



Eastern Wairarapa Ecological District

Survey report for the Protected Natural Areas
Programme

JUNE 2004



Department of Conservation
Te Papa Atawhai

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Cover photo: Maungapakeha Taipo, a site of biological significance in Eastern Wairarapa Ecological District. Photo: The late Tim Harington.

Foreword

This report is an introduction to the Eastern Wairarapa Ecological District, a vast expanse of land to the east of the lower North Island and the third largest ecological district in New Zealand. In particular it describes the most significant natural areas that are not already protected for nature conservation. The Department of Conservation has recommended that these natural areas be protected so that the natural character of the district may be preserved.

This report is one of a series produced as part of New Zealand's Protected Natural Areas Programme (PNAP). The long-term goal of the PNAP is *...to protect examples of the full range of indigenous biological and landscape features in New Zealand...*

The Eastern Wairarapa Ecological District supports a rich and diverse flora and fauna including coastal dunes, wetlands, primary forest and regenerating shrublands. However, the existing protected natural area network covers only a small proportion of the district and is inadequate to protect, in perpetuity, its biological diversity. What indigenous vegetation there is now only partially reflects what has been lost. Some elements of the flora, such as the Mount Percy daisy, cannot be found growing in the wild anywhere else in the world.

The Department of Conservation alone cannot achieve protection of biodiversity. On-going management to conserve the distinctive natural diversity of the district will be achieved most effectively by a collective approach to nature conservation involving landowners, local communities and land management agencies, such as the Department of Conservation.

The completion of this report has been a huge task, one that has involved a great many people. The identification of the most significant remaining natural areas in the Eastern Wairarapa is a major step forwards for conservation in the region. Land owners, community groups and land management agencies, including the Department of Conservation, are now much better placed to be able to work collectively for the protection and restoration of these important areas.

Allan Ross
Conservator
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Executive summary

Eastern Wairarapa Ecological District (406 724 ha) is situated on the east coast of the lower North Island. The district is mostly moderately steep to rugged hill country (to a height of 633 m asl) with a mixed greywacke, limestone, siltstone and sandstone geology, but localised marine and alluvial terraces and areas of relatively easy terrain are also present. The hill country is finely dissected and is drained to the east and west by numerous small to moderate-sized streams and rivers. It is the third-largest ecological district in the country.

Prior to human settlement, the hill country of the Eastern Wairarapa Ecological District was, for the most part, covered in podocarp broadleaf forest dominated by rimu, northern rata and tawa. Hard beech and black beech were prominent on ridge tops, with totara-dominant podocarp forest on the lower hills. However, Maori fires around the seventeenth century destroyed most of the original forest, and by the time of European settlement in the mid-nineteenth century the predominant vegetation cover was low fernland, scrub, and shrubland. Arrival of Europeans brought further and ongoing changes to indigenous ecosystems. Much of the remaining forest was cleared, native fernland, scrub and grassland communities were burnt and grazed, and small wetlands drained; these were largely replaced by exotic pasture grasslands. In addition, a suite of invasive plant and animal pests was introduced to the further detriment of indigenous ecosystems and species.

A survey was carried out to document the remaining natural areas in the Eastern Wairarapa Ecological District in order to provide a basis for planning for their protection. The Ecological District was subdivided into three bioclimatic zones (coastal, semi-coastal and lowland) on the basis of the distribution of indicator plant species. It was also subdivided into 13 land types, based on landform and underlying geology. These frameworks were used in combination with a set of standard criteria to select Recommended Areas for Protection. The criteria were: present *versus* past extent, landscape and ecological diversity, naturalness, size, shape of area, surrounding landscape, fragility and threat, and representativeness. Other factors were also taken into account such as species distribution limits, rarity and endemism (of flora and fauna), and the features represented within existing protected areas.

Areas of indigenous vegetation were mapped and described in a draft reconnaissance report. Subsequently, this ecological information was examined to assess the relative ecological value of the natural areas identified. These natural areas were then assigned to one of five categories: Recommended Areas for Protection (RAP); areas of High, Moderate-High and Moderate biological importance (that did not qualify as an RAP); or none of the above. Field surveys of potential RAPs (i.e. the highest priority for protection) were then undertaken. Forty-nine Recommended Areas for Protection were identified and are described in this report. These comprise c.12 800 ha or 3 percent of the Eastern Wairarapa Ecological District. They include examples of remnant primary forest, secondary forest, scrub and shrubland, dunelands, wetland and tussockland communities.

The RAPs are the highest priorities for protection because they are the largest or best examples of the range of currently inadequately protected indigenous communities in the Ecological District. In addition, a further 462 natural areas were identified

and ranked, in terms of their biological importance, into three categories: High, Moderate-High and Moderate. Although not necessarily the best or largest examples of their type, these sites were considered to be significant indigenous vegetation or wildlife habitats. Their protection would enhance the District's network of protected natural areas and provide opportunities for ecological restoration. If protection is impossible for one or more RAPS, then the relative priority of those other sites will increase.

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 mapped into 268 Ecological Districts determined by landscape and ecological patterns. The ecological districts are grouped into 68 Ecological Regions, and these frameworks have been used as the basis of the PNA Programme (McEwen 1987a & b). Identifying the natural areas which maintain the indigenous character of each district, and recommending protection for the most significant of these, provides a framework for the identification of a comprehensive national network of natural areas representative of New Zealand's natural biodiversity.

The Eastern Wairarapa Ecological District is one of 13 that lie wholly or partially within the Department of Conservation's Wellington Conservancy. It is the only ecological district in the Eastern Wairarapa Ecological Region (see Figure 1) and is the third largest ecological district in the country. The Conservation Management Strategy for Wellington Conservancy (DOC 1996a) identified it as a high priority for PNAP survey. Particular priorities for protection noted were wetlands; riparian areas with natural vegetation; areas containing examples of pre-European vegetation; regenerating areas with good connections to large areas of indigenous vegetation; and habitats significant for threatened species and geological features (DOC 1996a; CMS Vol. 1).

The preliminary phase of the PNAP survey started in 1988 but most of the work was carried out between 1993–1996 by Wellington Conservancy, DOC. Areas of indigenous vegetation in the ecological district were identified, their spatial extent mapped, and comments on vegetation and other biological features recorded. This information was presented in a draft reconnaissance report (Sawyer *et al.* 1998b).

Wildland Consultants Ltd completed the latter phase of the PNAP survey for the Wairarapa Area Office, Wellington Conservancy, DOC. This contract was to undertake an evaluation of the existing data to assess the relative value of the natural areas identified in phase 1 of the PNAP survey. These natural areas were then assigned to one of five categories: Probable and possible Recommended Areas for Protection (RAPs); areas of High, Moderate-High and Moderate biological importance (not RAPs); none of the above. Field surveys of natural areas identified as probable and possible RAPs were then undertaken, followed by description and mapping of confirmed RAPs. Although accorded their RAP status as part of this evaluation, the other areas of biological importance were not resurveyed and their descriptions are from reconnaissance survey information unless otherwise specified.

The report includes overviews of the physical character of the ecological district, an outline of survey methods, a vegetation history map, and summaries of remaining natural vegetation features currently protected and features that warrant protection.

