

NATURAL AREAS IN
TAURANGA ECOLOGICAL
DISTRICT

2008

Report No. 1914

Prepared for:

ENVIRONMENT BAY OF PLENTY
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EXECUTIVE SUMMARY

The Tauranga Ecological District (85,915.6 ha) was surveyed to identify natural areas and assess the values associated with those areas.

A total of 168 sites have been identified, encompassing 3,240.2 ha, or 4.92%, of the terrestrial area. Several sites cover large areas of Tauranga harbour.

Existing protected natural areas in both terrestrial and marine environments total 1,147.0 ha, or 1.7% of the ecological district, including Department of Conservation reserves, Tauranga City Council and Western Bay of Plenty District Council reserves, QEII and Nga Whenua Rahui covenants. Another 23,136.7 ha of natural areas are unprotected, most of which are associated with Tauranga Harbour and smaller estuaries along the coast.

Apart from estuarine and harbour sites, remaining areas are small and isolated, 110 of 168 are less than 10 ha in size. Natural areas were divided into four categories, to reflect their relative quality and the values currently associated with them (53 Category 1 sites - 22,294 ha including Tauranga Harbour; 28 Category 2 sites - 777 ha; 42 Category 3 sites - 869 ha; 45 Category 4 sites - 331 ha. All sites can be regarded as significant under the Resource Management Act 1991.

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1. INTRODUCTION

The Protected Natural Areas Programme (PNAP) was established in 1983 to address Section 3(1)(b) of the Reserves Act 1977:

The preservation of representative samples of all classes of natural ecosystems and landscapes which in the aggregate originally gave New Zealand its own recognisable character.

New Zealand has been divided into 68 ecological regions which comprise 286 ecological districts (McEwen 1987). Each ecological district is characterised by a unique combination of geology, topography, climate, soils, and biological features.

The Tauranga Ecological District is situated in the western Bay of Plenty, between the eastern foothills of the Kaimai-Mamaku range and the Pacific Ocean, encompassing the western half of the coastal dune systems that stretch between Waihi beach and Opotiki. The district contains three estuarine environments, including the entire expanse of the Tauranga Harbour, coastal dunes and plains, and low hills. The ecological district is largely within the coastal bioclimatic zone due to the proximity of volcanic landforms, which define the district boundary, to the coast. Only small portions of the area extend inland for more than approximately 1 km from the coastal or estuarine environments. Those areas that do extend inland are all in the semi-coastal bioclimatic zone, which reflects the low relief of the sedimentary substrates underlying the district. Tauranga ED had been modified historically by pre-European fires, and in European times by conversion to agricultural, horticultural, and urban developments, the last three of which are ongoing.

Environment Bay of Plenty commissioned Wildland Consultants to undertake a study on Tauranga Ecological District in 2003. This study entailed compiling existing information about the ecological district, including landforms, vegetation, flora, fauna, and history (Wildland Consultants 2003e). Following that, Tauranga City Council commissioned a study to update the 2000 State of the Environment reporting project on biodiversity. This included updating the vegetation map of natural areas in Tauranga City and the ecological information on each of the significant sites within the city (see Wildland Consultants 2005e). In 2006 Environment Bay of Plenty undertook a study to update the 1994 study on significant natural areas in the coastal zone (Wildland Consultants 2006g). An addendum to this report was prepared in 2007 (Wildland Consultants 2007a).

These two projects (i.e. Wildland Consultants 2005e and 2006g) resulted in comprehensive understanding of the location and extent of many natural areas in the Tauranga Ecological District. However, the semi-coastal bioclimatic zone outside of Tauranga City remained poorly known at the completion of these two studies.

In 2007 and 2008 Environment Bay of Plenty commissioned studies to undertake field surveys of all the sand dune sites in the semi-coastal zone of Tauranga ED outside of Tauranga City, and to map the vegetation cover of all natural areas in the coastal zone. Environment Bay of Plenty desired the data derived from these surveys to be combined with existing data on natural areas within the Tauranga Ecological District, and presented in a report on all natural areas in the district. This report includes site

maps and significance assessments in addition to site descriptions and information on flora and fauna at each site.

2. ECOLOGICAL CHARACTER OF TAURANGA ECOLOGICAL DISTRICT

2.1 Location and setting

Tauranga Ecological District encompasses c.85,000 ha within the Northern Volcanic Plateau Ecological Region (see Figure 1). The district includes Tauranga Harbour, Matakana Island, Maketu Estuary, Waihi Estuary, the coastal dunes between Waihi and Otamarakau, coastal plains, and the low rounded hills of the Western Bay of Plenty lowlands.

The ecological district encompasses approximately 80 km of ocean beach and a large area of estuarine environment, comprising three estuaries, including the entire expanse of the Tauranga Harbour. The boundary skirts the lower slopes of the Kaimai-Mamaku Range and passes around the eastern side of the Mamaku plateau before joining the coast near Otamarakau. The altitudinal range is from sea level to approximately 300 m. Typically the land is of a shallow gradient, rising gradually to a series of rolling and moderately steep hills in the west.

2.2 Climate

The Tauranga Ecological District is sheltered from the west, south, and east by high country ranges and plateaux. The interaction between these plateaux and ranges and the predominantly westerly airflow over New Zealand results in the district experiencing lower rainfall, higher temperatures and higher sunshine hours than many other areas (Rijkse and Cotching 1995). At Tauranga Airport the mean annual rainfall for the 1971-2000 period was 1,198 mm, with an average of 111 “wet days” (≥ 1.0 mm) per annum. The mean annual temperature for the same period was 14.5 °C, and 2260 mean annual sunshine hours were recorded. Extreme temperatures from the full historical records are a maximum of 33.7 °C and a minimum of -5.3 °C (NIWA 2008b).

2.3 Bioclimatic zones

Two bioclimatic zones have been recognised for Tauranga ED. These are mapped in Figure 2. They are:

- *Coastal*: The coastal zone extends from the coast to the inland limit of pohutukawa as a conspicuous forest canopy species. This zone extends approximately 1 km inland and is often exposed to salt laden winds. Characterised by a range of different species dependent on the site, for example sand dune species, salt marsh species, pohutukawa, taupata, houpara, ngaio, and karo.

Figure 1



Figure 2

- *Semi-coastal*: Extends from the coastal zone to the inland limit of kohekohe. This may be up to 30 km from the coast. Most of Tauranga ED is within the semi-coastal bioclimatic zone.

2.4 Geography and physiography

Tauranga ED extends from sea level to approximately 300 m, and the land is generally of a gentle gradient, rising gradually to a series of rolling and moderately-steep hills in the west. A large part of the ED, along the coast, has an underlying geology of sand which is bounded by areas of alluvial deposits (Healy *et al.* 1974). West of Tauranga Harbour, the geology comprises intermixed fluviatile sands and silts with siltstones, sandstones, and conglomerates. Occasional pumiceous tuffs form moderately-steep, undulating hill country (*ibid.*). The western boundary of the ED is defined by the boundary between fluviatile deposits and the ignimbrites of the Kaimai Range. At the base of the Mamaku Plateau, the boundary of the ED roughly coincides with two large, hidden faults.

Tauranga Harbour, Maketu Estuary and Waihi Estuary are composed of alluvial sediment (Healy *et al.* 1974). Intermixed beds of peat and alluvium surround parts of the Maketu Estuary and Waihi Estuary, and merge into fluviatile terraces (*ibid.*). South and west of Maketu Estuary and Waihi Estuary, are flat and slightly undulating terraces formed of fluviatile sands, silts, and gravels (*ibid.*). Towards the south of the ED they have been overlain by the same ignimbrites that form the Mamaku Plateau, and by pumice breccias from the Rotoiti eruption. At the very eastern limit of the ED, there is a small area of pumice breccias with siltstones.

Large rivers within the ED include the Wairoa River, which flows into the Tauranga Harbour, and the Kaituna River, which flows into the Maketu Estuary and directly out to sea. The Kaituna River played a major role in the formation of the Kaituna-Pongakawa Plain, which formed during the last 8000 years, as rivers deposited vast quantities of pumiceous tephra which was erupted from the Okataina and Taupo volcanic centres. The Kawa Swamp, a large wetland, was previously present on this plain

2.4.1 Special geological features

Kenny and Hayward (1996) identified seven important geological features within Tauranga ED: the peak of Mauao, which is the remnant of a large rhyolite lava dome; Maketu Estuary; Maketu Hot Springs; the Woodlands Springs and Sapphire Springs at Katikati; Waihi Beach; and Matakana Island with its associated tombolos. Mauao and Matakana Island are of national significance, and the other sites are of regional significance (*ibid.*).

2.5 Soils

Most soils within Tauranga Ecological District are derived from a range of volcanic events which showered the ED in ash and tephra, primarily the Kaharoa eruption and the Waihi and Whakatane ashes. Ashes from these events form sandy well drained soils that have a high allophone content (Rijkse and Cotching 1995). The predominant ash-based soil is a yellow brown loam derived from the Whakatane and

Waihi ashes. This yellow brown loam extends from the Tauranga Harbour west and south across the ED into the foothills of the Kaimai Range. Further south the dominant soil types are derived from Kaharoa ash and yellow-brown pumice soils. These are mixed with organic (peat) soils. Smaller areas of peat-based soils are found in the low-lying lands adjoining Maketu Estuary and Waihi Estuary. These areas have been converted to farmland by draining and fertilisation (Town and Country Planning Branch, Ministry of Works, 1962). Along the coast there are large areas of recently formed soils, especially on Matakana Island. These are derived from the deposition of sand and include the dune systems along Papamoa Beach (Stokes 1980; Rijkse and Cotching 1995).

Sand deposits extend along the ocean beaches and for some distance inland, forming deep, well drained soils. The distribution of sandy soils corresponds in large part with urbanised areas within the ED. The largest areas of intact habitat in this region are the dune systems along Waihi beach, Matakana Island, and from Mauao to the Kaituna River mouth and beyond to the Maketu Estuary.

Sub-surface soil temperatures are typically 1-2 degrees Celsius above the average air temperature, and as such the ecological district is ideal for horticulture, of which kiwifruit (*Actinidia deliciosa*) production forms a large part (Rijkse and Cotching 1995).

2.6 Landform units

Landform mapping in this report is based on Wildland Consultants (2003e), with modification. The landforms in Wildland Consultants (2003e) are derived from Wildland Consultants (2000a), which is in turn based on the landform maps prepared by the Department of Conservation (1997) for the Bay of Plenty Conservancy.

Eighteen landform units were identified in the ecological district. These are described below and mapped in Figure 3.

2.6.1 Coastal margin

1. **Infilled (Reclaimed) Harbour:** Comprising one section of the Tauranga Harbour, namely Sulphur Point.
2. **Intertidal Flats:** Extensive areas between the mean high water spring and the mean low water spring tidal marks.
3. **Oceanside Sand Beach:** Found along the shores of the ocean, between the high tide mark and the dune systems that run along much of the ocean coastline in the ecological district.
4. **Sand Dune:** Stretching along the ocean coast of most of the ED, from Waihi Beach to the eastern end of Pukehina. This is the dominant land form along the ocean beach and forms a critical part of the ecosystem.

Figure 3

5. Rocky Shore: Very limited in its extent and restricted to small areas around Mauao, Bowentown Heads and at the base of the cliffs at the entrance to Maketu Estuary.
6. Harbour and Estuary: Areas that are subtidal at low tide.

2.6.2 Flat-shallow gradient land

7. Alluvial Plains: Located around the banks of the Kaituna River. They are somewhat limited in extent and were formerly part of a large swamp which has now mostly been drained and cultivated.
8. Flat-Undulating/Undulating Low Hills: Located to the west and south of the Tauranga Harbour, in the gentle terrain below the steeper slopes of the Kaimai and Mamaku Ranges. These can be defined as hills with less than 100 m between the base and top. This landform grades into undifferentiated terraces towards the harbour.
9. Undifferentiated Terrace: These are local or isolated terraces, which are indistinguishable from higher or lower terraces according to current data.
10. Higher Terraces: There is a restricted area of this landform on the borders of the Mamaku Range. Generally this landform has a gentle slope and is more or less modified by erosion.
11. Flats: These include riparian flats and are generally found near the lower reaches of streams and wetlands. Some peat swamp areas also form part of this landform unit.

2.6.3 Moderately steep land

12. Hills: There are occasional isolated moderately steep hills.

2.6.4 Steep land

13. Scarps, Toeslopes and Associated Steep Slopes: This landform includes the transition between terraces and flats, but also includes scarps and inland cliffs.
14. Very Steep Hills: There are isolated occurrences of very steep hills, the best example of which is Mauao.
15. Gorges: This landform is restricted to a small area on the eastern flanks of the Mamaku Plateau; it typically has very steep sides and an absence of streamside terraces.
16. Gullies: Steep-sided and narrow, these are similar to gorges, but are typically found in undulating or moderately hilly country.
17. Cliffs: There are small areas of very steep to sheer cliffs around the coast.

2.6.5 Other

18. Wetlands: Occur occasionally on the plains and riparian margins. The majority of these are less than 20 ha in area.

2.7 Human history and land use

The Bay of Plenty Region was extensively settled by Maori, especially in coastal regions, estuaries, and major river valleys. This pattern of settlement reflected the availability of food, the suitability of soils for horticulture, and the proximity to defensive sites suitable for Pa. The Bay of Plenty Region is the landing place of two of the seven legendary canoes from Hawaiki. Takitimu landed in Tauranga Harbour and Te Arawa made landfall within the Maketu Estuary. Other canoes are recorded as having passed by or called in briefly, leaving a few settlers and then passing on (Tauranga District Council 1996).

There is archaeological evidence that the Tauranga Ecological District has been occupied for approximately 1,000 years, although this is subject to some debate. Settlement was especially intensive, with archaeological sites highly concentrated about the Tauranga Harbour (Department of Conservation 1997), with over 30 kainga in the region in 1840 (Stokes 1980). Many tribes and iwi have established themselves in or around the district. There are four Iwi associated with Mauao: Ngati Ranginui, Ngaiterangi, Ngati Pukenga, and Waitaha. Stokes (1980) provides a detailed account of the succession of tribal invasions and warfare that has occurred in Tauranga district.

Maori built many Pa and villages, and cultivated large tracts of land for kumara and taro. Kumara grew especially well in the fertile soils of the lowlands, where early European settlers found large areas under cultivation. Cultivation was carried out by a system of burning an area, planting for several seasons, and then leaving it to lie fallow for a period, after which any regenerating vegetation would be burnt and the ashes used as fertiliser (Stokes 1980). Many of these sites of occupancy can still be seen in the terraces and shell middens on hillsides in the area, but most lowland sites have been destroyed by land development (ibid.).

With early Europeans came potatoes, pigs, corn, wheat, and cattle, as well as a variety of pest plants and animals such as rats and brush-tailed possums. Early European settlers lived in or near the local Maori villages, sometimes as part of the tribe (Stokes 1980). Later colonists lived in small villages, often at sites that are now towns and cities. These people cleared the land in a similar fashion to the local Maori, by burning. However, the land was then sown in pasture species and grazed by cattle and sheep to keep down regenerating native species. At first, little effort was made to log the native forest before clearing, although later timber became a valuable resource and podocarp species were selectively logged (Town and Country Planning Branch, Ministry of Works 1962). The arrival of Europeans also saw the introduction of money and firearms as well as the arrival of numerous diseases, each of which had a major impact on the local Maori population.

Today, agriculture and horticulture constitute the main land uses in the Tauranga Ecological District. However, there is a large and increasing urban area in Tauranga

city and many other smaller towns in the area. These townships were originally established around mission stations and sites chosen especially for settlement, which was aided by distribution of land confiscated from the local Maori after land wars. Gold strikes at places such as Te Puke also enticed settlers from other parts of New Zealand and overseas (Stokes 1980).

Urban areas are focussed on the delivery of primary services to the surrounding rural areas, especially in the agricultural and horticultural regions. Plantation forestry is also an important land use in the Tauranga Ecological District, although this is insignificant in comparison to the plantation forests found in other parts of the Bay of Plenty region (Town and Country Planning Branch, Ministry of Works 1962). The Port of Tauranga also provides employment for many people, with large volumes of timber and other resources being shipped from here to destinations overseas.

2.8 Ecological history

Pre-Human Vegetation Cover

Tall podocarp-broadleaved forest would have covered all of the hill country and the flat land with the exception of the foredunes and the extensive freshwater wetlands on the plains. The podocarp-broadleaved forests would have been dominated by rimu and tawa, with other podocarp species such as miro and matai. Kauri is likely to have been present in the northern end of the ecological district (Stokes 1980). Pohutukawa forest would have occurred on the headlands and hill slopes near the harbour. The non-forested dunes would have included sand binding species such as pingao, pohuehue, and spinifex, with low shrubland areas of *Coprosma* spp., kanuka, karo, and pohutukawa further back from the beach.

Within the estuarine systems there would have been extensive saltmarshes, mangrove scrub, and seagrass beds. Large freshwater wetlands existed on the Kaituna-Pongakawa plain, and around the Maketu and Waihi Estuaries. There were extensive areas of flaxland and reedland, and swamp forests dominated by kahikatea with maire tawake (swamp maire) and large areas of kiekie. Smaller wetlands covered in a mixture of flaxland, reedland and swamp forest would have been found along the margins of the major river valleys such as the Wairoa, Kopurererua and Waimapu.

Human Settlement and Modification

The arrival of Maori resulted in clearance of extensive areas of vegetation by burning, especially on the lower, more fire-prone flat lands and dune areas. Tall forest was replaced by a mixture of fernland, shrubland, remnant primary forest and secondary forest. The arrival of Europeans saw the introduction of a wide range of cultivated species and environmental weeds, and tools for extensive clearance of primary and secondary forest for farmland and timber production. Freshwater wetlands were cleared and drained for farming, although this did not occur for some time after the arrival of Europeans.

As a result of human activity, there has been a significant reduction in the amount of indigenous vegetation cover in the Tauranga Ecological District. This is especially the case for wetland vegetation including tall swamp forest, which has largely been

cleared and drained for agriculture, horticulture and urban development (Cromarty 1996).

Relatively little indigenous vegetation remains in the District away from the margins of the harbour and estuaries, and even saline wetlands have been reduced in extent by draining and conversion to agricultural or horticultural production. There are very few protected natural areas in the District, and most are small. The changes in surrounding land use on remaining indigenous vegetation at one scale are compounded by ongoing invasion by a range of environmental pests and weeds at another. Within the context of contemporary landscapes, human induced changes are ongoing processes which have not stopped simply because we, as a people, are no longer burning, clearfelling, or selectively logging.

2.9 Flora

2.9.1 General

A provisional list of the vascular plant species for the ecological district was compiled in 2002 (Beadel 2002). This has been expanded and revised. Of the 886 species listed, less than half (391) are indigenous and about 500 (495) are exotic species. Separate species lists for indigenous vegetation are available for several reserves and other sites within the area (see Beadel 1989b, 1992e, 2004; Beadel *et al.* 1996a; Shaw 1999a). Full species lists for both indigenous and exotic species are provided in Appendices 1 and 2.

2.9.2 Threatened and local plants

Twenty-two nationally threatened or uncommon plant species (as per Hitchmough *et al.* 2007) have been recorded within the District (see Table 1). There are historical records of two Nationally Critical species - *Pterostylis micromega* (Nationally Critical) which was recorded from the Kaituna in 1983 (Miller 1983) and *Atriplex hollowayi* from the Mount in 1890.

Table 1: List of nationally threatened and uncommon species.

Threat Ranking	Species
Acutely Threatened – Nationally Critical	<i>Atriplex hollowayi</i> (AK 3965) ¹ <i>Pterostylis micromega</i> ¹
Acutely Threatened – Nationally Endangered	<i>Amphibromus fluitans</i> <i>Lepidium oleraceum</i> ¹
Chronically Threatened - Serious Decline	<i>Marattia salicina</i> <i>Pimelea tomentosa</i> s.s.
Chronically Threatened - Gradual Decline	<i>Austrofestuca littoralis</i> <i>Cyclosorus interruptus</i> <i>Desmoschoenus spiralis</i> <i>Mida salicifolia</i> ¹ <i>Myriophyllum robustum</i> <i>Paspalum orbiculare</i> ¹ <i>Pimelea arenaria</i> <i>Ranunculus macropus</i> <i>Thelypteris confluens</i> <i>Tupeia antarctica</i> ¹
At Risk – Sparse	<i>Hypolepis dicksonioides</i> <i>Lindsaea viridis</i> ¹ <i>Mimulus repens</i> <i>Peperomia tetraphylla</i> <i>Tetragonia tetragonioides</i>
At Risk - Data Deficient	<i>Vittadinia australis</i> ¹

One ‘Nationally Endangered’ species (*Amphibromus fluitans*) has recently been recorded from the ED and one (*Lepidium oleraceum*) was recorded in 1942 from Mauao, but has not been seen since. There is a specimen lodged in WELT(SP032505) which is incorrectly identified as *Olearia pachyphylla* (it is probably *Olearia furfuracea*). This species is also classed as Acutely Threatened, Nationally Endangered. This specimen may be the source of an unconfirmed historic record (P. de Lange pers. comm.) of *O. pachyphylla* from the ED.

Nine ‘Chronically Threatened’ species are present and there are historic records of three species. *Ranunculus macropus* (Serious Decline) occurs in the wetlands at the northern end of Matakana Island, at Papamoa, at Matua, and Wairakei Stream. There are large populations of *Cyclosorus interruptus* and *Thelypteris confluens* (both Gradual Decline) in the wetlands on Matakana Island. Small populations of these species also occur in the Arawa Wetlands near Maketu, and also in a degraded wetland east of Papamoa. King fern (Serious Decline) occurs inland of Te Puke, and *Pimelea tomentosa* (Gradual Decline) occurs on Mauao. *Pimelea arenaria* (Gradual Decline), pingao (Gradual Decline), and sand tussock (Gradual Decline) are dune species present within the district. Relatively large populations of pingao are present on Matakana Island, the Papamoa-Kaituna Dunes and Maketu Spit, with small populations elsewhere. A large population of sand tussock occurs on the dunes between Papamoa and the Kaituna River, with smaller populations at Maketu Spit, Papamoa, and Pukehina Spit. This species is known from only a handful of sites in the Bay of Plenty.

¹ Historic records, not currently known from the ecological district.

Four plant species which are classed as At Risk (Sparse) are present in the District. *Tetragonia tetragonoides* (kohihi) occurs at several sites, including Matakana Island, Bowentown Heads, Bowentown Beach, and Waikaraka Estuary. *Hypolepis dicksonioides* and *Peperomia tetraphylla* both occur at one site. *Mimulus repens* has been recorded from two sites within the Ecological District, Arawa wetland near Maketu (Beadel 1989b), and Waihi estuary (Beadel 1991b). There is an old record for *Lindsaea viridis* but it has not been seen recently.

In 2006 a preliminary checklist of regionally uncommon species in the Bay of Plenty Region was prepared (Beadel 2006). This has been recently updated (Beadel 2008). Forty-seven species on the 2008 list have been recorded from the Tauranga ED recently, and one was recorded from the ED many years ago but has not been recorded since. These are listed in Table 2.

Table 2: List of species regionally uncommon in the Bay of Plenty Region present in the Tauranga Ecological District (from Beadel 2006).

<i>Asplenium appendiculatum</i> subsp. <i>maritimum</i>
<i>Asplenium flaccidum</i> subsp. <i>haurakiense</i>
<i>Astelia banksii</i>
<i>Astelia grandis</i>
<i>Austrostipa stipoides</i>
<i>Bolboschoenus caldwellii</i>
<i>Callitriche petriei</i> subsp. <i>petriei</i>
<i>Carex fascicularis</i>
<i>Chionochloa flavicans</i> f. <i>flavicans</i>
<i>Coprosma acerosa</i>
<i>Einadia trigonos</i> subsp. <i>trigonos</i>
<i>Elatine gratioloides</i>
<i>Empodisma minus</i>
<i>Fuchsia perscandens</i>
<i>Gahnia lacera</i>
<i>Gahnia xanthocarpa</i>
<i>Galium trilobum</i>
<i>Hypericum japonicum</i>
<i>Hypolepis distans</i>
<i>Juncus caespiticus</i>
<i>Lepidosperma laterale</i>
<i>Leptinella squalida</i> subsp. <i>squalida</i>
<i>Limosella lineata</i>
<i>Melicytus novae-zelandiae</i>
<i>Olearia solandri</i>
<i>Oxalis rubens</i>
<i>Parietaria debilis</i>
<i>Poa pusilla</i>
<i>Psilotum nudum</i>
<i>Pteris comans</i>
<i>Ranunculus acaulis</i>
<i>Rorippa palustris</i>
<i>Rytidosperma unarede</i>
<i>Ruppia megacarpa</i>
<i>Schoenus apogon</i>
<i>Schoenus nitens</i>
<i>Senecio biserratus</i>
<i>Senecio glomeratus</i>
<i>Senecio hispidulus</i>

Senecio quadridentatus
Solanum aviculare
Sparganium subglobosum
Syzygium maire
Tetraria capillaris
Viola lyalli
Trisetum arduanum
Wahlenbergia littoricola subsp. *vernica* (historic record)
Zoysia pauciflora

Regionally uncommon species which are present in the ED include maire tawake (swamp maire), and *Psilotum nudum*. Three small stands of maire tawake are present, one at the northern end of the ecological district, one at the northern end of Matakana Island, and the other in the Kaituna Wetland. This species is only known from a few sites in the Bay of Plenty. There is a good population of *Psilotum nudum* on Mauao and it also occurs at several sites in Tauranga City (G.T. Jane pers. comm.). Within the Bay of Plenty Region this species occurs at several geothermal sites and at Putauaki, but is known from only two other coastal sites: Moutohora (Whale Island) and at the base of Wairere Falls (P. Cashmore pers. comm.).

Many other species are confined to only one site in the ecological district, reflecting perhaps a combination of gaps in botanical knowledge of, and the little remaining natural vegetation within many parts of the district. One of these species is wire rush (*Empodisma minus*), a small population of which occurs on Matakana Island. Wire rush was recorded from the Kawa Swamp in 1872 by Thomas Kirk (AK11106). It is no longer known from that area though. Coastal mahoe (*Melicactus novae-zelandiae*) also occurs on Matakana Island. It is also present on the sand dunes near Papamoa, and on Moturiki, where it has probably naturalised from plantings.

2.9.3 Distribution limits

Lepidosperma laterale approaches the southern limit of its distribution in the District, where it is known from only two sites. Toetoe (*Cortaderia toetoe*) reaches its northern limit of distribution on Te Hopai Island. Mangroves approach their southern limit for the east coast, although they are also found slightly further south at Ohiwa Harbour.

2.9.4 Diversity

The indigenous flora of Tauranga Ecological District was previously considerably more diverse than it is today. As well as the threatened and uncommon species identified above as previously having occurred in the district, it is likely that several other nationally threatened species could once have been present, including para and shore spurge (*Euphorbia glauca*), along with some species which are now regionally uncommon, including coastal maire (*Nestegis apetala*) and tawapou (*Planchonella novae-zelandiae*). As well, several relatively common species are known to have previously occurred in the district but the sites at which they occurred have been cleared and these species are not known from other sites. These species include *Dracophyllum latifolium*, tawari (*Ixerba brexioides*), *Pittosporum umbellatum*, hard beech (*Nothofagus truncata*), horopito (*Pseudowintera colorata*), and *Pittosporum cornifolium*, but it is likely that there are considerably more.

2.10 Fauna

The indigenous fauna of the Tauranga Ecological District is diverse, a reflection of the diversity of habitat types within the District. In particular, the diversity of wading birds reflects the fact that the District encompasses a large section of shoreline and three harbour/estuarine systems. However, habitat destruction for agricultural and urban development and plantation forestry limits the diversity and density of forest birds. A list of fauna is provided in Appendix 3.

2.10.1 Avifauna

The Tauranga Ecological District supports a wide diversity of bird species, with nearly two thirds being indigenous. However, forest bird species have become relatively scarce due to habitat modification. The large numbers of seabirds, waders listed in Appendix 3 reflects the presence of large saltwater wetlands in the form of estuaries, as well as a long sandy coastline. Several petrels and other seabirds breed or roost on the offshore islands just outside the Tauranga Ecological District, and grey-faced petrels (oi; *Pterodroma macroptera*) and northern blue penguins (*Eudyptula minor iredalei*) also breed on the mainland. Many species, especially waders and other species that inhabit the harbour/estuaries, are migratory, of which several, such as the white heron, are only occasional visitors.

Twenty-six threatened bird species are present in or visit the ecological district (refer to Table 3). These include 11 coastal and estuarine species, seven freshwater wetland species and five forest species. Some, such as the northern New Zealand dotterel (*Charadrius obscurus aquilonius*), have nationally significant breeding populations within the District. Other threatened species with important breeding areas in the District include Australasian bittern (matuku; *Botaurus poiciloptilus*), northern blue penguin (korora; *Eudyptula minor*), and banded dotterel (*Charadrius bicinctus*). Many other species of waders are non-breeding visitors from breeding grounds in central and southern New Zealand and from the northern hemisphere.

Table 3: Threatened avifauna species known to occur in Tauranga Ecological District.

Species	Threat Status*	Main Habitat
White heron	Nationally Critical	Wetlands
Black stilt	Nationally Critical	Harbour, estuaries
Australasian bittern	Nationally Endangered	Wetlands
North Island kaka	Nationally Endangered	Forest
Black-fronted tern	Nationally Endangered	Coast, estuaries
Grey duck	Nationally Endangered	Wetlands
Brown teal, pateke	Nationally Endangered	Recorded at Waihi Estuary and Uretara Stream Wetland.
Reef heron	Nationally Vulnerable	Coast
Wrybill	Nationally Vulnerable	Harbour, estuaries
Caspian tern	Nationally Vulnerable	Coast
New Zealand falcon, bush falcon	Nationally Vulnerable	Forest
Northern New Zealand dotterel	Nationally Vulnerable	Beaches, estuaries

Species	Threat Status*	Main Habitat
Black-billed gull	Serious Decline	Recorded at Tauranga Harbour, Maketu Estuary, and Waihi Estuary.
Northern blue penguin	Gradual Decline	Coast
Banded dotterel	Gradual Decline	Beaches and estuaries
Red-billed gull	Gradual Decline	Coast
White-fronted tern	Gradual Decline	Coast
Kereru	Gradual Decline	Forest
Long-tailed cuckoo	Gradual Decline	Forest
Black shag	Sparse	Coast
Banded rail	Sparse	Freshwater wetlands
Marsh crake	Sparse	Freshwater wetlands
Spotless crake	Sparse	Freshwater wetlands
North Island fernbird	Sparse	Freshwater wetlands
New Zealand dabchick	Sparse	Found at Te Maunga oxidation ponds and in other ponds around Tauranga Harbour.
Little black shag	Range Restricted	Found in Tauranga Harbour, Maketu Estuary, Waihi Estuary, and in local ponds.

Note: * = Threat status follows Hitchmough *et al.* 2007.

The species listed in Table 3 are the victims of habitat loss and breeding site destruction, ongoing predation by introduced mammals (for example Pierce 2002), ongoing habitat degradation by introduced environmental pests and weeds, and human disturbances. Tauranga Harbour, Maketu Estuary, and Waihi Estuary provide important habitat for many of these species. Tauranga Harbour, Maketu Estuary, and Waihi Estuary meet the criteria recognised by the RAMSAR convention as being wetlands of international significance for the protection of migratory and indigenous wetland bird species and other values (Cromarty 1996, Owen *et al.* 2006).

2.10.2 Herpetofauna

Three native skinks are present within Tauranga ED. These are the copper skink (*Cyclodina aenea*), moko skink (*Oligosoma moco*), and shore skink (*Oligosoma smithii*). Of these species, only one is threatened - moko skink is listed as 'Sparse' in Hitchmough *et al.* (2007). There are recent records of copper skink and moko skinks from within Tauranga city limits, and the first of these species at least appears to tolerate considerable habitat modification (DOC 2008a). Only five mainland populations of Moko skink were identified by Towns *et al.* (2002), one of which was Mauao (Mt Maunganui). There are recent records of shore skink from a number of dunes systems within the district, including Matakana Island, Rangiwaea Island, Papamoa Beach, Kaituna Dunes, and Maketu Spit (DOC 2008a).

Introduced rainbow skinks (*Lampropholis delicata*) are well established in the Tauranga area, and also occur in Te Puke and at Whakatane, and are expanding their range rapidly. Biosecurity New Zealand considered them to be a biodiversity risk (see Biosecurity NZ Website).

There is only one gecko record from within the ecological district, a single green gecko (*Nautilinus elegans elegans*) captured and identified at Katikati by A.H. Whitaker in 1964. Green gecko were also recorded just beyond the ED boundary at Waihi in 1965. Green gecko are listed as Chronically Threatened - Gradual Decline) and it is possible that this species has become extinct within the ED as part of this decline. The only other gecko that may occur within the Tauranga ED is *Hoplodactylus granulatus* however, with the exception of one observation from the western side of the Kaimai Range, all recent (post 1998) mainland records of this species within the Bay of Plenty occur above 400 m. Whether this represents a real contraction in distribution and, if so, whether this reflects availability of remaining habitat, some facet of predation dynamics, or other factors, is unknown. At any rate, predicting the occurrence of *Hoplodactylus granulatus* within Tauranga ED is not concordant with what we currently know about the current distribution of this species.

Hochstetters frog (*Leiopelma hochstetteri*) are widespread in headwaters of streams and rivers which flow through the ED. Recent records of Hochstetters frogs come from bouldery streams within forested catchments on the volcanic hill country just beyond the border of the Tauranga Ecological District. The only record of this species within the ED is a 1980 observation of live individuals in headwaters of the Ohui stream near the end of Shearers Road. In 2002 this site was searched for frogs but none were found.

The introduced golden bell frog (*Litoria aurea*) and the southern bell frog (*Litoria raniformis*), both of which are native to SE Australia, are widespread in association with freshwater throughout the ecological district

2.10.3 Mammalian species

No indigenous mammal species are known to occur within the Tauranga Ecological District, though both short-tailed bats (*Mystacina tuberculata rhyacobia* (eastern); Range Restricted) and long-tailed bats (*Chalinolobus tuberculatus* (North Island); Nationally Critical) have been recorded from adjacent ecological districts (Rasch 1989).

Feral cats (*Felis catus*), ship rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), goats (*Capra hircus*), pigs (*Sus scrofa*), house cats (*Felis catus*), stoats (*Mustela erminea*), ferrets (*Mustela furo*), weasels (*Mustela nivalis*), brush-tailed possums (*Trichosurus vulpecula*), dama wallabies (*Macropus eugenii*), European hedgehogs (*Erinaceus europaeus*), house mice (*Mus musculus*), brown hares (*Lepus europaeus*), and rabbits (*Oryctolagus cuniculus*) are present in the ecological district. Stray dogs (*Canis familiaris*) and cattle (*Bos taurus*) are occasionally recorded, but these have not established feral populations.

2.10.4 Fish species

A diverse array of indigenous freshwater fish species are present within the Tauranga Ecological District, which is surprising given the degree to which freshwater systems within the district have been modified. There are recent (post 1998) records of indigenous fish from highly modified streams, such as banded kōkopu (*Galaxias fasciatus*) from the lower reaches of an unnamed tributary of the Waipawa estuary

(Shaw and Kusabs 2000), long-finned eel (*Anguilla dieffenbachii*, Gradual Decline) from an unnamed stream south of Omokoroa (Shaw and Kusabs 2000), and banded kōkopu and giant kōkopu (*Galaxias argenteus*, Gradual Decline) from an unnamed stream adjacent to Tetly Road, Katikati (Wildland Consultants 2005f). These records suggest that the presence of indigenous fish, including threatened species, can be anticipated in virtually any river or stream that empties into the sea or harbour and lacks artificial or natural barriers. A similar conclusion was reached in Beadel *et al.* (1999a) in the PNA survey of the nearby Taneatua ED.

Seventeen indigenous and four introduced fish species are known from the district (Appendix 3), though their distribution within the district is poorly known. Threatened species present within the District include shortjaw kōkopu (*Galaxias postvectis*, Sparse), giant kōkopu, and long-finned eels. Common smelt (*Retropinna retropinna*), banded kōkopu, short-finned eels (*Anguilla australis*), red-finned bully (*Gobiomorphus huttoni*), common bully (*Gobiomorphus cotidianus*), torrentfish (*Cheimarrichthys fosteri*) and inanga (*Galaxias maculatus*) are also present.

Yellow-eyed mullet (*Agonostomus forsterii*), kahawai (*Arripis trutta*) and black flounder (*Rhombosolea retiaria*) can be found in the lower reaches of major waterways (NIWA 2008). Rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) have been introduced to many streams and rivers in the area.

2.10.5 Invertebrate species

There is no published list of invertebrate species found in the Tauranga Ecological District (Rasch 1989). However, some notable indigenous invertebrates have been reported, including katipo spider (Chronically Threatened, Serious Decline) and several species of minute snails in the vegetation at the base of Mauao, and *Mecodema atrox*, a type of ground beetle classified as Sparse by Hitchmough *et al.* (2007). Matakana Island supports the most extensive surviving population of katipo spider in the Bay of Plenty. Koura (*Paranephrops planifrons*) are present in freshwater streams, as are a wide range of caddis-flies, stoneflies, and mayflies (Hatton *et al.* 1975). Estuarine environments within the Tauranga Ecological District provide habitat for a wide range of intertidal fauna such as mud snails (*Amphibola crenata*), crabs (*Helice crassa*), and pipi (*Paphies australe*) (Barker and Larcombe 1976).

Watt (1982) considered that 80-90% of the estimated 20,000+ insect taxa in New Zealand are endemic. Several studies have found a high incidence of insect endemism in very small areas of indigenous habitat (for example Ramsay *et al.* 1988; Kuschel 1990; May 1993). Up to 50% of the insect species in New Zealand have yet to be described. It is possible, but not likely given the degree of habitat modification, that invertebrate species which are endemic to Tauranga Ecological District may yet be discovered.

Introduced insects such as wasps (*Vespula germanica*, *V. vulgaris*, *Polistes chinensis*) and honey bees (*Apis mellifera*) are the most notable of the exotic species. Honey bees and bumble bees (*Bombus* spp.) are used commercially for the pollination of fruit crops in orchards, and honey bees for honey production. The introduced gorse seed weevil (*Apion ulicis*) is used to control gorse (*Ulex europaeus*).

2.11 Threatening processes

Protected areas within the Tauranga Ecological District are very limited in extent. The Department of Conservation (DOC) administers only 0.4% of the total land area (Department of Conservation 1997), which is a miniscule proportion compared to other ecological districts such as Rotorua Lakes, which is a relatively developed district and has 14% of its land administered by DOC. Smaller areas within the District are protected by covenant, for example QEII open space covenant. With the limited extent of natural areas in the Tauranga Ecological District, any process that threatens native flora or fauna is likely to be significant. At the present time the most serious issues are the invasion of plant pest species into many of the natural areas, the destruction of these areas by the brush-tailed possum, predation of indigenous species by mammalian pest animal species (for example mustelids, rats, and mice), and disturbance of nesting and roosting areas.

Weed invasion, fire, urban development, off-road vehicles, people (entering sensitive areas), and mining pose a threat to dune vegetation and rare coastal forests, especially as unmodified vegetation of this type is extremely rare. There is a significant lack of formally protected areas of these two vegetation types in the Tauranga Ecological District, and they are significantly reduced on a national scale. Coastal areas also see a significantly increasing conflict between a recreational focussed human community and the specialised nesting, feeding and roosting requirements of many threatened bird species.

Freshwater wetland vegetation and habitats are highly threatened by drainage of wetlands for agricultural purposes and encroachment by willows. This is especially an issue for sites like the Arawa wetland near Maketu Estuary, which was once part of a vast wetland stretching between Maketu and the Tauranga Harbour. The wetland now encompasses only 24 ha and has been substantially modified by the lowering of the water table and invasion of weeds such as grey willow (*Salix cinerea*). Nevertheless, the remaining wetland habitat is still used extensively by a range of common and threatened bird species such as North Island fernbird and banded rail, and contains two species of rare ferns; *Thelypteris confluens* and *Cyclosorus interruptus* (Beadel 1989b). Of wetland vegetation types, kahikatea dominated wetland forest is the least common, as the majority of this forest type was on higher ground suitable for farming and consequently has largely been cleared for agriculture.

Weeds

Weeds are a significant threat to maintaining or enhancing the natural values within the ED. The adventive flora is considerably larger than the current known indigenous flora (see Section 2.9 above). Many of these species threaten the long-term integrity of natural areas. Species include spartina and saltwater paspalum in estuarine environments; marram, coast tea tree, evergreen buckthorn, pampas, and moth plant on sand dunes; grey willow and royal fern in freshwater wetlands; boneseed in shrublands, and ginger, tradescantia, privet, coral tree, Japanese honeysuckle, and climbing asparagus in forests. Several of these species are currently the subject of large-scale or intensive weed control programmes, for example coast tea tree on Matakana Island, royal fern on Matakana Island, rhamnus, Sydney golden wattle, and

prickly pear on sand dunes (along with numerous other weed species), spartina in Tauranga Harbour and Maketu Estuary, and boneseed on Mauao and in Mt Maunganui. However, weed control operations will need to be ongoing and widespread in the future to ensure that the existing natural values of the district are maintained and enhanced.

A field population of a notifiable pest plant species was discovered during the survey. A small infestation of *Salvinia* was discovered in the Kaituna Wetland. This was thought to have spread from an incursion in Te Puke about six years ago (W. Stahel pers. comm.). Despite regular surveillance and control over the last six years, this infestation had not been discovered. However, control of *Salvinia* at this site will be undertaken shortly.

2.12 Relation to adjoining districts

Three ecological districts share boundaries with the Tauranga Ecological District.

1. *Waihi Ecological District* bounds a very small portion of the northern boundary of the Tauranga Ecological District and is demarcated by a change in geology from sedimentary rock types to rocks of volcanic origin.
2. *Te Aroha Ecological District* is situated to the west of the Tauranga Ecological District and south of the Waihi Ecological District. It comprises the northern half of the Kaimai Range, which is largely steep hill country of volcanic origin and is predominantly forest-clad. The eastern side of the Kaimai Range demarcates the eastern boundary of the Te Aroha Ecological District and the western boundary of the Tauranga Ecological District.
3. *Otanewainuku Ecological District* comprises the Mamaku Plateau to the west and south of Tauranga Ecological District. The boundary between the two is demarcated by the change between sedimentary rock types (Tauranga) and volcanic rock types (Otanewainuku) (see Beadel 2006a).

A fourth ecological district (Motiti), to the north, is separated from the Tauranga Ecological District by a stretch of water. This ecological district consists of a group of small islands and Motiti itself, which is probably part of the same drowned volcanic plateau as Mauao.

3. OUTLINE OF STUDY METHODS

3.1 Data sources

Digital data and associated hard copy data were compiled from previous studies which have been undertaken by Wildland Consultants. Some of the studies which were consulted relate to multiple natural areas in defined parts of the District such as the coastal zone (i.e. Wildland Consultants 2006g), Tauranga City (i.e. Wildland Consultants 2005e) and the SmartGrowth study area (i.e. Wildland Consultants 2003f). Data and information was also gathered from studies which relate to specific

natural areas, for example, wetlands along the Kaituna River (Wildland Consultants 2005g).

There are existing digital vegetation type or class maps for all sites in Tauranga City (see Wildland Consultants 2005e), and some sites elsewhere in the Tauranga ED. There are also hard copy vegetation maps at various scales for many sites in the ED outside of Tauranga City. For example, all the wetland vegetation on the margins of Tauranga Harbour was mapped in 1991 at 1:10,000.

Recent (April 2008) GIS layers were obtained from the Western Bay of Plenty District Council (WBOPDC) showing covenants, and SES sites (“ecosites and ecoaddit” on the layer) as per the District Plan. These layers were checked for overlap with ecological corridors identified in previous Wildlands and Environment Bay of Plenty reports.

Staff at Environment Bay of Plenty and the Department of Conservation were consulted to obtain relevant information on natural areas. The Western Bay of Plenty District Council provided information about covenanted areas within their administrative area.

3.2 Geological and landform units

In this report detailed landform units have been identified for each vegetation unit. This is because of the finer scale at which the vegetation mapping was undertaken (c.f. the broad landform mapping for the whole ED, see Section 2.)

The detailed landform descriptions used in the site descriptions are defined below.

3.2.1 Islands

1. Marine Islands: Isolated land masses bounded and separated from the mainland by exposed water.
2. Harbour Islands: Isolated land masses bounded and separated from the mainland by water itself bounded and sheltered by a larger land mass.

3.2.2 Coastal margin

1. Infilled (Reclaimed) Harbour: Comprising one section of the Tauranga Harbour, namely Sulphur Point.
2. Subtidal Flats: Extensive areas below mean low water spring.
3. Intertidal Flats: Extensive areas between the mean low water spring and mean high water spring tidal marks.
4. Rocky Shore: Very limited in its extent and restricted to small areas around Mauao, Bowentown Heads and at the base of the cliffs at the entrance to Maketu Estuary.

5. Beach Sand: Found along the shores between the high tide mark and the terrestrial landform immediately inland.
6. Sand Dune: Wind deposited aggregations of tiny fragments of hard rock derived through physical weathering. This is the dominant land form along the oceanic coast from Waihi Beach to Whakatane.

Aeolian erosional and depositional processes and their interaction with marine incursion events, result in characteristic structuring of sand aggregations along the gradient of exposure running inland from the sand source of the beach proper. The following dune formations were recognised for vegetation mapping, terminology and description follow Hesp (2000).

Berm: A wave-built terrace landform lying between dunes and high water. Impressive example at the western end of Matakana Island appears to be the result of massive inshore movement of subtidal sand bars during recent storm events. Unvegetated dry sand on the surface of berms constitutes a significant source of Aeolian sand.

Incipient foredune: new dunes actively accreting Aeolian sand among dune vegetation or around any other turbulence inducing impediment to wind movement.

Established foredune: As incipient foredunes grow their leeward slopes stabilise and are colonised by a range of dune inhabiting plants. Established dunes are distinguished from incipient foredunes by their denser vegetation, more diverse plant communities having higher cover abundance, which may include some woody species of which *Pimelea arenaria* is an excellent example.

Transgressive duneland: Large scale Aeolian sand deposits formed by the downwind movement of sand into and over semi-vegetated terrain (Hesp 2000).

Foredune plain: Foredunes isolated from processes of sand accretion and erosion before they have become established foredunes, by formation of new incipient foredunes in front of them. A series of isolated incipient foredunes comprises a foredune plain.

7. Volcanic Hard Coast: Formed in areas where volcanic rock formations are exposed on the coast. Volcanic rocks are relatively resistant to erosion, and typically form headlands and other promontories where exposed adjacent to the coast as softer surrounding bedrock and sediment is eroded.
8. Harbour and Estuary: Areas which are underwater at low tide.

3.2.3 Flat-shallow gradient land

9. Alluvial Plains: Located around the banks of the Kaituna River. They are somewhat limited in extent and were formerly part of a large swamp which has now mostly been drained and cultivated.

10. **Undulating Low Hills:** Located to the west and south of the Tauranga Harbour, in the gentle terrain below the steeper slopes of the Kaimai and Mamaku Ranges. These can be defined as hills with less than 100 m between the base and top. This landform grades into undifferentiated terraces towards the harbour.
11. **Alluvial Flats:** These include riparian flats and are generally found near the lower reaches of streams and wetlands. Some peat swamp areas also form part of this landform unit.
12. **Undifferentiated Terrace:** These are local or isolated terraces, which are indistinguishable from higher or lower terraces on the basis of current data.
13. **Higher Terraces:** There is a restricted area of this landform on the borders of the Mamaku Ranges. Generally this landform has a gentle slope and is more or less modified by erosion.

3.2.4 Hill country

14. **Hills:** There are occasional isolated moderately steep hills.

3.2.5 Steep land

15. **Gorges:** This landform is restricted to a small area on the eastern flanks of the Mamaku Plateau; it typically has very steep sides and an absence of streamside terraces.
16. **Scarps, Toeslopes and Associated Steep Slopes:** This landform includes the transition between terraces and flats, but also includes scarps and inland cliffs.
17. **Very Steep Hills:** There are isolated occurrences of very steep hills, the best example of which is Mauao.
18. **Gullies:** Steep-sided and narrow, these are similar to gorges, but are typically found in undulating or moderately hilly country.
19. **Cliffs:** There are small areas of very steep to sheer cliffs around the coast.

3.2.6 Wetlands

20. **Wetlands:** Occur occasionally on the plains and riparian margins. The majority of these are less than 20 ha in area.

3.2.7 Freshwater

21. **Pond/Lagoon:** Still water situated in depressions within the landscape. May or may not output to, or have input from, flowing freshwater from streams and rivers.

22. Oxbow Lake: Formed by mature rivers when erosion of river banks firstly cuts through the neck of a meander to form a loop, then secondly deposits sediment in the arms of the loop, eventually cutting the head of the loop off. Aerial photographs suggest an extensive system of oxbow lakes was once associated with the lower Kaituna river. Two remain, and are the only examples of this landform within the Ecological district.
23. Rivers and Streams: Flowing freshwater in moving bodies of various sizes, from trickles to large meandering rivers. Common throughout ED.

3.3 Bioclimatic zones

Two broad bioclimatic zones have been identified for the Tauranga Ecological District, determined mainly by indicator plant species. These are defined in Section 2.3.

3.4 Vegetation types

Vegetation type names follow Atkinson 1985 (see Glossary, Appendix 8). For sites which were field inspected in 2008 as part of this survey, two additional symbols have been used, as appropriate. These are as follows - a single underline for species which comprise more than 20% of the vegetation cover, and a double underline where they comprise more than 50% of the vegetation cover (see also Appendix 8 “Vegetation Structural Class”).

3.5 Land environments

Land environments within the ecological district which are threatened, i.e. acutely threatened, chronically threatened, at risk, critically underprotected, underprotected (see MfE and DOC 2007a&b) were identified, along with better protected and less reduced. Excluding rivers and harbour, 87.8% of the ED has been identified as “Acutely Threatened” with a further 3.9% “At Risk” and “Critically Underprotected”. This information was used to help identify sites for survey and in the site assessments.

3.6 Collection of field data

Site visits were undertaken to natural areas for which existing information was inadequate for the purposes of this study. This included all of the sand dunes, most of the sites in the semi-coastal bioclimatic zone, most sites on Matakana Island, and many sites around Tauranga Harbour. A list of field survey sites is provided in Appendix 9. This table also identifies which natural areas have been field checked in the last five years to confirm ecological values or extent. The mapping base for the vegetation maps was the 2007 high resolution aerial photographs (1:1,000) for dune vegetation, and the 2003 RDAM (1:5,000) for all other areas.

3.7 Site maps and boundaries

Maps for each site have been prepared. These are presented in Section 8. The base map for these are the High Resolution aerial photographs for the coastal sites (2007) and the RDAM (2003) for the inland sites. Unfortunately the 2007 photographs are

incomplete so for some sites parts of the maps do not have aerial photographs as the backdrop. The site maps have been prepared at a variety of scales (1:5,000-1:175,000) as appropriate given the size of each site, to fit an A4 or A3 page, or, for a few sites, several A3 pages.

In general, individual sites around the harbour are based on sites identified in previous studies, however in most instances the boundaries have been modified to exclude “harbour” (for example inter-tidal flats, water) from within these sites. In some instances other site boundaries differ from site boundaries in previous reports due to a change in mapping base rather than an actual change in the extent of a site.

3.8 Evaluation

Following completion of the site sheets, each natural area was assessed and assigned one of four levels of relative significance (Refer to Appendix 10 (modified from the Taneatua ED PNAP survey report)). Natural areas were also assessed against Bay of Plenty Regional Council significance criteria (refer to Appendix 11) and assigned relative significance levels (refer to Appendix 12).

3.9 Digital data

Vegetation maps of each natural area were digitised using the most recent available aerials for each site from among RDAM 2003, Tauranga City, and the 2007 High Resolution Coastal aerials (Environment Bay of Plenty), or RDAM 2003, or Tauranga City 2003, at a scale of 1:5,000. Metadata were prepared for the digital data layer.

4. WHAT NATURAL VEGETATION REMAINS?

Terrestrial natural areas total 3,315.9 ha, 4.89% of the terrestrial area, with a heavy bias toward dune vegetation (814.2 ha) and wetlands (1,102.0 ha) within the coastal zone, particularly Matakana Island. In total this survey identified 168 natural areas comprising 24,283.7 ha, including saltmarsh, mangroves, intertidal, estuarine, subtidal, and harbour, which amounts to 20,104.4 ha (refer to Figure 4). The largest areas are those associated with marine environments in Tauranga Harbour, which together with all marine and estuarine areas comprise 24.5% the area of the ecological district. In contrast, terrestrial natural areas occupy 3.7% of the area of the ecological district.

Remaining natural areas are typically small, and have a strongly left-skewed size distribution. Of the 166 sites identified in this survey, 70 are less than 10 ha, and 90 less than 20 ha in size (refer to Figure 5).

Figure 4



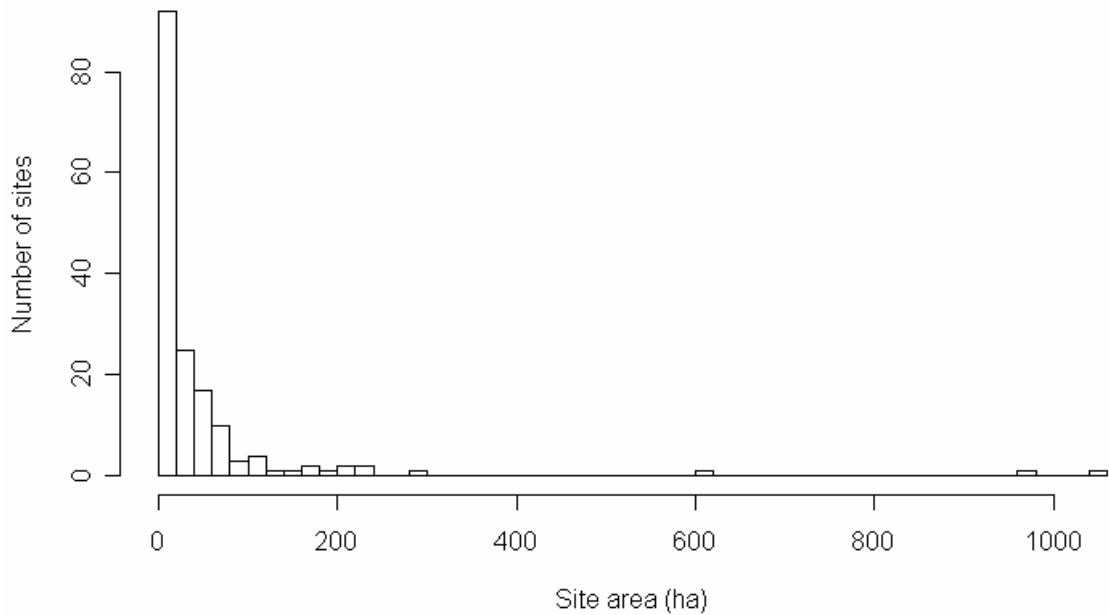


Figure 5: Size distribution of natural areas within Tauranga ED.

Dunelands, wetlands, saltmarsh and mangroves characterize natural areas remaining in the coastal zone, whereas modified primary forest, secondary forest, and wetlands comprise the most common vegetation types in natural areas within the semi-coastal zone.

Wetlands occur in both zones, with a bias in distribution toward low lying coastal areas. The most extensive areas of wetland remaining in the ecological district are on the northern end of Matakana Island. Wetlands that remain uninvaded by exotic plants are rare. Of 773.3 ha of wetland in the coastal zone, 586.5 ha are invaded by exotic species to some degree, and 186.8 ha are dominated exclusively by willows. Wetlands in the semi-coastal zone exhibit a more severe degree of invasion, with 304.4 ha of 328.8 ha being invaded to some degree by exotic species, and 67 ha dominated exclusively by willow.

Within the coastal zone, 2,097.9 ha of natural areas remain in terrestrial habitats, which is 8.9% of terrestrial area within the coastal zone, and this is 65.1% of remaining non-marine indigenous areas within the ED. Eight hundred and fourteen hectares is associated with dunelands, 472.2 ha with other terrestrial habitats, and 811.5 ha with freshwater habitats including lakes, ponds, wetlands and rivers. Only 13.2 ha of the other terrestrial natural areas are primary forest, which is 27.1% of the primary forest remaining within the ED (including the semi-coastal zone). Primary forest occurs only at Bowentown Heads, and comprises mature pohutukawa forest. The larger occurs at Bowentown Heads.

One hundred and sixty-five hectares of modified primary and secondary forest and scrub remain in the coastal zone, all of which are associated with rocky headlands, with the largest areas found on Mauao.

Dunelands occur along the entire length of the Ecological District coastline. Wetlands are most common on Matakana Island, with the exception of Kaituna wetlands, and smaller areas around estuaries.

Within the semi-coastal zone 1,134.9 ha of indigenous vegetation (2.7%) remains. This zone possesses 34.8% of remaining non-marine indigenous areas. Of this, 654.8 ha is associated with terrestrial habitats and 480.1 ha with freshwater habitats including lakes, ponds, wetlands, and rivers.

Only 35.4 ha (3.1%) is primary forest, which is 72.9% of the primary forest remaining within the ED. Primary forest occurs at three sites. The largest stand occurs alongside Uretara Stream where 26.1 ha of totara, kahikatea, and puriri-dominated forest grows on alluvial flats. The other two areas include a stand of puriri at Whatakao Stream and puriri/tawa-rimu forest at McKinney Stream.

Just over half (53.0%) the indigenous semi-coastal vegetation is modified primary or secondary forest. Modified primary forests typically have near full forest structure, with emergent trees, typically rewarewa over an intact canopy predominantly kamahi and mamaku with other indigenous secondary species as minor components. The size of canopy trees and canopy composition, particularly the absence of emergent podocarps suggests that vegetation of this character has been subject to historical timber harvesting, although clear felling and burning the forest was not a usual component of these activities. Secondary forest may have emergent rewarewa, but is simpler in structure, typically lacking a subcanopy, and is of lower stature. Secondary forests over much of the ecological district have mamaku and mahoe as canopy dominant species.

Table 4: Extent of natural areas within Tauranga ED within each vegetation/landform class in each bioclimatic zone.

Vegetation/Landform Class	Coastal (ha)	Semi-coastal (ha)	Total (ha)	% of ED
Primary forest	13.2	35.4	48.5	0.06
Modified primary forest	53.5	229.0	282.5	0.33
Secondary forest	57.3	348.6	405.9	0.47
Indigenous treeland	6.3	5.2	11.5	0.01
Secondary scrub and shrubland	54.1	24.4	78.5	0.09
Cliffland	44.4	0.0	44.4	0.05
Indigenous wetland	231.6	24.4	255.9	0.30
Mixed indigenous-exotic wetland	147.1	38.9	186.3	0.21
Mixed indigenous-willow wetland	203.8	189.0	392.8	0.46
Willow wetland	186.6	76.6	263.3	0.30
Wetland total	769.7	328.8	1,098.4	1.29
Open freshwater	17.2	11.5	28.7	0.03
Rivers	21.0	139.8	160.8	0.19
Estuarine saltmarsh	728.7	1.5	730.2	0.85
Estuarine mangrove	1,021.0	0.1	1,021.0	1.19
Estuarine total	1,749.7	1.6	1,751.2	2.03

Vegetation/Landform Class	Coastal (ha)	Semi-coastal (ha)	Total (ha)	% of ED
Harbour	19,289.7	1.8	19,291.5	22.45
Dunelands	812.1	0.0	812.1	0.95
Beach sand	242.7	0.0	242.7	0.28
Revegetated exotic areas	10.7	8.9	18.9	0.02
Total	23,141.6	1,135.0	24,276.6	28.25

Areas of terrestrial indigenous vegetation within the semi-coastal zone are almost exclusively associated with gorges incised into undulating low hills and terraces by streams and rivers flowing off the Kaima Range. Most of these indigenous areas are contiguous with vegetation on the Kaimai Range beyond, and hence abut, the ED boundary. Natural areas within the semi-coastal zone occur primarily north from Te Puke, in reflection of the proximity of the Kaimai Range. There are only three natural areas within the semi-coastal zone east of the Kaituna River, all clustered together on steep land behind Paengaroa. No indigenous vegetation remains on the undulating low hills, terraces and the extensive alluvial plains of this eastern portion of the Ecological District. Complete change in land use within the ED is by no means confined to this area. The Kawa Swamp, which also occupied alluvial plains would once have stretched from Papamoa to Pukehina and included hundreds of acres dominated by marsh shield fern (*Thelypteris confluens*) (Kirk 1873). The area of this wetland has been reduced to the 18.7 ha Arawa Wetlands site. Nearly all other landforms in the Tauranga Ecological District exhibit a similar degree of alteration in land use.

Relative Significance of Natural Areas

Natural areas were divided into four categories, to reflect their relative quality and the values currently associated with them. Fifty-three sites covering 22,294 ha (including Tauranga Harbour) were ranked Category 1 (see Tables 5 and 6). Twenty-eight sites covering 777 ha were ranked Category 2. Forty-two sites covering 869 ha were ranked Category 3. Forty-five sites covering 331 ha were ranked Category 4. These sites were also assessed for significance. The significance of these ranked areas is shown in Table 5.

Table 5: Extent of sites in each significance category and significance level.

Significance Level	Category 1-4				Total
	1	2	3	4	
National	9,546 ha				9,546 ha
Regional	12,746 ha	704 ha	254 ha	29 ha	13,733 ha
Local	3 ha	73 ha	615 ha	302 ha	992 ha
Total	22,294 ha	777 ha	869 ha	331 ha	24,271 ha

Table 6: Number of sites in each significance category and at each level of significance.

Significance Level	Category 1-4				Total
	1	2	3	4	
National	24				24
Regional	28	25	8	4	65
Local	1	3	34	41	79
Total	53	28	42	45	168

5. WHAT VALUES ARE CURRENTLY PROTECTED?

One thousand one hundred and forty-seven hectares (1147.0 ha) of all natural areas (4.7%) have some form of legal protection. This includes small parts of Tauranga Harbour and Waihi Estuary, which contain three protected areas, totaling 18.2 ha.

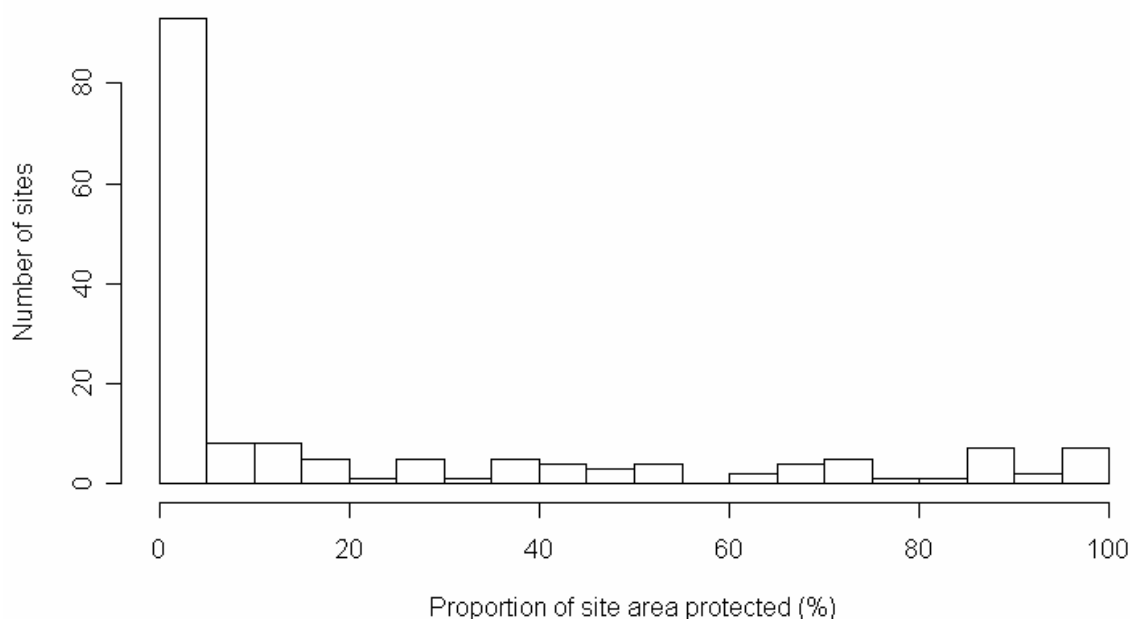


Figure 6: Protection status for all natural areas within Tauranga ED.

Ninety three (93) sites have less than 5% of their area legally protected. Seven sites have more than 95% of their area legally protected (Figure 6).

The natural area and landform best represented in protected areas are cliff land, and 87.3% of the 44.4 ha of cliffland occurs on lands administered by the Tauranga City Council.

Most of the primary forests (82.4% of the 48.5 ha) are protected. Legal protection of other categories of natural area is less comprehensive, with 41.0% of modified primary forest, 27.1% of secondary forest and 26.3% of wetland areas legally

protected. Of protected wetlands, only 34.6 ha are dominated exclusively by indigenous species. Approximately 90% of protected wetlands are invaded by exotic species which dominate, either in part or completely, the vegetation within these areas. Other landforms where legal protection through land tenure is low include rivers and harbours, with less than 1% of their areas protected.

Protected Vegetation in the Coastal Zone

One protected site within the coastal zone contains primary forest. Bowentown Heads (Site 136) includes 6.4 ha of mature pohutukawa forest, which is 50.1% of the area of primary forest in the zone. The pohutukawa forest at this site is the best within the ED, and contains *Tetragonia tetragonioides*. A further 15.3 ha of modified primary forest is included within the Bowentown Heads site. Modified pohutukawa forests are also protected at Tuapiro (0.9 ha) and Kauri Point (8.9 ha). Bowentown Heads is a breeding site for little blue penguin.

Secondary forest is protected at five sites that together total 10.1 ha, or 17.6% of the 57.3 ha remaining in the coastal zone. These protected sites are dominated by mamaku, with other seral species including mahoe and tarata and are all associated with Mauao.

Within estuarine habitats 17.2% of estuarine saltmarsh, but only 2.4% of estuarine mangrove are afforded legal protection, perhaps in reflection of historical attitudes toward values associated with mangrove swamps (see for example Sherwood (1963)). The largest protected estuarine areas are found on the southern margin of Waihi Estuary, the Waihi Estuary Wildlife Management Reserve (46.2 ha), at Athenree Wildlife Refuge Reserve (40.2 ha), Matua Estuary (21.3 ha), and Waimapu Estuary (10.6 ha). *Mimulus repens* occurs on the southern margin of Waihi Estuary. A number of small estuarine areas are components of larger protected areas, particularly around Tauranga Harbour. In total 150.6 ha of the estuarine saltmarsh and mangrove in the ED have legal protection.

Six dune sites, totaling 25.0% of dunelands, have legal protection. These sites are distributed along the coast from Bowentown (74.0 ha) in the north-west to Pukehina Spit (1.8 ha) in the south-east, and include Papamoa Dunes (64.2 ha), Maketu Spit Recreation Reserve (22.2 ha), Central Waihi Beach (21.9 ha), and Shark Alley to Kaituna (33.7 ha). Pukehina Spit and Maketu Spit both harbour small populations of sand tussock (*Austrofestuca littoralis*).

For freshwater wetlands, 8.7% (66.8 ha of the 773.3 ha) of coastal zone wetlands are legally protected. The largest protected wetland in the coastal zone is the 14.5 ha freshwater wetland section of the Waihi Estuary Wildlife Management Reserve that is contiguous with estuarine saltmarsh habitat on the southern side of Waihi Estuary. Legally protected freshwater wetlands occur at 16 other small sites distributed from Te Rereatukahia in the west to Waihi Estuary in the east.

Protected Vegetation in the Semi-Coastal Zone

The WBOPDC administered recreation reserve at Sapphire Springs (Site 001) includes 25.6 ha of primary rewarewa-kamahi-puriri forest. This is also the largest

single area of primary forest identified in this study within the Ecological District. A further 7.8 ha of primary puriri-tawa-rimu forest is within a conservation covenant at McKinney Stream.

One hundred and fifteen hectares out of 283 ha remaining of modified primary forest is legally protected in forests distributed over 13 sites.

The largest area of secondary forest receiving legal protection within the semi-coastal zone occurs within the Wainui River Scenic Reserve where 56.9 ha of kamahikanuka-mamaku dominated forest grows alongside the Wainui River. Small Conservation covenants and QEII covenants complement legally protected forests on DoC land. Twelve other protected sites contain 110 ha (27.1% of 406 ha) protected secondary forest within the semi-coastal zone.

The largest protected wetland within the Ecological District is the DoC administered Kaituna Wildlife Management Reserve. This wetland is 174.6 ha in area, and comprises the bulk of the 223.4 ha, or 70.2% of legally protected freshwater wetland in the semi-coastal zone. The other five semi-coastal sites containing protected wetlands contain large areas dominated by willows, as at Kopurererua Stream wetland.

Types of Protected Land

Land administered by the Department of Conservation accounts for 372.9 ha, 32.5% of the protected areas within Tauranga ED. Lands administered by Tauranga City Council cover 351.4 ha (30.6%), Western Bay of Plenty District Council 296.3 ha (25.8%). The remaining legally protected natural areas are on free-hold land covered by conservation covenant (88.4 ha), QEII trust covenant (36.6 ha) and Nga Whenua Rahui (1.5 ha).

6. WHAT VALUES NEED PROTECTION?

Changes in land use associated with urbanization, pastoralization, and other forms of cultivation and commerce, are usually associated with habitat destruction that results in loss of ecological connections and ecosystem function in natural areas. New Zealand's coastal and lowland environments have undergone extensive modification. More than 90% of indigenous vegetation has been cleared from coastal and lowland environments (Walker *et al.* 2006). In this respect the Tauranga ED is typical. These changes can contribute to biodiversity loss through extinction that is a direct function of habitat destruction. However, changes in land use also incur an 'ecological debt' (Tilman *et al.* 1994) in the form of disruption to ecological linkage and ecosystem processes above and beyond direct impact on species themselves (Walker *et al.* in press). It may be some time before the impact of that debit is realized in the form of ongoing biodiversity decline (Helm *et al.* 2006). The Tauranga ED has experienced massive habitat loss and associated decline in biodiversity. Tauranga ED is committed to further decline in indigenous biodiversity as impacts of habitat loss and fragmentation manifest in remaining natural areas or, metaphorically, as the ecological debt incurred through disruption to ecosystems within the ED is repaid (Walker *et al.* 2008). Circumstantial evidence for ongoing biodiversity decline exists

in the historical species records associated with many of the sites described in this report.

The magnitude of this incurred ecological debt is unknown, as is the time-course over which it will be repaid. Natural systems are exceptionally complex, knowledge of their composition and functioning is incomplete, even in terms of full knowledge of the array of organisms comprising them (see for example Kushcel 1990). Assessment of biodiversity 'value' is, and will remain, uncertain and imprecise (Myers 1993). The role of historical contingency versus biotic determinism in dictating current composition and functioning is poorly understood, apart from an appreciation that contingency is a factor in the current state of all natural systems. The unknown contribution of historical contingency makes predicting precise future composition and functioning of natural areas difficult, if not impossible. However, like all complex systems, natural areas display emergent properties that can be generalized. One of these generalizations emphasizes the importance of patch dynamics, including dispersal between and extinction within patches, in the persistence of indigenous biodiversity within both natural and modified landscapes (Hubbell 2001). Habitat fragments currently unoccupied by a particular species may be critical for its long-term persistence (Hanski 1998).

From these perspectives, all remaining natural areas within the Tauranga ED contain both current and potential biodiversity values that need protecting.

The methods employed by this survey are geared toward identifying landforms and broad vegetation categories against which an assessment of significance, in terms of representativeness of remaining areas can be made. This survey, as with Protected Natural Area Programme surveys, is essentially a reconnaissance survey. Vegetation units were identified through vegetation assessment based on the canopy concept of Atkinson (1962). Recommendations derived from this data for the protection of a selection of remaining areas were the primary focus of PNAP significance criteria. These criteria were derived from the objectives embodied within Section 3b of the Reserves Act 1977 for the Protected Natural Areas Program. They place particular emphasis on species, communities, and habitats which have been most heavily impacted by human influence (Kelly & Park 1986). These significance criteria have been included in the site write-ups for each site within this report.

There is, however, a fundamental conflict between criteria requiring ecosystems and species be reduced to scarcity before they are regarded as significant, and the desire to preserve indigenous biodiversity in functioning examples of indigenous ecosystems through a ranking system based on significance (Walker *et al.* 2008).

Local and regional authorities have statutory obligations to maintain indigenous biological diversity within the areas they administer under the Resource Management Act. To maintain biological diversity means to change biodiversity trends from the 'current decline to a level of stabilization' (DOC & MfE 2000 p.8), or in other words to halt the concomitant loss and homogenization of the biological diversity that remains in Tauranga ED.

The idea that New Zealand can maintain its biological diversity while continuing to reduce its already depleted stock of indigenous natural areas has no foundation in

ecological science (Walker *et al.* 2008). Every remaining natural area within the Tauranga ED has value, given the context of wholesale change in patterns of land use that has occurred here. The idea that New Zealand can maintain its biological diversity through a “do nothing approach” to management of remaining natural areas similarly has no foundation in conservation management science. The demonstrated capacity of exotic animals to impact (Innes *et al.* 1999; Brass *et al.* 2003; Husheer & Frampton 2005; Husheer & Robertson 2006), and exotic plants to invade, commandeer and usurp (Smale and Gardner 1999; Toft *et al.* 2001) indigenous species may precipitate complete exhumation of indigenous species, and with them all vestiges of indigenous character, from the handful of natural areas remaining within Tauranga ED. Active interventive management is required in all remaining natural areas to ensure the persistence of biodiversity values (current and potential) in those areas. This is particularly true for species recognized to be declining, naturally rare, locally uncommon, or locally endemic (Walker *et al.* 2008). Such active management is the responsibility of land-owners and land managers, although their intervention to preserve indigenous biodiversity values on their land is entirely discretionary. This discretion is a function of whether we value indigenous elements of New Zealand’s landscapes as a component of our cultural identity, and that reflects on all of us.

6.1 Strategic ecological linkages

Tauranga ED contains numerous high quality freshwater, estuarine and marine natural areas in and around the margins of the Tauranga Harbour and along the open coast. The inland areas of the district are substantially more modified, with only minor, often isolated remnants of indigenous vegetation present within the semi-coastal zone. Extensive areas of indigenous forest are however located within the nearby Otanewainuku, Te Aroha, and Rotorua Lakes Ecological Districts. These are mainly located within the Kaimai Range to the west, the Mamaku Plateau to the south-west, and the Rotorua Lakes catchments to the south. Currently, no continuous areas of indigenous vegetation within Tauranga ED link these inland expanses of forest to the natural habitats along the coast. In several places narrow strips of indigenous vegetation, mainly lining streams and rivers, extend to low altitudes, but do not connect directly with coastal indigenous habitats. Riparian strips are often unmanaged areas dominated by exotic woody plant species. Some waterways are heavily modified in their lower parts by channelisation and other development.

Connectivity between the inland and coastal natural areas is desirable for a variety of reasons. These include, but are not limited to; aiding dispersal of birds and other indigenous fauna between discontinuous habitats; the benefits of protective buffers to areas of natural habitat (e.g indigenous forest upstream of estuarine habitats); and the retention or reinstatement of diverse ecological sequences and linkages.

The term ‘ecological corridor’ is often used to describe narrow, linear landscape elements that connect two or more patches of distant habitat (c.f. Soule and Gilpin 1991 as cited in Wildland Consultants 2007c). Ecological connectivity may be achieved through such continuous linear features, but also by discrete areas of vegetation and habitat which are sufficiently close to each other to enable flora and fauna dispersal. Areas of exotic vegetation which are interspersed with remnants of indigenous vegetation may also contribute to ecological connectivity.

Several reports have identified and/or prioritised existing and potential ecological linkages within different localities in the Tauranga area, including Wildland Consultants 2007c, 2007d, Environment Bay of Plenty 2006, and 2007. Although the approach used has differed between reports, together they provide a framework on which to continue building to prioritise areas for future restoration effort. Many of those corridors which have been identified are focused around streams and rivers, which are currently the only truly continuous natural habitats providing ecological connectivity. Those waterways which connect areas of high ecological value at both upper and lower ends, with minimal distance in between, are obvious priorities for future restoration. For example, the Wainui River connects Category 1 natural areas at its upper and lower end, separated by less than 2 km of exotic habitats in between. Uretara Stream also connects Category 1 natural areas at its upper and lower ends, with approximately 5-6 km of intervening exotic habitat. Revegetation and other appropriate management of such areas has the potential to restore ecological habitat connectivity through much of Tauranga ED.

7. NATURAL AREAS IN TAURANGA ECOLOGICAL DISTRICT

Despite being generally depauperate in terrestrial natural areas, Tauranga ED possess large areas of two nationally uncommon landforms, sand dunes, and wetlands. Sand dunes are a dominant feature of the Bay of Plenty coastline. Arguably the most spectacular dunelands in the ED are those between the Kaituna River mouth and Papamoa. Here a highly mobile transgressive dunefield contains an impressive series of sharp, steeply sided erosive dunes, the most dynamic within the ED. Vegetation associated with these dunes reflects this dynamism. The largest single area of sand dunes occurs on Matakana Island, where 608 ha of duneland runs the entire length of the oceanic coast of the island. These dunelands have, with the exception of the foredunes nearest the coast, been overplanted with pine.

Wetlands, a landform which has been reduced to 4.7% of its former extent in the North Island, are a dominant feature of the north-eastern end of Matakana Island. Here they are a component of an intact dune-wetland coastal-plain sequence running across the entire width of the Island, albeit with some modification through draining and planting associated with exotic forestry, and weed invasion. This complex of wetlands, and dunelands is the largest single natural area within the Ecological District. It is probably the most intact dune-wetland system in the North Island.

Kirk (1873) communicates an unconfirmed record of *Cyclosorus interruptus* from around fumeroles in the Kawa Wetland. No fumeroles are now known from this area, however in the Arawa Wetland, the last remaining example of the once extensive Kawa Wetland, *Cyclosorus interruptus* and *Thelypteris confluens* are still present in a small part of the wetland.

Tauranga ED also possesses one of the largest harbours on the east coast of New Zealand. Nine of the ten largest natural areas in Tauranga Ecological District are estuarine and marine sites, seven of which are in Tauranga Harbour, with Maketu and Waihi Estuary comprising the remaining two. Estuarine saltmarsh, mangrove and inter-tidal flats are dominant characteristics of Tauranga Harbour, and in combination, these features contribute to the diversity of waders, rails, waterbird, and perching

birds associated with the harbour and harbour-side habitats. The Waihi Estuary and its southern margin is an outstanding example of a riverine estuary associated with a sequence of estuarine saltmarsh and adjacent freshwater wetlands.