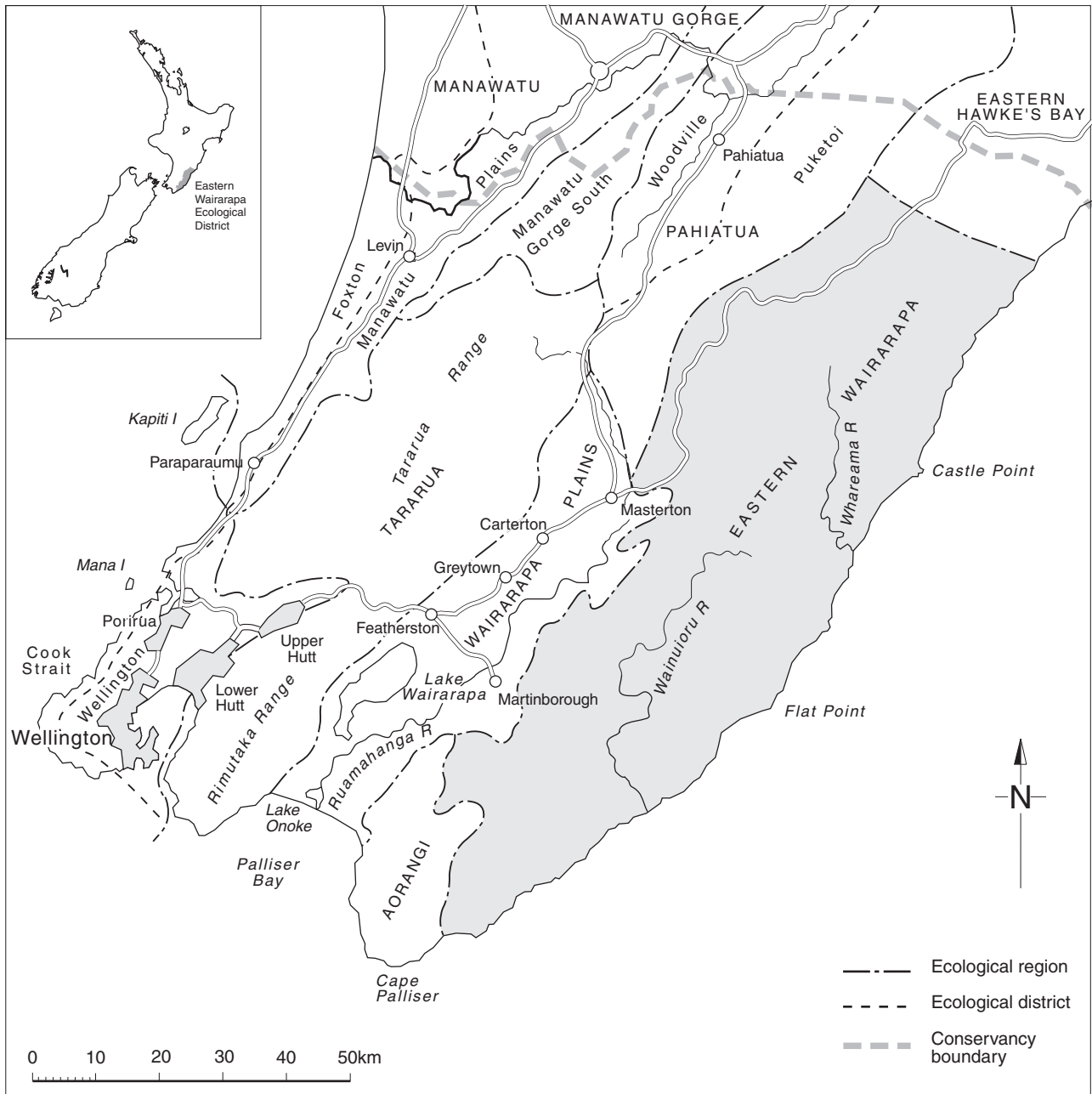


Figure 1. Location of the Eastern Wairarapa Ecological District.

2. Location and setting

At c.406 724 ha the Eastern Wairarapa Ecological District is the largest in the Wellington Conservancy. It extends to the east coast of the lower North Island, bounded by the sharply contrasting relief of the Wairarapa Plains to the west and the mountainous Aorangi Ranges to the southwest. To the north, the boundary is less distinctive, running northwest from near Akitio and then southwest to the northern Wairarapa Plains near Masterton where it adjoins the Wairarapa Plains Ecological District.

A short southern coastline aligns approximately east-west at White Rock, continuing as an extensive eastern coast of wave-cut platforms and sandy beaches. Hill country rises steeply from the shore and occupies the bulk of the district, broken by steep hard ridges with jagged outlines (termed “taipos”) to the east and patterned by low hill ranges broadly parallel to the coast. Toward the centre, and scattered elsewhere, are localised areas of subdued relief.

The steep, often incised, rivers have produced only narrow riparian flats. The larger areas of coastal plain near Uruti Point and around Glenburn-Flat Point are of marine origin. Mt Adams (663 m a.s.l.) is the highest point in the ecological district.

A history of fire and agricultural development for sheep and cattle farming has left a mosaic of small indigenous habitat fragments scattered amidst farmland and increasing areas of radiata pine forestry. Most fragments have been moderately to severely affected by logging or exotic species, including farm animals and pest plants. A series of larger areas of indigenous vegetation of varying quality and stature remain towards the coast.

Long, generally unsealed and often tortuous roads link the small villages, coastal settlements and farms.

2.1 GEOLOGY AND PHYSIOGRAPHY

The following account is based on information from Kamp (1982), King (1930), Kingma (1967), McEwen (1987b), and on interpretation of topographical maps (NZMS260 series).

Eastern Wairarapa Ecological District is predominantly composed of moderately steep to rugged hills (maximum height 663 m a.s.l.) and contains a greatly contorted mixture of greywacke, limestone, siltstone and sandstone. This has produced some very striking landforms, such as the fossiliferous limestone outcrop at Castle Point, marine terraces, fossiliferous coastal reefs, and the series of steep, jagged high ridges known as taipos.

The geological history is complex. In broad terms, marine sedimentary rocks from Mesozoic to Pliocene age have been variously uplifted and intensely faulted. Most of the straight to sinuous, and in places coalescing, faults run northeastward and determine the general alignment of the different rock formations. There are early Cretaceous sandstones, mudstone, alternating sandstone and mudstone, minor igneous rocks and breccia; late Cretaceous sandstone, mudstone, conglomerate and breccia; tertiary mudstone, sandstone and limestone; Quaternary alluvium and coastal sands and minor igneous rocks.

The district has mainly hill and stepland soils from a large range of parent materials. The soils on Tertiary mudstones are moderately deep, while those on more indurated sandstone, argillites and limestones are shallower and more drought-prone. In areas with higher rainfall, the soils are more leached and are generally less fertile. Small areas of soils from loess, with compact subsoils and impeded drainage, occur on rolling lands along the western border of the district (McEwen 1987b).

The terrain is dissected. The chief rivers flowing west to the Wairarapa Plains are the Whangaehu, Tauweru, and Huangarua. The Wainuioru River drains the

centre before flowing into the Pahaoa and turning southeast to the sea. The main rivers of the east are the Owahanga, Mataikona, Whakataki, Whareama, Kaiwhata, Pahaoa, Awhea, and Opouawe. The major rivers have more-or-less flat flood plains c.1 km wide, reaching 2 km along part of the Whareama, and small flats line many lesser rivers and streams flowing through very narrow valleys. However, with the notable exception of the Mataikona and Whareama Rivers, the waterways have become deeply entrenched along parts of their courses during periods of lowered base water levels, and now flow in deep, steep-sided, narrow gullies bordered by consequent terraces. These alluvial terraces are quite extensive in places (elsewhere small and numerous) and most widely represented in the Wainuioru, upper Pahaoa, Tauweru, and Huangarua river systems.

In the west of the Ecological District a wide belt of hills c.15 km across, formed of Pleistocene pumiceous silts and sands with some limestone bands, stretches from about Mauriceville southwards to the foot of the Aorangi Range. Slopes are moderately steep and ridge crests usually broad. The hills nearest to the plains rise to only 250–300 m a.s.l.; further east maximum altitudes increase to c.600 m.

Eastward again, a narrower belt of moderately steep hills with broad-topped ridges, 300–450 m a.s.l., is formed of Upper Miocene, massive, calcareous siltstones and some sandstone and tuffaceous strata. It runs almost the length of the district, southward to a little beyond Wainuioru, abutting far older formations. In the northeast quarter, this Miocene formation forms most of the terrain to within 10 km of the coast. A narrow tongue then runs southward from about Tinui to reach the coast at Uruti Point and Flat Point.

In the central north the upper Tauweru catchment north of Carswell, and part of the Wainuioru catchment southeast of it, contain significant areas of often steep hills up to 540 m a.s.l. composed of Lower Mesozoic argillite and greywacke sandstone and muddy siltstone. The same formation occurs in the south as a 10 km wide belt, from the headwaters of the Pahaoa River to the coast. The highest point on steep and narrow ridges is Mt Adams at 663 m a.s.l. On the southwest side of this belt, over the Awhea and Opouawe catchments, are hills of the same formation and contemporary siltstones and sandstones with extensive crush zones.

Most of the hill country along the east side of the district, for 10–15 km inland as far south as the Pahaoa River mouth comprises lowest Tertiary and uppermost Mesozoic strata of commonly siliceous mudstones, siltstones, and tuffs, with some bentonic mudstones with limestone lenses. The relief is rather variable, with the hills ranging from moderately steep with rounded summits to very steep with narrow ridges, reaching 400–500 m a.s.l. at the most.

Exceptional areas of easy terrain (i.e. with the elevation changing no more than c.60 m) are widely scattered throughout much of the hill country. Three sub-types are apparent: gradually rising foothill slopes; mini-plateau between 200–400 m a.s.l.; and interspersed flats and low rises, most extensive in the upper Wainuioru and Pahaoa River catchments. Occasional flat to near flat surfaces at 100–150 m a.s.l. on the coastal hills between Flat Point and the Kaiwhata River are remnants of a marine bench, predating uplift of the land roughly 80 000 years ago. The highest terraces to the north, above Riversdale Beach, and lower ones between Whareama River mouth and Castle Point, may also be of marine origin.

Along most of the coast, steep hill faces lie close or extremely close to the shore, but a prograded lowland c.10 km long and 4–5 km wide, known as the Homewood

Plains, has replaced a former ocean embayment between the Kaiwhata River and Riversdale Beach. Dissected terraces 20–100 m high occur about the river, between Uruti Point and Riversdale, and along the inland foothills. Between those foothill terraces and the sea is a flood plain crossed by many streams, with low sand rises and marshy swales. An unusually wide (c.1 km) coastal plain to the south stretching c.15 km between Flat Point to near Honeycomb Light is known as Glenburn Plain.

Characteristically, a narrow to extremely narrow, often bouldery, platform separates the ocean and the hills of old, hard, Mesozoic or early Tertiary rock formations. Spectacular rocky reefs, exposed at low tide, commonly fringe the platform. In the southwest, the almost continuous beds of shingle on the Opouawe River and tributaries have created a mainly shingle beach fronting the coastal platform in this short section. Fine sandy to pebbly beaches occur only where the hinterland is formed of soft Tertiary strata and are therefore almost confined to the Homewood and Glenburn shorelines, although there are very local occurrences further north, e.g. at Castlepoint.

2.2 SPECIAL GEOLOGICAL FEATURES

Kenny & Hayward (1996) identified 20 special geological features in the ecological district. Of these, the Mangaopari paleomagnetic section is accorded international importance. Seven sites are of national importance, including the local attraction of a fossil forest at the Kaiwhata River mouth, and twelve sites are regionally significant (listed in Table 1).

Other special geological features include Honeycomb Rock, scenic limestone gorges (e.g. RAPs 106 and 128), the major East Wairarapa Fault and various minor faults running the length of the district, and the distinctive ‘taipos’. “Not all (taipos) are made up of the same kind or age of rock but in every case the feature is an outcropping fin of steeply dipping strata which, being distinctly harder than the surrounding rocks, has been worn down by erosion more slowly.” Taipo is a Maori term meaning an evil spirit or other sinister influence, perhaps applied because the landforms are so unusual (Clark 1989: 161). Taipo can also mean goblin.

2.3 CLIMATE

The following account is based on Thompson (1982).

The Wairarapa experiences sharp and sudden temperature changes and large daily variations in sheltered inland places, typical of eastern areas around New Zealand ranges. The area generally has relatively cold winter night-time minima of 1–3°C and warm summer afternoon temperatures of 20–23°C, although daytime temperatures occasionally rise above 32°C in summer. Mean monthly daytime temperatures range from c.6–18°C with mean annual temperatures around 11–14°C.

Variability in seasonal and annual rainfall is also typical of a New Zealand east coast area. The greatest variation occurs in summer and increases with distance away from the Tararua and Rimutaka Ranges to the west. These ranges create a wind- and rain-shadow effect most clearly distinguished in the Wairarapa Plains Ecological

TABLE 1. IMPORTANT GEOLOGICAL SITES AND LANDFORMS IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT (FROM KENNY & HAYWARD 1996)

IMPORTANCE ¹ & VULNERABILITY ²	NAME	GRID REF.	RAP OR PROTECTED AREA ³
A3	Mangaopari Miocene-Pleistocene paleomagnetic section	S27 172845	-
B2	Pukemuri Stream uplifted marine benches	S28 180613	Tora Coastal Bush, Tora Coast, Oroi Stream, Tora Coastal Flats, Tora Road Duneland (RAPs 47, 48, 144, 281, 495)
B3	Big Hill earth pillars, rills and gullies	S28 182789	Nikorima Bush Remnant, Nikorima (RAPs 273 and 482)
B3	Castle Point Pleistocene sediments	U26 810280	Castle Point Scenic Reserve
B3	Huangaaru River cyclothems	S27 172872	-
B3	Huangaaru syncline flexural slip faults	S27 192928	-
B3	Kaiwhata River mouth fossil forest and Miocene flysch sequence	T27 609967	-
B3	McClouds Trig rock slump	T26 326392	-
C2	Kaiwhata Stream sills	T27 550045	-
C3	Alfredton fault	T25 522548	Alfredton Domain, Tree Hill Tiraumea (RAPs 5, 160)
C3	Carterton fault, Blairlogie Road trace	T26 544266	Rewanui and Rorokoro Gorge Bush (RAP 16)
C3	Castle Point marine terraces	U26 810286	Protected area (Castle Point Scenic Reserve) and/or coast slope (RAP 213)
C3	Dry River fault, White Rock Road scarp	S27 162908	-
C3	Glenburn dike	T28 457797	-
C3	Huangaaru fault	S27 195926	-
C3	Sunnyside Miocene conglomerate	S27 181838	-
C3	Te Kaukau Point Paleocene Amuri Group sediments	S28 124572	Tora Coast (RAP 48)
C3	Three Kings cuestas	U25 815560	Rara Bush (RAP 3)
C3	Whakataki Miocene flysch	U26 825327	-
C3	White Rock Amuri limestone	S28 098570	White Rock Beach (RAP 49)

¹ Importance rankings (Kenny & Hayward 1996:6) are:

- A. international scientific importance;
- B. national scientific, educational or aesthetic importance;
- C. regional scientific, educational or aesthetic importance.

² Vulnerability rankings (Kenny & Hayward 1996:6) are:

- 1. highly vulnerable to complete destruction or major modification by humans;
- 2. moderately vulnerable to modification by humans;
- 3. unlikely to be damaged by humans;
- 4. could be improved by human activity;
- 5. site already destroyed (not necessarily by human activity).

³ Only part of the geological site or landform might occur in the RAP or protected area listed.

District, but still effective over Eastern Wairarapa Ecological District. Annual figures range from 970 mm at Castle Point to 1600 mm in the northern areas of the district (for the period 1941-1970).

Temperatures are ameliorated by maritime influences near the long coastline resulting in less extreme temperatures and reduced temperature variation, although it is exposed to high winds. Northwesterly and southerly winds are the most frequent over the district throughout the year until spring, when northwesterlies predominate. In spring and summer dry foehn winds are common and drier areas usually experience dry spells or droughts of varying severity at least annually. The Wairarapa also receives a high number of sunshine hours. Frost occurs least on the northern and coastal areas. Snow affects higher areas in winter and early spring.

2.4 HISTORICAL VEGETATION COVER

The Eastern Wairarapa Ecological District hill country was once dominated by rimu (*Dacrydium cupressinum*) and northern rata (*Metrosideros robusta*), emergent over a canopy of tawa (*Beilschmiedia tawa*). Although, northern rata was probably not that prominent in the dry eastern parts of the district as it is unlikely it established, along with the other epiphytes. On dry spurs and ridges, hard beech (*Nothofagus truncata*) and black beech (*N. solandri* var. *solandri*) were prominent, especially on the drought-prone soils in the east. Hard beech is now a localised element of the vegetation. Here, summer drought limited the extent of broadleaved species; totara-rich podocarp forest grew on the lower hills while tawa, northern rata, kohekohe (*Dysoxylum spectabile*), pukatea (*Laurelia novae-zelandiae*), and kamahi (*Weinmannia racemosa*) were conspicuously absent. Kowhai (*Sophora microphylla*) and ngaio (*Myoporum laetum*) were a major component of forest fringes in the district (Sawyer *et al.* 1998b).