8. NATURAL AREAS
(SITE MAPS AND
DESCRIPTIONS)

CATEGORY 1 SITES

<u>Site Name</u>	<u>Site Number</u>
Bowentown Heads	136
Sapphire Springs	001
Uretara Stream	002
Katikati Inlet	003
Tuapiro	004
Wainui River Scenic Reserve	005
Wainui Estuary Wetlands	006
Tuapiro Estuary Sandspit	007
North Tauranga Harbour	008
Athenree	009
Aongatete Estuary	010
Bowentown Shellbanks	011
Wainui Estuary	012
Matahui Point Intertidal flats	013
Egg Island Sandbank	014
Bowentown Sand Dunes and Beach	015
Apata Estuary	016
Te Hopai Island	017
Matakana Wetlands B	018
Tirohanga Mangroves	019
Mid Tauranga Harbour	020
Waipapa Estuary	021
Tahunamanu Island	022
Blue Gum Bay 1	023
Matakana Island 1	024
Opureora Spit	025
Tauranga Harbour at Motungaio Island	026
Otapu Bay	027
Tauranga Harbour (Part)	028
Wairoa River Wetlands	029
Matua Estuary - Yorke Park	030
Waimapu Estuary	031
Waikareao Estuary 1	032
Mauao 1	033
Waipu Bay Intertidal flats	034
Motuotau Island	035
Te Maunga	036
Waitao Stream	037
Otira Sand Dunes	038
Raparapahoe Stream	039
Papamoa Sand Dunes	040
Kaituna Kahikatea Stands	041
Mangorewa River	042
Kaituna Sand Dunes and Wetland	043

Kaituna Wetland	044
Kaituna River	045
Maketu Spit and Wildlife Management Reserve	046
Waewaetutuki	047
Waihi Estuary	048
Waihi Estuary Southern Margin	049
Mangawhai Bay Intertidal Flats	097

BOWENTOWN HEADS

Site Number	136
Grid Reference (NZMG)	E2773907 N6410822
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	29.5 ha
Altitudinal Range	0-80 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest.	Volcanic hard coast
Terrestrial	2. Five finger-houpara-mapou-brush wattle forest. (Beadel 1994a, current study)	Volcanic hard coast

Vegetation and Indigenous Flora

Mature coastal pohutukawa forest occurs on steep sites around the perimeter of this volcanic headland. Regenerating forest occurs on gently sloping sites on the top and upper sides of the headland. *Tetragonia tetragonioides* (At Risk, Sparse) is present under pohutukawa around the carpark. It had also been recorded in previous surveys (Beadel 1994a). *Pteris comans*, *Astelia banksii*, *Lepidosperma laterale*, and *Chionochloa flavicans*, all of which are regionally uncommon, are also present.

Fauna

This is a nesting site for northern little blue penguin (Chronically Threatened, Gradual Decline) (John Heaphy pers. comm. 2006).

Condition/Pressures

Secondary vegetation within the site and adjacent to it includes invasive species such as pampas and brush wattle. These areas may need to be managed to allow indigenous species to regenerate.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	M
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	<p>Pohutukawa forest was once common in Tauranga Ecological District, but has now been greatly reduced in extent and only small areas remain (for example Mauao, Kauri Point, Ngakautuakina Point, Matakana Point, Tuapiro, Motuhoa Island). This site includes good examples of remnant pohutukawa forest and secondary mixed forest on hard rocky headland. This site is also ecologically significant as a nesting area for little blue penguin, a chronically threatened marine bird species, the northern little blue penguin, and an at risk plant species (<i>Tetragonia tetragonoides</i>). One of few sites suitable for breeding sites of blue penguin within the ED (other is Mauao). Strong regeneration, impacted by possums in places, and weeds such as brush wattle, requires a moderate level of active management to ensure healthy ongoing ecosystem functioning. Adjoins Bowentown dunes and, across Katikati entrance, Matakana Island. Forest divided into two discrete patches on headlands by grassed area, otherwise headland is covered in indigenous forest or scrub. Potential to increase physical linkage between sites. Large size relative to area capable of supporting Pohutukawa forest in local vicinity.</p>
Category	1
Notes	<p>Adjacent areas of gorse scrub contain scattered indigenous species (for example pohutukawa, manuka, ti kouka). If these areas are allowed to regenerate and degrading influences (weeds and pests) are managed, gorse will be superseded by secondary successional forest dominated by indigenous species natural succession processes. This has the potential to increase the indigenous biodiversity of the site and buffer the existing pohutukawa and secondary indigenous forest. Control of invasive species will be required (for example pampas, brush wattle, mothplant, and Taiwan cherry).</p> <p>The vegetation of this site was previously ranked as being of District significance by Beadel (1994a) and was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).</p>
References	Beadel 1994a; Beadel and Shaw 2000; current study.

SAPPHIRE SPRINGS

Site Number	001
Grid Reference (NZMG)	E2764432, N6397554
Local Authority	Western Bay of Plenty District Council
Status	Fully protected (Sapphire Springs Recreation Reserve), WBOPDC.
Site Area	26.1 ha
Altitudinal Range	80-120 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Kauri-radiata pine-maritime pine/ <u>rewarewa/ kamahi</u> -puriri-(rimu)-(kahikatea) forest. (Current study)	Undulating low hills

Vegetation and Indigenous Flora

This remnant stand of primary forest is in excellent condition. The canopy also includes tawa and kohekohe, and subcanopy species include porokaiwhiri, kohuhu, whauwhaupaku, and ponga. The understorey is also in excellent condition, with kawakawa, hangehange, and kanono, and the groundcover includes *Oplismenus hirtellus* subsp. *imbecillis*, *Lycopodium deuterodensum*, and *Metrosideros perforata*.

Fauna

North Island fantail, pukeko, silvereye, New Zealand kingfisher and Australian magpie were observed at this site during the current study. Kereru (Chronically Threatened, Gradual Decline) likely use the site. Te Rereatukahia Stream is habitat for torrentfish (NIWA 2008).

Condition/Pressures

This site is managed as a reserve by the WBOPDC, and several nature walks run from the adjoining Sapphire Springs Hot Pools complex through the reserve. Pest plants are present in the reserve however, and are especially common near Te Rereatukahia Stream which flows through the reserve. Pest plants noted at the site include wild ginger, wild kiwifruit, gorse, wild cherry, pampas, and Japanese honeysuckle. Surrounding land uses include pastoral farming, orchards, and a hot spa thermal park.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	M
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Sapphire Springs natural area contains forest in which kauri is a significant component of the canopy. Kauri is close to its southern limit of distribution at this site. Although larger sized kauri trees are present within the Kaimai-Mamaku Conservation Park they are generally isolated. The site provides habitat for a Chronically Threatened bird species (kereru) which is present.

Category 1

Notes Downstream of this site are Covenant 7160 and Killen Road. Upstream of the site is Te Rereatukahia Stream and Te Rereatukahia Stream Marginal Strip (DOC T14027). The site is linked to Kaimai-Mamaku Conservation Park via Te Rereatukahia Stream. The site is also recognised as SES Site T14/11 (WBOP District Plan). It was identified as a Category 1 site in Beadel and Shaw (2000).

References DOC 2008a; NIWA 2008; Beadel and Shaw 2000; WBOP District Plan; Current study.

URETARA STREAM

Site Number	002
Grid Reference (NZMG)	E2765829 N6399094
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 6420), part unprotected.
Site Area	26.0 ha
Altitudinal Range	20-120 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Totara-rewarewa-kahikatea-puriri-(rimu) forest with kauri, kohekohe, and <i>Eucalyptus</i> sp.	Alluvial flats
Terrestrial	2. Radiata pine/silver wattle-rewarewa-mahoe-mamaku-brush wattle-(puriri)-(totara)-(kohekohe) forest. (Current study)	Gully

Vegetation and Indigenous Flora

This site comprises a series of remnant stands of alluvial forest scattered along Uretara Stream. Several of these stands are in very good condition, and appear to be fenced from stock (Unit 1). The stream margin itself (Unit 2) is vegetated with a mixture of indigenous and exotic species.

Fauna

New Zealand kingfisher, bellbird, tui, silvereye, North Island fantail, pukeko, Australasian harrier, goldfinch, myna and eastern rosella were observed at this site during the current study. Uretara Stream is habitat for long-finned eel (Chronically Threatened, Gradual Decline), northern koura (*Paranephrops planifrons*) (Chronically Threatened, Gradual Decline), short-finned eel and torrentfish (NIWA 2008). The forest at this site probably enhances the quality of habitat for these species.

Condition/Pressures

Vegetation Unit 2, which lines Uretara stream, includes several exotic species such as silver wattle and brush wattle. Generally the condition of the stream vegetation deteriorates downstream, becoming narrower until it is a narrow band of wattle lining the stream. The condition of the alluvial forest also generally improves upstream, and in those parts which are fenced from stock. Although most of the site is surrounded by pastoral farming (cattle), parts of it also bound residential areas and orchards.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	L

Criterion*	RPS Number*	Ranking**
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

This site contains the largest and best quality example in Tauranga ED of alluvial forest containing totara as a significant component of the canopy. Although the site is narrow and convoluted, it is linked to expansive areas of natural forest in the Kaimai-Mamaku Conservation Park and thus forms part of an ecological sequence that includes a regionally significant site. The site contributes to the quality of habitat of two Chronically Threatened freshwater species (long-finned eel and northern koura).

Category 1

Notes

This site links discontinuously upstream to Kaimai-Mamaku Conservation Park via Uretara Stream Marginal Strip. Further downstream the stream-side vegetation deteriorates to exotic species such as brush and silver wattle. The Katikati Inlet site is situated where Uretara Stream flows into the Tauranga Harbour. This site was identified as part of Category 1 Site No. 35 in Beadel and Shaw (2000).

References

NIWA 2008; Beadel and Shaw 2000; Current study.

KATIKATI INLET

Site Number 003
Grid Reference (NZMG) E2768232 N6402992
Local Authority Western Bay of Plenty District Council
Status Protected (WBOPDC reserve) and unprotected parts
Site Area 44.7 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland	Intertidal flat
Palustrine	2. Grey willow forest.	Wetland
Palustrine	3. Manuka shrubland.	Wetland
Palustrine	4. Harakeke-manuka flaxland.	Wetland
Estuarine	5. Sea rush-oioi-saltmarsh ribbonwood-(harakeke) rushland.	Intertidal flat
(Beadel 1992a, Current study)		

Vegetation and Indigenous Flora

This site includes the mouths of the Uretara and Tahawai Streams. It is dominated by mangrove scrub and shrubland and estuarine wetlands which comprise sea rush, oioi, saltmarsh ribbonwood, and harakeke. There are also small areas of grey willow forest and harakeke-manuka wetland. No rare or uncommon plant species have been recorded at this site.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered), and banded rail, marsh crake, and North Island fernbird (all of which are categorised as At Risk, Sparse) were recorded at the site in 1992 (Owen 1993).

Condition/Pressures

Owen (1993) noted stock access, *Spartina*, and dumped household and garden refuse. *Spartina* may now be eradicated.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	L
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	M
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

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** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This inlet is a relatively large, good quality, representative example of the wetland vegetation of the Tauranga Harbour and is considered regionally significant (Beadel 1994a). Pressures operating on site are related to weeds and neighbouring land uses. One Acutely Threatened and three At Risk bird species have been recorded here in the past.

Category 1

Notes An area of low-lying pasture immediately south of the site, and adjacent to Uretara Stream, has been reflooded and is in the process of being restored to an estuarine wetland (Wildland Consultants 2006c). This has become a notable site for waders and waterbirds including black stilt, wrybill, and brown teal, and has considerable potential to be an intensively-managed wetland site (for example specifically for waterbirds).

Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

References Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2006c.

TUAPIRO

Site Number	004
Grid Reference (NZMG)	E2769504 N6407381
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC Reserve; WBOPDC Covenants) and unprotected parts
Site Area	47.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest.	Hillslope
Estuarine	2. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	3. (Saltmarsh ribbonwood)/sea rush-oioi- <i>Baumea juncea</i> tussockland. (Beadel 1992a, Current study)	Intertidal flat

Vegetation and Indigenous Flora

Tuapiro includes estuarine wetlands and a strip of pohutukawa forest on the southeast side of Tanners Point. The estuarine wetlands include mangrove scrub and shrubland, and saltmarsh comprising mixtures of sea rush, oioi, and *Baumea juncea* with scattered saltmarsh ribbonwood (particularly towards the landward edges of the site). Two regionally uncommon species are present at this site, *Asplenium appendiculatum* subsp. *maritimum* and *Gahnia lacera* (Beadel 1992b).

Fauna

North Island fernbird and banded rail (both At Risk, Sparse) are present (K. Owen pers. comm.). Marsh crane may have been present in 1991-1992 (Owen 1993).

Condition/Pressures

Owen (1993) noted stock access and a range of weeds present in 1991-92.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	M
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

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** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	Tuapiro is regionally significant because it contains good quality examples of pohutukawa forest and saltmarsh that are representative of the ecological character of the region. Pohutukawa forest was once common in Tauranga Ecological District, but has now been greatly reduced in extent and only small areas remain (for example Mauao, Kauri Point, Ngakautuakina Point, Matakana Point, Bowentown Heads, Motuhoa Island) (Beadel 1994a). It is also notable that the pohutukawa forest has a relatively intact understorey. This site provides reasonably good quality habitat for three At Risk marshbird species with especially high numbers of North Island fernbird present.
Category	1
Notes	<p>The vegetation of this site was previously ranked as being significant at the District scale in Beadel (1994a). It was also identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).</p> <p>This site forms part of the eastern/western edge of Environment Bay of Plenty 'Tuapiro' corridor (Environment Bay of Plenty 2006) ranked second priority level 2 (Wildland Consultants 2007d).</p>
References	Owen 1993; Beadel 1994a; Beadel and Shaw 2000.

WAINUI RIVER SCENIC RESERVE

Site Number	005
Grid Reference (NZMG)	E2770591, N6389259
Local Authority	Western Bay of Plenty District Council
Status	Most of this site is protected in Wainui River Scenic Reserve and Wainui River Marginal Strip, Covenants 7911 and 9200, and QEII 5/03/178B. Minor unprotected areas.
Site Area	137.3 ha
Altitudinal Range	20-14 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Radiata pine)-(maritime pine)/rewarewa/ <u>kanuka</u> -mamaku-kamaha forest with occasional puriri, pukatea and mahoe.	Hills
Terrestrial	2. (Maritime pine)/rewarewa-tanekaha-rimu-kanuka-(mamaku) forest with hinau and tawa.	Hills
Terrestrial	3. Radiata pine/rewarewa/kanuka-mamaku forest.	Hills
Terrestrial	4. (Maritime pine)-(radiata pine)/puriri-rewarewa-tawa-rimu/kamaha-tanekaha-mamaku-(kanuka) forest.	Hills
(Current study)		

Vegetation and Indigenous Flora

This site comprises a large area of secondary forest, containing local remnants of modified primary forest, which follows a section of the Wainui River and a couple of its tributaries. The canopy is generally more diverse at the upstream ends, where puriri, tanekaha, pukatea and rimu become more common (Units 2, 4). At the downstream end the site becomes increasingly dominated by radiata pine (Unit 3). Makomako and kawakawa are also present at this site. Manuka was found to be locally common in gullies in Beadel (1995a).

Fauna

Silvereye and pukeko were observed at this site during the current study. Kereru (Chronically Threatened, Gradual Decline) and tui have been recorded in the adjacent Wainui River RAP in the Otanewainuku ED (Beadel 2006) and are very likely to be present within this site.

Condition/Pressures

Radiata pine and maritime pine are scattered emergents throughout the site, occurring in localised patches. Black wattle is present along the stream in places. Willow-leaved hakea was noted in parts of Wainui River Scenic Reserve in Beadel (1995a) and is probably still present. Climbing asparagus infestations were noted by Environment Bay of Plenty (2007). Surrounding land uses include pastoral farming, avocado orchards and residential areas. Pest animals including mustelids, goats, possums, feral cats, deer, pigs and rodents are all present in the reserve (Environment Bay of Plenty 2007).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

This site is the largest forested site in the ecological district, and is mostly within the Wainui Scenic Reserve. It is linked to Kaimai-Mamaku Conservation Park via an adjacent RAP, and provides a lower-altitude extension to this ecological sequence, into the semi-coastal bioclimatic zone. The site also contributes to the 'Work Road' corridor. One Chronically Threatened bird species (kereru) is likely to be present.

Category

1

Notes

This site is mostly protected in Wainui Scenic Reserve, with other smaller areas protected as QEII covenants. The site is contiguous with RAP 1 'Wainui River' (Category 1) in Otanewainuku ED (Beadel 2006), which links the site to large areas of indigenous forest in Kaimai-Mamaku Conservation Park..

This site is also part of Environment Bay of Plenty corridor 'Work Road' (Environment Bay of Plenty 2006) which is ranked as being second priority Level 2 (Wildland Consultants 2007d).

The site is recognised as SES site U14/33 in the WBOP District Plan.

This site and parts of Wainui River downstream of the site were identified as Category 1 in Beadel and Shaw (2000). The site was ranked as having 'very high' botanical conservation values in Beadel (1995a).

The lower parts of the Wainui River are a high priority area for restoration, with the potential to provide an ecological corridor between the forested Kaimai ranges and the Tauranga Harbour.

References

Beadel 1995a and 2006; DOC 2008a; Environment Bay of Plenty 2006 and 2007; Beadel and Shaw 2000; WBOP District Plan; Wildland Consultants 2007d; Current study.

WAINUI ESTUARY WETLANDS

Site Number	006
Grid Reference (NZMG)	E2771296 N6391832
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	10.9 ha
Altitudinal Range	0-40 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. <u>Oioi</u> -sea rush-(saltmarsh ribbonwood) rushland.	Intertidal flat
Estuarine	2. Saltmarsh ribbonwood-harakeke-pampas- <i>Olearia solandri</i> -(manuka) shrubland.	Intertidal flat
Terrestrial	3. Black wattle- <i>Eucalyptus</i> sp.-(maritime pine)- (rewarewa)/ <u>mamaku</u> -kanuka forest.	Undulating low hills
Palustrine	4. <u>Grey willow</u> /manuka forest.	Wetland
Palustrine	5. Grey willow/raupo forest.	Wetland
Palustrine	6. Standing dead stems (possibly manuka?)- ti kouka/manuka-mamaku-grey willow treeland.	Wetland
Palustrine	7. Mamaku-manuka-harakeke-mahoe-barberry scrub.	Wetland
Estuarine	8. Manuka-saltmarsh ribbonwood-(harakeke)- (toetoe) shrubland ↔ <u>oioi</u> -saltmarsh ribbonwood rushland.	Intertidal flat
Palustrine	9. <u>Raupo</u> reedland.	Wetland
(Beadel 1992a and Current study)		

Vegetation and Indigenous Flora

Wainui wetland comprises estuarine wetlands along the margin of the Wainui River, several small patches of palustrine wetlands, and secondary indigenous forest on the hillslopes adjacent to these. The intertidal flats are mostly vegetated with oioi interspersed with sea rush, although shrublands of saltmarsh ribbonwood, harakeke, pampas and *Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b) are also present. Small, peripheral areas of palustrine wetland are generally dominated by grey willow and raupo, with areas of manuka and ti kouka. The forest is dominated by common secondary indigenous species such as mamaku and kanuka, although exotic tree species are frequent emergents. No rare or uncommon plant species have been recorded.

Fauna

New Zealand kingfisher was observed at this site during the current study. Banded rail (At Risk, Sparse) and North Island fernbird (At Risk, Sparse) were recorded in 1991 (Owen 1993). Shortjaw kōkopu (Chronically Threatened, Gradual Decline) were recorded in an adjacent waterway in 1994 (NIWA 2006).

Condition/Pressures

Pest plants present at this site include woolly nightshade, grey willow and black wattle. Tradescantia and moth plant are present adjacent to the site, along the roadside.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	M
	3.5	M
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

Wainui Estuary Wetlands includes representative examples of estuarine wetlands adjacent to a river, and small examples of freshwater wetlands. The site is situated directly upstream from Wainui Estuary, another regionally significant site, with which it forms an ecological sequence. The vegetation was ranked as being of regional significance in Beadel (1994a). It provides reasonably good quality habitat for the two At Risk bird species recorded here.

Category 1

Notes This site forms part of Environment Bay of Plenty 'Work Road' corridor (Environment Bay of Plenty 2006) ranked second priority level 2 (Wildland Consultants 2007d).

References Owen 1993; Beadel 1994a; NIWA 2006; Current study.

TUAPIRO ESTUARY SANDSPIT

Site Number 007
Grid Reference (NZMG) E2771356 N6407369
Local Authority Western Bay of Plenty District
Status WBOPDC Recreation and Local Purpose Foreshore Reserve and Unprotected Parts
Site Area 11.0 ha
Altitudinal Range 0 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sandfield and intertidal flats. (Wildland Consultants 2007a)	Sandspit, Sandbank, intertidal flat.

Vegetation and Indigenous Flora This site comprises largely unvegetated sandspit and intertidal flats. No rare or uncommon plant species have been recorded here.

Fauna This sandspit is periodically used as a neap high tide roost by waders such as bar-tailed godwit and pied oystercatcher (Brian Chudleigh pers. comm. 2006; Owen *et al.* 2006).

Condition/Pressures Increasing public use of the adjoining recreation reserve is resulting in increased disturbance to this roost site (Owen *et al.* 2006).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	M
	3.6	N/A
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	H
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Tuapiro Estuary Sandspit is nationally significant because of the numbers and

Justification	diversity of international and New Zealand migratory waders that regularly roost here on neap high tides (Owen <i>et al.</i> 2006). The adjacent Ongare and nearby Tuapiro sites provide buffering and habitat diversity.
Category	1
References	Brian Chudleigh (OSNZ) pers. comm. 2006; Owen <i>et al.</i> 2006.

NORTH TAURANGA HARBOUR

Site Number	008
Grid Reference (NZMG)	E2771781, N6410551
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	1059.4 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Seagrass grassland.	Intertidal and subtidal flat
Marine	2. Worm field.	Subtidal channel
Marine	3. Worm field.	Intertidal flat
Marine	4. Cockle bed.	Intertidal flat
Marine	5. Pipi bed.	Subtidal channel
Marine	6. Horse mussel bed.	Subtidal channel
(Park 1999; Stephen Park, Environment Bay of Plenty, pers. comm. 2006; Wildland Consultants 2006g)		

Vegetation and Indigenous Flora This site occupies the northern end of Tauranga Harbour, from Athenree to Ongare Point. It includes extensive areas of high-density seagrass beds (Park 1999).

Fauna Tauranga Harbour is ranked as a wildlife habitat of outstanding value (Rasch 1989), including this sector of the harbour. The extensive intertidal flats are feeding grounds for wading bird species (principally bar-tailed godwit and pied oystercatcher), waterbirds, and sea birds, including areas adjacent to known, major wader roosting areas (Brian Chudleigh pers. comm. 2006).

Condition/Pressures Sediment and nutrient runoff that decreases levels of light reaching seabed may have contributed significantly to a 34% reduction in the extent of seagrass beds in Tauranga Harbour between 1959 and 1996 (Park 1999).

Control and eradication efforts in recent years mean that *Spartina*, a significant weed of intertidal flats, now poses a potential rather than an actual threat.

There are a wide range of threats and disturbances occurring around the harbour. These include reclamations, drainage, stock grazing, rubbish dumping, adventive plants, harmful water discharges, fire, introduced mammals, and recreational activities.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	M
	3.5	H

Criterion*	RPS Number*	Ranking**
	3.6	N/A
Diversity and Pattern	3.7	M
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

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** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification

The extensive intertidal flats found in the northern part of Tauranga Harbour are close to the major wader roosts at Bowentown Shellbanks and Waikoura Point at the north-western end of Matakana Island, and are extensively used for feeding at low tide. This site also contains the second-largest area of high-density seagrass beds in the harbour. Tauranga Harbour as a whole is regarded as meeting criteria to be considered a Ramsar Wetland of International Importance (Owen *et al.* 2006), and this site is a particularly high-value component of it.

Category 1

Notes This site is part of the North Tauranga Harbour Key Ecological Zone (see Wildlands 2006g).

References Rasch 1989; Beadel 1992a; Owen 1993; Park 1999; Brian Chudleigh (OSNZ) pers. comm. 2006; Owen *et al.* 2006; Wildland Consultants 2006g.

ATHENREE

Site Number	009
Grid Reference (NZMG)	E2771941 N6414496
Local Authority	Western Bay of Plenty District Council
Status	Protected (DOC, Athenree Wildlife Refuge Reserve)
Site Area	45.0 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. (Saltmarsh ribbonwood)/oioi-sea rush tussockland and <i>Bolboschoenus fluviatilis</i> sedgeland.	Intertidal flat
Palustrine	3. Harakeke flaxland.	Intertidal flat
Palustrine	4. Manuka scrub. (Beadel 1992a, Wildland Consultants 2006g)	Wetland

Vegetation and Indigenous Flora

Mangrove scrub and shrublands are extensive towards the downstream end of the site and are scattered along the edge of the river channel. The site comprises extensive areas of oioi rushland and sea rush tussockland with scattered saltmarsh ribbonwood and stands of *Bolboschoenus fluviatilis*. There are also smaller areas of freshwater wetlands on the margins, particularly towards the southern (upstream) end of the site, which include harakeke, raupo, and manuka.

Fauna

Athenree is regarded by the Department of Conservation (J. Heaphy pers. comm.) as one of the most important saltmarsh areas in Tauranga Harbour. There are recent records for a range of threatened saltmarsh birds, for example Australasian bittern (Acutely Threatened, Nationally Endangered), and spotless crake, banded rail, North Island fernbird, and marsh crake (all of which are At Risk-Sparse) (John Heaphy pers. comm. 2006).

Condition/Pressures

Residential developments close to the margins of the site at Athenree and Island View may have adverse impacts on vegetation and fauna. Pampas is present on the margins of the site and within it, particularly along the margins of drains. Owen (1993) noted the presence of weeds and dumping of road spoil. The Department of Conservation has recently acquired the area of poorly drained pasture between the southern end of the Athenree Wildlife Refuge and Steele Road. This is being restored back to saltmarsh and freshwater wetland to expand the current habitats (K. Owens pers. comm.).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	H
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	H
Ecological Context	3.9	M
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

**Significance
Justification**

Athenree is a nationally significant saltmarsh and freshwater wetland complex. It comprises high quality representative examples of vegetation characteristic of the Tauranga Ecological District. One Acutely Threatened bird species (Australasian bittern) and four At Risk marshbird species are present. Pest plant impacts on the natural character of the site are relatively low.

Category 1

Notes

Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000). The vegetation was identified as being of regional significance in Beadel (1994a). This site is part of the North Tauranga Harbour Key Ecological Zone (Wildland Consultants 2006g).

References

Beadel 1992a; Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2006g.

AONGATETE ESTUARY

Site Number 010
Grid Reference (NZMG) E2772022 N6395156
Local Authority Western Bay of Plenty District Council
Status Protected (WBOPDC reserve) and unprotected parts
Site Area 111.9 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal fla
Estuarine	2. Mangrove-sea rush-oioi shrubland.	Intertidal fla
Estuarine	3. Sea rush tussockland, oioi rushland, and oioi-saltmarsh ribbonwood shrub-rushland. (Beadel 1994a, Current study)	Intertidal flat

Vegetation and Indigenous Flora Aongatete Estuary includes examples of mangrove scrub and shrubland, mangrove-sea rush-oioi shrubland, sea rush tussockland, oioi rushland, and oioi-saltmarsh ribbonwood shrub-rushland. No rare or uncommon plant species have been recorded at this site.

Fauna Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail, and North Island fernbird (both At Risk, Sparse) were present in 1992 (Owen 1993). A range of wader and waterbird species inhabit the site.

Condition/Pressures Owen (1993) noted stock access, stormwater discharge, and weeds, i.e. pampas, wattles, wilding pines.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	L
	3.5	H
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	National
Significance Justification	Aongatete is nationally significant due to the high diversity and large extent of high quality mangrove and saltmarsh vegetation types present. It contains large areas of representative mangrove stands which are diverse in stature and density, and contiguous with saltmarsh of high quality characteristic of the Tauranga Harbour. Acutely Threatened and At Risk bird species recorded in the past persist at the site (K. Owen pers. obs. 2007).
Category	1
Notes	The vegetation was identified as being of national significance in Beadel (1994a). Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).
References	Beadel 1992a; Owen 1993; Beadel 1994a; Beadel and Shaw 2000.

BOWENTOWN SHELLBANKS¹

Site Number	011
Grid Reference (NZMG)	E2772737 N6410479
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	9.8 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sandfield, seagrass grassland and intertidal flats. (Park 1999)	Sandbank, intertidal and subtidal flat

Vegetation and Indigenous Flora This site includes small areas of seagrass, but is mainly unvegetated sand and silt.

Fauna Along with the north-west end of Matakana Island, Bowentown Shellbanks is one of the most important roosting sites for waders (principally bar-tailed godwit and pied oystercatcher) and sea birds in Tauranga Harbour. Counts of godwit commonly exceed 1,000 individuals, and counts of pied oystercatcher commonly number in the hundreds. (John Heaphy and Brian Chudleigh pers. comm. 2006) (Owen *et al.* 2006).

Condition/Pressures Its situation as a shellbank in mid-harbour means direct human disturbance is low. The sandbank is subject to erosion and accretion, and is flooded by spring high tides, affecting its availability as a roost (Owen *et al.* 2006). Some bird nesting (Caspian terns, red-billed gulls, southern black-backed gulls, and seagulls) occurs.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H

¹ This site has previously been known as Yellow Point Sandbank (see Wildlands 2006g).

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification This site is nationally significant because of the numbers and diversity of international and New Zealand migratory waders, including some threatened and uncommon species, that flock here, and because, as a mid-harbour shellbank, direct human pressures are very low.

Category 1

Notes This site is part of the North Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References Park 1999; Brian Chudleigh (OSNZ) pers. comm. 2006; John Heaphy (DOC) pers. comm. 2006; Owen *et al.* 2006.

WAINUI ESTUARY

Site Number	012
Grid Reference (NZMG)	E2773072 N6393191
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	150.5 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Sea rush tussockland, oioi rushland, and oioi-sea rush rushland.	Intertidal flat
Estuarine	3. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	4. Sea rush-oioi-saltmarsh ribbonwood- <i>Baumea juncea</i> rushland.	Intertidal flat
Palustrine	5. Manuka shrubland.	Wetland
Palustrine	6. Grey willow forest.	Wetland
Palustrine	7. Kanuka-grey willow/harakeke flaxland (not mapped).	Wetland
Palustrine	8. <i>Baumea articulata</i> reedland (not mapped). (Beadel 1994a and Wildland Consultants 2005f)	Wetland

Vegetation and Indigenous Flora

Wainui Estuary includes relatively large areas of mangrove scrub and shrubland with examples of saline and freshwater wetlands on the landward sides of the mangroves. Species in the estuarine wetlands include sea rush, oioi, *Baumea juncea*, and saltmarsh ribbonwood. Freshwater wetlands include flax, *Baumea articulata*, manuka, and raupo. No rare or uncommon plant species have been recorded at this site.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1991 (Owen 1993), and are still present in good numbers today (K. Owen pers. obs. 2006).

Condition/Pressures

Owen (1993) noted stock access, reclamation, agricultural effluent discharge, and pampas.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	M
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	H

Criterion*	RPS Number*	Ranking**
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Wainui Estuary is a relatively large, albeit modified, example of estuarine habitat. It also contains small examples of freshwater wetlands. Good numbers of Acutely Threatened and At Risk bird species inhabit the site today.

Category 1

Notes This site forms part of the eastern/western edge of Environment Bay of Plenty 'Work Road' corridor (Environment Bay of Plenty 2006) ranked second priority Level 2 (Wildland Consultants 2007d).

References Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2005f.

MATAHUI POINT INTERTIDAL FLATS

Site Number	013
Grid Reference (NZMG)	E2773101 N6398010
Local Authority	Western Bay of Plenty District
Status	Unprotected
Site Area	16.2 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Intertidal flats.	Intertidal flat
Estuarine	2. Mosaic of estuary margin vegetation types. (Beadel 1992a)	Intertidal flat

Vegetation and Indigenous Flora Matahui Point Intertidal Flats is predominantly unvegetated, though there are limited areas of estuarine margin vegetation. No rare or uncommon plant species have been recorded at this site.

Fauna Matahui Point Intertidal Flats is one of the most important roosting sites for waders in Tauranga Harbour. It regularly hosts thousands of waders, including the ‘Nationally Threatened, Critically Endangered’ migrating black stilts (Acutely Threatened, Nationally Critical) (Owen *et al.* 2006). Its position near the main Tauranga Harbour watershed means it is near to feeding areas exposed for the longest duration between high tides. It is available as a neap high tide roosting site for *c.*20 days per month (Owen *et al.* 2006).

Condition/Pressures The relative isolation of this site and lack of facilities like boat ramps mean direct human disturbance is low.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	National
Significance Justification	Matahui Point Intertidal Flats is of national significance as roosting habitat for large and diverse flocks of international and New Zealand migratory wader species. Pressure and disturbance on this site is low due to its remoteness from facilities like roads, boat ramps and other means of beach access. Disturbances from a recently constructed grass airstrip on farmland nearby may diminish this usage in the future (K. Owen pers. comm. 2008).
Category	1
Notes	This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).
References	Beadel 1992a; Brian Chudleigh (OSNZ) pers. comm. 2006; Owen <i>et al.</i> 2006.

EGG ISLAND SANDBANK

Site Number 014
Grid Reference (NZMG) E2773146 N 6401956
Local Authority Western Bay of Plenty District
Status Protected (DOC Stewardship Area - Egg Island Crown Land) and unprotected parts
Site Area 236.4 ha
Altitudinal Range 0 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	Sandfield and seagrass grassland. (Park 1999)	Sandbank, intertidal and subtidal flat

Vegetation and Indigenous Flora Egg Island Sandbank comprises unvegetated marine sediment and seagrass beds. No rare or uncommon plant species have been recorded at this site.

Fauna This site is periodically used as a neap tide roost by waders, particularly bar-tailed godwit and pied oystercatcher (Brian Chudleigh pers. comm. 2006).

Condition/Pressures Its situation as a sandbank in mid-harbour means direct human disturbance of roosting birds is low.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	L
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification Egg Island comprises an extensive area of sandbank and seagrass beds where, by virtue of being a mid-harbour sandbank, direct human pressures are very

low. It is nationally significant because of the numbers and diversity of international and New Zealand migratory waders that feed here and roost when tidal conditions are right.

Category

1

Notes

This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References

Park 1999; Brian Chudleigh (OSNZ) pers. comm. 2006.

BOWENTOWN SAND DUNES AND BEACH

Site Number	015
Grid Reference (NZMG)	E2773630 N6412166
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	87.1 ha
Altitudinal Range	0-15 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Lupin)/spinifex/ <i>Calystegia soldanella</i> grassland.	Incipient and established foredune
Terrestrial	2. (<i>Ficinia nodosa</i>)/spinifex/ <i>Calystegia soldanella</i> grassland.	Incipient and established foredune
Terrestrial	3. <i>Ficinia nodosa</i> -lupin-spinifex/ <i>Calystegia soldanella</i> grassland.	Established foredune
Terrestrial	4. <i>Ficinia nodosa</i> / <i>Carex testacea</i> -pohuehue- <i>Calystegia soldanella</i> sedgeland.	Transgressive dunefield
Terrestrial	5. Maritime pine-houpara-gorse/ <i>Ficinia nodosa</i> /pohuehue sedgeland.	Transgressive dunefield
Terrestrial	6. Gorse/ <i>Ficinia nodosa</i> /pohuehue sedgeland.	Transgressive dunefield
Terrestrial	7. Gorse ⇄ exotic grasses shrubland.	Transgressive dunefield
Terrestrial	8. Grey willow/pampas scrub.	Transgressive dunefield
Terrestrial	9. <i>Banksia integrifolia</i> / <i>Ficinia nodosa</i> -pohuehue treeland.	Transgressive dunefield
Terrestrial	10. <i>Banksia integrifolia</i> /pohuehue- <i>Tetragonia</i> forest.	Transgressive dunefield
Terrestrial	11. Pohutukawa/oioi-harakeke rushland.	Transgressive dunefield
Terrestrial	12. <u>Gorse</u> -pohuehue scrub.	Transgressive dunefield
Terrestrial	13. (Grey willow)-ti kouka/pampas/manuka-harakeke-taupata-karo-exotic grasses shrubland.	Transgressive dunefield
Terrestrial	14. Cape ivy vineland.	Transgressive dunefield
Terrestrial	15. <i>Ficinia nodosa</i> / <i>Gazania linearis</i> -pohuehue- <i>Asparagus densiflorus</i> herbfield.	Transgressive dunefield
Terrestrial	16. Saltmarsh ribbonwood/ <i>Ficinia nodosa</i> sedgeland.	Transgressive dunefield
Terrestrial	17. Sandfield. (Current study)	Beach sand

Vegetation and Indigenous Flora

This site comprises a series of dunes, continuous across a tombolo, from an exposed oceanic coast on one side to a sheltered estuarine margin on the other. Dune landform and vegetative cover change dramatically across the tombolo in response to varying degrees of exposure. Spinifex and pingao (Chronically Threatened, Gradual Decline) occur on incipient dunes and the stoss face of established dunes. *Ficinia* and pohuehue dominated vegetation occur on densely vegetated transgressive dunefield, and pohutukawa, harakeke, oioi, and saltmarsh ribbonwood occur on the estuarine margin. Some areas of the transgressive dunefield are covered by gorse. In 1983 one plant of sand pimelea (Chronically Threatened, Gradual Decline) was recorded at this site in

1983 (P.J. de Lange pers. comm. in Beadel 1994a). *Tetragonia tetragonioides* (At Risk, Sparse) is locally common under *Banksia* and pine within the site, however the identity of these plants should be checked when they are in fruit.

This is one of the few sites in the Bay of Plenty where the giant rush *Juncus pallidus* occurs in dune hollows and ephemeral wetlands. There is also a small population of *Coprosma acerosa* (Greg Jenks pers. comm. 2006), which is considered to be regionally uncommon (Beadel 2006b). *Oxalis rubens* and *Zoysia pauciflora* (both regionally uncommon plant species, as per Beadel 2006b) are present on dunes.

Fauna

This beach is a nesting area for northern NZ dotterel (Acutely Threatened, Nationally Vulnerable) and variable oystercatcher. Shore skinks are present (John Heaphy pers. comm. 2006).

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta.

Condition/Pressures

There is an ever-increasing *Banksia integrifolia* infestation at this site, mainly concentrated at the northern end. Other invasive weeds include cape ivy, gorse, kikuyu, lupins, and pampas. Rabbits threaten the *Coprosma acerosa* population (Greg Jenks pers. comm. 2006).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	H
	3.5	M
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

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** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

Extensive example of natural vegetation on barrier tombolo within ED with indigenous vegetation encompassing entire range of variation found on mobile dunes, from exposed coast to estuarine margin.

This regionally significant site has high botanical values - a mosaic of sand dune vegetation types are present. However, it is degraded by invasive weeds which will continue to spread through the site unless eradicated or controlled. This site has high potential for restoration. It is a regionally important breeding area for the acutely threatened northern NZ dotterel and variable oystercatcher, and contains two chronically threatened plant species, pingao and sand coprosma, and one sparse species, beach spinach. This site has been identified as part of a regionally significant geological feature (Kenny and Hayward 1996). Adjoins Bowentown Heads and, through central Waihi Beach, Orokawa. Large size, natural areas extend across tombolo for significant length. Healthy, but extensive areas of gorse invasion require active interventive and ongoing management. One of the few examples of an intact shore-shore dune system within the ED. Reduced edge effects as housing restricted to either end of tombolo.

Category	1
Notes	Regionally significant example of a beach form shaped by long-term erosional processes (Kenny and Hayward 1996). The vegetation of this site was previously ranked as regionally significant by Beadel (1994a).
References	Beadel 1994a; Kenny and Hayward 1996; current study.

APATA ESTUARY

Site Number	016
Grid Reference (NZMG)	E2774321 N6391023
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	61.7 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Oioi-sea rush rushland.	Intertidal flat
Estuarine	3. Sandspit vegetation.	Beach sands
Palustrine	4. Raupo reedland. (Beadel 1992a; Beadel 1994a and Wildland Consultants 2006g)	Wetland

Vegetation and Indigenous Flora Apata Estuary includes a relatively extensive area of mangrove scrub and shrubland, with smaller examples of oioi-sea rush rushland, sandspit vegetation, and raupo reedland along the landward margins of the site. No rare or uncommon plant species have been recorded at this site.

Fauna Australasian bittern, banded rail, marsh crane and North Island fernbird (all At Risk, Sparse) were recorded in 1991 (Owen 1993).

Condition/Pressures Owen (1993) noted stock access.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

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** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

Apata Estuary contains a large, good quality stand of mangroves, with relatively narrow strips of saltmarsh along the margins. These vegetation types and habitats are relatively common in Tauranga Harbour. One Acutely Threatened and three At Risk bird species have been recorded from here in the past.

Category

1

References

Beadel 1992a; Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2006g.

TE HOPAI ISLAND

Site Number	017
Grid Reference (NZMG)	E2774512 N6393217
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	63.2 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland, and mangrove/oioi-sea rush-glasswort shrubland.	Intertidal flat
Estuarine	2. Sandspit vegetation.	Beach sands
Estuarine	3. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Palustrine/estuarine	4. <i>Olearia solandri-Coprosma propinqua</i> subsp. <i>propinqua</i> -toetoe/oioi-saltmarsh ribbonwood shrubland and <i>Coprosma propinqua</i> subsp. <i>propinqua</i> -toetoe-saltmarsh ribbonwood- <i>Olearia solandri</i> -manuka/oioi rushland.	Wetland, intertidal flat
Palustrine/estuarine	5. Manuka forest.	Wetland, intertidal flat
Palustrine/estuarine	6. Harakeke- <i>Olearia solandri</i> -saltmarsh ribbonwood-oioi shrubland.	Wetland, intertidal flat
Palustrine/estuarine	7. Oioi-marsh ribbonwood shrub-rushland ↔ <i>Sarcocornia quinqueflora</i> herbfield ↔ mudflats.	Wetland, intertidal flat
Palustrine/estuarine	8. Mangrove-(<i>Sarcocornia quinqueflora</i>) shrubland.	Wetland, intertidal flat
Palustrine/estuarine	9. Manuka- <i>Olearia solandri</i> scrub.	Wetland, intertidal flat
Palustrine/estuarine	10. <i>Olearia solandri</i> /oioi rushland.	Wetland, intertidal flat
Palustrine/terrestrial	11. Ngaio/ <i>Coprosma propinqua</i> subsp. <i>propinqua</i> - <i>Olearia solandri</i> -marsh ribbonwood shrubland.	Wetland

(Beadel 1992a and Current study)

Vegetation and Indigenous Flora

Te Hopai island includes mangrove scrub and shrubland with oioi, sea rush, and glasswort, and oioi-saltmarsh ribbonwood shrub-rushland. An area on the northwestern side of the site comprises variable mixtures of *Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b), *Coprosma propinqua* subsp. *propinqua*, toetoe, saltmarsh ribbonwood, manuka, harakeke, and oioi (i.e. Vegetation Type 4). *Austrostipa stipoides* and *Olearia solandri*, both regionally uncommon, are present. Low numbers of gorse and hawthorn are present in Vegetation Type 11 and there are low numbers of Norway rats and mice (Environment Bay of Plenty 2007). The island is the northern limit of *Cortaderia toetoe*.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1991 (Owen 1993). Used by waders as a high tide roost when tidal conditions are suitable.

Condition/Pressures Unknown.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	H
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification Te Hopai Island comprises a high quality, diverse, representative vegetation sequence. It is probably the least modified substantial area of estuarine vegetation in Tauranga Harbour (Beadel 1992a). It provides habitat for two At Risk bird species and is used by waders as a high tide roost.

Category 1

Notes Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000), and the vegetation was ranked nationally significant in Beadel (1994a). This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References Beadel 1992a; Owen 1993; Beadel 1994a; Beadel and Shaw 2000.

MATAKANA WETLANDS B

Site Number	018
Grid Reference (NZMG)	E2774581, N6408655
Local Authority	Western Bay of Plenty District Council
Status	Protected (DOC, Matakana Island Wildlife Refuge)
Site Area	22.6 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Radiata pine/grey willow-shining karamu-whekimingimingi/pampas scrub with hangehange, ponga and gorse.	Foredune plain
Palustrine	2. Grey willow-ti kouka-(mapou)-(mingimingi)/ <i>Baumea juncea</i> -oioi scrub.	Wetland
Palustrine	3. Raupo- <i>Baumea articulata</i> -kapungawha/ <i>Baumea juncea</i> - <i>Carex secta</i> - <i>Eaeocharis acuta</i> - <i>Cyclosorus interruptus</i> - <i>Persicaria decipiens</i> reedland.	Wetland
Palustrine	(Current study)	Wetland

Vegetation and Indigenous Flora

The center of this wetland is dominated by raupo reedland with smaller areas of *Persicaria decipiens* herbfield, *Baumea articulata* reedland, *Eleocharis sphacelata* reedland, and *Carex secta* tussockland. The northern margin of the site and the arm that extends from the south of the site are dominated by grey willow and ti kouka. This wetland contains one of the largest areas of raupo reedland in the Bay of Plenty Region, and also possibly the only natural occurrence of kahikatea on Matakana Island. Four pole kahikatea are emergent over grey willow-ti kouka forest on the northern central edge of the wetland. There are large populations of *Cyclosorus interruptus*, *Thelypteris confluens*, and *Ranunculus macropus* (all of which are Chronically Threatened, Gradual Decline).

Fauna

Spotless crane (At Risk, Sparse) was recorded in 1992 (Owen 1993).

Condition/Pressures

The margins of the raupo reedland are being encroached upon by grey willow. Reed sweet grass occurs locally on the western side of the wetland. A few individuals of royal fern (*Osmunda regalis*) are present. These are being monitored and controlled by Environment Bay of Plenty (Walter Stahel pers. comm. 2006 and 2008).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	H
	3.5	H
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification

This site contains a large representative example of wetland vegetation, including one of the largest areas of raupo reedland in the Bay of Plenty Region. It supports large populations of three Chronically Threatened plant species and is locally distinctive because of the presence of four kahikatea, a species which is not known elsewhere on Matakana Island. The natural character of the site is under threat from weeds. The wetland provides ideal habitat for at risk marshbird species, for example spotless crane.

Category 1

Notes Previously ranked as nationally significant vegetation by Beadel (1994a) and high quality marshbird habitat by Owen (1993).

References Beadel 1989c; Beadel 1989e; Owen 1993; Beadel 1994a; Wildland Consultants 2006g.

TIROHANGA MANGROVES

Site Number	019
Grid Reference (NZMG)	E2776283 N6398205
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	237.3 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland. (Beadel 1994a, Current study)	Intertidal flat

Vegetation and Indigenous Flora This site contains the largest example of mangrove scrub and shrublands in the harbour. No uncommon plant species have been recorded (Beadel 1994a). This area of mangroves is distinctive because it forms a compact island in the harbour, separated from the shoreline by open water.

Fauna Used as a roost at high tide periods by good numbers of little shag, pied shag, black shag, and white-faced heron (Owen 1993 - Vol 1, Page 8). It has the potential to be used by nesting shags in the future.

Condition/Pressures Not known.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	M
	3.5	H
	3.6	N/A
	Diversity and Pattern	3.7
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification The Tirohanga mangroves are nationally significant because they are the largest example of mangrove scrub and shrubland in the Tauranga Harbour.

The site is very large, unified and relatively isolated, increasing its resilience to the range of pressures characteristic around Tauranga Harbour. Black shag (At Risk, Sparse) roosts on mangroves.

Category

1

Notes

Identified as vegetation of national significance in Beadel (1994a) and as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000). This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References

Beadel 1994a; Beadel and Shaw 2000.

MID TAURANGA HARBOUR

Site Number	020
Grid Reference (NZMG)	E2776413 N6395466
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	5,188.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	Seagrass grassland (not mapped).	Intertidal and subtidal flat
Estuarine	Sandspit vegetation (not mapped).	Intertidal flat
Marine	Worm field (not mapped).	Subtidal channel
Marine	Worm field (not mapped).	Intertidal flat
Marine	Cockle bed (not mapped).	Intertidal flat
Marine	Pipi bed (not mapped).	Subtidal channel
Marine	Scallop bed (not mapped).	Subtidal channel
Marine	Horse mussel field (not mapped).	Subtidal channel
	(Beadel 1992a; Stephen Park, Environment Bay of Plenty, pers. comm. 2006; Wildland Consultants 2006g)	

Vegetation and Indigenous Flora This site contains the most extensive areas of high-density seagrass beds in Tauranga Harbour.

Fauna The central sector of Tauranga Harbour is part of an “Outstanding” wildlife habitat (Rasch 1989a). The extensive intertidal flats function as feeding grounds for a wide range of wader bird species (principally bar-tailed godwit, pied oystercatcher, and black swan). It includes areas adjacent to known, major wader roosting areas (Brian Chudleigh pers. comm. 2006, Owen *et al.* 2006).

Condition/Pressures Suspended sediment and nutrient runoff that decreases light levels at the seabed may have contributed significantly to a 34% reduction in the extent of seagrass beds in Tauranga Harbour between 1959 and 1996 (Park 1999).

There are several threats and detrimental impacts occurring around the harbour. These include reclamations, drainage, stock grazing, rubbish dumping, adventive plants, harmful water discharges, fire, introduced mammals, and recreational activities.

Control and eradication efforts in recent years mean that *Spartina*, a significant weed of intertidal flats, now poses a potential rather than an actual threat.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification The extensive intertidal flats found in the central part of Tauranga Harbour are close to major wader roosts (for example Matahui Point). This site also contains the second-largest area of high-density seagrass beds in the harbour. Tauranga Harbour as a whole is regarded as meeting the criteria for a Ramsar Wetland of International Importance (Owen *et al.* 2006), and this site is a particularly high value component of Tauranga Harbour.

Category 1

Notes This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References Rasch 1989a; Beadel 1992a; Owen 1993; Park 1999; Brian Chudleigh (OSNZ) pers. comm. 2006; Wildland Consultants 2006g; Owen *et al.* 2006.

WAIPAPA ESTUARY

Site Number	021
Grid Reference (NZMG)	E2776572 N6390967
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	68.3 ha
Altitudinal Range	0-40 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub.	Intertidal flat
Estuarine	2. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	3. Mangrove-sea rush-oioi shrubland	Intertidal flat
Estuarine	4. Sea rush tussockland.	Intertidal flat
Estuarine	5. Oioi rushland and sea rush tussockland.	Intertidal flat
Estuarine	6. Oioi rushland.	Intertidal flat
Estuarine	7. <i>Olearia solandri</i> -oioi rushland.	Intertidal flat
Palustrine	8. Manuka-harakeke-toetoe shrubland.	Wetland
Palustrine	9. Manuka scrub.	Wetland
Palustrine	10. Grey willow forest.	Wetland
Terrestrial	11. Sandspit vegetation.	Beach sands
Terrestrial	12. Mamaku treefernland.	Hillslope

(Beadel 1992a, Current study)

Vegetation and Indigenous Flora

Waipapa Estuary includes intertidal wetlands of mangrove, oioi, sea rush, saltmarsh ribbonwood, and *Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b). *Baumea juncea* and *Schoenoplectus pungens* are also likely to be present. Inland of the intertidal wetlands are freshwater wetlands of manuka, harakeke, toetoe, and grey willow, with an area of mamaku forest on an adjacent hillslope at the southwest of the site. No rare or uncommon plant species have been recorded.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1991 (Owen 1993). North Island fernbird was recorded again in 2006 (Wildland Consultants 2006b). The sandspit provides roost for waders when conditions are right (K. Owen pers. comm.).

Condition/Pressures

Owen (1993) recorded stock access and weeds such as woolly nightshade, grey willow, pampas, and wilding pines.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	H

Criterion*	RPS Number*	Ranking**
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Waipapa Estuary is regionally significant because it comprises relatively large, good quality, representative examples of intertidal vegetation and small examples of freshwater wetlands contiguous with estuarine wetlands. There are recent or past records of two At Risk bird species. The sandspit provides good habitat for wader roosting.

The vegetation to the west of the railway bridge is a representative, relatively large example of high quality oioi rushland inland from the main harbour and adjacent to a tidal stream (Beadel 1994a).

Category 1

Notes Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

Reference Beadel 1992a; Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2006a.

TAHUNAMANU ISLAND

Site Number 022
Grid Reference (NZMG) E2780440 N6394899
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 2.1 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Glasswort herbfield and sandspit vegetation. (Beadel 1992a)	Intertidal flat, dune and beach sands

Vegetation and Indigenous Flora No uncommon plant species have been recorded.

Fauna The name 'tahuna' (sandbank) 'manu' (bird) suggests that this site has long been recognised by Maori as important to birds. These inner harbour sandspits and sandbanks are very important high tide roosts and nesting areas for northern NZ dotterel (Acutely Threatened, Nationally Vulnerable), Caspian tern (Acutely Threatened, Nationally Endangered), white-fronted tern (Chronically Threatened, Gradual Decline) and variable oystercatcher (Owen 1993; John Heaphy, pers. comm. 2006). It is a wader roost of increasing importance for species such as bar-tailed godwit, turnstone, lesser or red knot, or oystercatchers, as other central Tauranga Harbour roosts become less favourable through factors like disturbance or erosion (Owen *et al.* 2006).

Condition/Pressures Gorse and other pest weeds are present. However, apart from this, the island is in good condition although cattle may access the island occasionally.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	M
	3.5	M
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	National
Significance Justification	Tahunamanu Island supports a representative example of the vegetation occurring on sandspits in Tauranga Harbour. It is a very important nesting and roosting area for three bird species which are Acutely or Chronically Threatened, as well as high numbers of waders. It includes one of the larger, better quality examples of glasswort herbfield in the Tauranga Harbour (Beadel 1994a). This site complements the nearby Opureora Spit, which is also nationally significant.
Category	1
Notes	This site is part of the Motungaio Key Ecological Zone (Wildlands 2006g).
References	Owen 1993; Beadel 1994a; Owen <i>et al.</i> 2006.

BLUE GUM BAY 1

Site Number	023
Grid Reference (NZMG)	E2781209 N6398609
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	177.3 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest, ti kouka-grey willow-manuka forest and raupo reedland.	Wetland
Palustrine/Estuarine	2. Manuka forest and scrub.	Wetland, intertidal flat
Palustrine/Estuarine	3. Manuka-mingimingi- <i>Olearia solandri</i> shrubland.	Wetland, intertidal flat
Palustrine/Estuarine	4. Manuka-harakeke-toetoe shrubland, harakeke flaxland, <i>Baumea teretifolia</i> - <i>Baumea arthrophylla</i> / <i>Gleichenia</i> fernland, ti kouka/ <i>Baumea juncea</i> - <i>Coprosma tenuicaulis</i> - <i>Baumea articulata</i> treeland.	Wetland, intertidal flat
Estuarine	5. <i>Baumea juncea</i> -sea rush-oioi sedgeland, oioi rushland, oioi-saltmarsh ribbonwood shrub-rushland, <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat
Estuarine	6. Mangrove shrubland.	Intertidal flat
Terrestrial	7. Radiata pine forest.	Flats
Palustrine	8. Raupo reedland.	Wetland
Palustrine	9. Grey willow forest.	Wetland

(Beadel 1994a and Wildland Consultants 2006g)

Vegetation and Indigenous Flora

Blue Gum Bay 1 includes freshwater and estuarine wetlands. The freshwater wetlands include large areas which are dominated by grey willow. Other species include manuka, *Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b), *Baumea* spp., ti kouka, harakeke, and toetoe. Estuarine species include *Baumea juncea*, sea rush, oioi, saltmarsh ribbonwood, and *Schoenoplectus pungens*. There is also a small area of radiata pine forest. No rare or uncommon plant species have been recorded, but there has not been a detailed botanical survey of the site.

Fauna

High numbers of banded rail and North Island fernbird (both At Risk, Sparse), and three Australasian bittern (Acutely Threatened, Nationally Endangered) were recorded in 1992 (Owen 1993). Caspian tern (Acutely Threatened, Nationally Vulnerable) were recorded roosting in good numbers (18 birds) on the sandspit in 1992 (Owen 1993).

Condition/Pressures

The palustrine (freshwater) wetland vegetation is more modified than the saltmarsh vegetation, with expanding grey willow and wilding pine populations.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	H
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification This site comprises a very large, diverse, relatively unmodified and representative estuarine and freshwater wetland complex. Two at risk bird species were present in high numbers in 1992. This site is part of a nationally significant, representative tract of the vegetation and habitats of the Tauranga Harbour. Parts of the site are impacted by invasive weeds.

Category 1

Notes Previously ranked as nationally significant vegetation in Beadel (1994a) and habitat for marshbirds of mainly outstanding quality in Owen (1993). Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000). This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2006g.

MATAKANA ISLAND 1

Site Number	024
Grid Reference (NZMG)	E2781697, N6400299
Local Authority	Western Bay of Plenty District Council
Status	Protected (Part DOC Matakana Island Wildlife Refuge) and unprotected parts
Site Area	609.1 ha
Altitudinal Range	0-10 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Spinifex sandfield.	Berm and incipient foredune.
Terrestrial	2. (<i>Ficinia nodosa</i>)-(sea rocket)-(lupin) sandfield.	Incipient and established foredune
Terrestrial	3. Spinifex-pingao/ <i>Calystegia soldanella</i> grassland.	Incipient foredune
Terrestrial	4. (Radiata pine)/spinifex-pingao-(<i>Ficinia nodosa</i>) grassland.	Incipient foredune
Terrestrial	5. Spinifex-pingao-marram grassland.	Incipient foredune
Terrestrial	6. (Maritime pine)/gorse-pampas shrubland.	Incipient foredune
Terrestrial	7. Marram-spinifex/(<i>Calystegia soldanella</i>) grassland.	Established foredune
Terrestrial	8. Radiata pine/spinifex- <i>Ficinia nodosa</i> / <i>Calystegia soldanella</i> grassland	Established foredune
Terrestrial	9. (Radiata pine)/marram-spinifex- <i>Ficinia nodosa</i> -pohuehue grassland.	Established foredune
Terrestrial	10. (<i>Leptospermum laevigatum</i>)/(<i>Ficinia nodosa</i>)/(<i>Calystegia soldanella</i>) sandfield.	Established foredune
Terrestrial	11. <i>Ficinia nodosa</i> /pohuehue/ <i>Carex testacea</i> sedgeland.	Established foredune
Terrestrial	12. (Radiata pine)-pampas/ <i>Ficinia nodosa</i> -pohuehue sedgeland.	Established foredune
Terrestrial	13. Radiata pine/pampas/ <i>Ficinia nodosa</i> /spinifex-pohuehue sedgeland.	Established foredune
Terrestrial	14. <i>Ficinia nodosa</i> /pohuehue vineland.	Established foredune
Terrestrial	15. <i>Ficinia nodosa</i> /pohuehue sedgeland.	Established foredune and transgressive dunefield.
Terrestrial	16. <i>Ficinia nodosa</i> /pohuehue- <i>Calystegia soldanella</i> -(<i>Carex testacea</i>) vineland.	Established foredune and transgressive dunefield.
Terrestrial	17. Radiata pine- <i>Leptospermum laevigatum</i> / <i>Ficinia nodosa</i> /pohuehue shrubland.	Established foredune and Transgressive dunefield.
Terrestrial	18. <i>Leptospermum laevigatum</i> scrub.	Established foredune and transgressive dunefield.
Terrestrial	19. Radiata pine-maritime pine/pampas-radiata pine-maritime pine/pohuehue- <i>Ficinia nodosa</i> -(mingimingi)/ <i>Zoysia pauciflora</i> treeland	Established foredune and transgressive dunefield.
Terrestrial	20. (Radiata pine)/ <i>Ficinia nodosa</i> -marram-pohuehue sedgeland.	Transgressive dunefield

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	21. Radiata pine/ <i>Ficinia nodosa</i> -pohuehue- <i>Carex testacea</i> treeland.	Transgressive dunefield
Terrestrial	22. Radiata pine/gorse-pampas-mingimingi/ <i>Ficinia nodosa</i> - <i>Baumea juncea</i> scrub	Transgressive dunefield
Terrestrial	23. Radiata pine/marram-pohuehue- <i>Ficinia nodosa</i> forest.	Transgressive dunefield
Terrestrial	24. Radiata pine/mingimingi-harakeke treeland (groundlayer mosaic of <i>Zoysia pauciflora</i> on old dunes and <i>Baumea juncea</i> -oioi in old dune swales).	Transgressive dunefield
Terrestrial	25. Radiata pine/-pampas-(mingimingi)/ <i>Ficinia nodosa</i> -pohuehue-bracken forest.	Transgressive dunefield
Terrestrial	26. Radiata pine/bracken/pohuehue treeland.	Transgressive dunefield
Terrestrial	27. Radiata pine-maritime pine/ <i>Leptospermum laevigatum</i> /pampas-(mingimingi)-maritime pine-(ti kouka)/ <i>Ficinia nodosa</i> -oioi- <i>Zoysia pauciflora</i> treeland.	Transgressive dunefield
Terrestrial	28. Radiata pine-maritime pine/pampas/ <i>Ficinia nodosa</i> -oioi- <i>Baumea juncea</i> -pohuehue-(mingimingi) forest.	Transgressive dunefield and foredune plain
Terrestrial	29. Pampas/ <i>Ficinia nodosa</i> -marram tussockland.	Foredune plain
Terrestrial	30. Radiata pine/gorse-pampas/ <i>Ficinia nodosa</i> -mingimingi/ <i>Zoysia pauciflora</i> treeland.	Foredune plain
Terrestrial	31. Radiata pine/oioi- <i>Ficinia nodosa</i> / <i>Zoysia pauciflora</i> - <i>Cladina confusa</i> treeland (with local <i>Coprosma acerosa</i>).	Foredune plain
Terrestrial	32. Radiata pine/oioi- <i>Ficinia nodosa</i> - <i>Baumea juncea</i> -pohuehue forest.	Foredune plain
Terrestrial	33. Radiata pine/(pohutukawa)/mingimingi-shining karamu-harakeke-mapou/ <i>Baumea juncea</i> treeland.	Foredune plain
Terrestrial	34. Radiata pine-mapou-karamu/ <i>Ficinia nodosa</i> -oioi-mingimingi sedgeland.	Foredune plain
Terrestrial	35. (Radiata pine)/(pohutukawa)-(manuka)-(marsh ribbonwood)/ <i>Baumea juncea</i> - <i>Baumea arthropphylla</i> -harakeke-(<i>Cyperus ustulatus</i>) reedland.	Foredune plain
Terrestrial	36. Grey willow-(radiata pine)/gorse-pampas-(mapou)/ <i>Baumea juncea</i> scrub.	Foredune plain
Palustrine	37. Radiata pine/grey willow/mingimingi-mapou-koromiko-karamu-ti kouka-pampas shrubland.	Wetland
Palustrine	38. Radiata pine/grey willow-mapou-hangehange-mingimingi/flax treeland.	Wetland
Palustrine	39. Grey willow/ <i>Baumea juncea</i> -mingimingi scrub.	Wetland
Palustrine	40. Grey willow-(mapou)/ <i>Baumea juncea</i> - <i>Baumea arthropphylla</i> shrubland.	Wetland
Palustrine	41. Grey willow/ <i>Baumea juncea</i> - <i>Baumea articulata</i> - <i>Carex secta</i> -(harakeke) shrubland.	Wetland
Palustrine	42. Manuka-(mapou)-(ti kouka)/ <i>Baumea juncea</i> - <i>Cyperus ustulatus</i> reedland.	Wetland
Palustrine	43. <i>Baumea juncea</i> - <i>Carex secta</i> - <i>Juncus</i> sp.-(<i>Baumea arthropphylla</i>)/ <i>Cyclosorus interruptus</i> sedgeland.	Wetland

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	44. <i>Raupo-Baumea articulata-Schoenoplectus tabernaemontani/Carex secta-Eleocharis acuta-Persicaria decipiens</i> reedland	Wetland
Palustrine	45. <i>Raupo-Schoenoplectus tabernaemontani/Baumea juncea-Cyperus ustulatus</i> reedland.	Wetland
Palustrine	46. <i>Raupo</i> reedland.	Wetland
Palustrine	47. <i>Raupo/Ranunculus sceleratus-Rorippa palustris-Lemna minor</i> reedland.	Wetland
Palustrine	48. <i>Rorippa palustris-Triglochin striata-Eleocharis gracilis</i> herbfield.	Wetland
Palustrine	49. Open water.	Pond/Lake
Terrestrial	50. Sandfield.	Beach sand

(Beadel 1992a & 1994a, Current study)

Vegetation and Indigenous Flora

Pingao and sand pimelea (both Chronically Threatened, Gradual Decline) are present on the sand dunes (Wildland Consultants 2006g). A 1989 census detected 64 individuals of sand pimelea on Matakana (Beadel 1989a). In 2008 22 individuals were observed at two widely separated sites. A small population of coastal mahoe is present (Beadel 1989a and current study). This species is uncommon on the Bay of Plenty mainland. Sand coprosma, although regionally uncommon, is relatively abundant on Matakana. Sand tussock is not present on the island, despite the presence of large areas of habitat similar to other sites where it occurs in the ecological district at the western and eastern ends of the island associated with the large berms around the harbour entrances.

Thelypteris confluens, *Cyclosorus interruptus*, and *Ranunculus macropus* (all Chronically Threatened, Gradual Decline) were recorded in the wetlands in 1990 (Beadel 1990b). Large populations of *Cyclosorus interruptus* and *Thelypteris confluens* were confirmed present during the current study. One kauri ricker is present on the the margins of one wetland within this site, and appears to be of natural occurrence (S.M. Beadel pers. obs. 2006).

Asplenium appendiculatum subsp. *maritimum*, a regionally uncommon species (Beadel 2008), occurs underneath the pines in this site.

Several other regionally uncommon species have been recorded at this site - *Schoenus nitens*, *Hyperium japonicum*, *Juncus caespiticius*, *Rorippa palustris*, *Oxalis rubens*, *Senecio biserratus*, *Senecio glomeratus*, *Ranunculus acaulis*, and *Poa pusilla*. Several of these - *Schoenus nitens*, *Poa pusilla*, and *Senecio biserratus* - are not known to occur elsewhere in the Bay of Plenty. Another species present (*Pseudognaphalium* "coast") has not been recorded from elsewhere in the ED.

A large population of *Zoysia pauciflora* (also regionally uncommon) occurs within this site.

The pine plantation and wilding pine understories are generally dominated by low-growing indigenous plant species (for example mainly sedges and reeds, with local shrubs, grasses and orchids) but can contain threatened species, for example pingao and sand pimelea within their seaward margin (Beadel 1990b).

Fauna

Regarded by Department of Conservation (J. Heaphy pers. comm.) as one of the best coastal wetland complexes for fauna in the Bay of Plenty. Matakana has the full range of threatened wetland birds known in the region. Australasian bittern (Acutely Threatened, Nationally Endangered), grey duck (Acutely Threatened, Nationally Endangered), spotless crake (At Risk, Sparse), banded rail (At Risk, Sparse), marsh crake (At Risk, Sparse), North Island fernbird (At Risk, Sparse), pateke or brown teal (Acutely Threatened, Nationally Endangered). Several NZ scaup were seen during 2005 (Wildland Consultants 2006g)

The dunes and beach along the entire outer Matakana Island coastline from “Waikoura Point” to “Panepane Point” are used by northern NZ dotterel (Acutely Threatened, Nationally Vulnerable) as breeding grounds, especially Waikoura Point and Panepane Point. This is the main nesting area in the Bay of Plenty, and one of the top two in the country with 43 breeding pairs recorded in the 2004-2005 nesting season (Murray 2007). Sixteen northern NZ dotterel and several banded dotterel were observed in this area during the current survey. Variable oystercatchers also nest in good numbers along the entire coastline dunes (John Heaphy pers. comm. 2006).

Along with the Bowentown Shellbanks, the north-west end (Waikoura Point) of Matakana Island is one of the principal high tide roost for waders and other coastal birds in the northern part of Tauranga Harbour. This area is often used whenever the Bowentown Shellbanks roost is affected by storms or erosion. Panepane Point, at the south-eastern end of the island, is also an important wader roost (Owen *et al.* 2006).

Other birds observed roosting and feeding along the length of the beach include variable oystercatcher, Caspian tern, white-fronted tern, and pied shag.

The chronically threatened katipo spider (*Latrodectus katipo*) (Chronically Threatened, Serious Decline) resides along the dunes and beaches of Matakana Island. This is the most extensive surviving population in the Bay of Plenty. Information on native lizard fauna is limited; no geckos are known from here, and only shore skinks have been recorded (John Heaphy pers. comm. 2006, current study).

Kaka (Acutely Threatened, Nationally Endangered) were repeatedly observed in pine forest around the mill, suggesting that a small number of birds are seasonal visitors to the island. Although this area does not include this site, it is likely to be a part of the home range of these birds.

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta.

Condition/Pressures

There are local infestations of marram along the foredune which are not being controlled, and these have expanded in size since 1989 (Beadel 1989a, Wildland Consultants 2006g, current survey).

Coast tea tree (*Leptospermum laevigatum*) is currently in its fourth year of control via helicopter spraying with Escort.

Royal fern is widespread in the wetlands, and is also being monitored and controlled by Environment Bay of Plenty. A large mature population was discovered in 2006 and controlled in early 2007. The other occurrences are scattered and generally younger plants. Environment Bay of Plenty are controlling these (Walter Stahel, Environment Bay of Plenty, pers. comm.).

Grey willow has greatly expanded at the northern end of this site and adjacent wetland sites since 1989.

Other weeds present include *Erigeron karvinskianus* blackberry, kikuyu, buffalo grass, lupin, dimorphotheca, pampas, *Banksia integrifolia*, *Yucca gloriosa*, Italian buckthorn, woolly nightshade, gorse, and radiata pine and maritime pine where these grow on foredunes. Most of these weeds are currently present in very low numbers at one or two sites only, but all are likely to increase in abundance on dunes with time.

In order to benefit northern NZ dotterel nesting, the Department of Conservation traps stoats, rats, cats and possums around the northern end of the site. Southern black-backed gulls are also controlled by DOC when high populations begin to affect the northern NZ dotterels (John Heaphy pers. comm. 2006). Panepane Point wader roost and breeding area is subject to high disturbance by anglers and surfers over summer (Owen *et al.* 2006).

Possums are inflicting heavy browsing damage to some coastal mahoe individuals. Rabbits are browsing *Coprosma acerosa* and pingao.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	H
	3.5	H
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M-H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification This very large site contains diverse, high quality, examples of sand dune and wetland vegetation which are of national significance. Several threatened plants species - *Ranunculus macropus*, *Thelypteris confluens*, *Cyclosorus interruptus*, *Pimelea arenaria*, *Desmoschoenus spiralis* (all Chronically

Threatened Gradual Decline), and many threatened birds - Australasian bittern, grey duck, brown teal, kaka (Nationally Endangered) Caspian tern, northern NZ dotterel (Nationally Vulnerable) white-fronted tern, red-billed gull (Gradual Decline), fernbird, marsh crake, spotless crake (Sparse) occur within this site, which is also a feeding and roosting ground for a range of migratory wader species. (Chronically Threatened, Serious Decline) are present.

Category

1

Notes

This site has previously been ranked as nationally significant for its high quality, representative sand dune and wetland communities (Beadel 1989a, 1990b and 1994a).

The seaward edge of Matakana barrier island is a nationally significant geological feature (Kenny and Hayward 1996).

Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000b).

References

Beadel 1989a; Beadel 1989c; Beadel 1989e; Beadel 1990b; Owen 1993; Beadel 1994a; Kenny and Hayward 1996; Owen *et al.* 2006; Wildland Consultants 2006g.

OPUREORA SPIT

Site Number	025
Grid Reference (NZMG)	E2782181 N6393090
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	8.5 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Manuka scrub and shrubland.	Wetland
Estuarine	2. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	3. Sea rush tussockland and <i>Austrostipa stipoides</i> -oioi- <i>Baumea juncea</i> -sea rush tussockland.	Intertidal flat
Terrestrial	4. Sandfield.	Dune and beach sands
Estuarine	5. Oioi-saltmarsh ribbonwood shrub-rushland ↔ sea rush tussockland and <i>Austrostipa stipoides</i> -oioi- <i>Baumea juncea</i> -sea rush tussockland. (Beadel 1992a, Current study)	Intertidal flat

Vegetation and Indigenous Flora

Vegetation types at Opureora Spit include manuka scrub and shrubland, oioi-saltmarsh ribbonwood shrub-rushland, sea rush tussockland, and *Austrostipa stipoides*-oioi-*Baumea juncea*-sea rush tussockland. The latter is a distinctive vegetation type, found only once in the Tauranga Harbour in a 1992 survey (Beadel 1994a). *Austrostipa stipoides* is regarded as regionally uncommon.

Fauna

The sandspit is a nesting area for northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable) and variable oystercatcher, and the saltmarshes are habitat for North Island fernbird (At Risk, Sparse) (Owen 1993; John Heaphy pers. comm. 2006). North Island fernbird, banded rail (dead) and spotless crane (At Risk, Sparse) were recorded in 1992 (Owen 1993). Used by waders, shags, herons, and gulls as a high tide roost site (K. Owen pers. comm. 2008).

Condition/Pressures

Owen (1993) noted rubbish dumping, stock access, vehicle access, and a range of weed species.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	M
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	M
Naturalness	3.8	H
Ecological Context	3.9	H

Criterion*	RPS Number*	Ranking**
	3.10	H
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification Opureora Spit provides important breeding habitat for one Acutely Threatened bird species, and is used by three At Risk bird species. Together with Tahunamanu Island it is of national significance. This site includes a distinctive vegetation type, *Austrostipa stipoides*-*oioi*-*Baumea juncea*-sea rush tussockland, which is not found elsewhere in the Tauranga Harbour. Other sites nearby act as protective buffers.

Category 1

Notes This site is part of the Motungaio Key Ecological Zone (Wildlands 2006g).

References Owen 1993; Beadel 1994a.

TAURANGA HARBOUR AT MOTUNGAIO ISLAND

Site Number	026
Grid Reference (NZMG)	E2782590, N6392628
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	977.0 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	Seagrass grassland (not mapped).	Intertidal and subtidal flat
Estuarine	Mangrove shrubland (not mapped).	Intertidal flat
Estuarine	Mangrove scrub (not mapped).	Intertidal flat
Estuarine	Estuary margin vegetation mosaics (not mapped).	Intertidal flat
Estuarine	Harakeke flaxland (not mapped).	Intertidal flat
Estuarine	Sea rush tussockland (not mapped).	Intertidal flat
Estuarine	Oioi rushland (not mapped).	Intertidal flat
Estuarine	<i>Schoenoplectus pungens</i> sedgeland (not mapped).	Intertidal flat
Estuarine	Oioi-saltmarsh ribbonwood shrub-rushland (not mapped).	Intertidal flat
Estuarine	Glasswort herbfield (not mapped).	Intertidal flat
Terrestrial	Sandspit vegetation (not mapped).	Sandspit
Marine	Worm field (not mapped).	Subtidal channel
Marine	Worm field (not mapped).	Intertidal flat
Marine	Cockle bed (not mapped).	Intertidal flat
Marine	Pipi bed (not mapped).	Subtidal channel
Marine	Horse mussel field (not mapped).	Subtidal channel
	(Beadel 1992a; Stephen Park, Environment Bay of Plenty, pers. comm. 2006; Wildland Consultants 2006g).	

Vegetation and Indigenous Flora

This site comprises intertidal and subtidal flats and channels between Matakana Island, Motungaio, and Rangiwaea Island. It contains extensive seagrass beds.

Fauna

Part of Tauranga Harbour, an "Outstanding" wildlife habitat (Rasch 1989a). The extensive intertidal flats are feeding grounds for wader bird species (principally bar-tailed godwit, oystercatchers, waterbirds, and sea birds), and include areas adjacent to known, major wader roosting areas.

Condition/Pressures

There are numerous impacts and detrimental impacts occurring in and around this site (Owen 1993). These include reclamation, drainage, stock grazing, rubbish dumping, adventive plants, harmful water discharges, fire, introduced mammals, and recreational activities.

Suspended sediment and nutrient runoff that decreases light levels at the seabed may have contributed significantly to a 34% reduction in the extent of seagrass beds in Tauranga Harbour between 1959 and 1996 (Park 1999).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

**Significance
Justification**

The extensive intertidal flats found around Motungaio are close to Tahunamanu Island, an important wader roost, and other smaller roosts, and function as important wader feeding areas. This site also contains significant areas of high-density sea-grass beds. Tauranga Harbour as a whole is regarded as meeting criteria to be considered a Ramsar Wetland of International Importance (Owen *et al.* 2006), and this site is a particularly high-value component of it.

Category 1

Notes This site is part of the Motungaio Key Ecological Zone (Wildlands 2006g).

References Rasch 1989a; Beadel 1992a; Owen 1993; Park 1999; Owen *et al.* 2006; Wildland Consultants 2006g.

OTAPU BAY

Site Number	027
Grid Reference (NZMG)	E2782969 N6395864
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	54.0 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Palustrine	2. Manuka scrub and shrubland (with local scattered grey willow).	Wetland
Palustrine	3. (Manuka)/ <i>Baumea teretifolia</i> / <i>Gleichenia dicarpa</i> fernland (with local scattered grey willow).	Wetland
Estuarine	4. Oioi rushland, and oioi- <i>Baumea juncea</i> rushland, and oioi-saltmarsh ribbonwood shrub-rushland, and <i>Schoenoplectus pungens</i> sedgeland, and sea rush tussockland	Intertidal flat
Estuarine	5. Searush tussockland (with small areas of oioi rushland, sandspit vegetation, and mangrove shrubland).	Intertidal flat
Estuarine	6. <i>Schoenoplectus pungens</i> sedgeland. (Beadel 1994a)	Intertidal flat

Vegetation and Indigenous Flora

This site comprises palustrine and estuarine wetlands. At the northern end of the site, in Otapu Bay, are palustrine wetlands dominated by manuka, *Baumea* spp., and *Gleichenia dicarpa* with a strip of grey willow on the western margin. Seaward of the palustrine wetlands and in the southern part of the site are estuarine wetlands of oioi, sea rush, *Baumea juncea*, saltmarsh ribbonwood, and *Schoenoplectus pungens*. *Austrostipa stipoides*, which is regarded as regionally uncommon, was observed during this study. *Tetraria capillaris*, another regionally uncommon species, is also present. A small population of wire rush is present.

Fauna

Banded rail and North Island fernbird (At Risk, Sparse) were recorded in 1992, and there were earlier reports of Australasian bittern in 1982 (Acutely Threatened, Nationally Endangered) (Owen 1993). Fernbird were heard during the current study.

Condition/Pressures

Willow, gorse, pampas and brush wattle are all invading palustrine wetlands at the northern end of the site. The estuarine wetlands are weed-free with the exception of saltwater paspalum and gorse which have established on marginal sand spits surrounding the salt marshes. The saltwater paspalum is penetrating into the salt marshes themselves, and is severely degrading this habitat. Owen (1993) noted stock access, a range of weeds, domestic rubbish dumping, and vehicle access and use.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	H
	3.5	H
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

**Significance
Justification**

Otapu Bay is a large, relatively intact, high quality, representative example of a contiguous estuarine and freshwater wetland vegetation sequence (Beadel 1994a). One Acutely Threatened species and two At Risk species of wetland birds have been recorded. Given the size and quality of habitat these populations are likely to persist. This site is part of a nationally significant, representative tract of vegetation and habitat in the Tauranga Harbour.

Category

1

Notes

This site has previously been known as 'Hunters Creek', however the name 'Otapu Bay' has been used in this study to acknowledge the name originally given to the bay by tangata whenua.

The site was ranked as nationally significant vegetation in Beadel (1994a) and as a mainly outstanding quality marshbird habitat in Owen (1993). It has also been identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

This site is part of the Motungaio Key Ecological Zone (Wildlands 2006g).

References

Owen 1993; Beadel 1994a; Beadel and Shaw 200b; Wildland Consultants 2006g.

TAURANGA HARBOUR (PART)

Site Number	028
Grid Reference (NZMG)	E2771812, N6401234
Local Authority	Western Bay of Plenty District Council and Tauranga City Council
Status	Unprotected
Site Area	3,225.4 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	<i>Baumea juncea</i> sedgeland (not mapped).	Intertidal flat
Estuarine	Harakeke/ <i>Baumea juncea</i> -oioi-saltmarsh ribbonwood sedgeland (not mapped).	Intertidal flat
Estuarine	Mangrove scrub and shrubland (not mapped).	Intertidal flat
Estuarine	Oioi rushland (not mapped).	Intertidal flat
Estuarine	<i>Schoenoplectus pungens</i> sedgeland (not mapped).	Intertidal flat
Estuarine	Sea rush tussockland (not mapped).	Intertidal flat
Estuarine	<i>Baumea juncea</i> -sea rush-oioi sedgeland (not mapped).	Intertidal flat
Estuarine	Oioi-saltmarsh ribbonwood shrub-rushland (not mapped).	Intertidal flat
Estuarine	Raupo reedland (not mapped).	Intertidal and subtidal flat
Marine	Seagrass grassland (not mapped).	Intertidal flat
Marine	Sandfield (not mapped).	Subtidal channel and
Marine	Worm field (not mapped).	intertidal flat
Marine	Cockle bed (not mapped).	Intertidal flat
Marine	Scallop bed (not mapped).	Subtidal channel
Marine	Pipi bed (not mapped).	Subtidal channel
Marine	Horse mussel field (not mapped).	Subtidal channel
	(Beadel 1992a; Stephen Park, Environment Bay of Plenty, pers. comm. 2006; Wildland Consultants 2006g)	

Vegetation and Indigenous Flora

This site comprises much of Tauranga Harbour, including estuarine vegetation on its margins. Indigenous species which are present at this site include mangrove, harakeke, *Baumea juncea*, oioi, saltmarsh ribbonwood, sea rush, raupo, and seagrass. *Tetraria capillaris*, a regionally uncommon species, occurs in freshwater wetlands at several sites around the harbour. Another regionally uncommon species, *Austrostipa stipoides*, is also present on sandspits at several sites around the harbour.

Fauna

Rasch (1989) ranks the whole harbour as a wildlife habitat of “Outstanding” value. The estuarine and marine systems support very high numbers and diversity of wading and seabird populations. It contains extensive intertidal flats which provide outstanding feeding grounds for waders (principally bar-tailed godwit, oystercatches) and waders (swan, ducks, geese). Numerous wader roosts are present, for example near the boat ramp at Pahoia Beach Road, at several sites around the Omokoroa Peninsula (Mangawai Bay sand bank), on a small sandspit at the eastern end of Rangiwaia Island, on a sandspit at the end of Kuka Road, around Motupuhi in the Waimapu Estuary, and at several sites around the fringe of Welcome Bay, for example Tye Park (Owen *et al.* 2006).

Condition/Pressures

Gross changes have been measured in the extent of intertidal mangrove and intertidal/subtidal seagrass communities around Tauranga Harbour. Increased sedimentation caused by clearance of indigenous vegetation in the harbour catchment and intensification of land-use, which raises the intertidal seabed and increases nutrient inputs, is suggested as a possible explanation for the large observed increase in the mangrove population between 1943 and 2001 (Park 2004). Sediment and nutrient runoff that decreases the amount of light reaching the seabed may have contributed significantly to a 34% reduction in the extent of seagrass beds in Tauranga Harbour between 1959 and 1996 (Park 1999). Owen (1993) identified a number of threats and detrimental impacts taking place around the harbour. These included reclamations, drainage, stock grazing, rubbish dumping, adventive plants, harmful water discharges, fire, introduced mammals, and recreation activities.

Control and eradication efforts in recent years mean that *Spartina*, a significant weed of intertidal flats, now poses potential rather than actual threats.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	H
	3.6	N/A
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification	Several parts of Tauranga Harbour have been identified separately as being of national significance (i.e. North Tauranga Harbour, Mid Tauranga Harbour, Tauranga Harbour at Motungaio Island, Waipu Bay Intertidal Flats and Te Maunga). These areas contain the best examples of seagrass beds or habitat for wader species throughout the entire harbour system. This site represents the remaining parts of Tauranga Harbour, which are assessed as being of regional significance, and includes extensive seagrass beds, wader roosts, and habitat of ecological importance.
Category	1
Notes	Tauranga Harbour as a whole is regarded as meeting the criteria to be considered a Ramsar Wetland of International Importance.
References	Rasch 1989a; Beadel 1992a; Owen 1993; Park 1999; Park 2004; Owen <i>et al.</i> 2006; Wildland Consultants 2006g.

WAIROA RIVER WETLANDS

Site Number	029
Grid Reference (NZMG)	E2783453 N6386018
Local Authority	Tauranga City Council, Western Bay of Plenty District Council
Status	Unprotected (including 3.48 ha Margaret Jackson Wildlife Management Reserve)
Site Area	33.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Oioi- <i>Baumea juncea</i> rushland.	Intertidal flat
Estuarine	2. Saltmarsh ribbonwood shrubland.	Intertidal flat
Estuarine	3. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	4. Oioi rushland.	Intertidal flat
Estuarine	5. <i>Coprosma propinqua</i> subsp. <i>propinqua</i> /oioi rushland	Intertidal flat
Estuarine	6. She-oak-wattle treeland.	Intertidal flat
Estuarine	7. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Palustrine	8. Sea rush-oioi-(pasture) tussockland.	Wetland
Palustrine	9. Manuka scrub.	Wetland
Riverine	10. <i>Baumea articulata</i> - <i>Bolboschoenus fluviatilis</i> -raupo reedland; <i>Baumea articulata</i> reedland; <i>Schoenoplectus tabernaemontani</i> reedland.	River margin
Palustrine	11. Grey willow forest.	Wetland
Palustrine	12. Raupo-oioi- <i>Baumea articulata</i> reedland.	Wetland
Terrestrial	13. Brush wattle-mamaku-ti kouka forest. (Beadel 1992a, Wildland Consultants 2005e)	Hillslope

Vegetation and Indigenous Flora

Wairoa River includes estuarine and freshwater wetlands. North of the railway bridge are estuarine wetlands dominated by oioi, sea rush, *Baumea juncea*, and saltmarsh ribbonwood. East of the railway bridge are freshwater wetlands dominated by manuka, and grey willow. Towards the southern end of the site there are wetlands of *Coprosma propinqua* subsp. *propinqua*, oioi, raupo, and *Baumea articulata*. There is also an example of brush wattle-mamaku-ti kouka forest. No rare or uncommon plant species have been recorded at this site.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail, North Island fernbird, and spotless crane (all At Risk, Sparse) were recorded in 1990 (Owen 1993). Grey duck (Acutely Threatened, Nationally Endangered), red-billed gull (Chronically Threatened, Gradual Decline) and North Island fernbird (At Risk, Sparse) have been recorded at this site within the last four years (Wildland Consultants 2002a; 2005e).

Condition/Pressures

The following weed species are present within the site in suitable habitat: smilax, she-oak, black wattle, tree privet, Chinese privet, woolly nightshade, grey willow, blackberry, brush wattle, gorse and pampas (Wildland Consultants 2005e).

Weed species which have increased in abundance and distribution at the site since 2000 include brush wattle, she-oak, and possibly black wattle. Grey willow, pampas, and tree privet are widespread in suitable habitat but there has been no detectable change in their distribution and abundance since 2000. This is probably a reflection of the fact that they were widespread in 2000 and already occupied almost all suitable habitats and micro-sites (Wildland Consultants 2005e). There is a building on the Margaret Jackson Wildlife Management Reserve site (used by whitebaiters and game hunters).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	M
	3.5	H
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Wairoa River is a site of reasonable size with a diverse range of indigenous vegetation types and is of regional significance. It contains a representative example of freshwater wetland vegetation adjacent to a river channel (Beadel 1994a). Two Acutely Threatened, one Chronically Threatened, and three At Risk bird species have been recorded at the site, several within the last four years.

Category 1

Notes This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and the vegetation was identified as being of District significance in Beadel (1994a).

Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

References Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2005e.

MATUA ESTUARY - YORKE PARK

Site Number	030
Grid Reference (NZMG)	E2785933 N6387207
Local Authority	Tauranga City Council
Status	Protected (TCC nature reserve, Matua Local Purpose Wildlife Reserve - 21.52 ha) and unprotected parts
Site Area	44.9 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Gorse-pampas-harakeke-saltmarsh ribbonwood/sea rush-oioi-mangrove tussockland.	Intertidal flat
Estuarine	2. Sea rush tussockland.	Intertidal flat
Estuarine	3. Sea rush-mangrove-oioi-saltmarsh ribbonwood tussockland.	Intertidal flat
Estuarine	4. Sea rush-oioi-mangrove tussockland.	Intertidal flat
Estuarine	5. Mangrove scrub and shrubland.	Intertidal flat
Palustrine	6. Manuka scrub.	Wetland
Terrestrial	7. Akeake-manuka-tarata-kohuhu-ti kouka-ngaio-koromiko-harakeke scrub (planted).	Flats
Estuarine	8. (Grey willow)/(manuka)/oioi-sea rush-(raupo) sedgeland.	Intertidal flat
Estuarine	9. Oioi-sea rush rushland.	Intertidal flat
Palustrine	10. Raupo reedland.	Wetland
Estuarine	11. Oioi rushland.	Intertidal flat
Palustrine	12. Japanese honeysuckle/ <i>Carex geminata</i> vineland.	Wetland
Palustrine	13. Manuka-raupo shrubland. (Beadel 1992a, Wildland Consultants 2005e)	Wetland

Vegetation and Indigenous Flora

Matua Estuary-Yorke Park is within Tauranga City and its catchment is predominantly urban. It comprises estuarine wetlands, small freshwater wetlands, and some indigenous plantings. The most abundant species are mangrove, oioi, and sea rush. No rare or uncommon plant species have been recorded.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail, and North Island fernbird (both At Risk, Sparse) were recorded in 1990 (Owen 1993).

Condition/Pressures

Owen (1993): recorded stock access, extensive reclamation and drainage works, a range of weeds, and stormwater run-off. Wildland Consultants (2005e) recorded the following weed species on site: arum lily, wild ginger, she-oak, Taiwan cherry, tradescantia, black wattle, Chinese privet, Japanese honeysuckle, grey willow, blackberry, brush wattle, gorse, and pampas.

Matua saltmarsh has been the subject of an intensive saltwater paspalum control programme.

Matua saltmarsh is the subject of a community restoration project which has carried out weed control and reduced the distribution and abundance of pampas and wild ginger (and also probably of other species). Wild ginger, gorse, and brush wattle are present on the railway embankment and on the margins of the drains, especially towards the centre of the saltmarsh. In contrast, weed control does not appear to have been undertaken in Yorke Park, and grey willow and pampas remain common (Wildland Consultants 2005e). A walkway is planned by Tauranga City Council for the northern shoreline.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

Matua Estuary-Yorke Park is a substantial site supporting a diverse range of vegetation types, including representative examples of indigenous estuarine wetlands and small examples of freshwater wetlands. A wide range of pest plants are present, but the effects of these and other pressures are being alleviated by active restoration efforts. One Acutely Threatened and two At Risk bird species have been recorded here.

Category 1

Notes

This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City and is the subject of a community-led restoration project (Wildland Consultants 2005e).

Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

References

Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2005e.

WAIMAPU ESTUARY

Site Number	031
Grid Reference (NZMG)	E2787701 N6381212
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	40.5 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Terrestrial	2. Puriri/mamaku-mahoe/kawakawa treeland.	Hillslope
Terrestrial	3. Brush wattle-mamaku-ti kouka forest.	Hillslope
Palustrine	4. Grey willow-manuka forest.	Wetland
Palustrine	5. Grey willow forest.	Wetland
Palustrine	6. Manuka scrub.	Wetland
Estuarine	7. <i>Coprosma propinqua</i> subsp. <i>propinqua</i> shrubland.	Intertidal flat
Palustrine	8. Grey willow/pampas-harakeke tussockland.	Wetland
Palustrine	9. Harakeke-pampas-raupo-gorse- <i>Coprosma propinqua</i> subsp. <i>propinqua</i> /sea rush-oioi-(saltmarsh ribbonwood)-(<i>Baumea articulata</i>) shrub-tussockland.	Wetland
Estuarine	10. Sea rush-harakeke-saltmarsh ribbonwood- <i>Coprosma propinqua</i> subsp. <i>propinqua</i> tussockland.	Intertidal flat
Estuarine	11. Sea rush-mangrove-oioi-saltmarsh ribbonwood tussockland.	Intertidal flat
Estuarine	12. Sea rush-oioi tussockland.	Intertidal flat
Estuarine	13. Oioi- <i>Baumea articulata</i> rushland.	Intertidal flat
Estuarine	14. Oioi rushland.	Intertidal flat
Estuarine	15. Oioi- <i>Baumea articulata</i> -saltmarsh ribbonwood rushland.	Intertidal flat
Estuarine	16. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	17. Arrow grass herbfield.	Intertidal flat
Estuarine	18. (<i>Coprosma propinqua</i> subsp. <i>propinqua</i>)-(manuka)/ <i>Baumea articulata</i> -mangrove-oioi-(sea rush)/arrow grass herbfield.	Intertidal flat
Palustrine	19. Grey willow/ <i>Coprosma propinqua</i> subsp. <i>propinqua</i> forest. (Beadel 1992a, Wildland Consultants 2005e)	Wetland

Vegetation and Indigenous Flora

This site is located at the southern end of Waimapu Estuary and includes the outlet of Waimapu Stream. It is dominated by saline wetlands which include mangrove, sea rush, oioi, saltmarsh ribbonwood, and arrow grass. There are also freshwater wetlands which include grey willow, harakeke, *Coprosma propinqua* subsp. *propinqua*, and raupo. There is a small area of puriri treeland on a hillside near the northern tip of the site and a high quality example of *Coprosma propinqua* subsp. *propinqua* shrubland towards the southern end of the site. One regionally uncommon species is present -

Tetraria capillaris.

Fauna Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1990 (Owen 1993), and North Island fernbird (At Risk, Sparse) was recorded in 2002 and 2005 (Wildland Consultants 2002a and 2005e). White-fronted tern (Chronically Threatened, Gradual Decline) and several common coastal bird species were also recorded at the site in 2002 (Wildland Consultants 2002a).

Condition/Pressures The following weed species are currently present within the site: arum lily, wild ginger, Taiwan cherry, tree privet, Chinese privet, Japanese honeysuckle, woolly nightshade, grey willow, blackberry, brush wattle, gorse and pampas. (Wildland Consultants 2005e)

The abundance and distribution of brush wattle and Japanese honeysuckle increased between 2000 and 2005. No change was detected in the abundance and distribution of grey willow, tree privet, and pampas (Wildland Consultants 2005e).

The following activities have impacted on the site: dumping of organic waste has had a minor negative impact, drainage has had a moderate minor negative impact and weed control has had a minor positive impact (Wildland Consultants 2005e).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification Waimapu Estuary is a relatively large site which comprises a representative example of the estuarine and freshwater vegetation in Tauranga Ecological District. It contains the best example of coastal *Coprosma propinqua* subsp. *propinqua* shrubland in the Bay of Plenty.

Category 1

Notes

This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

References

Owen 1993; Beadel and Shaw 2000; Wildland Consultants 2002a and 2005e.

WAIKAREAO ESTUARY 1

Site Number	032
Grid Reference (NZMG)	E2787878 N6386652
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	43.0 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Palustrine	2. Grey willow-manuka-(ti kouka)/raupo-pampas treeland.	Wetland
Palustrine	3. <i>Coprosma propinqua</i> subsp. <i>propinqua</i> -manuka-pampas shrubland.	Wetland
Estuarine	4. Mangrove scrub and shrubland.	Intertidal flat
Terrestrial	5. Mamaku-tarata-Taiwan cherry-kohuhu-titoki-karaka-makomako scrub.	Hillslope
Estuarine	6. Saltmarsh ribbonwood/oioi-sea rush rushland.	Intertidal flat
Palustrine	7. Manuka/oioi-sea rush-saltmarsh ribbonwood rushland. (Beadel 1994c, Wildland Consultants 2005e)	Wetland

Vegetation and Indigenous Flora

Waikareao Estuary 1 is within Tauranga City and surrounded by urban development. To the south, it is adjacent to Waikareao Estuary 2. Waikareao Estuary 1 comprises saline wetlands and freshwater wetlands on the northwestern side of Waikareao Estuary. The freshwater wetlands are dominated by grey willow. At the north of the site there is a hillside of mixed indigenous-exotic scrub. Regionally uncommon species present include *Olearia solandri*, *Austrostipa stipoides*, *Tetraria capillaris*, and *Gahnia xanthocarpa* (Beadel 1994).

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1990 (Owen 1993), and North Island fernbird was recorded in 2002 and 2005 (Wildland Consultants 2002a; 2005e). Waders roost along the saltmarsh edges, especially on neap tides (Owen *et al.* 2006).

Condition/Pressures

The following weed species are present within the site: plectranthus, reed sweetgrass, ladder fern, climbing asparagus, silver poplar, arum lily, wild ginger, moth plant, she-oak, Taiwan cherry, tradescantia, black wattle, tree privet, Chinese privet, grey willow, brush wattle, gorse and pampas (Wildland Consultants 2005e).

In this site the distribution of wild ginger and tradescantia has increased over recent years. Grey willow and Taiwan cherry remain abundant and widespread, and are canopy dominants on the northern, landward, side of the site. Invasive weeds present on the margin of the wetland and at the base of the hillslope include pampas, Japanese honeysuckle, ladder fern, Chinese privet, arum lily, and reed sweetgrass (Wildland Consultants 2005e).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This is a substantial, relatively compact site with diverse indigenous vegetation. The large number of weed species present probably reflects its urban setting, as do the impacts of direct human activity. There are current records of two At Risk bird species at this site.

Category 1

Notes This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and the vegetation was identified as being of District significance in Beadel (1994a).

Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

References Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2002a; Wildland Consultants 2005e; Owen *et al.* 2006.

MAUAO 1

Site Number 033
Grid Reference (NZMG) E2790133 N6391728
Local Authority Tauranga City Council
Status Returned to iwi as part of Treaty Claim but still “managed” by TCC.
Site Area 39.3 ha
Altitudinal Range 0-120 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest and treeland.	Very steep hill
Terrestrial	2. Pohutukawa-rewarewa treeland	Very steep hill
Terrestrial	3. Akeake-manuka-tarata-kohuhu-ti kouka-ngaio-koromiko-harakeke scrub.	Very steep hill
Terrestrial	4. Ngaio scrub.	Very steep hill
Terrestrial	5. (Pohutukawa)-(rewarewa)/mamaku-mahoe treefernland.	Very steep hill
Terrestrial	6. Gorse-manuka-Spanish heath-pampas scrub	Very steep hill
Terrestrial	7. Gorse-Spanish heath-pampas-bracken-smilax scrub	Very steep hill
Terrestrial	8. Mapou-mingimingi-mahoe-karamu scrub.	Very steep hill
Terrestrial	9. Pohutukawa/gorse-pampas scrub.	Very steep hill
Terrestrial	10. (Pohutukawa)-(kanuka)-(rewarewa)-(totara)/mahoe-whauwhaupaku-manuka-karamu-hawthorn-mingimingi scrub.	Very steep hill
Terrestrial	11. Mahoe-mingimingi-hangehange-karamu-scrub.	Very steep hill
Terrestrial	12. Manuka-kanuka-mingimingi-(pohutukawa) scrub.	Very steep hill
Terrestrial	13. Pohutukawa/mingimingi-akepiro-hangehange scrub.	Very steep hill
Terrestrial	14. Totara-mahoe-hawthorn scrub.	Very steep hill
Terrestrial	15. Gorse-pampas tussock-shrubland.	Very steep hill
Terrestrial	16. Whau-karamu-ngaio-(tarata)-(manuka)-(pohutukawa)-(taupata)/kikuyu grass-cocksfoot shrubland.	Very steep hill
Terrestrial	17. Pampas/gorse-Spanish heath-manuka-harakeke/exotic grasses shrubland rockland.	Very steep hill
Terrestrial	18. Mamaku-brush wattle-(Taiwan cherry)-(mahoe)-(hawthorn) treefernland.	Very steep hill
Terrestrial	19. Pohutukawa/mahoe-mingimingi-hawthorn-kawakawa-gorse shrubland.	Very steep hill
Terrestrial	20. Manuka-harakeke-ngaio-pohutukawa/exotic grasses shrubland.	Very steep hill
Terrestrial	21. Pohutukawa/bracken fernland.	Very steep hill
Terrestrial	22. Manuka/cocksfoot-paspalum-bidibid grassland	Very steep hill
Terrestrial	23. Manuka-(pohutukawa)-(akeake)-(mingimingi) shrubland	Very steep hill

(Wildland Consultants 2005e)

Vegetation and Indigenous Flora

Mauao 1 includes most of the non-pasture vegetation on Mauao (the remainder is within site Mauao 2). The lower slopes of this site include pohutkawa forest and treeland, and there are smaller examples of these vegetation types on the upper slopes of the site. The remainder of the site comprises predominantly secondary indigenous vegetation, some of which has a relatively high component of exotic species. This is especially true of the north-facing slopes where pampas, gorse, and Spanish heath are common. Also on the northern slopes, there are areas of planted indigenous scrub, some of which has been established in the wake of recent fires.

One nationally threatened species is present on Mauao - *Pimelea tomentosa*. Several regionally uncommon species present include *Schoenus apogon*, *Psilotum nudum*, *Lepidosperma laterale*, *Rytidosperma unarede*, *Trisetum arduanum*, *Astelia banksii*, *Tetraria capillaris*, *Zoysia pauciflora*, and *Oxalis rubens*.

Other species with a limited distribution in Tauranga Ecological District are present on Mauao. Of special note is mangemange (*Lygodium articulatum*) (Beadel 2004).

Other threatened or local species which have been recorded from Mauao, or near Mauao, in the past are *Lepidium oleraceum*, *Atriplex hollowayi*, *Vittadinia australis*, *Paspalum orbiculare*, *Wahlenbergia littoricola* subsp. *vericosa*. Reintroduction of these species could be considered in the future if suitable habitat can be created/maintained.

Fauna

Northern little blue penguins (Chronically Threatened, Gradual Decline) breed in good numbers on the Mauao coast (OSNZ 2006). Shore skinks are present but at low abundance (John Heaphy pers. comm. 2006).

There is a mainland grey-faced petrel (*Pterodroma macroptera*) breeding colony of about 200 pairs on Mauao which is monitored by members of OSNZ since 1989 with DOC assistance. From a high point of around 36 chicks fledging per season in 1999-2002, there has been a dramatic decline due to pest impacts, with no fledged chicks in the 2005-2006 breeding season (Cuming 2006) but has since recovered to produce further chicks this season (K. Owen pers. comm.).

The land snail *Succinea archeyi* (Chronically Threatened, Serious Decline) is a rare inhabitant of these foreshore dunes (Powell 1933).

Condition/Pressures

The following weed species are present within the site: boneseed, mignonette (Madeira vine), climbing asparagus, smilax, evergreen buckthorn, wild ginger, *Pinus* spp., tree privet, Japanese honeysuckle, woolly nightshade, brush wattle, gorse and pampas (Wildland Consultants 2005e).

Tauranga City Council is restoring and monitoring the vegetation on Mauao (Wildland Consultants 2004d and 2005e). Since 2000 weed control has reduced the distribution and/or abundance of wild ginger, pampas, gorse, and boneseed. Pampas and gorse remain widespread but are less dominant than they were in 2000. Other invasive species that have not been controlled include climbing asparagus, Japanese honeysuckle, smilax, wild ginger, evergreen buckthorn, mignonette vine, blue morning glory, Spanish heath and loquat (Wildland Consultants 2005e).

The following activities/mechanisms cause negative impacts: recreation

(tracks) and track erosion, weeds, animal pests, and blasting to remove rocks has caused damage to vegetation downslope of the rock faces.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	M
	3.5	M
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification

This site encompasses a large portion of the eroded Mauao (Mt Maunganui) rhyolite dome, which is a nationally important geological feature (Kenny and Hayward 1996), and includes good examples of remnant pohutukawa forest and secondary mixed forest on volcanic hard coast. Pohutukawa forest was once common in Tauranga Ecological District, but has now been greatly reduced in extent and only small areas remain (for example Mauao, Kauri Point, Ngakautuakina Point, Matakana Point, Tuapiro, Bowentown Heads, Motuhoa Island). Significant pressure exerted by weeds and fire are being actively managed. In addition the site is habitat for a Chronically Threatened bird species (little blue penguin), and notable for being one of a few mainland breeding sites of grey-faced petrel in the Bay of Plenty Region.

Category 1

Notes This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

Mauao has high historic, archaeological, and heritage values. This site has considerable potential as an ecological restoration site (see Wildland Consultants 2004a).

The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority (Wildland Consultants 2007c and 2007d).

References

Kenny and Hayward 1996; Beadel and Shaw 2000; Wildland Consultants 2004a and 2005e; OSNZ 2006; Beadel 1994a; Bibby *et al.* 1999; Cuming 2006.

WAIPU BAY INTERTIDAL FLATS

Site Number	034
Grid Reference (NZMG)	E2791846 N6385791
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	216.2 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Unvegetated sediment and seagrass grassland. (Beadel 1992a; Park 1999)	Intertidal and subtidal flat

Vegetation and Indigenous Flora This site includes extensive seagrass beds and unvegetated intertidal flats and subtidal channels.

Fauna Part of Tauranga Harbour “Outstanding” Wildlife Habitat (Rasch 1989a). This site is an important feeding area and high tide roost for large numbers (i.e. thousands) of international migratory wader species, for example pied oystercatcher, variable oystercatcher, bar-tailed godwit, lessor or red knot, turnstones, and national migrants banded dotterel. The Maheka Point roost is largely used as a neap tide roost whereas the grassy areas of nearby Tauranga Airport are essential for both spring and neap tide roosting waders in the southern third of the harbour. The usage of this roost has increased substantially since Sulphur Point was fully developed as a port area (John Heaphy, Brian Chudleigh pers. comm. 2006; K. Owen *et al.* 2006).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	National
Significance Justification	This site is of national significance as a feeding area and roosting habitat for a large number and diversity of international migratory wader species. It also contains significant beds of seagrass.
Category	1
Notes	This site is part of the Waipu Bay Key Ecological Zone (Wildlands 2006g).
References	Rasch 1989a; Park 1999; Brian Chudleigh (OSNZ) pers. comm. 2006; John Heaphy (DOC) pers. comm.; Owen <i>et al.</i> 2006.

MOTUOTAU ISLAND

Site Number	035
Grid Reference (NZMG)	E2792105 N6391820
Local Authority	Tauranga City Council
Status	Protected (DOC Motuotau Island Scenic Reserve)
Site Area	2.1 ha
Altitudinal Range	0-40 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest. (Wildland Consultants 2005e)	Marine island

Vegetation and Indigenous Flora

Motuotau is located approximately 800 m offshore of Mount Maunganui beach. The canopy is dense pohutukawa. Coastal mahoe, which is regionally uncommon in the Bay of Plenty, is present on Motuotau (Wildland Consultants 2000a). Two other regionally uncommon species are also present - *Asplenium flaccidum* subsp. *haurakiense* (NZFRI 19141; collected by Bruce Clarkson in 1990) and *Einadia trigonos* subsp. *trigonos*. A small population of parapara is present and regenerating on the island, planted in the early 1990s, with seed sourced from nearby Karewa Island.

Fauna

Reef herons (*Egretta sacra*) (Acutely Threatened, Nationally Vulnerable) are known to feed around this island and also nest here. The outlying rocks are nesting sites for red-billed gulls (Chronically Threatened, Gradual Decline). There are also grey-faced petrel and common diving petrel nesting colonies here (John Heaphy pers. comm. 2006, K. Owen pers comm.).

Condition/Pressures

Infestations of ivy, banana passionfruit, *Asparagus* sp., woolly nightshade, and wild ginger were recorded in 1992, Small infestations of boxthorn are present. These, and a range of other weed species, are currently either eradicated or subject to ongoing control by DOC.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	L
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	L
	3.10	H

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	H
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification This site is a good quality example of indigenous vegetation/habitat that is under-represented nationally (i.e. coastal pohutukawa forest) and that is representative of the ecological character of the Region.

Motuotau is a representative example of a forest type which has been greatly reduced in extent throughout its natural range, and which typifies a major component of the ecological character of the Bay of Plenty coastal environment. A range of pest plant species with the potential to alter the natural character of the site are present and are being controlled. Motuotau is habitat of a regionally uncommon plant species, and breeding habitat for one Acutely Threatened and one Chronically Threatened bird species.

Category 1

Notes This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority (Wildland Consultants 2007c and 2007d).

References Beadel and Shaw 2000; Wildland Consultants 2005e; Wildland Consultants 2000a.

TE MAUNGA

Site Number 036
Grid Reference (NZMG) E2794834 N6384048
Local Authority Tauranga City Council
Status Unprotected
Site Area 97.8 ha
Altitudinal Range 0 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Seagrass grassland and unvegetated intertidal flats. (Park 1999)	Intertidal and subtidal flats and channels.

Vegetation and Indigenous Flora This site comprises intertidal flats and subtidal channels. Much of the area is unvegetated, though there are patches of seagrass. No rare or uncommon plant species have been recorded at this site.

Fauna This area, adjacent to the sewage works at Te Maunga, is one of the major wading bird feeding areas in Rangataua Bay, especially a sandbank near Otumarua Point and the margins of Te Maunga sewage ponds (K. Owen pers. obs.). Birds roost on the adjacent Te Maunga oxidation pond embankments over high tide.

Condition/Pressures Unknown.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

This is a relatively large and compact site, containing significant areas of seagrass beds. The main significance of this site lies in its function as feeding grounds for international and New Zealand migrant waders species.

Category

1

References

Park 1999; Owen *et al.* 2006.

WAITAO STREAM

Site Number	037
Grid Reference (NZMG)	E2795259 N6382566
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	48.9 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Palustrine	2. Ti kouka/grey willow-manuka forest.	Wetland
Estuarine/Palustrine	3. Manuka scrub.	Intertidal flat, wetland
Estuarine	4. Mangrove shrubland and loamfield.	Intertidal flat
Estuarine	5. Sea rush tussockland.	Intertidal flat
Estuarine	6. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	7. Oioi-sea rush rushland.	Intertidal flat
Estuarine	8. <i>Bolboschoenus fluviatilis</i> reedland.	Intertidal flat
Estuarine	9. Sea rush-oioi-mangrove tussockland.	Intertidal flat
	(Beadel 1992a, Wildland Consultants 2005e)	

Vegetation and Indigenous Flora

This site is located at the mouth of the Waitao Stream in the Rangataua Estuary of Tauranga Harbour. Much of the site comprises saline wetlands of sea rush, oioi, and mangrove. Towards the northern end of the site there is a freshwater wetland of ti kouka/grey willow-manuka forest. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail and North Island fernbird (At Risk, Sparse) were recorded in 1990 (Owen 1993) and in 2002 (Wildland Consultants 2002a).

Condition/Pressures

Stock access; drainage works; *Spartina* and other weeds were present in 1990 (Owen 1993). Weeds that were recorded in 2005 include banana passionfruit, moth plant, she-oak, black wattle, *Pinus* spp., woolly nightshade, grey willow, blackberry, brush wattle, gorse and pampas (Wildland Consultants 2005e). Pampas is present on the margins of the site and on raised areas, such as where spoil from drains has been dumped. Grey willow is common in one vegetation type and pines are common. She-oak is established in the sea rush tussockland (Wildland Consultants 2005e).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	M

Criterion*	RPS Number*	Ranking**
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Waitao Stream is a substantial site, with a diverse range of vegetation types that are representative of the Tauranga Ecological District. It is also valuable as a protective buffer to the nationally significant Te Maunga wader roost. Several recent surveys have recorded two At Risk bird species.

Category 1

Notes Ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e). Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000). Iwi and NIWA are working to restore the Waitao River. This site forms the eastern/western edge of the 'Otago' Corridor (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d).

References Owen 1993; Beadel and Shaw 2000; Wildland Consultants 2002a and 2005e.

OTIRA SAND DUNES

Site Number	038
Grid Reference (NZMG)	E2797575, N6385566
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	66.7 ha
Altitudinal Range	0-2 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Spinifex sandfield.	Incipient foredune
Terrestrial	2. Pingao-spinifex sandfield.	Incipient foredune
Terrestrial	3. Spinifex-pingao/ <i>Calystegia soldanella</i> grassland.	Incipient and established foredune
Terrestrial	4. <i>Ficinia nodosa</i> /pohuehue- <i>Carex testacea</i> - <i>Calystegia soldanella</i> sedgeland.	Established foredune and transgressing dunefield
Terrestrial	5. Kikuyu-pohuehue grassland.	Transgressing dunefield
Terrestrial	6. <i>Ficinia nodosa</i> /pohuehue-bracken-cocksfoot sedgeland with scattered pampas	Established foredune and transgressing dunefield
Terrestrial	7. Bracken- <i>Ficinia nodosa</i> -pohuehue fernland.	Transgressing dunefield
Terrestrial	8. Periwinkle vineland.	Transgressing dunefield
Terrestrial	9. <i>Banksia integrifolia</i> -lupin/ <u>knot-root bristle-grass</u> /ice plant grassland.	Transgressing dunefield
Terrestrial	10. Sandfield.	Beach sand.

(Current study)

Vegetation and Indigenous Flora

Otira Sand Dunes include two large dune complexes linked by foredune vegetation in front of the two areas of residential housing which are established on the site of a transgressive dunefield. The larger areas contain a sequence of large stabilised dunes from broad incipient foredunes bearing spinifex and pingao (Chronically Threatened, Gradual Decline) through the leeward face and swale of established foredune bearing *Carex testacea* and onto the transgressive dunefield which is clothed in a dense mat of pohuehue and *Ficinia nodosa*, with bracken increasing in abundance as distance from the shoreline increases.

The dune system is relatively stable, with the exception of several large blowouts, possibly the result of human-induced reduction of vegetative cover associated with unofficial walking tracks, are present.

Shore spurge had been planted by Coast Care (Wildland Consultants 2005e) but was not observed during this study. Eight plants of sand pimelea (Chronically Threatened, Gradual Decline) are present just behind crest of established foredune. This is apparently the first record of sand pimelea on the Otira dunes, although a population is known approximately 4 kilometres further south in the Papamoa dunes (Beadel 1992). Only two populations of sand pimelea were known for the ecological district in 1993, from Papamoa and Matakana (Tait 1993). Pimelea was recorded at Bowentown in 1983, but may now have gone from that site. *Ozothamnus leptophyllus* also occurs at this locality. Pingao (Chronically Threatened, Gradual Decline) is widespread

as scattered individuals along the incipient foredune. *Oxalis rubens* and *Zoysia pauciflora* (both regionally uncommon plant species, as per Beadel 2006b) are present.

Fauna

There are scattered populations of katipo spider (*Latrodectus katipo*) (Chronically Threatened, Serious Decline) within the dunes (B. Christensen pers. comm.).

New Zealand pipit and variable oystercatcher were recorded at this site during the current study. Variable oystercatcher feed along the beach. *Succinea archeyi* (Chronically Threatened, Serious Decline) have been reported at this site in the past.

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta. Of indigenous vertebrates, only shore skink is likely to occur.

Condition/Pressures

Detailed weed distribution maps were produced for this site in summer 2002, and formed the basis for a Tauranga City Council 10 year environmental weed management plan (Wildland Consultants 2002b).

Weed species present include *Agapanthus praecox*, *Banksia integrifolia*, blackberry, black wattle, brush wattle, Cape ivy, Chinese privet, climbing dock, evergreen buckthorn, gorse, Japanese spindle tree, kikuyu, lupin, marram, moth plant, pampas, periwinkle, smilax, South African ice plant, tradescantia, and ladder fern.

A 2005 study did not detect any change in weed abundance and distribution between 2000 and 2005 (Wildland Consultants 2005e). In part this may be because weeds are scattered throughout the site at relatively low densities, and it would take a large change for any variation to be detected in the abundance and distribution scores. Exotic grasses are present throughout the site but are more common towards its western end. Lupins are scattered on the foredune. This species has a potentially high negative impact because it is a nitrogen-fixer, which alters the nutrient status of the substrate and may create habitat suitable for other adventive species, however its numbers are kept low by a fungal pathogen that has been present in the lupin population since the 1980s (Wildland Consultants 2005e).

The following activities impacted on the site during the period of 2000-2005: pedestrian and vehicle tracks, dumping of organic and inorganic waste has had a minor negative impact and animal pest and weed control has had a minor positive impact on the site (Wildland Consultants 2005e).

Parts of the site are bounded by residential housing on the foredune, and the gardens of some of these properties are encroaching into the site, resulting in indigenous vegetation being damaged and/or replaced by exotic species.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M or H?
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	H
	3.5	M
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

A relatively good quality large example of indigenous vegetation or habitat for indigenous species which is representative of the ecological character of the Region, and which is a nationally uncommon habitat. Pingao and sand pimelea present, and planted shore spurge (all Chronically Threatened, Gradual Decline).

The Otira Sand Dunes site comprises a much wider strip of representative sand dune vegetation type than the adjacent Shark Alley dunes. Accordingly it has greater resilience and buffering from encroaching human impacts, and this is reflected in the condition of its natural character. Incipient weed invasion along much of the inland margin, and in places within the dune system itself. Large expanse of dunes in some areas.

This site is notable for the existence of scattered populations of the black katipo (Chronically Threatened, Serious Decline).

Category 1

Notes

This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000b).

Survey for native lizards and butterflies is recommended.

References

Beadel 1995b; Beadel and Shaw 2000b; Wildland Consultants 2002b; Wildland Consultants 2005e; current study.

RAPARAPAHOE STREAM

Site Number	039
Grid Reference (NZMG)	E2800021, N6371008
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant No. 7406), part unprotected.
Site Area	113.6 ha (80.6 ha Tauranga ED, 33.0 ha Otanewainuku ED)
Altitudinal Range	20-120 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-kanuka-kamahi-tawa-(radiata pine)-(<i>Eucalyptus</i> sp.)-(silver wattle)/ mamaku forest with local pukatea and mangeao.	Gully
Terrestrial	2. Radiata pine/mamaku-mahoe forest ↔ <u>kanuka</u> / mamaku-mahoe forest.	Gully
Terrestrial	3. (Black wattle)/ <u>mamaku</u> -mahoe-brush wattle-(tree privet) forest.	Gully
Terrestrial	4. Radiata pine-black wattle/ <u>mamaku</u> -kanuka-mahoe-whauwhaupaku-(<i>Muehlenbeckia australis</i>) forest.	Gully
	(Current study)	

Vegetation and Indigenous Flora

This site occupies the gullies in the mid-section of the Raparapahoe Stream and two of its tributaries, Waikokoi and Kirikiri Streams. The quality of indigenous vegetation varies significantly throughout the site, generally being less modified at the southern, upstream end and more modified downstream. Vegetation Type 1 has a diverse canopy, dominated by rewarewa, kanuka and kamahi in most parts, with tawa becoming dominant in the gully bottom near the stream. Pukatea is scattered throughout the gully bottom, and radiata pine and *Eucalyptus* sp. are common at the upper gully edges which bound orchards. Whau, kohuhu, pate, rangiora, karamu, mahoe, makomako, kawakawa, kotukutuku, porokaiwhiri, whauwhaupaku and ponga are scattered throughout, and mangeao occurs locally. Kingfern (Chronically Threatened, Serious Decline) is present at the upstream end of Vegetation Type 1. Steep banks and cliffs are vegetated with kiokio, *Machaerina sinclairii*, and *Metrosideros perforata*. Other indigenous species present at the site include *Pomaderris* aff. *phylicifolia*, *Morelotia affinis*, *Metrosideros fulgens*, *Dryomanthus adversus*, *Lycopodium deutoerodensum*, mingimingi and turutu.

One plant of *Peperomia tetraphylla* (At Risk, Sparse) has been observed growing as an epiphyte within the site (Hobbs 2001). *Tupeia antarctica* (Chronically Threatened, Gradual Decline) occurs within Otanewainuku ED (in RAP 40 'Raparapahoe Stream'; P. Cashmore pers. comm. as cited in Beadel 2006) and may also be present at this site.

Fauna

Pukeko, silvereye, bellbird, welcome swallow, house sparrow and eastern rosella were observed at this site during the current study. Kereru (Chronically Threatened, Gradual Decline) are likely to be present at this site, at least seasonally. Sulphur crested cockatoo are also known to frequent the site (Mr. Fraser pers. comm. 2008). North Island kaka (Acutely Threatened,

Nationally Endangered) have been known to utilise habitat in Raparapahoe Stream, and North Island brown kiwi (Chronically Threatened, Serious Decline) were recorded in the nearby Ottawa Scenic Reserve in the 1980s, although it is not known if they are still present (Beadel 2006, Wildland Consultants 2007c). North Island brown kiwi were present in the Raparapahoe catchment upstream of this site during the 1980s (R. Fraser pers. comm. 2008), and may still be present.

Hochstetter's frog (At Risk, Sparse) have been recorded in the nearby Ottawa Scenic Reserve as recently as 2002 (DOC 2008a) and may utilise habitat in Raparapahoe Stream.

Short-finned eel, banded kōkopu, and inanga have been recorded in Raparapahoe Stream (Wildland Consultants 2007c). Rainbow trout were noted in the river during the current study. Northern koura (Chronically Threatened, Gradual Decline) are known to inhabit the stream (Mr Fraser pers. comm. 2008).

Other species which have been recorded from the Raparapahoe catchment include long-finned eel (Chronically Threatened, Gradual Decline), lamprey (At Risk, Sparse), torrentfish, kōaro, common bully, redbfin bully and common smelt (Wildlands 2007c).

Condition/Pressures

Pest plants are a problem in most parts of the site. Pest plants found along the stream edge include wild ginger, montbretia, Japanese honeysuckle, climbing dock, gorse, blackberry, *Selaginella*, Jerusalem artichoke, tradescantia and walnut. Other problem species include black wattle, silver wattle, brush wattle and green wattle, madiera vine, wild kiwifruit, Himalayan fairy grass, buddleia, pampas and ivy. The gully contains some areas of pine plantation, and in its lower parts the site is split by kiwifruit orchards on the stream terrace. The upper edges of the gullies generally bound kiwifruit orchards, and are likely to suffer pressures from dumping of organic and inorganic waste, sources of new weed infestations, and local ground disturbance.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	L
	3.5	M
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	<p>Raparapahoe Stream is one of the largest forested sites in the ecological district. It contains semi-coastal forest of excellent quality, although parts of the site have been heavily modified by weeds. The site forms part of a corridor of natural vegetation extending down Raparapahoe Stream from nearby areas of more extensive natural forests in the neighbouring ecological district (Otanewainuku).</p> <p>The site contains one of the few populations in the ecological district of a Chronically Threatened plant species - king fern. It provides habitat for one At Risk plant species (<i>Peperomia tetraphylla</i>). The forest improves the habitat of two Chronically Threatened freshwater animals (long-finned eel and northern koura) which are present within the stream.</p> <p>At least one Chronically Threatened bird species (kereru) is very likely to use the site at least occasionally, and it is potentially habitat for other threatened species (North Island kaka, Acutely Threatened; NI brown kiwi and <i>Tupeia antarctica</i>, Chronically Threatened; Hochstetter's frog, At Risk).</p>
Category	1 - This site is the largest and best quality example of semi-coastal forest in a gully in the higher terraces of Tauranga ED.
Notes	<p>This site is part of SmartGrowth Corridor No. 1, 'Raparapahoe', ranked as being second priority Level 3 (Wildland Consultants 2007c and 2007d). It is also included in Otanewainuku RAP 40 'Raparapahoe Stream' (Category 3; Beadel 2006). The upper reaches of the Raparapahoe Stream, and Waikoki Stream, form SES Site U14/28 (WBOP District Plan).</p> <p>Part of Raparapahoe Stream natural area is outside Tauranga Ecological District.</p>
References	Beadel 2006; Hobbs 2001; Wildland Consultants 2007c and 2007d; DOC 2008a; WBOP District Plan; P. Cashmore pers. comm. as cited in Beadel 2006; Mr Fraser pers. comm. 2008; R. Fraser pers. comm. 2008; Current study.

PAPAMOA SAND DUNES

Site Number	040
Grid Reference (NZMG)	E2801791, N6383328
Local Authority	Tauranga City Council
Status	Protected (TCC reserve - Papamoa Beach Reserve 2)
Site Area	65.6 ha
Altitudinal Range	0-2 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Spinifex-pingao-/ <i>Calystegia soldanella</i> grassland	Incipient foredune
Terrestrial	2. Spinifex-pingao-lupin/ <i>Calystegia soldanella</i> grassland.	Incipient and established foredune
Terrestrial	3. <i>Ficinia nodosa</i> / <i>Carex testacea</i> -pohuehue-cocksfoot- <i>Calystegia soldanella</i> sedgeland.	Established foredune and transgressive dunefield
Terrestrial	4. <i>Ficinia nodosa</i> -bracken/pohuehue sedgeland.	Transgressive dunefield
Terrestrial	5. <i>Ficinia nodosa</i> -bracken/pohuehue fern-vineland.	Transgressive dunefield
Terrestrial	6. <i>Ficinia nodosa</i> /pohuehue-bracken-cocksfoot- <i>Festuca rubra</i> grassland.	Transgressive dunefield
Terrestrial	7. Kikuyu-pohuehue vineland.	Transgressive dunefield
Terrestrial	8. Sandfield (Current study)	Beach sand

Vegetation and Indigenous Flora

Papmoa sand dunes are a single large dune complex containing a sequence of large stabilised dunes from broad incipient foredunes bearing spinifex and pingao (Chronically Threatened, Gradual decline) through leeward face and swale of established foredune bearing *Carex testacea* and onto the well vegetated transgressive dunefield which bears a dense mat of pohuehue and *Ficinia nodosa*, with bracken increasing in abundance as distance from the shoreline increases. The dune system is relatively stable, with the exception of several large blowouts, possibly the result of human-induced reduction of vegetative cover associated with unofficial walking tracks, are present. Pingao, sand tussock (hinarepe), and sand pimelea (all in Chronically Threatened, Gradual Decline) were recorded within the site in 2000, 2002 and 2005 (Wildland Consultants 2005e). *Coprosma acerosa* was observed within the site during the current study, but sand tussock and sand pimelea were not. The sand tussock population comprised one plant in 1993 (Tait 1993), and the sand pimelea population comprises only two patches, 4 × 4 m, and 1.2 × 0.9 m approximately 3 m apart (Wildland Consultants 2005e). *Oxalis rubens* and *Zoysia pauciflora* (both regionally uncommon plant species, as per Beadel 2006b) are present on dunes.

Fauna

NZ pipit and variable oystercatcher are present. Variable oystercatcher feed and roost along the beach. This site has scattered populations of the black katipo spider (Chronically Threatened, Serious Decline) (Brendon Christensen pers. comm.).

Succinea archeyi (land snail; Acutely Threatened, Serious Decline) have been reported in the past, and may still be present today. Native lizards and butterflies are likely to be present.

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta. Of indigenous vertebrates, only shore skink is likely to occur.

Condition/Pressures Detailed weed distribution maps were produced for this site in summer 2002, and formed the basis for a Tauranga City Council 10 year environmental weed management plan (Wildland Consultants 2002b).

Weed species present include *Agapanthus praecox*, blackberry, black wattle, Chinese privet, climbing dock, evergreen buckthorn, German ivy, Japanese honeysuckle, Japanese spindle tree, kikuyu, lupin, pampas marram, periwinkle, silver poplar, smilax, South African ice plant, Taiwan cherry, tradescantia, and ladder fern.

A 2005 study found that the abundance and distribution of pampas and Japanese spindle tree had decreased, and that climbing dock may have increased in this site between 2000 and 2005. There is a wide variety of exotic species within the parts of the site that are adjacent to the road including Norfolk pine, freesia, cape spurge and nasturtium (Wildland Consultants 2005e).

The following activities impacted on the site during the period of 2000-2008. Pedestrian and vehicle tracks and dumping of organic waste have had a moderate negative impact; the dumping of inorganic waste has had a minor negative impact and planting has had a minor positive impact on the site (Wildland Consultants 2005e, this study).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	H
	3.5	M
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.
 ** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	<p>A relatively large, good quality, diverse example of sand dune vegetation of the Bay of Plenty. Two chronically threatened plant species are present.</p> <p>The Papamoia Sand Dunes site comprises a relatively wide strip of representative sand dune vegetation. Accordingly it has greater resilience and buffering from encroaching human impacts, and this is reflected in the condition of its natural character. One of the few sites for natural populations of sand tussock (hinarepe) in the western Bay of Plenty.</p> <p>This site is notable for the existence of scattered populations of the black katipo, (Chronically Threatened, Serious Decline) (B. Christensen pers. comm.).</p>
Category	1
Notes	<p>This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000b).</p> <p>A survey for native lizards and butterflies is recommended.</p>
References	Beadel 1995b; Beadel and Shaw 2000b; Wildland Consultants 2002b; Wildland Consultants 2005e.

KAITUNA KAHIKATEA STANDS

Site Number	041
Grid Reference (NZMG)	E2805346, N6375292
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	2.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. <u>Kahikatea</u> -pukatea/ti kouka/(Chinese privet) forest. (Current study)	Alluvial plains

Vegetation and Indigenous Flora These two small remnant stands of forest are dominated by kahikatea, with occasional pukatea. *Metrosideros perforata* is also present in the canopy. The open understorey includes thistles and exotic grasses, with Chinese privet common in places. Ti kouka and Chinese privet are abundant around the forest edges.

Fauna Yellowhammer, pukeko, and Australasian harrier were observed at this site during the current study.

Condition/Pressures These stands are surrounded by a mixture of dairy farms or maize crops.

The larger (southern) stand of forest is fenced, but appears to be grazed at times, having a highly modified, open understorey. Chinese privet, a pest plant, is common in the understorey and will remain at the site unless controlled. The canopy is in fairly good condition.

The canopy of the smaller stand is relatively open and, although the stand was not entered during field work, the understorey of this stand is also likely to be in poor condition.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	M
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is locally significant because it contains one of only two remaining examples of kahikatea forest on alluvial plains in the Tauranga ED. However, the trees in these stands are markedly older than the trees in the other stand in the Kaituna Wildlife Management Reserve. The canopy is reasonably intact, although the understorey is highly modified.

Category 1

Notes The larger stand was identified as a Category 1 site (No. 34) in Beadel and Shaw (2000). The larger stand is SES Site U14/153, and the smaller stand SES Site U14/154 (WBOP District Plan).

References Beadel and Shaw 2000; WBOP District Plan; Current study.

MANGOREWA RIVER

Site Number	042
Grid Reference (NZMG)	E2806959 N6367297
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 9136; QEII 5/03/295; Mangorewa River Marginal Strip), part unprotected.
Site Area	39.9 ha
Altitudinal Range	20-80 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-tawa/mamaku-kanuka-tree privet-kamahi-mangeao-mahoe forest.	Gully
Terrestrial	2. Radiata pine-rewarewa/mamaku-kamahi-kanuka-mahoe-tree privet-(mangeao) forest.	Gully
Terrestrial	3. Mahoe-mamaku-kanuka forest.	Gully
Terrestrial	4. <i>Eucalyptus</i> sp./mamaku-tree privet-mahoe forest.	Gully
Terrestrial	5. (Radiata pine)-(rewarewa)/mamaku-kamahi-mahoe-(kanuka) forest. (Current study)	Gully

Vegetation and Indigenous Flora

This site lines both sides of Mangorewa River and includes stretches of indigenous vegetation which grade from high quality forest dominated by indigenous species upstream, to highly modified secondary forest downstream. Porokaiwhiri, ponga, and makomako occur scattered throughout the site. The understorey is thick in places, and includes ponga, karamu, kawakawa, hangehange and kiokio. A long grassy strip forms the immediate riverside vegetation in the lower parts. This area includes a variety of problem plants, as listed below.

Kingfern (Chronically Threatened, Serious Decline) is present at other places in the 'Mangorewa Corridor' identified in Wildland Consultants (2007c). This site could potentially provide habitat for this species.

Fauna

New Zealand kingfisher, North Island fantail, silvereve, tui, blackbird, and Australian magpie were observed at this site during the current study.

Goats and possums are present at the site, and trout are present in the river. Other freshwater fish and invertebrate records for the Mangorewa River include long-finned eel (Chronically Threatened, Gradual Decline), short-finned eel, and northern koura (Chronically Threatened, Gradual Decline) (NIWA 2008). The Mangorewa River drains into the Kaituna River, and it is possible that other freshwater fish recorded from the Kaituna (as described in Site TSC20) also utilise habitat in the Mangorewa.

Whio (Acutely Threatened, Nationally Endangered) are known to be present further up Mangorewa River (P. Jansen pers. comm. 1994, as cited in Beadel 2006). North Island brown kiwi (Chronically Threatened, Serious Decline) were recorded from the 'lower Mangorewa Gorge' by Owen (1992). North

Island kokako (Acutely Threatened, Nationally Endangered) inhabit the Kaharoa Block adjacent to that RAP (*ibid.*).

North Island kaka (Acutely Threatened, Nationally Endangered) have been noted further upstream in the 'mid Mangorewa Gorge' RAP 12, as have bats (Fauna Survey Unit 1982, unpublished, as cited in Beadel 2006). Falcon (probably bush falcon; Acutely Threatened, Nationally Vulnerable) have also been recorded in the Mangorewa catchment (Saunders 1983 as cited in Wildland Consultants 2007c).

Condition/Pressures Radiata pine is a common emergent on the eastern side of the river (Vegetation Unit 2), while the canopy of the forest on the western side is almost entirely indigenous. The quality of vegetation generally deteriorates downstream, with plants such as tree privet becoming increasingly common. Numerous pest plants occur along the streamside, including blackberry, montbretia, barberry, Japanese honeysuckle, grey willow, tradescantia, wild ginger, ladder fern, hydrangea, castor oil plant, and gorse. Other pest plant species present at the site include *Cotoneaster glaucophylla* and jasmine. The upper edges of the gully bound a mixture of kiwifruit orchards, residential areas, and pastoral farming. The river water is extremely clear.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Mangorewa River contains a large sized example of tall tawa forest and secondary forest within a high-priority ecological corridor. It is contiguous with a Category 1 RAP in the neighbouring ecological district, and through that links further to other protected and unprotected natural forests stretching all the way to the Kaimai-Mamaku Conservation Park., making it part of an ecological sequence that includes regionally significant sites. The river which flows through the site is habitat for two Chronically Threatened species (long-finned eel and northern koura). It is potential habitat for other threatened species, including four Acutely Threatened bird species (whio, bush falcon,

North Island kokako, North Island kaka), a Chronically Threatened bird species (North Island brown kiwi).

Category

1 - This site contains one of the largest areas of natural forests in Tauranga ED. It is part of one of the most important ecological corridors in the ecological district.

Notes

Upstream from this site, in the neighbouring Otanewainuku ED, is RAP 13 'Lower Mangorewa Gorge' (Beadel 2006), a Category 1 RAP which links this site with Kaharoa Forest and other protected natural areas upstream. Part of the site is within Mangorewa River Marginal Strip.

Mangorewa River natural area is part of Smartgrowth Corridor No. 4 'Mangorewa' ranked as being second-priority, Level 1 (Wildland Consultants 2007c and 2007d). This site is also recognised as SES site U15/28 (WBOP District Plan).

The Mangorewa River is lined with indigenous vegetation for 27.9 km of its 29.8 km length, which is all but the last 1.9 km (Wildland Consultants 2007c). Indigenous vegetation also lines Ohaupara and Upokoongauru Stream, the two main tributaries of the river (*ibid.*). The lower stretch of the Mangorewa River should thus be considered a priority area for restoration and revegetation.

This site was identified as a Category 1 site in Beadel and Shaw (2000).

References

Wildland Consultants 2007c and 2007d; P. Jansen pers. comm. 1994, as cited in Beadel 2006; Saunders 1983 as cited in Wildland Consultants 2007c; WBOP District Plan; NIWA 2008; Fauna Survey Unit 1982, unpublished, as cited in Beadel 2006; Beadel 2006; Current study.

KAITUNA SAND DUNES AND WETLAND

Site Number	043
Grid Reference (NZMG)	E2807291, N6380265
Local Authority	Tauranga City Council
Status	Unprotected
Site Area	58.6 ha
Altitudinal Range	0-1m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Spinifex- <i>Calystegia soldanella</i> - <i>Lachnagrostis billiardieri</i> sandfield.	Transgressive dunefield
Terrestrial	2. <i>Carex pumila</i> - <i>Calystegia soldanella</i> sandfield.	Transgressive dunefield
Terrestrial	3. Spinifex-(pingao)/ <i>Calystegia soldanella</i> -flatweeds grassland.	Incipient foredune
Terrestrial	4. Spinifex-lupin/pohuehue- <i>Calystegia soldanella</i> grassland.	Established foredune and transgressive dunefield
Terrestrial	5. Tauhinu/spinifex- <i>Lachnagrostis billiardieri</i> sandfield.	Established foredune
Terrestrial	6. <i>Ficinia nodosa</i> /pohuehue-spinifex- <i>Lachnagrostis billiardieri</i> / <i>Calystegia soldanella</i> vineland.	Established foredune
Terrestrial	7. <i>Ficinia nodosa</i> /pohuehue- <i>Calystegia soldanella</i> - <i>Lachnagrostis billiardieri</i> -(<i>Carex testacea</i>) sedgeland.	Transgressive dunefield
Terrestrial	8. <i>Ficinia nodosa</i> -(spinifex)/pohuehue- <i>Calystegia soldanella</i> /(bracken)-flatweeds sedge-vineland.	Transgressive dunefield
Terrestrial	9. <i>Ficinia nodosa</i> / <i>Carex testacea</i> -pohuehue- <i>Calystegia soldanella</i> - <i>Lachnagrostis billiardieri</i> sedgeland.	Transgressive dunefield
Terrestrial	10. <i>Ficinia nodosa</i> -(lupin)-(gorse)/pohuehue-bracken- <i>Festuca rubra</i> / <i>Calystegia soldanella</i> vineland.	Transgressive dunefield
Terrestrial	11. Gorse/ <i>Ficinia nodosa</i> -pohuehue/ <i>Calystegia soldanella</i> -flatweeds-kikuyu herbfield.	Transgressing dunefield
Terrestrial	12. (Broom)-(gorse)/exotic herbfield.	Transgressive dunefield
Terrestrial	13. Gorse scrub.	Transgressive dunefield
Palustrine	14. Grey willow/raupo reedland.	Wetland.
Palustrine	15. Raupo- <i>Baumea articulata</i> reedland.	Wetland.
Palustrine	16. Raupo reedland.	Wetland.
Terrestrial	17. Sandfield	Beach sand.
Lacustrine	18. Open water	Open water.

(Wildland Consultants 2005e, Beadel 1994a, Current study)

Vegetation and Indigenous Flora

This site comprises a dynamic complex of large unstable foredunes and a highly erosional transgressive dunefield containing many blowouts, deflation basins, and other features of active dune systems. The juxtaposed matrix of a diverse array of vegetation types is linked to dune activity. As in other dune

systems, spinifex and pingao (Chronically Threatened, Gradual Decline) dominate incipient foredunes and the stoss face of established dunes. Pohuehue and *Ficinia* occur inland from the lee face of the established foredune and dominate vegetation on stabilised transgressive dunes. In swales behind the established foredune *Carex testacea* dominates vegetation. Sandfields occur throughout the dune complex, those containing *Carex pumila*, and *Calystegia soldanella* are characteristic of deposition lobes and typically occur within the transgressive dunefield, those containing spinifex and *Lachnagrostis billiardieri* are characteristic of deflation basins in both established and transgressive dunes. Sand tussock (Chronically Threatened, Gradual Decline) was observed in large deflation basins and incipient foredunes at the eastern end of the site. An estimated hundred plants are currently present. Hinarepe has been recorded at this site in every survey since 1991 (Beadel 1992) and 2000, 2002, 2005 (Wildland Consultants 2005e)). A 1993 census counted 424 plants in the Kaituna dunes (Tait 1993). It was then and, although no census was conducted during this study, is still the largest population within the Bay of Plenty. *Oxalis rubens* and *Zoysia pauciflora* (both regionally uncommon plant species, as per Beadel 2006b) are also present on dunes.

Small populations of *Cyclosorus interruptus*, *Ranunculus macropus*, *Thelypteris confluens*, and *Myriophyllum robustum* (all classed as Gradual Decline) occur in the wetlands. *M. robusta* is currently not known to occur elsewhere in the Region. *Sparganium subglobosum* is also present (P. Cashmore pers. comm.).

Amphibromus fluitans (classed as nationally endangered), only known from two other sites in the Region, may also occur in this wetland, although there is no fruiting material on the herbarium specimen and a subsequent visit to the wetland failed to locate any flowering material (P. Cashmore pers. comm. 2008).

Fauna

The site provides a feeding and roosting area for a range of migrant bird species (OSNZ 2006). New Zealand dotterel (Acutely Threatened, Nationally Vulnerable) and banded dotterel (Chronically Threatened, Gradual Decline) utilise the beach. White-fronted tern (Chronically Threatened, Gradual Decline) are also present in large numbers. The Wairakei Stream and wetlands provide habitat for Australasian bittern (Acutely threatened, Nationally Endangered), black shag (At Risk, Sparse), and a variety of other waterbirds (K. Owen, DOC, pers. comm.).

Red-billed gull (Chronically Threatened, Gradual Decline) are also present (K. Owen pers. comm.).

Katipo (*Latrodectus katipo*) (Chronically Threatened, Serious Decline) are present in good numbers (B. Christensen pers. comm.).

Shore skink were observed within the site during this study.

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta.

Condition/Pressures

Weed species present include African boxthorn, blackberry, broom, climbing dock, *Gazania linearis* gorse, kikuyu, lupin, dimorphotheca, pampas, sheep's sorrel, and South African ice plant. Three additional weed species, Japanese spindle tree, moth plant, and woolly nightshade, were recorded at the western end of the site in 2005 (Wildland Consultants 2005e) but were not seen during this study.

This site is less weed-infested than the sand dunes to the west, and there was no detectable change in weed distribution or abundance within the site between 2000 and 2005. However, South African ice plant, gazania, and an unidentified succulent plant are present on the dunes near the houses (at the west end of the site), and there is potential that they will spread if left unchecked (Wildland Consultants 2005e).

Scattered mature grey willow are present in the wetland.

The following activities had a negative impact on the site during the period of 2000-2005: Vegetation clearance has had a moderate negative impact and recreation (tracks) and dumping of inorganic waste has had a minor negative impact on the site (Wildland Consultants 2005e). In 2008 vehicle tracks, particularly those generated by quad bikes, dumping of organic garden waste which includes living plants and plant fragments of succulent species, and trekking or ranging of horses on dunes all continue to have a minor negative impact on dunes.

Recent clearance of gorse from dunes and farmland adjacent dunes within the 8B1 block has had a positive impact. In addition, Ford Holdings are making efforts to reduce impact of the use of ATV's on dunes through fencing affected areas.

Sand tussock occurs in the same area impacted by quad biking. Between 1991 and 1993 the size of the sand tussock population was about 400 individuals (S.M. Beadel pers. obs.). The population of sand tussock has decreased in size to c.150 individuals. This may in part be due to the impact of quad biking, which is a recent phenomenon on these dunes.

The raupo wetland in the slack behind the dunes is a grazed paddock. It has been grazed and pugged in areas where willows are not dominant. This wetland is in poor condition.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	H
	3.5	H
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	M
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

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** H = High, M = Medium, L = Low.

Relative Significance National

**Significance
Justification**

A good quality example of a nationally uncommon suite of habitats grading from back-dune wetland to an extensive highly erosional dune system that is under-represented nationally (i.e. coastal dunes). This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000b). The only site on the mainland where back dune wetlands remain in direct contact with associated dunefield within the ecological district, though this wetland is now in poor condition. Notable for the presence of good numbers of the black katipo (Chronically Threatened, Serious Decline) (B. Christensen pers. comm.).

Weed pressure is relatively low compared to other similar sites. One acutely threatened and six chronically threatened plant species are present.

One acutely threatened, two chronically threatened, and a range of international migratory bird species currently use this site.

This site contains the best and largest population of sand tussock in the Region.

It contains the only population of *Myriophyllum robustum* (a threatened species) in the ecological district. It also contains small populations of three other threatened wetland plants all of which are known from a handful of sites within the ecological district.

Category 1

Notes

The wetland parts of this site are within the bed of the Wairakei Stream, and the banks are grazed pasture or pine plantation. Upstream of this site, Wairakei Stream flows through a TCC reserve adjacent to urban properties. Black shag (At Risk, Sparse) have occasionally been observed in the stream in the eastern parts of the reserve. The stream does not have an outlet - it drains into sand at the eastern end of this site.

A survey for native lizards and butterflies should be undertaken.

References

Beadel and Shaw 2000b; Wildland Consultants 2002b; Wildland Consultants 2005e; OSNZ 2006, current study.

KAITUNA WETLAND

Site Number	044
Grid Reference (NZMG)	E2807720, N6377831
Local Authority	Western Bay of Plenty District Council
Status	Protected (Lower Kaituna Wildlife Management Reserve; Kaituna Wetland Stewardship Area)
Site Area	190.1 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Ti kouka/Japanese honeysuckle-pampas-(grey willow)/Japanese honeysuckle-(Mercer grass) treeland.	Wetland
Palustrine	2. Ti kouka-grey willow-(crack willow)/mamaku forest ↔ ti kouka-grey willow/pampas-Japanese honeysuckle-(<i>Coprosma propinqua</i> subsp. <i>propinqua</i>)-(harakeke)-(bracken) shrubland with occasional kahikatea.	Wetland
Palustrine	3. Mercer grass- <i>Juncus acuminatus</i> - <i>Eleocharis acuta</i> - <i>Eleocharis sphacelata</i> - <i>Juncus planifolius</i> - <i>Persicaria decipiens</i> - <i>Myriophyllum propinquum</i> -parrot's feather- <i>Juncus prismatocarpus</i> /open water rushland.	Wetland
Palustrine	4. Raupo-pampas- <i>Schoenoplectus tabernaemontani</i> - <i>Eleocharis sphacelata</i> - <i>Juncus</i> spp./ <i>Eleocharis acuta</i> - <i>Baumea articulata</i> - <i>Bolboschoenus fluviatilis</i> -parrot's feather- <i>Myriophyllum propinquum</i> -(beggars' tick)-(swamp bedstraw) rushland.	Wetland
Terrestrial	5. Kahikatea (planted)-ti kouka-manuka/exotic grass treeland.	Wetland
Terrestrial	6. Ti kouka-(mahoe)/pampas-exotic grasses shrubland.	Wetland
Palustrine	7. Ti kouka/harakeke- <i>Bolboschoenus fluviatilis</i> -(<i>Cyperus ustulatus</i>) flaxland.	Wetland
Palustrine	8. <u>Raupo</u> reedland with occasional ti kouka, grey willow and crack willow.	Wetland
Terrestrial	9. Pampas-harakeke/ <i>Calystegia sepium</i> -Japanese honeysuckle-tall fescue shrubland.	Wetland
Palustrine	10. <u>Grey willow</u> -crack willow-ti kouka forest.	Wetland
Palustrine	11. Crack willow-grey willow-ti kouka/Japanese honeysuckle- <i>Calystegia sepium</i> - <i>Baumea rubiginosa</i> -(pampas)-(harakeke) treeland with occasional mamaku, <i>Coprosma propinqua</i> subsp. <i>propinqua</i> , <i>Coprosma tenuicaulis</i> , kahikatea and <i>Bolboschoenus fluviatilis</i> .	Wetland
Palustrine	12. Ti kouka/ <i>Coprosma propinqua</i> subsp. <i>propinqua</i> -harakeke-raupo-(grey willow)/ <i>Baumea rubiginosa</i> - <i>Calystegia sepium</i> -tall fescue-oioi-(Japanese honeysuckle) shrubland.	Wetland
Palustrine	13. Raupo/parrot's feather- <i>Persicaria decipiens</i> /open water waterfield with	Wetland

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	occasional <i>Carex virgata</i> , grey willow, crack willow and <i>Bolboschoenus fluviatilis</i> .	
Palustrine	14. Raupo-(grey willow)-(harakeke)/ <i>Calystegia sepium</i> - <i>Baumea articulata</i> -tall fescue- <i>Isachne globosa</i> grassland.	Wetland
Palustrine	15. <i>Eleocharis sphacelata</i> / <u>open water</u> waterfield.	Wetland
Palustrine	16. <i>Baumea rubiginosa</i> / <i>Juncus prismatocarpus</i> - <i>Eleocharis acuta</i> / <i>Myriophyllum propinquum</i> /open water reedland.	Wetland
Palustrine	17. <i>Baumea-articulata</i> - <i>Baumea rubiginosa</i> -swamp millet/ <i>Juncus articulatus</i> - <i>Eleocharis acuta</i> -mercer grass/parrot's feather/open water waterfield.	Wetland
Palustrine	18. <i>Eleocharis acuta</i> - <i>Juncus planifolius</i> -Mercer grass- <i>Juncus prismatocarpus</i> /open water waterfield.	Wetland
Palustrine	19. Pampas-harakeke-ti kouka/tall fescue-swamp millet-blackberry-Japanese honeysuckle- <i>Baumea rubiginosa</i> shrubland.	Wetland
Palustrine	20. (Kahikatea)/crack willow-ti kouka-(mamaku)-(grey willow)/harakeke forest.	Wetland
Palustrine	21. Ti kouka/ <u>harakeke</u> -pampas/tall fescue- <i>Carex geminata</i> - <i>Calystegia sepium</i> flaxland.	Wetland
Terrestrial	22. Tall fescue- <i>Calystegia sepium</i> -(pampas) grassland.	Wetland
Palustrine	23. Wild cherry- <i>Quercus</i> sp.-ti kouka-kahikatea-rimu-(weeping willow)-(walnut)-(puriri)-(pukatea)/mamaku-grey willow forest with occasional Chinese privet and harakeke.	Wetland
Palustrine	24. (<i>Populus</i> sp.)/(weeping willow)-ti kouka-Japanese honeysuckle/pampas/ <i>Carex geminata</i> -tall fescue- <i>Calystegia sepium</i> treeland with occasional woolly nightshade.	Wetland
Palustrine	25. (Ti kouka)-(grey willow)/raupo/ <i>Bolboschoenus fluviatilis</i> -(<i>Carex geminata</i>) reedland with patches of blackberry and harakeke.	Wetland
Palustrine	26. Grey willow-ti kouka/raupo- <i>Carex geminata</i> treeland.	Wetland
Palustrine	27. <i>Persicaria decipiens</i> /(parrot's feather)- <i>Salvinia molesta</i> /open water waterfield.	Wetland
Palustrine	28. (Grey willow)/raupo- <i>Bolboschoenus fluviatilis</i> /tall fescue reedland.	Wetland
Palustrine	29. Pampas-harakeke- <i>Schoenoplectus tabernaemontani</i> /Mercer grass-(parrot's feather) grassland.	Wetland
Palustrine	30. (Ti kouka)/pampas tussockland.	Wetland
Palustrine	31. Ti kouka/pampas-harakeke- <i>Cyperus ustulatus</i> / <i>Schoenoplectus tabernaemontani</i> - <i>Juncus</i> spp.-Mercer grass grassland.	Wetland
Terrestrial	32. Kahikatea/(Japanese honeysuckle)-(Chinese privet) forest.	Wetland
	(Current study)	

Vegetation and Indigenous Flora

This large wetland contains a wide variety of mixed exotic and indigenous vegetation and habitat types.

Several regionally uncommon species are present. These include *Fuchsia perscandens* (Irving 1991), maire tawake (a small stand is present), *Gahnia xanthocarpa*, *Galium trilobum*, *Sparganium subglobosum*, *Hypolepis distans*, and *Rorippa palustris*. One of these species, *Fuchsia perscandens*, is not known to occur elsewhere in the ecological district, and swamp maire only occurs at only one other site in the ED. Swamp greenhood (*Pterostylis micromega*) (Acutely Threatened, Nationally Critical) has historically been recorded from the wetland (Miller 1983) though it has not been recorded since.

Ruppia megacarpa (NZFRI 12466) was present in 1975 (classed as regionally uncommon in Beadel 2006b).

A small stand of pole kahikatea is present. This is one of only two stands of kahikatea in the ED.

Fauna

Grey duck (Acutely Threatened, Nationally Endangered), North Island fernbird (At Risk, Sparse), welcome swallow, pukeko, silvereye, Australasian harrier, pied shag, yellow hammer, magpie, mallard, and mallard-grey duck hybrid were observed at this site during the current study. The New Zealand freshwater shrimp (*Paratya curvirostris*) was also observed.

White heron (Acutely Threatened, Nationally Critical), Australasian bittern (Acutely Threatened, Nationally Endangered), spotless crane (At Risk, Sparse), New Zealand dabchick (At Risk, Sparse), banded rail (At Risk, Sparse), and royal spoonbill have also been recorded at the wetland (DOC 2008c).

Other birds known to utilise riparian habitat in the lower Kaituna are royal spoonbill, white-faced heron, and New Zealand kingfisher (Wildland Consultants 2007c).

A fish passage connects the wetland canals with the Kaituna River. Fifteen indigenous species of fish have been recorded in the catchment of the Kaituna River (Wildland Consultants 2007b, based on data from the New Zealand Freshwater Fish Database (see NIWA 2008) and Boubée and Baker 2005). These include giant kōkopu (Chronically Threatened, Gradual Decline), long-finned eel (Chronically Threatened, Gradual Decline), short-finned eel, and banded kōkopu which are likely to be present within the wetland. Other species which were recorded in the Kaituna River include lamprey (At Risk, Sparse), yellow eye mullet (a marine wanderer), kahawai (a marine wanderer), torrentfish, koaro, inanga, common bully, giant bully, redfin bully, common smelt, black flounder, goldfish (*Carassius auratus*), mosquito fish (*Gambusia affinis*), rainbow trout, and brown trout (Ibid.). The Kaituna River is an important recreational whitebait fishery, and the lower Kaituna River includes spawning sites of whitebait species (Mitchell 1990, Young and Ellery 2002).

Condition/Pressures

This wetland, which is cooperatively managed by DOC, Eastern Region Fish and Game Council, and Environment Bay of Plenty, has been historically

extensively modified through the development of stopbanks, plantings, and weed invasion. The wetland is currently being restored through increased water levels and reticulation, development of open water areas, weed control, and some revegetation. Grey willow dominates most of the wetland, with Japanese honeysuckle becoming a major component of all but the wettest parts of the site. Other pest plants noted include crack willow, Chinese privet, tree privet, wild cherry, pampas, reed sweetgrass, tradescantia, *Carex lucida*, Japanese walnut, beggars' tick, blackberry, royal fern, Mercer grass, *Salvinia molesta*, and arum lily. *Salvinia* is a notifiable organism under the Biosecurity Act 1993. A survey of the wetland will be undertaken for *salvinia* shortly, and this infestation and any others will be controlled (W. Stahl, Environment Bay of Plenty, pers. comm.). Community-based restoration projects undertake weed control, planting, and pest animal control. Most of the wetland is surrounded by pastoral farming (cattle), and cattle were observed grazing the eastern edge of the site during the current study.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	L
	3.5	H
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance National

Significance Justification

Though highly modified and suffering pest plant problems, this site is the largest remaining freshwater wetland in Tauranga Ecological District. The site provides habitat for three Acutely Threatened bird species (grey duck, Australasian bittern and white heron), and four At Risk bird species (North Island fernbird, spotless crane, New Zealand dabchick, and banded rail). It is possible, although unlikely, that the Acutely Threatened orchid *Pterostylis micromega* is also present. It is the only known habitat of *Fuchsia perscandens* in the ecological district, and one of only three sites for swamp maire.

Two Chronically Threatened fish species (long-finned eel and giant kōkopu) are likely to also be present at the wetland.

Category	1
Notes	This site forms part of Smartgrowth Corridor No. 5 'Kaituna', ranked as being second-priority, Level 1 (Wildland Consultants 2007c and 2007d). It was identified as a Category 1 site in Beadel and Shaw (2000).
References	Beadel and Shaw 2000; Beadel 1995a; Cashmore 2002; Irving 1991; Miller 1983; Wildland Consultants 2007b, 2007c, 2007d; NIWA 2008; Boubée and Baker 2005; Mitchell 1990; Young and Ellery 2002; DOC 2008c; current study.

KAITUNA RIVER

Site Number	045
Grid Reference (NZMG)	E2807967 N6366005
Local Authority	Western Bay of Plenty District Council, Tauranga City Council.
Status	Minor parts of adjacent land protected (Kaituna River Marginal Strip), mostly unprotected.
Site Area	107.0 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal and semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Riverine	Open water.	River
Estuarine	Open water.	Estuarine river channel

Location and Setting The Kaituna River is one of the largest rivers within Tauranga ED. Its source is Lake Rotoiti, in the Rotorua Lakes Ecological District, from which it flows north through Otanewainuku ED in a long gorge, before emerging into easier terrain in Tauranga ED. Its upper reaches, in Otanewainuku ED, are generally forested, with a narrow ribbon of indigenous vegetation along the gorge as it passes through expanses of exotic plantation forest. Where the river flows into Tauranga ED it emerges from the gorge and flows through agricultural and horticultural land towards the coast. Narrow strips of indigenous forest (within the “Kaituna River Forest” site and Kaituna River Marginal Strip) line the river at the bottom of the gorge, but change to scrub and forest generally dominated by exotic species further downstream, and then to stopbanks and pasture. Riparian margins in the lower reaches have been fenced to exclude stock and planted with indigenous species. The river is contained within stopbanks as it flows across alluvial plains for several kilometres before flowing past several associated freshwater wetlands (Kaituna River wetlands and Kaituna River Mouth). It then discharges either directly into the sea through “the cut” or via the Maketu Estuary which now receives only a small part of this outflow.

This site also includes the lower section of the Mangorewa Stream, one of the least modified tributaries of the Kaituna River. The Mangorewa is also mostly forested adjacent to the upper reaches, and where it enters Tauranga ED is lined by indigenous forest (Mangowera River site). Other tributaries which discharge into the Kaituna within Tauranga ED are Waiari Stream, Raparapahoe Stream, Ohineangaanga Stream, and various other canals, although these are substantially modified.

Fauna In total, fifteen indigenous fish species have been recorded in the catchment of the Kaituna River (Wildland Consultants 2007b, based on data from the New Zealand Freshwater Fish Database (see NIWA 2008) and Boubée and Baker 2005). These include long-finned eel (Chronically Threatened, Gradual Decline), short-finned eel, giant kōkopu (Chronically Threatened, Gradual Decline), lamprey (At Risk, Sparse), yellow eye mullet (a marine wanderer), kahawai (a marine wanderer), torrentfish, koaro, banded kōkopu, inanga, common bully, giant bully, redfin bully, common smelt, and black

flounder (*ibid.*). Introduced fish recorded from the Kaituna River include goldfish, mosquito fish, rainbow trout, and brown trout (Ibid). The Kaituna River is an important recreational whitebait fishery, and the lower Kaituna River includes spawning sites of whitebait species (Mitchell 1990, Young and Ellery 2002). Northern koura (Chronically Threatened, Gradual Decline) have also been recorded (NIWA 2008).

Blue duck (Acutely Threatened, Nationally Endangered), grey duck (Acutely Threatened, Nationally Endangered), black shag (At Risk, Sparse), and little shag are known to be present within the Kaituna Gorge and are also likely to utilise this site (Wildlands 2007c). Various other bird species utilise habitats along the lower river, including white-fronted tern (Chronically Threatened, Gradual Decline), variable oystercatcher, pied shag, mallard, white-faced heron, welcome swallow, and pukeko (Wildland Consultants 2000e).

Condition/Pressures The lower reaches of the Kaituna River have been heavily modified by channelization and stopbanking. Several oxbow lakes adjacent to these are the remnants of the river’s former channel. The river outlet has been altered significantly through the construction of the Kaituna Cut.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	H
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.
 ** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification The Kaituna River is one of the best examples in the region of riverine habitat for indigenous fauna. It provides an important ecological linkage from extensive areas of indigenous forest and lakes in the Rotorua Lakes area to estuarine and marine areas at the coast. It provides habitat for two Chronically Threatened fish species (long-finned eel and giant kōkōpu), one Chronically Threatened invertebrate (northern koura), and one At Risk fish species (lamprey). Parts of the river upstream from the site are habitat for two Acutely Threatened bird species (blue duck and grey duck). At least one Chronically Threatened bird species (white-fronted tern) and one At Risk bird

species (black shag) utilise the river habitat at the site.