Most Wairarapa forests were lost to widespread fires around the seventeenth century. By the mid-nineteenth century the resulting cover was still predominantly rarahu (bracken) and low scrub or shrubland, although forest occurred on the hills furthest from the coast, and probably in scattered pockets elsewhere (Hill 1962, 1963; Fyfe 1990; Figure 2). The “hills near Whareama were mainly fern-clad, but with a good deal of aniseed (*Gingidia* sp.) and grass amongst the fern, and at Castle Point the hills were mainly in grass with small quantities of toetoe (*Cortaderia fulvida* and *C. toetoe*), manuka (*Leptospermum scoparium*) and fern.” The generally narrow river valleys held grass and sedgeland, while some wider valleys (e.g. along the Whareama River) contained substantial areas of swamp (Hill 1962:11).

The coastal duneland was probably dominated by pingao (*Desmoschoenus spiralis*) and spinifex (*Spinifex sericeus*) with sand sedge (*Carex pumila*), hinarepe (sand tussock; *Austrofestuca littoralis*), *Calystegia soldanella*, *Pimelea* aff. *arenaria*, *Coprosma acerosa*, taupata (*Coprosma repens*), and other species also present.

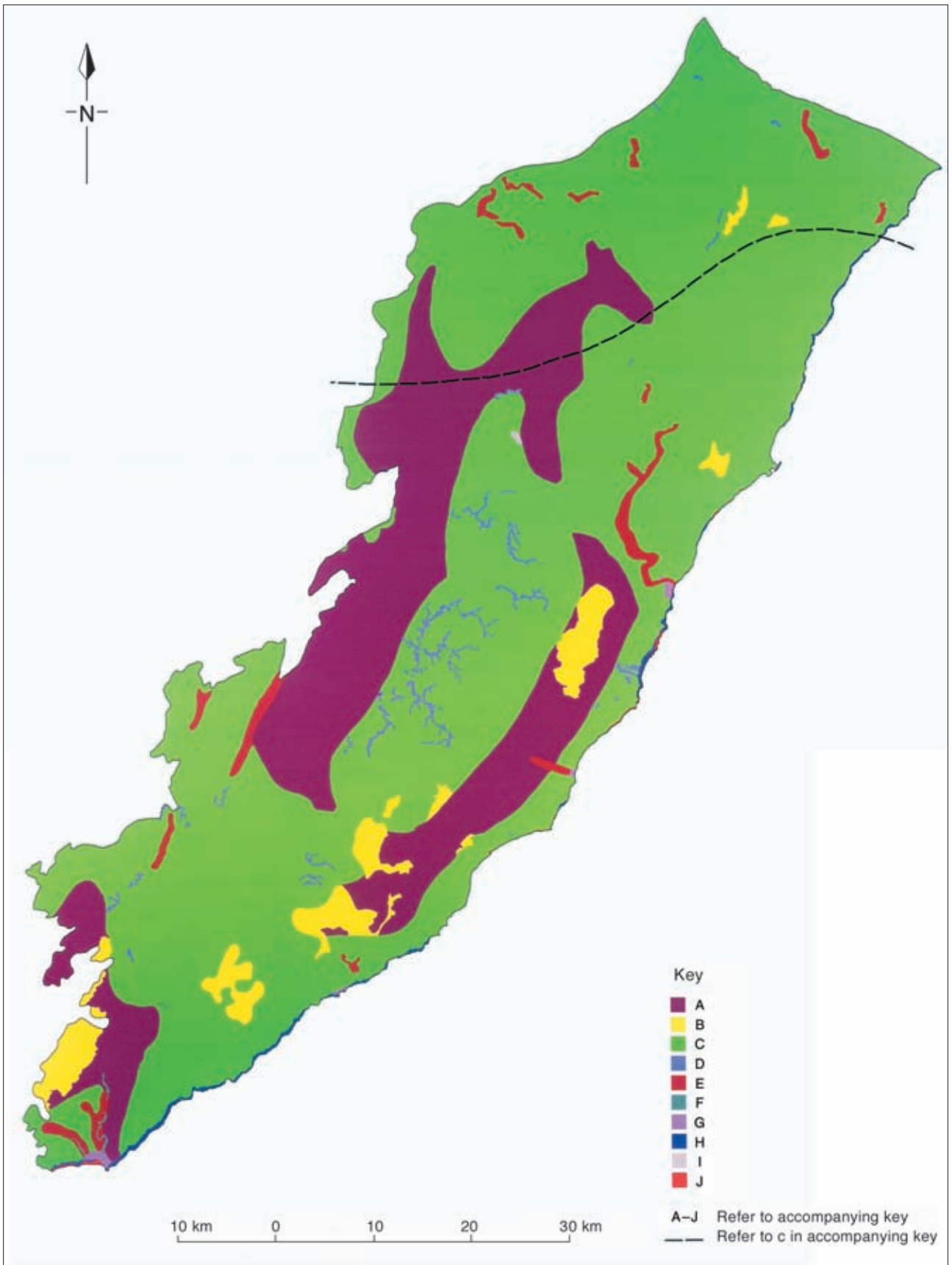


Figure 2. Vegetation of the Eastern Wairarapa Ecological District c. 1853.

Key for Figure 2: Vegetation History Map of Eastern Wairarapa Ecological District c.1853

- A Mixed podocarp-broadleaf forest. Rimu and northern rata over tawa. Totara forest predominant in the more drought-prone east. Kowhai and ngaio at forest fringes, karaka toward the coast. Greatly reduced in extent by fires c.200 years before.
- B Predominantly beech forest, beech-podocarp-hardwood mixture; also greatly reduced by fires. Black beech and hard beech dominant on drier, less fertile, or steep areas. Elsewhere beech was less dominant and more likely to grow in local associations, including rewarewa, maire, kanuka, black beech; rimu, miro, matai, totara, kabikatea, binau, rewarewa, and black beech; and tawa, binau, rewarewa, and black beech, with local hard beech.
- C A mosaic of rarahu (bracken) fernland, sbrubland (especially taubinu, manuka and/or kanuka) and grassland (Agrostis, Poa, Rytidosperma, and Festuca spp. with tutu, spaniard and Gingidia) of varying proportions. 'Extensive Maori cultivation' noted by Smith (1853) on hills near Masterton. Occasional small stands of forest, and an increasing proportion of broad-leaved shrubs and trees in older sbrublands. Small wetlands around river bends, hillside basins, and seepages. Much of the area north of the dashed line may have been forested by "Seventy Mile Bush", however accounts differ (Ropiba 1994 mapped as it bush, c.f. Hill 1962).
- D Incised gullies probably held mostly scrub with patches of beech and mixed podocarp-broadleaved forest, and cliff vegetation in steeper parts. Cliff vegetation also at Castlepoint.
- E Large areas of freshwater wetland and grassland along broad river valleys in the lower reaches of the Opouawe and Kaiwhata Rivers, less extensive areas in small river valleys. Sedges, rushes, native grasses, toetoe.
- F Shingle river beds predominantly unvegetated but with grasses and scattered shrubs likely on the more stable areas.
- G Estuarine wetlands. Around the mouths of the Whareama, Kaiwhata, Pabaoa and Opouawe Rivers, including turfs and saltmarsh (oioi, sea rush, marsh ribbonwood).
- H A mosaic of duneland vegetation (see duneland type below; also with taupata, Muehlenbeckia astonii, marsh ribbonwood), tussockland and coastal wetland (raupo, harakeke, rushes, sedges).
- I Cliff vegetation (wbarariki, toetoe, grasses and herbs).
- J Unvegetated intertidal flats merging into duneland dominated by pingao and spinifex, with binarepe, Calystegia soldanella, Pimelea aff. arenaria, Coprosma acerosa, Muehlenbeckia complexa and other species.