The Kaituna River has high cultural, recreation, biological and landscape values.

Category

1

Notes

The importance of the Kaituna River as a key ecological linkage has been recognised by its inclusion in the 'Kaituna Corridor' (Wildland Consultants 2007c). This corridor traces the course of the Kaituna River from lake Rotoiti to Maketu Estuary, and was identified as a Second-Priority Level 1 corridor within the Smartgrowth study area (Wildland Consultants 2007d). Upstream of Tauranga ED the Kaituna River connects several RAPs within Otanewainuku ED (Category 2 RAPs 44 'Kaituna River' and 31 'Te Iringa', and Category 3 RAP 55 'Upper Kaituna', Beadel 2006).

Areas alongside the Kaituna River should be considered a priority for future revegetation efforts.

References

Wildland Consultants 2000e, 2007b, 2007c and 2007d; Beadel 2006; NIWA 2008; Boubee and Baker 2005; Mitchell 1990; Young and Ellery 2002.

MAKETU SPIT AND WILDLIFE MANAGEMENT RESERVE

Site Number	046
Grid Reference (NZMG)	E2812850, N6377506
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC Reserve, DOC Maketu Wildlife Management Reserve) and unprotected parts
Site Area	46.5 ha
Altitudinal Range	0-4 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Spinifex-sea rocket sandfield	Berm
Terrestrial	2. Spinifex-pingao-sand tussock/ <i>Lachnagrostis billiardieri</i> - <i>Carex pumila</i> / <i>Calystegia soldanella</i> grassland	Berm
Terrestrial	3. Spinifex-(pingao)/ <i>Calystegia soldanella</i> grassland	Incipient foredune
Terrestrial	4. Spinifex-(<i>Ficinia nodosa</i>)/ <i>Calystegia soldanella</i> -flatweeds grassland	Incipient and established foredune
Terrestrial	5. Marram/pohuehue- <i>Calystegia soldanella</i> vineland.	Established foredune
Terrestrial	6. <i>Ficinia nodosa</i> -spinifex/pohuehue- <i>Calystegia soldanella</i> vineland	Transgressive dunefield
Terrestrial	7. <i>Ficinia nodosa</i> /pohuehue- <i>Calystegia soldanella</i> sedgeland	Transgressive dunefield
Terrestrial	8. <i>Ficinia nodosa</i> /pohuehue- <i>Calystegia soldanella</i> vineland	Transgressive dunefield
Terrestrial	9. Pampas/ <u>tall fescue</u> - <u>kikuyu</u> grassland.	Transgressive dunefield
Estuarine	10. Sea rush tussockland.	Pond/lagoon
Estuarine	11. Impounded open water.	Pond/lagoon
Terrestrial	12. Sandfield	Beach sand

(Widland Consultants 2007a, this study)

Vegetation and Indigenous Flora

The vegetation on the spit is dominated by indigenous species such as spinifex, pohuehue, and pingao (Chronically Threatened, Gradual Decline) with occasional ti kouka and pohutukawa. Sand tussock (Chronically Threatened, Gradual Decline) was recorded on the berm at the end of the spit. *Oxalis rubens* and *Zoysia pauciflora* (both regionally uncommon plant species, as per Beadel 2006b) are present on dunes.

There is a lagoon (DOC reserve) at the southwest end of the spit which has been created by causeways which impound part of the estuary. Sea rush tussockland on the edges of the lagoon includes saltmarsh ribbonwood, oioi, and *Baumea juncea*.

Fauna

Maketu has the highest wading bird species diversity in the Bay of Plenty, including both internal and transequatorial migrants. This is the most important winter roost for New Zealand fairy tern (Acutely Threatened, Nationally Critical) in the Bay of Plenty, with 4-6 birds present each winter

(J. Heaphy pers. comm.). The end of Maketu Spit, the opposite side of the estuary mouth, and the paddocks near the Kaituna River are nesting areas for northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable), banded dotterel (Chronically Threatened, Gradual Decline), and variable oystercatcher. North Island fernbird (At Risk, Sparse) are present in the Wildlife Management Reserve and along the back of the dunes (John Heaphy pers. comm. 2006). Caspian tern, reef heron, wrybill (all Acutely Threatened, Nationally Vulnerable); banded dotterel (Chronically Threatened, Gradual Decline); breeding banded rail (At Risk, Sparse); and a range of migratory species have all been recorded since 2003 (OSNZ 2006). In 2007, an Australasian bittern was observed in the band of sea rush tussockland between the lagoon and Papahikawai Island (Wildland Consultants 2007a). A flight of eight royal spoonbills was observed flying over the spit during the current study. Waders roost on sandspits on either side of estuary mouth (Owen *et al.* 2006). The poorly drained paddocks are used by waders, waterfowl and coastal birds for feeding, roosting and breeding. They are notable for banded dotterel and a range of uncommon wader species (24 species recorded in adjacent estuary), many from the northern hemisphere (Owen *et al.* 2006).

Shore skinks are common along the spit (John Heaphy pers. comm. 2006).

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta.

Condition/Pressures Domestic cat release, hedgehogs and mustelids are the main pest problems at this location (John Heaphy pers. comm. 2006). Radiata pines and pampas are scattered along the southern face of the spit. Pampas is common on the edges of the lagoon. Kikuyu is spreading in to the dunes from the vehicle track along the estuary edge. The surface of the lagoon is often covered in a dense algal blooms probably as a result of lack of water movement

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	M
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	H
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	Nesting area for northern NZ dotterel (Acutely Threatened, Nationally Vulnerable), banded dotterel (Chronically Threatened, Gradual Decline), and most important winter roost for NZ fairy tern (Acutely Threatened, Nationally Critical) in Bay of Plenty. It is used by migratory shorebirds, with 24 species of waders recorded (Owen <i>et al.</i> 2000), and it is a well recognised site for rare and uncommon species (Keith Owen pers. comm.). Sand tussock and pingao (both Chronically Threatened, Gradual Decline) are present on spit. This is the second largest population of sand tussock in the ED. Relatively unmodified river mouth sand spits are a nationally uncommon habitat type, and these are also uncommon within Tauranga ED. This spit system is unmodified along its length, and is the largest unmodified spit in ED, with edge effects at base around river cut only. The relatively low level of invasion by dune weeds (although there is some marram present), and isolation from weed sources, means that it has a high potential for restoration.
Category	1
Notes	The lagoon (Maketu Wildlife Management Reserve) is impounded by causeways and culverts, but has a high potential for restoration.
References	Beadel 1994a, OSNZ 2006; Owen <i>et al.</i> 2006; Wildland Consultants 2006g, 2007a.

WAEWAETUTUKI

Site Number	047
Grid Reference (NZMG)	E2815856 N6374512
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	110.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. <u>Grey willow</u> -(ti kouka) forest with local raupo.	Wetland
Palustrine	2. Ti kouka/ <u>raupo</u> -exotic grasses- <i>Baumea articulata</i> -(harakeke)-(Cyperus ustulatus) reedland with occasional grey willow, pampas and areas of open water.	Wetland
Palustrine	3. <u>Grey willow</u> -ti kouka/raupo-(pampas) treeland.	Wetland
Palustrine	4. Ti kouka/ <i>Coprosma propinqua</i> subsp. <i>propinqua</i> -harakeke-(pampas) shrubland.	Wetland
Estuarine	5. <u>Sea rush-oioi</u> tussockland with occasional mangrove and saltmarsh ribbonwood.	Intertidal flat
Palustrine	6. Open water.	Pond
Estuarine	7. <u>Mangrove</u> scrub.	Intertidal flat
Estuarine	8. Unvegetated flats and channels (worm fields, cockle beds and pipi beds).	Intertidal and subtidal flats and channels
Palustrine	9. (<i>Coprosma propinqua</i> subsp. <i>propinqua</i>)/exotic grasses and herbs grassland.	Wetland
	(Current study)	

Vegetation and Indigenous Flora

Swamp kiokio, *Baumea teretifolia*, *Carex virgata*, and *C. maorica* were present in Vegetation Types 1 and 2 in 1989 (Beadel 1989e). Pohuehue, *Baumea articulata* and raupo were noted amongst the shrubland (Vegetation Unit 4), along with *Baumea juncea* and oioi near the estuary (Beadel 1989e). *Carex virgata* was noted in a mosaic of vegetation in Beadel (1989e), and are probably present within Vegetation Unit 2.

Mangrove are scattered along small channels within the intertidal flats in the estuary.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail (At Risk, Sparse) and North Island fernbird (At Risk, Sparse) are present. Welcome swallow, pukeko, North Island fantail, Australasian harrier, mallard, goldfinch, skylark, Australian magpie and starling were observed at this site during the current study.

Condition/Pressures

The freshwater parts of this site are dominated by grey willow, with blackberry common along the edges and under the canopy. Pampas is a problem in areas. Reed sweetgrass is present in an adjacent canal, and if not already present is likely to invade the site in the future. Vegetation Unit 2, and possibly other parts of Waewaetutuki, are grazed by cattle and the site is damaged by trampling and browsing.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	M
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

This site is part of one of the last substantial examples of freshwater wetland vegetation on the Pongakawa Plains. Prior to drainage the plains were largely wetland. This site is large and compact in shape and includes a sequence from saltwater to freshwater wetland. The estuarine vegetation is representative of the remaining saltmarsh in Waihi Estuary (Beadel 1994a). However grey willow forms the canopy over much of the freshwater wetland area.

Category

1

Notes

This site has been identified as a Category 1 natural heritage area in the Tauranga Ecological District (Beadel and Shaw 2000). The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor 'Rotoiti Hills to Waihi Estuary', ranked as being longer-term priority (Wildland Consultants 2007c and 2007d). During the current study this site was viewed from opposite the canal, no walk-through survey was conducted.

The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor 'Kaituna', ranked as being Second-Priority Level 1 (Wildland Consultants 2007c and 2007d),

References

Beadel 1989e; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2007c and 2007d; Current study.

WAIHI ESTUARY

Site Number	048
Grid Reference (NZMG)	E2817032 N6375771
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	291.6ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Unvegetated flats and channels (worm fields, cockle beds and pipi beds).	Intertidal and subtidal flats and channels
Estuarine	2. <u>Mangrove</u> scrub.	Intertidal flat
Terrestrial	3. <i>Olearia solandri</i> -saltmarsh ribbonwood-harakeke-pohuehue shrubland.	Flats
Terrestrial	4. Brush wattle-(karo)/gorse-pampas-manuka/ <i>Baumea juncea</i> -blackberry scrub with saltmarsh ribbonwood around the edges, and occasional ti kouka and harakeke.	Flats
Estuarine	5. <u>Sea rush-oioi</u> tussockland ↔ (karo)/saltmarsh ribbonwood- <i>Olearia solandri</i> -taupata-harakeke/sea rush-oioi- <i>Baumea juncea</i> shrubland with occasional <i>Ficinia nodosa</i> .	Intertidal flat
Estuarine	6. <u>Mangrove</u> scrub ↔ <u>sea rush-oioi</u> tussockland.	Intertidal flat
Estuarine	7. <i>Olearia solandri</i> -saltmarsh ribbonwood-harakeke-(pampas)-(taupata)/sea rush-oioi shrubland with sea couch grassland and glasswort herbfield around the estuary margin.	Flats and intertidal flat
Estuarine	8. <u>Sea rush-oioi</u> tussockland with occasional saltmarsh ribbonwood.	Intertidal flat
Estuarine	9. <u>Pampas/sea rush</u> tussockland.	Intertidal flat
Terrestrial/marine	10. Sandfield.	Beach sands
Estuarine	11. <u>Pampas</u> tussockland.	Flats
Estuarine	12. <i>Olearia solandri</i> -saltmarsh ribbonwood-harakeke-(pampas)-(taupata)/sea rush-oioi shrubland ↔ sea rush- saltmarsh ribbonwood tussockland.	Flats and intertidal flat

(Beadel and Shaw 1997; current study)

Vegetation and Indigenous Flora

Vegetation Unit 4 also contains bracken, sea couch, pohuehue and *Coprosma propinqua* subsp. *propinqua* x *C. robusta*. Around the edges of the islands described in Vegetation Unit 5 are small patches of *Samolus repens* and glasswort. Local *Austrostipa stipoides* (regionally uncommon), bachelor's button, *Lobelia anceps* and *Selliera radicans* were also noted around the estuary in Beadel (1989e).

Fauna

Black-billed gull (Chronically Threatened, Serious Decline), red-billed gull (Chronically Threatened, Gradual Decline), banded dotterel (Chronically Threatened, Gradual Decline), little black shag (At Risk, Range Restricted), pied oystercatcher, New Zealand kingfisher, little shag, white-faced heron,

pieb shag, pieb stilt, bar-tailed godwit, spur-winged plover, royal spoonbill and black swan were observed at the estuary during the current study. Other species which have been recorded at the estuary since 2003 include northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable), wrybill (Acutely Threatened, Nationally Vulnerable), and Caspian tern (Acutely Threatened, Nationally Vulnerable) and various common and rare migrant species (OSNZ 2006) such as ruff, marsh sandpiper, sharp-tailed sandpiper, Pacific golden plover, red knot, and red-necked stint. Brown teal (Acutely Threatened, Nationally Endangered) (two birds) was recorded on several occasions over the last 12 months. The estuary provides a wintering site for variable oystercatcher and pieb stilt (Dowding and Moore 2006). Several sandbanks and low-lying islands in the estuary are wader roosts (Owen *et al.* 2006). Outstanding site for rare and uncommon wader birds (K. Owen pers. comm.).

Condition/Pressures Pampas is a problem in many places around the estuary, and brush wattle has established on the largest islands within the estuary. Sea couch is locally established at the tide-line in several places around the estuary. South African ice plant is present in Vegetation Unit 11. Lupin, gorse, blackberry, dimorphotheca and tall fescue are also present.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	M
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site was recommended for RAMSAR status as a Wetland of International Importance in Owen *et al.* 2006. It is a relatively large estuary system containing regionally representative vegetation and habitat types. Pest plant pressure is impacting on parts of the site. This estuary is outstanding for waders and waterbirds. It hosts a wide diversity of these species, with many uncommon species recorded in the last few years. Six Acutely Threatened, four Chronically Threatened, and four At Risk wader species, and various migratory wader species, utilise the estuary regularly, making it an important bird habitat.

Category

1

Notes

This site has been identified as a Category 1 natural heritage area in the Tauranga Ecological District (Beadel and Shaw 2000). The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor 'Rotoiti Hills to Waihi Estuary', ranked as being longer-term priority (Wildland Consultants 2007c and 2007d).

References

Beadel and Wallace 1989; Beadel and Shaw 1997 and 2000; Dowding and Moore 2006; OSNZ 2006; Owen *et al.* 2006; Wildland Consultants 2006g, 2007c and 2007d; Current study.

WAIHI ESTUARY SOUTHERN MARGIN

Site Number	049
Grid Reference (NZMG)	E2817627 N6374546
Local Authority	Western Bay of Plenty District Council
Status	Protected (DOC Unnamed Wildlife Management Reserves) and unprotected parts
Site Area	46.1 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. <u>Pampas</u> /tall fescue- <i>Juncus</i> sp./Mercer grass tussockland with areas of open water, <i>Baumea articulata</i> , sea rush and occasional <i>Cyperus ustulatus</i> .	Wetland
Palustrine	2. <u>Sea rush</u> tussockland with local bachelor's button herbfield.	Wetland
Estuarine	3. <u>Sea rush-oioi</u> tussockland.	Intertidal flat
Estuarine	4. Saltmarsh ribbonwood/sea couch-sea rush- (<i>Baumea juncea</i>)-(oioi) shrubland with occasional harakeke, pampas and <i>Coprosma propinqua</i> subsp. <i>propinqua</i> .	Intertidal flat
Estuarine	5. <u>Sea couch</u> -sea rush-oioi grassland.	Intertidal flat
Palustrine	6. <u>Raupo</u> reedland.	Wetland
Estuarine	7. Pampas-saltmarsh ribbonwood/searush-oioi shrubland.	Intertidal flat
Palustrine	8. Open water.	Pond
Estuarine	9. <i>Olearia solandri</i> /saltmarsh ribbonwood/sea rush-oioi shrubland.	Intertidal flat
Estuarine	10. <u>Oioi-searush</u> tussockland.	Intertidal flat
Palustrine/Estuarine	11. Raupo- <i>Bolboschoenus fluviatilis</i> reedland.	Wetland
Estuarine	12. <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat

(Beadel 1991b and current study)

Vegetation and Indigenous Flora

The southern part of the site (Vegetation Units 1 and 2), between Wharere Canal and Pongakawa Canal, was grazed pasture until 2005, when it was re-flooded. This area now includes indigenous species such as sea rush and *Baumea articulata* but pampas is widespread and areas of rank pasture remain. Herbfield dominated by bachelor's button, with *Mimulus repens* (At Risk, Sparse), *Spergularia media*, *Plantago coronopifolia*, arrow grass, *Selliera radicans*, *Isolepis cernua* and *Samolus repens* was recorded in Unit 2 in 1991 (Beadel 1991b). This habitat may have since been modified through the invasion of pampas or other exotic species. *Bolboschoenus caldwellii* (regionally uncommon) was also recorded at this site in 1991 (Beadel 1991b), as was *Olearia solandri*.

Raupo and *Bolboschoenus fluviatilis* reedland (Vegetation Unit 11) and an area of *Schoenoplectus pungens* sedgeland (Vegetation Unit 12) have been invaded along the edges of stopbanks by pampas.

Fauna

Wrybill (Acutely Threatened, Nationally Vulnerable), Caspian tern (Acutely Threatened, Nationally Vulnerable), banded dotterel (Chronically Threatened, Gradual Decline); New Zealand dotterel, and various migratory species have been recorded since 2003 (OSNZ 2006). It is a wintering site for variable oystercatcher and pied stilt (Dowding and Moore 2006).

Australasian bittern (Acutely Threatened, Nationally Endangered), and banded rail and North Island fernbird (At Risk, Sparse) inhabit this wetland (K. Owen pers. comm.).

Pukeko and mallard were observed in great abundance at this site during the current study (in Vegetation Unit 1 more than 50 pukeko and 100 ducks were noted). The site is also likely to provide habitat for grey duck (Acutely Threatened, Nationally Endangered). New Zealand kingfisher, North Island fantail, pied shag and little black shag (At Risk, Range Restricted) were also observed at the site during the current study.

Condition/Pressures

Drainage has reduced the extent of wetlands around Waihi Estuary, and existing landuses (predominantly dairy farming) continue to put pressure on the site, the adjacent waterways, and Waihi Estuary. Invasive weeds include pampas, grey willow, and sea couch. Sea couch is a problem because it reduces the area of habitat for estuarine birds (Beadel 1991b; Owen 1993, 1994a). Pampas is particularly common in the part of the site, the DOC reserve, which was re-flooded in 2005. In addition to thick pampas, grey willow, gorse, brush wattle and silver wattle are present along the stopbanks.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

This site is of regional significance because it is already largely protected under the Reserves Act as a Wildlife Management Reserve. Saltmarsh has been greatly reduced in extent in Waihi Estuary, and this site is a relatively

large and intact representative example of the remaining saltmarsh vegetation in Waihi Estuary (Beadel 1994a). The site is habitat for At Risk and regionally uncommon plant species. Three Acutely Threatened, one Chronically Threatened, and two At Risk wader species, and various migratory wader species, have recently been recorded here in a recently ponded area of the reserve. It is a regionally important bird habitat.

Category

1

Notes

The southern margin of Waihi Estuary has been identified as a Category 1 natural heritage area in the Tauranga Ecological District (Beadel and Shaw 2000). The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor 'Rotoiti Hills to Waihi Estuary', ranked as being longer-term priority (Wildland Consultants 2007c and 2007d).

The area where *Mimulus repens* was present may now be flooded and it is uncertain whether it is still present in this site.

References

Beadel 1991b; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2007c and 2007d; Dowding and Moore 2006; OSNZ 2006; Current study.

MANGAWHAI BAY INTERTIDAL FLATS

Site Number 097
Grid Reference (NZMG) E2778864 N6390586
Local Authority Western Bay of Plenty District
Status Unprotected
Site Area 123.4 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sandfield, intertidal flats, and seagrass grassland. (Park 1999)	Sandbank, intertidal and subtidal flat

Vegetation and Indigenous Flora Mangawhai Bay Intertidal Flats includes unvegetated marine sediments and seagrass beds (Park 1999). No rare or uncommon plant species have been recorded at this site.

Fauna The sandbank roost near Tinopai Lodge is one of the most important roosting sites for waders (principally bar-tailed godwit and pied oystercatcher) in Tauranga Harbour. For example, the census in November/December 1999 recorded 2,500 godwit and the census in June/July 2000 recorded 500 pied oystercatcher (OSNZ data). The nearby Omokoroa golf course is infrequently used as a roost during unusually high spring tides or during bad weather/storm surges (Brian Chudleigh pers. comm. 2006). The sandbank roost at this site is the least subject to disturbance of the three wader roosts around Omokoroa Peninsula (Owen *et al.* 2006).

Condition/Pressures No information.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	H
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	H
	3.12	H
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	National
Significance Justification	This site is one of the most important roosting sites for waders in Tauranga Harbour. Large numbers and a high diversity of international and New Zealand migratory waders flock here.
Category	1
References	Park 1999; Brian Chudleigh (OSNZ) pers. comm. 2006; Owen <i>et al.</i> 2006.

CATEGORY 2 SITES

<u>Site Name</u>	<u>Site Number</u>
Busby Road	050
McKinney Stream	051
Te Rereatukahia	052
Park Road Estuary	053
Matahui Road	054
Steele Road Wetlands B	055
Kauri Point	056
Waipapa River	057
Matakana Wetlands C	058
Matakana Wetlands D	059
Matakana Island 2	060
Matakana Island 4	061
Opureora Islet	062
Motungaio Island	063
Rangiwaea Island Foreshore	064
Motutangaroa Isle Foreshore	065
Rangiwaea Island Estuary	066
Rangiwaea Island East	067
Poike	068
Ngapeke Road Wetlands	069
Ohineangaanga Stream	070
Elizabeth Wetland	071
Kaituna River Forest	072
Kaituna River Wetlands (Part) and Kaituna River Mouth	073
Maketu Estuary	074
Arawa Wetland	075
Ongare	086

BUSBY ROAD

Site Number	050
Grid Reference (NZMG)	E2763845, N6401048
Local Authority	Western Bay of Plenty District Council
Status	Part protected (QEII 5/03/225, covenant 9605), part unprotected.
Site Area	23.4 ha (17.2 ha Tauranga ED, 6.2 ha Te Aroha ED)
Altitudinal Range	90-200 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Puriri-rimu-rewarewa-tawa-pukatea-(kauri)/ kamahi-kohekohe forest. (Current study)	Hills

Vegetation and Indigenous Flora This reasonably large stand of primary forest occupies hills on the eastern slopes of the Kaimai Ranges. The canopy appears to be in excellent condition. However, it appears that cattle have access to parts of the stand. Other indigenous species which are present include mamaku, makomako, *Metrosideros perforata* and *Collospermum hastatum*.

Fauna Silvereye, pukeko, chaffinch, blackbird, and Australian magpie were recorded at this site. The streams at this site flow into Boyd Stream, which is habitat for long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), short-finned eel and torrentfish (NIWA 2008). These species may also be present in the stream at the site.

Condition/Pressures The margins of the site are grazed, and the interior may also be grazed in places.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	This site is a moderate sized example of semi-coastal forest of excellent quality representative of the ecological character of the region. Part of the site is protected in a QEII conservation covenant. The stream that flows through this site may be habitat for two Chronically Threatened species (long-finned eel and northern koura), and the forest is potential habitat for one At Risk species (Hochstetter's frog).
Category	2
Notes	Part of the Busby Road natural area is outside of Tauranga ED.
References	DOC 2008a; NIWA 2008; Current study

MCKINNEY STREAM

Site Number	051
Grid Reference (NZMG)	E2764458, N6401971
Local Authority	Western Bay of Plenty District Council
Status	Fully protected (Covenant 6121).
Site Area	8.5 ha
Altitudinal Range	80-140 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Puriri-tawa-rimu-rewarewa-(pukatea)-(northern rata)-(hinau) forest. (Current study)	Hills

Vegetation and Indigenous Flora The canopy of this compact stand of remnant indigenous forest is diverse and in good condition. Notable species include northern rata and puriri.

Fauna Welcome swallow, bellbird and North Island fantail were observed near this site during the current study. McKinney Stream flows into Uretara Stream, which is habitat for long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), short-finned eel and torrentfish (NIWA 2008). This site probably contributes to the quality of habitat for these species.

Condition/Pressures This site is surrounded by pastoral farms. The forest appears to be fenced from stock, with gorse common around the edges.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

This compact stand of primary forest is one of the most intact and healthy in the ecological district, and is likely to remain viable over time. It is regionally significant because its canopy is diverse and is representative of semi-coastal forest in the Tauranga Ecological District.

Category

2

Notes

Kaimai-Mamaku Conservation Park is located a few hundred metres up the hill from this site.

References

DOC 2008a; NIWA 2008; Current study.



TE REREATUKAHIA

Site Number	052
Grid Reference (NZMG)	E2768488 N6398278
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	17.4 ha
Altitudinal Range	<20 m asl

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Riverine	2. Grey willow forest.	Wetland
Estuarine	3. Harakeke- <i>Olearia solandri</i> -saltmarsh ribbonwood-oioi shrubland.	Intertidal flat
Estuarine	4. Manuka- <i>Olearia solandri</i> scrub.	Intertidal flat
Estuarine	5. Sea rush-oioi-saltmarsh ribbonwood tussockland.	Intertidal flat
Palustrine	6. <i>Baumea articulata</i> reedland. (Wildland Consultants 2006g, Beadel 1992a, Current study)	Wetland

Vegetation and Indigenous Flora

Te Rereatukahia is dominated by mangrove scrub and shrubland, and estuarine wetlands of sea rush, oioi, and saltmarsh ribbonwood. There are also examples of harakeke-*Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b)-saltmarsh ribbonwood-oioi shrubland, *Baumea articulata* reedland. Very small, unmapped vegetation types include raupo reedland and manuka scrub. No rare or uncommon plant species have been recorded at this site.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered) and North Island fernbird (At Risk, Sparse) were recorded here in 1992, within riverine and estuarine habitats and on adjacent, infilled land around the marae (Owen 1993).

Te Rereatukahia is a roosting and feeding site for brown teal (Acutely Threatened, Nationally Endangered), Caspian tern and wrybill (both Acutely Threatened, Nationally Vulnerable), banded dotterel (Chronically Threatened, Gradual Decline), and North Island fernbird (At Risk, Sparse) (OSNZ 2006).

Condition/Pressures

Most weed problems in 1992 were noted on the small vegetated islets within the saltmarsh. The riverine wetlands were not fenced to exclude to stock and there was evidence of damage from cattle (Owen 1993). Since 1993 at least part of the riverine wetland has been fenced and planted, as has a steep face on the south side of the estuary (Wildland Consultants 2006g). Pampas is present on the margins of the site (ibid.).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	H
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

Te Rereatukahia contains a relatively diverse array of habitats, but parts of the site are modified by weeds and the site is exposed along its entire landward margin to pressures of adjacent intensive land use. Four Acutely Threatened and one Chronically Threatened bird species have been recorded here but additional information is needed to clarify their use of the site. For example, the brown teal sighting is likely to have been a “one-off” visit.

Category 2

References Beadel 1992a, Owen 1993, OSNZ 2006.

PARK ROAD ESTUARY

Site Number	053
Grid Reference (NZMG)	E2769978 N6402520
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	35.6 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland and mangrove-sea rush shrubland.	Intertidal flat
Palustrine	2. Manuka scrub.	Wetland
Estuarine	3. Oioi rushland.	Intertidal flat
Estuarine	4. Sea rush tussockland.	Intertidal flat
Palustrine	5. Manuka-pampas/ <i>Cyperus ustulatus</i> -reed sweetgrass shrubland. (Beadel 1994a, Shaw <i>et al.</i> 1999a, Current study)	Wetland

Vegetation and Indigenous Flora

Park Road Estuary is dominated by mangrove scrub and shrubland and mangrove-sea rush shrubland. The areas of oioi rushland and sea rush tussockland include other species such as saltmarsh ribbonwood, harakeke, *Baumea juncea*, *Bolboschoenus fluviatilis*, and *Isolepis cernua*. The manuka scrub includes ti kouka, harakeke, *Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b), *Baumea juncea*, and hukihuki. There are small, unmapped areas of arrow grass-*Isolepis cernua* glasswort herbfield. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) are present (Shaw *et al.* 1999a).

Condition/Pressures

Owen (1993) noted reclamation, drainage, stock access, and dumped orchard prunings. In 1999, grazing stock and dumping of refuse were still impacting upon the site (Shaw *et al.* 1999a). Reed sweetgrass (*Glyceria maxima*) is present and forms the dominant cover in a few places in freshwater wetland on the margins of the site (Wildland Consultants 2005b).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Park Road Estuary comprises a relatively large example of estuarine vegetation with a diverse array of habitats which are characteristic of Tauranga Ecological District. It also contains contiguous freshwater wetlands and provides habitat for two At Risk bird species. Neighbouring land uses and several pest plant species are exerting negative pressures on the natural character of the site.

Category 2

Notes Identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

References Owen 1993; Beadel 1994a; Shaw *et al.* 1999a; Beadel and Shaw 2000; Wildland Consultants 2005b.

MATAHUI ROAD

Site Number	054
Grid Reference (NZMG)	E2770534 N6396739
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	16.7 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Harakeke/ <i>Baumea juncea</i> -saltmarsh ribbonwood-oioi rushland.	Intertidal flat
Estuarine	3. Sea rush tussockland and oioi rushland. (Beadel 1992a, Current study)	Intertidal flat

Vegetation and Indigenous Flora The Matahui Road site is dominated by mangrove scrub and shrubland, which probably also includes sea rush and oioi. Along the landward edge of the mangroves are areas of harakeke/*Baumea juncea*-saltmarsh ribbonwood-oioi sedgeland, sea rush tussockland and oioi rushland. No rare or uncommon plant species have been recorded at this site.

Fauna Black stilt/hybrid (Acutely Threatened, Nationally Critical) and wrybill (Acutely Threatened, Nationally Vulnerable) have been recorded roosting and feeding at the site since 2003 (OSNZ 2006). Banded rail sign and, North Island fernbird (both At Risk, Sparse) have been observed, and Australasian bittern (Acutely Threatened, Nationally Endangered) was detected in 1992 (Owen 1993).

Condition/Pressures Owen (1993) noted stock access and weeds, for example pampas, wattle, blackberry.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Matahui Road is a relatively large site and is in close proximity to other similar sites (for example Te Rereatukahia and Waitekohe Stream Mouth), which increases its ecological viability. However, the indigenous vegetation has been modified by human and weed impacts. This is a regionally significant area because of recent observations of three Acutely Threatened bird species.

Category 2

References Beadel 1992a; Owen 1993; OSNZ 2006.

STEELE ROAD WETLANDS B

Site Number	055
Grid Reference (NZMG)	E2770778 N6413401
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	13.9 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal and Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow-manuka-(mamaku)-(ti kouka)-(kanuka)/raupo-(harakeke) shrubland.	Wetland
Palustrine	2. Grey willow-kanuka-manuka-mamaku shrubland. (Current study)	Wetland

Vegetation and Indigenous Flora

Steele Road Wetlands (B) comprises a large wetland beside the Waiau River. Other species which are present in Vegetation Unit 1 include raupo, *Coprosma propinqua* subsp. *propinqua*, karamu, toetoe (*Cortaderia fulvida*), harakeke, kawakawa, mahoe, hangehange, whauwhaupaku, and *Coprosma tenuicaulis*. Unit 2 occurs alongside Unit 1, but generally on slightly drier ground up adjacent gullies. Additional species are wheki, gorse, mahoe, whauwhaupaku and exotic grasses and herbs. No rare or uncommon plant species have been recorded at this site.

Fauna

This site is adjacent to the Waiau River. The river is habitat for a suite of indigenous freshwater species, including long-finned eel (Chronically Threatened, Gradual Decline) and giant kōkopu (Chronically Threatened, Gradual Decline) (Wildland Consultants 2006b). This site is likely to have a role in maintaining instream habitat values. North Island fernbird (At Risk, Sparse) have been heard in the nearby Steele Road Wetlands A (Wildland Consultants 2006g), and this species may also be present in Steele Road Wetlands B. Other species which have been recorded in the nearby wetlands along the Waiau River (see Site Athenree) and which may be present in this site include Australasian bittern (Acutely Threatened, Nationally Endangered), marsh crake (At Risk, Sparse), spotless crake (At Risk, Sparse), and banded rail (At Risk, Sparse) (John Heaphy pers. comm. 2006).

Pukeko, silvereye, North Island fantail, magpie, and house sparrow were observed at this site during the current study.

Condition/Pressures

The site is dominated by grey willow, which is an invasive species. Where the site bounds Steele Road many other pest plant infestations occur, including gorse, tradescantia, hawthorn, wild cherry, Chinese privet, cotoneaster (*Cotoneaster glaucophylla*), canna lily, elephant's ear, and brush wattle. Climbing asparagus is present on the opposite side of the road and may also be present at the site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	H
	3.4	L
	3.5	M
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification

This site is degraded but it is locally significant because freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District. There is a recent record of one At Risk bird species, and two Chronically Threatened fish species have been recorded in the catchment of the stream which flows along the edge of the site.

Category 2

Notes The vegetation in this site was ranked as being of District significance in Beadel (1994a) (see Athenree 2).

References Beadel 1994a; Wildland Consultants 2006b; Wildland Consultants 2006g; John Heaphy pers. comm. 2006; Current study.

KAURI POINT

Site Number 056
Grid Reference (NZMG) E2773015 N6405220
Local Authority Western Bay of Plenty District Council
Status Protected (WBOPDC Historic Reserve)
Site Area 11.6 ha
Altitudinal Range 0-40 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest and pohutukawa/houpara-karaka/ <i>Astelia banksii</i> -kawakawa-karaka forest. (Wildland Consultants 2006g)	Moderate-steep hillslope

Vegetation and Indigenous Flora The site comprises pohutukawa forest on moderate to steep faces adjacent to Tauranga Harbour. *Astelia banksii* (a regionally uncommon species), houpara, karaka, and kawakawa are present in the understorey.

Fauna It is possible that moko skink (At Risk, Sparse), which inhabits some locations in the inner Tauranga Harbour, is present at Kauri Point (John Heaphy pers. comm. 2006).

Condition/Pressures There is an infestation of wild ginger near the toilet block. The site appears to be fenced and ungrazed.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	M
	3.6	L
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

Kauri Point is regionally significant as it comprises a good quality, representative example of a regionally under-represented vegetation type (i.e. coastal pohutukawa forest). Pohutukawa forest was once common throughout Tauranga Ecological District, but has now been greatly reduced in extent and only small areas remain (for example Mauao, Bowentown Heads, Ngakautuakina Point, Matakana Point, Tuapiro, Motuhoa Island).

Category

2

References

Beadel 1994a; Wildland Consultants 2006g.

WAIPAPA RIVER

Site Number	057
Grid Reference (NZMG)	E2773178, N6385882
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenants 6508, 7515, 7811, 8873, 9024, and 9266).
Site Area	18.2 ha
Altitudinal Range	60-160 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-rimu-(pukatea)-(radiata pine)-(maritime pine)/kamahi-mamaku-(kanuka) forest with local totara, tawa, and matai. (Current study)	Gully

Vegetation and Indigenous Flora

This indigenous forest has a diverse canopy, and also includes lancewood and porokaiwhiri, with karamu present near the edges. At least parts of it are fenced from stock, and most of it is probably too steep to be grazed.

Fauna

North Island fantail, silvereve, New Zealand kingfisher, grey warbler, California quail, Australian magpie and blackbird were observed at this site during the current study. Deer and possum are also present (L. Walker pers. comm. 2008). Long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), short-finned eel and an unidentified bully (*Gobiomorphus* sp.) have been recorded from the Waipapa River (NIWA 2008).

Kereru (Chronically Threatened, Gradual Decline), tui, bellbird, little shag, and grey duck (Acutely Threatened, Nationally Endangered) have been recorded in the adjacent RAP 17 "Waipapa" (Beadel 2006 and Fauna Survey Unit unpublished data 1980s, as cited in Beadel 2006).

Condition/Pressures

Gorse and blackberry are thick around the forest edges, and woolly nightshade is also present. Radiata pine is common at the south-east edge of the forest, where it bounds pastoral land.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Despite historical modification, the forests within Waipapa River natural area form one of the most intact stands remaining in the ecological district. The site provides an extension into lower altitudes from Kaimai-Mamaku Conservation Park via RAP 17. The river that flows through this site contains two Chronically Threatened species (long-finned eel and northern koura). In addition, the site probably provides habitat for a Chronically Threatened bird species (kereru) and an Acutely Threatened bird species (grey duck).

Category 2

Notes This site links to Kaimai-Mamaku Conservation Park via RAP 17 'Waipapa' in Otanewainuku ED (Beadel 2006), several covenants including a QEII covenant, and Waipapa River Marginal Strip. This site is recognised as SES Site U14/16 in the WBOP District Plan.

References Beadel 2006; Fauna Survey Unit unpublished as cited in Beadel 2006; NIWA 2008; L. Walker pers. comm. 2008; WBOP District Plan; Current study.

MATAKANA WETLANDS C

Site Number	058
Grid Reference (NZMG)	E2774998, N6408219
Local Authority	Western Bay of Plenty District Council
Status	Protected (DOC, Matakana Island Wildlife Refuge) and unprotected parts
Site Area	42.2 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Radiata pine/ <u>pampas</u> -gorse tussockland	Foredune plain
Terrestrial	2. Mamaku/gorse-pampas-mapou-Spanish heath-hangehange scrub.	Foredune plain
Palustrine	3. <u>Grey willow</u> /pampas-(wheki)/ <i>Carex secta</i> - <i>Carex virgata</i> - <i>Baumea arthrophylla</i> - <i>Baumea juncea</i> - <i>Carex maorica</i> -swamp kiokio forest.	Wetland
Palustrine	4. Grey willow/mamaku-wheki/pampas-gorse-hangehange shrubland.	Wetland
Palustrine	5. Ti kouka-karamu-pampas-mamaku/ <i>Baumea juncea</i> scrub (with manuka, <i>Coprosma tenuicaulis</i> , grey willow, wheki, and mahoe).	Wetland
Palustrine	6. <u>Grey willow</u> / <i>Carex virgata</i> - <i>Baumea juncea</i> - <i>Baumea tenax</i> -karamu-pampas scrub.	Wetland
Palustrine	7. Grey willow-ti kouka/ <u>pampas</u> - <i>Carex virgata</i> / <i>Baumea arthrophylla</i> - <i>Cyperus ustulatus</i> tussockland.	Wetland
Palustrine	8. (Ti kouka)/ <u>pampas</u> -harakeke-mamaku tussockland.	Wetland

(Current study)

Vegetation and Indigenous Flora

This is the largest wetland on Matakana Island. Most of the site comprises a continuous grey willow canopy over a ground layer dominated by *Carex virgata* with other indigenous sedges and rushes including *Baumea arthrophylla*, *B. juncea*, *B. tenax*, *Carex maorica*, *C. secta*. Indigenous shrubs including *Coprosma tenuicaulis*, wheki and ti kouka are scattered through the grey willow canopy. Seedling pukatea was observed within grey willow forest during this survey. The western end of the site is a mosaic of vegetation types, including *Carex secta* tussockland, *Eleocharis sphacelata* reedland, raupo reedland, *Baumea articulata* reedland, and pampas tussockland. The abundance of pampas at this end of this wetland is possibly related to drier conditions associated with drainage. *Cyclosorus interruptus* (Chronically Threatened, Gradual Decline), *Hypolepis distans* (Regionally Uncommon), swamp kiokio, and royal fern were seen in grey willow forest during a walk through survey of the site in 2008.

Fauna

There are past or recent records of two Acutely Threatened and four At Risk bird species: Australasian bittern and grey duck (both Acutely Threatened, Nationally Endangered), spotless crane, banded rail, marsh crane, and North Island fernbird (all At Risk, Sparse).

Condition/Pressures This wetland has been extensively drained and as a consequence has a lower diversity of natural plant communities than it would have had originally. Grey willow is better established here than in other large wetlands on Matakana Island. A few individuals of royal fern are present. These are being monitored and controlled by Environment Bay of Plenty (Walter Stahel pers. comm. 2006 and 2008).

Feral pigs were observed in the wetland in 2006. Possum and rabbit damage has been noted in the past (Owen 1993).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	M
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site comprises a large example of freshwater wetland vegetation, albeit modified through drainage and grey willow. It provides good habitat for one Chronically Threatened fern species. There are past or recent records of two Acutely Threatened and four At Risk bird species.

Category 2

Notes The site was ranked as 'moderate' quality marshbird habitat by Owen (1993). Part of the site (the upper end of the wetland) was ranked as vegetation of 'District' significance in Beadel (1994a).

References Beadel 1989c; Beadel 1989e; Beadel 1992a; Owen 1993; Wildland Consultants 2006g.

MATAKANA WETLANDS D

Site Number 059
Grid Reference (NZMG) E2775694, N6408392
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 5.1 ha
Altitudinal Range 0 m asl
Bioclimatic Zone

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow-ti kouka/ <i>Carex secta</i> forest.	Wetland
Palustrine	2. Mahoe-mapou/sweet fern forest.	Wetland
Palustrine	3. Raupo reedland	Pond/Lake
	4. Open water	
(Wildland Consultants 2006g)		

Vegetation and Indigenous Flora

This wetland is dominated by a canopy of grey willow and ti kouka above pampas, harakeke, karamu, kohuhu, mingimingi, and koromiko. In the centre of the site there is an area of raupo reedland. Other species include *Baumea articulata* and *Carex* spp. *Cyclosorus interruptus* and *Thelypteris confluens* (both Chronically Threatened, Gradual Decline) occur under grey willow around the edges of this wetland.

Fauna

No bird species were recorded here during a survey in 1992 but Owen (1993) judged that spotless crane were likely to be present. There is no recent fauna information available for this site.

Condition/Pressures

Large infestations of grey willow and pampas. Disturbance from surrounding plantation forestry operations.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	This site is regionally significant because it includes populations of two chronically threatened species and examples of modified indigenous freshwater wetland, a habitat type which has been greatly reduced in extent in Tauranga Ecological District. This site is part of the extensive wetland complex at the northern end of Matakana Island (see the nationally significant sites Matakana Island 1, and Matakana Wetlands B and C sites).
Category	2
Notes	Ranked as 'moderate' quality marshbird habitat by Owen (1993) and the vegetation was ranked as of 'District' significance by Beadel (1994a).
References	Beadel 1992a; Owen 1993, Wildland Consultants 2006g.

MATAKANA ISLAND 2

Site Number	060
Grid Reference (NZMG)	E2776690 N6403556
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	45.4 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine Palustrine	1. Mangrove scrub and shrubland. 2. <i>Baumea juncea</i> sedgeland, and <i>Baumea juncea</i> -saltmarsh ribbonwood-oioi sedgeland, and harakeke/ <i>Baumea juncea</i> -oioi-saltmarsh ribbonwood sedgeland, and sea rush tussockland, and oioi rushland.	Intertidal flat Wetland
Terrestrial Terrestrial	3. Sandspit vegetation. 4. Radiata pine/ <i>Austrostipa stipoides</i> forest. (Beadel 1994a, Wildland Consultants 2006g, Current study)	Sandspit Sandspit

Vegetation and Indigenous Flora

This is a long, narrow site on the harbour margin of Matakana Island. It is dominated by estuarine wetlands, including species such as mangrove, *Baumea juncea*, oioi, sea rush, and saltmarsh ribbonwood. There is an area of radiata pine on the sandspit at the northern end of the site. *Austrostipa stipoides*, which is regarded as a regionally uncommon species (Beadel 2006b), occurs under the pines.

Fauna

Banded rail and North Island fernbird (At Risk, Sparse) were recorded in 1992 (Owen 1993).

Condition/Pressures

Wilding pine, grey willow and pampas infestations are present. Some drainage works are evident at the northern end of the site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	M
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site is considered to be a relatively large, good quality representative example of the vegetation types present, and characteristic of Tauranga Ecological District (Beadel 1994a). A regionally uncommon plant species is present and threatened marshbirds are likely to be present, based on records from 1992. This site provides a protective buffer to seagrass beds and intertidal flats in a nationally significant part of the Tauranga Harbour.

Category 2

Notes The vegetation in this site was ranked as being of District significance in Beadel (1994a) and was ranked as an outstanding marshbird habitat in Owen (1993). The site was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000). It is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References Owen 1993; Beadel 1994a; Beadel and Shaw 2000; Wildland Consultants 2006g.

MATAKANA ISLAND 4

Site Number	061
Grid Reference (NZMG)	E2778409 N6401619
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	17.8 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Sea rush tussockland, oioi rushland, and <i>Baumea juncea</i> sedgeland.	Intertidal flat
Palustrine	3. <i>Olearia solandri</i> -toetoe-harakeke-manuka shrubland and harakeke flaxland.	Intertidal flat, wetland
Terrestrial	4. (Radiata pine)-(<i>Eucalyptus</i> sp.)/manuka-brush wattle-pampas scrub. (Beadel 1992a and Wildland Consultants 2006g)	Sandspit

Vegetation and Indigenous Flora

This site is long and narrow, extending along part of the harbour margin of Matakana Island. The site comprises a strip of mangrove scrub, estuarine wetland, and palustrine wetlands. Species present include sea rush, oioi, *Baumea juncea*, *Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b), toetoe, harakeke, and manuka. *Gleichenia microphylla* and *Hypolepis distans* are present underneath manuka in places. *Hypolepis distans* is regarded as regionally uncommon (Beadel 2006).

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were present in 1992 (Owen 1993).

Condition/Pressures

Wilding pines, pampas and brush wattle are problems.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

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Relative Significance Regional

Significance Justification This site includes good quality, representative examples of saltmarsh and freshwater vegetation. Two At Risk wetland bird species and a regionally uncommon plant species are known from this site. This site acts as a protective buffer to seagrass beds and intertidal flats in a nationally significant area of the Tauranga Harbour. A small part of the site is modified by weed pressures.

Category 2

Notes The habitat quality of this site for marsh birds was ranked as 'high' in Owen (1993). This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References Beadel 1992a; Owen 1993; Wildland Consultants 2006g.

OPUREORA ISLET

Site Number 062
Grid Reference (NZMG) E2782569 N6393659
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 5.6 ha
Altitudinal Range 0 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Manuka- <i>Olearia solandri</i> scrub.	Sandbank
Estuarine	2. Sea rush tussockland, and oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	3. <i>Samolus repens</i> herbfield (not mapped). (Beadel 1992a, Current study)	Intertidal flat

Vegetation and Indigenous Flora Opureora Islet is dominated by sea rush tussockland and oioi-saltmarsh ribbonwood shrub-rushland which enclose areas of manuka-*Olearia solandri* (a regionally uncommon plant species, as per Beadel 2006b) scrub. There are patches of *Samolus repens* herbfield within the tussockland (not mapped). No rare or uncommon plant species have been recorded at this site.

Fauna North Island fernbird (At Risk, Sparse) was recorded in 1992 (Owen 1993), and was still present in 2006 (John Heaphy pers. comm. 2006).

Condition/Pressures Owen (1993) noted vehicle impacts, and weeds such as pampas, gorse, wattle, woolly nightshade, and blackberry. Vehicle tracks are still present and the islet is commonly used as an accessway between Opureora settlement and Rangiwaea Island (Wildland Consultants 2006g).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	Opureora Islet is a small natural area that is complementary to Motungaio Island and acts as a protective buffer to Opureora Inlet and Opureora Spit. There are recent records of an At Risk bird species.
Category	2
Notes	This site is part of the Motungaio Key Ecological Zone (Wildlands 2006g).
References	Beadel 1992a; Owen 1993.

MOTUNGAIO ISLAND

Site Number	063
Grid Reference (NZMG)	E2782993 N6393306
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	20.0 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Manuka forest and scrub.	Dune and beach sands
Estuarine	2. <i>Olearia solandri</i> /oioi rushland.	Intertidal flat
Estuarine	3. <i>Baumea juncea</i> -saltmarsh ribbonwood-oioi rushland.	Intertidal flat
Estuarine	4. Sea rush tussockland.	Intertidal flat
Estuarine	5. Oioi saltmarsh ribbonwood shrub-rushland. (Beadel 1992a, Current study)	Intertidal flat

Vegetation and Indigenous Flora The centre of Motungaio Island is manuka forest and scrub which is surrounded by *Olearia solandri*/oioi rushland and *Baumea juncea*-saltmarsh ribbonwood-oioi sedgeland. The tree in the middle of this site is a eucalyptus. The seaward margins of the site comprise sea rush tussockland. There are also small, unmapped areas of *Samolus repens* herbfield. One of the species present, *Olearia solandri*, is a regionally uncommon species.

Fauna North Island fernbird (At Risk, Sparse) was common in 1992 (Owen 1993), and was still present in 2006 (John Heaphy pers. comm. 2006).

Condition/Pressures Unknown.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	M
	3.5	L
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Regional
Significance Justification	A good quality example of an ecological sequence grading from terrestrial/estuarine forest to estuarine saltmarsh. The site is contiguous with or close to Opureora Inlet, Opureora Spit, and Opureora Islet, and helps buffer the nationally significant Opureora Spit. There are recent records of an At Risk bird species.
Category	2
References	Beadel 1992a; Beadel 1994a.

RANGIWAEA ISLAND FORESHORE

Site Number	064
Grid Reference (NZMG)	E2783690 N6393833
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	12.4 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Manuka scrub and harakeke flaxland.	Wetland
Estuarine	2. Sea rush tussockland, and oioi-saltmarsh ribbonwood shrub-rushland, and <i>Austrostipa stipoides</i> tussockland, and <i>Samolus repens</i> herbfield, and glasswort herbfield. (Beadel 1992a; Owen 1993, Wildland Consultants 2006g, Current study)	Intertidal flat

Vegetation and Indigenous Flora This site comprises an estuarine wetland which is a mosaic of vegetation types, and a palustrine wetland dominated by manuka. *Austrostipa stipoides*, which is regarded as regionally uncommon, is present at this site (Beadel 2006). There is quite a large population of this species at the southern end of the site.

Fauna Banded rail (At Risk, Sparse) has been sighted amongst *Austrostipa stipoides* (Wildland Consultants 2006g). North Island fernbird (At Risk, Sparse) were recorded in 1992 (Owen 1993). Shore skink (not threatened) are present (John Heaphy pers. comm. 2006).

Condition/Pressures Pampas and *Hakea* sp. infestations are present on the inland edge of the site, and there is also extensive vehicle damage to vegetation, for example bulldozed tracks, evidence of tractor and trailbike usage (Owen 1993).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This moderately-sized site contains a good example of saltmarsh vegetation, and provides a protective buffer to a nationally significant area of the Tauranga Harbour. Human impacts have significantly modified the natural character of the site. The site supports a regionally uncommon plant species, and there are current or past records of two At Risk wetland bird species.

Category 2

Notes This site was not identified as significant in Beadel (1994a). Owen (1993) ranked the site as moderate quality habitat for marshbirds.

A herpetological survey in this area is recommended, because skinks have been recorded on the eastern side of Rangiwaea Island in 1992 (Owen 1993). The species present needs to be confirmed, however it is probable that it is moko (K. Owen pers. comm. 2008).

Part of this site is in the Motungao Key Ecological Zone (Wildlands 2006g).

References Beadel 1992a; Owen 1993; Wildland Consultants 2006g.

MOTUTANGAROA ISLE FORESHORE

Site Number	065
Grid Reference (NZMG)	E2784467 N6393116
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	10.7 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	2. Sea rush tussockland.	Intertidal flat
Terrestrial	3. Sandspit vegetation.	Sandspit
Palustrine	4. Manuka-grey willow-woolly nightshade-(mamaku) forest.	Wetland
Terrestrial	5. Shrubland (Beadel 1992a, Owen 1993, Wildland Consultants 2006g, Current study)	Harbour island

Vegetation and Indigenous Flora

The estuarine portions of this site are dominated by sea rush with smaller areas of oioi-saltmarsh ribbonwood shrub-rushland. There are examples of *Samolus repens* herbfield and glasswort herbfield within the sea rush tussockland. On the eastern (i.e. landward) side of the site there is a freshwater wetland which is dominated by manuka and grey willow. No rare or uncommon plant species have been recorded.

Fauna

The sandspit at the southern end of the site is a nesting area of northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable) (John Heaphy, pers. comm. 2006). North Island fernbird (At Risk, Sparse) was recorded in the saltmarsh in 1992 (Owen 1993), and in 2006 a banded rail (At Risk, Sparse) was recorded in the neighbouring site (Rangiwaea Island Foreshore) close to the boundary with this site (Wildland Consultants 2006g). It is therefore likely that banded rail are present at this site.

Condition/Pressures

Gorse, wilding pine, woolly nightshade and grey willow infestations are present in and around the margins of the freshwater wetland, which is surrounded by a pine plantation reaching harvest age. Vehicle tracks and rubbish dumping have been identified as pressures in the past (Owen 1993), and appear to be ongoing.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M

Criterion*	RPS Number*	Ranking**
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

Motutangaroa Isle Foreshore is a site of moderate size that contains examples of estuarine and sandspit vegetation typical of Tauranga ED. The sandspit is currently breeding habitat for the Acutely Threatened northern New Zealand dotterel, and is an important site for the regional population of this species. Two At Risk marsh bird species are likely to use this site. This site provides a protective buffer to a nationally significant area of the Tauranga Harbour, but vehicle use and weeds are impacting on the quality of the site.

Category 2

Notes

A herpetological survey in this area is recommended, because speckled skink (Chronically Threatened, Gradual Decline) were recorded on the eastern side of Rangiwaea Island in 1992 (Owen 1993). There is now some doubt about the correct identification, and the species is more likely to have been shore skink (K. Owen pers. comm.).

Part of this site is in the Motungairo Key Ecological Zone (Wildlands 2006g).

References

Beadel 1992a; Owen 1993; Wildland Consultants 2006g.

RANGIWAEA ISLAND ESTUARY

Site Number	066
Grid Reference (NZMG)	E2784855 N6392060
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	21.3 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sea rush tussockland and oioi rushland.	Intertidal flat
Palustrine/Terrestrial	2. Manuka-(mamaku) scrub.	Wetland, beach sands
Palustrine	3. Grey willow-(ti kouka) forest and raupo reedland.	Wetland
Terrestrial	4. Sandspit vegetation. (Beadel 1992a and Wildland Consultants 2006g)	Sandspit

Vegetation and Indigenous Flora

This site includes saline and freshwater wetlands in an inlet which is almost fully enclosed by Rangiwaea Island. The dominant species are sea rush, oioi, and manuka, with areas of grey willow forest and raupo reedland on the inland parts of the site. Other species include *Carex sinclairii* and ti kouka. Pingao (Chronically Threatened, Gradual Decline) occurs on the sandspit at the western end of the site (Beadel 1994a).

Fauna

The sandspit is a nesting area for northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable) (John Heaphy pers. comm. 2006). North Island fernbird (At Risk, Sparse) were recorded in 1992 (Owen 1993).

Condition/Pressures

Owen (1993) noted rubbish dumping, stock access, vehicle access, and a range of weed species.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	H

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

This site is considered to be a good example of manuka scrub, contiguous with saline wetland types which are characteristic of Tauranga Ecological District (Beadel 1994a). It is regionally significant because it provides good habitat for an At Risk marshbird species, and includes a small nesting area for northern New Zealand dotterel, which is an Acutely Threatened species. This site provides a protective buffer to a nationally significant area of the Tauranga Harbour.

Category 2

Notes

The vegetation in this site has been ranked as being of District significance (Beadel 1994a), and was classed as a high quality habitat for marshbirds in Owen (1993).

Part of this site is in the Motungairo Key Ecological Zone (Wildlands 2006g).

References

Owen 1993; Beadel 1992a; Beadel 1994a; Wildland Consultants 2006g.

RANGIWAEA ISLAND EAST

Site Number	067
Grid Reference (NZMG)	E2785380 N6392962
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	17.2 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sea rush tussockland.	Intertidal flat
Estuarine	2. <i>Baumea juncea</i> -saltmarsh ribbonwood-oioi sedgeland	Intertidal flat
Estuarine	3. Oioi rushland.	Intertidal flat
Estuarine	4. Mangrove shrubland.	Intertidal flat
Palustrine	5. Manuka shrubland. (Beadel 1992a and Wildland Consultants 2006g)	Wetland

Vegetation and Indigenous Flora

This site comprises estuarine wetland and a very small palustrine wetland on the eastern shore of Rangiwaea Island. Species in the estuarine wetlands include sea rush, oioi, *Baumea juncea*, and mangrove. Manuka is the dominant species in the palustrine wetland. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail sign and North Island fernbird (both At Risk, Sparse) were recorded in 1992 (Owen 1993).

Condition/Pressures

The site is bordered by a narrow fringe of mixed exotic scrub. Old vehicle tracks were noted in 1992 (Owen 1993), but they are no longer apparent today. Mangrove shrubland appears to have developed along the outer edge of the saltmarsh since the early 1990s.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	H
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	H

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site comprises an extensive area of high quality estuarine vegetation on the eastern side of Rangiwaea Island, where pressures on natural character appear to be low. It provides reasonably good habitat for threatened marshbird species and may have one of the most northern populations of the Chronically Threatened speckled skink, though recent information on this species at this site is lacking.

Category 2

Notes Owen (1993) ranked this site as high quality habitat for marshbird species.

A herpetological survey in this area is recommended, because skinks have been recorded on the eastern side of Rangiwaea Island in 1992 (Owen 1993). The species present needs to be confirmed, however it is probable that it is moko (K. Owen pers. comm. 2008).

References Beadel 1992a; Owen 1993; Wildland Consultants 2006g.

POIKE

Site Number	068
Grid Reference (NZMG)	E2788525 N6380902
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	31.0 ha
Altitudinal Range	0-40 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Palustrine	2. Grey willow-manuka forest.	Wetland
Palustrine	3. Manuka scrub.	Wetland
Terrestrial	4. (Wattle)/mamaku-Japanese honeysuckle-gorse scrub.	Alluvial flat
Palustrine	5. <i>Coprosma propinqua</i> subsp. <i>propinqua</i> shrubland.	Wetland
Terrestrial	6. Manuka-harakeke-toetoe shrubland.	Alluvial flat
Estuarine	7. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	8. Pampas tussockland.	Alluvial flat
Palustrine	9. Grey willow/pampas-harakeke tussockland.	Wetland
Estuarine	10. Oioi-sea rush-(saltmarsh ribbonwood) rushland.	Intertidal flat
Estuarine	11. Oioi-sea rush rushland.	Intertidal flat
Estuarine	12. Oioi-saltmarsh ribbonwood-harakeke- <i>Baumea juncea</i> rushland.	Intertidal flat
Terrestrial	13. Brush wattle-mamaku-ti kouka forest. (Wildland Consultants 2005e)	Hillslope

Vegetation and Indigenous Flora

This site is located on the south side of Waimapu Estuary. It includes estuarine wetlands and a grey willow-dominated wetland in a gully which flows into the estuary. The saline wetlands are dominated by searush and oioi, and pampas is common, particularly on the margins and along drains. Grey willow dominates the freshwater wetlands which also include indigenous species such as manuka, *Coprosma propinqua* subsp. *propinqua*, harakeke, and toetoe. No rare or uncommon plant species have been recorded.

Fauna

Banded rail, spotless crake, and North Island fernbird (all At Risk, Sparse species) were recorded in 1990 (Owen 1993) and North Island fernbird was recorded again in 2002 and 2005 (Wildland Consultants 2002a and 2005e). White-fronted tern (Chronically Threatened, Gradual Decline) and several common coastal birds were recorded in 2002 (Wildland Consultants 2002a).

Condition/Pressures

The following weed species are currently present within the site: *Pinus* spp., tree privet, Chinese privet, Japanese honeysuckle, woolly nightshade, grey willow, blackberry, brush wattle, gorse and pampas (Wildland Consultants 2005e). *Spartina* is present (K. Owen pers. comm.). The abundance and distribution of pampas and Japanese honeysuckle have increased in the site in recent years. Grey willow, tree privet, and radiata pine may also have spread (Wildland Consultants 2005e).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

This site is of regional significance because of the diverse vegetation communities present in combination with other features, including its large size and close proximity to the Waimapu Estuary site. It is a moderate-sized, diverse example of the estuarine and freshwater wetland vegetation of Tauranga Harbour. It supports at least three At Risk bird species, and one Chronically Threatened. This site is dissected at one end by a state highway. Pest plant infestations appear to be increasing in extent/density.

Category 2

Notes This site is ranked as a Category 1 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Owen 1993; Wildland Consultants 2002a and 2005e.

NGAPEKE ROAD WETLANDS

Site Number	069
Grid Reference (NZMG)	E2793525 N6382588
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	20.1 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sandfield.	Intertidal flat
Estuarine	2. Oioi-sea rush rushland.	Intertidal flat
Estuarine	3. Mangrove scrub, shrubland, and loamfield.	Intertidal flat
Estuarine	4. Sea rush-oioi-mangrove tussockland.	Intertidal flat
Terrestrial	5. Harakeke-pampas-manuka-saltmarsh ribbonwood/sea rush-oioi tussockland.	Flats
Estuarine	6. Sea rush-oioi tussockland.	Intertidal flat
Palustrine	7. Manuka-(raupo) shrubland.	Wetland
Palustrine	8. Manuka-grey willow/harakeke- <i>Baumea juncea</i> -saltmarsh ribbonwood shrubland.	Wetland
Palustrine	9. Grey willow/manuka-raupo scrub.	Wetland
Palustrine	10. Grey willow forest.	Wetland

(Wildland Consultants 2005e)

Vegetation and Indigenous Flora

Ngapeke Road Wetland is on the southern side of the Rangataua Estuary. It includes saline wetlands on the estuary margin and freshwater wetlands in an adjacent gully. The saline wetlands are dominated by mangrove, sea rush, and oioi. The freshwater wetland in the valley is dominated by grey willow. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail sign and North Island fernbird (both At Risk, Sparse) were recorded in 1990 (Owen 1993).

Condition/Pressures

Gorse, grey willow, blackberry, pampas, and she-oak (Owen 1993, Wildland Consultants 2005e).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Ngapeke Road Wetland is locally significant because it includes examples of indigenous vegetation types which occur widely in Tauranga Harbour. The site is narrow and convoluted, which decreases its resilience to the range of pressures operating on it. Two At Risk bird species were recorded here in 1990.

Category 2

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Owen 1993; Wildland Consultants 2005e.

OHINEANGAANGA STREAM

Site Number	070
Grid Reference (NZMG)	E2801195, N6371470
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Ohineangaanga Stream Marginal Strip; QEII 5/03/183), part unprotected.
Site Area	32.3 ha
Altitudinal Range	20-100 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-radiata pine-tawa-(silver wattle)-(black wattle)/kamahi-mamaku-(kanuka)-(kohekohe)-(brush wattle) forest with occasional pukatea.	Gully
Terrestrial	2. Mahoe-pate-crack willow-mamaku/blackberry- <i>Calystegia sepium</i> - <i>Calystegia silvatica</i> -(bracken) shrubland.	Alluvial flat
Terrestrial	3. <u>Mamaku</u> -mahoe-kohuhu-tree privet-(supplejack)-(<i>Calystegia silvatica</i>) forest with occasional mangeao and kanuka ↔ radiata pine- <i>Eucalyptus</i> sp.-black wattle-silver wattle forest.	Gully
Terrestrial	4. <i>Salix</i> sp./ <u>kanuka</u> forest. (Current study)	Gully

Vegetation and Indigenous Flora

Vegetation Unit 1 is predominantly indigenous, although exotic trees form a significant component of the canopy near upper edges of the gully. The quality of vegetation generally becomes more degraded downstream, where the site is split into two strips of vegetation occupying the slopes of the gully, with kiwifruit orchards covering the stream terrace in the middle. A population of kingfern (Chronically Threatened, Serious Decline) is located at the southernmost end of the site (in Vegetation Unit 1). Other indigenous species noted at this site include kotukutuku, hangehange, ponga, rangiora, karaka, mapou, porokaiwhiri, karamu, kawakawa, whau, *Diplazium australe* and *Pneumatopteris pennigera*. Titoki, hinau, *Lycopodium varium*, *Doodia australis*, mingimingi and *Collospermum hastatum* were also noted in Beadel (1995a).

Fauna

Kereru (Chronically Threatened, Gradual Decline) were recorded at this site during the current study, as were silvereye, pukeko, Australasian harrier, North Island fantail, grey warbler, New Zealand kingfisher, blackbird, pheasant and hare.

There is a 1980 record of Hochstetter's frog (At Risk, Sparse) from Ohui Stream, which flows into Ohineangaanga Stream, about 5 km from this site (DOC 2008A). If managed appropriately, this site could potentially provide habitat for this species in the future. Giant kōkopu (Chronically Threatened, Gradual Decline), banded kōkopu, and short-finned eel were recorded in Ohineangaanga Stream by Wildland Consultants (2006f). There are also 2002 records of long-finned eel (Chronically Threatened, Gradual Decline),

northern koura (Chronically Threatened, Gradual Decline), short-finned eel and torrentfish from Ohineangaanga Stream (NIWA 2008). Inanga, common bully, grey mullet, common smelt, mosquito fish and rainbow trout have also been found in the Ohineangaanga catchment (Wildland Consultants 2007c).

North Island brown kiwi (Chronically Threatened, Serious Decline) were recorded in the Ohineangaanga corridor in the 1980s, but it is not known if they are still present (Wildland Consultants 2007c).

Condition/Pressures

The presence of king fern at the southern end of this site is indicative of the relatively good condition of the understorey at the upstream end of this forest. Nonetheless pest plants are present in the understorey, and these increase in abundance further down the stream. Pest plants noted at the site include woolly nightshade, monkey apple, canna lily, *Calystegia silvatica*, tradescantia, barberry, selaginella, jasmine, castor oil plant, montbretia, tree privet, banana passionfruit, Japanese honeysuckle, climbing dock, red cestrum, climbing gloxinia, elephant’s ear, Chinese lantern, climbing asparagus, wild strawberry (*Duchesnea indica*), and buddleia. Moth plant and maderia vine have previously been noted at the site (Wildland Consultants 2007c). Pest plant levels are worst where the site bound kiwifruit orchards and residential areas along the top of the gully. Dumping of organic and inorganic waste is likely to be a historic and present pressure around the peripheries of the site, and is a likely source of the wide variety of pest plant species listed above.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

Although this moderate-sized site is heavily modified by pest plants, this site is regionally significant because it contains one of the best populations of a Chronically Threatened species (king fern) in Tauranga Ecological District. A second Chronically Threatened species (kereru) also utilises habitat at this site. Three additional Chronically Threatened species (giant kōkopu, long-finned

eel, and northern koura) are also likely to be present in the stream at this site. The site provides a corridor function to the contiguous Category 2 RAP 'Ohineangaanga Stream' in Otanewainuku Ecological District, and comprises a moderate-sized area of semi-coastal forest in an ecological district where very little remains.

Category

2

Notes

The site adjoins Category 2 RAP 23 'Ohineangaanga Stream' in Otanewainuku ED (Beadel 2006). It is included in Smartgrowth Corridor No. 2 'Ohineangaanga', ranked as being second priority Level 3 (Wildlands 2007c and 2007d). Ohineangaanga Stream is recognised in the WBOP District plan as SES Site U14/24.

This site was identified as Category 1 in Beadel and Shaw (2000) - Site No. 32. It was ranked as having 'very high' botanical conservation values in Beadel (1995a).

References

Beadel 2006 and 1995a; WPOB District Plan; DOC 2008A; NIWA 2008; Beadel and Shaw 2000; Wildland Consultants 2006f, 2007c, and 2007d; Current study.

ELIZABETH WETLAND

Site Number	071
Grid Reference (NZMG)	E2807512, N6379235
Local Authority	Tauranga City Council
Status	Unprotected
Site Area	3.2 ha
Altitudinal Range	0-2 m
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation Type	Landform
Palustrine	1. <i>Juncus effusus</i> /pasture grassland.	Wetland
Palustrine	2. <i>Baumea articulata</i> reedland.	Wetland
Palustrine	3. <i>Eleocharis sphacelata</i> reedland. (Wildland Consultants 2007a)	Wetland

Vegetation and Indigenous Flora The site is a small lake in a dune hollow which is dominated by *Eleocharis sphacelata* and stands of *Baumea articulata*. It is surrounded by grazed pasture.

Fauna Australasian bittern (Acutely Threatened, Nationally Endangered) has been recorded at the site (2006 record C. Staite, DOC, pers. comm.). A pair of bittern regularly breed at this site (landowner pers. comm. to C. Staite, DOC).

Condition/Pressures The site is not fenced and the margins are grazed by domestic stock. However, they are unlikely to penetrate into the site because of the depth of the water. There is a small infestation of pampas.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	M
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification	This site is a good example of a dune lake in Tauranga Ecological District and is habitat for an Acutely Threatened species (Australasian bittern). Apart from the lakes on Matakana Island, no other dune lakes remain in Tauranga Ecological District.
Category	2
Notes	The site would benefit from fencing and planting of a buffer of suitable, locally sourced, indigenous species (for example manuka).
References	Wildland Consultants 2007a

KAITUNA RIVER FOREST

Site Number	072
Grid Reference (NZMG)	E2808466, N6366473
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Kaituna River Marginal Strip), part unprotected.
Site Area	61.1 ha (38.9 ha Tauranga ED, 22.2 ha Otanewainuku ED)
Altitudinal Range	20-80 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Radiata pine)-(rewarewa)/ <u>kanuka</u> /mamaku forest.	Gully
Terrestrial	2. Radiata pine/kanuka-tree privet-mamaku-ti kouka-mahoe forest.	Gully
Terrestrial	3. Radiata pine/rewarewa/kanuka forest.	Gully
Terrestrial	4. Kanuka-radiata pine/mamaku forest.	Hills
Terrestrial	5. Pohutukawa-pukatea-radiata pine/kanuka-mahoe-mamaku-(karaka) forest.	Hills
Terrestrial	6. <u>Kanuka</u> forest. (Current study)	Hills

Vegetation and Indigenous Flora

This site comprises slopes of secondary indigenous forest lining the Kaituna River gully, and several linked patches of indigenous forest. Sections of vegetation lining the river have been fenced from stock and planted in species such as tarata, harakeke, and akeake. Totara and karaka are occasional in parts of Vegetation Unit 1. In places the understorey is thick and comprises mamaku, karamu, wheki, hangehange, mahoe, ponga, kiokio, and rangiora with occasional kohuhu and kotukutuku. In other parts, which are grazed, the understorey is sparse. Grazed sections directly adjacent to the river have a groundcover of exotic grasses and herbs, *Diplazium australe*, and *Cyperus ustulatus*.

Kingfern (Chronically Threatened, Serious Decline) is known to be present further up the Kaituna Gorge (Wildland Consultants 2007c). It is possible that kingfern is also present at this site.

Fauna

North Island fantail, bellbird, grey warbler, pukeko, New Zealand kingfisher, turkey, California quail, and Australian magpie were observed at this site during the current study.

Tui, pied tit, robin, whitehead, bush falcon (Acutely Threatened, Nationally Vulnerable), kereru (Chronically Threatened, Gradual Decline) and North Island fernbird (At Risk, Sparse) have all been recorded in the Kaituna Gorge (Wildland Consultants 2007c) and may frequent this site.

Black shag (At Risk, Sparse), grey duck (Acutely Threatened, Nationally Endangered), and little shag are also known to be present in Kaituna Gorge (*ibid*) and are likely to be at least occasional visitors to the river at this site.

North Island brown kiwi (Chronically Threatened, Serious Decline) and whio

(Acutely Threatened, Nationally Endangered) were recorded from the Kaituna River area in the early 1980's, however, it is not known if these species are still present (see Innes and Shaw 1988 and Saunders 1983 as cited in Wildland Consultants 2007c).

Long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline) and short-finned eel have all been recorded within 1 km of the site in the Kaituna River (NIWA 2008). In total, fifteen indigenous species of fish have been recorded in the catchment of the Kaituna River (Wildland Consultants 2007b, based on data from the New Zealand Freshwater Fish Database (see NIWA 2008) and Boubée and Baker 2005). Other species recorded from the Kaituna catchment include giant kōkopu (Chronically Threatened, Gradual Decline), lamprey (At Risk, Sparse), yellow eye mullet (a marine wanderer), kahawai (a marine wanderer), torrentfish, koaro, banded kōkopu, inanga, common bully, giant bully, redfin bully, common smelt, black flounder, goldfish, mosquito fish, rainbow trout, and brown trout (Ibid.). The Kaituna River is an important recreational whitebait fishery, and the lower Kaituna River includes spawning sites of whitebait species (Mitchell 1990, Young and Ellery 2002).

North Island long-tailed bats (Acutely Threatened, Nationally Vulnerable) have been recorded in the Kaituna Gorge (Wildland Consultants 2007c), and may be present at this site.

Condition/Pressures

The gully is mostly surrounded by pastoral farming (cattle and sheep). Sections of the vegetation lining the river have been fenced from stock, although in places the fence has fallen into disrepair and no longer exclude stock. Several plantations of radiata pine, Tasmanian blackwood and lusitanica are scattered along the gully, and in some places have been interplanted with indigenous scrub (for example, Units 2 and 4). These areas are currently dominated by indigenous vegetation, but with time will become dominated by the planted pine and lusitanica. The condition of the site deteriorates downstream, with black wattle, silver wattle and tree privet becoming increasingly prevalent. Grey willow is present in the Kaituna River, which is also used for jet boating by a local tourist operator. Other pest plant species which are present at the site include tradescantia, wilding kiwifruit, gorse, and barberry.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Kaituna River natural area is locally significant because it forms the downstream end of a long corridor of vegetation stretching down the Kaituna River, which also includes an RAP in the adjacent ecological district. It contains a large, although convoluted, area of secondary forest dominated by kanuka. Two Chronically Threatened species are present in the stream at this site (Long-finned eel and northern koura). Another (kereru) is likely to utilise the forest habitat at the site.

Kaituna River natural area potentially provides habitat for two other Chronically Threatened species (king fern and North Island brown kiwi), four Acutely Threatened species (North Island long-tailed bat, bush falcon, whio and grey duck), and two At Risk species (North Island fernbird and black shag).

Category 2

Notes This site is part of Smartgrowth Corridor No. 5 'Kaituna' ranked as being second-priority, Level 1 (Wildland Consultants 2007c and 2007d). Parts of Kaituna gorge, upstream of this site, are included in the Category 2 RAP 44 'Kaituna River' (Beadel 2006).

Part of the Kaituna River natural area is outside Tauranga ED.

References

Wildland Consultants 2007c, 2007d, 2008b; Beadel 2006; NIWA 2008; Boubée and Baker 2005; Mitchell 1990; Young and Ellery; Innes and Shaw 1988 and Saunders 1983 as cited in Wildland Consultants 2007c; Current study.

KAITUNA RIVER WETLANDS (PART) AND KAITUNA RIVER MOUTH

Site Number	073
Grid Reference (NZMG)	E2809979 N6377826
Local Authority	Tauranga City Council and Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	41.7 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pampas tussockland	Artificial bund
Riverine	2. Tall fescue-paspalum- <i>Bolboschoenus fluviatilis</i> -sea rush-(pampas)-(gorse) grassland	Alluvial flat
Terrestrial/estuarine	3. Spinifex/ <i>Calystegia soldanella</i> sandfield	Beach sands
Riverine	4. Raupo reedland	Wetland
Riverine/estuarine	5. (Harakeke)/raupo- <i>Baumea articulata</i> reedland	Wetland
Riverine	6. Raupo/reed sweetgrass- <i>Schoenoplectus tabernaemontani</i> -tall fescue reedland	Wetland
Riverine	7. Raupo- <i>Baumea articulata</i> reedland	Wetland
Paulustrine	8. (Grey willow)/manuka-harakeke scrub	Wetland
Riverine	9. Harakeke- <i>Coprosma propinqua</i> subsp. <i>propinqua</i> /raupo- <i>Baumea articulata</i> harakeke-reedland	Wetland
Riverine	10. <i>Coprosma propinqua</i> subsp. <i>propinqua</i> -harakeke-ti kouka/ <i>Schoenoplectus tabernaemontani</i> -raupo reedland	Wetland
Palustrine	11. <i>Coprosma propinqua</i> subsp. <i>propinqua</i> - <i>Baumea articulata</i> reedland	Wetland
Riverine/estuarine	12. <i>Bolboschoenus fluviatilis</i> -raupo reedland	Wetland
Palustrine/terrestrial	13. Tall fescue- <i>Juncus edgariae</i> /reed sweetgrass- <i>Eleocharis acuta</i> rushland	Wetland
Palustrine/terrestrial	14. Ti kouka/ <i>Juncus edgariae</i> /pasture rushland	Wetland
Terrestrial	15. Maritime pine/boxthorn-radiata pine/pohuehue treeland	Hillslope
Paulstrine	16. Grey willow forest (Wildland Consultants 2007b, Current study)	Wetland

Vegetation and Indigenous Flora

This site comprises wetlands along the true left and right bank of the Kaituna River. It includes tidal and non-tidal, riverine and palustrine wetlands dominated by variable mixtures of raupo, harakeke, and *Baumea articulata* with other species such as *Schoenoplectus tabernaemontani*, *Bolboschoenus fluviatilis*, reed sweetgrass, and grey willow. At the river mouth there is an area of beach sand and a hillslope of maritime pine treeland which provides a roosting site for birds. Thirty-seven indigenous plant species were recorded in 2005 and none were rare or threatened (Wildland Consultants 2005g).

Fauna

Northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable) and banded dotterel (Chronically Threatened, Gradual Decline) and variable oystercatcher have bred there in the past and are present, and white-fronted tern (Chronically Threatened, Gradual Decline) have been recorded in large

numbers roosting at the river mouth. The site is a roosting area for a range of migrant species (OSNZ 2006). The treeland on the west side of the mouth of the Kaituna River is a roosting/breeding site for black shag (At Risk, Sparse) and pied shag (K. Owen, pers. comm.).

Spawning of inanga (*Galaxias maculatus*, not threatened), a culturally and commercially important species, was recorded in 1988, mainly among tidally-inundated tall fescue, Mercer grass and *Juncus edgariae* (Mitchell 1990).

Condition/Pressures Parts of the site are grazed. Threats to the inanga spawning areas including stock grazing during dry autumns, dying willows collapsing onto sites, and a paper road running through the spawning area (Mitchell 1990). Invasive weeds include grey willow, pampas, crack willow, and reed sweetgrass.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	M
	3.5	M
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	L
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site comprises small examples of wetland types which would once have extended along the margins of the Kaituna River and into the Kawa Swamp, a once large wetland which covered much of the Maketu Plains (Kirk 1873). Some of the vegetation types present here are not well-represented at other sites in the Tauranga Ecological District (Beadel 1994a). One Acutely Threatened, two Chronically Threatened, and one At Risk bird species have been recorded at the site.

Category 2

Notes Part of this site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e) and was identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000).

The Kaituna Wetland (a DOC-administered Reserve) is present on the south side of the river. The site forms part of the Smartgrowth 'Kaituna' corridor, ranked as Second-priority Level 1 (Wildland Consultants 2007c and 2007d).

References

Mitchell 1990; Beadel and Shaw 2000; Wildland Consultants 2005e; Wildland Consultants 2005g; OSNZ 2006; Wildland Consultants 2007b.