Sources: Smith 1853, Hill 1962, 1963; Nicholls 1974; Ropiba 1994; Sawyer et al. 1998.

3. Flora

3.1 GENERAL

Checklists of vascular plant species recorded in the Eastern Wairarapa Ecological District have been compiled (Appendices 1 and 2), based on information held by New Zealand herbaria, on plant checklists (Sawyer 2001) and on information provided by local botanists. In total 607 indigenous plant species have been recorded from the District, and 223 adventive plant species.

3.2 THREATENED AND LOCAL PLANTS

In Eastern Wairarapa Ecological District 45 plant species of national conservation concern have been recorded (Hitchmough 2002; see Table 2). They include threatened species and those that are naturally rare. Some, including *Alepis flavida*, *Juncus holoschoenus* var. *holoschoenus*, *Peraxilla tetrapetala* and *Simplicia laxa*,

are already thought to be extinct in the Ecological District (Sawyer *et al.* 1998b). New populations of some species continue to be discovered (e.g. *Tupeia antarctica* in RAP 24; G. Foster pers. comm. and *Pimelea tomentosa* in RAP 36).

TABLE 2. PLANTS OF NATIONAL CONSERVATION CONCERN IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT.

SCIENTIFIC NAME	COMMON NAME	NATIONAL STATUS (HITCHMOUGH 2002)
<i>Alepis flavida</i>	Yellow mistletoe	Gradual Decline
<i>Amphibromus fluitans</i>		Nationally Endangered
<i>Anemethele lessonii</i>		Sparse
<i>Anogramma leptophylla</i>	Jersey fern	Gradual Decline
<i>Austrofestuca littoralis</i>	Shore tussock	Gradual Decline
<i>Botrychium bifforme</i>		Sparse
<i>Brachyglottis compacta</i>	Castle Point groundsel	Range Restricted
<i>Brachyglottis pentacopa</i>	Mount Percy daisy	Range Restricted
<i>Brachyglottis sciadopbila</i>		Gradual Decline
<i>Celmisia spectabilis</i> subsp. <i>lanceolata</i>		Range Restricted
<i>Cbionochloa beddiei</i>		Range Restricted
<i>Coprosma pedicellata</i>		Gradual Decline
<i>Coprosma wallii</i>		Gradual Decline
<i>Cordyline australis</i>	Cabbage tree	Gradual Decline
<i>Crassula mataikona</i>		Data deficient
<i>Crassula peduncularis</i>		Nationally Endangered
<i>Daucus glochidiatus</i>	New Zealand carrot	Serious Decline
<i>Desmoschoenus spiralis</i>	Pingao	Gradual Decline
<i>Doodia squarrosa</i>		Gradual Decline
<i>Genoplesium nudum</i>		Sparse
<i>Gratiola nana</i>		Gradual Decline
<i>Hypolepis dicksonioides</i>	Giant hypolepis	Sparse
<i>Isolepis basilaris</i>		Serious Decline
<i>Juncus holoschoenus</i> var. <i>holoschoenus</i>		Nationally Endangered
<i>Korthalsella salicornioides</i>	Dwarf/leafless mistletoe	Sparse
<i>Leptinella tenella</i>		Sparse
<i>Mazus novaezeelandiae</i> subsp. <i>novaezeelandiae</i>	Dwarf musk	Serious Decline
<i>Meliccytus crassifolius</i>	Thick-leaved mahoe	Sparse
<i>Mimulus repens</i>	Maori musk	Sparse
<i>Muehlenbeckia astonii</i>	Shrubby tororaro	Nationally Vulnerable
<i>Olearia gardneri</i>		Nationally Critical
<i>Peraxilla tetrapetala</i>	Red mistletoe	Gradual Decline
<i>Pimelea</i> aff. <i>arenaria</i>	Sand daphne	Serious Decline
<i>Pimelea tomentosa</i>		Serious Decline
<i>Pittosporum obcordatum</i>		Nationally Endangered
<i>Pterostylis porrecta</i>		Data deficient
<i>Ranunculus macropus</i>	Swamp buttercup	Gradual Decline
<i>Rytidosperma petrosum</i>		Range Restricted
<i>Simplicia laxa</i> ¹		Nationally Endangered
<i>Stegostyla atradenia</i>		Sparse
<i>Tetragonia tetragonioides</i>	New Zealand spinach	Sparse
<i>Teucrium parvifolium</i>		Gradual Decline
<i>Tbelymitra</i> aff. <i>ixioides</i>		Sparse
<i>Tupeia antarctica</i>	White mistletoe	Gradual Decline
<i>Urtica linearifolia</i>	Swamp nettle	Gradual Decline

¹ *S. laxa* was historically found on the north side of Haurangi forest in limestone river beds (see Townsend *et al.* 1998a), however it is not clear whether it was within the Eastern Wairarapa Ecological District.

Thirty-six regionally threatened plant species have been recorded (Empson & Sawyer 1996; listed in Appendix 3). These are species that may be more abundant elsewhere in the country, but in Wellington Conservancy are so rare or in decline that their survival in the region is in doubt. Some of these species, such as *Carex buchananii*, are already believed to have gone extinct in the district. Some species, although not considered nationally or regionally threatened, are known from only a very few sites in the Ecological District. Examples include *Potentilla anserinoides*, *Clematis quadribraactiolata*, *Nertera scapanioides*, *Myosotis pygmaea*, *Olearia furfuracea* and *Pseudowintera axillaris* (Sawyer *et al.* 1998).

The *national status* of plants used above was derived from a recent report by the Department of Conservation (Hitchmough 2002). The terms used are defined in the following document: Molloy *et al.* 2002. Classifying species according to threat of extinction: A system for New Zealand. Department of Conservation. Wellington, New Zealand.

3.3 DISTRIBUTION LIMITS AND ENDEMIC PLANTS

Many species reach their distribution limit in the Eastern Wairarapa Ecological District. The relatively large population of *Muehlenbeckia astonii* at Honeycomb Light (RAP 41) is the northern limit for this species, as is the population of *Brachyglottis greyi* in RAP 17. *Olearia furfuracea* also reaches its southernmost limit in the district (Sawyer *et al.* 1998b).

Some species are endemic to the District. These include *Brachyglottis compacta* (the Castlepoint groundsel—endemic to Castlepoint) and *Brachyglottis pentacopa* (the Mount Percy daisy—endemic to Mount Percy). The grass *Chionochloa beddiei* is endemic to the southern Wairarapa (including Aorangi and the southern part of the Eastern Wairarapa).

4. Fauna

Wildlife in Eastern Wairarapa Ecological District was historically more diverse and abundant than at present. Subfossil moa bones have been found at Castle Point, Mataikona and at coastal sites elsewhere. Those sites are sometimes associated with early Polynesian campsites. There are significant subfossil cave deposits of birds at Ruakokoputuna which indicate that the present bird fauna is greatly reduced from that of the past (McEwen 1987). Early writers noted kereru and high numbers of kaka in Wairarapa forests, as well as kakariki (parakeet), huia, weka, and tui. Rivers and wetlands harboured a diverse range of birds (Hill 1962).

Subfossil records for large species of lizard also indicate a much broader range over the North Island than their present, relict island populations. Skeletal material of *Cyclodina alani* and *Hoplodactylus duvaucelii* has been found in several North Island caves including the Haurangi caves near Martinborough (Worthy 1987). Marine mammals were once common along the coast of the Eastern Wairarapa

Ecological District until harvesting in the 19th century substantially reduced their numbers (Sawyer *et al.* 1998b).

Several introduced animal pests are present, including red deer, feral cat, Norway rat, ship rat, mice, hedgehog and mustelids.

Introduced pigs were present in scrub, fern and swamp country by the mid-1800s (Hill 1962), probably at high densities, as Smith (1853) noted an abundance of both pigs and eels around the northwest of the district.

Wildlife species recorded from Eastern Wairarapa Ecological District are listed in Appendix 4. The 21 species of national conservation concern in the district (15 birds, 4 fish, 1 mammal and 1 reptile) are listed in Table 3. Regionally threatened animals recorded in Eastern Wairarapa Ecological District are listed in Appendix 5 (32 birds, seven reptiles, one invertebrate species).