MAKETU ESTUARY

Site Number	074
Grid Reference (NZMG)	E2812791 N6377016
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	218.5 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sea rush tussockland, and saltmarsh ribbonwood-sea rush shrubland	Intertidal flat
Estuarine	2. Sandfield and mudflat (Wildland Consultants 2006g)	Intertidal and subtidal flats and channels

Vegetation and Indigenous Flora

Maketu Estuary comprises largely unvegetated intertidal and subtidal flats interpolated with a network of narrow shallow channels. There is a sizeable example of sea rush tussockland at the south of the estuary. Sea rush tussockland and saltmarsh ribbonwood-sea rush shrubland is present at the eastern tip of Papahikawai Island. There are also small, unmapped examples of these vegetation types elsewhere on the estuary margins. The intertidal flats support beds of cockles and pipi.

Fauna

Maketu has the highest diversity of wading bird species in the Bay of Plenty, including both internal and transequatorial migrants. This is the most important winter roost for NZ fairy tern (Acutely Threatened, Nationally Critical) in the Bay of Plenty, with 4-6 birds each winter. The eastern end of Maketu Spit and the opposite side of the estuary mouth are nesting areas for northern NZ dotterel (Acutely Threatened, Nationally Vulnerable) and variable oystercatcher. North Island fernbird (At Risk, Sparse) is present in the Wildlife Management Reserve and along the back of the dunes (John Heaphy, DOC, pers. comm. 2006). Caspian tern, grey duck, reef heron, and wrybill (all of which are Acutely Threatened, Nationally Vulnerable); banded dotterel, black-billed gull, white-fronted tern (all Chronically Threatened, Gradual Decline); black shag, banded rail (At Risk, Sparse); little black shag (At Risk, Range Restricted); and a range of migratory species have been recorded since 2003 (Owen *et al.* 2006; OSNZ 2006). Waders roost on sandspits either side of estuary mouth (Owen *et al.* 2006). In 2007 an Australasian bittern was observed in the band of searush tussockland between the lagoon and Papahikawai Island. Post-breeding flocks of about 50 northern NZ dotterel are present in autumn and winter (John Heaphy pers. comm.).

Shore skinks are common along the spit (John Heaphy, DOC, pers. comm. 2006).

Condition/Pressures

Domestic cat releases, hedgehogs, and mustelids are the main pest problems at this location (John Heaphy, DOC, pers. comm. 2006). Dogs also swim across the harbour entrance and roam on the spit. Radiata pine are scattered along the southern face of the spit. Pampas is scattered on the spit and on the margins of the lagoon. The lagoon is often covered in a dense growth of

smelly algae as a result of lack of water movement. Fencing of Papahikawai Island is not adequate to exclude domestic stock from the lagoon (this site) or Maketu Estuary (Site SVHZ-106).

Spartina is present in the estuary, despite a control programme in the 1990s. There is a threat of infilling (Kenny and Hayward 1996).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

Maketu Estuary has undergone extensive modification as a result of intense modification of its catchment, the diversion of the Kaituna River, and agricultural runoff, but it remains a regionally significant site because it is regularly used by a wider diversity of birds, including six Acutely Threatened, three Chronically Threatened, and three At Risk bird species, as well as international and New Zealand wader species. Twenty-four wader species have been recorded here over the last 20 years, some of which are particularly rare (Owen *et al.* 2006). It also provides habitat for marine fishes, shellfish, and migratory freshwater fish (for example “whitebait”).

Recommended for RAMSAR status as a Wetland of International Importance in Owen *et al.* (2006).

Category 2

Notes

A well-defined example of a meso-tidal lagoon, with hot springs located on southern side of estuary. Regionally important, of scientific value, moderately vulnerable to human modification (Kenny and Hayward 1996).

The site forms part of the Smartgrowth ‘Coastal strip’ corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor ‘Kaituna’, ranked as being Second-Priority Level 1 (Wildland Consultants 2007c and 2007d).

The lagoon (Maketu Wildlife Management Reserve) is impounded by causeways and culverts, but has a high potential for restoration.

References

Bergin 1991; Shaw *et al.* 1998; Kenny and Hayward 1996; OSNZ 2006; Dowding and Moore 2006; Owen *et al.* 2006; Wildland Consultants 2006g.

ARAWA WETLAND

Site Number	075
Grid Reference (NZMG)	E2813766 N6375888
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	18.8 ha
Altitudinal Range	<20 m asl

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. <u>Grey willow</u> -(ti kouka) forest with harakeke, <i>Coprosma propinqua</i> subsp. <i>propinqua</i> and manuka, and local crack willow at the northern end.	Wetland
Palustrine	2. <u>Pampas</u> tussockland with <i>Baumea articulata</i> , <i>Baumea rubiginosa</i> and local patches of sea rush, raupo, blackberry and Japanese honeysuckle.	Wetland
Palustrine	3. (Pampas)/ <u>sea rush</u> tussockland.	Wetland
Palustrine	4. Manuka-harakeke- <i>Baumea juncea</i> - <i>Coprosma propinqua</i> subsp. <i>propinqua</i> sedgeland and shrubland. (Beadel 1989b; Current study ¹)	Wetland

Vegetation and Indigenous Flora

When surveyed in 1989 (see Beadel 1989b) this wetland included a variety of reedlands, native herbfields and sedgelands. These have become increasingly overgrown by pampas and grey willow, which now form the major components of the vegetation. Small patches of reedland and herbfield remain interspersed with the pampas, grey willow and other pest plants. Species which were formerly more abundant in vegetation types and are likely to still be present (from Beadel 1989b) include raupo, bachelor's button, arrow grass, *Spergularia media*, *Isolepis cernua*, *Plantago coronopus*, oioi, saltmarsh ribbonwood, and *Selliera radicans*.

Cyclosorus interruptus (Chronically Threatened, Gradual Decline) and marsh fern (*Thelypteris confluens*) (Chronically Threatened, Gradual Decline) were recorded in Vegetation Unit 4 in 1989 (Beadel 1989b), and *Mimulus repens* (At Risk, Sparse) was also noted at the site (*ibid.*). These were still present in 1993 (Beadel 1993). Each of these species have been recorded in only two or three other sites within Tauranga ED.

Other species present include *Coprosma tenuicaulis*, swamp kiokio, and swamp millet (Beadel 1989b).

Fauna

Australasian harrier, welcome swallow and skylark were observed at this site during the current study. North Island fernbird and banded rail (both At Risk, Sparse) have both been recorded at this site (K. Owen pers. obs.).

Condition/Pressures

The hydrology of Arawa wetland has been drastically altered in the past by the

¹ Viewed from road.

construction of a causeway separating it from the estuary, and a system of drains and canals. Grey willow dominates most of the wetland now, forming a discontinuous canopy throughout Vegetation Unit 1. Pampas has formed a dense fringe along the wetland road margin and appears to have spread into most of the north-west side of the wetland (Vegetation Unit 2). Robinia and gorse appear to dominate a small area of higher ground to the south-east side of the wetland, an edge which is otherwise bounded by pastoral farms (cattle). Blackberry, brush wattle and canna lily were also noted at this site during the current study, and Japanese honeysuckle was noted in Beadel (1989).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	L-M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

Although mainly heavily modified by pest plants, this moderately-sized site contains one of the few remaining examples of the wetland vegetation of the Kawa swamp which once covered hundreds of acres west of Maketu (Kirk 1873). It forms part of an ecological sequence including Maketu estuary, another regionally significant site. The site includes one of only a few populations in the ecological district of two Chronically Threatened and one At Risk plant species, as well as two At Risk bird species.

Category 2

Notes

This site has been identified as a Category 1 natural heritage site in the Tauranga Ecological District (Beadel and Shaw 2000). The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor 'Kaituna', ranked as being Second-Priority Level 1 (Wildland Consultants 2007c and 2007d).

References

Kirk 1873; Beadel 1989b; Beadel and Shaw 2000; Wildland Consultants 2007c and 2007d; Current study.

ONGARE

Site Number	086
Grid Reference (NZMG)	E2771218 N6407396
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	25.4 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Radiata pine/ <i>Baumea juncea</i> forest.	Sandspit
Estuarine	2. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	3. Sea rush-oioi- <i>Baumea juncea</i> tussockland and rushland	Intertidal flat
Estuarine/terrestrial	4. <i>Olearia solandri</i> /oioi rushland, manuka scrub and shrubland, and estuary margin vegetation	Intertidal flat
Palustrine	5. (Ti kouka)-(grey willow)/(manuka)/ <i>Baumea juncea</i> - <i>Juncus</i> spp.- <i>Carex</i> spp. rushland	Wetland
Palustrine	6. Raupo-manuka reedland. (Wildland Consultants 2007a and Beadel 1992a)	Wetland

Vegetation and Indigenous Flora

The site is dominated by species which are typical of estuarine wetlands in Tauranga Harbour, and includes smaller examples of freshwater wetland. In 2003, the freshwater wetland east of the road was described as being dominated by grey willow with an understorey of *Baumea juncea*, manuka, mingmingi, *Coprosma tenuicaulis*, kiokio, and bracken (Wildland Consultants 2003c). It appears that grey willow and crack willow have been controlled recently. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded here in 1992 (Owen 1993). North Island fernbird was recorded again in 2003 (Wildland Consultants 2003c). The sandy beach on the end of the point is a high tide roost for wading birds (John Heaphy pers. comm. 2006). In 2006, Australasian bittern (Acutely Threatened, Nationally Endangered) were observed in the wetland on the eastern side of the road.

Condition/Pressures

Wild ginger is present on the spit beneath the pines but appears to be being controlled. Pampas and blackberry are present on the margins of the site. Motorcyclists ride on the spit and beach. This activity has the potential to disturb wildlife and damage vegetation.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site comprises estuarine habitat typical of Tauranga Ecological District, however weeds and direct human impacts have significantly modified its condition. One acutely threatened species is present. Two at risk bird species have been previously recorded here.

Category 2

References Beadel 1992a; Owen 1993; Wildland Consultants 2003c.

MAUAO 2

Site Number	111
Grid Reference (NZMG)	E2790379 N6391708
Local Authority	Tauranga City Council
Status	Protected (TCC reserves - Mauao, Mauao Recreation Reserve) and unprotected parts
Site Area	3.9 ha
Altitudinal Range	0-60 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa treeland.	Hillslope
Terrestrial	2. Akeake-manuka-tarata-kohuhu-ti kouka-ngaio-koromiko-harakeke scrub.	Hillslope
Terrestrial	3. Ngaio scrub.	Hillslope
Terrestrial	4. Pohutukawa-taupata/ <i>Ficinia nodosa</i> tree-tussockland.	Hillslope
Terrestrial	5. Macrocarpa/karaka-pohutukawa treeland.	Hillslope
Terrestrial	6. Sycamore-karaka-radiata pine treeland.	Hillslope
Terrestrial	7. Radiata pine-eucalyptus-(sycamore)/pohutukawa-poplar treeland.	Hillslope
Terrestrial	8. Kawakawa-whau-mamaku scrub.	Hillslope
Terrestrial	9. Kawakawa-pohuehue/pohuehue-blackberry shrubland.	Hillslope

(Wildland Consultants 2005e)

Vegetation and Indigenous Flora

Mauao 2 encompasses predominately indigenous vegetation on the eastern-facing, lower slopes of Mauao. It includes pohutukawa treeland and coastal scrub, some of which has been planted as part of a Council-managed restoration project. No uncommon plant species have been recorded. *Zoysia pauciflora* and *Oxalis rubens* are present (both are regionally uncommon species).

Fauna

Northern little blue penguins (Chronically Threatened, Gradual Decline) breed on the Mauao coast in good numbers (OSNZ 2006). Shore skinks are present but at low abundance (John Heaphy pers. comm. 2006). The land snail *Succinea archeyi* (Chronically Threatened, Serious Decline) is a rare inhabitant of the foreshore dunes (Powell 1933).

Condition/Pressures

Fire, erosion, and invasive weeds such as sycamore, pampas and other exotic grasses, for example kikuyu, cocksfoot, and ratstail (Wildland Consultants 2004a). This site includes revegetated areas (Wildland Consultants 2005e).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site is a mix of extensively modified indigenous and adventive vegetation, and includes revegetated areas. However, it provides a partial protective buffer to the nationally ranked 'Mauao 1' site, is a breeding area for a chronically threatened bird species, and forms part of a nationally significant geological feature.

Category 2

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e). Surveys for rare land snails are recommended.

Mauao has high historic, archaeological, and heritage values.

The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority (Wildland Consultants 2007c and 2007d).

References Kenny and Hayward 1996; Wildland Consultants 2004a; Wildland Consultants 2005e; OSNZ 2006.

CATEGORY 3 SITES

Site Name	Site Number
Lindemann Road Lookout	076
Waitekohe Stream	077
Poupou Stream	078
Wright Road	079
Tetley Road Inlet	080
Whatakao Stream	081
Stokes Road Coastal Forest	082
Hikurangi	083
Waitekohe Stream Mouth	084
Tutaetaka Island	085
Steele Road Wetlands A	087
Central Waihi Beach	088
Central Matakana Wetlands	089
Matakana Wetlands A	090
Waipapa Estuary Wetland	091
Ngakautuakina Point	092
Mangawhai Bay Inlet	093
Tirohanga Point Beach	094
Mangawhai Bay	095
Te Puna Estuary	096
Snodgrass Road Inlet	098
Newnham Road	099
Minden Scenic Reserve	100
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LINDEMANN ROAD LOOKOUT

Site Number	076
Grid Reference (NZMG)	E2764487, N6402565
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	4.4 ha
Altitudinal Range	100-180 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Puriri-tawa-rewarewa-pukatea/mamaku-kamahi forest.	Gully
Terrestrial	2. <u>Mamaku</u> -whauwhaupaku forest. (Current study)	Gully

Vegetation and Indigenous Flora

This site comprises a small area of forest which adjoins natural forests contiguous with Kaimai-Mamaku Conservation Park. Northern rata is also present, along with mahoe and *Metrosideros fulgens*.

Fauna

Grey warbler, bellbird, silvereve and tui were observed at this site during the current study. Hochstetter's frog (At Risk, Sparse) is known to occur within 2 km of the site in Kaimai-Mamaku Conservation Park (DOC 2008a), and it is possible that the site provides habitat for this species. The stream at this site flows into Tahawai Stream, which is habitat for long-finned eel (Chronically Threatened, Gradual Decline), short-finned eel and torrentfish (NIWA 2008).

Condition/Pressures

The site surrounds a residential property, and garden plants may be planted around the house. A small stand of *Cupressus* sp. is planted in the middle of the site. Maritime pine and brush wattle are also present, and montbretia and gorse are alongside the edge at Lindemann Road.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Lindemann Road natural area is locally significant because it acts as a buffer to adjacent natural forests in unprotected areas and Kaimai-Mamaku Conservation Park. Although very small and convoluted because of a residential property, it is linked to expansive areas of natural forest, and it contains semi-coastal forest typical of Tauranga ED. It is potentially habitat for Hochstetter's frog, and probably contributes to the quality of habitat for one Chronically Threatened freshwater species (long-finned eel).

Category 3

Notes This site is linked to Kaimai-Mamaku Conservation Park via an unprotected area of forest. Part of this site is included in SES T13/2 (WBOP District Plan).

References WBOP District Plan; DOC 2008a; NIWA 2008; Current study.

WAITEKOHE STREAM

Site Number	077
Grid Reference (NZMG)	E2765491 N6394663
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenants 8516, 8590, QEII 5/03/196) part unprotected.
Site Area	26.9 ha
Altitudinal Range	40-140 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-kohekohe-totara-(rimu)-(kahikatea) forest and treeland.	Alluvial flat
Terrestrial	2. Rewarewa-puriri-pukatea/kamahi-mamaku-mahoe-(kohekohe)-(rimu)-(kanuka) forest with local titoki and hinau.	Gully
Terrestrial	3. Rewarewa/ <u>kanuka</u> -mamaku-rimu forest.	Hills
Terrestrial	4. <u>Rewarewa</u> forest.	Hills
Terrestrial	5. <u>Puriri</u> forest.	Alluvial flat
Terrestrial	6. Mahoe-kanuka-rewarewa forest.	Alluvial flat
Terrestrial	7. <u>Manuka</u> scrub ↔ mamaku forest. (Current study and Wildland Consultants 2008a)	Hills

Vegetation and Indigenous Flora

This site comprises a long, narrow gully of forest which links to the Kaimai-Mamaku Conservation Park via natural areas at its upstream end, remnants of forest scattered along the Waitekohe Stream, and an area of secondary scrub. The forest canopy is diverse, and includes mature puriri in places. Vegetation Unit 7 also includes emergent rewarewa and karamu, and Anon (2000) reported that the understorey is in good condition, with hangehange, mahoe, ponga, kamahi and kawakawa. No uncommon plant species were observed at this site during the current study.

Fauna

New Zealand kingfisher were observed at this site during the current study. Common forest birds and occasional kereru (Chronically Threatened, Gradual Decline) are likely to be present however. Hochstetter's frog (At Risk, Sparse) has been recorded nearby in the Kaimai-Mamaku Conservation Park (DOC 2008a), and may utilise habitat at this site.

Condition/Pressures

Most of the gully is surrounded by radiata pine plantation, however at the lower end the site adjoins pastoral farms and residential areas. Wild kiwifruit and brush wattle are present in these areas of plantation forest. Maritime pine and pampas are present in the scrub (Vegetation Unit 7).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

Part of Waitekohe Stream natural area is protected by a QEII covenant. The forest at this site is a good quality example of diverse semi-coastal forest. The site contains a variety of vegetation types, including forest and treeland on alluvial flats and good quality secondary scrub. It is linked to large areas of natural forest in the Kaimai-Mamaku Conservation Park, and probably provides habitat for a Chronically Threatened bird species (kereru). An At Risk species (Hochstetter's frog) may also potentially utilise habitat at the site.

Category 3

Notes

The site is linked to an unnamed DOC Stewardship area, Kaimai-Mamaku Conservation Park, and an additional conservation covenant via an unprotected natural area in Otanewainuku ED. It is recognised as SES Site T14/9 in the WBOP District Plan. It was identified as part of a Category 1 site in Beadel and Shaw (2000).

References

WBOP District Plan; DOC 2008a; Beadel and Shaw 2000; Anon 2000; Wildland Consultants 2008a; Current study.

POUPOU STREAM

Site Number	078
Grid Reference (NZMG)	E2766768, N6391789
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 6561), part unprotected
Site Area	4.4 ha
Altitudinal Range	60-100 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-(radiata pine)-(Taiwan cherry)/ <u>kamahi-mamaku-totara-(miro)-(rimu)/mahoe-</u> makomako-(whauwhaupaku)-(puriri) forest. (Current study)	Gully

Vegetation and Indigenous Flora

The indigenous forest in this gully is dominated by emergent rewarewa over kamahi and mamaku. The forest appears to be at a late successional stage and, if maintained, is likely to be eventually replaced by a diverse podocarp-broadleaf forest with distinctly lowland character. Seedling, sapling and maturing puriri, kohekohe, tanekaha and porokaiwhiri are present alongside miro and rimu under the canopy. Kiekie is present in the understorey with a range of forest ferns including *Adiantum cunninghamii*, and *Blechnum fluviatile*. Kotukutuku overhangs Poupou Stream from tall, vertical streambanks.

Fauna

Australasian harrier, New Zealand kingfisher, North Island fantail, grey warbler and silvereve were observed at this site during the current study. Poupou Stream drains into the Aongatete River, which is habitat for long-finned eel (Chronically Threatened, Gradual Decline) (NIWA 2008), and this site probably enhances the quality of habitat for this species. Other species which are also present in the Aongatete River catchment include northern koura (Chronically Threatened, Gradual Decline) and short-finned eel (*ibid.*).

Condition/Pressures

The vegetation at this site alongside Poupou stream is in excellent condition, and is fenced from stock. Ungulate browsers, either goats or deer, are present at this site as evidenced by browse on understorey shrubs. These may access the site down Poupou stream from the adjacent Kaimai Range. Possums are also present at the site.

In addition to mammalian browsers, several weed species are present at the site, such as Taiwan cherry and ivy (*Hedera helix*). These have the potential to disrupt the successional sequence of the forest.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Poupou Stream is locally significant because it is a good quality example of semi-coastal forest representative of the ecological character of Tauranga ED. It is linked to expansive areas of natural forest in the Kaimai-Mamaku Conservation Park, making its effective area much greater than that within Tauranga ED. The site also probably enhances the quality of habitat for at least one Chronically Threatened freshwater species (long-finned eel).

Category 3

Notes

This site has been identified as SES Site UT14/5 (WBOP District Plan). SES UT14/5 links this site to Kaimai-Mamaku Conservation Park along Poupou Stream.

References

WBOP District Plan; NIWA 2008; Current study.

WRIGHT ROAD

Site Number	079
Grid Reference (NZMG)	E2768846, N6390600
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	33.2 ha (30.9 ha Tauranga ED, 2.3 ha Otanewainuku ED)
Altitudinal Range	40-140 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Maritime pine)-(radiata pine)/rewarewa-(rimu)/kanuka-mamaku-pukatea forest with occasional puriri. (Current study)	Undulating low hills

Vegetation and Indigenous Flora These hillslopes of mostly secondary indigenous forest are centred around three tributary streams of Whatakao Stream. Other species present are tanekaha, porokaiwhiri, and lancewood. Mature puriri and kauri rickers are present in parts of the site which are located in the neighbouring ecological district.

Fauna No birds were observed at this site during the current study. The site is relatively close to expansive areas of natural forest in the Kaimai-Mamaku Conservation Park however, and it is likely that common forest birds and kereru (Chronically Threatened, Gradual Decline) frequent the site regularly. The streams at this site drain into Whatakao Stream. Long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline) and short-finned eel were recorded in Whatakao Stream in 2002 (NIWA 2008). Although the streams at this site are likely to be relatively small, they may provide habitat for these species.

Condition/Pressures The forest is in very good condition, and is mostly fenced and not grazed. Gorse and low numbers of woolly nightshade are present.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	M
	3.5	M
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site includes one of the best quality examples of secondary forest in the ecological district. Pockets of remnant primary forest increase the potential of this site to regenerate naturally into diverse indigenous forest. The site provides potential habitat for threatened species such as kereru (Chronically Threatened). The stand of kauri present at this site, although small, is nonetheless one of the few present in the ecological district.

Category 3

Notes Parts of this site are outside Tauranga Ecological District. These areas contain a gully of puriri-tawa-rewarewa forest with kanuka, mamaku and mahoe, and a gully of kauri/rewarewa-(pukatea)/kanuka-mamaku forest. These pockets of diverse, mature forest are potential seed sources for the regenerating secondary forest that comprises the majority of the site. The site is linked near-continuously via Whatakao stream and RAP 36 'Whatakao Stream' in the neighbouring ecological district (Beadel 2006) to the Kaimai-Mamaku Conservation Park.

References NIWA 2008; DOC 2008a; Beadel 2006; Current study.

TETLEY ROAD INLET

Site Number	080
Grid Reference (NZMG)	E2769194 N6400289
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	10.7 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub	Intertidal flat
Estuarine	2. Oioi rushland and sea rush tussockland	Intertidal flat
Palustrine	3. Grey willow forest, raupo reedland, and a mosaic of freshwater vegetation. (Beadel 1992a)	Wetland

Vegetation and Indigenous Flora Tetley Road inlet includes mangrove scrub, estuarine wetlands of oioi and sea rush, and palustrine wetlands dominated by grey willow and raupo. No rare or uncommon plant species have been recorded at this site.

Fauna Banded rail and spotless crane (At Risk, Sparse) were observed here in 1992 (Owen 1993). Upstream of the site, near Tetley Road, giant kōkopu (Chronically Threatened, Gradual Decline), banded kōkopu and short-finned eel have been recorded (Wildland Consultants 2005f).

Condition/Pressures Grey willow infestations in freshwater wetlands. Past damming of tidal inlet (Owen 1993).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Tetley Road Inlet is a small palustrine wetland and intertidal wetland system, containing vegetation types typical of Tauranga Ecological District. It has been modified by construction works and pest plant invasion. Chronically threatened giant kōkopu are known from upstream of the site, and two At Risk bird species have been recorded here in the past.
Category	3
References	Beadel 1992a; Owen 1993; Wildland Consultants 2005f.

WHATAKAO STREAM

Site Number	081
Grid Reference (NZMG)	E2769406, N6389747
Local Authority	Western Bay of Plenty District Council
Status	Part protected (QEII 5/03/185)
Site Area	26.3 ha (24.0 ha in Tauranga ED, 2.3 ha in Otanewainuku ED)
Altitudinal Range	20-140 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa/puriri-kanuka-tanekaha-mamaku forest.	Hills
Terrestrial	2. Maritime pine-rewarewa-rimu/ <u>kanuka</u> -mamaku-kamahi forest with local puriri.	Hills
Terrestrial	3. <u>Kanuka</u> -gorse shrubland.	Hills
Terrestrial	4. Rewarewa/ <u>kamahi</u> - <u>kanuka</u> /pasture forest.	Hills
Terrestrial	5. <u>Puriri</u> forest.	Hills
Terrestrial	6. Rewarewa/kanuka-kamahi-(mamaku)-(radiata pine) forest.	Hills
	(Current study)	

Vegetation and Indigenous Flora

Secondary indigenous forest, dominated by kanuka, mamaku and kamahi with emergent rewarewa, covers most of the gully around Whatakao Stream at this site. Local patches of large, mature puriri trees are also present, and in other areas maritime pine is a common emergent. Rimu and tanekaha are also present in the canopy. Where the forest bounds adjacent pasture areas of gorse, rank grass, and *Paesia scaberula* are present. Several small stands of forest in nearby farmland also form parts of this site.

Fauna

This site was viewed from a distance, so no birds were observed during the current study. The site is close to expansive areas of natural forest in the Kaimai-Mamaku Conservation Park however, and it is likely that common forest birds and kereru (Chronically Threatened, Gradual Decline) frequent the site regularly. Long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline) and short-finned eel were recorded in Whatakao Stream in 2002 (NIWA 2008).

Fauna present in the adjacent RAP 36 'Whatakao Stream' includes tui, bellbird, and grey warbler (Beadel 2006), and North Island brown kiwi may be present, having been recorded 20 years prior (Fauna Survey Unit, unpublished, as cited in Beadel 2006). Fifty-three species of land snail have been identified in the adjacent RAP 36, including four of restricted distribution: *Mocella prestoni*, *Therasiella serrata*, *Rhytida greenwoodi*, and *Schizoglossa novoseelandiae* (Mayhill 1994 as cited in Beadel 2006). It is possible that these species are also present within the site.

Condition/Pressures

Patches of maritime pine are interspersed with the vegetation at this site, sometimes dominating the canopy. A railway siding runs alongside the site, and pine is common along this. Patches of radiata pine plantation are also present adjacent to the site, though generally the site is surrounded by pastoral

farming.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

Parts of Whatakao Stream are protected under a QEII covenant. It is a moderately sized area of indigenous forest which is linked to more expansive natural forests via a neighbouring RAP. The stream which flows through the site is habitat for two Chronically Threatened species (long-finned eel and northern koura). The forest is likely to provide habitat for at least one Chronically Threatened bird species (kereru), and may provide habitat for several snail species of restricted distribution.

Category 3

Notes

This site is linked to Kaimai-Mamaku Conservation Park via RAP 36 'Whatakao Stream' in Otanewainuku ED (Beadel 2006). The site is also included in Environment Bay of Plenty corridor 'Work Road' (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d). SES Site T14/13 includes most of the site (WBOP District Plan).

Parts of Whatakao Stream natural area are outside Tauranga ED.

References

NIWA 2008; DOC 2008a; Beadel 2006; Mayhill 1994 as cited in Beadel 2006; Fauna Survey Unit, unpublished, as cited in Beadel 2006; WBOP District Plan; Current study.

STOKES ROAD COASTAL FOREST

Site Number 082
Grid Reference (NZMG) E2769703 N6403839
Local Authority Western Bay of Plenty District
Status Protected (WBOPDC reserve) and unprotected parts
Site Area 23.6 ha
Altitudinal Range 0-60 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Maritime pine)/rewarewa-mamaku-brush wattle-mahoe scrub. (Wildland Consultants 2006g)	Moderate hillslope

Vegetation and Indigenous Flora The site comprises mixed exotic and indigenous forest. Maritime pine is emergent over species such as rewarewa, mamaku, brush wattle and mahoe. No rare or uncommon plant species have been recorded at this site.

Fauna No information available.

Condition/Pressures Not known.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification A small example of modified secondary vegetation which acts as a protective buffer to the Katikati Inlet.

Category 3 - This site is one of very few examples in Tauranga ED of indigenous forest adjacent to the harbour margins/coast line.

References Wildland Consultants 2006g.

HIKURANGI

Site Number	083
Grid Reference (NZMG)	E2770165 N6409131
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	60.7 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Sea rush tussockland, oioi rushland, <i>Baumea juncea</i> sedgeland.	Intertidal flat
Estuarine	3. (Mangrove)-(sea rush) shrubland.	Intertidal flat
Estuarine	4. Sea rush/pasture rushland.	Intertidal flat
Palustrine	5. Constructed ponds.	Wetland
Palustrine	6. Manuka scrub and shrubland.	Wetland
Palustrine	7. Grey willow forest.	Wetland

(Beadel 1992a)

Vegetation and Indigenous Flora

The site includes mangrove scrub and shrublands, and estuarine wetlands which comprise variable mixtures of sea rush, oioi, and *Baumea juncea*. Towards the northern end of the site there are three constructed ponds, and on the landward margins of the site there are small examples of manuka scrub and willow forest. No rare or uncommon plant species have been recorded at this site.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered) was reported by an adjoining landowner, and banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1992 (Owen 1993).

Condition/Pressures

Owen (1993) noted weeds, organic rubbish dumping, illegal reclamation, and stock access. *Spartina* is being controlled in the southern end of this site (K. Owen pers. comm. 2008).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification The relatively large size of this site is offset by its long, narrow shape, lack of buffering from intensive land use, and extensive modification by a range of pressures. Further information is required on reports of an Acutely Threatened bird species here. It has been classed as of local significance because of its large size and it comprises large typical examples of the estuarine vegetation of Tauranga Harbour.

Category 3

References Beadel 1992a; Owen 1993.

WAITEKOHE STREAM MOUTH

Site Number	084
Grid Reference (NZMG)	E2770200, N6398092
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	28.6 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Sea rush-oioi-(saltmarsh ribbonwood) rushland and tussockland	Intertidal flat
Terrestrial	3. Sandspit vegetation.	Beach sands
Terrestrial	4. <i>Samolus repens</i> herbfield.	Beach sands
Palustrine/Estuarine	5. <i>Baumea articulata</i> -sea rush-oioi reedland.	Wetland
Palustrine	6. Open water	Artificial pond
	(Beadel 1992a)	

Vegetation and Indigenous Flora

Waitekohe Stream Mouth is predominantly mangrove scrub and shrubland, with variable mixtures of sea rush, oioi, and saltmarsh ribbonwood along the stream. Towards the north of the site there are small areas of sandspit vegetation, *Samolus repens* herbfield, and *Baumea articulata*-sea rush-oioi reedland. No rare or uncommon plant species have been recorded at this site.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail (At Risk, Sparse) and North Island fernbird (At Risk, Sparse) were recorded here in 1992 (Owen 1993).

Condition/Pressures

Drainage/stop-banking, stock access, *Spartina*, reclamation, and dumping of refuse were pressures on this site in 1992 (Owen 1993).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M

Criterion*	RPS Number*	Ranking**
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Waitekohe Stream Mouth is a site of moderate size which is relatively close to other similar sites (for example Te Rereatukahia, Matahui Road). These features increase its ecological viability. The indigenous vegetation has been modified by human and weed impacts. One Acutely Threatened bird species has been recorded from here, but additional information is required on the nature and extent of current use of this site.

Category 3

References Beadel 1992a; Owen 1993.

TUTAETAKA ISLAND

Site Number 085
Grid Reference (NZMG) E2770564 N6400075
Local Authority Western Bay of Plenty District Council
Status Unprotected (Māori owned)
Site Area 1.7 ha
Altitudinal Range 0 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest. (Beadel 1992a)	Harbour island

Vegetation and Indigenous Flora Tutaekaka Island includes a small example of pohutukawa forest. No rare or uncommon plant species have been recorded at this site.

Fauna No rare or uncommon species of fauna have been recorded.

Condition/Pressures Large tree privet and pampas are present near the Urupa and the coastal cliffs. Large radiata pine is present on the southern end of the island. (P. Cashmore pers. comm.)

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This island comprises a locally significant, small example of pohutukawa forest. This forest type was formerly abundant on headlands and hillslopes around Tauranga Harbour, however it has been greatly reduced in extent.

Category 3

Notes Vegetation was ranked as being of local significance in Beadel (1994a). There is an Urupa on the island (see 2003 aerial photographs) which has been excluded from the natural area.

References Beadel 1992a; Beadel 1994a.

STEELE ROAD WETLANDS A

Site Number	087
Grid Reference (NZMG)	E2771321 N6413018
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	9.9 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. <u>Grey willow</u> forest.	Wetland
Palustrine	2. <u>Manuka</u> /harakeke-pampas shrubland (Current study)	Wetland

Vegetation and Indigenous Flora

A large proportion of this site is grey willow forest, with the remainder comprising manuka shrubland containing frequent harakeke and pampas and occasional ti kouka. The understorey varies according to water levels. Drier sites include dense hangehange with karamu, mamaku, ponga, swamp kiokio, and bush rice grass. At wetter sites *Coprosma tenuicaulis*, *Baumea juncea* and *B. teretifolia* are prominent. *Baumea articulata* and *Bolboschoenus fluviatilis* are also present in localised patches.

Fauna

The stream is habitat for inanga, short-finned eel, and giant kōkopu (Chronically Threatened, Gradual Decline) (Grove *et al.* 1999). A single North Island fernbird (At Risk, Sparse) was heard within the site in 2006 (Wildland Consultants 2006g).

Condition/Pressures

Invasive weeds include grey willow, pampas, brush wattle and Japanese honeysuckle. Hawthorn is present at the southern end of the site. The landfill is a potential source of invasive weeds, and attracts cats and rats which may also impact upon the site. The area adjoins damp pasture (c.20 ha) to the north which has been acquired by DOC and is being reflooded to recreate a saltmarsh/freshwater wetland.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is degraded and the canopy is dominated by exotic species in places. However, it is locally significant because freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District, there is a recent record of one At Risk bird species, and a Chronically Threatened fish species has been recorded in the catchment of the stream which flows along the edge of the site.

Category 3

Notes The vegetation at this site was ranked as being of District significance in Beadel (1994a) (see Athenree 2).

References Beadel 1992a; Grove *et al.* 1999; Wildland Consultants 2006g; Current study.

CENTRAL WAIHI BEACH

Site Number 088
Grid Reference (NZMG) E22772047 N6406462
Local Authority Western Bay of Plenty District Council
Status Protected (WBOPDC reserve) and unprotected parts
Site Area 40.0 ha
Altitudinal Range 0-4 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Spinifex-pingao/ <i>Calystegia soldanella</i> -harestalk grassland.	Incipient foredune
Terrestrial	2. Spinifex-pingao-buffalo-(sand tussock) grass grassland.	Incipient foredune
Terrestrial	3. Spinifex-pingao-buffalo grass grassland.	Incipient foredune
Terrestrial	4. Lupin/spinifex-dimorphotheca/ <i>Calystegia soldanella</i> grassland.	Incipient foredune
Terrestrial	5. Lupin/ <i>Arctotis</i> -South African ice plant-pohuehue- <i>Gazania linearis</i> -buffalo grass herbfield.	Established foredune
Terrestrial	6. <i>Agapanthus praecox</i> -succulents-pohuehue herbfield.	Established foredune
Terrestrial	7. Lupin/ <i>Carex testacea</i> - <i>Gazania linearis</i> -cocksfoot-harestalk sedgeland.	Established foredune and transgressive dunefield
Terrestrial	8. (Lupin)/ <i>Ficinia nodosa</i> -marram/pohuehue- <i>Carex testacea</i> vineland.	Transgressive dunefield
Terrestrial	9. Houpara-(taupata-ti kouka)/ <i>Ficinia nodosa</i> /pohuehue- <i>Carex testacea</i> vineland.	Transgressive dunefield
Terrestrial	10. <i>Ficinia nodosa</i> /pohuehue-dimorphotheca-kikuyu- <i>Agapanthus praecox</i> vineland.	Transgressive dunefield
Terrestrial	11. Cape ivy- <i>Arctotis</i> - <i>Ficinia nodosa</i> -succulents- <i>Ipomea indica</i> -buffalo grass vineland.	Transgressive dunefield
Terrestrial	12. <i>Ficinia nodosa</i> / <i>Asparagus densiflorus</i> - <i>Gazania linearis</i> -pohuehue herbfield.	Transgressive dunefield
Terrestrial	13. Buffalo grass-pohuehue grassland.	Transgressive dunefield
Terrestrial	14. <i>Asparagus densiflorus</i> -buffalo grass herbfield.	Transgressive dunefield
Terrestrial	15. Succulents- <i>Agave americana</i> - <i>Agapanthus praecox</i> /pohuehue vineland.	Transgressive dunefield
Terrestrial	16. Cape ivy-pohuehue-buffalo grass vineland.	Transgressive dunefield.
Terrestrial	17. Gorse-oioi-(kikuyu) shrubland.	Transgressive dunefield.
Terrestrial	18. Gorse-broom/pohuehue scrub.	Transgressive dunefield.
Terrestrial	19. Gorse- <i>Agapanthus praecox</i> -pohuehue ↔ marram-pohuehue vineland.	Transgressive dunefield.
Terrestrial	20. (<i>Banksia integrifolia</i>)/ <i>Agapanthus praecox</i> - <i>Gazania linearis</i> - <i>Arctotis</i> -cape ivy-South	Transgressive dunefield.

Hydrosystem	Vegetation/Habitat Type	Landform
	African ice plant- <i>Calystegia soldanella</i> herbfield.	
Terrestrial	21. Pohutukawa-karo/ <u>bracken</u> - <i>Ficinnia nodosa</i> -buffalo grass- <i>Agapanthus praecox</i> fernland.	Transgressive dunefield.
Terrestrial	22. Cape ivy-kikuyu/succulents herbfield.	Transgressive dunefield
Terrestrial	23. Kikuyu-pohuehue grassland.	Transgressive dunefield
Terrestrial	24. (Pig's ear)/ <u>buffalo grass</u> -pohuehue with succulents grassland.	Transgressive dunefield
Terrestrial	25. Sandfield (Current study)	Beach sand

Vegetation and Indigenous Flora

This site comprises several narrow strips of spinifex and pingao (Chronically Threatened, Gradual Decline) dominated incipient and established foredunes backed by residential development and two deep undeveloped blocks that include heavily vegetated stabilised transgressive dunefields in addition to the incipient and established dune complex. In narrow areas weed invasion from adjacent lawns and gardens can be severe, and the vegetation highly modified. Some areas within narrow dune strips are subject to active restoration work motivated by recent severe erosion, which includes plantings of sand tussock and sand pimelea. *Oxalis rubens* (a regionally uncommon plant species, as per Beadel 2006b) is present.

Fauna

Variable oystercatcher, reef heron and Caspian tern were recorded in this study.

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta. Of indigenous vertebrates, only shore skink is likely to occur.

Condition/Pressures

Several invasive species including kikuyu, marram, and pampas are present at this site. The dunes around the mouth of Three Mile Creek are dominated by gorse, lupin, and pampas. The dunes north of Three Mile Creek also include a high component of exotic species, including garden escapes. Other invasive weeds in this site include *Asparagus densiflorus*, agapanthus, *Banksia integrifolia*, buffalo grass, cape ivy, dimorphotheca, Japanese honeysuckle, kikuyu, morning glory, Italian buckthorn, South African ice plant, a range of succulents, tradescantia, and ladder fern. Many of these weeds are have spread from adjacent private land, or are associated with areas in which dumping of organic waste occurs. Kikuyu and couch are spreading into dune vegetation from mown lawns adjacent to the dunes.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site includes a population of Chronically Threatened pingao (which has probably been planted at the site). This site occurs on a tombolo, a regionally significant geological feature. The site been impacted by development for residential housing and exotic plant species which dominate vegetation behind the foredune.

Category 3

Notes The site is a regionally significant example of a beach form shaped by long-term erosional processes (Kenny and Hayward 1996).

References Kenny and Hayward 1996; rapid field assessment (2006); current study.

CENTRAL MATAKANA WETLANDS

Site Number	089
Grid Reference (NZMG)	E2775285, N6406435
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	63.5 ha
Altitudinal Range	0 m asl

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. <u>Harakeke</u> -manuka/ <i>Baumea juncea</i> -pampas flaxland with scattered radiata pine.	Wetland
Palustrine	2. Manuka scrub ⇔ <i>Baumea juncea</i> sedgeland.	Wetland
Palustrine	3. <u>Manuka-ti kouka</u> -pampas shrubland.	Wetland
Palustrine	4. Manuka-mingimingi-ti kouka- <i>Coprosma tenuicaulis</i> - <i>Coprosma propinqua</i> subsp. <i>propinqua</i> /harakeke-pampas- <i>Baumea juncea</i> - <i>Baumea arthrophylla</i> - <i>Gleichenia microphylla</i> shrubland, with a few planted eucalyptus and pines.	Wetland
Palustrine	5. (Pines)/rushland with saltmarsh ribbonwood.	Wetland
Palustrine	6. Manuka-(mingimingi)-(swamp coprosma) scrub.	Wetland
Palustrine	7. (Pine)/harakeke-manuka flaxland.	Wetland
	(Current study)	

Indigenous Flora

This site comprises a mosaic of indigenous dominated wetlands and mixed indigenous-plantation shrublands. Indigenous wetlands occur along the coastal fringe, and are dominated by harakeke or *Baumea juncea*. The shrublands consist of indigenous shrubs, with pampas and sedges with taller pines and eucalyptus in rows within them. Some of the wetlands have also had radiata pine planted into them. Most of the area surrounding these sites, and including some of the sites themselves, has been cleared of previous vegetation which was a mix of eucalyptus and indigenous species resulting from failed efforts to establish plantation forestry. Following clearance most of the area was hummocked into lines upon which eucalyptus have been planted. Manuka, mingimingi and other indigenous species as well as pampas and brush wattle have responded to this disturbance in kind, resulting in the current vegetation.

Indigenous Fauna

No information available.

Condition/Pressures

Large infestations of pampas. Disturbance from plantation forestry operations. Most of the area surrounding these sites, and including some of the sites themselves, has been recently cleared of vegetation resulting from failed efforts to establish plantation forestry. Following vegetation clearance most of the area was windrowed. Eucalyptus have been planted on the top of the windrows. Six drains dissect this site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	M
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is locally significant because it includes examples of modified indigenous freshwater wetland, a habitat type which has been greatly reduced in extent in Tauranga Ecological District. This site is part of the extensive wetland complex at the northern end of Matakana Island (see the nationally significant sites Matakana Island 1, and Matakana Wetlands B and C sites).

Category 3

Notes This site is highly modified. It was cleared and drained, along with surrounding land, in preparation for planting as a eucalyptus-pine plantation forest. However this area was not planted or the crop failed. The overall extent of the site is difficult to determine because it is difficult to distinguish from the adjacent areas of exotic plantation on aerial photographs. There may be other natural or semi-natural areas that were not identified as a component of this study.

MATAKANA WETLANDS A

Site Number	090
Grid Reference (NZMG)	E2775779, N6408914
Local Authority	Western Bay of Plenty District Council
Status	Protected (DOC, Matakana Island Wildlife Refuge) (part) and unprotected parts
Site Area	5.70 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Ti kouka-grey willow/ <i>Baumea arthropphylla</i> -mingimingi-oioi-pampas shrubland.	Wetland
Palustrine	2. Grey willow-(mapou)-(ti kouka)-gorse/ <i>Baumea juncea</i> - <i>Baumea arthropphylla</i> shrubland.	Wetland
Palustrine	3. Grey willow-(mapou)/ <i>Baumea juncea</i> - <i>Baumea arthropphylla</i> shrubland.	Wetland
Terrestrial	4. Radiata pine/ <i>Ficinia nodosa</i> -oioi- <i>Baumea juncea</i> -mingimingi/pohuehue- <i>Zoysia pauciflora</i> sedgeland. (Current study)	Foredune plain

Vegetation and Indigenous Flora

This wetland comprises several areas dominated by grey willow, ti kouka, and manuka with occasional mapou and *Coprosma tenuicaulis* above a ground layer dominated by indigenous wetland sedges and rushes including oioi, *Baumea arthropphylla*, *B. juncea*, *Carex maorica*, *C. virgata*, the fern swamp kiokio, and occasionally the grass swamp millet. *Cyclosorus interruptus* (Chronically Threatened, Gradual Decline) occurs within grey willow forest. Juvenile royal fern occur sporadically on wet ground throughout the site. One remaining area within this site bears reedland dominated by oioi and *Ficinia nodosa* with pohuehue and low growing shrubs of mingimingi, mapou, and karamu. Natural or semi-natural areas on sand dunes within the foredune plain are now uncommon on Matakana.

Fauna

There is no information on the fauna of this site. However, it may provide habitat for species which are known from larger wetlands nearby, such as North Island fernbird and spotless crane.

Condition/Pressures

Radiata pine forestry surrounds all parts of this site and considerably affects their quality. The southernmost part has the largest royal fern infestation currently known on Matakana Island (discovered in 2006). Aerial control of this infestation was planned for, and undertaken in 2006/07 (W. Stahel pers. comm.). A few individuals of royal fern are still present. These are being monitored and controlled by Environment Bay of Plenty (Walter Stahel pers. comm. 2008).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	M
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This small site is locally significant because it comprises indigenous freshwater wetland, which is a habitat type that has been greatly reduced in extent in Tauranga Ecological District. The site itself is significantly impacted by surrounding land use but it is complementary to other freshwater wetlands at the northwestern end of Matakana Island.

Category 3

References Wildland Consultants 2006g, this study.

WAIPAPA ESTUARY WETLAND

Site Number 091
Grid Reference (NZMG) E2776049 N6389957
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 2.5 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest. (Wildland Consultants 2006a)	Wetland

Vegetation and Indigenous Flora

The canopy at this site is dominated by grey willow. The relatively open understorey includes hukihuki, and there is a dense groundcover of kiokio, *Carex geminata*, and *Baumea rubiginosa*. A stream flows out of the site and into drains that cross the pasture and enter the Waipapa River through floodgates in the stopbank. The drains are not fenced and pasture extends to their margins, though there are scattered saltmarsh ribbonwood, *Carex secta*, and *Juncus edgariae* near the water edge. No rare or uncommon plant species have been recorded at this site.

Fauna

No information.

Condition/Pressures

Heavy grey willow infestation.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

This small freshwater wetland is dominated by grey willow. It is locally significant due to its proximity to the Waipapa Estuary, which includes freshwater wetlands and large areas of saltmarsh. Wetlands are important for the maintenance of wetland bird populations. Freshwater wetlands have been greatly reduced in extent within the Tauranga Ecological District.

Category

3

Reference

Beadel 1992a, Wildland Consultants 2006a.

NGAKAUTUAKINA POINT

Site Number	092
Grid Reference (NZMG)	E2776209 N6392969
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	3.7 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest.	Hills, cliffland
Terrestrial	2. Mamaku-mahoe-gorse scrub. (Wildland Consultants 2006g)	Hills, cliffland

Vegetation and Indigenous Flora

Ngakautuakina is dominated by pohutukawa forest with smaller areas of secondary scrub. Indigenous species in the understorey of the pohutukawa forest include karaka, kawakawa, ponga, hangehange, *Gahnia* sp., and *Astelia banksii*. *Astelia banksii* is regionally uncommon (see Beadel 2006b).

Fauna

It is possible that moko skink (At Risk, Sparse), which is present at some headlands in the inner Tauranga Harbour, is present at this site (John Heaphy pers. comm. 2006).

Condition/Pressures

Exotic species include macrocarpa, brush wattle, wild ginger, ivy, pampas, and radiata pine. Adjacent residential properties may be a source of future weed invasions. Domestic cats and dogs may also be an issue, for example cats hunting moko skink. In the long-term, erosion of the coastal cliff may threaten the site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Ngakautuakina is locally significant because it comprises a small example of coastal pohutukawa forest. Pohutukawa forest was once common in Tauranga Ecological District, but has now been greatly reduced in extent and only small areas remain (for example Mauao, Kauri Point, Tuapiro, Matakana Point, Bowentown Heads, Motuhoa Island) (Beadel 1994a).

Category 3

References Wildland Consultants 2006g.

MANGAWHAI BAY INLET

Site Number	093
Grid Reference (NZMG)	E2777100 N6388518
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	7.1 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrublands.	Intertidal flat
Estuarine	2. Oioi rushland and sea rush tussockland	Intertidal flat
Estuarine	3. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Palustrine	4. Grey willow forest, manuka shrubland, and raupo reedland.	Wetland
(Beadel 1992a, Current study)		

Vegetation and Indigenous Flora Mangawhai inlet includes mangrove scrub and shrublands, oioi rushland, sea rush tussockland, and oioi-saltmarsh ribbonwood shrub-rushland. On the north side of the inlet there is a small area of grey willow forest, manuka shrubland, and raupo reedland. No rare or uncommon plant species have been recorded at this site. *Sparganium subglobosum*, a regionally uncommon species, is present.

Fauna Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1991 (Owen 1993).

Condition/Pressures In 2006, pampas was noted on the margins and stock have access to at least the extreme southern part of the site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Mangawhai Bay Inlet is locally significant because it is a small site which includes examples of indigenous vegetation (estuarine wetlands) which are typical of the vegetation of Tauranga Harbour, and small examples of freshwater wetlands. Stock access and pest plants are current pressures impacting on the natural character of the site. Two At Risk bird species have been recorded here.

Category 3

References Beadel 1992a; Owen 1993; Wildland Consultants 2006g.

TIROHANGA POINT BEACH

Site Number 094
Grid Reference (NZMG) E2778009 N6399092
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 0.6 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sandfield. (Wildland Consultants 2006g)	Beach sands

Vegetation and Indigenous Flora This site comprises unvegetated, mobile sands.

Fauna The beach is a regular nesting area for a pair of northern NZ dotterel (Acutely Threatened, Nationally Vulnerable) (John Heaphy pers. comm. 2006).

Condition/Pressures Possible stock access.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	L
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Tirohanga Point Beach is a small site that nonetheless provides breeding habitat for an Acutely Threatened species (northern NZ dotterel). The largest population for this species in the Bay of Plenty Region is centred on Tauranga Harbour.

Category 3

References Wildland Consultants 2006g.

MANGAWHAI BAY

Site Number	095
Grid Reference (NZMG)	E2778248 N6389979
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	17.3 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Sea rush tussockland.	Intertidal flat
Estuarine	3. Oioi-sea rush-saltmarsh ribbonwood rushland.	Intertidal flat
Palustrine	4. <i>Baumea articulata</i> reedland and <i>Bolboschoenus fluviatilis</i> reedland	Wetland
Terrestrial	5. Sandspit vegetation.	Beach sands
Palustrine	6. Manuka scrub (Beadel 1992a, Wildland Consultants 2006g, Current study)	Wetland

Vegetation and Indigenous Flora

Mangawhai Bay includes mangrove scrub and shrubland, with narrow estuarine and palustrine wetlands on the landward side. No rare or uncommon plant species have been recorded at this site.

Fauna

There is a significant high tide roost for waders and waterbirds at the northern end of this site on WBOPDC reserve (K. Owen 1993; John Heaphy pers. comm. 2006). The site hosts thousands of godwits, pied oystercatchers, and other waders (K. Owen *et al.* 2006). *Oligosoma* sp. skink and banded rail (At Risk, Sparse) were recorded in 1991 (Owen 1993).

Condition/Pressures

Dogs and people often disturb birds at the high tide roost (John Heaphy pers. comm. 2006). Owen (1993) noted stock access, mangrove destruction, reclamation, and a range of weed species.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Mangawhai Bay is locally significant because it includes, within a small site, good examples of indigenous vegetation (estuarine wetlands) which are relatively common in Tauranga Harbour. There is one wader roost site in the bay. Direct human impacts and pest plants have exerted significant pressure on the natural character of the site. One At Risk bird species has been recorded here. This site acts as a protective buffer to the nationally significant Mangawhai Bay Intertidal Flats wader roosting area.

Category 3

References Beadel 1992a; Owen 1993.

TE PUNA ESTUARY

Site Number	096
Grid Reference (NZMG)	E2778373 N6386902
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	14.9 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove shrubland.	Intertidal flat
Estuarine	2. (Saltmarsh ribbonwood)/oioi-sea rush rushland.	Intertidal flat
Estuarine	3. Mixed intertidal vegetation (raupo, saltmarsh ribbonwood, harakeke, oioi and mangrove seedlings).	Intertidal flat
Riverine	4. Grey willow-manuka/(gorse)/pasture forest.	Wetland
Riverine	5. Manuka/raupo-toetoe scrub.	Wetland
Terrestrial	6. Mamaku-(kamahi) forest (Wildland Consultants 2005c)	Hillslope

Vegetation and Indigenous Flora

Te Puna Estuary includes mangrove shrubland, (saltmarsh ribbonwood)/oioi-sea rush rushland, and mixed intertidal vegetation. Towards the southern end of the site there is a freshwater wetland which is dominated by grey willow, manuka, raupo, and toetoe. No rare or uncommon plant species have been recorded at this site. *Austrostipa stipoides* (a regionally uncommon plant species, as per Beadel 2006b) is present.

Fauna

Banded rail sign and North Island fernbird (both At Risk, Sparse) were recorded in 1991 (Owen 1993).

Condition/Pressures

Saltwater paspalum (*Paspalum vaginatum*) is encroaching from the landward margin into the margins of the mangrove shrubland. Grazing animals have access to the freshwater wetlands. Grey willow is encroaching on the margins of the manuka/raupo-toetoe scrub (Wildland Consultants 2005c). A serious infestation of pampas was noted in 2005 (Wildland Consultants 2005c). Extensive reclamation was recorded in 1991 Owen (1993).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Te Puna Estuary is locally significant because it includes examples of indigenous vegetation types (estuarine and freshwater wetlands) that are typical of the vegetation of Tauranga Harbour. Two At Risk bird species were recorded in 1991. Stock and pest plants are current pressures operating on the site.

Category 3

Notes The vegetation in the small, manuka-dominated wetland on the Te Puna Stream mouth was recognised in Beadel (1994a) as a site of District significance. 'Manuka forest would once have been relatively common adjacent to tidal streams of Tauranga Harbour, but has been greatly reduced in extent. This site comprises a good quality example of this type' (Beadel 1994a).

North Island fernbird and banded rail are known to still be present (K. Owen pers. comm.).

This site forms part of the eastern/western edge of Environment Bay of Plenty corridor 'Te Puna' (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d).

Large restoration works are currently being undertaken in the Te Puna Estuary (for example on the eastern side of the harbour, just north of State Highway 2, and these areas are likely to meet the criteria to be included in this natural area in the future.

References Beadel 1994a; Wildland Consultants 2005c.

SNODGRASS ROAD INLET

Site Number 098
Grid Reference (NZMG) E2779519 N6386867
Local Authority Western Bay of Plenty District Council
Status Protected (WBOPDC reserve) and unprotected parts
Site Area 15.3 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. (Saltmarsh ribbonwood)/oioi-sea rush rushland.	Intertidal flat
Palustrine	3. Grey willow forest.	Wetland
Terrestrial	4. Mamaku forest.	Hillslope
	(Beadel 1992a)	

Vegetation and Indigenous Flora Snodgrass Road Inlet includes mangrove scrub and shrubland and estuarine wetlands of saltmarsh ribbonwood, oioi, and sea rush. The freshwater wetland is dominated by grey willow and an adjacent hillslope is clad in mamaku forest. No rare or uncommon plant species have been recorded at this site.

Fauna Banded rail (At Risk, Sparse) were recorded in 1991 (Owen 1993).

Condition/Pressures Owen (1993) noted stock access and weeds.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	H
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification	Snodgrass Road Inlet is locally significant because it includes examples of indigenous vegetation (estuarine wetlands) which are typical of the vegetation of Tauranga Harbour, and modified examples of freshwater wetlands. One At Risk bird species has been recorded here in the past.
Category	3
Notes	This site forms part of the eastern/western edge of Environment Bay of Plenty corridor 'Te Puna' (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d).
References	Beadel 1992a; Owen 1993; Wildland Consultants 2005c.

NEWNHAM ROAD

Site Number 099
Grid Reference (NZMG) E2779703 N6387823
Local Authority Western Bay of Plenty District Council
Status Protected (WBOPDC reserve) and unprotected parts
Site Area 4.7 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. (Saltmarsh ribbonwood)/oioi-sea rush rushland	Intertidal flat
Palustrine	3. Manuka scrub. (Beadel 1992a, Wildland Consultants 2005c)	Wetland

Vegetation and Indigenous Flora Newnham Road is dominated by mangrove scrub and shrubland with estuarine wetlands of saltmarsh ribbonwood, oioi, and sea rush on the landward side. There are also more limited areas of manuka scrub, with adjacent areas of estuarine wetlands which include harakeke (this type is not mapped). No rare or uncommon plant species have been recorded at this site.

Fauna Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail sign, and North Island fernbird (At Risk, Sparse) were possibly detected in 1990 (Owen 1993).

Condition/Pressures Owen (1993) noted rubbish dumping and weed species.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	M
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification	Newnham Road is locally significant because it includes examples of indigenous vegetation (estuarine wetlands) which are typical of the Tauranga Harbour. One Nationally Endangered and two At Risk bird species have been recorded in the past.
Category	3
Notes	This site forms part of the eastern/western edge of Environment Bay of Plenty corridor 'Te Puna' (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d).
References	Beadel 1992a; Owen 1993; Wildland Consultants 2005c.

MINDEN SCENIC RESERVE

Site Number	100
Grid Reference (NZMG)	E2779810, N6384508
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Minden Scenic Reserve), part unprotected
Site Area	1.3 ha
Altitudinal Range	20-40 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Lacustrine	1. (Grey willow)/open water waterfield.	Pond
Terrestrial	2. (<i>Populus</i> sp.)-(<i>Eucalyptus</i> sp.)/totara-mamaku-grey willow-mahoe-(kohuhu)-(wharangi)-(kowhai)-(ti kouka)-(houhere) forest (includes plantings).	Gully
Terrestrial	3. Rewarewa/mamaku-mahoe-makomako-grey willow-(wild cherry) forest. (Current study)	Gully

Vegetation and Indigenous Flora

This site comprises a small lake surrounded by a narrow strip of indigenous and exotic vegetation (which includes planted indigenous species), and a gully of indigenous forest which forms one end of Minden Scenic Reserve. Species which appear to have been planted include kauri, horopito, tarata, *Griselinia littoralis*, *Hebe* sp., nikau, wharangi, houhere, titoki, *Pseudopanax laetus*, and kowhai. Other species present include rimu, kawakawa, ti ngahere, *Coprosma arborea*, and ponga.

Fauna

A grey duck (Acutely Threatened, Nationally Endangered) was present on the small lake at the time this site was inspected. Grey duck may be regular visitors to this lake. Silvereye, North Island fantail, tui, and eastern rosella were also observed at this site during the current study.

Condition/Pressures

Several large exotic trees emerge over the indigenous forest at this site (including *Eucalyptus* sp. and *Populus* sp.), although the presence of large stumps suggest that some have already been removed. Along the forest edge here, and along part of the lakefront, are plantings of various indigenous species (as detailed above) which are forming a thick edge to the reserve vegetation. The pest plants woolly nightshade and brush wattle are present in the forest. Japanese honeysuckle is present alongside the lake near the bridge.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	H
	3.3	L
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	M

Criterion*	RPS Number*	Ranking**
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Part of the site is within Minden Scenic Reserve, hence it is of regional significance. This site provides habitat for an Acutely Threatened species (grey duck). Although the site is very small, it is contiguous with larger areas of natural forest in Otanewainuku Ecological District.

Category 3

Notes This site is part of Environment Bay of Plenty corridor 'Te Puna' (Environment Bay of Plenty 2006) ranked as being second priority Level 2 (Wildland Consultants 2007d). Upstream of Minden Scenic Reserve are further areas of unprotected forest and an unnamed local purpose reserve, although these do not link directly with Kaimai-Mamaku Conservation Park. This site is recognised as SES Site U14/4 in the WBOP District Plan.

References WBOP District Plan; Environment Bay of Plenty 2006; Wildland Consultants 2007d; Current study.

WAIPA ROAD

Site Number	101
Grid Reference (NZMG)	E2780501 N6389082
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	5.0 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove shrubland.	Intertidal flat
Estuarine	2. Sea rush tussockland, oioi rushland, and oioi-sea rush- <i>Baumea juncea</i> rushland.	Intertidal flat
Terrestrial	3. <i>Carex pumila</i> -glasswort- <i>Ficinia nodosa</i> -haretail-spinifex-gorse-brush wattle sandfield.	Sandspit
Terrestrial	4. Radiata pine/sand treeland. (Beadel 1992a, Wildland Consultants 2003d, Wildland Consultants 2007a)	Sandspit

Vegetation and Indigenous Flora

Waipa Road is predominately mangrove shrubland and variable mixtures of sea rush, oioi, and *Baumea juncea*. There is a sandspit at the tip of the point. The sandspit comprises unvegetated sand, scattered tall radiata pines, and, at the end, an area of *Carex pumila*-glasswort-*Ficinia nodosa*-haretail-spinifex-gorse-brush wattle sandfield. A small population of *Tetragonia tetragonoides* (At Risk, Sparse) is present. *Zoysia pauciflora*, a regionally uncommon species, is also present.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1991 (Owen 1993). The sandspit is a known breeding site of northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable) and a roosting area for waders such as bar-tailed godwit, pied oystercatcher, variable oystercatcher, and pied stilt (K. Owen, DOC, pers. comm.). It is a breeding location (2006) for northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable).

Condition/Pressures

Waipa Estuary is subject to a range of pressures which are typical of many natural areas around/within Tauranga Harbour. *Spartina* (P. Cashmore pers. comm.), pampas, gorse, blackberry, saltwater paspalum, brush wattle, and wilding radiata pines are present. This site is part of an area which is being managed by the Waikaraka Estuary Management Group (Wildland Consultants 2003d).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Waipa Road is regionally significant because it is a habitat of an Acutely Threatened species (northern New Zealand dotterel). Banded rail and North Island fernbird (both At Risk, Sparse) were recorded here in 1991, and the site also provides habitat for an At Risk plant species (*Tetragonia tetragonoides*). It includes small examples of vegetation/habitat types which are typical of the indigenous biodiversity of the Tauranga Ecological District.

Category 3

Notes This site forms part of the eastern/western edge of Environment Bay of Plenty corridor 'Te Puna' (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d).

References Beadel 1992a; Owen 1993; Wildland Consultants 2003d and 2007a; P. Cashmore pers. comm. 2008.

WAIKARAKA ESTUARY

Site Number	102
Grid Reference (NZMG)	E2780475 N6388282
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	11.8 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Oioi rushland, sea rush tussockland, and oioi-sea rush- <i>Baumea juncea</i> rushland	Intertidal flat
Palustrine	3. Grey willow forest and manuka scrub. (Beadel 1992a, Wildland Consultants 2003d)	Wetland

Vegetation and Indigenous Flora

Waikaraka Estuary includes mangrove scrub and shrubland and estuarine wetlands dominated by oioi, sea rush, and *Baumea juncea*. Towards the south of the site there is a small wetland of grey willow and manuka. No rare or uncommon plant species have been recorded at this site. *Austrostipa stipoides* (a regionally uncommon plant species, as per Beadel 2006b) is present.

Fauna

Australasian bittern (Acutely Threatened, Nationally Endangered) sign, banded rail (At Risk, Sparse), and North Island fernbird (At Risk, Sparse) were recorded in 1991 (Owen 1993), and recently (K. Owen pers. comm.). Spotless crane (At Risk, Sparse) was recorded recently by the Waikaraka Estuary Management Group (K. Owen pers. comm.).

Condition/Pressures

Much of the Waikaraka catchment has been cleared for agricultural, horticultural, and residential development. Indigenous coastal forest on the estuary margins has been replaced by tree privet, Lombardy poplar, eucalyptus, and woolly nightshade. Sedimentation and eutrophication has led to a reduction in seagrass beds. Numerous weed infestations are present (for example grey willow) and there are ad hoc structures around the estuary margins (for example retaining walls). The Waikaraka Estuary Management Group has been actively restoring this site since 2003, following the restoration plan (see Wildland Consultants 2003d).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H

Criterion*	RPS Number*	Ranking**
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Waikaraka Estuary is locally significant because it includes examples of indigenous vegetation types which are typical of the vegetation of Tauranga Harbour, within a relatively small site. One Nationally Endangered and three At Risk bird species have been recorded recently.

Category 3

Notes This site forms part of the eastern/western edge of Environment Bay of Plenty corridor 'Te Puna' (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d).

References Beadel 1992a; Owen 1993; Wildland Consultants 2003d.

KUKA ROAD WETLANDS

Site Number	103
Grid Reference (NZMG)	E2781525 N6388867
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	7.7 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Palustrine	2. Manuka shrubland.	Wetland
Palustrine	3. Raupo reedland.	Wetland
(Beadel 1992a, Current study)		

Vegetation and Indigenous Flora Kuka Road wetland is dominated by grey willow forest, with smaller examples of manuka shrubland and raupo reedland. Other species within the site include gorse, karo, wattle, pampas, harakeke, blackberry, bracken, woolly nightshade, and eucalyptus (Owen 1993). No rare or uncommon plant species have been recorded at this site.

Fauna No rare or uncommon species of fauna have been recorded at this site. Waders roost on adjacent beach when conditions are suitable.

Condition/Pressures Owen (1993) noted stock access and a range of weed species including woolly nightshade, pampas, grey willow, and blackberry.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

This site is locally significant. It is freshwater wetland, a habitat type that has been significantly decreased in extent throughout New Zealand, though this site has been modified by stock access and a range of weed species.

Category

3

References

Beadel 1992a; Owen 1993.

OPUREORA INLET

Site Number 104
Grid Reference (NZMG) E2781798 N6393464
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 6.1 ha
Altitudinal Range 0 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sea rush tussockland.	Intertidal flat
Estuarine	2. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Palustrine	3. (Ti kouka)/ <i>Cyperus ustulatus</i> sedgeland. (Wildland Consultants 2006g and Beadel 1992a)	Wetland

Vegetation and Indigenous Flora Opureora inlet comprises sea rush tussockland, oioi-saltmarsh ribbonwood shrub-rushland, and (ti kouka)/*Cyperus ustulatus* sedgeland. No rare or uncommon plant species have been recorded at this site.

Fauna North Island fernbird (At Risk, Sparse) were recorded in 1992 (Owen 1993), and were still present in 2006 (John Heaphy pers. comm. 2006).

Condition/Pressures Weed invasion of the freshwater wetland; 4WD vehicles.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	M
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification	Although relatively small in size, this site contains freshwater and estuarine wetlands and acts as a protective buffer to the nationally significant Opureora Spit. One At Risk bird species has been recorded here recently.
Category	3
Notes	This site is part of the Motungaio Key Ecological Zone (Wildlands 2006g).
References	Owen 1993; Beadel 1992a; Wildland Consultants 2006g.

BLUE GUM BAY 2

Site Number	105
Grid Reference (NZMG)	E2782668 N6397533
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC Reserve) and unprotected parts
Site Area	62.8 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Palustrine	2. Ti kouka-grey willow-manuka forest and raupo reedland.	Wetland
Estuarine	3. Sea rush tussockland and oioi rushland.	Intertidal flat
Palustrine	4. Grey willow forest and ti kouka-grey willow-manuka forest and raupo reedland.	Wetland
Palustrine	5. <i>Baumea articulata</i> reedland.	Wetland
Estuarine	6. Oioi rushland, and oioi-saltmarsh ribbonwood shrub-rushland, and <i>Baumea juncea</i> sedgeland, and <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat
Palustrine	7. Manuka scrub and raupo reedland.	Wetland
Estuarine	8. Mangrove scrub and shrubland. (Beadel 1992a; Beadel 1994a; Wildland Consultants 2006g)	Intertidal flat

Vegetation and Indigenous Flora

Estuarine and palustrine wetlands are present in Blue Gum Bay and in the gullies which drain into the bay. No rare or uncommon plant species have been recorded, but there has not been a detailed botanical survey of this site.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1992 along the western margins of Blue Gum Bay (Owen 1993).

Condition/Pressures

This site includes modified wetland areas fringing and buffering the nationally significant wetlands of Blue Gum Bay 1. These areas have been affected variously by the following pressures: weed infestation (especially grey willow, woolly nightshade, pampas, wattle species and gorse), drainage, planting of exotic trees (for example *Eucalyptus* sp.), wilding trees (for example radiata pine), domestic and farm rubbish dumping, cattle grazing, effluent run-off, and other agricultural impacts.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M

Criterion*	RPS Number*	Ranking**
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Vegetation contains examples of estuarine vegetation habitat types commonly found elsewhere in Tauranga ED. The site is large but fragmented, convoluted in shape and affected by a wide range of pest plants and human activity. These modified wetlands are locally significant as ecological linkages and partial buffers to the nationally significant wetlands at the centre of Blue Gum Bay (Blue Gum Bay 1). Two At Risk wetland bird species are known to occur here.

Category 3

Notes This site includes Blue Gum Bay 2 (from Beadel 1994a), in which the vegetation was ranked as being of District significance, as well as additional areas to the north and south. It also includes site numbers 40 and 50 from Owen (1993) which were both ranked moderate for habitat quality. This site is part of the Mid Tauranga Harbour Key Ecological Zone (Wildlands 2006g).

References Owen 1993; Beadel 1994a.

OIKIMOKE

Site Number	106
Grid Reference (NZMG)	E2783404 N6386590
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	23.4 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Sea rush tussockland, and oioi rushland, and oioi- <i>Baumea juncea</i> rushland.	Intertidal flat
Terrestrial	3. Sandspit vegetation. (Beadel 1992a, Current study)	Beach sands

Vegetation and Indigenous Flora

Okimoke occupies the margin of the Tauranga Harbour between Te Puna Beach and the mouth of the Wairoa River. It includes mangrove scrub and shrubland and estuarine wetlands comprising variable mixtures of oioi, sea rush and *Baumea juncea*. No rare or uncommon plant species have been recorded at this site.

Fauna

The small sandspit at the northern end of the site is a nesting area for northern New Zealand dotterel (Acutely Threatened, Nationally Vulnerable) (John Heaphy pers. comm. 2006). The sandspit at Oikimoke Point and the shoreline to the south are roosts for a range of wader species (Owen *et al.* 2006). Australasian bittern (Acutely Threatened, Nationally Endangered), banded rail, spotless crane and North Island fernbird (all At risk, Sparse) were recorded in 1991 (Owen 1993).

Condition/Pressures

Owen (1993) noted some reclamation, stock access, and weeds such as *Spartina*, woolly nightshade, pampas, wattle, and grey willow.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Oikimoke is locally significant because it includes typical examples of indigenous vegetation types which are relatively common in Tauranga Harbour and has notable bird species inhabiting the site.

The site is fragmented and convoluted, which increases its vulnerability to pressures such as invasive weeds and surrounding intensive land uses. It is a locally-important breeding site for the Acutely Threatened northern New Zealand dotterel, and other Acutely Threatened and At Risk bird species have been recorded here in the past, and persist today (K. Owen, pers. comm.).

Category 3

References Beadel 1992a; Owen 1993; Owen *et al.* 2006.

SOUTHEASTERN MATAKANA WETLANDS

Site Number 107
Grid Reference (NZMG) E2787233, N6392206
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 24.6 ha
Altitudinal Range 0 m asl

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow-radiata pine/rushes-sedges forest.	Wetland
Palustrine	2. Grey willow-ti kouka/pampas shrubland.	Wetland
Palustrine	3. Grey willow-(ti kouka)/pampas-bracken forest.	Wetland
Palustrine	4. Raupo reedland.	Wetland
	(Current study)	

Indigenous Flora This wetland is dominated by a canopy of grey willow and ti kouka above pampas, *Baumea juncea*, harakeke, karamu, kohuhu, mingimingi, and koromiko. In the centre of the site there is an area of raupo reedland. Other species include *Baumea articulata*, *Carex virgata*, and *Carex secta*. No rare or uncommon plant species have been recorded at this site.

Indigenous Fauna There is no fauna information available for this site.

Condition/Pressures Large infestations of grey willow and pampas. Disturbance from surrounding plantation forestry operations. A small population of evergreen buckthorn was noted at this site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	M
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

This site is locally significant because it includes examples of modified indigenous freshwater wetland, a habitat type which has been greatly reduced in extent in Tauranga Ecological District.

Category

3

WAIKAREAO ESTUARY 2

Site Number	108
Grid Reference (NZMG)	E2788044 N6384820
Local Authority	Tauranga City Council
Status	Protected (TCC reserve and DOC Wildlife Refuge) and unprotected parts
Site Area	15.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. <i>Olearia solandri</i> -harakeke-saltmarsh ribbonwood-oioi- <i>Baumea juncea</i> -pampas-grey willow shrubland.	Intertidal flat
Estuarine	3. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	4. Oioi-sea rush-(saltmarsh ribbonwood) rushland.	Intertidal flat
Palustrine	5. Grey willow/pampas-harakeke tussockland.	Wetland
Estuarine	6. Sea rush-oioi tussockland.	Intertidal flat
Palustrine	7. Grey willow/raupo forest.	Wetland
Terrestrial	8. Whau-karamu-taupata-manuka-karo-harakeke shrubland (planted).	Hill
Terrestrial	9. Mamaku/kawakawa shrubland (partly planted).	Hill
Palustrine	10. Raupo-harakeke reedland. (Wildland Consultants 2005e)	Wetland

Vegetation and Indigenous Flora

Waikareao Estuary 2 is within Tauranga City and surrounded by urban development. To the north, it is adjacent to Waikareao Estuary 1. Waikareao Estuary 2 comprises saline wetlands and small freshwater wetlands on the southwestern side of Waikareao Estuary and in a gully that flows into the estuary. The saline wetlands include mangrove, saltmarsh ribbonwood, oioi, and sea rush. The freshwater wetlands include grey willow, harakeke, raupo and pampas. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1990 (Owen 1993). North Island fernbird (At Risk, Sparse) was present in 2005.

Condition/Pressures

Owen (1993) noted reclamation and drainage works; domestic rubbish dumping; grey willow, wattle and *Spartina* spp.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Waikareao Estuary 2 is locally significant because it includes, within a relatively small site, examples of indigenous vegetation which are typical of the indigenous biodiversity of Tauranga Harbour. Two At Risk bird species has been recorded here in the past.

Category 3

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Owen 1993; Wildland Consultants 2005e.

MOTUOPAE ISLAND

Site Number	109
Grid Reference (NZMG)	E2788204 N6385905
Local Authority	Tauranga City Council
Status	Unprotected (Urupa site)
Site Area	2.2 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Manuka scrub.	Harbour island
Terrestrial	2. (Brush wattle)-mamaku/gorse-woolly nightshade-mahoe-hangehange scrub.	Harbour island
Estuarine	3. Sea rush-oioi tussockland. (Wildland Consultants 2003a and 2005e)	Intertidal flat

Vegetation and Indigenous Flora Motupae Island is located within Waikareao Estuary, in Tauranga Harbour. It includes manuka scrub, mamaku-dominated scrub, and sea rush-oioi tussockland. No rare or uncommon plant species have been recorded.

Fauna No specific fauna information.

Condition/Pressures Scattered pampas and gorse occur amongst the sea rush-oioi tussockland. Saltwater paspalum is present along the margins of this type. Dense pampas and scattered gorse are present on the terrestrial parts of the island. A restoration plan for the island was prepared for Huria Management Trust Lands in 2003 (Wildland Consultants 2003a).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Motuopae is locally significant because, though small, it is an island comprising an example of indigenous vegetation and habitat which is characteristic of the indigenous biodiversity of Tauranga Ecological District.
Category	3
Notes	This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e). There is an Urupa on Motuopae, however the part of the island where the Urupa is located has been excluded from this site (the vegetation cover was mainly invasive weeds in 2003 (Wildland Consultants 2003a)).
References	Wildland Consultants 2003a and 2005e.

KAITEMAKO STREAM MOUTH

Site Number	110
Grid Reference (NZMG)	E2790350 N6381552
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	16.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. <i>Bolboschoenus fluviatilis</i> reedland.	Intertidal flat
Palustrine	2. Manuka shrubland.	Wetland
Estuarine	3. Mangrove scrub and shrubland and loamfield.	Intertidal flat
Palustrine	4. Manuka-harakeke-ti kouka-(raupo)-(oioi) shrubland.	Wetland
Palustrine	5. Grey willow/manuka-raupo shrubland.	Wetland
Estuarine	6. Oioi-saltmarsh ribbonwood shrub-rushland.	Intertidal flat
Estuarine	7. Oioi-sea rush rushland.	Intertidal flat
Estuarine	8. Oioi-saltmarsh ribbonwood rushland.	Intertidal flat
Palustrine	9. Grey willow/manuka treeland.	Wetland
Estuarine	10. Oioi rushland.	Intertidal flat

(Wildland Consultants 2005e)

Vegetation and Indigenous Flora

Kaitemako Stream Mouth is located within Welcome Bay, Tauranga City. The most widespread species within this site is mangrove. There are also areas of saltmarsh which include oioi, sea rush, and saltmarsh ribbonwood. On the northern margins of the site there are variable mixtures of grey willow and manuka, with other species such as raupo and harakeke. No rare or uncommon plant species have been recorded at this site.

Fauna

North Island fernbird (At Risk, Sparse) was present in 2007 (P. Cashmore pers. comm.) and banded rail (At Risk, Sparse) were recorded in 1990 (Owen 1993).

Condition/Pressures

Owen (1993) recorded weeds (for example wattle, willow, gorse), drainage works, stormwater discharge, and mangrove removal for boat access.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	M

Criterion*	RPS Number*	Ranking**
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Kaitemako Stream Mouth is locally significant because it includes examples of indigenous vegetation (estuarine wetlands) which are relatively common in Tauranga Harbour. Although the site is relatively large, it is highly fragmented and there are a wide range of pressures operating typical of urban estuaries. One At Risk bird species is present and another At Risk bird species has been recorded in the past and is likely to still be present, but in low numbers (K. Owen pers. comm.).

Category 3

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Owen 1993; Wildland Consultants 2005e.

WELCOME BAY

Site Number	112
Grid Reference (NZMG)	E2790462 N6380351
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	25.5 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Whau-karamu-ngaio-(tarata)-(manuka)-(pohutukawa)-(taupata)/kikuyu grass-cocksfoot shrubland.	Alluvial flat
Estuarine	2. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	3. Oioi rushland.	Intertidal flat
Estuarine	4. Sea rush tussockland.	Intertidal flat
Riverine	5. Grey willow/raupo-harakeke-purei treeland.	Alluvial flat
Palustrine	6. Raupo reedland.	Intertidal flat
Terrestrial	7. Akeake-manuka-tarata-kohuhu-ti kouka-ngaio-koromiko-harakeke scrub.	Alluvial flat

(Wildland Consultants 2005e)

Vegetation and Indigenous Flora

This site is located on the southern margin of Welcome Bay and in an adjacent valley. It includes estuarine wetlands of mangrove, searush, and oioi, and freshwater wetlands of grey willow, harakeke, and raupo. In the valley, there are planted areas of indigenous shrubland and scrub which include whau, karamu, akeake, manuka, and ti kouka. No rare or uncommon plant species have been recorded at this site.

Fauna

No marsh birds were recorded here in 1990 (Owen 1993).