TABLE 3. NATIONALLY THREATENED ANIMALS IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT (HITCHMOUGH 2002)

COMMON NAME	SCIENTIFIC NAME	NATIONAL STATUS (HITCHMOUGH 2002)
Birds		
Australasian bittern	<i>Botaurus poicoptilus</i>	Nationally Endangered
Banded dotterel	<i>Charadrius bicinctus</i>	Gradual Decline
Black-billed gull	<i>Larus bulleri</i>	Serious Decline
Black-fronted dotterel	<i>Charadrius bicinctus bicinctus</i>	Gradual Decline
Black shag	<i>Phalacrocorax carbo novaehollandiae</i>	Sparse
Caspian tern	<i>Sterna caspia</i>	Nationally Vulnerable
Grey duck	<i>Anas superciliosa superciliosa</i>	Serious Decline
New Zealand dabchick	<i>Poliiocephalus rufopectus</i>	Sparse
New Zealand falcon	<i>Falco novaeseelandiae</i>	Gradual Decline
New Zealand pigeon	<i>Hemiphaga novaeseelandiae novaeseelandiae</i>	Gradual Decline
Reef heron	<i>Egretta sacra</i>	Nationally Endangered
Spotless crane	<i>Porzana tabuensis plumba</i>	Sparse
Spur-winged plover	<i>Vanellus miles</i>	Coloniser
Welcome swallow	<i>Hirundo tabitica neoxena</i>	Coloniser
White-fronted tern	<i>Sterna striata</i>	Gradual Decline
Fish		
Brown mudfish	<i>Neobanna apoda</i>	Gradual Decline
Giant kokopu	<i>Galaxias argenteus</i>	Gradual Decline
Lamprey	<i>Geotria australis</i>	Sparse
Longfinned eel	<i>Anguilla dieffenbachii</i>	Gradual Decline
Shortjawed kokopu	<i>Galaxias postvectis</i>	Gradual Decline
Reptiles		
Spotted skink	<i>Oligosoma lineocellatum</i>	Gradual Decline
Mammals		
Long-tailed bat	<i>Chalinolobus tuberculata</i>	

The *national status* of animals was derived from a recent report by the Department of Conservation (Hitchmough 2002). The terms used are defined in the following document: Molloy *et al.* 2002. Classifying species according to threat of extinction: A system for New Zealand. Department of Conservation. Wellington, New Zealand.

4.1 BIRDS

A total of 47 indigenous bird species and 19 introduced bird species have been recorded, including 15 species that are priorities for conservation management by the Department of Conservation (see Table 3) and 31 species identified as being regionally threatened (DOC 1996a) (listed in Appendix 5).

4.2 REPTILES

Eleven reptile species have been recorded in the Ecological District including records of one of national conservation concern (spotted skink) and five regionally threatened lizard species (see Appendix 5). Eastern Wairarapa Ecological District is the stronghold of the North Island population of spotted skink (see Table 3).

4.3 FISH

Six freshwater species of fish have been recorded, of which five (giant kokopu, longfin eel, brown mudfish, shortjaw kokopu and lamprey) are priorities for species recovery work because of their national status. The record of brown mudfish from Eastern Wairarapa is old and the species now may not be present there.

4.4 INVERTEBRATES

The katipo spider (*Latrodectus katipo*) is classed as regionally threatened (DOC 1996a). It is believed to be in danger of regional extinction due to competition for habitat with the South African spider (*Steatoda capensis*).

4.5 MAMMALS

Long-tailed bats occur in the Alfredton area (G. Foster pers. comm.) and are now listed as a nationally threatened species (see Table 3). The rare Hector's dolphin has been reported in the Wairarapa (DOC 1996a), however this record is considered to be a vagrant movement of a species more generally confined to higher latitudes, and it is therefore not included on the list of nationally threatened species for the district. There have also been sightings from the coast, of Andrew's beaked whale, elephant seal, and leopard seal. New Zealand fur seals have recently started breeding at Honeycomb Light (B. Dix pers. comm.).

5. Human history and land use

The Wairarapa was home to the Ngati Kahungunu, about 780 of whom lived here in 1849, most on the Wairarapa Plains. Elsewhere in the Wairarapa, villages were situated at the mouths of river valleys along the east coast, not all of which were permanently inhabited.

“The Maori economy was based largely on subsistence crops such as kumara (*Ipomoea batatas*) and the semi-cultivated fern root supplemented by hunting and collecting. Karaka (*Corynocarpus laevigatus*), tawa, tutu (*Coriaria arborea*), titoki (*Alectryon excelsus*), and fuchsia (kotukutuku; *Fuchsia excorticata*) trees all bore edible berries that were highly prized. Ducks in the lake (Lake Wairarapa, to the west), birds in the forest and pigs in the scrub provided abundant quarry for the hunter. Eels in the lake and swamp and fish in the lake and sea were very important items of native diet” (Hill 1962:14). Parts of the hill country toward the northern Wairarapa Plains were cultivated by Maori by the mid-1800s (Smith 1853).

“Burning of scrub, fern and tussock to promote fresh growth for stock was regularly carried out and casual travellers also fired the fern ... Where, however, the forest was fired, tall *Sonchus* spp. immediately sprang up” (Hill 1963). Some native herbs (particularly spaniard) and small shrubs were cleared from open country by hand, and exotic pasture grasses sown, e.g. sweet vernal (*Anthoxanthum odoratum*), timothy (*Phleum pratense*), Yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomerata*), couch (*Elytrigia repens*) (Hill 1963). Other adventive species arrived with stock and goods, and spread from Maori and European gardens. Sheep, cattle, horses, rabbits, possums, goats, hedgehogs, cats, dogs, exotic fish and numbers of invertebrates were introduced or spread into the area, joining the pigs and kiore already present.

Sheep and cattle browsing and trampling severely affected the native vegetation. Cattle preferentially selected broadleaf shrubs and young trees and “... thus had significant effects upon the species composition of all forest areas to which they had access, and in the absence of fences, these areas must have been quite extensive. The fern and scrub was also opened up by trampling (by cattle) and thus made available for sheep. ‘Cattle ... speedily destroy the fern and grass takes its place .. the fern has, in many parts, disappeared, and thousands of acres of the native rye-grass, and other grass are now to be found’ (Allom 1849, p. 21).” Sheep also had significant effects on the species composition within areas to which they had access, rapidly reducing the distribution of various plant species, particularly *Aciphylla* and *Gingidia* (Hill 1963:46).

Today sheep stations cover large areas of the district, with smaller areas of cattle farming and increasing numbers of large radiata pine forestry blocks.

5.1 THREATENING PROCESSES

The major threats to the indigenous ecosystem and habitats of the Eastern Wairarapa Ecological District are habitat destruction (such as drainage of wetlands) and habitat fragmentation (through subdivision or partial clearance) associated with commercial

land management and land-use change. The spread and effects of adventive species (e.g. goats, possums, pigs, deer, mustelids, rodents, magpies, hedgehogs, old man's beard (*Clematis vitalba*), Cape ivy (*Senecio angulatus*), marram (*Ammophila arenaria*), and wilding pines (*Pinus* spp.) are a severe, often insidious threat to indigenous communities and populations. Effects include competition, predation and habitat alteration. Many forest and scrub remnants are unfenced and grazed by stock or feral animals that deplete or eliminate the understorey and damage trees and shrubs. Over time, species diversity has reduced and canopy health has deteriorated as gaps have not been replaced by new growth. If the causal factors continue to operate, these areas will eventually be reduced to treelands. The Eastern Wairarapa Ecological District contains many remnants at this stage of deterioration that will gradually disappear altogether. However many remnants retain their regenerative capability and can be restored to good condition with appropriate management (e.g. stock exclusion, pest control).

Other threats include fire, coastal erosion and coastal protection works, coastal residential and lifestyle development, water pollution, soil erosion, and physical damage to plant communities and their substrate by visitors and recreational vehicles (DOC 1996a). Active management is often required to protect indigenous habitats, in addition to legal protection. Regular inspections of habitats may also be necessary to monitor change.