Condition/Pressures

1990 Owen (1993) recorded drainage works, organic rubbish dumping; and weeds (for example taro, *Tradescantia*, wild ginger, banana passionfruit, woolly nightshade).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	H
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification The Welcome Bay site is locally significant because it comprises indigenous vegetation and habitat types which are typical of the indigenous biodiversity of the Tauranga Ecological District. This site is moderate in size, long and narrow in shape, and impacted by a range of weeds and urban pressures.

Category 3

Notes The part of the site which is within the valley is subject to a community-led project to control weeds and replant with indigenous species. This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Owen 1993; Wildland Consultants 2005e.

MOTURIKI ISLAND

Site Number	113
Grid Reference (NZMG)	E2791310 N6391803
Local Authority	Tauranga City Council
Status	Protected (TCC reserve - Moturiki)
Site Area	2.4 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa-karo-taupata-coastal mahoe-ngaio scrub.	Marine island
Terrestrial	2. (Ngaio)-(harakeke)-(pohutukawa)/South African ice plant-Indian doab-kikuyu grassland.	Marine island
Terrestrial	3. <i>Ficinia nodosa</i> -pohuehue/ratstail-cocksfoot- <i>Poa anceps</i> grassland.	Marine island
Terrestrial	4. (Taupata)-(pohutukawa)/(oioi)/(glasswort)-(<i>Senecio lautus</i>) rockland. (Wildland Consultants 2005e)	Marine island

Vegetation and Indigenous Flora

Moturiki is a small island which is connected to Mount Maunganui Beach by a rock causeway. The vegetation is dominated by pohutukawa, karo, ngaio, tuapata and coastal mahoe. Coastal mahoe occurs predominantly on islands in the Bay of Plenty (for example Matakana, Rurima). This population of coastal mahoe may have originated from plantings on Moturiki during 1972-75 (Beadel 1995e).

Fauna

Moturiki is a nesting site for good numbers of breeding northern little blue penguin (Chronically Threatened, Gradual Decline) (John Heaphy pers. comm. 2006).

Condition/Pressures

Moturiki was quarried in the past and was then used as a marine theme park. Recreational pressures are still present and there are invasive weeds such as South African ice plant, Norfolk Island hibiscus (*Lagunaria pattersonii*), dimorphotheca, evergreen buckthorn, boxthorn, and pampas (Wildland Consultants 2006g). Australian ngaio (*Myoporum insulare*) has been planted on the island (Beadel 1995e).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	L
Ecological Context	3.9	L

Criterion*	RPS Number*	Ranking**
	3.10	M
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Moturiki includes small remnants of coastal forest which were once more widespread throughout the ED. However, they have been heavily modified by disturbance and ongoing weed infestations. It provides breeding habitat for a Chronically Threatened bird species (northern little blue penguin).

Category 3

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority (Wildland Consultants 2007c and 2007d).

References Beadel 1995e; Wildland Consultants 2005e; rapid field assessment (2005).

SHARK ALLEY TO KAITUNA SPIT SAND DUNES

Site Number 114
Grid Reference (NZMG) E2793415, N6389138
Local Authority Tauranga City Council
Status Protected (TCC reserve) and unprotected parts
Site Area 100.2 ha
Altitudinal Range 0-5 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (<i>Ficinia nodosa</i>)-(pohutukawa)-(Coprosma acerosa x C. repens) rockland.	Volcanic hard coast
Terrestrial	2. Pingao-spinifex sedgeland.	Incipient foredune
Terrestrial	3. Spinifex-pingao/ <i>Calystegia soldanella</i> grassland.	Incipient and established foredune
Terrestrial	4. Buffalo grass-pohuehue-(pig's ear) grassland.	Established foredune
Terrestrial	5. <u>Lupin</u> / <i>Gazania linearis</i> -harestail-spinifex-ice plant/ <i>Calystegia soldanella</i> - <i>Lachnagrostis billiardieri</i> shrubland.	Established foredune
Terrestrial	6. (Karo)-(taupata)/pohuehue-cocksfoot-(spinifex)-(<i>Ficinia nodosa</i>) vineland.	Established foredune
Terrestrial	7. Cape ivy vineland.	Established foredune and transgressive dunefield
Terrestrial	8. Canna lily herbfield	Established foredune and transgressive dunefield
Terrestrial	9. <i>Ficinia nodosa</i> /pohuehue-(<i>Carex testacea</i>) vineland.	Established foredune and transgressive dunefield
Terrestrial	10. (Karo)-(houpara)/pohuehue- <i>Ficinia nodosa</i> -climbing dock vineland.	Established foredune and transgressive dunefield
Terrestrial	11. (Karo)/ <i>Ficinia nodosa</i> / <i>Carex testacea</i> -pohuehue sedgeland.	Established foredune and transgressive dunefield
Terrestrial	12. <i>Ficinia nodosa</i> /pohuehue vineland.	Established foredune and transgressive dunefield
Terrestrial	13. <i>Banksia integrifolia</i> -(karo)-(pohutukawa)/ <i>Ficinia nodosa</i> /pohuehue vineland.	Established foredune and transgressive dunefield
Terrestrial	14. <u>Marram</u> /ice plant-pohuehue grassland.	Established foredune and transgressive dunefield
Terrestrial	15. Kikuyu grassland.	Established foredune and transgressive dunefield
Terrestrial	16. African boxthorn-lupin/ <u>spinifex</u> - <i>Ficinia nodosa</i> -pohuehue shrubland.	Established foredune and transgressive dunefield
Terrestrial	17. African boxthorn/bracken-pohuehue-blackberry shrubland and <i>Altenanthera deflexus</i> -cocksfoot-knot root bristle grass fern-vineland.	Transgressive dunefield
Terrestrial	18. Sandfield. (Beadel 1995b, Wildland Consultants 2005e, Current study)	Beach sand

Vegetation and Indigenous Flora

This site contains a thin strip of dune vegetation comprising incipient and part of the established foredunes. Some small areas of unmodified transgressive dunefield are present. Pingao and sand tussock (both Chronically Threatened, Gradual Decline) have been recorded in this site (Wildland Consultants 2005j). Native celery (*Apium prostratum* - not threatened but uncommon in Tauranga Ecological District) occurs on a rock off the Shark Alley sand dunes. There are also small natural populations of akeake, houpara, and karo, which are now all locally uncommon on sand dunes in the Bay of Plenty. *Oxalis rubens* (a regionally uncommon plant species, as per Beadel 2006b) is also present on dunes.

Coastal mahoe (*Melicytus novae-zelandiae*) is present in the dunes locally and is spreading slowly. It is not known whether these populations have derived from plantings or from natural occurrence. This species occurs at a small number of inshore sites (Matakana Island, Moturiki, Thornton) in coastal Bay of Plenty.

Coprosma acerosa x *C. repens* occurs on the rocks near Shark Alley sand dunes. This is one of only two known naturally occurring populations for this hybrid in the Bay of Plenty (Beadel 1995b).

Fauna

Northern NZ dotterel (Acutely Threatened, Nationally Vulnerable) and banded dotterel (Chronically Threatened, Gradual Decline) present. White-fronted tern (Chronically Threatened, Gradual Decline) present in large numbers. The beach is at times used as a roosting area for a range of migrant species (OSNZ 2006).

Black katipo spider (Chronically Threatened, Serious Decline) is present (B. Christensen pers. comm.).

The land snail *Succinea archeyi* (Chronically Threatened, Serious Decline) may still be present in the dunes, although surveys in the early 2000s failed to find it (K. Owen pers. comm.). Native butterflies and lizards are likely to be inhabiting dunes.

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta. Of indigenous vertebrates, only shore skink is likely to occur.

Condition/Pressures

Garden escapes and weed species are widespread on dunes within this site, and include cape ivy, *Acacia sophorae*, *Aeonium haworthii*, pig's ear, *Ipomaea indica*, *Sedum praealtum*, montbretia, lupin, ice plant, Italian buckthorn, *Agapanthus praecox*, *Asparagus densiflorus*, climbing dock, dimorphotheca, *Watsonia bulbilifera*, *Crassula ovata*, *Crassula sarmentosa*, smilax, *Arctotis*, tradescantia, nasturtium. Many of these weeds are currently associated with dumped organic waste or, given their present distribution, have originated from this source.

Buffalo grass, couch, and kikuyu are invading dune vegetation from lawns in residential backyards, around carparks, roadends, and roadsides where these are adjacent dunes. Vehicles are causing damage to the site, particularly at

Papamoa East.

Detailed weed distribution maps were produced for this site in summer 2002, and formed the basis for a Tauranga City Council 10 year environmental weed management plan (Wildland Consultants 2002b).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	H
	3.5	M
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	H

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification

A narrow, discontinuous site containing examples of indigenous sand dune vegetation, albeit extensively modified by heavy human use and adjacent residential activity that links Mauao with dune systems further east. A range of NZ and migratory wader species, several of which are acutely or chronically threatened, are occasionally recorded here. Potentially key habitat for coastal mahoe within ecological district. Ongoing and incipient weed invasion degrading dune vegetation in some areas.

Succinea archeyi (land snail) may still be present. A detailed survey is required to determine this.

Category 3

Notes

Shark Alley beach has the largest ongoing sand renourishment programme in New Zealand. It is intended to counteract loss of sand due to sand removal from Tauranga Harbour (Greg Jenks pers. comm. 2006). Survey area of dunes for native lizards and butterflies.

This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References

Beadel 1995b; Wildland Consultants 2002b; Wildland Consultants 2005e; OSNZ 2006, current study.

RANGATAUA BAY

Site Number	115
Grid Reference (NZMG)	E2793606 N6385182
Local Authority	Tauranga City Council
Status	Unprotected
Site Area	66.1 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. <i>Ficinia nodosa</i> -sea rush/ <i>Samolus repens</i> -glasswort tussockland.	Intertidal flat
Estuarine	2. Saltmarsh ribbonwood/sea rush- <i>Ficinia nodosa</i> tussockland.	Intertidal flat
Estuarine	3. Sea rush tussockland.	Intertidal flat
Estuarine	4. Sea rush-oioi tussockland.	Intertidal flat
Terrestrial	5. Ti kouka/pampas tussockland.	Alluvial flat
Estuarine	6. Saltmarsh ribbonwood/sea rush- <i>Ficinia nodosa</i> / <i>Samolus repens</i> -glasswort tussockland.	Intertidal flat
Estuarine	7. Saltmarsh ribbonwood/oioi-sea rush sedgeland.	Intertidal flat
Palustrine	8. Manuka scrub.	Wetland
Estuarine	9. Mangrove scrub, shrubland, and loamfield.	Intertidal flat
Palustrine	10. Ti kouka/grey willow-manuka forest.	Wetland
Palustrine	11. Grey willow forest.	Wetland

(Wildland Consultants 2005e)

Vegetation and Indigenous Flora

Rangataua Bay includes saline wetlands dominated by mangrove, oioi, and searush. On the western side of the site there are small examples of willow-dominated freshwater wetlands. At the northeastern end of the site there is a small area of manuka scrub and an area of ti kouka/pampas tussockland. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded in 1990 (Owen 1993).

Condition/Pressures

Owen (1993) recorded stock access, *Spartina* sp., grey willow, pampas, drainage and reclamation works, and stormwater discharge from the highway. Pampas continues to be a problem within this site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	M

Criterion*	RPS Number*	Ranking**
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Rangataua Bay is locally significant because it includes estuarine wetland vegetation typical of the vegetation of Tauranga Harbour. It provides a protective buffer to Te Maunga oxidation pond embankments wader roost.

Category 3

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Owen 1993; Wildland Consultants 2005e.

OKUREI POINT

Site Number	116
Grid Reference (NZMG)	E2816266, N6376649
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	14.0 ha
Altitudinal Range	0-52 m
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation / Habitat Type	Landform
Terrestrial	1. Pohutukawa treeland	Cliff, steep hillslope
Terrestrial	2. Mahoe forest and mamaku treefernland	Hillslope
Terrestrial	3. Spinifex grassland	Established foredune
Terrestrial	4. Pohuehue-buffalo grass vineland	Incipient and established foredune
(Wildland Consultants 2007a, current study)		

Vegetation and Indigenous Flora

There are scattered areas of pohutukawa treeland on the cliffs around Okurei Point. Taupata and a suite of exotic species are present in the understorey. At the base of the cliff there is a rock and boulder-field (not mapped) and, on the east side of the point is 'Newdick's Beach'. At the southern end of the beach there is a narrow strip of spinifex grassland and pohuehue-buffalo grass vineland. There are occasional patches of pingao (Chronically Threatened, Gradual Decline) within the spinifex grassland. To the south of the site, adjacent to the road which leads to Waihi, secondary forest is present on the hillslope.

Fauna

Okurei Point is a nesting site of little blue penguin (Chronically Threatened, Gradual Decline) (K. Owen, pers. comm.). The small stream at the northern end of Newdick's Beach is habitat for giant kōkopu (Chronically Threatened, Gradual Decline) (Wildland Consultants 2006h).

Condition/Pressures

Weed species present within the pohutukawa treeland include barberry, boneseed, brush wattle, gorse, maritime pine, moth plant, pampas, radiata pine, and exotic pasture grasses.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Okurei Point is a breeding site for little blue penguin (Chronically Threatened, Gradual Decline). Coastal pohutukawa forest and indigenous sand dune vegetation has been greatly reduced in extent in the Tauranga Ecological District, but larger and better quality examples of the type remain (for example pohutukawa forest at Mauao, Bowentown Heads, and sand dunes at Papamoa and Maketu). The headland links two spit systems, Maketu and Pukehina,

Category 3

Notes The local coast care group planted pingao and spinifex (500) in 2005 (with help from an EEF grant).

References Beadel 1994a; OSNZ 2006, Wildland Consultants 2003n, 2006g, 2006h, 2007a.

WHARERE ROAD WETLAND

Site Number	117
Grid Reference (NZMG)	E2816409 N6374526
Local Authority	Western Bay of Plenty District Council
Status	Protected (Eastern Region Fish & Game Council)
Site Area	3.8 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Open water.	Pond
Palustrine	2. (Ti kouka)/ <u>raupo</u> -(pampas)-(Coprosma propinqua subsp. propinqua) reedland. (Current study)	Wetland

Vegetation and Indigenous Flora Mamaku, mahoe and ponga grow on the stopbanks along the eastern edge of the wetland. Other indigenous species which were noted at this site are pohuehue, taupata, and harakeke.

Fauna Australasian bittern (Acutely Threatened, Nationally Endangered), grey duck (Acutely Threatened, Nationally Endangered) and pied stilt have been recorded at this site (Wildland Consultants 2006g). North Island fernbird and banded rail (At Risk, Sparse) have been recorded in an adjacent wildlife management reserve (Rasch 1989) and are likely to be present here. Other bird species which were observed at this site during the current survey include pukeko, Australasian harrier, pied shag, welcome swallow, goldfinch, starling, and large numbers of ducks. A range of waterbird species is present.

Condition/Pressures Stopbanks completely surround the wetland and are infested with pampas. Silver wattle and grey willow are also present on the stopbanks in low numbers. The stopbanks are grazed by cattle, but the wetland is probably too wet for cattle to enter it. Eastern Region Fish & Game Council is working to restore this wetland by improving water quality flows, removing pampas, and creating open water for waterbirds.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This is a small site containing freshwater vegetation and habitat. It is regionally significant because it forms part of an ecological sequence that includes a regionally significant site (Waihi Estuary, SVHZ-112). Two Actutely Threatened bird species use this area. It provides habitat for large numbers of waterbirds. Stop-banking has altered water flows, and created habitat which pampas has invaded.

Category 3 .

Notes Large numbers of waterbirds frequent the wetland (mainly mallard and grey duck) (Wildland Consultants 2006g). There appears to be more open water here than at comparable nearby sites. Fish and Game would like to control raupo in order to maintain open water.

The site forms part of the Smartgrowth 'Coastal strip' corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor 'Rotoiti Hills to Waihi Estuary', ranked as being longer-term priority (Wildland Consultants 2007c and 2007d).

References Wildland Consultants 2006g, 2007c and 2007d; Rasch 1989; Current study.

PUKEHINA SPIT

Site Number	118
Grid Reference (NZMG)	E2816982, N6376650
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	3.5
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Spinifex-(pingao)-(sand tussock)/ <i>Calystegia soldanella</i> grassland	Berm
Terrestrial	2. Spinifex-dimorphothecca-ice plant grassland	Incipient foredune
Terrestrial	3. Norfolk Island pine-pohutukawa/ <i>Ficinia nodosa</i> /pohuehue-ice plant sedge-vineland (Current study)	Established foredune

Vegetation and Indigenous Flora

Pukehina Spit comprises a heavily wave cut and eroded berm with incipient and well vegetated established foredunes behind the berm at the base of the spit. The berm has recently been reduced in area by wave erosion. Pingao (Chronically Threatened, Gradual Decline) is present on the front face of the fore dune, particularly in front of the surf club where it may have been planted. Sand tussock (Chronically Threatened, Gradual Decline) is present on the remaining area of berm at the eastern end of the spit. *Oxalis rubens*, a regionally uncommon species, also occurs at this site.

Fauna

A spring high tide roost for waders (Owen *et al.* 2006), especially wintering variable oystercatcher and pied stilt (Dowding and Moore 2006).

This is a nesting site for northern NZ dotterel (Acutely Threatened, Nationally Vulnerable) and variable oystercatcher (John Heaphy pers. comm. 2006).

Northern NZ dotterel, wrybill, Caspian tern (Acutely Threatened, Nationally Vulnerable); banded dotterel (Chronically Threatened, Gradual Decline); various migrant species recorded since 2003 (OSNZ 2006).

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods, Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta. Of indigenous vertebrates, only shore skink is likely to occur.

Condition/Pressures

The site is adjacent to a residential area and is used for recreation. Humans and domestic cats and dogs, therefore, disturb nesting dotterel. Rabbit browse was observed on sand tussock during the current study. There are occasional small specimens of Norfolk pine (*Araucaria heterophylla*), Sydney golden wattle (*Acacia longifolia*), and maritime pine. Ice plant is aggressively invading sedge-vineland, and *Arctotis* and dimorphothecca are colonising spinifex grassland. Kikuyu and couch are invading vineland adjacent to carpark by surf club.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	L
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

**Significance
Justification**

A relatively small site containing good examples of sand dune vegetation. Two chronically threatened dune plant species are present. Three acutely threatened, one chronically threatened wader species, and various migratory wader species utilise this area regularly, making it regionally important bird habitat. Pressures on habitat and indigenous fauna come mainly from activity associated with adjacent residential areas.

Nesting site for northern NZ dotterel.

One of only a few sites where sand tussock occurs in western Bay of Plenty.

Category 3

References

Wildland Consultants 2005d; Dowding and Moore 2006; OSNZ 2006; Owen *et al.* 2006.

PUKEHINA

Site Number	119
Grid Reference (NZMG)	E2822275, N6372052
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve) and unprotected parts
Site Area	17.9 ha
Altitudinal Range	1-20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Sea rocket- <i>Chenopodium album</i> sandfield.	Berm
Terrestrial	2. Spinifex sandfield.	Incipient foredune
Terrestrial	3. Spinifex-marram-ice plant/ <i>Calystegia soldanella</i> grassland.	Incipient foredune
Terrestrial	4. <u>Marram</u> /ice plant-pohuehue/ <i>Calystegia soldanella</i> grassland.	Incipient foredune
Terrestrial	5. <i>Ficinia nodosa</i> / <u>pohuehue</u> -bracken-(<i>Cyperus ustulatus</i>) vineland.	Established foredune
Terrestrial	6. <i>Ficinia nodosa</i> -pohuehue sedgeland.	Established foredune
Terrestrial	7. Pampas/ <i>Ficinia nodosa</i> /pohuehue sedgeland.	Established foredune
Terrestrial	8. Ti kouka-taupata/blackberry-exotic grasses shrubland.	Established foredune
Terrestrial	9. (Ti kouka)/ <u>pampas</u> / <u>gorse</u> scrub.	Established foredune
Terrestrial	10. Pohutukawa-taupata-boxthorn shrubland	Cliffland
Terrestrial	11. Pohutukawa treeland and forest with taupata and <i>Einadia trigonos</i> .	Cliffland
Terrestrial	12. Sandfield.	Beach sand
	(Current study)	

Vegetation and Indigenous Flora

Pukehina comprises a narrow strip of coastline containing both hard and soft coast. Dunes alternate with coastal cliffs some of which are composed of pyroclastic ash fall and pumice that probably originated from within the Okataina volcanic centre. Coastal cliffs vegetation is generally sparse, however several stands of mature pohutukawa are present. Dune vegetation within the site is dominated by spinifex and pingao (Chronically Threatened, Gradual Decline) and pohuehue on established foredunes. Pingao has been planted here, though wild established plants are also present. Three plants of sand tussock (Chronically Threatened, Gradual Decline) are also present at the southern end of the site. These are likely to have naturally established in this site. *Einadia trigonos*, *Oxalis rubens*, and *Zoysia pauciflora* (all regionally uncommon plant species, as per Beadel 2006b) are present.

Fauna

Caspian tern (Acutely Threatened, Nationally Vulnerable) and white-fronted tern (Chronically Threatened, Gradual Decline) have been recorded roosting since 2003 (OSNZ 2006). Variable oystercatchers were recorded in the current study.

The fauna described for this site does not constitute an exhaustive account. A wide variety of indigenous invertebrates will be present in microsites with indigenous habitats, including, but not limited to, Crustaceans, Myriopods,

Arachnids, and Hexapods including Diplurans, Proturans, Collembolids, and Insecta. Of indigenous vertebrates, only shore skink is likely to occur.

Condition/Pressures Weed species present include African boxthorn, Japanese honeysuckle, lupin, marram, pampas, smilax, and South African ice plant. These weeds are scattered throughout the site, with heavy invasion in some areas particularly near residential properties. African boxthorn forms extensive shrublands and scrub on and behind established foredunes in the southern half of the site.

Establishment of plants from garden waste at road end near Pukehina Redoubt.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	H
	3.3	H
	3.4	M
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is relatively narrow and comprises a small example of indigenous vegetation characteristic of the Tauranga Ecological District coastline.

Pingao has been planted and is regenerating in situ, and sand tussock is also present, and is likely to be of natural occurrence (both plants Chronically Threatened, Gradual Decline).

The cliffs at the northern end of this site which are covered with taupata/pohuehue-*Ficinia nodosa* shrubland are considered to be a representative example of one of the landforms and its vegetation cover of the coastal zone of the Tauranga Ecological District (Beadel 1994a).

Category 3

Notes The local coast care group planted pingao and spinifex (500) in 2005 (with help from an EEF grant). A survey of native lizards, butterflies, and spiders is recommended.

References Beadel 1994a; OSNZ 2006.

WAIROA RIVER

Site Number	145
Grid Reference (NZMG)	E2781865 N6380113
Local Authority	Tauranga City Council and Western Bay of Plenty District Council
Status	Minor parts of adjacent land protected (Ohourere Stream/Wairoa River Marginal Strip), mostly unprotected (small c.4 ha area DOC Wildlife Reserve).
Site Area	53.8 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal and semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Riverine	Open water.	River
Estuarine	Open water.	Estuarine river channel
Riverine	Raupo reedland.	River margin
Riverine	<i>Schoenoplectus tabernaemontani</i> reedland	River margin

Vegetation and Indigenous Flora *Elatine gratioloides* (AK 254579) and *Viola lyalli* (AK 71247), both regionally uncommon species, have been recorded from the banks of the Wairoa River. *Leptinella squalida* (AK 254584) has also been recorded from the margins of the Wairoa River.

Location and Setting The Wairoa River flows from the Mamaku Plateau in Otago north towards Tauranga Harbour. It has a large catchment, including the Omanawa River, which drains indigenous forest and exotic plantation forest on the north-eastern Mamaku Plateau in the vicinity of Puwhenua (627 m). The river then passes through steep-sided gorgy country (including Omanawa Falls) with a cover of indigenous vegetation along much of its length. This is lacking in its very lowest reaches where the easier terrain has led to farmland extending to the edge of the river. The Omanawa River links to the main stem of the river less than 10 km from the harbour.

The main stem of the Wairoa River, upstream of the Omanawa junction, is subject to hydro-electricity control and management in the vicinity of Lake McLaren. The main tributary upstream of McLaren Falls and the lake is the Opuiki River, which drains a large part of the northern Mamaku Plateau, in Otago.

The headwaters of the Opuiki include the Ngatuhua, Mangaroa, and Opuiki catchments, which drain relatively featureless plateau terrain extending back to Hiwiroa Trig (696 m). Part of this area is under intensive management by the Department of Conservation, to protect kokako and other indigenous biodiversity.

The Ngamuwahine River - a large tributary in the western sector of the catchment headwaters - drains the southern part of the Kaimai Range, to the north of the Kaimai Road (SH29). This large sub-catchment - also in Otago - is mainly indigenous forest and adjoins the Waihou catchment to the west - in the Waikato Region - at Te Weraiti (765 m) and also extends north-eastwards to Whakamarama.

In its lower reaches it flows through agricultural and horticultural land before entering the harbour at Site SVHZ-49. These lower reaches are subject to control for hydro-electricity generation, with periodic releases of water from the dam.

Fauna Several fish species have been recorded in the Wairoa River. These include long-finned eel (Chronically Threatened, Gradual Decline), short-finned eel, yelloweye mullet, estuarine triplefin (in 1983), an unidentified mullet (*Mugil* sp.), unidentified bully (*Gobiomorphus* sp.), and an unidentified salmonid (*Salmo* sp.) (NIWA 2008). Northern koura (Chronically Threatened, Gradual Decline) have also been recorded in the Wairoa River (*ibid*). Waterbirds are common, especially shags.

Condition/Pressures Much of the upper catchment is in very good condition but the main stem of the river, in its middle reaches, has been significantly modified by development for hydro-electricity generation and the lower reaches - in Tauranga ED - have been subjected to intensive development for agriculture and horticulture.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	H
	3.3	M
	3.4	L
	3.5	M
	3.6	H
Diversity and Pattern	3.7	M
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	H
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification The Wairoa River is one of the largest in Tauranga ED and connects large areas of natural forest within Otanewainuku ED with estuarine habitats at Tauranga Harbour.

It provides habitat for two Chronically Threatened freshwater species (long-finned eel and northern koura).

Category 3

Notes Ohourere Stream/Wairoa River Marginal Strip adjoins a small section of the Wairoa River at its junction with Ohourere Stream. There are several reserves adjacent to the Wairoa River in its upper reaches in Otanewainuku ED. The

upper reaches of the river are contiguous with a large forest tract - Opuiaki River RAP in Otanewainuku ED and Kaimai-Mamaku Conservation Park. Wairoa River Marginal Strip, McLaren Falls Park Local Purpose (Water Power Development) Reserve, and is linked to large areas of natural forest in Kaimai-Mamaku Conservation Park via Category 1 RAP 7 'Opuiaki River' (Beadel 2006).

References

NIWA 2008; Beadel 2006.

CATEGORY 4 SITES

<u>Site Name</u>	<u>Site Number</u>
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Omokoroa	141
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Maketu Road Wader Roost	161
Waihi Beach Grey Willow Forest	162
Duck Bay	163

Bell Road Oxbow	164
Rereatukahia	165
Fergus Road Wetland	166



BOYD STREAM

Site Number	120
Grid Reference (NZMG)	E2763855 , N6400340
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	3.4 ha
Altitudinal Range	80-120 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-rimu-kamahai-puriri forest. (Current study)	Gully

Vegetation and Indigenous Flora This site comprises two very small stands of forest surrounded by pasture and some residential properties. Mature puriri are present at the site.

Fauna Pukeko were recorded at this site. Two streams are present at this site, Boyd Stream and one of its tributaries. Boyd Stream is habitat for long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), short-finned eel and torrentfish (NIWA 2008). These patches of forest probably enhance the quality of habitat for these species in these streams.

Condition/Pressures Radiata pine is present in places. This site was viewed from a distance, so few other pest plants were noted.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Although this site is small and fragmented, the forest canopy is diverse and the understorey could be improved with appropriate management. The forest is potential habitat for birds such as kereru (Chronically Threatened).

Category

4 - Although small and fragmented, this site contains semi-coastal forest in an ecological district where very little remains.

Notes

References

NIWA 2008; Current study

TE REREATUKAHIA STREAM

Site Number	121
Grid Reference (NZMG)	E2764021, N6397145
Local Authority	Western Bay of Plenty District Council
Status	Partly (mostly) protected (Te Rereatukahia Stream Marginal Strip)
Site Area	3.1 ha
Altitudinal Range	80-100 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-kamahi-(tawa)-(puriri)-(kauri) forest. (Current study)	Undulating low hills

Vegetation and Indigenous Flora This site comprises a very narrow strip of forest lining Te Rereatukahia Stream. Other species present include mamaku, tanekaha, mahoe and hangehange. Totara, pate, *Griselinia lucida*, kohekohe, titoki, karamu, hinau, tarata and northern rata were also noted in Beadel (1995a).

Fauna Pukeko and North Island fantail were observed at this site during the current study. Te Rereatukahia Stream is habitat for torrentfish (NIWA 2008). This site may aid movement of species between Sapphire Springs (TSC40) and Kaimai-Mamaku Conservation Park, and enhance the quality of stream habitat.

Condition/Pressures This site is extremely narrow, comprising little more than a strip of trees either side of the stream. Nonetheless it provides a valuable riparian buffer to the stream from the pastoral farms which surround it.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Te Rereatukahia Stream is locally significant because it functions as a key ecological linkage. Although narrow and convoluted, this site provides a forested link between Sapphire Springs Recreation Reserve and Kaimai-Mamaku Conservation Park.
Category	4
Notes	Most of this site is situated within the 'Te Rereatukahia Stream Marginal Strip', which is linked further upstream to Covenants 9638 and 7287 and then Kaimai-Mamaku Conservation Park. The site was ranked as having 'high' botanical significance in Beadel (1995a).
References	Beadel 1995a; DOC 2008a; NIWA 2008; Current study.

HOT SPRINGS ROAD

Site Number	122
Grid Reference (NZMG)	E2764653, N6396702
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenants 8916; 7142), part unprotected.
Site Area	9.7 ha
Altitudinal Range	40-100 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Makomako-mamaku/gorse-blackberry scrub.	Gully
Terrestrial	2. Maritime pine-rewarewa/ <u>kamahi</u> - <u>kanuka</u> -mamaku forest.	Gully
Terrestrial	3. (Radiata pine)/ <u>mamaku</u> -kanuka-(grey willow) forest ⇔ gorse scrub. (Current study)	Gully

Vegetation and Indigenous Flora

This narrow gully of indigenous forest and scrub lines a small stream which flows into Te Mania Stream. Patches of grey willow wetland, raupo reedland, and grey willow-harakeke-raupo shrubland were noted in Unit 3 in Beadel (1995f). These areas also contained swamp kiokio, *Baumea arthropphylla*, *Baumea tenax*, *Carex geminata*, swamp millet, *Juncus* spp., *Persicaria decipiens*, *Eleocharis sphacelata* and local ti kouka among other species (*ibid.*). Tanekaha, mahoe, and small kauri are also present at this site.

Fauna

Welcome swallow, paradise shelduck, silvereye, pukeko, spur-winged plover, eastern rosella, Australian magpie, goldfinch, and myna were observed at this site during the current study.

The waterways on this site flow into Te Mania Stream. Te Mania Stream is habitat for long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), and torrentfish (NIWA 2008). This site probably enhances the quality of habitat for these species.

Condition/Pressures

Douglas fir and gorse are present along the edges of the forest in Unit 2. The site is mostly surrounded by pastoral farming. Vegetation Unit 2 is fenced around the perimeter, but may be grazed underneath periodically. Vegetation Units 1 and 3 are being managed as conservation covenants, and appear to have been fenced from stock. Plantings of indigenous species are present along the margins of Unit 1, although these include species such as pukaniu (*Meryta sinclairii*) which are well outside of their natural range. Maritime pine and radiata pine grow in patches above the indigenous forest. Pines and grey willow which are present in the conservation covenant in vegetation Unit 3 should be removed. Japanese honeysuckle, blackberry, willow-leaved hakea and Spanish heath were recorded at this site in Beadel (1995f).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

This site is small but diverse, containing patches of wetland vegetation and indigenous forest. It is locally significant because freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District, it enhances the habitat of two Chronically Threatened freshwater species (long-finned eel and northern koura), and it has the potential to be restored as quality riparian vegetation.

Category 4

Notes Part of Hot Springs Road natural area is outside Tauranga ED. The site is near but not directly linked to Kaimai-Mamaku Conservation Park.

References NIWA 2008; Beadel 1995f; Current study.

WILLOUGHBY ROAD

Site Number	123
Grid Reference (NZMG)	E2764761, N6403011
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	2.9 ha
Altitudinal Range	80-140 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa/tawa forest.	Gully
Terrestrial	2. Mahoe/kawakawa forest. (Wildland Consultants 2006d)	Gully

Vegetation and Indigenous Flora

Other species present in the canopy of the tall rewarewa/tawa forest are kohekohe, puriri, mangeao, rimu and pukatea (Wildland Consultants 2006d). The understorey includes supplejack, kiekie, kawakawa, and rangiora.

Fauna

Kereru (Chronically Threatened, Gradual Decline), Australasian harrier, pukeko, grey warbler, North Island fantail, tui, blackbird, song thrush, and pheasant have been observed at this site (Wildland Consultants 2006d).

A tributary of Tahawai Stream flows through this site. Tahawai Stream is habitat for long-finned eel (Chronically Threatened, Gradual Decline), short-finned eel and torrentfish (NIWA 2008). The vegetation at this site probably enhances the quality of habitat for these species. Hochstetter's frog (At Risk, Sparse) have been recorded within 2 km from this site, on the boundary of Kaimai-Mamaku Conservation Park and a QEII covenant (DOC 2008a). This site is connected almost continuously by natural forests to Kaimai-Mamaku Conservation Park, and it is possible that Hochstetter's frog utilises habitat at this site.

Condition/Pressures

This site is fenced and is not grazed (Wildland Consultants 2006d). Pest plants at the site include brush wattle, Chinese privet, and pampas (*ibid.*).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Although Willoughby Road natural area is a small site, it is in good condition and is representative of semi-coastal forest typical of Tauranga ED. At least one Chronically Threatened bird species (kereru) utilises habitat at this site. The site probably enhances the habitat of one Chronically Threatened freshwater fish species (long-finned eel), and may be potential habitat for an At Risk frog species (Hochstetter's frog).

Category 4

Notes

References Wildland Consultants 2006d; NIWA 2008; DOC 2008a; Current study.

LUND ROAD WEST

Site Number 124
Grid Reference (NZMG) E2764841, N6395213
Local Authority Western Bay of Plenty District Council
Status Fully protected (Covenant 8968).
Site Area 2.7 ha
Altitudinal Range 60-100 m asl
Bioclimatic Zone Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. <u>Kanuka</u> -mamaku forest.	Hills
Terrestrial	2. <u>Rewarewa</u> -(pukatea)/kamahi forest. (Current study)	Hills

Vegetation and Indigenous Flora Mahoe, makomako and ti kouka are also present at this site.

Fauna Welcome swallow, Eastern rosella and Australian magpie were observed at this site during the current study.

Condition/Pressures This site is bounded by farmland on its lower edge, and a large area of natural forest on its upper edge. Grey willow is present at the lower end of Unit 2, and gorse grows around the edges of Unit 1. The kanuka appears to be in poor health near the edges of the site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Although this site is small, it is contiguous with more extensive areas of

Justification	natural vegetation in the adjacent Otanewainuku ED, and is thus part of a fairly large area of natural forest. It is locally significant because it provides an extension to these large areas into Tauranga ED, and is likely to remain viable over time.
Category	4
Notes	This site forms the lower edge of a larger stand of indigenous vegetation which is mostly located in Otanewainuku Ecological District. This links via unprotected and protected areas of forest to the Kaimai-Mamaku Conservation Park. There is some overlap with SES Site T14/9 (WBOP District Plan).
References	WBOP District Plan; Current study.

TE MANIA STREAM

Site Number	125
Grid Reference (NZMG)	E2764876, N6395850
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 8968), part unprotected.
Site Area	6.8 ha (6.0 ha Tauranga ED, 0.8 ha Te Aroha ED)
Altitudinal Range	40-80 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. <u>Mamaku</u> -mahoe-(kamahi)-(tanekaha)/gorse-exotic grasses treeland.	Hills
Terrestrial	2. Rewarewa-radiata pine/mamaku-mahoe forest with occasional ti kouka.	Gully
Terrestrial	3. Puriri-rewarewa-tawa-totara-tanekaha forest. (Anon 2001 and Current study)	Hills

Vegetation and Indigenous Flora

The vegetation at this site is scattered along the gully and hillslopes adjacent to Te Mania Stream. Anon (2001) recorded kamahi, mamaku, rimu, kohekohe, hinau and pukatea as additional species in the canopy of Unit 3. Unit 3 includes the most intact vegetation at the site.

Fauna

Pukeko, North Island fantail, welcome swallow and paradise shelduck were observed at this site during the current study. Te Mania Stream is habitat for long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), and torrentfish (NIWA 2008), and the vegetation within this site probably enhances the quality of habitat for these species.

Condition/Pressures

The vegetation in Unit 3 is in good condition, and has a dense and healthy understorey (Anon 2001). Vegetation in Units 1 and 2 is in poor condition, with an open canopy and numerous exotic species such as radiata pine and gorse. It appears that large pine trees have been removed from Unit 1, and may account for the disturbed nature of these areas. This site is surrounded by a pastoral farm.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
	Diversity and Pattern	3.7
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Although small and degraded, Te Mania Stream is locally significant because it contains an intact area of semi-coastal forest in an ecological district where very little remains. The site enhances habitat for two Chronically Threatened freshwater species (long-finned eel and northern koura).

Category 4

Notes This site is near several other sites, including Lund Road West, Lund Road, and Lund Road Wetland. SES Site T14/24 (WBOP District Plan) overlaps with this site, and although the SES boundaries differ from those mapped in this study, they are probably intended to refer to the same areas of natural vegetation.

Parts of Te Mania Stream natural area are outside Tauranga ED.

References NIWA 2008; WBOP District Plan; Anon 2001; Current study.

KILLEN ROAD

Site Number	126
Grid Reference (NZMG)	E2765139, N6397970
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 7160), part unprotected.
Site Area	4.4 ha
Altitudinal Range	60-80 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Radiata pine)/rewarewa/kamahi-(kanuka) forest with occasional puriri.	Gully
Terrestrial	2. Kauri forest.	Alluvial flat
Terrestrial	3. Rewarewa-puriri-tawa-kamahi forest.	Alluvial flat
Terrestrial	4. Puriri-rewarewa/mamaku forest. (Young 1995 and current study)	Gully

Vegetation and Indigenous Flora Despite its small size this site contains several different vegetation types, including a small stand of kauri. Totara, miro, mahoe, kawakawa, rangiora, rimu and hinau were also noted at the site in Young (1995).

Fauna Silvereys were recorded near this site during the current study. Te Rereatukahia Stream is habitat for torrentfish (NIWA 2008).

Condition/Pressures Wattle, gorse and blackberry are also present in Covenant 7160 (Young 1995). Most of the site is surrounded by kiwifruit orchards, although residential areas and pastoral farms also border the site in places.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Killen Road natural area contains a stand of kauri representative of a vegetation type which was formerly more common in Tauranga Ecological District. It is downstream from Sapphire Springs natural area (TSC40) and linked via Te Rereatukahia Stream to more expansive areas of natural forest in Kaimai-Mamaku Conservation Park.
Category	4
Notes	This site adjoins Covenant 7160, which links discontinuously to Sapphire Springs Recreation Reserve, Te Rereatukahia Stream Marginal Strip and the Kaimai-Mamaku Conservation Park.
References	NIWA 2008; Young 1995; Current study.

LUND ROAD

Site Number	127
Grid Reference (NZMG)	E2765203, N6395383
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	7.3 ha
Altitudinal Range	40-120 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. <u>Rewarewa/kamahi</u> -kanuka-mamaku forest. (Current study)	Gully

Vegetation and Indigenous Flora This site comprises a small gully of secondary forest, with a stream flowing through it which drains into Te Mania Stream. Other indigenous species present include makomako, kawakawa, mahoe and tanekaha.

Fauna No bird species were noted at this site, although common forest birds are likely to be present.

Condition/Pressures Maritime pine and radiata pine are occasional emergents above the forest at this site. Brush wattle, gorse, and barberry are also present. At the upstream end the forest canopy becomes open and it is grazed underneath. In addition to pastoral farming the site bounds residential areas and pine plantation.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Lund Road natural area contains a moderately small gully of indigenous forest

Justification	in reasonably good condition which is linked to a small wetland downstream. It is locally significant because it contains semi-coastal forest in an ecological district where very little remains. With low levels of management intervention it is likely to be ecologically viable in the long term.
Category	4
Notes	This site is near to other sites, including Lund Road West. It is upstream of Lund Road wetland, which is protected by a covenant.
References	Current study.

LUND ROAD WETLAND

Site Number	128
Grid Reference (NZMG)	E2765537, N6396142
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 8921), minor areas unprotected.
Site Area	0.7 ha
Altitudinal Range	40 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. <u>Grey willow</u> / raupo- <i>Carex geminata</i> -reed sweetgrass-(<i>Carex virgata</i>) shrubland ↔ raupo reedland. (Current study)	Wetland

Vegetation and Indigenous Flora This small wetland is situated along a small tributary of Te Mania Stream. Raupo reedland occurs as patches amongst grey willow wetland. Other indigenous species are present and include swamp millet, *Coprosma tenuicaulis*, *Paesia scaberula*, mahoe, harakeke, mamaku, kamahi, puriri, kahikatea and totara. Some of these species have been planted along the wetland edge.

Fauna Welcome swallow and Australian magpie were observed at this site during the current study. No significant fauna were noted, although the site is potential habitat for wetland birds.

Condition/Pressures Pest plants present mostly along the margins of the site include barberry, blackberry, and gorse. Reed sweetgrass is present in the wetland itself. The wetland is situated in a pastoral farm, although it is fenced from stock.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Although Lund Road Wetland is small and degraded, it is a freshwater wetland which is being actively managed to enhance its ecological values. It is locally significant because freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District, and the site may provide habitat for threatened species in the future.

Category 4

Notes

References Current study.

TUAPO STREAM

Site Number	129
Grid Reference (NZMG)	E2766551, N6394365
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 7951 QEII ¹), part unprotected.
Site Area	7.6 ha
Altitudinal Range	60-100 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-(radiata pine)/kamahi-tawa-kanuka-mamaku forest. (Current study)	Hills

Vegetation and Indigenous Flora

This site comprises several small remnants of indigenous secondary forest on hillslopes above Tuapo Stream. Two of these are being managed as conservation covenants and have been planted along the margins with species such as tarata, rimu and kohuhu. Local puriri were reported at the site in Humphreys (1997). Other indigenous species present at this site include karamu, mahoe, mingimingi and hangehange.

Fauna

Silvereye and welcome swallow were observed at this site during the current study. Long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), torrentfish and short-finned eel have been recorded in Tuapo Stream since 1999 (NIWA 2008). This site probably contributes to the quality of habitat for these species.

Condition/Pressures

Maritime pine is present at the most northern forest remnant. Several radiata pine trees, among a cluster in the middle remnant, have been ring-barked and the landowner intends to ring-bark those that remain in the near future (Mr Moore pers. comm. 2008). Woolly nightshade and gorse are also present in low numbers at the site. The site is surrounded by pastoral farms.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	L

¹ Not on GIS.

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification These remnants of forest are small, but provide potential habitat for mobile bird species such as kereru (Chronically Threatened), and enhance the habitat of two Chronically Threatened freshwater species (long-finned eel and northern koura). They are locally significant because they include relatively good quality secondary vegetation and are being managed to increase their ecological values.

Category 4

Notes

References NIWA 2008; Mr Moore pers. comm. 2008; Humphreys 1997; Current study.

HUME ROAD

Site Number	130
Grid Reference (NZMG)	E2766622, N6392738
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	11.4 ha (7.4 ha Tauranga ED, 4.0 ha Te Aroha ED)
Altitudinal Range	60-100 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Radiata pine/rewarewa-rimu/ <u>mamaku</u> forest.	Gully
Terrestrial	2. <u>Tawa</u> -rewarewa-puriri-kamahi-totara-(pukatea) forest. (Current study)	Gully

Vegetation and Indigenous Flora Mature puriri are a feature of this site, along with a diverse canopy including tawa, totara, pukatea, kamahi, rewarewa and rimu. Other species present at the site are mahoe, makomako, kohuhu, and wheki.

Fauna Grey warbler, silvereye, bellbird, pukeko and pheasant were observed at this site during the current study. Kereru (Chronically Threatened, Gradual Decline) are likely to utilise the site at least occasionally. The stream that flows through the site drains into the Aongatete River, which is habitat for long-finned eel (Chronically Threatened, Gradual Decline; NIWA 2008).

Condition/Pressures This is a small site, which merges into pine forest (both maritime pine and radiata pine) at its downstream end. Its edges are surrounded by areas of barberry, gorse, black wattle and blackberry. Surrounding land uses include pastoral farming, residential areas, and avocado orchards.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Although small, this site contains diverse forest representative of natural forests in Tauranga ED. It is linked upstream to larger areas of natural forests protected in Kaimai-Mamaku Conservation Park, and thus forms a lower-altitude extension to these. The forest and stream which flows through the site may provide habitat for two Chronically Threatened species (kereru and long-finned eel).
Category	4
Notes	<p>This site links to Kaimai-Mamaku Conservation Park discontinuously via several covenants upstream. The site is recognised as SES Site T14/20 in the WBOP District Plan.</p> <p>Part of the Hume Road natural area is outside Tauranga ED.</p>
References	NIWA 2008; WBOP District Plan; Current study.

AONGATETE RIVER-UPLAND ROAD

Site Number	131
Grid Reference (NZMG)	E2767159, N6391482
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 6405; Aongatete River Marginal Strip), part unprotected.
Site Area	11.3 ha (9.1 ha Tauranga ED; 2.2 ha Otanewainuku ED).
Altitudinal Range	60-100 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Stone pine)-rewarewa-(tanekaha)/ <u>kanuka-mamaku</u> -totara-whauwhaupaku-(horoeka)-manuka-(radiata pine)-(woolly nightshade) forest. (Current study)	Undulating low hills

Vegetation and Indigenous Flora

The vegetation at this site comprises an early-mid successional sequence dominated by kanuka, over which rewarewa and a few tanekaha have emerged. The kanuka canopy is being succeeded by mid-succession broadleaf species including whauwhaupaku, horoeka, and totara. The site contains several mature individuals of stone pine (*Pinus pinea*) which may be of wilding origin.

Fauna

North Island fantail and tui were observed at this site during the current study. Kereru (Chronically Threatened, Gradual Decline) may also frequent the site. Long-finned eel (Chronically Threatened, Gradual Decline) are present in the Aongatete River (NIWA 2008). Aongatete River flows alongside this site, and the site probably enhances the quality of habitat for this species.

Condition/Pressures

The vegetation in this site alongside the Aongatete River is in excellent condition. It is fenced from stock and relatively isolated from weed sources, although woolly nightshade has established within the forest edge in some places and is likely to spread.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site contains excellent quality secondary forest dominated by kanuka. It enhances the habitat of a Chronically Threatened freshwater fish species (long-finned eel), and probably provides habitat for a Chronically Threatened bird species (kereru). The site is linked to expansive areas of natural forest in Kaimai-Mamaku Conservation Park.

Category 4

Notes This site is linked to Kaimai-Mamaku Conservation Park via Aongatete River Marginal Strip.

Parts of Aongatete River-Upland Road natural area are outside Tauranga ED.

References NIWA 2008; Current study.

WAIAU ROAD WETLAND

Site Number 132
Grid Reference (NZMG) E2770164, N6412820
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 3.1 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. <u>Grey willow</u> -ti kouka-manuka forest. (Current study)	Wetland

Vegetation and Indigenous Flora Dominated by grey willow, with local ti kouka and manuka.

Fauna No threatened species were recorded.

Condition/Pressures This site is close to the Waiau River. The site is mostly surrounded by pastoral farming (cattle).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This moderately small, degraded freshwater wetland is of local significance because freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District.

Category	4
Notes	The site was not entered during fieldwork.
References	Current study.

WALFORD ROAD

Site Number	133
Grid Reference (NZMG)	E2770449, N6391918
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	3.7 ha
Altitudinal Range	20 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. <u>Grey willow</u> -mamaku-ti kouka-ponga-(kanuka) scrub. (Current study)	Wetland

Vegetation and Indigenous Flora

The vegetation at this site occupies a narrow band of wet alluvial soil alongside a small tributary of the Whatakao Stream. The vegetation is low statured and dominated by grey willow, however it retains a number of indigenous components in the canopy that are characteristic of damp sites, including ti kouka, with ponga, mamaku and kanuka. The understorey is dominated by *Carex geminata*, with *Carex virgata* adjacent to the water course, and *Coprosma tenuicaulis* occasional throughout. Large plants of *Parsonsia* sp. are also present.

Fauna

North Island fantail, grey warbler, silvereye and tui were observed at this site during the current study. The stream at this site drains into Whatakao Stream, which is habitat for long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline) and short-finned eel (NIWA 2008), and this site probably enhances the quality of habitat for these species.

Condition/Pressures

Grey willow dominates this site. Considerable areas of the gully surrounding the site appear to have recently been cleared of vegetation and converted to grazing land. The remaining vegetation is unfenced and is frequented by stock. Woolly nightshade seedlings and small trees are scattered through surrounding exotic vegetation, although this species is unlikely to thrive on the damp ground this site occupies.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is locally significant because it contains freshwater wetland and could potentially be restored. Freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District.

Category 4

Notes This site is very close to, but not within, the 'Wainui' corridor (Environment Bay of Plenty 2006).

References NIWA 2008; Environment Bay of Plenty 2006; Current study.

ESDAILE ROAD

Site Number	134
Grid Reference (NZMG)	E2771887, N6386985
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Covenant 9367), part unprotected.
Site Area	10.7 ha
Altitudinal Range	120-160 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. <i>Eucalyptus</i> sp./rewarewa/ <u>mamaku-kamahi</u> -silver wattle forest with gorse, blackberry and woolly nightshade around the edges.	Hills
Terrestrial	2. Mamaku-kohuhu-tarata-puriri-mahoe scrub (planted).	Hills
Terrestrial	3. <u>Mamaku</u> treeland.	Hills
Terrestrial	4. <u>Kamahi</u> -mamaku forest.	Gully
Terrestrial	5. (Silver wattle)-(rewarewa)- <i>Eucalyptus</i> sp./ <u>mamaku</u> -mingimingi-woolly nightshade-(gorse) forest. (Current study)	Hills

Vegetation and Indigenous Flora The largest patch of indigenous forest at this site is dominated by emergent rewarewa over a canopy of kamahi and mamaku. No uncommon plant species have been recorded at this site.

Fauna Australasian harrier and North Island fantail were observed at this site during the current study. The site bounds an unnamed stream which may contain freshwater fish species.

Condition/Pressures Indigenous vegetation has been modified to varying degrees throughout the site by underplanting with exotic trees (primarily *Eucalyptus* sp.), weed invasion, and historical stock grazing. It is likely the site was logged. The site is fenced from stock. At least one adjacent landowner is actively encouraging regeneration on steep land around a track which passes through the middle of the site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is a moderately small sized area of indigenous forest in good condition. With some management is likely to maintain its ecological values in the future.

Category 4

Notes This site is very close to the Wainui corridor (Environment Bay of Plenty 2006) although it is not a part of it.

References Environment Bay of Plenty 2006; Current study.

WAIPAPA WEST

Site Number	135
Grid Reference (NZMG)	E2772854, N6385857
Local Authority	Western Bay of Plenty District Council
Status	Unprotected.
Site Area	5.4 ha (3.5 ha Tauranga ED, 1.9 ha Otanewainuku ED)
Altitudinal Range	120-160 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-rimu-(pukatea)-(radiata pine)-(maritime pine)/ <u>kamahi</u> -mamaku-(kanuka) forest. (Current study)	Gully

Vegetation and Indigenous Flora These two stands of indigenous forest were not entered during fieldwork, so no additional species were recorded.

Fauna North Island fantail, silvereeye, New Zealand kingfisher, grey warbler, California quail, Australian magpie and blackbird were observed near this site during the current study. Kereru (Chronically Threatened, Gradual Decline), tui, and bellbird have been recorded in the nearby RAP 17 'Waipapa' (Beadel 2006 and Fauna Survey Unit unpublished as cited in Beadel 2006), and are likely to frequent this site.

Condition/Pressures This site is surrounded by pastoral farming. It is not known if these stands of forest are fenced or are grazed.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Although small, Waipapa West natural area comprises stands of semi-coastal forest representative of those typical of Tauranga ED. The site is situated near more expansive areas of natural forests, and may function as a ‘stepping stone’ for bird species such as kereru (Chronically Threatened).
Category	4
Notes	This site is very close to the Waipapa River site, also known as SES Site U14/16 (WBOP District Plan). That site is linked to Kaimai-Mamaku Conservation Park. Part of this site is outside Tauranga ED.
References	Beadel 2006; Fauna Survey Unit unpublished as cited in Beadel 2006; WBOP District Plan; Current study.

MATAKANA ISLAND 3

Site Number 137
Grid Reference (NZMG) E2775025, N6407561
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 5.8 ha
Altitudinal Range 0 m asl

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. (Ti kouka)/ <u>pampas</u> -harakeke-mamaku tussockland.	Wetland
Palustrine	2. Mamaku-ti kouka/ <u>pampas</u> /karamu-hangehange scrub. (Wildland Consultants 2006g and Owen 1993)	Wetland

Vegetation and Indigenous Flora

This site is part of a highly modified tidal inlet which has been partially drained and planted with pines. It includes remnant areas of freshwater wetland, including manuka scrub, harakeke flaxland, however pampas tussockland is the dominant vegetation across the whole site. No rare or uncommon species are known to occur here.

Fauna

No birds were recorded during a survey in 1992 (Owen 1993).

Condition/Pressures

In 1992 extensive stopbanking and drainage works were undertaken which have lowered water levels within the swamp. This has facilitated pampas invasion beyond the areas of spill associated with drainage works. The area between the western end of the site and the coast is now under active forestry management. Pig sign was recorded by Owen (1993). A few individuals of royal fern are present. These are being monitored and controlled by Environment Bay of Plenty (Walter Stahel pers. comm. 2006 and 2008).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	L
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is of local significance because it contains several small examples of freshwater wetlands, a habitat which has been greatly reduced within the Tauranga Ecological District. It is complementary to higher quality wetland sites further north on Matakana Island. Heavy modification (drainage, infilling and weed invasion) of the site has taken place. This site is suitable for ecological restoration.

Category 4

Notes The extent of this site has been greatly reduced since it was mapped and described in 2006 (Wildland Consultants 2006g; Matakana Island 3, SVHZ-74). It has been bulldozed, modified, and mainly planted in pines. Where pines have not been planted, pampas is now dominant.

References Beadel 1992a; Owen 1993; Beadel 1994a; Wildland Consultants 2006g.

OMOKOROA WETLANDS

Site Number 138
Grid Reference (NZMG) E2776488 N6388344
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 0.9 ha
Altitudinal Range 20-40 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow/raupo reedland.	Wetland
Palustrine	2. Grey willow-(ti kouka)-(mamaku)/raupo treeland. (Wildland Consultants 2006g)	Wetland

Vegetation and Indigenous Flora This wetland is dominated by grey willow and raupo. The part of the site which is on the east side of State Highway 2 is in considerably better condition than the part which is west of the road. No field survey has been undertaken within this site for threatened or uncommon species.

Fauna Long-finned eel (Chronically Threatened, Gradual Decline) has been recorded in small streams at the south end of Mangawhai Bay (Wildland Consultants 2006a). This site contains raupo reedland, a suitable habitat for spotless crane, which may be present.

Condition/Pressures The site is relatively long and narrow and is not fenced from adjacent pasture.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

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** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

The site is locally significant because it is an example of a habitat type which has been greatly reduced in extent at all scales (i.e. freshwater wetlands). It acts as a protective buffer to Mangawhai Bay and provides habitat for indigenous species of freshwater fish. It is degraded and an exotic species dominates the canopy in places but the site has potential for restoration.

Category

4

References

Wildland Consultants 2006a; Wildland Consultants 2006g.

TIROHANGA POINT POHUTUKAWA

Site Number 139
Grid Reference (NZMG) E2777804 N6398822
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 0.7 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa/woolly nightshade-karaka forest. (Wildland Consultants 2006g)	Hillslope, headland

Vegetation and Indigenous Flora The forest canopy is dominated by pohutukawa. Woolly nightshade and karaka are the most common species in the understorey and exotic grasses form the groundcover. No rare or uncommon plant species have been recorded at this site.

Fauna No specific information on fauna.

Condition/Pressures Woolly nightshade is the most common species in the understorey and is an invasive weed. Pampas is also present at the bottom of the face. The groundcover is dominated by exotic grasses, which may prevent indigenous species from establishing/regenerating.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Pohutukawa forest was once common in Tauranga Ecological District, but has

Justification	now been greatly reduced in extent and only small areas remain (for example Mauao, Kauri Point, Tuapiro, Ngakautuakina Point, Bowentown Heads, Motuhoa Island) (Beadel 1994a). The only examples of pohutukawa forest on Matakana Island are here and at Matakana Point, which are both relatively small examples.
Category	4
References	Wildland Consultants 2006g.

MATAKANA POINT

Site Number	140
Grid Reference (NZMG)	E2778116 N6395668
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	2.0 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa-(radiata pine) forest. (Wildland Consultants 2006g)	Hillslope, headland

Vegetation and Indigenous Flora Matakana Point comprises pohutukawa dominated forest with an understorey that includes karamu, houpara, rangiora, and hangehange. No rare or uncommon plant species have been recorded.

Fauna No specific fauna information.

Condition/Pressures Radiata pine are present in the canopy. Erosion of the coastal cliff has created areas of bare soil which are being colonised by brush wattle, pampas, gorse, and woolly nightshade, in addition to indigenous species.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	L
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Pohutukawa forest was once common in Tauranga Ecological District, but has now been greatly reduced in extent and only small areas remain (for example Mauao, Kauri Point, Tuapiro, Ngakautuakina Point, Bowentown Heads,

Motuhoa Island) (Beadel 1994a). The only examples on Matakana Island are here and at Tirohanga Point. Both of these sites are relatively small.

Category 4

Notes There is an urupa on the headland.

References Wildland Consultants 2006g.

OMOKOROA

Site Number 141
Grid Reference (NZMG) E2778412 N6388957
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 2.0 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrublands.	Intertidal flat
Estuarine	2. Oioi rushland and sea rush tussockland.	Intertidal flat
Estuarine	3. Sandspit vegetation (not mapped). (Beadel 1992a)	Beach sands

Vegetation and Indigenous Flora This site comprises mangrove scrub and shrublands, oioi rushland, and sea rush tussockland. *Samolus repens* herbfield and *Austrostipa stipoides* grassland dominate a small sandspit. *Austrostipa stipoides* is a regionally uncommon species.

Fauna Banded rail (At Risk, Sparse) was recorded in 1991 (Owen 1993).

Condition/Pressures Owen (1993) recorded stock access and weed encroachment.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	L
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Omokoroa is locally significant because it includes small examples of indigenous vegetation (estuarine wetlands) which are typical of the vegetation

of Tauranga Harbour. Two At Risk bird species were recorded in 1991.

Category 4

References Beadel 1992a; Owen 1993.

JESS ROAD

Site Number	142
Grid Reference (NZMG)	E2778848 N6388248
Local Authority	Western Bay of Plenty District Council
Status	Protected (DOC, Jess Road Wildlife Management Reserve (10.94 ha)) and unprotected parts
Site Area	27.1 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland.	Intertidal flat
Estuarine	2. Sea rush-mangrove rushland.	Intertidal flat
Palustrine	3. <i>Carex geminata</i> sedgeland.	Wetland
Palustrine	4. Raupo reedland.	Wetland
Palustrine	5. Constructed pond	Pond
(Wildland Consultants 2005c and 2006e)		

Vegetation and Indigenous Flora

Jess Road comprises mangrove scrub and shrubland on the northeastern side of a railway embankment, and an area of reflooded agricultural land on the southern side of the railway which is now dominated by mangrove and sea rush with areas of bare mud and some dead manuka. There are constructed ponds on the southern margin of this area, and a small *Carex geminata* wetland and a raupo wetland on the northern margin. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail (At Risk, Sparse) were recorded in 1991 (Owen 1993) and on several occasions since 2003 (OSNZ 2006). Other relatively common indigenous species of birds which were recorded at the site in 1996 include NZ kingfisher, pukeko, spur-winged plover, white-faced heron, pied stilt, and paradise shelduck (Shaw 2002d).

Condition/Pressures

The site is divided by a railway embankment with a flood-gate (now permanently open). The part of the site to the west of the railway embankment began being reflooded with saltwater in 1998, after being drained and grazed for many decades (Wildland Consultants 2005c). It now comprises large areas of intertidal mudflats with densely establishing mangrove seedlings, areas of dead manuka and remnant patches of sea rush. Some illegal earthworks were carried out here in 2001 (Shaw 2002d). Recent approved earthworks were carried out in 2007-2008 to improve drainage and creation of roosting/nesting islands (K. Owen pers. comm.).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

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** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Jess Road is locally significant because it includes examples of indigenous vegetation types (estuarine wetlands) which are typical of the vegetation of Tauranga Harbour, and small examples of freshwater wetlands. One At Risk bird species is currently known from this site. The part of this site which is west of the railway line (i.e. within the Wildlife Management Reserve) is highly modified and degraded but is currently being restored by the local community with the support of DOC.

Category 4

Notes

Beadel (1996) provides a detailed description of the vegetation in the inlet as it was ten years ago, and Shaw (2002d) details changes over the periods 1998-2001 and 2001-2002. The Te Puna Estuary Managers Group and DOC are currently involved in restoration of the Jess Road site, along with other parts of the wider Te Puna Estuary (Wildland Consultants 2005c).

References

Beadel 1992a; Owen 1993; Beadel 1996; OSNZ 2006; Shaw 2002d; Wildland Consultants 2005c; Wildland Consultants 2006e.

I'ANSON RESERVE

Site Number	143
Grid Reference (NZMG)	E2780485, N6385039
Local Authority	Western Bay of Plenty District Council
Status	Protected - QEII covenant P/00/017
Site Area	7.2 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rimu-ti kouka-kohuhu-makomako-kanuka-mamaku-totara-whauwhaupaku-tarata-houhere-karamu-rewarewa-karo-kowhai-kauri forest (planted).	Undulating low hills
Palustrine	2. Raupo-harakeke/Mercer grass-parrot's feather-swamp millet/open water waterfield, with patches of <i>Eleocharis sphacelata</i> .	Wetland
Terrestrial	3. <u>Kahikatea</u> forest (planted).	Flats
Palustrine	4. (Totara)-(ti kouka)-(kahikatea)-(kohuhu)-(karamu)/harakeke- <i>Carex</i> spp.-blackberry-tall fescue treeland (including plantings).	Wetland
Terrestrial	5. Manuka-kohuhu-totara-houhere-karo-karamu-tarata/exotic grasses and herbs shrubland (planted).	Undulating low hills
Terrestrial	6. <u>Manuka</u> scrub.	Undulating low hills

Vegetation and Indigenous Flora

This reserve was gifted to the QEII National Trust in 1987 by Keith and Takiko I'Anson. It was transformed from dairy pasture to native bush through extensive plantings, and Lake Taki was created by a dam on the Waikaraka Stream (WBOPDC 2008a). The reserve is now managed by Western Bay of Plenty District Council. The wide diversity of species which form the canopy of the forest (Vegetation Unit 1) reflects the planted origins of this forest. A variety of other planted species are present, including a wide range of *Hebe* species, *Pomaderris apetala*¹, narrow-leaved mahoe, akeake, karaka, taupata, houpara, and miro.

Other species present in the wetlands include *Juncus articulatus*, *Carex lurida*, *Cyperus congestus*, *Carex virgata*, *Calystegia sepium*, *Persicaria hydropiper*, and *Persicaria decipiens*.

Fauna

Birds recorded at the site include pukeko, tui, North Island fantail, grey warbler, hybrid mallard-grey duck, California quail, myna, and blackbird. Short-finned eel have been recorded in the lake (NIWA 2008). Grey duck (Acutely Threatened, Nationally Endangered), a mobile species which has been recorded at the nearby Minden Scenic Reserve (see TSC09) is likely to utilise the site at least occasionally.

¹ Classed as 'Acutely Threatened, Nationally Critical', however this species does not naturally occur in this ecological district.

Condition/Pressures In general, pest plants levels are relatively low in this reserve. Japanese honeysuckle, elephant's ear, and black wattle are present in low numbers. Beggars' tick is common in parts of the wetland. Selaginella is also present alongside 'Reg Janes' track. *Prunus laurocerasus*, an ornamental exotic tree, grows alongside the 'Graeme Mander' walkway.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	M
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site is regionally significant because it was created and protected by the QEII National Trust. It contains a diverse assemblage of vegetation and habitat types in a small area. Although not 'natural', it nonetheless has values worthy of protection, and may provide habitat for threatened species (grey duck). It contributes to the 'Te Puna' ecological corridor.

Category 4

Notes This site is part of Environment Bay of Plenty corridor 'Te Puna' (Environment Bay of Plenty 2006) ranked as being second Priority Level 2 (Wildland Consultants 2007d).

References WBOPDC 2008a; NIWA 2008; Environment Bay of Plenty 2006; Wildland Consultants 2007d; Current study.

MOTUHOA ISLAND

Site Number	144
Grid Reference (NZMG)	E2780661 N6391236
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	8.2 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest.	Cliffs
Terrestrial	2. Karaka forest with brush wattle, cabbage tree, and woolly nightshade.	Headland
Terrestrial	3. Pohutukawa/mamaku-woolly nightshade-brush wattle forest.	Cliffs
Terrestrial	4. Radiata pine-pohutukawa/brush wattle-mamaku forest. (Beadel 1989 and 1994a)	Cliffs

Vegetation and Indigenous Flora

This site comprises relatively narrow strips of pohutukawa forest on the margins of Motuhua Island. A small area of karaka forest occurs on the north eastern headland.

Tetragonia tetragonoides (NZFRI 25154), classed as 'At Risk, Sparse' is present (P. Cashmore pers. comm. 2008).

Fauna

Shore skink (not threatened) (John Heaphy pers. comm. 2006). Neap tide roost for seabirds and some waders on the south-eastern shore when conditions are right (K. Owen pers. comm.).

Condition/Pressures

A range of weed species were noted in 2003, including woolly nightshade and Mexican devil (P. Cashmore pers. comm.).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Pohutukawa forest was once abundant on hillslopes and headlands around Tauranga Harbour. This is a good example of remnant pohutukawa forest within the ecological district Beadel (1994a). One At Risk species is present. This site is locally important as a seabird and wader roost.

Category 4

Notes The vegetation of this site was previously ranked as being of local significance in Beadel (1994a).

References Beadel 1994a; P. Cashmore pers. comm. 2008.

WAIHEREHERE ROAD WETLAND

Site Number 146
Grid Reference (NZMG) E2782133 N6395848
Local Authority Western Bay of Plenty District Council
Status Unprotected
Site Area 1.2 ha
Altitudinal Range <20 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest. (Wildland Consultants 2006g)	Wetland

Vegetation and Indigenous Flora This site is dominated by grey willow. No other information is available about the vegetation at this site.

Fauna No survey for fauna has been undertaken at this site.

Condition/Pressures Owen (1993) recorded that the edges of the wetland were modified by stock grazing; wilding pines, Spanish heath and blackberry. Currently, the wetland is still grazed and has similar levels of weed infestation.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	H
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification A small, modified tidal inlet and freshwater wetland with moderate ecological values. It acts as a protective buffer to an area of the Tauranga Harbour which is ranked as nationally significant (Wildland Consultants 2006g).

Category	4
Notes	Ranked 'moderate' quality marshbird habitat in Owen (1993).
References	Owen 1993; Wildland Consultants 2006g.

JOYCE ROAD

Site Number 147
Grid Reference (NZMG) E2785997, N6376669
Local Authority Western Bay of Plenty District Council
Status Part protected (Local Purpose Water Supply Reserve; QEII 5/03/068); part unprotected.
Site Area 22.4 ha (16.3 ha Tauranga ED, 6.1 ha Otanewainuku ED)
Altitudinal Range 20-80 m asl
Bioclimatic Zone Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Radiata pine/ <u>mamaku</u> -gorse forest with scattered exotic trees and local open patches.	Hills
Terrestrial	2. <u>Mamaku/hangehange</u> -makomako-mahoe-rangiora-pate-kotukutuku forest. (Current study)	Hills

Vegetation and Indigenous Flora The indigenous vegetation at this site is dominated by mamaku and other woody secondary species. The natural forests contain an array of common understorey species.

Fauna North Island fantail, pukeko, and tui were observed at this site during the current study. Kereru (Chronically Threatened, Gradual Decline) are likely to frequent the forest regularly. The waterways at this site drain into the Waiorahi Stream which contains long-finned eel (Chronically Threatened, Gradual Decline) and northern koura (Chronically Threatened, Gradual Decline) (NIWA 2008). This site probably enhances the quality of habitat for these species.

Condition/Pressures The indigenous vegetation on hillslopes at this site is strongly regenerating and in good condition, although the pest plants Taiwan cherry, tree privet and woolly nightshade are present nearby and pose a threat to the long term maintenance of the indigenous character of the forest.

Surrounding land uses include pastoral farming, avocado orchards, and residential areas.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification Joyce Road natural area is regionally significant because it is part protected by a QEII covenant. The site comprises secondary forest in a reasonable condition in an ecological district where very little indigenous forest remains. The site is likely to provide habitat for one Chronically Threatened bird species (kereru).

Category 4

Notes This site is situated within the 'Hidden Gorge' Environment Bay of Plenty corridor (Environment Bay of Plenty 2006), ranked as second-priority Level 1 (Wildland Consultants 2007d). It is linked to Oropi Road Water Reserve site, which is situated downstream from Otanewainuku RAP 39 'Waiorahi Stream', Category 3 (Beadel 2006). Waiorahi Stream is lined almost continuously with vegetation upstream from that site.

Part of this site is outside Tauranga ED.

References NIWA 2008; Environment Bay of Plenty 2006; Beadel 2006; Wildland Consultants 2007d; Current study.

KOPURERERUA STREAM WETLAND

Site Number	148
Grid Reference (NZMG)	E2786157 N6382724
Local Authority	Tauranga City Council
Status	Part protected (unnamed recreation reserve), part unprotected.
Site Area	64.1 ha
Altitudinal Range	0-40 m asl
Bioclimatic Zone	Coastal and semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. (Radiata pine)/mamaku-manuka-(gorse)-(blackberry) scrub and shrubland.	Hills
Palustrine	2. <u>Grey willow</u> -(ti kouka) forest.	Wetland
Palustrine	3. (Dead grey willow)/ <i>Carex secta</i> -reed sweetgrass-pampas-(grey willow)/open water tussockland.	Wetland
Palustrine	4. <u>Manuka</u> -(gorse)-(pampas) scrub.	Wetland
Terrestrial	5. Manuka-(ti kouka)/pasture treeland. (Current study)	Flats

Vegetation and Indigenous Flora

This site comprises a large grey willow wetland, several smaller wetlands of varying composition, and a nearby hillslope of secondary indigenous scrub and shrubland. Additional indigenous species noted at this site include kohuhu, *Cyperus ustulatus*, *Calystegia sepium*, raupo, and *Baumea* sp. Plantings of indigenous species are common along the edges of these wetlands, and also along the Kopurererua Stream canal which flows alongside the site. Species which have been planted include akeake, karamu, ngaio, harakeke, kohuhu, manuka, ti kouka, and tarata. It appears that grey willow has been removed from some parts of the site, such as Unit 5, which now comprises treeland. No threatened species have been recorded at this site.

Fauna

Pukeko are common at this site, and little shag, spur-winger plover, grey-mallard hybrid and skylark were also observed at this site during the current study. Long-finned eel (Chronically Threatened, Gradual Decline), yelloweye mullet, and short-finned eel have been recorded in Kopurererua Stream, which flows down a canal alongside the site (NIWA 2008).

Condition/Pressures

This site is dissected by the Takitimu Drive toll road, which is bordered by wide grassy verges and plantings of native species. Native plantings are generally in long, narrow strips adjacent to either the road or the wetland vegetation that comprises this site. Native plantings have also been established at the north-eastern end of the site, near to a pedestrian boardwalk. The largest wetland at the site is dominated by grey willow, which is an invasive species. Other pest plants which are present at this site include brush wattle, gorse, woolly nightshade, Japanese honeysuckle, and blackberry.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	H
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	M
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is of local ecological significance because, although highly modified, it is, for Tauranga ED, a relatively large freshwater wetland. Freshwater wetlands have been greatly reduced in extent in New Zealand.

Category 4

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

The site is also part of the 'Hidden Gorge' corridor (Environment Bay of Plenty 2006).

References Wildland Consultants 2005e; NIWA 2008; Current study.

OROPI ROAD WATER RESERVE

Site Number	149
Grid Reference (NZMG)	E2786356, N6376352
Local Authority	Western Bay of Plenty District Council
Status	Part protected (Unnamed Local Purpose Water Supply Reserve); part unprotected.
Site Area	9.7 ha
Altitudinal Range	20-80 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Rewarewa-rimu-(radiata pine)/mamaku-mahoe-karamu-whauwhaupaku forest. (Current study)	Hills

Vegetation and Indigenous Flora The indigenous vegetation at this site contains stands of rimu and rewarewa. An array of common understorey species are also present.

Fauna North Island fantail, pukeko, and tui were observed at this site during the current study, as were galaxiids (*Galaxias* sp.) in the stream and *Litoria aurea* in nearby pine forest. Kereru (Chronically Threatened, Gradual Decline) are likely to frequent the forest regularly. The Waiorahi Stream, which flows through this site, contains long-finned eel (Chronically Threatened, Gradual Decline) and northern koura (Chronically Threatened, Gradual Decline) (NIWA 2008). This site probably enhances the quality of habitat for these species.

Condition/Pressures The indigenous vegetation at this site is strongly regenerating and in good condition, although the pest plants Taiwan cherry, tree privet and woolly nightshade are nearby and pose a threat to the long term maintenance of the indigenous character of the forest.

Surrounding land uses include pastoral farming, avocado orchards, and residential areas.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Water Reserve natural area is locally significant because it contains good quality indigenous vegetation which is linked upstream to further natural areas in Otanewainuku ED. The forest is in good condition, and probably enhances the habitat of two Chronically Threatened freshwater species (long-finned eel and northern koura). It is also likely to provide habitat for one Chronically Threatened bird species (kereru).

Category 4

Notes This site is situated within the 'Hidden Gorge' Environment Bay of Plenty corridor (Environment Bay of Plenty 2006), ranked as second-priority Level 1 (Wildland Consultants 2007d). It is situated downstream from Otanewainuku RAP 39 'Waiorahi Stream', Category 3, (Beadel 2006), and is downstream from another water supply reserve. Waiorahi Stream is lined almost continuously with vegetation upstream from this site.

References NIWA 2008; Environment Bay of Plenty 2006; Beadel 2006; Wildland Consultants 2007d; Current study.

OROPI ROAD WATER RESERVE WETLAND

Site Number	150
Grid Reference (NZMG)	E2786519, N6377063
Local Authority	Western Bay of Plenty District Council
Status	Protected (Local Purpose Water Supply Reserve).
Site Area	2.8 ha
Altitudinal Range	20-60 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. <u>Mamaku/hangehange</u> -makomako-mahoe-rangiora-pate-kotukutuku forest.	Hills
Terrestrial	2. Grey willow-manuka-gorse/raupo forest. (Current study)	Wetland

Vegetation and Indigenous Flora

This very small site comprises a degraded freshwater wetland and associated areas of secondary indigenous vegetation within the Oropi Road Water Reserve. It occupies a tributary of the Waiorahi Stream.

The natural forests contain an array of common understorey species.

Fauna

North Island fantail, pukeko, and tui were observed near this site during the current study. The waterways at this site drain into the Waiorahi Stream which contains long-finned eel (Chronically Threatened, Gradual Decline) and northern koura (Chronically Threatened, Gradual Decline) (NIWA 2008). This site probably enhances the quality of habitat for these species.

Condition/Pressures

The wetland is dominated by grey willow and also contains gorse. The site is surrounded almost entirely by stands of radiata pine.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Oropi Road Water Reserve wetland is locally significant because it is a freshwater wetland. Freshwater wetlands are greatly reduced in extent in Tauranga ED.
Category	4
Notes	This site is situated within the 'Hidden Gorge' Environment Bay of Plenty corridor (Environment Bay of Plenty 2006), ranked as second-priority Level 1 (Wildland Consultants 2007d). It is very close to the Oropi Road Water Reserve and Joyce Road sites, which are also within the Water Supply Reserve. Together these sites are situated downstream from Otanewainuku RAP 39 'Waiorahi Stream', Category 3, (Beadel 2006), and are downstream from another water supply reserve. Waiorahi Stream is lined almost continuously with vegetation upstream from this site.
References	NIWA 2008; Environment Bay of Plenty 2006; Beadel 2006; Wildland Consultants 2007d; Current study.

HAYCOCKS PRIVATE RESERVE

Site Number	151
Grid Reference (NZMG)	E2787360, N6377227
Local Authority	Western Bay of Plenty District Council
Status	Protected (Private Scenic Reserve); unprotected
Site Area	3.1 ha
Altitudinal Range	30-70 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Kanuka-mamaku-mangeao-mahoe-makomako-porokaiwhiri forest.	Gully
Terrestrial	2. Kanuka-(rewarewa)-(kowhai - planted)-(mahoe)-(titoki - planted)/gorse scrub.	Hills
Terrestrial	3. Houhere-rimu-kauri-totara-kahikatea/exotic grasses and herbs shrubland (planted).	Gully
Palustrine	4. <u>Raupo</u> -harakeke-(<i>Calystegia sepium</i>)-(blackberry) reedland.	Wetland
Palustrine	5. (Weeping willow)-(ti kouka)-(kowhai - planted)/grey willow-raupo-pampas-harakeke- <i>Carex geminata</i> shrubland.	Wetland
Terrestrial	6. <u>Gorse</u> -woolly nightshade-mamaku-mahoe-(makomako) scrub.	Hills
Terrestrial	7. Mamaku-kanuka-whauwhaupaku/gorse scrub. (Current study)	Hills

Vegetation and Indigenous Flora

This small reserve contains secondary indigenous forest and scrub (Vegetation Units 1, 2, 6, and 7) and areas of indigenous plantings (Vegetation Unit 3 and lining the edges of the reserve). Planted species include houhere, ngaio, variegated mapou, kauri, karo, kawaka, titoki, karaka, rimu, kowhai, totara, and kahikatea. Planted species noted in Beadel (1995a) also included tanekaha, akeake, puriri, nikau, pukatea, kohekohe, tarata, miro, and kingfern (the last of these species was sourced from King Country). A small stream flows through the reserve. There is a small wetland alongside the stream containing areas of raupo and harakeke (Units 4 and 5).

Fauna

Birds recorded at the site during the current study include New Zealand kingfisher, silvereye, pukeko, grey warbler, blackbird and goldfinch. Kereru also frequent the site (D. Haycock pers. comm. 2008).

Condition/Pressures

This reserve is managed by the Haycock family as a private reserve, and substantial effort has been put into fencing and plantings. Pest plants include climbing dock, grey willow, pampas and blackberry in the wetland, woolly nightshade amongst areas of scrub, and Japanese honeysuckle, tradescantia, brush wattle, and barberry scattered throughout the site. These all require ongoing control. Chinese privet is present in a nearby gully, and may invade the reserve in the future. The reserve is mostly surrounded by pasture, with parts of the boundary adjacent to avocado orchards, and a small part of the boundary adjoining a residential garden.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification This site is small, but contains good quality secondary vegetation which is being actively managed. It is regionally significant because it is protected by a QEII covenant. King fern has been planted in the site, and the site may provide habitat for a substantial population of this species in the future.

Category 4

Notes This site was described as a “small example of indigenous vegetation with weeds throughout and planted indigenous species (mainly common species) from undocumented sources” in Beadel (1995a).

References Beadel 1995a; D. Haycock pers. comm. 2008; Current study.

WAIMAPU ESTUARY WALKWAY

Site Number	152
Grid Reference (NZMG)	E2788283 N6382626
Local Authority	Tauranga City Council
Status	Protected (TCC reserve) and unprotected parts
Site Area	4.2 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow-manuka forest.	Wetland
Palustrine	2. Raupo-pampas-harakeke- <i>Baumea articulata</i> /oioi-mangrove-sea rush sedge-tussockland.	Wetland
Estuarine	3. <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat
Palustrine	4. <i>Baumea articulata</i> -harakeke-raupo reedland.	Wetland
Estuarine	5. Mangrove shrubland and loamfield.	Intertidal flat
Estuarine	6. Oioi-mangrove-sea rush-raupo shrub rushland.	Intertidal flat
Terrestrial	7. Akeake-manuka-tarata-kohuhu-ti kouka-ngaio-koromiko-harakeke scrub.	Hillslope
Palustrine	8. Grey willow forest.	Wetland
Estuarine	9. Oioi-saltmarsh ribbonwood shrub- rushland.	Intertidal flat
Terrestrial	10. Mamaku-tree privet treeland (Beadel 1994d, Wildland Consultants 2005e)	Hillslope

Vegetation and Indigenous Flora

Waimapu Estuary walkway is located on the northwestern margin of Waimapu Estuary, and is adjacent to urban areas and parkland. The site includes mangrove scrub and shrubland, saline wetlands of species such as oioi and sea rush, and grey willow-dominated wetlands. *Tetraria capillaris*, a regionally uncommon species, is present (Beadel 1994d).

Fauna

Nearby residents recorded the presence of North Island fernbird (At Risk, Sparse) in 1990 (Owen 1993).

Condition/Pressures

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	M

Criterion*	RPS Number*	Ranking**
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification The site is locally significant because, though small, it is a typical example of indigenous vegetation and habitat types which are relatively common in the Tauranga Ecological District. A range of pressures, including weed species, reflects its urban setting. There is an unconfirmed report of one At Risk bird species.

Category 4

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Owen 1993; Beadel 1994d; Wildland Consultants 2005e.

HAIRINI

Site Number	153
Grid Reference (NZMG)	E2789135 N6381772
Local Authority	Tauranga City Council
Status	Unprotected
Site Area	2.1 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Estuarine	2. Saltmarsh ribbonwood shrubland.	Intertidal flat
Palustrine	3. Grey willow/gorse- <i>Coprosma propinqua</i> subsp. <i>propinqua</i> -manuka-harakeke shrubland.	Wetland
Estuarine	4. Mangrove/ <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat
Estuarine	5. Oioi rushland.	Intertidal flat
Estuarine	6. Oioi- <i>Baumea articulata</i> rushland.	Intertidal flat
Estuarine	7. <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat
Palustrine	8. <i>Baumea articulata</i> reedland.	Wetland
(Wildland Consultants 2005e)		

Vegetation and Indigenous Flora

This is a small site on the margin of Tauranga Harbour, within Tauranga City. The site is dissected by a four-lane causeway. The most abundant vegetation type is grey willow/gorse-*Coprosma propinqua* subsp. *propinqua*-manuka-harakeke shrubland, and there are small areas of grey willow forest, and saline wetlands. No rare or uncommon plant species have been recorded.

Fauna

Hairini shoreline is a neap high tide roost for some wader species, for example pied stilt (Owen *et al.* 2006) such as pied stilts and variable oystercatchers.

Condition/Pressures Unknown.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	H
	Diversity and Pattern	3.7
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification The site is locally significant because, though small, it contains indigenous vegetation and habitat types which are typical of the indigenous biodiversity of Tauranga Ecological District (ED). It includes small examples of freshwater wetland, a habitat that has been greatly reduced in extent in the ED.

Category 4

Notes This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).

References Wildland Consultants 2005e; Owen *et al.* 2006.

MOTUOPUHI ISLAND

Site Number 154
Grid Reference (NZMG) E2789585, N6383018
Local Authority Western Bay of Plenty District Council
Status Protected (TCC reserve) and unprotected parts
Site Area 1.2 ha
Altitudinal Range 0 m asl

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Robinia-brush wattle-(pohutukawa)-(karaka)- (<i>Eucalyptus</i> sp.) treeland.	Harbour Island
Terrestrial	2. Wattle forest and scrub.	Harbour Island
Estuarine	3. (Pampas)/(saltmarsh ribbonwood)-sea rush-oioi- <i>Baumea juncea</i> tussockland (with local mangrove in channels). (P. Cashmore pers. comm.)	Harbour Island

Indigenous Flora Seven plants of *Tetragonia tetragonioides* (At Risk, Sparse) were noted (P. Cashmore pers. comm.).

Indigenous Fauna Tui and New Zealand kingfisher were noted in 2008. Wader roosting site for pied oystercatcher, variable oystercatcher, pied stilt, and other species. (P. Cashmore pers. comm.).

Condition/Pressures A large range of weed species are present including pampas, brush wattle, black wattle, boneseed, coastal banksia, Japanese spindletree, Japanese honeysuckle, Chinese privet, wild ginger, arum lily, moth plant, bamboo, montbretia, smilax, false acacia, cape ivy, kikuyu, and tradescantia. There are a range of both exotic and native plantings on the island. Some of the native plantings consist of species which do not occur naturally in Tauranga ED, for example pukani (*Meryta sinclairii*) (P. Cashmore pers. comm.).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Small harbour island in an inner harbour setting bearing degraded, exotic dominated vegetation. One At Risk plant species is present.

Category 4

Notes Due to the proximity to the mainland and easy accessibility at low tide, this island would be relatively frequently visited by the public, dogs, and pest animals (P. Cashmore pers. comm.).

This site is otherwise known as Rat Island.

HOPUKIORE

Site Number	155
Grid Reference (NZMG)	E2791110 N6391370
Local Authority	Tauranga City Council
Status	Protected (TCC reserve - Hopukiore Reserve) and unprotected parts
Site Area	1.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Pohutukawa forest and scrub. (Wildland Consultants 2005e)	Hills

Vegetation and Indigenous Flora Hopukiore (otherwise known as Mount Drury) comprises modified pohutukawa forest and scrub within a public reserve. Photographs from the early 1900s show that indigenous vegetation had been virtually removed from the site. The current vegetation is derived mainly from plantings and natural regeneration (Beadel 1995e). No rare or uncommon plant species have been recorded here.

Fauna No notable species have been recorded.

Condition/Pressures Hopukiore is subject to pressures arising from recreational impacts (for example pedestrian tracks) and invasive weeds such as tradescantia, arum lily, climbing asparagus, phoenix palm, cotoneaster, agapanthus, and Japanese honeysuckle (Wildland Consultants 2006g).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	L
	3.3	L
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification	Hopukiore is locally significant because it includes a small example of pohutukawa forest - a vegetation type which has been greatly reduced in extent in the Tauranga Ecological District. The vegetation present reflects a high degree of modification and weed invasion typical in urban areas.
Category	4
Notes	This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e). Hopukiore has historic and archaeological values.
References	Beadel 1995e; Wildland Consultants 2005e; rapid field assessment (2005).

WAIPU BAY MARGINS

Site Number	156
Grid Reference (NZMG)	E2791579 N6385376
Local Authority	Tauranga City Council
Status	Unprotected
Site Area	36.6 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Grey willow forest.	Wetland
Palustrine	2. Grey willow-manuka forest.	Wetland
Palustrine	3. Grey willow/manuka treeland.	Wetland
Estuarine	4. Mangrove scrub, shrubland, and loamfield.	Intertidal flat
Estuarine	5. <i>Ficinia nodosa</i> -sea rush tussockland.	Intertidal flat
Palustrine	6. Raupo reedland.	Wetland
Estuarine	7. Sea rush tussockland.	Intertidal flat
Estuarine	8. Sea rush-oioi sedgeland.	Intertidal flat
Estuarine	9. Sea rush-(pasture) tussockland.	Intertidal flat
Estuarine	10. Saltmarsh ribbonwood/oioi-sea rush sedgeland.	Intertidal flat
Estuarine	11. <i>Baumea juncea</i> -harakeke-oioi sedgeland.	Intertidal flat
Estuarine	12. Mangrove/ <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat
Estuarine	13. Manuka/oioi-sea rush-saltmarsh ribbonwood sedgeland.	Intertidal flat
Estuarine	14. <i>Schoenoplectus pungens</i> sedgeland.	Intertidal flat
Palustrine	15. <i>Baumea articulata</i> -pohuehue reedland.	Wetland
Palustrine	16. Grey willow/raupo-harakeke-pampas reedland.	Wetland
Terrestrial	17. Manuka-gorse scrub.	Alluvial flats
Palustrine	18. Manuka scrub.	Wetland
Estuarine	19. Sea rush- <i>Samolus repens</i> -saltmarsh ribbonwood- <i>Baumea juncea</i> -oioi tussockland.	Intertidal flat
Estuarine	20. Glasswort sandfield.	Intertidal flat

(Wildland Consultants 2005e)

Vegetation and Indigenous Flora

This site includes multiple examples of estuarine wetlands on the margins of Waipu Bay, between the Matapihi Peninsula and Tauranga Airport. The saline wetlands are dominated by mixtures of mangrove, searush, oioi, and saltmarsh ribbonwood. Non-tidal parts of the site include freshwater wetlands of grey willow, raupo, and harakeke, and manuka scrub. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail and North Island fernbird (both At Risk, Sparse) were recorded here in 1990 (Owen 1993).

Condition/Pressures

Owen (1993) recorded extensive reclamation and drainage works, stock access, pampas, wattle, radiata pine; industrial and domestic rubbish dumping; and recreational horse-riding.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	H
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	M
	3.12	M
	3.13	M

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Relative Significance Local

Significance Justification This site acts as a protective buffer to a nationally significant wader feeding area at Waipu Bay Intertidal Flats. It contains a diverse range of vegetation types. Pest plants are locally present.

Category 4

Notes This site includes five sites (Waipu Bay 1 to 5) which are all ranked as Category 2 Special Ecological Sites (SES) in Tauranga City (Wildland Consultants 2005e). This site is part of the Waipu Bay Key Ecological Zone (Wildlands 2006g).

References Owen 1993; Wildland Consultants 2005e.

TYE PARK INLET

Site Number	157
Grid Reference (NZMG)	E2792190 N6381657
Local Authority	Tauranga City Council
Status	Unprotected
Site Area	2.3 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sandfield.	Intertidal flat
Estuarine	2. Oioi rushland.	Intertidal flat
Estuarine	3. Mangrove scrub.	Intertidal flat
Estuarine	4. Mangrove-oioi-sea rush scrub. (Wildland Consultants 2005e)	Intertidal flat

Vegetation and Indigenous Flora Tye Park Inlet is a small site in Welcome Bay. It comprises estuarine wetlands of mangrove, oioi, and searush. No rare or uncommon plant species have been recorded at this site.

Fauna Banded rail (At Risk, Sparse) were recorded in 1990 (Owen 1993).

Condition/Pressures Pampas is present on the margins of the site. The site is surrounded by exotic vegetation (for example brush wattle-woolly nightshade scrub to the east and mown grass to the west) and residential development. Some unauthorised mangrove clearance has occurred in past years (P. Cashmore pers. comm.).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	L
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	M
Naturalness	3.8	M
Ecological Context	3.9	H
	3.10	M
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification	Tye Park Inlet is locally significant because it contains small examples of indigenous mangrove scrub and estuarine wetlands, which occur widely in Tauranga Harbour. There is one record of an At Risk bird species.
Category	4
Notes	This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).
References	Owen 1993; Wildland Consultants 2005e.

MANGATAWA

Site Number	158
Grid Reference (NZMG)	E2795507 N6384567
Local Authority	Tauranga City Council
Status	Unprotected
Site Area	8.4 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Sea rush-oioi tussockland.	Intertidal flat
Estuarine	2. Sea rush tussockland.	Intertidal flat
Estuarine	3. Mangrove scrub, shrubland and loamfield	Intertidal flat
Estuarine	4. Oioi- <i>Bolboschoenus fluviatilis</i> rushland. (Wildland Consultants 2005e)	Intertidal flat

Vegetation and Indigenous Flora

Mangatawa is a small site on the northern side of Rangataua Estuary below Mangatawa Marae. It comprises estuarine wetlands of mangrove, searush, oioi, and *Bolboschoenus fluviatilis*. The site is adjacent to created wetlands within the sewage treatment works. No rare or uncommon plant species have been recorded at this site.

Fauna

Banded rail (At Risk, Sparse) were present in 1990 (Owen 1993). North Island fernbird (At Risk, Sparse) was present in 2007 (K. Owens pers. obs.).

Condition/Pressures

Owen (1993) noted stock access, gorse, pampas, drainage and reclamation works, and stormwater discharge.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	M
Ecological Context	3.9	M
	3.10	L
Viability and Sustainability	3.11	L
	3.12	M
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance	Local
Significance Justification	Mangatawa is locally significant because it comprises estuarine vegetation typical of the vegetation of Tauranga Harbour. There are records of two At Risk bird species.
Category	4
Notes	This site is ranked as a Category 2 Special Ecological Site (SES) in Tauranga City (Wildland Consultants 2005e).
References	Owen 1993; Wildland Consultants 2005e.

PAH ROAD OXBOW LAKES

Site Number	159
Grid Reference (NZMG)	E2805188, N6377018
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	2.8 ha
Altitudinal Range	<20 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Crack willow/Mercer grass/ <i>Azolla</i> sp. waterfield.	Wetland
Lacustrine	2. (Weeping willow)/(Mercer grass)/ <u>open water</u> waterfield. (Current study)	Lake

Vegetation and Indigenous Flora

There are two oxbow lakes at this site. The southern lake is bordered by crack willow, with mercer grass dominant along the water's edge. Scattered *Cyperus ustulatus*, *Juncus edgariae*, beggars' tick, and *Carex secta* are also present along the water's margins. *Azolla* sp. and algae are present on the lake surface. The northern lake, which is deeper, is mostly open water bounded by farm paddocks, with a garden along the northern side. A variety of additional species occur along the margins of the northern lake, including harakeke, ti kouka, *Calystegia sepium*, *Cyperus ustulatus*, and *Carex geminata*.

Fauna

Pukeko, mallard, black shag (At Risk, Sparse), and southern black-backed gull were observed at the site during the current study.

Condition/Pressures

The southern lake is not fenced from stock and the margins appear to be grazed by cattle. The vegetation around the southern lake is in poor condition and is dominated by exotic species. There is probably a high nutrient input into this very shallow lake.

One side of the northern lake bounds a residential property, and this side has been planted as a garden using a mixture of indigenous and exotic species. The remainder of the northern lake is either grazed pasture to the water's edge, or is fenced with a narrow strip of rank grass and herbs between the lake and a road. Several weeds were present at this site, including beggars' tick, Mercer grass, and Chinese mugwort.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	L
	3.4	L
	3.5	L
	3.6	H
Diversity and Pattern	3.7	L
Naturalness	3.8	L

Criterion*	RPS Number*	Ranking**
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification This site is of local significance because very few ox-bow lakes remain in the Tauranga ED, and the site has potential to be restored. Black shag (At Risk) are occasional visitors to the site. The vegetation at this site is highly degraded however, and better quality examples of ox-bow lakes are present within the Kaituna River Wetland (see TSC10).

Category 4

Notes

References Current study.

POKOPOKO STREAM WETLAND

Site Number	160
Grid Reference (NZMG)	E2810521, N6366496
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	3.9 ha
Altitudinal Range	20-30 m asl
Bioclimatic Zone	Semi-coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Palustrine	1. Black wattle-robinia/ <u>grey willow</u> -ti kouka forest.	Wetland
Terrestrial	2. Robinia/ <u>mamaku</u> forest.	Hills

Vegetation and Indigenous Flora Black wattle and robinia are emergent over grey willow in this wetland. Ti kouka are scattered throughout.

Fauna Australian magpie was recorded at this site during the current study. Long-finned eel (Chronically Threatened, Gradual Decline), northern koura (Chronically Threatened, Gradual Decline), and torrentfish were recorded in Pokopoko Stream in 2004 (NIWA 2008).

Condition/Pressures This highly modified wetland is surrounded by pastoral farming. A new orchard development is located nearby. If this development were to extract water from the stream, then this may impact on the waterflow patterns of Pokopoko Stream.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

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Relative Significance Local

Significance Justification	Very few freshwater wetlands are present in Tauranga Ecological District. Although this site is heavily infested with weeds (grey willow), it is locally significant, with moderate potential for restoration. The site probably enhances habitat used by two Chronically Threatened species (long-finned eel and northern koura).
Category	4
Notes	This site was viewed from distance. It is within the 'Rotoiti Hills to Waihi Estuary' long-term priority ecological corridor (Wildland Consultants 2007c and 2007d).
References	NIWA 2008; Current study.

MAKETU ROAD WADER ROOST

Site Number	161
Grid Reference (NZMG)	E2813915 N6376744
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC reserve)
Site Area	2.2 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Exotic grassland (recreation reserve). (Wildland Consultants 2006g)	Alluvial flat

Vegetation and Indigenous Flora This site is a grassed sports field which is regularly mown. Ngaio has been planted on the estuary margin of the site. No rare or uncommon plant species have been recorded (Wildland Consultants 2006g).

Fauna This site is a spring high tide roost for wading bird species (John Heaphy pers. comm. 2006, OSNZ 2006) when conditions force waders, terns, and gulls from Maketu Estuary, especially when high spring tides and/or strong winds occur. On these occasions good numbers of waders (including bar-tailed godwits and oystercatchers) roost here (K. Owen pers. comm.).

Condition/Pressures Possible disturbance to roosting birds resulting from sporting/community activities.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	N/A
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

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** H = High, M = Medium, L = Low.

Relative Significance Regional

Significance Justification	The site is regionally significant because, despite being a completely modified habitat (mown grass), it is a high tide roosting site for wading birds.
Category	4
Notes	Should be maintained as reserve and not built upon. The site forms part of the Smartgrowth 'Coastal Strip' corridor, ranked as being highest priority, and is also part of the Smartgrowth Corridor 'Kaituna', ranked as being Second-Priority Level 1 (Wildland Consultants 2007c and 2007d).
References	OSNZ 2006; Wildland Consultants 2006g.

WAIHI BEACH GREY WILLOW FOREST

Site Number 162
Grid Reference (NZMG) E2770423 N6417325
Local Authority Western Bay of Plenty District Council
Status Protected (WBOPDC local purpose reserve)
Site Area 1.7 ha
Altitudinal Range 0 m asl
Bioclimatic Zone Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial	1. Grey willow forest. (Wildland Consultants 2006g)	Alluvial flat

Vegetation and Indigenous Flora This forest canopy at this site is dominated by grey willow species. Ginger and arum lily present. No rare or threatened species are known to occur at this site, however the recent discovery of several threatened wetland plants in the Kaituna wetland suggests that these are capable of withstanding considerable habitat modification, and their occurrence here cannot be ruled out.

Fauna Habitat for common forest birds.

Condition/Pressures Dumping of garden refuse containing pest plants and other weeds, drainage and development due to expansion of surrounding adjacent suburban area. Weeds including ginger and arum lily are already established within this wetland.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	L
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Small freshwater wetland; canopy dominated by grey willow. Although

Justification

Waihi Beach Grey Willow Forests are small and degraded, they are locally significant because freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District, and the site may provide habitat for threatened species in the future.

Category

4

DUCK BAY

Site Number	163
Grid Reference (NZMG)	E2786695, N6392469
Local Authority	Western Bay of Plenty District Council
Site Area	5.6 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove-oioi-sea rush scrub.	Inter-tidal flats
Estuarine	2. Sea rush-oioi tussockland. (Wildland Consultants 2006g)	Inter-tidal flats

Vegetation and Indigenous Flora

The site is dominated by vegetation types which are typical of estuarine wetlands in Tauranga Harbour, including mangrove scrub, and estuarine wetlands of sea rush, and oioi. No rare or uncommon plant species have been recorded at this site, but *Austrostipa stipoides*, regionally uncommon within the Tauranga ED, is present on sandspits at several sites around the harbour, and is likely to occur in drier areas within saltmarsh vegetation.

Fauna

Rasch (1989) ranks the whole harbour as a wildlife habitat of “Outstanding” value. The estuarine and marine systems support very high numbers and diversity of wading and seabird populations. This site contains intertidal flats which provide outstanding feeding grounds for waders (principally bar-tailed godwit, oystercatches) and waterfowl (swan, ducks, geese).

Banded rail and North Island fernbird (At Risk, Sparse) are known to occur in similar sites elsewhere on Matakana Island, such as Otapu Bay (Owen 1993), and probably also inhabit this site.

Condition/Pressures

Invasion of estuarine saltmarsh vegetation by saltwater paspalum would degrade this habitat and reduce its value to marsh birds, wading birds and waterfowl. Saltwater paspalum is well established at Otapu Bay, and could spread to this site.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	M
Rarity or Distinctive Features	3.2	M
	3.3	M
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	H
Ecological Context	3.9	M
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	M
	3.12	H
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Duck Bay provides reasonably good habitat for threatened marshbird species, as well as feeding and roosting habitat for the wide range of waders that inhabit Tauranga Harbour. It is also a good quality, representative example of a saltmarsh – mangrove complex on intertidal flats and provides a protective buffer to a nationally significant area of the Tauranga Harbour. The site should maintain its ecological integrity with minimal management input, periodic survey and control and eradication of invasive estuarine weeds in response to detection of early stages of invasion should be all that is required.

Category 4

BELL ROAD OXBOW

Site Number	164
Grid Reference (NZMG)	E2805978 N6379006
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC local purpose reserve)
Site Area	4.6 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Lacustrine	1. Open fresh water, crack willow-gorse shrubland; crack willow-grey willow-pampas shrubland. (Wildland Consultants 2006g)	Open water

Vegetation and Indigenous Flora This oxbow lake is divided by roads into three parts. Crack willow-gorse shrubland occurs along the margins of the southern area, whilst crack willow-grey willow-pampas shrubland and sandfield occurs around the northern area. There is local raupo and harakeke. A small stand of raupo is present at the south-east end of this oxbow. Elsewhere open water is fringed by creeping bent (*Agrostis stolonifera*) (Wildland Consultants 2000e).

Fauna Mallard, white-faced heron, pukeko, and shag species use this lake (Wildland Consultants 2000e).

Condition/Pressures One side of this site appears to be fenced and is bounded by a narrow marginal strip of scrub or rank grassland.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	L
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

This site is of local significance because very few ox-bow lakes remain in the Tauranga ED, and the site has potential to be restored. The vegetation at this site is highly degraded however, and better quality examples of ox-bow lakes are present within the Kaituna River Wetland. This site is habitat for shags and common waterfowl.

Category

4

References

Wildland Consultants 2000e.

REREAUKAHIA

Site Number	165
Grid Reference (NZMG)	E2768788 N6399129
Local Authority	Western Bay of Plenty District Council
Status	Protected (WBOPDC) and unprotected parts
Site Area	13.5 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Estuarine	1. Mangrove scrub and shrubland	Intertidal flats
Estuarine	2. Sea rush-oioi-saltmarsh ribbonwood tussockland. (Wildland Consultants 2006g)	Intertidal flats

Vegetation and Indigenous Flora Rereatukahia is dominated by mangrove scrub and shrubland, and estuarine wetlands of sea rush, oioi, and saltmarsh ribbonwood. No rare or uncommon plant species have been recorded at this site.

Fauna Australasian bittern (Acutely Threatened, Nationally Endangered) and North Island fernbird (At Risk, Sparse) were recorded here in 1992, within riverine and estuarine habitats and on adjacent, infilled land around the marae (Owen 1993).

Rereatukahia is a roosting and feeding site for Caspian tern and wrybill (both Acutely Threatened, Nationally Vulnerable), banded dotterel (Chronically Threatened, Gradual Decline), and North Island fernbird (At Risk, Sparse) (OSNZ 2006).

Condition/Pressures The riverine wetlands were not fenced to exclude to stock and there was evidence of damage from cattle (Owen 1993). Pampas is present on the margins of the site (ibid.).

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	L
	3.4	L
	3.5	L
	3.6	M
Diversity and Pattern	3.7	L
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L

Criterion*	RPS Number*	Ranking**
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

Significance Justification Four Acutely Threatened and one Chronically Threatened bird species have been recorded in the vicinity but information is needed to clarify their use of this site.

Category 4

References Beadel 1992a, Owen 1993, OSNZ 2006.

FERGUS ROAD WETLAND

Site Number	166
Grid Reference (NZMG)	E2769613, N6416423
Local Authority	Western Bay of Plenty District Council
Status	Unprotected
Site Area	3.4 ha
Altitudinal Range	0 m asl
Bioclimatic Zone	Coastal

Hydrosystem	Vegetation/Habitat Type	Landform
Terrestrial Paulustrine	1. Rewarewa-houpara treeland. 2. Willow forest. (Wildland Consultants 2006g)	Gully Wetland

Vegetation and Indigenous Flora Thin band of willow wetland on damp alluvial flats with rewarewa treeland on gully side form linear band of riparian vegetation alongside headwaters of small stream. A regionally threatened species, maire tawake (swamp maire; *Syzygium maire*), is present within the willow forest.

Fauna No specific information

Condition/Pressures Urbanisation of surrounding area may impact within stream flows, increase peak flows, and decrease base flows as impermeable surface within surrounding catchment increases in area. Surrounding urban areas are likely to be a ready source of environmental weeds.

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	L
Rarity or Distinctive Features	3.2	M
	3.3	L
	3.4	L
	3.5	L
	3.6	M
	Diversity and Pattern	3.7
Naturalness	3.8	L
Ecological Context	3.9	L
	3.10	L
Viability and Sustainability	3.11	L
	3.12	L
	3.13	L

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.

** H = High, M = Medium, L = Low.

Relative Significance Local

**Significance
Justification**

Site contains a regionally uncommon tree species (*Syzygium maire*). Although Fergus Road Wetland is small and degraded, it is locally significant because freshwater wetlands have been greatly reduced in extent in the Tauranga Ecological District, and the site may provide habitat for threatened species in the future.

Category

4

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ACKNOWLEDGMENTS

We gratefully acknowledge the assistance of the following people during the survey.

- Landowners of the Tauranga Ecological District for allowing access to study areas and providing useful information and assistance.
- Sue Mavor and Nancy Willems (Environment Bay of Plenty) for initiating the project and providing logistical support. Nancy Willems also provided comments on a draft of this report.
- Rhodri Harfort (Wildland Consultants Ltd) for working on the Phase 1 report, Jenny Lux (Wildland Consultants Ltd) for assistance with project set-up, William Shaw (Wildland Consultants Ltd) for technical assistance.
- John Heaphy and Keith Owen (Department of Conservation) provided information on indigenous fish, birds, reptiles, mammals, amphibians, and human history. Keith Owen also provided comments on a draft of this report.
- Paul Cashmore (Department of Conservation, Bay of Plenty Conservancy Office) provided information on indigenous plants, and comments on a draft of this report.
- Sue Clements (Department of Conservation) for providing access to useful information.
- Paul Cuming and Brian Chudleigh (Ornithological Society of New Zealand).
- Gareth Evans (Environment Bay of Plenty) for supplying digital aerial photographs.
- Ewen Cameron (Auckland Museum), Leon Perrie (Te Papa Museum), and Chris Ecroyd (Scion) for providing information on herbarium vouchers.
- Also thanks to all other people who have made information available and helped in the preparation, fieldwork, and write-up of this survey.

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CHECKLIST OF INDIGENOUS VASCULAR PLANTS IN TAURANGA ECOLOGICAL DISTRICT

Sarah M. Beadel 2008

Note: Based on field surveys undertaken between 1984 and 2008. Herbarium vouchers are given for species not seen by the author.

Gymnosperms

<i>Agathis australis</i>	kauri
<i>Dacrycarpus dacrydioides</i>	kahikatea
<i>Dacrydium cupressinum</i>	rimu
<i>Phyllocladus trichomanoides</i>	tanekaha
<i>Podocarpus totara</i> var. <i>totara</i>	totara
<i>Prumnopitys ferruginea</i>	miro
<i>Prumnopitys taxifolia</i>	matai

Monocot. trees and shrubs

<i>Cordyline australis</i>	ti kouka
<i>Cordyline banksii</i>	ti ngahere, forest cabbage tree
<i>Phormium cookianum</i>	wharariki, mountain flax
<i>Phormium tenax</i>	harakeke, flax
<i>Rhopalostylis sapida</i>	nikau

Dicot. trees and shrubs

<i>Alectryon excelsus</i> subsp. <i>excelsus</i>	titoki
<i>Aristotelia serrata</i>	makomako, wineberry
<i>Avicennia marina</i> subsp. <i>australasica</i>	manawe, mangrove
<i>Beilschmiedia tawa</i>	tawa
<i>Brachyglottis kirkii</i> var. <i>angustior</i>	
<i>Brachyglottis repanda</i>	rangiora
<i>Carmichaelia australis</i>	makaka, maukoro
<i>Carpodetus serratus</i>	putaputaweta
<i>Coprosma propinqua</i> × <i>C. robusta</i>	
<i>Coprosma acerosa</i> s.s	
<i>Coprosma acerosa</i> s.s × <i>C. repens</i>	
<i>Coprosma arborea</i>	tree coprosma
<i>Coprosma grandifolia</i>	kanono
<i>Coprosma lucida</i>	karamu
<i>Coprosma propinqua</i> subsp. <i>propinqua</i>	mingimingi
<i>Coprosma propinqua</i> × <i>C. repens</i>	
<i>Coprosma repens</i>	taupata
<i>Coprosma rhamnoides</i>	

<i>Coprosma rigida</i>	
<i>Coprosma robusta</i>	karamu
<i>Coprosma tenuicaulis</i>	hukihuki
<i>Coriaria arborea</i> var. <i>arborea</i>	tutu
<i>Corynocarpus laevigatus</i>	karakā
<i>Dodonaea viscosa</i>	akeake
<i>Dracophyllum latifolium</i> (NZFRI 690) ⁶	neinei
<i>Dysoxylum spectabile</i>	kohekohe
<i>Elaeocarpus dentatus</i>	hināu
<i>Entelea arborescens</i>	whāu
<i>Fuchsia excorticata</i>	kotukutuku
<i>Fuchsia perscandens</i>	
<i>Gaultheria antipoda</i>	tawiniwini
<i>Geniostoma rupestre</i> var. <i>ligustrifolium</i>	hangehange
<i>Griselinia lucida</i>	puka
<i>Hebe stricta</i> var. <i>stricta</i>	koromiko
<i>Hedycarya arborea</i>	porokaiwhiri
<i>Hoheria populnea</i>	houhere, lacebark
<i>Ixerba brexioides</i> (NZFRI 1144) ¹	tawari
<i>Knightia excelsa</i>	rewarewa
<i>Kunzea ericoides</i>	kanuka
<i>Laurelia novae-zelandiae</i>	pukatea
<i>Leptecophylla juniperina</i>	prickly mingimingi
<i>Leptospermum scoparium</i>	manuka
<i>Leucopogon fasciculatus</i>	mingimingi
<i>Leucopogon fraseri</i> s.s.	patotara
<i>Litsea calicaris</i>	mangeao
<i>Macropiper excelsum</i> subsp. <i>excelsum</i>	kawakawa
<i>Melicytus novae-zelandiae</i>	coastal mahoe
<i>Melicytus ramiflorus</i> subsp. <i>ramiflorus</i>	mahoe
<i>Metrosideros excelsa</i>	pohutukawa
<i>Metrosideros robusta</i>	northern rata
<i>Mida salicifolia</i> (NZFRI 1126) ⁷	mida
<i>Myoporum laetum</i>	ngaio
<i>Myrsine australis</i>	mapou
<i>Nothofagus truncata</i> (NZFRI 799) ¹	
<i>Olearia furfuracea</i>	akepiro
<i>Olearia rani</i>	heketara
<i>Olearia solandri</i>	
<i>Ozothamnus leptophyllus</i>	tauhinu
<i>Pimelea arenaria</i>	
<i>Pimelea prostrata</i>	pinatoro
<i>Pimelea tomentosa</i>	
<i>Pittosporum cornifolium</i> (NZFRI 971) ¹	
<i>Pittosporum crassifolium</i>	karo

⁶ 1946 records. This location was tawa-kohekohe forest and is now developed for horticulture. There are no recent records of these species from the ED.

⁷ Early record (NZFRI 1126) undated but probably pre-1950. This location is now all developed for housing. There are no recent records of these species from the ED.

<i>Pittosporum eugenoides</i>	tarata
<i>Pittosporum tenuifolium</i> subsp. <i>tenuifolium</i>	kohuhu
<i>Pittosporum umbellatum</i> (recorded in 1957; NZFRI 21637)	
<i>Plagianthus divaricatus</i>	marsh ribbonwood, makaka
<i>Pomaderris kumeraho</i>	kumarahou
<i>Pomaderris</i> sp. aff. <i>P. phlyicifolia</i>	
<i>Pseudopanax arboreus</i>	whauwhaupaku, five finger
<i>Pseudopanax crassifolius</i>	horoeka, lancewood
<i>Pseudopanax crassifolius</i> × <i>P. lessonii</i>	
<i>Pseudopanax lessonii</i>	houpara
<i>Pseudowintera axillaris</i> (NZFRI 849) ⁸	horopito
<i>Rhabdothamnus solandri</i>	taurepo
<i>Schefflera digitata</i>	pate
<i>Solanum aviculare</i> var. <i>aviculare</i>	
<i>Syzygium maire</i>	maire tawake, swamp maire
<i>Tupeia antarctica</i> (NZFRI 20331) ⁹	puriri
<i>Vitex lucens</i>	
<i>Vittadinia australis</i> (AK 266303) ¹⁰	
<i>Weinmannia racemosa</i>	kamahi, tawhero

Monocot. lianes

<i>Freycinetia banksii</i>	kiekie
<i>Ripogonum scandens</i>	kareao, supplejack

Dicot. lianes

<i>Calystegia sepium</i>	pohue
<i>Calystegia sepium</i> × <i>C. soldanella</i>	
<i>Calystegia soldanella</i>	panahi
<i>Calystegia tuguriorum</i>	
<i>Clematis cunninghamii</i>	ngakau-kiore
<i>Clematis paniculata</i>	puawananga
<i>Metrosideros diffusa</i>	rata
<i>Metrosideros fulgens</i>	rata
<i>Metrosideros perforate</i>	aka
<i>Muehlenbeckia australis</i>	puka
<i>Muehlenbeckia australis</i> × <i>M. complexa</i>	
<i>Muehlenbeckia complexa</i>	pohuehue
<i>Parsonsia capsularis</i>	akakiore
<i>Parsonsia heterophylla</i>	akakaikiore
<i>Rubus australis</i>	tataramoa
<i>Rubus cissoids</i>	tataramoa
<i>Rubus schmidelioides</i>	akatataramoa

⁸ 1946 records. This location was tawa-kohekohe forest and is now developed for horticulture. There are no recent records of these species from the ED.

⁹ Recorded in 1967 by John Hobbs near No. 4 Road (J.F.F. Hobbs pers. comm.). However, no plants have been seen in the ED recently.

¹⁰ 1884 record. Not seen recently.

Tetragonia implexicoma
Tetragonia tetragonoides

kokihi

Lycopods and psilopsids

Huperzia varia
Lycopodium deuterodensum
Lycopodium volubile
Psilotum nudum
Tmesipteris tannensis

Whiri-o-Raukatauri
puakarimu
waewaekoukou

Ferns

Adiantum cunninghamii
Adiantum hispidulum
Asplenium appendiculatum subsp. *maritimum*
Asplenium bulbiferum
Asplenium flaccidum
Asplenium flaccidum subsp. *haurakiense*
Asplenium oblongifolium
Asplenium polyodon
Azolla filiculoides
Blechnum chambersii
Blechnum colensoi
Blechnum filiforme
Blechnum fluviatile
Blechnum minus
Blechnum minus × *B. novae-zelandiae*
Blechnum novae-zelandiae
Blechnum vulcanicum
Ctenopteris heterophylla
Cyathea dealbata
Cyathea medullaris
Cyclosorus interruptus
Deparia petersenii
Dicksonia fibrosa
Dicksonia squarrosa
Diplazium australe
Doodia australis
Gleichenia dicarpa
Gleichenia microphylla
Histiopteris incise
Hymenophyllum demissum
Hymenophyllum dilatatum
Hymenophyllum multifidum
Hymenophyllum rarum
Hymenophyllum sanguinolentum
Hymenophyllum scabrum
Hypolepis ambigua
Hypolepis dicksonioides

huruhuru tapairu

mouku

huruhuruwhenua
petako
retoretore
rereti
peretao
panako
kiwikiwi
swamp kiokio

kiokio
korokio

ponga, silver fern
mamaku, black tree fern

wheki-ponga
wheki

pukupuku
tangle fern
waewaekaka
matata, water fern
irirangi
matua mauku
mauku
mauku
piripiri
mauku

<i>Hypolepis distans</i>	
<i>Hypolepis lacteal</i>	
<i>Lastreopsis glabella</i>	
<i>Lastreopsis hispida</i>	
<i>Leptopteris hymenophylloides</i>	heruheru
<i>Lygodium articulatum</i>	mangemange
<i>Marattia salicina</i>	para, kingfern
<i>Microsorium pustulatum</i>	kowaowao (hounds tongue fern)
<i>Microsorium scandens</i>	mokimoki
<i>Paesia scaberula</i>	matata
<i>Pellaea rotundifolia</i>	tarawera (button fern)
<i>Pneumatopteris pennigera</i>	pakau
<i>Polystichum neozelandicum</i> subsp. <i>neozelandicum</i>	pikopiko, shield fern
<i>Pteridium esculentum</i>	rarahu (bracken)
<i>Pteris comans</i>	
<i>Pteris comans</i> × <i>P. macilenta</i>	
<i>Pteris macilenta</i> (incl. <i>P. pendula</i>)	sweet fern
<i>Pteris tremula</i>	turawera (shaking brake)
<i>Pyrrosia eleagnifolia</i>	leather-leaf fern
<i>Rumohra adiantiformis</i>	
<i>Thelypteris confluens</i>	
<i>Trichomanes reniforme</i>	
<i>Trichomanes venosum</i>	

Orchids

<i>Acianthus sinclairii</i>	
<i>Diplodium alobulum</i>	
<i>Drymoanthus adversus</i>	
<i>Earina autumnalis</i>	raupeka
<i>Earina mucronata</i>	peka-a-waka
<i>Ichthyostomum pygmaeum</i>	piripiri
<i>Microtis unifolia</i>	maikaika
<i>Nematoceras</i> sp. (<i>Corybas</i> "Kaimai")	
<i>Orthoceras novae-zeelandiae</i>	maikaika
<i>Petalochilus alatus</i>	
<i>Petalochilus</i> sp. (= <i>Caladenia</i> aff. <i>C. catenata</i>)	
<i>Pterostylis banksii</i>	tutukiwi
<i>Pterostylis micromega</i> ¹¹	
<i>Singularybas oblongus</i>	
<i>Thelymitra longifolia</i>	maikuku
<i>Thelymitra pauciflora</i>	slender sun orchid
<i>Winika cunninghamii</i>	

Grasses

Amphibromus fluitans (NZFRI 26982)

¹¹ Not seen since 1983. Probably extinct in the district.

<i>Austrofestuca littoralis</i>	
<i>Austrostipa stipoides</i>	
<i>Chionochloa flavicans</i> f. <i>flavicans</i>	
<i>Cortaderia fulvida</i>	toetoe
<i>Cortaderia fulvida</i> × <i>C. toetoe</i>	
<i>Cortaderia toetoe</i>	toetoe
<i>Deyeuxia avenoides</i>	
<i>Deyeuxia quadriseta</i>	
<i>Dichelachne crinita</i>	patiti
<i>Echinopogon ovatus</i>	
<i>Isachne globosa</i>	swamp millet
<i>Lachnagrostis billardierei</i>	perehia
<i>Lachnagrostis filiformis</i>	
<i>Lachnagrostis lyallii</i>	
<i>Microlaena avenacea</i>	bush rice grass
<i>Microlaena stipoides</i>	patiti
<i>Oplismenus hirtellus</i> subsp. <i>imbecillis</i>	
<i>Paspalum orbiculare</i> (WECT SP069260) (Undated, L. Cockayne herbarium) ¹²	
<i>Poa anceps</i> subsp. <i>anceps</i>	
<i>Poa pusilla</i>	
<i>Rytidosperma biannulare</i> (AK 217018)	
<i>Rytidosperma gracile</i>	
<i>Rytidosperma unarede</i> (AK 216981)	
<i>Spinifex sericeus</i>	kowhangatara
<i>Trisetum arduanum</i> (AK 216351)	
<i>Zoysia pauciflora</i>	

Sedges

<i>Baumea arthrophylla</i>	
<i>Baumea articulate</i>	
<i>Baumea juncea</i>	
<i>Baumea rubiginosa</i>	
<i>Baumea tenax</i>	
<i>Baumea teretifolia</i>	
<i>Bolboschoenus caldwellii</i>	
<i>Bolboschoenus fluviatilis</i>	rirewaka
<i>Bolboschoenus medianus</i>	rirewaka
<i>Carex</i> "raotest"	
<i>Carex breviculmis</i>	
<i>Carex dipsacea</i>	
<i>Carex dissita</i>	
<i>Carex geminata</i> agg.	rautahi
<i>Carex inversa</i> (AK 117717) (naturalised in lawn) (collected in 1968)	
<i>Carex maorica</i>	
<i>Carex pumila</i>	

¹² Historic record, not seen recently.

<i>Carex secta</i>	purei
<i>Carex sinclairii</i>	
<i>Carex solandri</i>	
<i>Carex subdola</i>	
<i>Carex testacea</i>	
<i>Carex virgata</i>	purei
<i>Cyperus ustulatus</i>	toetoe upokotangata
<i>Desmoschoenus spiralis</i>	pingao
<i>Eleocharis acuta</i>	
<i>Eleocharis gracilis</i>	
<i>Eleocharis sphacelata</i>	
<i>Ficinia nodosa</i>	wiwi
<i>Gahnia lacera</i>	tarangarara
<i>Gahnia pauciflora</i>	takahikahi
<i>Gahnia setifolia</i>	mapere
<i>Gahnia xanthocarpa</i>	tupari-maunga
<i>Isolepis cernua</i>	
<i>Isolepis distigmata</i>	
<i>Isolepis Habra</i>	
<i>Isolepis inundata</i>	
<i>Isolepis prolifera</i>	
<i>Isolepis reticularis</i>	
<i>Lepidosperma australe</i>	
<i>Lepidosperma laterale</i>	
<i>Machaerina sinclairii</i>	tuhara
<i>Morelotia affinis</i>	
<i>Schoenoplectus pungens</i>	
<i>Schoenoplectus pungens x S. tabernaemontani</i> (AK 284630)	
<i>Schoenoplectus tabernaemontani</i>	kapungawha
<i>Schoenus apogon</i>	
<i>Schoenus maschalinus</i>	
<i>Schoenus nitens</i>	
<i>Schoenus tendo</i>	wiwi
<i>Tetraria capillaries</i>	
<i>Uncinia scabra</i>	matau
<i>Uncinia uncinata</i>	kamu, matau a Maui

Rushes

<i>Apodasmia similis</i>	oioi
<i>Empodisma minus</i>	
<i>Juncus caespiticus</i>	
<i>Juncus edgariae</i>	wi
<i>Juncus kraussii</i> var. <i>australiensis</i>	wi (sea rush)
<i>Juncus pallidus</i>	wi
<i>Juncus planifolius</i>	
<i>Juncus prismatocarpus</i>	
<i>Juncus sarophorus</i>	wi
<i>Luzula picta</i> var. <i>picta</i>	

Monocot. herbs (other than orchids, grasses, sedges, and rushes)

<i>Arthropodium candidum</i>	
<i>Arthropodium cirratum</i>	rengarenga
<i>Astelia banksii</i>	kakaha
<i>Astelia fragrans</i>	kakaha
<i>Astelia grandis</i> (J. Hobbs in Cashmore 2002)	
<i>Astelia solandri</i>	kowharawhara
<i>Astelia trinervia</i>	mauri
<i>Collospermum hastatum</i>	kahakaha
<i>Collospermum microspermum</i>	
<i>Cordyline pumilio</i>	ti rauriki
<i>Dianella nigra</i>	turutu
<i>Lemna minor</i>	karearea
<i>Libertia grandiflora</i>	mikoikoi
<i>Potamogeton cheesemanii</i>	manihi
<i>Potamogeton ochreatus</i>	
<i>Ruppia megacarpa</i> (NZFRI 12466)	
<i>Sparganium subglobosum</i>	maru, burr reed
<i>Triglochin striata</i>	arrow grass
<i>Typha orientalis</i>	raupo
<i>Zostera capricorni</i>	
<i>Zostera muelleri</i>	

Composite herbs

<i>Anaphalioides trinervis</i> (NZFRI 26338)	puatea
<i>Cotula coronopifolia</i>	bachelor's button
<i>Euchiton audax</i>	
<i>Euchiton collinus</i>	
<i>Euchiton gymnocephalum</i>	
<i>Euchiton limosus</i> (NZFRI 17278)	
<i>Euchiton sphaericus</i> (NZFRI 17276)	
<i>Lagenifera pumila</i>	papataniwhaniwha
<i>Leptinella squalida</i> subsp. <i>squalida</i> (AK 254584)	
<i>Pseudognaphalium luteoalbum</i> agg.	pukatea
<i>Pseudognaphalium</i> "coast"	
<i>Senecio biserratus</i>	
<i>Senecio glomeratus</i>	
<i>Senecio hispidulus</i>	
<i>Senecio lautus</i> var. <i>lautus</i>	
<i>Senecio minimus</i>	
<i>Senecio quadridentatus</i>	

Dicot. herbs (other than composites)

<i>Acaena anserinifolia</i>	piripiri
<i>Apium prostratum</i> subsp. <i>prostratum</i> var. <i>filiforme</i>	New Zealand celery

<i>Atriplex hollowayi</i> (AK 3965) ¹³ (collected in 1890)	
<i>Callitriche petriei</i> subsp. <i>petriei</i>	
<i>Callitriche stagnalis</i>	starwort
<i>Centella uniflora</i>	
<i>Chenopodium ambiguum</i>	
<i>Dichondra repens</i>	Mercury Bay weed
<i>Disphyma australe</i> subsp. <i>australe</i>	horokaka
<i>Drosera auriculata</i>	
<i>Drosera peltata</i> subsp. <i>auriculata</i>	
<i>Einadia trigonos</i> subsp. <i>trigonos</i>	
<i>Elatine gratioloides</i> (AK 254579)	
<i>Epilobium alsinoides</i> s.s. (AK 11463)	
<i>Epilobium atriplicifolium</i> (AK 269307) ¹⁴	
<i>Epilobium billardioreanum</i> s.s. (AK 28564) ¹⁵	
<i>Epilobium nerteroides</i>	
<i>Epilobium nummulariifolium</i>	
<i>Epilobium pallidiflorum</i>	tawarewa
<i>Epilobium pedunculare</i>	
<i>Epilobium rotundifolium</i>	
<i>Galium propinquum</i>	mawe
<i>Galium trilobum</i>	
<i>Geranium solanderi</i>	
<i>Gonocarpus incanus</i>	piripiri
<i>Gonocarpus micranthus</i>	
<i>Gratiola sexdentata</i>	
<i>Haloragis erecta</i> subsp. <i>erecta</i>	toatoa
<i>Hydrocotyle heteromeria</i>	
<i>Hydrocotyle microphylla</i>	
<i>Hydrocotyle moschata</i>	
<i>Hydrocotyle novae-zeelandiae</i>	
<i>Hydrocotyle pterocarpa</i>	
<i>Hypericum japonicum</i>	
<i>Lepidium oleraceum</i> (AK 249218) ¹⁶	
<i>Lilaeopsis novae-zelandiae</i> (NZFRI 18104)	
<i>Limosella lineate</i>	mudwort
<i>Lobelia anceps</i>	punakuru
<i>Mimulus repens</i>	
<i>Myriophyllum propinquum</i>	
<i>Myriophyllum robustum</i> (NZFRI 26981)	
(WELT SP048581; Undated from T. Kirk herbarium, probably 1880's collection.) ¹⁷	
<i>Nertera depressa</i>	
<i>Nertera scapanioides</i>	
<i>Oxalis exilis</i>	

¹³ Historic record. Not seen in the district recently.

¹⁴ Collected 1884, not recorded recently.

¹⁵ Collected 1865, not recorded recently.

¹⁶ Collected in 1942 from Mt Maunganui, not recorded from the ED since then.

¹⁷ Herbarium voucher dated 1884. Also seen recently near Kaituna.

<i>Oxalis rubens</i>	
<i>Parietaria debilis</i>	
<i>Pelargonium inodorum</i>	kopata
<i>Peperomia tetraphylla</i>	
<i>Peperomia urvilleana</i>	
<i>Persicaria decipiens</i>	tutunawai
<i>Pratia angulata</i>	panakenake
<i>Ranunculus acaulis</i>	
<i>Ranunculus amphitrichus</i>	kawariki
<i>Ranunculus macropus</i>	
<i>Ranunculus reflexus</i>	maruru
<i>Rorippa palustris</i>	
<i>Samolus repens</i>	makaokao
<i>Sarcocornia quinqueflora</i>	
<i>Selliera radicans</i>	remuremu
<i>Solanum americanum</i>	small-leaved nightshade
<i>Spergularia media</i>	sea spurrey
<i>Stellaria parviflora</i> incl. <i>S. decipiens</i>	kohukohu
<i>Urtica incise</i>	
<i>Viola lyallii</i> (AK 71247)	
<i>Wahlenbergia littorica</i> subsp. <i>vernica</i> (WELT SP65251) ¹⁸	
<i>Wahlenbergia violacea</i>	

Planted

<i>Euphorbia glauca</i>	shore spurge
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¹⁸ 1934 collection, may no longer be present in the ED.

CHECKLIST OF ADVENTIVE VASCULAR PLANTS IN TAURANGA ECOLOGICAL DISTRICT

Sarah M. Beadel 2008

Note: Based on field surveys undertaken between 1984 and 2008. Herbarium vouchers are given for species not seen by the author.

ADVENTIVE SPECIES

Gymnosperms

<i>Araucaria heterophylla</i>	Norfolk Island pine
<i>Chamaecyparis lawsoniana</i>	Lawsons cypress
<i>Cupressus macrocarpa</i>	macrocarpa
<i>Pinus patula</i> ¹⁹	patula pine
<i>Pinus pinaster</i>	maritime pine
<i>Pinus pinea</i>	stone pine
<i>Pinus radiata</i>	radiata pine
<i>Pseudotsuga menziesii</i>	Douglas fir

Dicot. trees and shrubs

<i>Abutilon darwinii</i> × <i>A. pictum</i>	Chinese lantern
<i>Acacia dealbata</i>	silver wattle
<i>Acacia decurrens</i>	green wattle
<i>Acacia longifolia</i>	Sydney golden wattle
<i>Acacia mearnsii</i>	black wattle
<i>Acacia melanoxylon</i>	Tasmanian blackwood
<i>Acacia sophorae</i>	coastal wattle
<i>Acacia verticillata</i>	prickly Moses
<i>Acer pseudoplatanus</i>	sycamore maple
<i>Acmena smithii</i>	lillypilly, monkey apple
<i>Ailanthus altissima</i>	tree of heaven
<i>Asparagus densiflorus</i>	Sprenger's asparagus-fern
<i>Banksia integrifolia</i>	banksia
<i>Berberis glaucocarpa</i>	barberry
<i>Betula pendula</i>	silver birch
<i>Buddleja davidii</i>	buddleia
<i>Callistemon</i> sp.	bottlebrush
<i>Casuarina cunninghamiana</i>	river she-oak
<i>Casuarina littoralis</i>	black she-oak
<i>Cestrum elegans</i>	red cestrum
<i>Chamaecytisus palmensis</i>	tree lucerne

¹⁹ DOC Bioweb Weeds Database Version 5.1.4. Accessed 29/5/07.

<i>Chrysanthemoides monilifera</i>	boneseed
<i>Correa alba</i> (NZFRI 22199)	white correa
<i>Cotoneaster glaucophyllus</i> (incl. f. <i>serotinus</i>)	cotoneaster
<i>Cotoneaster simonsii</i>	Khasia berry
<i>Crataegus monogyna</i>	hawthorn
<i>Cytisus scoparius</i>	broom
<i>Elaeagnus</i> × <i>reflexa</i>	elaeanthus
<i>Erica arborea</i> (AK 216287)	tree heath
<i>Erica caffra</i>	hedge heath
<i>Erica lusitanica</i>	Spanish heath
<i>Eriobotrya japonica</i>	loquat
<i>Erythrina</i> × <i>sykesii</i>	coral tree
<i>Eucalyptus botryoides</i>	eucalyptus
<i>Eucalyptus piperita</i> subsp. <i>urceolaris</i>	Sydney peppermint
<i>Eucalyptus robusta</i> (AK 279499)	swamp mahogany
<i>Euonymus japonicus</i>	Japanese spindle tree
<i>Fatsia japonica</i>	fatsia
<i>Feijoa sellowiana</i>	feijoa
<i>Ficus carica</i>	fig
<i>Ficus rubiginosa</i> (AK 165261)	Port Jackson fig
<i>Fuchsia boliviana</i> (NZFRI 25124)	Bolivian fuchsia
<i>Fuchsia magellanica</i> ²⁰	Magellan fuchsia
<i>Gomphocarpus fruticosus</i>	swan plant
<i>Hakea salicifolia</i>	willow-leaved hakea
<i>Hakea sericea</i>	prickly hakea
<i>Hydrangea macrophylla</i>	hydrangea
<i>Idesia polycarpa</i>	wonder tree
<i>Impatiens sodenii</i>	shrub balsam
<i>Jasminum mesnyi</i>	primrose jasmine
<i>Juglans</i> sp.	walnut
<i>Lagunaria patersonia</i> subsp. <i>patersonia</i> (AK 284763)	Norfolk Island hibiscus
<i>Lantana camara</i> var. <i>aculeate</i>	lantana
<i>Leptospermum laevigatum</i>	coast tea tree
<i>Leycesteria formosa</i>	Himalayan honeysuckle
<i>Ligustrum lucidum</i>	tree privet
<i>Ligustrum sinense</i>	Chinese privet
<i>Liquidambar styraciflua</i> (AK 251539)	American sweetgum
<i>Lupinus arboreus</i>	lupin
<i>Lycium barbarum</i> (AK 278399)	Chinese boxthorn
<i>Lycium ferocissimum</i>	African boxthorn
<i>Malus</i> × <i>domestica</i>	apple tree
<i>Myoporum insulare</i>	Australian ngaio
<i>Nerium oleander</i>	oleander
<i>Ochna serrulata</i> (NZFRI 26266)	Mickey mouse plant, small-leaved plane
<i>Opuntia monacantha</i>	prickly pear
<i>Paraserianthes lophantha</i>	brush wattle
<i>Paulownia tomentosa</i>	paulownia

²⁰ DOC Bioweb Weeds Database Version 5.1.4. Accessed 29/5/07.

<i>Persea americana</i>	avocado
<i>Populus nigra</i> cv. <i>Italica</i>	Lombardy poplar
<i>Prunus campanulata</i> (AK 251540)	Taiwan cherry, bell-flowered cherry
<i>Prunus laurocerasus</i>	cherry laurel
<i>Quercus ilex</i>	oak
<i>Quercus robur</i>	English oak
<i>Rhamnus alaternus</i>	Italian buckthorn
<i>Rhaphiolepis umbellata</i> (AK 251781)	Sexton's bride
<i>Ricinus communis</i>	castor oil plant
<i>Robinia pseudacacia</i>	false acacia
<i>Rosa rubiginosa</i>	sweet brier
<i>Rubus fruticosus</i> agg. <i>R. caesius</i> (NZFRI 15459)	European dewberry
<i>Rubus phoenicolasius</i>	Japanese wineberry
<i>Rubus</i> sp. (<i>R. fruticosus</i> agg.)	blackberry
<i>Salix babylonica</i>	weeping willow
<i>Salix cinerea</i>	grey willow
<i>Salix fragilis</i>	crack willow
<i>Salix matsudana</i> cv. <i>tortuosa</i>	corkscrew willow
<i>Solanum betaceum</i>	tamarillo
<i>Solanum mauritianum</i>	woolly nightshade
<i>Syzygium australe</i> (AK 272138)	brush cherry
<i>Tecomaria capensis</i>	Cape honeysuckle
<i>Teline monspessulana</i>	Montpellier broom
<i>Tetrapanax papyriferus</i>	rice paper plant
<i>Ulex europaeus</i>	gorse
<i>Weigela florida</i>	apple blossom

Ferns

<i>Azolla pinnata</i>	ferny azolla
<i>Dryopteris filix-mas</i>	male fern
<i>Nephrolepis cordifolia</i>	ladder fern
<i>Osmunda regalis</i>	royal fern
<i>Platycerium bifurcatum</i>	staghorn fern
<i>Pteris cretica</i> (AK 250260)	Cretan brake
<i>Salvinia molesta</i>	kariba weed, giant salvinia

Dicot. lianes

<i>Actinidia deliciosa</i>	kiwifruit
<i>Anredera cordifolia</i>	madeira vine, mignonette vine
<i>Araujia sericifera</i>	moth plant
<i>Calystegia silvatica</i>	greater bindweed
<i>Clematis vitalba</i>	old man's beard
<i>Dipogon lignosus</i>	mile a minute
<i>Fallopia aubertii</i> (AK 237785)	Russian vine
<i>Hedera helix</i>	ivy
<i>Humulus lupulus</i>	hops
<i>Ipomoea indica</i> (incl. <i>I. congesta</i>)	blue morning glory
<i>Jasminum polyanthum</i>	jasmine

<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Lophospermum erubescens</i>	climbing gloxinia
<i>Passiflora caerulea</i>	blue-crown passion flower
<i>Passiflora edulis</i>	black passionfruit
<i>Passiflora tripartita</i> var. <i>mollissima</i>	banana passionfruit
<i>Philadelphus mexicanus</i>	mock orange
<i>Pueraria lobata</i> (AK 288417)	kudzu vine
<i>Roldana petasitis</i>	velvet groundsel
<i>Senecio angulatus</i>	cape ivy
<i>Senecio mikanioides</i>	German ivy
<i>Solanum jasminoides</i>	potato vine
<i>Vinca major</i>	periwinkle
<i>Vitis vinifera</i>	grape

Monocot. trees and shrubs

<i>Phoenix canariensis</i>	Phoenix palm
<i>Trachycarpus fortunei</i>	fan palm

Lycopods and psilopsids

<i>Selaginella kraussiana</i>	creeping clubmoss
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Grasses

<i>Agrostis capillaries</i>	browntop
<i>Agrostis stolonifera</i>	creeping bent
<i>Aira caryophyllea</i> subsp. <i>caryophyllea</i>	silvery hairy grass
<i>Aira elegans</i>	annual silver hairgrass
<i>Ammophila arenaria</i>	marram
<i>Anthoxanthum odoratum</i>	sweet vernal
<i>Aristida ramosa</i>	cane wire grass
<i>Arrhenatherum elatius</i> subsp. <i>bulbosum</i>	tall oat grass
<i>Arundo donax</i>	giant reed
<i>Austrostipa ramosissima</i> (NZFRI 24497)	stout bamboo grass
<i>Axonopus fissifolius</i>	narrow-leaved carpet grass
<i>Briza maxima</i>	large quaking grass
<i>Briza minor</i>	shivery grass
<i>Bromus diandrus</i>	ripgut brome
<i>Bromus hordeaceus</i>	soft brome
<i>Bromus lithobius</i> (AK 233422)	Chilean brome
<i>Bromus willdenowii</i>	prairie brome
<i>Catapodium rigidum</i> (NZFRI 26475)	hard grass
<i>Chloris gayana</i> (AK 216954)	Rhodes grass
<i>Cinnamomum camphora</i> (AK 256157)	camphor laurel
<i>Cortaderia jubata</i>	pampas
<i>Cortaderia selloana</i>	pampas
<i>Critesion murinum</i>	barley grass
<i>Cynodon dactylon</i>	Indian doab
<i>Cynosurus cristatus</i>	crested dogstail

<i>Dactylis glomerata</i>	cocksfoot
<i>Digitaria ciliaris</i> (NZFRI 26473)	Henry's crabgrass, summer grass
<i>Digitaria sanguinalis</i>	summer grass
<i>Echinochloa crus-galli</i>	barnyard grass
<i>Ehrharta erecta</i>	veld grass
<i>Eleusine indica</i>	crowfoot grass
<i>Elytrigia pycnantha</i>	sea couch
<i>Entolasia marginata</i> (NZFRI 12595)	bordered panic grass
<i>Eragrostis brownie</i>	bay grass
<i>Festuca rubra</i> subsp. <i>rubra</i>	red fescue
<i>Glyceria declinata</i>	floating sweetgrass
<i>Glyceria fluitans</i>	floating sweetgrass
<i>Glyceria maxima</i>	reed sweetgrass
<i>Glyceria striata</i> (NZFRI 25511)	fowl manna-grass
<i>Hemarthria uncinata</i>	matgrass
<i>Holcus lanatus</i>	Yorkshire fog
<i>Holcus mollis</i> (WELT 82884)	creeping fog, creeping soft grass
<i>Lagurus ovatus</i>	haretail
<i>Lolium perenne</i>	rye grass
<i>Miscanthus nepalensis</i>	Himalaya fairy grass
<i>Panicum dichotomiflorum</i>	smooth witchgrass
<i>Paspalum conjugatum</i>	Hilo grass
<i>Paspalum dilatatum</i>	paspalum
<i>Paspalum distichum</i>	Mercer grass
<i>Paspalum vaginatum</i>	saltwater paspalum
<i>Pennisetum clandestinum</i>	kikuyu grass
<i>Pennisetum macrourum</i> (WELT SPO82939) ²¹	African feather grass
<i>Phleum pretense</i>	timothy
<i>Piptatherum miliaceum</i> (NZFRI 25294)	Smilgrass, millet mountain rice
<i>Poa annua</i>	annual poa
<i>Poa pratensis</i>	Kentucky bluegrass
<i>Polypogon monspeliensis</i>	beard grass
<i>Polypogon viridis</i> (NZFRI 26486)	water bent
<i>Pseudosasa japonica</i>	bamboo
<i>Rytidosperma pilosum</i> (AK 217002)	hairy wallaby grass
<i>Rytidosperma racemosum</i>	danthonia
<i>Schedonorus phoenix</i>	tall fescue
<i>Setaria gracilis</i> (NZFRI 13092)	knot-root bristle grass
<i>Setaria pumila</i> (NZFRI 8600)	yellow bristle grass
<i>Setaria viridis</i>	green bristle grass
<i>Sorghum bicolor</i> (AK 216536)	sorghum
<i>Sorghum halepense</i> (AK 250005)	Johnson grass
<i>Spartina</i> × <i>townsendii</i>	spartina
<i>Spartina alterniflora</i>	spartina
<i>Spartina anglica</i>	spartina
<i>Sporobolus africanus</i>	ratstail
<i>Stenotaphrum secundatum</i>	buffalo grass
<i>Vulpia bromoides</i>	vulpia hair grass

²¹ 1920 collection, not seen in recent years.

Vulpia myuros var. *myuros*

vulpia hair grass

Sedges

Carex divulsa

grey sedge

Carex lurida

sallow sedge

Carex ovalis

oval sedge

Carex vulpinoidea

fox sedge

Cyperus brevifolius

globe sedge

Cyperus congestus

purple umbrella sedge

Cyperus eragrostis

umbrella sedge

Cyperus involucratus

umbrella sedge

Cyperus tenellus

tiny flatsedge

Isolepis marginata

coarse club-rush

Isolepis sepulcralis

African club sedge

Rhynchospora capitellata (AK 222566)

brownish beaksedge

Rushes

Juncus acuminatus

sharp-fruited rush

Juncus articulatus

jointed rush

Juncus bufonius

toad rush

Juncus bulbosus

bulbous rush

Juncus conglomeratus

soft rush, leafless rush

Juncus effuses

soft rush

Juncus microcephalus

South American rush

Juncus procerus

giant rush

Juncus tenuis

track rush

Monocot. herbs (other than orchids, grasses, sedges, and rushes)

Agapanthus praecox

agapanthus

Agave americana

century plant

Alisma plantago-aquatica (AK 254649)

water plantain

Allium triquetrum

three-cornered garlic

Alocasia brisbanensis

elephant's ear

Amaryllis belladonna

belladonna lily

Aristea ecklonii

aristea

Arum italicum

Italian arum

Asparagus asparagoides

smilax

Asparagus officinalis (NZFRI 19136)

asparagus

Asparagus scandens

climbing asparagus

Canna indica

canna lily

Colocasia esculenta

taro

Crocasmia × *crocosmiiflora*

montbretia

Freesia refracta

freesia

Gladiolus × *hortulanus* (AK 250281)

gladiolus

Hedychium gardnerianum

kahili ginger; wild ginger

Hyacinthoides non-scripta

bluebell

Iris spuria

butterfly iris

Ixia maculata
Kniphofia uvaria
Leucojum aestivum
Lilium formosanum
Narcissus pseudonarcissus
Potamogeton crispus
Sisyrinchium iridifolium
Spirodela punctata
Tradescantia fluminensis
Watsonia bulbifera
Yucca gloriosa
Zantedeschia aethiopica

ixia
red hot poker
snowflake
Formosan lily, Easter lily
daffodil
curly pondweed
purple-eyed grass
purple-backed duckweed
tradescantia
watsonia
yucca
arum lily

Composite herbs

Achillea millefolium
Ageratina adenophora (NZFRI 25156)
Ageratina riparia (DOC weed inventory)
Anthemis cotula (AK 122893)
Arctotheca calendula
Aster subulatus
Bellis perennis
Bidens frondosa
Carduus acanthoides (AK 219404)
Carduus nutans (AK 219399)
Carduus tenuiflorus
Chrysanthemum segetum
Cirsium arvense
Cirsium vulgare
Conyza albida
Conyza parva
Crepis capillaries
Erechtites hieraciifolia
Erigeron karvinskianus
Gaillardia × grandiflora
Gamochaeta coarctata
Gazania linearis
Gazania rigens (AK 251782)
Helenium × laetiflorus
Helianthus tuberosus
Helminthotheca echioides
Hypochoeris radicata
Lactuca serriola
Lapsana communis
Lavatera cretica
Leontodon taraxacoides
Leucanthemum vulgare
Matricaria discoidea
Mycelis muralis
Osteospermum fruticosum

yarrow
Mexican devil
mist flower
stinking mayweed
cape weed
sea aster
daisy
beggars' tick
plumeless thistle
nodding thistle
winged thistle
corn marigold
California thistle
Scotch thistle
fleabane
smooth fleabane
hawksbeard, hawksear
American fireweed
Mexican daisy
gaillardia
cudweed
gazania
coastal gazania, treasure-flower
perennial sunflower
Jerusalem artichoke
oxtongue
catsear
prickly lettuce
nipplewort
Cretan mallow
hawkbit
oxeye daisy
rayless chamomile
wall lettuce
dimorphotheca , rain daisy

<i>Senecio bipinnatisectus</i>	Australian fireweed
<i>Senecio crassiflorus</i> (AK 245781)	
<i>Senecio elegans</i>	purple groundsel
<i>Senecio esleri</i> (G.T. Jane pers. comm.)	Eslers fireweed
<i>Senecio jacobaea</i>	ragwort
<i>Senecio skirrhodon</i>	gravel groundsel
<i>Senecio sylvaticus</i>	wood groundsel
<i>Senecio vulgaris</i>	groundsel
<i>Soliva sessilis</i>	Onehunga weed
<i>Sonchus asper</i>	prickly puha, prickly sow thistle
<i>Sonchus oleraceus</i>	puha
<i>Taraxacum officinale</i>	dandelion
<i>Xanthium spinosum</i> (NZFRI 1272)	Bathurst bur
<i>Xanthium strumarium</i> (NZFRI 26202)	Noogoora bur, rough cocklebur

Dicot. herbs (other than composites)

<i>Acaena agnipila</i>	Australian sheep's burr, yarrow
<i>Acaena novae-zelandiae</i>	piripiri
<i>Acanthus mollis</i>	acanthus
<i>Alyssum</i> sp.	madwort
<i>Amaranthus deflexus</i>	mat amaranth
<i>Anagallis arvensis</i>	scarlet pimpernel
<i>Angelica pachycarpa</i>	angelica
<i>Anthemis arvensis</i>	corn chamomile
<i>Aphanes arvensis</i>	parsley piert
<i>Apium nodiflorum</i>	water celery
<i>Artemisia verlotiorum</i>	Chinese mugwort
<i>Atriplex prostrate</i>	hastate orache
<i>Brassica tournefortii</i> (NZFRI 12336)	wild turnip, Mediterranean mustard
<i>Cakile edentula</i>	sea rocket
<i>Cakile maritime</i>	sea rocket
<i>Cannabis sativa</i>	hemp, cannabis
<i>Capsella bursa-pastoris</i>	shepherd's purse
<i>Cardamine hirsuta</i>	bitter cress
<i>Carpobrotus edulis</i>	South African ice plant
<i>Centaurium erythraea</i>	centaury
<i>Cerastium fontanum</i> subsp. <i>vulgare</i>	mouse-ear chickweed
<i>Ceratophyllum demersum</i>	hornwort
<i>Chenopodium album</i>	fathen
<i>Chenopodium ambrosioides</i>	Mexican tea
<i>Chenopodium pumilio</i> (AK 72596)	clammy goosefoot
<i>Conium maculatum</i>	hemlock
<i>Coronopus didymus</i>	twin cress
<i>Cotyledon orbiculata</i>	pig's ear
<i>Crassula muscosa</i>	rattail crassula, clubmoss crassula
<i>Cymbalaria muralis</i>	ivy-leaved toad flax
<i>Cynoglossum amabile</i>	Chinese forget-me-not
<i>Datura stramonium</i>	thorn apple
<i>Daucus carota</i> (NZFRI 8434)	wild carrot

<i>Dianthus armeria</i>	Deptford pink
<i>Digitalis purpurea</i>	foxglove
<i>Dipsacus sylvestris</i> (incl. <i>D. fullonum</i>)	wild teasel
<i>Duchesnea indica</i>	Indian strawberry
<i>Egeria densa</i>	egeria; oxygen weed
<i>Elodea Canadensis</i>	Canadian pondweed
<i>Emex australis</i> (AK 70008)	spiny emex
<i>Eomecon chionantha</i>	snow poppy, Chinese bloodroot
<i>Epilobium ciliatum</i>	willow herb
<i>Euphorbia lathyris</i>	caper spurge
<i>Euphorbia maculata</i> (NZFRI 26487)	spotted spurge
<i>Euphorbia peplus</i>	milkweed
<i>Fagopyrum esculentum</i>	buckwheat
<i>Foeniculum vulgare</i>	fennel
<i>Fragaria vesca</i>	wild strawberry
<i>Fumaria muralis</i>	scrambling fumitory
<i>Galeobdolon luteum</i>	artillery plant
<i>Galinsoga parviflora</i>	galinsoga
<i>Galium aparine</i>	cleavers, bedstraw
<i>Galium divaricatum</i>	slender bedstraw
<i>Galium palustre</i>	marsh bedstraw
<i>Geranium dissectum</i> (AK 251653)	cut-leaved geranium
<i>Geranium molle</i>	dove's foot
<i>Geranium robertianum</i>	herb Robert
<i>Gunnera tinctoria</i>	Chilean rhubarb
<i>Helianthus tuberosus</i>	artichoke
<i>Houttuynia cordata</i> (AK 301533)	chameleon plant, heartleaf, dokudami
<i>Hypericum mutilum</i> (NZFRI 24276)	small-flowered hypericum
<i>Hypericum perforatum</i>	St John's wort
<i>Lactuca virosa</i> (NZFRI 25132)	acid lettuce
<i>Lagarosiphon major</i>	lagarosiphon; oxygen weed
<i>Lamium maculatum</i>	spotted dead nettle
<i>Lamium purpureum</i>	red dead nettle
<i>Lepidium africanum</i> agg. (NZFRI 26601)	narrow-leaved cress
<i>Lepidium bonariense</i> (NZFRI 12286)	Argentine cress
<i>Lepidium sativum</i> (AK 218189)	cress, garden cress
<i>Linaria purpurea</i> (NZFRI 26478)	purple linaria
<i>Linaria vulgaris</i> (NZFRI 26477)	common toadflax
<i>Linum bienne</i>	pale flax
<i>Lotus angustissimus</i> (NZFRI 14744)	slender birdsfoot trefoil
<i>Lotus pedunculatus</i>	lotus
<i>Lotus suaveolens</i>	hairy birdsfoot trefoil
<i>Ludwigia palustris</i>	water purslane
<i>Lunaria annua</i>	honesty
<i>Lycopus europaeus</i>	gypsy wort
<i>Lythrum hyssopifolia</i>	hyssop loosestrife
<i>Malva parviflora</i>	mallow
<i>Marrubium vulgare</i>	horehound
<i>Medicago Arabica</i>	spotted bur medick
<i>Medicago nigra</i>	bur medick

<i>Medicago sativa</i>	lucerne
<i>Melilotus indica</i>	King Island melilot
<i>Mentha × piperita</i>	peppermint
<i>Mentha pulegium</i>	penny royal
<i>Mentha spicata</i> (NZFRI 17289)	spearmint
<i>Mimulus guttatus</i> (NZFRI 17292)	monkey musk
<i>Mimulus moschatus</i>	musk
<i>Mirabilis jalapa</i> (AK 219507)	four o'clock plant
<i>Modiola caroliniana</i>	creeping mallow
<i>Myosotis arvensis</i>	forget-me-not
<i>Myosotis laxa</i> subsp. <i>caespitosa</i> (AK 92812)	forget-me-not
<i>Myosotis sylvatica</i>	garden forget-me-not
<i>Myriophyllum aquaticum</i>	parrot's feather
<i>Nasturtium microphyllum</i>	watercress
<i>Nasturtium officinale</i>	watercress
<i>Oenothera parviflora</i> (NZFRI 20923)	northern evening primrose
<i>Oenothera stricta</i>	evening primrose, sand primrose
<i>Ornithopus perpusillus</i>	seradella
<i>Ornithopus pinnatus</i> (NZFRI 26485)	yellow serradella
<i>Orobanche minor</i>	broomrape
<i>Oxalis chnoodes</i>	oxalis
<i>Oxalis incarnate</i>	lilac oxalis
<i>Oxalis pes-caprae</i> (AK 240387)	Bermuda buttercup
<i>Parentucellia viscosa</i>	tarweed
<i>Pastinaca sativa</i>	wild parsnip
<i>Persicaria capitata</i>	pink-head knotweed
<i>Persicaria</i> sp. (<i>P. decipiens</i> ?) x <i>P. maculosa</i> (AK 185274)	
<i>Persicaria hydropiper</i>	water pepper
<i>Persicaria punctata</i> (AK 219141)	American willow weed
<i>Physalis peruviana</i>	cape gooseberry
<i>Phytolacca americana</i>	pokeweed
<i>Phytolacca octandra</i>	inkweed
<i>Plantago australis</i>	swamp plantain
<i>Plantago coronopus</i>	buck's-horn plantain
<i>Plantago lanceolata</i>	narrow-leaved plantain
<i>Plantago major</i>	broad-leaved plantain
<i>Plectranthus ciliate</i>	plectranthus
<i>Polycarpon tetraphyllum</i>	allseed
<i>Polygonum aviculare</i>	wireweed
<i>Polygonum persicaria</i>	willow weed
<i>Portulaca oleracea</i>	wild portulaca
<i>Primula</i> sp.	primula
<i>Prunella vulgaris</i>	selfheal
<i>Ranunculus acris</i>	giant buttercup
<i>Ranunculus flammula</i>	spearwort
<i>Ranunculus ophioglossifolius</i>	Adder's-tongue spearwort
<i>Ranunculus parviflorus</i>	small-flowered buttercup
<i>Ranunculus repens</i>	creeping buttercup
<i>Ranunculus sardous</i> (AK 12853)	hairy buttercup
<i>Ranunculus sceleratus</i>	celery-leaved buttercup

<i>Raphanus raphanistrum</i> subsp. <i>maritimus</i>	sea raddish
<i>Raphanus raphanistrum</i> subsp. <i>raphanistrum</i>	wild raddish
<i>Rumex acetosella</i>	sheep's sorrel
<i>Rumex conglomeratus</i>	clustered dock
<i>Rumex crispus</i> (AK 181973)	curled dock
<i>Rumex obtusifolius</i>	dock
<i>Rumex pulcher</i>	fiddle dock
<i>Rumex sagittatus</i>	climbing dock
<i>Sagina procumbens</i>	pearlwort
<i>Salvia uliginosa</i> (AK 185277)	bog sage, swamp sage
<i>Scrophularia auriculata</i>	water betony
<i>Sechium edule</i> (NZFRI 26501)	choko
<i>Silene gallica</i>	catchfly
<i>Silene vulgaris</i> subsp. <i>vulgaris</i>	bladder campion
<i>Sisymbrium officinale</i>	wild mustard, hedge mustard
<i>Solanum carolinense</i> (AK 246095)	Carolina horsenettle
<i>Solanum chenopodioides</i>	velvety nightshade
<i>Solanum esculentum</i>	Tomato
<i>Solanum linnaeanum</i>	Apple of Sodom
<i>Solanum marginatum</i>	white-edged nightshade
<i>Solanum nigrum</i>	black nightshade
<i>Solanum pseudocapsicum</i>	Jerusalem cherry
<i>Solanum tuberosum</i>	Potato
<i>Spergula arvensis</i>	Spurrey
<i>Stachys arvensis</i>	Staggerweed
<i>Stachys sylvatica</i>	hedge woundwort
<i>Stellaria alsine</i>	bog stitchwort
<i>Stellaria graminea</i>	Stitchwort
<i>Stellaria media</i>	Chickweed
<i>Trifolium arvense</i>	haresfoot trefoil
<i>Trifolium hybridum</i> (AK 219449)	alsike clover
<i>Trifolium pretense</i>	red clover
<i>Trifolium repens</i>	white clover
<i>Trifolium subterraneum</i> (AK 133512)	subterranean clover
<i>Tropaeolum majus</i>	garden nasturtium
<i>Tropaeolum pentaphyllum</i> (AK 229589)	ladies' legs
<i>Urtica dioica</i> var. <i>gracilis</i>	stinging nettle
<i>Urtica urens</i> (AK 245159)	nettle
<i>Verbascum pulverulentum</i>	hoary mullein
<i>Verbascum Thapsus</i>	woolly mullein
<i>Verbascum virgatum</i>	moth mullein
<i>Verbena bonariensis</i>	purple-top
<i>Verbena officinalis</i>	vervain
<i>Veronica americana</i> (NZFRI 19421)	American brooklime
<i>Veronica anagallis-aquatica</i>	water speedwell
<i>Veronica arvensis</i>	field speedwell
<i>Veronica plebeia</i> (AK 265846)	Australian speedwell, creeping speedwell
<i>Veronica serpyllifolia</i>	turf speedwell
<i>Vicia disperma</i> (NZFRI 26483)	small French tare, two-seeded vetch

Vicia hirsuta (NZFRI 26484)
Vicia sativa

hairy vetch
vetch



CHECKLIST OF FAUNA SPECIES IN TAURANGA ECOLOGICAL DISTRICT

AVIFAUNA

List compiled from: Barker and Larcombe (1976); Rasch (1989); Owen (1993); Cromarty (1996); Tauranga District Council (1996) and Robertson *et al.* (2007).