5.2 RELATION TO ADJOINING ECOLOGICAL DISTRICTS

The Eastern Wairarapa Ecological District is bordered by the following ecological districts (Thompson 1982; McEwen 1987a & b):

Aorangi Ecological District (Aorangi Ecological Region) to the southwest

A steeply dissected greywacke and argillite range reaching 983 m, cut by approximately northeast faults, and draining into the Ruamahanga River and the sea. Large tracts of indigenous vegetation ranging from coastal forest, scrub, and grassland in the south to higher stature vegetation and black beech (*Nothofagus solandri* var. *solandri*), red beech (*Nothofagus fusca*) and silver beech (*Nothofagus menziesii*) forests in the north, with localised areas affected by logging, fires, and revegetation. The district is frequently swept by strong winds with torrential rain.

Wairarapa Plains Ecological District (Wairapa Plains Ecological Region) to the west

Low-lying Pleistocene and Holocene alluvial terraces and plains between the ranges and hill country of surrounding districts, developed by marine and alluvial deposition. The southern portion is dominated by Lake Wairarapa, its associated wetlands, and Lake Onoke. The Ruamahanga River drains the length of the plains toward the small area of sand and shingle beach within the district, fed by predominantly gravel-bed streams. The area is dry with very warm summer and moderate winter temperatures and is largely sheltered from wind in the north, and more exposed to frequent strong winds in the south. The original size and extent of forest and shrub remnants and wetlands have been substantially reduced.

Puketoi Ecological District (Pahiatua Ecological Region) to the northwest

A long narrow inland district of low ranges and dissected hills, generally above 300 m a.s.l., that includes the steep Puketoi Range bordering Eastern Wairarapa. The area is cool and wet with drainage to the Ruamahanga River in the south, and Manawatu River in the north. Most of the original cover of podocarp-broadleaved native forest was cleared for farming. Small amounts of black beech and red beech are found in riparian situations in the northwest only.

Eastern Hawkes Bay Ecological District (Eastern Hawkes Bay Ecological Region) to the north

A large, warm, summer-dry ecological district of low hills (most <600 m a.s.l) and terraces, extending to coastal dunes with a largely adventive cover over wave-cut platforms with rocky headlands. Mixed forests throughout the Ecological District, and black beech in the south, have mostly been cleared and modified for farming.

6. Outline of survey methods

6.1 RECONNAISSANCE PHASE

The reconnaissance phase of the Eastern Wairarapa Ecological District PNAP survey was initiated in 1988, but principally carried out between 1993–1996. During this phase, existing ecological information was compiled from published and unpublished sources (see References and Selected Bibliography) and study sites were identified using topographic maps and aerial photographs. Sites were inspected in the field, where possible, or viewed from an adjacent area or high point through binoculars. Data was collected on the “Phase 1” plot sheet in Appendix 12 and presented in a reconnaissance report which included maps of identified sites and a preliminary table of protected areas (Sawyer *et al.* 1998). Subsequent information on potential and existing study sites and protected sites was incorporated into this report as it became available.

6.2 ECOLOGICAL DISTRICT BOUNDARIES

The Ecological District was originally distinguished by McEwen (1987b) using criteria of topography, geology, climate and vegetation (specifically the absence of tawa, however this species occurs at several sites in the district; refer to Sections 7 and 8). These boundaries were published at 1:500 000 scale and have been refined on the basis of landform for the more detailed maps used in this report. In addition, the boundary with Aorangi Ecological District has been simplified by following the 500 m contour, switching to the Haurangi Forest Park boundary in the north (Nicholls 1997b) (Figure 1). The Ecological District boundary was digitised into the Geographic Information System (GIS) at Wellington Conservancy Office, Department of Conservation.

6.3 BIOCLIMATIC ZONES

Three broad bioclimatic zones have been identified for the Eastern Wairarapa Ecological District (refer to Figure 3).

Coastal

Extending approximately 1-2 km inland from the sea coast.

Semi-Coastal

All other land up to 300 m a.s.l. or a little less, over narrow shaded valleys.

Lowland

Occasional exposed areas of varying size over 300 m a.s.l., amounting to about 15% of the district.

The bioclimatic zone boundaries were digitised into the GIS at the Wellington Conservancy Office, Department of Conservation.

6.4 GEOLOGICAL AND LANDFORM UNITS

The Ecological District has been stratified into 13 landform units as illustrated in Figure 4. These units were used in conjunction with bioclimatic zones (see above), and vegetation type information, to classify study sites into comparable ecological units for the assessment of representativeness. Brief descriptions of the landform units are provided below.

1. *Sand beaches*

Relatively short sections of the coastline, wherever abundant supplies of fine alluvia have been carried by rivers and streams from the few hinterland areas of comparatively soft Tertiary rock formations.

2. *Shingle beaches*

These are confined to the southernmost coast, where an abundant supply of coarse gravel is delivered by the Opouawe River.

3. *Estuarine channels*

These are within the area of salt water influence (shown by vegetation, salt water fauna, or brackish water) and extend up the seaward stretches of rivers.

4. *Coastal platforms*

A narrow (to extremely narrow) ocean strand comprising most of the coastline, variably bare or bouldery except for some small fans at stream mouths. Commonly fringed by rock reefs on the seaward side. Narrow strips of sandy beach often found along the coastal platform have not been mapped due to considerations of scale.

5. *Wetlands*

Rare and small; generally confined to coastal flats.



Figure 3. Bioclimatic zones of the Eastern Wairarapa Ecological District.