Native

<i>Anarhynchus frontalis</i>	wrybill
<i>Anas chlorotis</i>	pateke, brown teal
<i>Anas gracilis</i>	grey teal
<i>Anas rhynchotis variegata</i>	New Zealand shoveler
<i>Anas superciliosa superciliosa</i>	grey duck
<i>Anthornis melanura</i>	bellbird
<i>Anthus novaeseelandiae novaeseelandiae</i>	New Zealand pipit
<i>Ardea novaehollandiae</i>	white-faced heron
<i>Arenaria interpres</i>	turnstone
<i>Aythya novaeseelandiae</i>	New Zealand scaup
<i>Botaurus poiciloptilus</i>	Australasian bittern
<i>Bowdleria punctata vealeae</i>	North Island fernbird
<i>Bubulcus ibis coromandus</i>	cattle egret
<i>Calidris acuminata</i>	sharp-tailed sandpiper
<i>Calidris alba</i>	sanderling
<i>Calidris canutus canutus</i>	lesser knot, red knot
<i>Calidris ferruginea</i>	curlew sandpiper
<i>Calidris ruficollis</i>	red-necked stint
<i>Charadrius bicinctus</i>	banded dotterel
<i>Charadrius melanops</i>	black-fronted dotterel
<i>Charadrius obscurus</i>	northern New Zealand dotterel
<i>Charadrius mongolus</i>	Mongolian dotterel
<i>Chlidonias leucopterus</i>	white-winged black tern
<i>Chrysococcus lucidus lucidus</i>	shining cuckoo
<i>Circus approximans</i>	Australasian harrier
<i>Egretta alba modesta</i>	white heron
<i>Egretta sacra sacra</i>	reef heron
<i>Eudynamys taitensis</i>	long-tailed cuckoo
<i>Eudiptula minor iredalei</i>	northern blue penguin
<i>Falco novaeseelandiae^N</i>	New Zealand falcon
<i>Fulicia atra australis</i>	Australasian coot
<i>Gerygone igata</i>	grey warbler
<i>Haematopus ostralegus finschi</i>	South Island pied oystercatcher
<i>Haematopus unicolor</i>	variable oystercatcher
<i>Halcyon sancta vagans</i>	New Zealand kingfisher

<i>Hymenolaimus malacorhynchos</i>	whio; blue duck
<i>Hemiphaga novaeseelandiae novaeseelandiae</i>	kereru, New Zealand pigeon
<i>Himantopus himantopus leucocephalus</i>	pied stilt
<i>Himantopus novaezelandiae</i>	black stilt
<i>Himantopus novaezelandiae x himantopus</i>	black x pied stilt hybrid
<i>Hirundo tahitica neoxena</i>	welcome swallow
<i>Larus bulleri</i>	black-billed gull
<i>Larus dominicanus dominicanus</i>	southern black-backed gull
<i>Larus novaehollandiae scopulinus</i>	red-billed gull
<i>Limosa haemastica</i>	Hudsonian godwit
<i>Limosa lapponica baueri</i>	eastern bar-tailed godwit
<i>Limosa limosa melanuroides</i>	Asiatic black-tailed godwit
<i>Morus serrator</i>	Australasian gannet
<i>Nestor meridionalis septentrionalis</i>	North Island kaka
<i>Ninox novaseelandiae novaseelandiae</i>	morepork
<i>Numenius madagascariensis</i>	eastern curlew
<i>Numenius phaeopus</i>	whimbrel
<i>Petroica macrocephala toitoi</i>	North Island tomtit
<i>Phalacrocorax carbo novaehollandiae</i>	black shag
<i>Phalacrocorax melanoleucos brevirostris</i>	little shag
<i>Phalacrocorax sulcirostris</i>	little black shag
<i>Phalacrocorax varius</i>	pied shag
<i>Philomachus pugnax</i>	ruff
<i>Platalea regia</i>	royal spoonbill
<i>Pluvialis fulva</i>	Pacific golden plover
<i>Poliiocephalus rufopectus</i>	New Zealand dabchick
<i>Porphyrio porphyrio melanotus</i>	pukeko
<i>Porzana pusilla affinis</i>	marsh crake
<i>Porzana tabuensis plumbea</i>	spotless crake
<i>Prothemadera novaeseelandiae novaeseelandiae</i>	tui
<i>Pterodroma macroptera gouldii</i>	grey-faced petrel
<i>Rallus philippensis assimilis</i>	banded rail
<i>Rhipidura fuliginosa placabilis</i>	North Island fantail
<i>Sterna albifrons sinensis</i>	little tern
<i>Sterna albobriata</i>	black-fronted tern
<i>Sterna caspia</i>	Caspian tern
<i>Sterna hirundo</i>	common tern
<i>Sterna nereis davisae</i>	New Zealand fairy tern
<i>Sterna striata</i>	white-fronted tern
<i>Tadorna variegata</i>	paradise shelduck
<i>Tringa brevipes</i>	Siberian tattler
<i>Tringa nebularia</i>	greenshank
<i>Tringa stagnatilis</i>	marsh sandpiper
<i>Vanellus miles novaehollandiae</i>	spur-winged plover
<i>Zosterops lateralis lateralis</i>	silveryeye

Exotic

<i>Acridotheres tristis</i>	common myna
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<i>Alauda arvensis</i>	skylark
<i>Anas platyrhynchos platyrhynchos</i>	mallard
<i>Anser anser</i>	feral goose
<i>Arenaria interpres</i>	turnstone
<i>Branta canadensis maxima</i>	Canada goose
<i>Cacatua galerita</i>	sulphur-crested cockatoo
<i>Callipepla californica brunnescens</i>	California quail
<i>Carduelis carduelis</i>	goldfinch
<i>Carduelis chloris</i>	greenfinch
<i>Carduelis flammea</i>	redpoll
<i>Carinia moschata</i>	Muscovy duck
<i>Columba livia</i>	feral pigeon
<i>Corvus frugilegus</i>	rook
<i>Cygnus atratus</i>	black swan
<i>Emberiza citronella</i>	yellowhammer
<i>Fringilla coelebs</i>	chaffinch
<i>Gallus gallus</i>	domestic chicken
<i>Gymnorhina tibicen</i>	Australian magpie
<i>Meleagris gallopavo</i>	feral turkey
<i>Passer domesticus</i>	house-sparrow, dunnoek
<i>Pavo cristatus</i>	peafowl
<i>Phasianus colchicus</i>	ring-necked pheasant
<i>Platycercus eximius</i>	eastern rosella
<i>Prunella modularis</i>	hedge-sparrow
<i>Streptopelia chinensis tigrina</i>	spotted dove
<i>Streptopelia roseogrisea</i>	barbary dove
<i>Sturnus vulgaris</i>	starling
<i>Synoicus ypsilophorus</i>	brown quail
<i>Turdus merula</i>	blackbird
<i>Turdus philomelos</i>	song thrush

HERPETOFAUNA

List compiled from: Herpetofauna database on BioWeb, Department of Conservation.

Indigenous

<i>Cyclodina aenea</i>	copper skink
<i>Leiopelma hochstetteri</i> ²²	Hochstetter's frog
<i>Nautilinus elegans elegans</i> ²³	green gecko
<i>Oligosoma moco</i>	moko skink
<i>Oligosoma smithi</i>	shore skink

Exotic

<i>Lampropholis delicata</i>	rainbow skink
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²² Record from Ohui stream 1980, not refound in 2002.

²³ Single record from Katikati in 1964.

<i>Litoria aurea</i>	green and golden bell frog
<i>Litoria raniformis</i>	southern bell frog

MAMMALS

Exotic

<i>Bos Taurus</i>	cattle
<i>Canis familiaris</i>	dog
<i>Capra hircus</i>	goat
<i>Erinaceus europaeus</i>	European hedgehog
<i>Felis catus</i>	feral cat
<i>Lepus europaeus</i>	brown hare
<i>Macropus euginii</i>	dama wallaby
<i>Mus musculus</i>	house mouse
<i>Mustela erminea</i>	stoat
<i>Mustela nivalis</i>	weasel
<i>Mustela putorius furo</i>	ferret
<i>Oryctolagus cuniculus</i>	rabbit
<i>Rattus norvegicus</i>	Norway rat
<i>Rattus rattus</i>	black (ship) rat
<i>Sus scrofa</i>	pig
<i>Trichosurus vulpecula</i>	brush-tailed possum

FISH

List compiled from: Rasch (1989); Cromarty (1996); Department of Conservation (1997); Wildland Consultants Ltd (2000e); Wildland Consultants Ltd (2001b); and Boubée and Baker (2005).

Indigenous

<i>Aldrichetta forsteri</i> ²⁴	yellow-eyed mullet
<i>Anguilla australis</i>	short-finned eel
<i>Anguilla dieffenbachia</i>	long-finned eel
<i>Arripis trutta</i> ¹	kahawai
<i>Cheimarrichthys fosteri</i>	torrentfish
<i>Galaxias argenteus</i>	giant kōkopu
<i>Galaxias brevipinnis</i>	koaro
<i>Galaxias fasciatus</i>	banded kōkopu
<i>Galaxias maculatus</i>	inanga
<i>Galaxias postvectis</i>	short-jawed kōkopu
<i>Geotria australis</i>	lamprey
<i>Gobiomorphus cotidienus</i>	common bully
<i>Gobiomorphus gobioides</i>	giant bully
<i>Gobiomorphus huttoni</i>	red-finned bully
<i>Oncorhynchus mykiss</i>	rainbow trout

²⁴ Marine wanderer.

Retropinna retropinna common smelt
*Rhombosolea retiaria*¹ black flounder

Exotic

Carassius auratus goldfish
*Cyprinus carpio*²⁵ koi carp (Kauri Pt)
Gambusia affinis mosquito fish
Onocorhynchus mykiss rainbow trout
Salmo trutta brown trout

FRESHWATER DECAPODS

Paranephrops sp. koura
Paratya curvirostris freshwater shrimp

INVERTEBRATES

This list contains only a very small proportion of the invertebrates likely to be present. Barker and Larcombe (1976) provide further information on invertebrate species in the tidal zone.

Amphibola crenata mud snail
Apion ulicis gorse seed weevil
Apis mellifera honey bee
Bombus spp. bumble bee
Chione stutchburyi cockle
Helice crassa crab
Latrodectus katipo katipo spider
(Amphidesina?) Paphies australe pipi
Polistes chinensis Asian paper wasp
Vespula vulgaris common wasp
Vespula germanica German wasp

²⁵ Control programme is in place (R. Lander, DOC, pers. comm.).

WILD SITES IN TAURANGA ECOLOGICAL DISTRICT

Wild sites comprise wild unmanaged areas which retain some or all of their indigenous character but do not meet any of the significance or category ranking criteria described in Appendices 10 and 11. The ecological and functional sustainability of wild sites has been compromised to the extent that they can be considered neither healthy nor viable examples of indigenous communities. This is not a complete list of wild sites in the ED; it only includes sites which were inspected during the current study.

Wolseley One

Site Number	W1
Grid Reference (NZMG)	E2769300 N6409100
Bioclimatic Zone	Coastal
Notes	A small wetland in a gully adjoining SH2. Grey willow is dominant, with radiata pine around the edges and kanuka, mamaku and Japanese honeysuckle throughout. Thick blackberry covers the ground, with occasional pampas and patches of <i>Gleichenia</i> . Bracken, kiokio, <i>Calystegia sepium</i> , mahoe and karamu are also present. Problem plants also include climbing dock, wild kiwifruit, montbretia, woolly nightshade, brush wattle and blue passion flower (<i>Passiflora caerulea</i>). Pukeko are present at the site. This area is within Environment Bay of Plenty corridor 'Tuapiro' (Environment Bay of Plenty 2006).

Wolseley Two

Site Number	W2
Grid Reference (NZMG)	E2769350 N6409325
Bioclimatic Zone	Coastal
Notes	A small gully adjacent to SH2. Exotic species are dominant. Eucalyptus are emergent over silver poplar, kanuka, mamaku, Japanese honeysuckle, and grey willow. This area is within Environment Bay of Plenty corridor 'Tuapiro' (Environment Bay of Plenty 2006).

Wolseley Three

Site Number	W3
Grid Reference (NZMG)	E2769400 N6409500
Bioclimatic Zone	Coastal
Notes	A small gully adjacent to SH2. Exotic species are dominant. Black wattle, radiata pine, and plane tree are emergent over brush wattle, mahoe, grey willow, kanuka, and mamaku. Japanese honeysuckle and blackberry are common in the understorey. This area is within Environment Bay of Plenty corridor 'Tuapiro' (Environment Bay of Plenty 2006).

Oropi Road

Site Number	W4
Grid Reference (NZMG)	E2787033 N6377352
Bioclimatic Zone	Semi-coastal
Notes	Steep slopes in the gullies formed by the Waimapu Stream and a tributary of the Waiorahi Stream covering an areas of c.13.6 ha.. Vegetation types present include radiata pine/ <u>mamaku</u> /gorse scrub; rewarewa-totara-radiata pine/ <u>kanahi</u> -mahoe-mamaku forest; radiata pine/mamaku-mahoe-makomako forest; brush wattle with native plantings treeland; mamaku-mahoe-Chinese privet scrub; radiata pine-black wattle/mamaku-brush wattle-mahoe forest; radiata pine-rewarewa/mamaku-tree privet-mahoe forest.

Whatakao North-East

Site Number	W5
Grid Reference (NZMG)	E2769260 N6390980
Bioclimatic Zone	Semi-coastal
Notes	Two small patches of forest surrounded by pasture. The forest areas comprise scattered large radiata pine over rewarewa, kanuka, and mamaku.

Lower Waipapa River

Site Number	W6
Grid Reference (NZMG)	E2774280 N6388210
Bioclimatic Zone	Semi-coastal
Notes	Small areas of highly-modified secondary indigenous forest beside the Waipapa River and one of its tributaries intermingle with plantation pine and residential gardens. Vegetation types present include <u>mamaku</u> forest with mahoe and makomako; (rewarewa)/ <u>kanuka-mamaku</u> forest; <u>radiata pine</u> /mamaku forest; mamaku-exotic tree-(rewarewa) forest. Maritime pine and coral tree are also present. Silvereve and goldfinch were observed.

Maungarangi Road

Site Number	W7
Grid Reference (NZMG)	E2808000 N6367100
Bioclimatic Zone	Semi-coastal
Notes	Situated in the gully of a small tributary of the Kaituna River, surrounded by farmland. Vegetation present includes radiata pine-tree privet-(black wattle)/kanuka forest with occasional rewarewa and ti kouka, and small patches of <u>kanuka</u> forest. Additional indigenous species include mamaku and mahoe. Although dominated by exotic species, with several clusters of large radiata pine, indigenous species occur throughout. Appears to be grazed underneath, at least in parts. This site is part of Smartgrowth Corridor No. 5 'Kaituna' (Wildland Consultants 2007c and 2007d).

Lindemann Road South

Site Number	W8
Grid Reference (NZMG)	E2765105 N6402525
Bioclimatic Zone	Semi-coastal
Notes	Vegetation includes maritime pine-rewarewa-(rimu)-(kauri)/mamaku-mahoe treeland and <u>maritime pine-rewarewa</u> forest with occasional radiata pine. Grey willow, pole kauri, lancewood, kanuka and pukatea are also present at the site. Pukeko, myna, and eastern rosella were observed at this site.

Lowry Road

Site Number	W9
Grid Reference (NZMG)	E2800095 N6375000
Bioclimatic Zone	Semi-coastal
Notes	A gully bordered on its upper edges by residential areas, pastoral farms, and orchards with shelterbelts of exotic trees. Dominated by exotic species, with indigenous species scattered throughout. The main vegetation types are <u>silver wattle</u> -(radiata pine)-(eucalyptus)/mamaku-Chinese privet forest and mamaku-ti kouka/ <u>Japanese honeysuckle</u> - <u>Calystegia sepium</u> -blackberry vineland. Other indigenous species found at this site include kanuka, karamu, mahoe, <i>Haloragis erecta</i> , <i>Carex geminata</i> , <i>Diplazium australe</i> , and <i>Persicaria decipiens</i> . Pest plant infestations have heavily modified the site, with silver wattle dominating the canopy and widespread Japanese honeysuckle. Other pest plants include tree privet, rice-paper plant, montbretia, woolly nightshade, elephant's ear, beggars' tick, climbing dock, velvet groundsel, and canna lily (<i>Canna indica</i>). Many of these infestations are likely to have spread from garden waste dumped from the roadside. Pukeko, grey warbler, eastern rosella, chaffinch, house sparrow, and myna were observed.

No. 1 Road

Site Number	W10
Grid Reference (NZMG)	E2802825 N6372015
Bioclimatic Zone	Semi-coastal
Notes	A small, isolated, and narrow gully dominated by mahoe and mamaku with hangehange and kawakawa in the understorey. Vegetation types include silver wattle/ <u>mamaku-mahoe</u> -tree privet forest and radiata pine/mahoe-tree privet/hangehange-kawakawa forest. <i>Diplazium australe</i> and <i>Deparia petersenii</i> are common in damp areas of gully floor. Pest plants include woolly nightshade, tree privet, Chinese privet, wilding paulownia and avocado, wild ginger, selaginella, and artillery plant. Wilding kiwifruit and Japanese honeysuckle are present nearby. New Zealand kingfisher, North Island fantail, pukeko, grey warbler, and silvereve were observed at this site.

Roderick Lane

Site Number	W11
Grid Reference (NZMG)	E2802280 N6371734
Bioclimatic Zone	Semi-coastal

Notes	<p>The vegetation in these gullies includes eucalyptus/silver wattle/mahoe-mamaku-(Taiwan cherry)-(makomako) forest and an area of <u>mamaku</u>-mahoe forest. Grass covers a long narrow section along one of the valley floors. Except where silver wattle is established, the vegetation is dominated by indigenous secondary species. Common indigenous understorey species are present, including kawakawa, kotukutuku, and <i>Coprosma grandifolia</i>, <i>Adiantum cunnninghamii</i>, kiokio, <i>Pteris tremula</i>, and <i>P. macilenta</i>. <i>Muehlenbeckia australis</i> reaches the canopy in places. Tasmanian blackwood has been planted in the gully floor in the northern arm. Two large rimu are present at the southern end of the site. Pest plants include woolly nightshade, buddleia, Chinese privet, Taiwan cherry, wild ginger, tradescantia, Japanese honeysuckle and climbing dock.</p> <p>The upper edges of this site are under pressure from dumping of garden waste. A range of exotic species have established here, including taro, canna lily, arum lily, grape, climbing dock, <i>Fagopyrum esculentum</i> and <i>Calystegia sepium</i>.</p>
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Whakamarama Road

Site Number	W12
Grid Reference (NZMG)	E2775723 N6385685
Bioclimatic Zone	Semi-coastal
Notes	<p>A small gully with a small stream running through it. Vegetation types present include eucalyptus-radiata pine-rewarewa/mamaku-(kamahi) forest; rewarewa-kamahi-(maritime pine)/black wattle-mamaku-barberry-gorse-woolly nightshade forest; kanuka-mamaku-(rewarewa)/gorse-barberry-(woolly nightshade) scrub. The understorey includes mahoe, kawakawa, makomako, ponga, <i>Pteris macilenta</i>, and <i>Blechnum filiforme</i>. The southernmost end of the gully was fenced to exclude stock about four years ago (J. Buzowsky pers. comm. 2008). Here the understorey is dominated by indigenous species, and includes some plantings, such as rimu. Scrub around the margins of the site includes species such as gorse, woolly nightshade, kanuka, and barberry. Tradescantia, walnut, crack willow, black wattle, and grey willow are also present. Birds include New Zealand kingfisher, North Island fantail, silvereye, spur-winged plover, Eastern rosella, myna, California quail, pheasant, and Australian magpie. Northern koura (Chronically Threatened, Gradual Decline) are present in the stream (J. Buzowsky pers. comm. 2008).</p>

Wainui Riverside Scrub

Site Number	W13
Grid Reference (NZMG)	E2771250 N6391375
Bioclimatic Zone	Semi-coastal
Notes	<p>A small patch of forest and scrub adjacent to the Wainui River, upstream from SVHZ-28. The vegetation includes grey willow, radiata pine, barberry, walnut and several small kahikatea.</p>

East Kaituna Dunes

Site Number	W14
Grid Reference (NZMG)	
Bioclimatic Zone	Coastal
Notes	Indigenous vegetation at this site comprises Spinifex and pohuehue dominated grassland and sedgeland, with occasional boxthorn, marram, and dimorphotheca, in a thin strip on the slump face of wave eroded established foredune on and behind which pine plantation is established.

Central Pukehina Beach

Site Number	W15
Grid Reference (NZMG)	E2819140 N6374585
Bioclimatic Zone	Coastal
Notes	Vegetation at this site is dominated by dune weed species such as <i>Gazania</i> , <i>Carpobrotus</i> , dimorphotheca, and <i>Arctotis</i> with other weeds including cape ivy, kikuyu, and various garden escapes. The site is very narrow, often comprising little more than a steep, unestablished slump face in the established foredune from its crest, with residential properties, houses, and gardens immediately behind the leeward slope of the established foredune. Vegetation types present include spinifex- <i>Gazania linearis</i> -dimorphotheca- <i>Arctotis</i> -South African ice plant-pingao herbfield; South African ice plant-pohuehue/ <i>Gazania linearis</i> herbfield; agave- <i>Yucca/Ficinia nodosa</i> /pohuehue-South African ice plant-dimorphotheca vineland.

OTHER 2008 FIELD SURVEY SITES NOT IDENTIFIED AS A
NATURAL AREA OR LISTED UNDER "WILD AREAS"
(SEE APPENDIX 5)

Pyes Pa Road

Site Number	FS1
Grid Reference (NZMG)	E2783750 N6377480
Bioclimatic Zone	Semi-coastal
Notes	Demolished for a road development.

Raparapahoe Canal

Site Number	FS2
Grid Reference (NZMG)	E2803350 N6377250
Bioclimatic Zone	Semi-coastal
Notes	This small stand of indigenous trees had been felled prior to the field survey.

Old Highway Road

Site Number	FS3
Grid Reference (NZMG)	E2774820 N6387800
Bioclimatic Zone	Semi-coastal
Notes	Maritime pine forest with an indigenous understorey dominated by mamaku.

Casuarina Drive

Site Number	FS4
Grid Reference (NZMG)	E2808000 N6369240
Bioclimatic Zone	Semi-coastal
Notes	Eucalyptus plantation.

Central Pukehina Beach

Site Number	FS5
Grid Reference (NZMG)	E2819140 N6374585
Bioclimatic Zone	Coastal
Notes	

TAURANGA ECOLOGICAL
DISTRICT NATURAL AREA
FIELD SURVEY FORM

Vegetation and Indigenous Flora	
Fauna	
Condition/Pressures	<i>Include notes about threats, modification, and overall condition.</i>

Significance Assessment

Criterion*	RPS Number*	Ranking**
Representativeness	3.1	
Rarity or Distinctive Features	3.2	
	3.3	
	3.4	
	3.5	
	3.6	
Diversity and Pattern	3.7	
Naturalness	3.8	
Ecological Context	3.9	
	3.10	
Viability and Sustainability	3.11	
	3.12	
	3.13	

* Bay of Plenty Regional Policy Statement Heritage Criteria: Appendix F, Set 3. Refer to A3 fold-out page in Appendix 11 of this document for descriptions of criteria and definitions of High, Medium, and Low rankings.
 ** H = High, M = Medium, L = Low.

Category	1 / 2 / 3 / 4 / 5	Relative Significance	Local / Regional / National
Significance Justification			
Notes			
References			

EXPLANATORY NOTES FOR FIELD SURVEY FORM

Hydrosystem classes

Terrestrial
Palustrine
Lacustrine
Riverine
Estuarine
Marine

Naming of vegetation types

tawa over 50% cover of the double underlined species
tawa between 25-49% cover of the underlined species
tawa between 5-24% cover of non-underlined species
(tawa) less than 5% cover of the bracketed species
rimu/tawa indicates that rimu and tawa differ significantly in height and form separate layers,
with the rimu emergent above the tawa.
rimu-tawa indicates rimu and tawa occur in the same layer.

Structural classes to follow Atkinson (1985), for example forest, scrub, shrubland.

GLOSSARY OF COMMON NAMES

African boxthorn	<i>Lycium ferocissimum</i>
agapanthus	<i>Agapanthus praecox</i>
akeake	<i>Dodonea viscosa</i>
akepiro	<i>Olearia furfuracea</i>
arrow grass	<i>Triglochin striata</i>
artillery plant	<i>Galeobdolon luteum</i>
arum lily	<i>Zantedeschia aethiopica</i>
avocado	<i>Persea americana</i>
bachelor's button	<i>Cotula coronopifolia</i>
banana passionfruit	<i>Passiflora mollissima</i>
barberry	<i>Berberis glaucocarpa</i>
beggars' tick	<i>Bidens frondosa</i>
bidibid	<i>Acaena</i> sp.
black wattle	<i>Acacia mearnsii</i>
blackberry	<i>Rubus</i> sp. (<i>R. fruticosus</i> agg.)
blue morning glory	<i>Ipomoea indica</i> (incl. <i>I. congesta</i>)
boneseed	<i>Chrysanthemoides monilifera</i>
bracken	rarahu; <i>Pteridium esculentum</i>
brush wattle	<i>Paraserianthes lophantha</i>
buddleia	<i>Buddleja davidii</i>
buffalo grass	<i>Stenotaphrum secundatum</i>
bush rice grass	<i>Microlaena avenacea</i>
canna lily	<i>Canna indica</i>
castor oil plant	<i>Ricinus communis</i>
Chinese lantern	<i>Abutilon darwinii</i> × <i>A. pictum</i>
Chinese mugwort	<i>Artemisia verlotiorum</i>
Chinese privet	<i>Ligustrum sinense</i>
climbing asparagus	<i>Asparagus scandens</i>
climbing dock	<i>Rumex sagittatus</i>
climbing gloxinia	<i>Lophospermum erubescens</i>
coastal mahoe	<i>Meliccytus novae-zelandiae</i>
cocksfoot	<i>Dactylis glomerata</i>
coral tree	<i>Erythrina</i> × <i>sykesii</i>
corn	<i>Zea mays</i>
dimorphotheca	rain daisy; <i>Osteospermum fruticosum</i>
elephant's ear	<i>Alocasia brisbanensis</i> (= <i>A. macrorrhiza</i>)
eucalyptus	<i>Eucalyptus</i> sp.
evergreen buckthorn	<i>Rhamnus alaternus</i>
glasswort	<i>Sarcocornia quinqueflora</i>
gorse	<i>Ulex europaeus</i>
grape	<i>Vitis vinifera</i>
green wattle	<i>Acacia decurrens</i>
hangehange	<i>Geniostoma ligustrifolium</i>
harakeke	flax, <i>Phormium tenax</i>
hawthorn	<i>Crataegus monogyna</i>

Himalayan fairy grass	<i>Miscanthus nepalensis</i>
hinau	<i>Elaeocarpus dentata</i>
horopito	<i>Pseudowintera colorata</i>
houhere	lacebark; <i>Hoheria populnea</i> var. <i>lanceolata</i>
houpara	<i>Pseudopanax lessonii</i>
hukihuki	<i>Coprosma tenuicaulis</i>
Indian doab	<i>Cynodon dactylis</i>
ivy	<i>Hedera helix</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Japanese spindle tree	<i>Euonymus japonicus</i>
jasmine	<i>Jasminum polyanthum</i>
Jerusalem artichoke	<i>Helianthus tuberosus</i>
kahikatea	<i>Dacrycarpus dacrydioides</i>
kanono	<i>Coprosma grandifolia</i>
kanuka	<i>Kunzea ericoides</i>
karaka	<i>Corynocarpus laevigatus</i>
karo	<i>Pittosporum crassifolium</i>
kauri	<i>Agathis australis</i>
kawaka	<i>Libocedrus plumosa</i>
kawakawa	<i>Macropiper excelsum</i> var. <i>excelsum</i>
kiekie	<i>Freycinetia banksii</i>
kikuyu grass	<i>Pennisetum clandestinum</i>
king fern	<i>Marattia salicina</i>
kiokio	<i>Blechnum novae-zelandiae</i> s.s.
kohekohe	<i>Dysoxylum spectabile</i>
kohuhu	<i>Pittosporum tenuifolium</i> subsp. <i>tenuifolium</i>
koromiko	<i>Hebe stricta</i> var. <i>stricta</i>
kotukutuku	<i>Fuchsia excorticata</i>
kowhai	<i>Sophora tetraptera</i>
ladder fern	<i>Nephrolepis cordifolia</i>
lancewood	<i>Pseudopanax crassifolius</i>
lombardy poplar	<i>Populus nigra</i> cv. <i>Nivea</i>
loquat	<i>Eriobotrya japonica</i>
lusitanica	<i>Cupressus lusitanica</i>
macrocarpa	<i>Cupressus macrocarpa</i>
maderia vine	<i>Anredera cordifolia</i>
mahoe	<i>Melicytus ramiflorus</i> subsp. <i>ramiflorus</i>
maire tawake	swamp maire; <i>Syzygium maire</i>
makomako	wineberry, <i>Aristotelia serrata</i>
mamaku	<i>Cyathea medullaris</i>
mangeao	<i>Litsea calicularis</i>
mangemange	<i>Lygodium articulatum</i>
mangrove	<i>Avicennia marina</i> subsp. <i>australasica</i>
manuka	<i>Leptospermum scoparium</i>
mapou	<i>Myrsine australis</i>
maritime pine	<i>Pinus pinaster</i>
matai	<i>Prumnopitys taxifolia</i>
Mercer grass	<i>Paspalum distichum</i>
mingimingi	<i>Leucopogon fasciculatus</i>
miro	<i>Prumnopitys ferruginea</i>

monkey apple	<i>Acmena smithii</i>
montbretia	<i>Crocoshmia × crocosmiiflora</i>
moth plant	<i>Araujia sericifera</i>
narrow-leaved mahoe	<i>Melicytus novae-zelandiae</i>
ngaio	<i>Myoporum laetum</i>
nikau	<i>Rhopalostylis sapida</i>
Norfolk Island hibiscus	<i>Lagunaria pattersonii</i>
oioi	<i>Apodasmia similis</i>
pampas	<i>Cortaderia selloana</i>
parrot's feather	<i>Myriophyllum aquaticum</i>
pate	<i>Schefflera digitata</i>
Phoenix palm	<i>Phoenix canariensis</i>
pingao	<i>Desmoschoenus spiralis</i>
pohuehue	<i>Muehlenbeckia complexa</i>
pohutukawa	<i>Metrosideros excelsa</i>
ponga	silver fern; <i>Cyathea dealbata</i>
porokaiwhiri	pigeonwood, <i>Hedycarya arborea</i>
pukatea	<i>Laurelia novae-zelandiae</i>
puriri	<i>Vitex lucens</i>
radiata pine	<i>Pinus radiata</i>
rangiora	<i>Brachyglottis repanda</i> s.s.
ratstail	<i>Sporobolus africanus</i>
raupo	<i>Typha orientalis</i>
red cestrum	<i>Cestrum elegans</i>
reed sweetgrass	<i>Glyceria maxima</i>
rewarewa	<i>Knightia excelsa</i>
rice paper plant	<i>Tetrapanax papyriferus</i>
rimu	<i>Dacrydium cupressinum</i>
robinia	<i>Robinia pseudacacia</i>
royal fern	<i>Osmunda regalis</i>
saltmarsh ribbonwood	<i>Plagianthus divaricatus</i>
sand tussock	hinarepe; <i>Austrofestuca littoralis</i>
sea couch	<i>Elytrigia pycnantha</i>
sea grass	<i>Zostera marina</i> and <i>Zostera capricorni</i>
sea rocket	<i>Cakile maritima</i>
sea rush	<i>Juncus kraussii</i> subsp. <i>australiensis</i>
selaginella	<i>Selaginella kraussiana</i>
she-oak	<i>Casuarina</i> sp.
shore spurge	<i>Euphorbia glauca</i>
silver poplar	<i>Populus alba</i> cv <i>Nivea</i>
silver wattle	<i>Acacia dealbata</i>
smilax	<i>Asparagus asparagoides</i>
South African ice plant	<i>Carpobrotus edulis</i>
Spanish heath	<i>Erica lusitanica</i>
spartina	<i>Spartina</i> species
spinifex	<i>Spinifex sericeus</i>
stone pine	<i>Pinus pinea</i>
supplejack	<i>Ripogonum scandens</i>
swamp kiokio	<i>Blechnum minus</i>
swamp millet	<i>Isachne globosa</i>

sycamore	<i>Acer pseudoplatanus</i>
Taiwan cherry	<i>Prunus campanulata</i>
tall fescue	<i>Schedonorus phoenix</i>
tanekaha	<i>Phyllocladus trichomanoides</i>
tarata	<i>Pittosporum eugenoides</i> , lemonwood
Tasmanian blackwood	<i>Acacia melanoxyton</i>
taupata	<i>Coprosma repens</i>
tawa	<i>Beilschmiedia tawa</i>
ti kouka	<i>Cordyline australis</i>
ti ngahere	<i>Cordyline banksii</i>
titoki	<i>Alectryon excelsus</i>
toetoe	<i>Cortaderia fulvida</i>
totara	<i>Podocarpus totara</i>
tradescantia	<i>Tradescantia fluminensis</i>
tree privet	<i>Ligustrum lucidum</i>
turutu	<i>Dianella nigra</i>
velvet groundsel	<i>Roldana petasitis</i>
walnut	<i>Juglans</i> sp.
weeping willow	<i>Salix babylonica</i>
wharangi	<i>Melicope ternata</i>
whau	<i>Entelea arborescens</i>
whauwhaupaku	fivefinger; <i>Pseudopanax arboreus</i> var. <i>arboreus</i>
wheat	<i>Triticum aestivum</i>
weke	<i>Dicksonia squarrosa</i>
wild cherry	<i>Prunus</i> sp.
wild ginger	<i>Hedychium gardnerianum</i>
wild kiwifruit	<i>Actinidia deliciosa</i>
willow-leaved hakea	<i>Hakea salicifolia</i>
woolly nightshade	<i>Solanum mauritianum</i>

GLOSSARY OF TECHNICAL TERMS

Adventive:

Present within an area but natural range does not include that area.

Alluvial Flat:

Refer to Landform.

Alluvial Terrace:

Refer to Landform.

Basin:

Refer to Landform.

Bioclimatic Zone:

The broad distribution of vegetational zones along altitudinal gradients, where, a particular climatic regime dictates the character of the natural ecosystem. See section on bioclimatic zones in text.

Coastal - A narrow zone extending up to 1 km inland from the coast, where the vegetation is often exposed to salt-laden winds, and frosts are mostly absent. It is characterised by estuarine, sand dune, or sea-cliff species, or on forested sites by pohutukawa.

Semi-coastal - This zone extends approximately 10 km inland from the coast, and generally to an altitude of approximately 200 m. Abundant kohekohe in the canopy was used as an indicator of the upper limit of this zone in the Turanga Ecological District (Clarkson and Clarkson 1991).

Buffer:

A zone surrounding a natural area, which reduces the effect of external influences upon the features within the natural area, for example: vegetation such as modified forest/scrub or a stream.

Buffering:

Refer to Natural Area Significance Assessment Criteria.

Canopy:

The layer or layers formed by the uppermost crowns or their parts. The concept is applicable to any kind of vegetation. In forests it includes lianes and epiphytes.

Cliff:

Refer to Landform.

Coastal Zone:

Refer to Bioclimatic Zone.

Communities:

A collection of populations of animals and plants that occur naturally together in a common environment of any size.

Conservation Value:

The relative merit of a natural feature within a regional or national context (for example: within an ecological region or ecological district).

Diversity:

The range of the natural physical and biotic components in the landscape, including species, communities, ecosystems, landforms, soil sequences, and dynamic systems and processes.

Dune Hollow:

Depression or low area between dunes, may have groundwater at surface (refer to Landform section).

Ecological Character:

The distinguishing features of a particular place, definable in terms of biotic composition, plus climatic, edaphic, and topographical factors.

Ecological Class:

A category which describes the broad ecological patterns within an ecological district in terms of bioclimatic zone, hydrological class, vegetation structural class, and land system. For example: a coastal palustrine reedland on uplifted marine terrace.

Ecological District:

A local part of New Zealand where geological, topographical, climatic and biological features and processes, including the broad cultural pattern, interrelate to produce a characteristic landscape and range of biological communities. It represents the level for assessing the representativeness of major ecosystem types in the national network of Protected Natural Areas. New Zealand has been subdivided into 268 such districts (McEwen 1987).

Ecological Region:

A group of adjacent ecological districts with closely related ecological characteristics, or, in some cases, a single very distinctive ecological district. New Zealand has been subdivided into 85 such regions (McEwen 1987).

Ecological Unit:

Any combination of vegetation types (or suite of interrelated types) plus the landform it occurs on, for example kahikatea forest on alluvial river terraces, narrow-leaved snow tussock-hard tussock tussockland on alluvial terraces. Other important attributes of the unit such as the bioclimatic zone (for example montane, coastal) may be added to the name.

Endangered:

Refer to rarity.

Endemic:

Present within an area, and naturally confined to that area. Use of the term endemic usually qualified by indicating the relevant geographic area, i.e. "endemic to New Zealand".

Estuarine:

Refer to Hydrological Class.

Estuary:

An environment of salt or brackish water, partially enclosed but permanently open to the sea, with diurnal or less frequent inundation.

Exotic:

Present within an area but natural range does not include that area, synonymous with adventive.

Fernland:

Refer to Vegetation Structural Class.

Foredune:

Refer to Landform.

Forest:

Refer to Vegetation Structural Class.

Gorge:

Refer to Landform.

Grass/Sedge/Rushland:

Refer to Vegetation Structural Class.

Gully:

Refer to Landform.

Habitat:

The part of the environment in which a plant or animal lives. An organism usually has adaptations, which allow it to live in that particular part of the environment, and it may be more or less restricted to that habitat.

Herbfield:

Refer to Vegetation Structural Class.

Hillslope:

Refer to Landform.

Hydrologic Class:

One of five descriptive categories used in classifying the influence of water on the character of the biotic elements. If water is not a significant influence, a site is considered terrestrial. On sites where water is a major feature, the characteristics of the soils and biota will be strongly influenced by the nature of the water body (for example: palustrine, lacustrine, estuarine) and its nutrient content.

Terrestrial - Free water has an insignificant role in the ecological character of these areas.

Estuarine- Tidal and non-tidal saline wetlands associated with a coastal body of water with a free connection to the open sea, and where fresh water, derived from land drainage (usually rivers) is mixed with sea water.

Palustrine - A wetland community/environment characterised by emergent vegetation, which may, or may not, have freestanding water present.

Lacustrine - A lake community /environment lacking persistent emergent vegetation.

Riverine - A system of flowing freshwater.

Indigenous:

Present within an area whose natural range includes that area.

Native to and occurring naturally in New Zealand. All those features which in aggregate originally gave New Zealand its own distinctive character. Important at the regional, district, and species level.

Induced:

Native vegetation established after destruction or disturbance of the previous cover, and which may dominate for many decades, but is essentially different from the original vegetation, for example: raupo reedland, manuka scrub.

Lacustrine:

See Hydrologic Class.

Landform:

A recognisable, naturally formed physical feature of land having a characteristic shape, for example hill, valley, alluvial fan. In the PNA Programme, classification of a landform emphasises its ecological significance rather than its geomorphological or geological significance. Definitions used in the PNA Programme include the following:

Landform Definitions-after Soons and Selby (1982), Bayfield and Benson (1986) and interpretation by the author.

Alluvial Flat - Flat area associated with river, over which the river course is unconfined; wetlands frequent.

Alluvial Terrace - Flat to gently sloping area of alluvium of variable height above river level. May be periodically flooded.

Basin - Concave to almost flat area on hillside; may be the site of water accumulation.

Cliff - Very steeply sloping to vertical rock face.

Dune Hollow - Low concave area or depression between dunes, may have groundwater at surface.

Foredune - A coastal dune parallel to the shoreline at the landward margin of the beach.

Gorge - A steep-sided narrow drainage-way cut into bedrock.

Gully - Deep incision into hillslope due to fluvial action.

Hillslope - Slope unit on which drainage lines are predominantly parallel.

Rear Dune - A coastal dune parallel to the shoreline and to landward of the foredune.

Ridge - The top (often acute angled) of a divide between two drainage ways.

Seepage Swamp - Swamp zone on hillside.

Tidal Flat - Flat area around river mouth regularly inundated and exposed by the tides.

Land System:

An area throughout which there is a general coherence and unity of physical and biological attributes.

Local:

Refer to rarity.

Native:

Refer to indigenous.

Natural:

Without intervention, whether intentional or not, by people.

Natural Area:

A place characterised by indigenous species or ecosystems, or a place or landform not or scarcely modified from an indigenous condition.

Some natural areas will be identified as suitable for evaluation of ecological quality and representativeness, and hence also be study areas. In some instances one natural area may embrace more than one study area.

or:

A tract of land which supports vegetation and landforms considered to be in a predominantly natural state; identified as a suitable unit for evaluation of ecological quality and representativeness and has potential to be recommended for protection.

Natural Area Significance Assessment Criteria:

Seven selection criteria are used for identifying Recommended Areas for Protection in the PNA Programme: representativeness; diversity and pattern; rarity and special features; naturalness; long-term ecological viability; size and shape; buffering and surrounding landscape.

Representative - The extent to which an area represents or exemplifies the components of the natural diversity of a larger reference area, for example: representation in reserves of the current natural diversity of an ecological district, or representation of the original natural landscape.

The identification and evaluation of the key representative natural areas in all ecological districts is the principal objective of the PNA Programme.

Natural Diversity and Pattern - Natural diversity refers to the range of the natural physical and biotic components in the landscape including species, plant and animal communities, ecosystems, landforms, soil sequences, and dynamic systems and processes, as arranged according to spatial and environmental gradients.

Rarity - A measure of the paucity of numbers or occurrences of elements of natural diversity (for example species, communities).

Naturalness - Involves the assessment of the degree which an area (for example vegetation ecosystem) has been free from the effects of human disturbance and intervention. It is also an assessment of the indigenous content of the area.

Viability - The ability of an area's plant communities (or in some cases a particular species) to maintain themselves in the long term, in the absence of any special effort to perpetuate them. Regeneration and vigour of a particular species, and the size and stability of communities are important factors for evaluation.

Size and Shape - Larger areas with “compact shape” are generally inherently more viable and better for the protection of the features present.

Buffering - Protection of an area (or a particular community) from outside modifying influences, given by natural features (catchment boundaries, rock barriers, surrounding vegetation) or, in some cases, fences or other artificial structures.

Surrounding Landscape - The land which surrounds and influences a particular natural area.

Site - An area of land surface for which a specific statement can be made of aspect, slope, exposure, ground water, underlying geological material, and vegetation. The size of a site may vary quite widely depending on the degree of uniformity required for sampling.

Natural Diversity:

Refer to Natural Area Significance Assessment Criteria.

Naturalised:

Established and reproducing in the wildland.

Naturalness:

Degree to which, ecological units/communities/ecosystems retain their original character. Refer to Original Natural Ecosystem.

Also refer to Recommended Area for Protection Selection Criteria.

Nature Conservation Value:

A value assessment for nature conservation purposes based on scientific criteria derived from ecological, and biogeographical theory (diversity, naturalness, rarity, etc) and on the social value placed on those criteria.

Original Natural Ecosystem:

Original natural landscape - the original state of an ecosystem and the landscape is that which prevailed before the arrival of humans in New Zealand with their domesticated and commensal animals and plants. A major objective of most nature conservation strategies in New Zealand is to protect indigenous ecosystems and landscapes that most closely approximate this state. In Otanewainuku Ecological District it applies to areas where the landscape has remained in, returned to, or is returning to its probable original state (i.e. mature or steady - state forest) of the pre-Polynesian period.

Palustrine:

See Hydrologic Class.

Pattern:

Refer to Natural Area Significance Assessment Criteria.

Primary:

Vegetation which is essentially original in composition and structure, i.e. which obviously has escaped human disturbance.

Protected Natural Area (PNA):

A legally protected area, characterised by indigenous species or ecosystems, in which the principal purpose of management is retention of the indigenous state.

Rare:

Refer to Natural Area Significance Assessment Criteria.

Rarity:

Refer to Natural Area Significance Assessment Criteria.

Rear Dune:

Refer to Landform.

Recommended Area for Protection (RAP):

An area identified as priority for protection because it is one of the best remaining natural areas in an ecological district. A RAP is intended to be the basis of a proposal for a new protected natural area.

Reedland:

Refer to Vegetation Structural Class.

Representative:

Refer to Natural Area Significance Assessment Criteria.

Ridge:

Refer to Landform.

Riverine:

Refer to Hydrologic Class.

Sandfield:

Refer to Vegetation Structural Class.

Scrub:

Refer to Vegetation Structural Class.

Secondary:

Vegetation which has been established after destruction or disturbance of the previous cover, and which is essentially different from the original vegetation, for example kanuka scrub and forest.

Seepage Swamp:

Refer to Landform.

Semi-coastal Zone:

Refer to Bioclimatic Zone.

Site:

Refer to Natural Area Significance Assessment Criteria.

Size and Shape:

Refer to Natural Area Significance Assessment Criteria.

Shrubland:

Refer to Vegetation Structural Class.

Study Area:

A tract of land with indigenous vegetation delineated as suitable for rapid field survey in order to identify the ecological patterns and the natural diversity of an ecological district.

A study area is an arbitrary unit, defined, appropriate to circumstances - it may be defined by the boundary of a remnant forest stand; a catchment; a legal title; or in largely undifferentiated environments by grid squares or other manageable, arbitrarily bound areas.

Submontane Zone:

See Bioclimatic Zone.

Succession:

The process of change in the appearance, composition, and structure of a community, usually over a number of years. Change may be due to biotic (intrinsic) factors, or state (extrinsic) factors, or both.

Surrounding Landscape:

Refer to Natural Area Significance Assessment Criteria.

Terrestrial:

See Hydrologic Class.

Threatened species:

Definitions from de Lange *et al.* (2004).

Acutely Threatened

Acutely Threatened taxa are those which meet the criteria specified by Molloy *et al.* (2002) for the categories 1. Nationally Critical, 2. Nationally Endangered, and 3. Nationally Vulnerable.

1. Nationally Critical

Taxa which qualify as Nationally Critical because of their small population size (≤ 250 mature individuals), or the number of sub-populations known (≤ 2 , with ≤ 200 mature individuals in the largest of these), or their area of occupancy (0.01 km^2), or their predicted decline rate ($\geq 80\%$ in the next 10 years). Fuller definitions are provided by Molloy *et al.* (2002).

2. Nationally Endangered

Taxa characterised by their small population size (250-1,000 mature individuals), ≤ 5 sub-populations known (with either ≤ 300 mature individuals in the largest population or the total area of occupancy $\leq 0.1 \text{ km}^2$), and a moderate to high recent predicted decline ($\geq 30\%$ of the total population or habitat area over the last 100 years, or predicted to occur within the next 10 years); or those taxa typified by small to moderate population sizes (1,000-5,000 mature individuals), ≤ 15 sub-populations (with ≤ 200 -500 mature individuals in the largest or the total area of occupancy is 0.1 - 1 km^2), and a high recent or predicted decline ($\geq 60\%$ of the total population or habitat area over the last 100 years, or this is predicted to occur within the next 10 years). Fuller definitions are provided by Molloy *et al.* (2002).

3. Nationally Vulnerable

Taxa characterised by their small to moderate population size (1,000-5,000 mature individuals), ≤ 15 sub-populations (either with 300-500 mature individuals in the largest sub-population or occupying a total area of 0.1 - 1 km^2), and with either an initially historic but continuing decline rate of 30-60% in total population size or habitat area over the last 100 years, or a predicted decline of 30-60% in the total population likely in the next 10 years. Fuller definitions are provided by Molloy *et al.* (2002).

Chronically Threatened

Chronically Threatened taxa are those which meet the criteria specified by Molloy *et al.* (2002) for the categories 1. Serious Decline, and 2. Gradual Decline.

1. Serious Decline

Taxa qualify if they occur as moderate to large populations where there is a moderate to large predicted decline (with total population size $> 5,000$ mature individuals, > 15 sub-populations, and either > 500 mature individuals in the largest sub-population or the total area of occupancy $> 1 \text{ km}^2$, with a predicted decline rate of $> 30\%$ in total population over the next 10 years), or taxa exist as small to moderate sized populations with a small to moderate predicted decline (with total population $< 5,000$ mature individuals, ≤ 500 mature individuals in the largest sub-population, or total area of occupancy $\leq 1 \text{ km}^2$, with a predicted decline rate of 5-30% in the total population over the next 10 years). Fuller definitions are provided by Molloy *et al.* (2002).

2. Gradual Decline

Taxa qualify if they occur as moderate to large populations with small to moderate predicted declines (total population size >5,000 mature individuals, >15 sub-populations, and either >500 mature individuals in the largest sub-population or the total area of occupancy >1 km², with a decline rate of 5-30% in total population over the next 10 years, which is predicted to continue beyond 10 years). Fuller definitions are provided by Molloy *et al.* (2002).

At Risk

These are taxa which do not qualify as Acutely or Chronically Threatened but which exist as widely scattered, small sub-populations or have restricted ranges. Although such taxa are not currently considered threatened, their small population size and aspects of their biology and ecology place them at potential risk, which is why they are listed here as either 1. Sparse, or 2. Range Restricted.

1. Sparse

Taxa that, for largely undetermined reasons, occur within typically small and widely scattered populations. This distribution appears wholly natural, and is not considered the result of past or recent anthropogenic disturbance. However, as the candidate taxa usually occur in small numbers at any given site, they are naturally susceptible to extirpation within parts of their range.

2. Range Restricted

Taxa whose distribution is naturally confined to specific substrates (for example ultramafic rock), habitats (for example high alpine fell field), or geographic areas (for example subantarctic islands). Range Restricted taxa occupy an area of <100 km² and within that area they are under no obvious or immediate threat. However, because of their distribution they are naturally susceptible to extirpation.

Non-Resident Native

Taxa whose natural presence in New Zealand is either sporadic or temporary (1. Vagrant), or they have succeeded in recent (<50 years) establishing themselves beyond their point of introduction (2. Coloniser).

1. Vagrant

Taxa whose occurrences, though natural, are sporadic and typically transitory. Most (if not all) fail to establish themselves beyond their point of arrival because of reproductive failure or for specific ecological reasons. Also includes those vagrants which are currently known in the New Zealand Botanical Region only from historic herbarium specimens but which remain extant in their country of origin, and so retain the potential to re-establish themselves.

2. Coloniser

Taxa which have arrived without direct or indirect human assistance and which have been successfully reproducing in the wild for <50 years.

Data Deficient

Taxa that are suspected but not definitely known to belong to any of the above categories due to a lack of current information about their present-day distribution and abundance.

It is hoped that listing such taxa will stimulate research to find out the true category or threat. For a fuller definition see Molloy *et al.* (2002).

Tombolo

A tombolo is a sand deposition which forms a narrow piece of land between an island or offshore rock and a mainland shore, or between two islands or offshore rocks. Tombolos usually form because the island causes refraction, depositing sand and shingle moved by longshore drift along the beach in toward the centre of the refraction shadow behind the island where the waves meet.

Treefernland:

Refer to Vegetation Structural Class.

Treeland:

Refer to Vegetation Structural Class.

Tussockland:

Refer to Vegetation Structural Class.

Vegetation Structural Class:

Vegetation classification based on the type of plant, which is dominant in the canopy, for example: forest, reedland. These are based on Atkinson (1985), with the following abbreviated definitions:

Forest - Vegetation in which the cover of woody plants is greater than 80% and the cover of trees with trunks greater than 10 cm dbh is greater than the cover of other sized individuals combined.

Treeland - Vegetation in which the cover of woody plants is 20-80%, with the cover of trees exceeding that of any other growth form, but in which the canopy is discontinuous and broken.

Scrub - Vegetation in which the cover of woody plants exceeds 80% and in which shrubs (dbh <10 cm) exceeds trees (dbh >10 cm).

Shrubland - Vegetation in which the cover of woody plants is 20-80% and in which the cover of woody plants <10 cm dbh is greater than any other growth form..

Tussockland - Vegetation in which the cover of herbaceous plants with linear leaves and densely clumped growth habit reaching >10 cm height is 20-100% and exceeds any other growth form.

Grassland - Vegetation in which the cover of grasses is 20-100% and exceeds any other growth form. Grasses with densely clumped growth form are included in tussockland.

Sedgeland - Vegetation in which the cover of members of the Cyperaceae is 20-100% and exceeds any other growth form.

Rushland - Vegetation in which the cover of rushes is 20-100% and exceeds any other growth form. No intentional definition of rush is provided by Aitkinson (1985), however he

states that the term applies to some species of *Juncus*, all species of *Sporodanthus*, *Apodasmia*, and *Empodisma*. In other words, those species we would otherwise refer to as restiad.

Reedland - Vegetation in which the cover of reeds is 20-100% and exceeds any other growth form. Atkinson (1985) defines reed as herbaceous plants growing in standing or slowly moving water that have tall, slender, erect, unbranched leaves or culms which are hollow or have a very spongy pith. He cites *Typha*, *Bolboschoenus*, *Eleocharis sphacelata*, and *Baumea articulata* as examples, even though some of these belong to the Cyperaceae.

Fernland - Vegetation in which the cover of ferns is 20-100% and exceeds any other growth form.

Sandfield - Land in which the areas of bare sand (0.02-0.2 mm diam.) exceeds the area covered by any one class of plant growth form.

Treefermland - Dominated by treeferns.

Vineland - Vegetation in which the cover of unsupported or artificially supported woody vines is 20-100%, and exceeds the cover of any other growth form.

Herbfield - Vegetation in which the cover of herbs is 20-100% and exceeds any other growth form. Aitkinsons (1985) definition of herb is “all herbaceous and low growing semi-woody plants not separated as ferns, tussocks, grasses, sedges, rushes, cushions, mosses, or lichens”.

Vegetation Type:

A term, which includes the dominant canopy species and structural class of an area of vegetation, for example: rimu/tawa-kamahi forest, *Ficinia nodosa*/*Muehlenbeckia complexa* sedge-vineland.

In addition, cover values and tiers are included, i.e:

(tawa)	less than 5% cover of the bracketed species.
(rimu)/tawa	indicates less than 5% cover of rimu emergent over a canopy of tawa.
tawa-hinau	indicates tawa and hinau occur in the same tier.
≡	mosaic of vegetation types
<u>tawa</u>	indicates more than 20% cover of tawa ²⁶
<u><u>tawa</u></u>	indicates more than 50% cover of tawa ¹

Viability:

Refer to Natural Area Significance Assessment Criteria.

Vineland:

Refer to Vegetation Structural Class.

Vulnerable:

Refer to Recommended Area for Protection Criteria.

²⁶ Only used to describe vegetation in sites which were field inspected in 2008.

Weed:

A naturalised plant having adverse impact on structure, composition, functioning of indigenous systems, or any components thereof.

FIELD SURVEY OF SITES 2002-2008

Site No.	Site Name	Field Survey of Part or All of Site Undertaken as Part of this Study ²⁷	Field Survey Undertaken of Part or All of Site Prior to the Current Study (2002-2008)	Field Survey Undertaken More than 5 Years Ago (Site boundaries and vegetation type boundaries identified from Current Aerial Photographs)
001	Sapphire Springs	Yes		
002	Uretara Stream	Yes		
003	Katikati Inlet			✓
004	Tuapiro			✓
005	Wainui River Scenic Reserve	Yes		
006	Wainui Wetlands		Wildland Consultants (2006g)	
007	Tuapiro Spit		Wildland Consultants (2006g)	
008	North Harbour		Wildland Consultants (2006g)	
009	Athenree			✓
010	Aongatete			✓
011	Bowentown Shellbanks		Wildland Consultants (2006g)	
012	Wainui Estuary			✓
013	Matahui Point			✓
014	Egg Island		Wildland Consultants (2006g)	
015	Bowentown Dunes	Yes		
016	Apata		Wildland Consultants (2006g)	
017	Te Hopai Island		✓	
018	Matakana Wetlands B	Yes		
019	Tirohanga Mangroves			✓
020	Mid Harbour		Wildland Consultants (2006g)	
021	Waipapa Estuary		Wildland Consultants (2006a**, 2006g)	
022	Tahunamanu Island			✓
023	Blue Gum 1	Yes		
024	Matakana 1	Yes		
025	Opureora Spit	Yes		

²⁷ Only completed if the answer to “Field Survey of Part or All of Site Undertaken as Part of this Study” was not Yes.

Site No.	Site Name	Field Survey of Part or All of Site Undertaken as Part of this Study ²⁷	Field Survey Undertaken of Part or All of Site Prior to the Current Study (2002-2008)	Field Survey Undertaken More than 5 Years Ago (Site boundaries and vegetation type boundaries identified from Current Aerial Photographs)
026	Harbour	Yes		
027	Otapu Bay	Yes		
028	Tauranga Harbour (Part)	Yes	Wildland Consultants (2006g)	
029	Wairoa River Wetlands		Wildland Consultants (2005e)	
030	Matua		Wildland Consultants (2005e)	
031	Waimapu Estuary		Wildland Consultants (2005e)	
032	Waikareao 1		Wildland Consultants (2005e)	
033	Mauao 1		Wildland Consultants (2005e)	
034	Waipu		Wildland Consultants (2005e)	
035	Motuotau		✓	✓
036	Te Maunga		Wildland Consultants (2005e)	
037	Waitao		Wildland Consultants (2005e)	
038	Otira Sand Dunes	Yes		
039	Raparapahoe Stream	Yes		
040	Papamoa Sand Dunes	Yes		
041	Kaituna Kahikatea Stands	Yes		
042	Mangorewa River	Yes		
043	Kaituna Dunes and Wetland	Yes		
044	Kaituna Wetland	Yes		
045	Kaituna River			
046	Maketu Spit and Wildlife Management Reserve	Yes	Wildland Consultants (2006g)	
047	Waewaetutuki	Yes		
048	Waihi Estuary	Yes	Wildland Consultants (2006g)	
049	Waihi Estuary	Yes		
050	Busby Road	Yes		
051	McKinney Stream	Yes		
052	Te Rereatukahia		Wildland Consultants (2006g)	
053	Park Road		Wildland Consultants (2005i).	
054	Matahui			✓
055	Steele Road B			✓
056	Kauri Point		Wildland Consultants (2006g)	
057	Waipapa River	Yes		

Site No.	Site Name	Field Survey of Part or All of Site Undertaken as Part of this Study ²⁷	Field Survey Undertaken of Part or All of Site Prior to the Current Study (2002-2008)	Field Survey Undertaken More than 5 Years Ago (Site boundaries and vegetation type boundaries identified from Current Aerial Photographs)
058	Matakana Wetlands C	Yes		
059	Matakana Wetlands D	Yes		
060	Matakana 2	Yes		
061	Matakana 4	Yes		
062	Opureora Islet	Yes		
063	Motungaio Island	Yes		✓
064	Rangiwaea Island Foreshore	Yes	Wildland Consultants (2006g)	✓
065	Motutangaroa	Yes	Wildland Consultants (2006g)	✓
066	Rangiwaea Island Estuary	Yes	Wildland Consultants (2006g)	✓
067	Rangiwaea Island East		Wildland Consultants (2006g)	✓
068	Poike		Wildland Consultants (2005e)	
069	Ngapeke Road Wetlands		Wildland Consultants (2005e)	
070	Ohineangaanga stream	Yes		
071	Elizabeth Wetland		Wildland Consultants (2007a)	
072	Kaituna River	Yes		
073	Kaituna River Wetlands (part) and Kaituna River Mouth		Wildland Consultants (2005p)	
074	Maketu Estuary		Wildland Consultants (2006g)	
075	Arawa Wetlands	Yes		
076	Lindemann Road Lookout	Yes		
077	Waitekohe Stream	Yes		
078	Poupou Stream	Yes		
079	Wright Road	Yes		
080	Tetley Rd			✓
081	Whatakao Stream	Yes		
082	Stokes Road Forest		Wildland Consultants (2006g)	
083	Hikurangi			✓
084	Waitekohe Stream Mouth			✓
085	Tutaekaka			✓
086	Ongare		Wildland Consultants (2003c, 2006g)	
087	Steele Road A		Wildland Consultants (2006g)	
088	Central Waihi Beach	Yes		

Site No.	Site Name	Field Survey of Part or All of Site Undertaken as Part of this Study ²⁷	Field Survey Undertaken of Part or All of Site Prior to the Current Study (2002-2008)	Field Survey Undertaken More than 5 Years Ago (Site boundaries and vegetation type boundaries identified from Current Aerial Photographs)
089	Matakana Central Wetlands	Yes		
090	Matakana Wetlands A	Yes		
091	Waipapa Wetland		Wildland Consultants (2006a)	
092	Ngakautuakina		Wildland Consultants (2006g)	
093	Mangawhai Bay		Wildland Consultants (2006g)	
094	Tirohanga Point Beach		Wildland Consultants (2006g)	
095	Mangawhai Bay			✓
096	Te Puna		Wildland Consultants (2005c)	
097	Mangawhai Bay Intertidal Flats			✓
098	Snodgrass			✓
099	Newnham			✓
100	Minden Scenic Reserve	Yes		
101	Waipa		Wildland Consultants (2007a)	
102	Waikaraka		Wildland Consultants (2003d)	
103	Kuka		Wildland Consultants (2005e)	
104	Opureora Inlet		Wildland Consultants (2006g)	
105	Blue Gum 2		Wildland Consultants (2006g)	
106	Oikimoke		Wildland Consultants (2005e)	
107	Southeastern Matakana Wetlands	Yes		
108	Waikareao 2		Wildland Consultants (2005e)	
109	Motupae		Wildland Consultants (2003a)	
110	Kaitemako		Wildland Consultants (2005e)	
111	Mauao 2		Wildland Consultants (2005e)	
112	Welcome Bay		Wildland Consultants (2005e)	
113	Moturiki		Wildland Consultants (2005e)	
114	Shark Alley to Kaituna	Yes		
115	Rangataua		Wildland Consultants (2005e)	
116	Okurei Point		Wildland Consultants (2003g)	
117	Wharere Road Wetland		Wildland Consultants (2006g)	
118	Pukehina Spit	Yes	Wildland Consultants (2005d)	
119	Pukehina	Yes		

Site No.	Site Name	Field Survey of Part or All of Site Undertaken as Part of this Study ²⁷	Field Survey Undertaken of Part or All of Site Prior to the Current Study (2002-2008)	Field Survey Undertaken More than 5 Years Ago (Site boundaries and vegetation type boundaries identified from Current Aerial Photographs)
120	Boyd Stream	Yes		
121	Te Rereatukahia Stream	Yes		
122	Hot Springs Road	Yes		
123	Willoughby Road	Yes		
124	Lund Road West	Yes		
125	Te Mania Stream	Yes		
126	Killen Road	Yes		
127	Lund Road	Yes		
128	Lund Road Wetlands	Yes		
129	Tuapo Stream	Yes		
130	Hume Road	Yes		
131	Aongatete River-Upland Road	Yes		
132	Waiau Road Wetland	Yes		
133	Walford Road	Yes		
134	Esdaile Road	Yes		
135	Waipapa West	Yes		
136	Bowentown Heads	Yes		
137	Matakana 3	Yes		
138	Omokoroa		Wildland Consultants (2006g)	
139	Tirohanga Point pohutukawa		Wildland Consultants (2006g)	
140	Matakana Point		Wildland Consultants (2006g)	
141	Omokoroa			✓
142	Jess Road		Wildland Consultants (2005c)	
143	I'Anson Reserve	Yes		
144	Motuhoa			✓
145	Wairoa River			✓
146	Waiherehere Road		Wildland Consultants (2006g)	
147	Joyce Road	Yes		
148	Kopurererua		Wildland Consultants (2006g)	
149	Oropi Road Water Reserve	Yes		
150	Oropi Road Water Reserve Wetland	Yes		
151	Haycocks Private Reserve	Yes		

Site No.	Site Name	Field Survey of Part or All of Site Undertaken as Part of this Study ²⁷	Field Survey Undertaken of Part or All of Site Prior to the Current Study (2002-2008)	Field Survey Undertaken More than 5 Years Ago (Site boundaries and vegetation type boundaries identified from Current Aerial Photographs)
152	Waimapu Walkway		Wildland Consultants (2005e)	✓
153	Hairini		Wildland Consultants (2005e)	
154	Motuopuhi Island	Yes		
155	Hopukiore		Wildland Consultants (2005e)	
156	Waipu Bay		Wildland Consultants (2005e)	
157	Tye Park		Wildland Consultants (2005e)	
158	Mangatawa		Wildland Consultants (2005e)	
159	Pah Road Oxbow Lakes	Yes		
160	Pokopoko Stream Wetland	Yes		
161	Maketu Roost		Wildland Consultants (2006g)	
162	Waihi Beach Grey Willow Forests			
163	Duck Bay			
164	Bell Road Oxbow			✓
165	Rereatukahia			
166	Fergus Road Wetland			✓
Other 2008 Study Areas (See Appendices 4 and 5)				
	Lowry Road	Yes		
	Roderick Lane	Yes		
	Raparapahoe Canal	Yes		
	No. 1 Road	Yes		
	Oropi Road	Yes		
	Pyes Pa Road	Yes		
	Maungarangi Road	Yes		
	Whakamarama Road	Yes		
	Lower Waipapa River	Yes		
	Whatakao North-East	Yes		
	Lund Road South	Yes		
	Lindemann Road South	Yes		
	Wolseley Road	Yes		
	Old Highway Road	Yes		
	Whatakao South	Yes		
	Whatakao East	Yes		

BAY OF PLENTY REGIONAL POLICY STATEMENT
HERITAGE CRITERIA (INDIGENOUS VEGETATION
AND HABITATS OF INDIGENOUS FAUNA)

BAY OF PLENTY REGIONAL POLICY STATEMENT - HERITAGE CRITERIA: APPENDIX F, SET 3 and GUIDELINES - Natural area is 'significant' if it meets one or more the criteria (i.e. at least one 'H' or several 'M' for any of these).	
Representativeness	
3.1	"Indigenous vegetation or habitat of indigenous fauna that contains associations of indigenous species representative, typical, or characteristic of the natural diversity of the region or any relevant ecological districts."
H	Best OR relatively large OR good quality example of vegetation/habitat in the ecological district; OR only example of a type which was formerly more extensive.
M	Similar to other areas that occur elsewhere in relevant ecological district.
L	Degraded, small; better quality examples exist elsewhere in ecological district.
Rarity or Distinctive Features	
3.2	"Indigenous vegetation or habitat of indigenous fauna supports an indigenous species or associations of species threatened, or rare nationally, regionally, or within the relevant ecological district."
H	Nationally <u>acutely</u> or <u>chronically</u> threatened species present (includes Nationally Critical, Nationally Endangered, Nationally Vulnerable, Serious Decline, Gradual Decline; see Molloy <i>et al.</i> 2002); OR several nationally <u>at risk</u> species present.
M	Nationally <u>at risk</u> or <u>data deficient</u> species present (includes Range Restricted, Sparse, Data Deficient) OR species considered rare or threatened in the region or ecological district.
L	No rare or threatened species known to be present.
3.3	"Indigenous vegetation or habitat of indigenous fauna can contribute to the maintenance or recovery of a species threatened, or rare nationally, regionally, or within the relevant ecological district."
H	Potentially key habitat for a threatened species OR likely to already be habitat for a threatened species, though not recorded (for example because same species has been recorded from very nearby in similar habitat, to which this area is complementary).
M	Potentially habitat that can contribute to maintaining or recovering a threatened species.
L	Not potential habitat for a threatened species.
3.4	"Indigenous vegetation or habitat of indigenous fauna is distinctive, of restricted occurrence, or at the limits of its natural distribution range, or has developed as a result of factors such as natural geothermal activity, historical cultural practices, altitude, water table, or soil type."
H	Nationally distinctive (for example nationally rare vegetation or habitat type; national species distribution limit).
M	Regionally distinctive (for example unusual vegetation or habitat type within region; only or one of few populations of species within region)
L	Typical vegetation or habitat type.
3.5	"Indigenous vegetation or habitat of indigenous fauna that is one of the largest remaining examples of its type within the region or any relevant ecological district."
H	Yes - one of largest examples of type in <u>region</u> (for example 1 of 3).
M	Yes - one of largest examples of type in <u>ecological district</u> (but also represented in other ecological districts).
L	Moderate or small size example of type.
3.6	"Indigenous vegetation or habitat of indigenous fauna is significantly reduced in area and is degraded but retains key natural ecosystem functions (for example hydrology) and has a high potential for restoration."
H	High restoration potential (for example reasonably large but moderately degraded example, however retains key ecosystem functions).
M	Moderate restoration potential (for example highly degraded example, however retains key ecosystem functions).
L	Little potential for restoration without large investment in restoring ecosystem function (for example restoring hydrology).
N/A	Indigenous vegetation or habitats of indigenous fauna not significantly reduced in area, or not degraded, or requiring little or no restoration effort.
Diversity and Pattern	
3.7	"Indigenous vegetation or habitats of indigenous fauna which contains a high diversity of indigenous ecosystem or habitat types or changes in species composition, reflecting the existence of diverse natural features (for example landforms, soil types or hydrology), or communities along an ecological gradient."
H	More than two landforms or bioclimatic zones; or more than 7 mainly indigenous vegetation/habitat classes.
M	More than one landform or bioclimatic zone; or 4-7 mainly indigenous vegetation/habitat classes.
L	Only one landform and bioclimatic zone; or 1-3 mainly indigenous vegetation/habitat classes.
Naturalness	
3.8	"Indigenous vegetation or habitat of indigenous fauna is in a natural state or healthy condition, or is in an original condition."
H	Low-level or nil human-related disturbance (for example weeds, pests, logging, fire, dumping, development) - includes secondary vegetation established following natural disturbance.
M	Moderate level of human-related disturbance, for example relatively good quality secondary vegetation developed following human disturbance, low levels of selective logging 20 or more years earlier.
L	Exotic/induced/heavily disturbed.
Ecological Context	
3.9	"Indigenous vegetation or habitat of indigenous fauna contributes to the ecological viability of adjoining natural areas and biological communities, by providing or contributing to an important ecological linkage or network, or providing a buffer from adjacent land uses."
H	Provides an ecological linkage/corridor function or buffer to an adjoining natural area of high overall ecological significance OR one of only a few examples of existing or potential key ecological linkages within the ecological district (for example only stream with riparian vegetation which reaches harbour).
M	Provides an ecological linkage/corridor function or buffer to an adjoining natural area of moderate or low overall ecological significance; OR an example of an ecological linkage or buffer which is not common within the ecological district.
L	An isolated natural area, without linkage or buffer functions OR an example of a linkage or buffer that is common.
3.10	"Indigenous vegetation or habitat of indigenous fauna provides habitat for indigenous species at key stages of their life cycle."
H	Yes - critical to the self-sustainability of an indigenous species (for example feeding, breeding or roosting site, such as for indigenous fish species or migratory birds (national and international)).
M	Yes - provides habitat for indigenous species at key stages of their life cycle.
L	Not known to provide habitat for indigenous species at key stages in their life cycle.
Viability and Sustainability	
3.11	"Indigenous vegetation or habitat of indigenous fauna is of sufficient size and compact shape and has the capacity to maintain its ecological viability over time."
H	Large size (relative to similar vegetation/habitat in region) OR primarily compact, no major constrictions.
M	Moderate size (relative to similar vegetation/habitat in region) OR irregular or convoluted.
L	Small size (relative to similar vegetation/habitat in region) OR highly convoluted or discontinuous.
3.12	"Indigenous vegetation or habitat of indigenous fauna supports intact habitats and healthy functioning ecosystems."
H	Intact and healthy; able to remain ecologically viable with low or minimal management effort.
M	Contains elements of a functioning ecosystem, but requires management intervention to be ecologically viable in long term.
L	Degraded; requires considerable management effort to render ecologically viable.
3.13	"Indigenous vegetation or habitat of indigenous fauna is of sufficient size and compact shape to resist changes initiated by external agents." (Same as 3.11, but relatively larger)
H	Large size (relative to similar vegetation/habitat in region) OR primarily compact, no major constrictions.
M	Moderate size (relative to similar vegetation/habitat in region) OR irregular or convoluted.
L	Small size (relative to similar vegetation/habitat in region) OR highly convoluted or discontinuous.

APPENDIX 11

CRITERIA FOR DETERMINING RELATIVE SIGNIFICANCE

These criteria are based on Wildland Consultants Contract Report No. 1345 (2006).

A site is of national significance if it meets at least one of the following criteria:

National (including International)

- N1 **Protected, or recommended for protection** under international legislation (for example RAMSAR, World Heritage), or
 - N2 **Protected or recommended for protection** under the Conservation Act 1987 (as an Ecological Area or Forest Sanctuary), National Parks Act 1980, Marine Reserves Act 1971, or Reserves Act 1977 (as a Nature Reserve or Scientific Reserve)¹, or
 - N3 Identified as being of international or national significance in a **previous assessment** (for example Kenny and Hayward 1996; Cody 1994), or
 - N4 **Best or only remaining** representative example of an indigenous vegetation/habitat type, or
 - N5 A good quality example of indigenous vegetation/habitat that is under-represented nationally (**10 % or less remains**), or is nationally uncommon and representative of its type, or
 - N6 Good quality example of a **nationally uncommon suite** of vegetation/ **habitat types** or a **sequence** of ecosystems, or
 - N7 Best or only remaining **large example** of a **suite** of vegetation/habitat types or an ecological sequence, or
 - N8 Unmodified/**pristine example** of a nationally under-represented type, or
 - N9 Forms a key part of an **ecological sequence** that includes an international or nationally significant site, or
 - N10 **Best or only remaining example** of a threatened or uncommon vegetation/habitat type, or
 - N11 Good quality example of a **threatened or uncommon habitat** type, or
 - N12 Habitat used on a regular or continuous basis by an **acutely threatened** species (i.e. Nationally Critical', 'Nationally Endangered' or 'Nationally Vulnerable') (see national threat rankings in Hitchmough 2002, Hitchmough (In press) and de Lange *et al.* 2004), or
 - N13 Habitat for the completion of the life cycle of an **international migratory species** that would be threatened if the habitat were not sustained, or
 - N14 Provides a habitat for a **threatened species** at a key stage of its **life cycle**; or
 - N15 **Largest**, or one of the **largest remaining good quality** examples of its type.
-

A site is of regional significance if it meets at least one of the following criteria, but does not meet any of the criteria for national significance above.

Regional

- R1 **Protected under the Reserves Act 1977** (as a Wildlife Management Reserve, Wildlife Refuge, or Scenic Reserve), Nga Whenua Rahui Kawenata, or for any purpose under the Conservation Act (for example Conservation Area or Conservation Park) with significant fauna and/or flora values¹, or
 - R2 **Protected** under QEII National Trust Act 1977¹, or
 - R3 **Recommended for protection** by NHF, NWR, or QEII¹, or
 - R4 Good quality example of a **regionally under-represented** type, or
 - R5 Identified as of regional significance in a **previous assessment** (for example Kenny and Hayward 1996; Cody 1994)¹, or
 - R6 Degraded but relatively large example of a nationally **under-represented** or **nationally uncommon** type, or
 - R7 One of the **best representative examples** in the **Region** of indigenous vegetation or habitat for indigenous fauna, or
 - R8 **Good quality** example of indigenous vegetation or habitat for indigenous species that is representative of the ecological character typical of the Region, or
 - R9 **Best or one of the best populations (in an ecological district) of a chronically threatened species** (i.e. 'Serious Decline' or 'Gradual Decline') or **at risk species** (i.e. 'Range Restricted' or 'Sparse'), (see national threat rankings in Hitchmough 2002, Hitchmough (In press) and de Lange *et al.* 2004), or
 - R10 Habitat of a **species** that is **endemic** to the Region, or
 - R11 One of the best examples in the Region of an **ecological sequence**, or
 - R12 Degraded but relatively large example of a **nationally uncommon sequence**, or
 - R13 **Degraded**, but the only remaining example of the **sequence** in the Region, or
 - R14 Forms part of an ecological sequence that includes a **regionally significant site**, or
 - R15 **Least-modified** example of its type in the Region, or
 - R16 Modified, but the **largest example** of its type in the Region, or
 - R17 Is a **buffer** (or a key part of a buffer) to a site that is internationally or nationally significant, or
 - R18 Provides a habitat for an indigenous species at a key stage of its **life cycle**, or
 - R19 The largest remaining good quality example of its type in the Region.
-

A site is **at least** of local significance if it met at least one criterion in Appendix 10 but did not meet any of the above criteria.

Local

Locally significant natural areas are healthy examples of relatively common vegetation and habitat types. They are often small areas, but large enough to enable key ecological processes to occur, such as regeneration of seedlings or reproduction of indigenous fauna. These sites may not be particularly significant in their own right, but nevertheless play an important part in a network of natural areas. For example, a locally significant site might be important as a seasonal feeding or breeding area. It might also act as a stepping stone between other natural areas, allowing indigenous fauna to move in search of food or mates.

Such sites are likely to provide representative examples of common or typical vegetation types or habitat for common indigenous species. They will not be among the best examples in the Region but will meet criteria for viability and sustainability as healthy, functioning, and ecologically viable sites.

APPENDIX 12

CATEGORIES OF SIGNIFICANCE

Sites ranked as Categories 1-4 can be considered to be significant in terms of Section 6(c) of the Resource Management Act (1991). The four categories are defined as follows:

Category 1

Category 1 areas are representative examples of indigenous vegetation or wildlife habitats on particular landform units within the relevant bioclimatic zone in each ecological district. They contain some of the largest, best quality, or only remaining examples of indigenous vegetation or wildlife habitat in an ecological district.

Category 2²⁸

Category 2 sites are also good quality representative examples of vegetation and/or wildlife habitat (c.f. Category 1), which complement Category 1 sites and existing protected natural areas. They may include:

- relatively small areas with vegetation types or plant taxa under-represented or unrepresented in protected natural areas or Category 1 areas;
- relatively large areas with features which are represented in existing protected areas or Category 1 areas, but which are nevertheless worthy of protection;
- sites containing vegetation types that were formerly more common in the ecological district and are unrepresented in protected natural areas or Category 1 sites, but which have been degraded by weed invasion or animal damage, or similar.

Category 3¹

Category 3 includes sites that are:

- often smaller than Category 1 or 2 sites with interesting or special features, even though the ecological unit(s) is usually of lower quality;
- relatively large areas that are highly modified.

Category 4

Category 4 sites are often smaller and may be considerably more modified than features represented in the previous category. They are nevertheless significant as they contain features worthy of protection.

²⁸ Category 2 and 3 sites are often smaller areas with interesting and unique features, but the condition of representative ecological units is usually not as good.

APPENDIX 13

GIS ATTRIBUTE TABLES

Site Boundary

DATE	Date of 2008 field survey (Null if prior to 2008)
NAME	Site name
SITE_NO	Site number
SNA	Not used
SIG_LEVEL	National, Regional, Local following Wildland Consultants (2006g) (see Appendices 11 and 12 of this report)
CAT_HIGH	Category ranking, 1-4 (see Appendix 12 of this report)
ED_1_50000	Ecological District boundary (1:50,000)
DIG_SCALE	Scale at which vegetation units were mapped
BASE_MAP	Source of aerials upon which mapping occurred.
COMMENTS	
GRID_REF	Site centroid

Vegetation/Habitat Type

SITE_NO	Site number
VEGE_NO	Vegetation unit number
HYDROSYS	Hydrosystem
LANDFORM	Landform
STRUCTURE	Vegetation structure following Atkinson (1985)

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