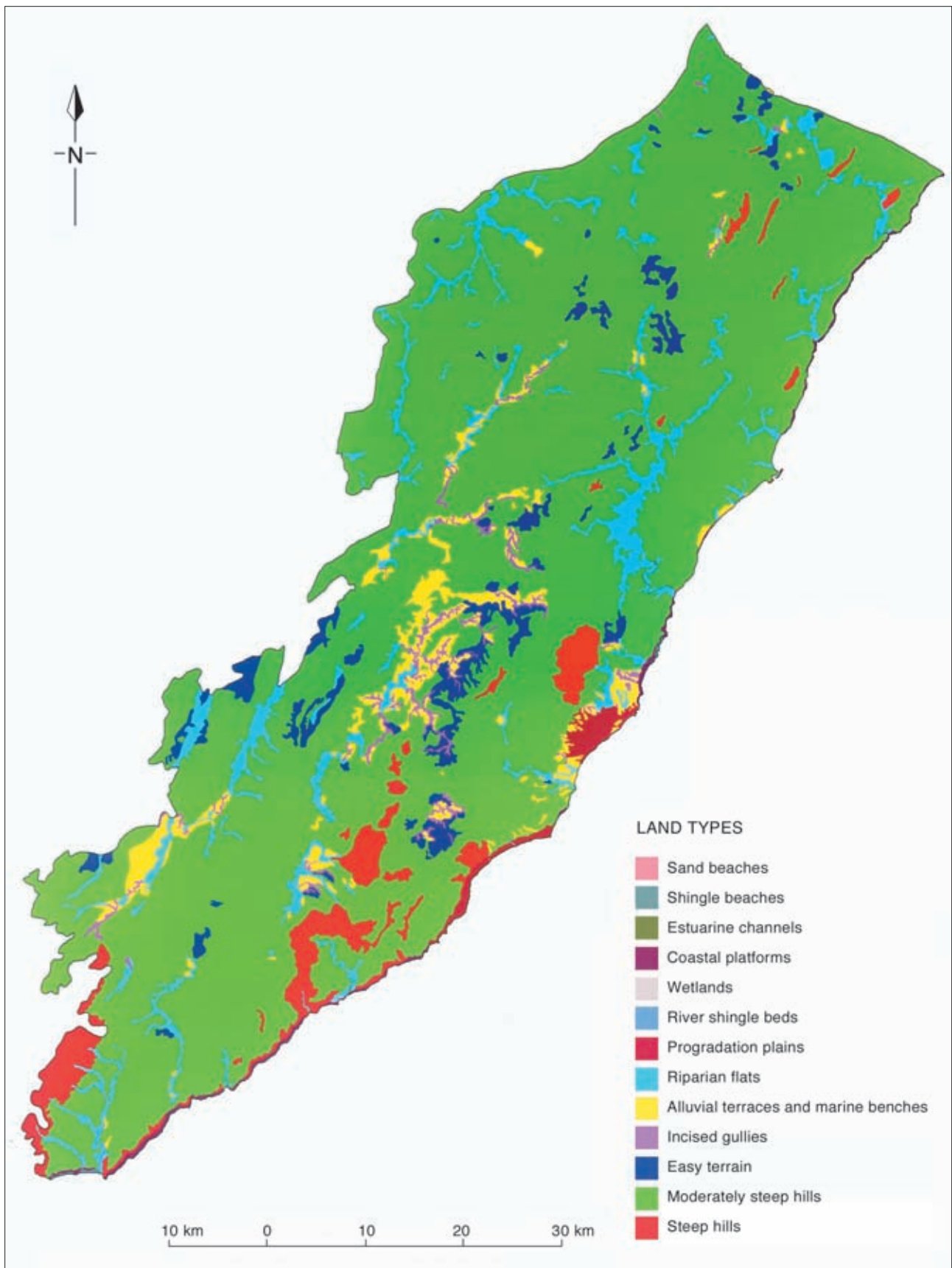


Figure 4. Land types of the Eastern Wairarapa Ecological District.

6. *River shingle beds*

The Awhea and Opouawe river and tributaries have nearly continuous bed loads of coarse gravels derived from erosion of greywacke and other indurated rocks with extensive crush zones.

7. *Progradation plains*

The only substantial area occurs in the coastal area between the Kaiwhata River and Riversdale Beach, a lowland resulting from the infilling of a former ocean embayment. A central flood plain is fringed inland by terraces and seaward by low sand rises (former dunes). A lesser coastal plain occurs a short distance away to the south.

8. *Riparian flats*

More-or-less flat, fairly extensive flood plains border reaches of the Mataikona and Whareama Rivers, in the northwest. Riparian flats of other rivers have become limited in area because of pronounced entrenchments.

9. *Alluvial terraces and marine benches*

The common dissection of riparian flats has led to a range of extensive to fragmented steep-sided terraces, lining most rivers and large streams. The majority occur adjacent to the Tauweru, Huangarua, Wainuioru, and upper Pahaoa Rivers, and some tributaries.

Flat to nearly flat surfaces at 100–150 m a.s.l. on coastal hills between Flat Point and the Kaiwhata River, and possibly others at a lower altitude further north, on or near the coast, are remnants of marine planation and deposition of gravels preceding uplift of the land.

10. *Incised gullies*

Narrow, deep, and in places tortuously aligned gullies are usually the result of river and stream entrenchment during a phase of lowering regional river base level.

11. *Easy terrain*

Occasional, exceptional areas of subdued relief, with an altitudinal range of no more than 60 m, at the most. They occur variously as foothills, elevated plateau-like terrain amid the hills or interspersed flats, undulating terrain and low rises. The latter sub-type is common in the upper Wainuioru and Pahaoa catchments.

12. *Moderately steep hills*

The greater part of the hill country is composed of moderately to very locally steep terrain. Though ranging from a mere 250 m or so up to occasional altitudes of c.600 m a.s.l., ridge crests and high point summits are characteristically broad. Mainly composed of relatively soft Pleistocene and upper Tertiary sedimentary strata and well veneered with loess, they are very prone to slipping and slumping during periods of heavy rain.

13. *Steep hills*

The hills in the east and south of the ecological district are predominantly hard Miocene or early tertiary rock formations. This has commonly resulted in fairly steep terrain, especially on uppermost faces where crests become narrow. Mount Adams (663 m a.s.l.) is the highest peak in the district. Boundaries of the above units were digitised into the GIS, Wellington Conservancy, Department of Conservation.

6.5 VEGETATION AND HABITAT CLASSES

The vegetation of the Eastern Wairarapa was classified into fifteen vegetation and habitats classes (Beadel *et al.* 1998a).

Vegetation classes present in each study area were determined from interpretation of the reconnaissance site information, combined with checking of aerial photographs and discussions with DOC staff.

TABLE 4. INDIGENOUS VEGETATION AND HABITAT CLASSES IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT

VEGETATION AND HABITAT CLASS	APPROXIMATE EXTENT IN 1853 (HA)	APPROXIMATE EXTENT IN 1998 (HA)	1998 AREA AS % OF 1853 AREA
Primary forest	107 480	3 280	3
Modified primary forest	0	8 000	-
Secondary forest	0	6 230	-
Secondary scrub and shrubland	145 520	25 340	17
Treeland	0	1 070	-
Cliffs	316	40	13
Freshwater wetland (non-forest)	4 250	207	5
Intertidal flats (unvegetated)	74	-	0
Duneland	990	786	80
Exotic vegetation	0	57	-
Estuarine wetlands or saline wetlands	437	1	0.2
Tussockland	147 250	21	0.01
River shingle beds	270	10	4
Estuarine channels	0	1	-
Unvegetated	0	50	-
Total indigenous vegetation	407 000	45 093	11

6.6 EVALUATION

The maps (1:50 000 scale)¹ produced in the reconnaissance stage of the study, showed the extent of indigenous vegetation in the Ecological District (Sawyer *et al.* 1998). These were compiled into a single base map for the ecological district.

Maps showing boundaries of bioclimatic zones and geological and landform units were printed from the GIS at the same scale and overlain onto the base map. The type and extent (in ha) of all ecological units (i.e. each unique combination of bioclimatic zone, landform type, and vegetation class) was then estimated from existing information for each study site and protected natural area. These data were entered into a computer database (Microsoft Excel v.4.0), and used to derive tables showing the extent of natural vegetation of each class on different land types in the coastal, semi-coastal and lowland bioclimatic zones when compared with estimated

¹ A small number of additional unprotected natural areas were identified from DOC staff reports or personal observation and added to the existing study sites (e.g. Homewood Road Bush; RAP 30).

historical vegetation¹. An indicative estimate could be made from this information as to which ecological units were most common in the district, which units have been most reduced from their former extent, and which units are in danger of being eliminated from the district altogether. The total remaining area of protected and unprotected indigenous vegetation in each land type and bioclimatic zone was also recorded (Beadel *et al.* 1998b).

The data were used in conjunction with site information (as represented in the reconnaissance report and any subsequent information) to assess the relative ecological values of the study sites. Assessments used the following primary and secondary criteria.

Primary Criteria

1. *Present versus past extent.* An estimate of the relative extent of an indigenous vegetation class remaining in the ecological district compared with that in an 1853 reconstruction.
2. *Landscape and ecological diversity.* The diversity of physical and ecological features, and the patterns that exist within the area(s) under consideration.
3. *Naturalness.* Most mainland ecosystems are modified but the degree of naturalness remaining in each site is an important consideration.
4. *Size.* Areas which are relatively large (i.e. compared to the mean size of remaining areas of indigenous vegetation in an ecological district) are preferred to small areas. Larger areas are likely to be more viable in the long term.
5. *Shape of area.* Areas that are essentially compact are preferable to areas that are highly convoluted or fragmented.
6. *Surrounding landscape.* The degree to which the area is protected/buffered by the surrounding landscape.
7. *Fragility and threat.* An assessment of known or likely threats and the capability of the vegetation or habitat to resist change initiated by the threat agent(s).
8. *Representativeness.* The most important criterion. One or more of the best examples of the characteristic (i.e. previously common) communities within relevant land types in each bioclimatic zone were identified as natural heritage sites. Each site was compared with all other sites containing any of the same ecological units for area and quality of habitat.

(cf. O'Connor *et al.* 1990; Myers *et al.* 1987; Diamond 1975; Young and Mitchell 1994; Shaw 1994; Ogle 1981; Whaley *et al.* 1995; Beadel *et al.* 1996a, b; 1998b).

Other Criteria

The presence of special or rare features and the area's rating as a fauna habitat was also assessed. Refer to page 2 of the Ecological Assessment Sheet

¹ Historical vegetation cover (c.1853) was estimated for each landform unit (within each bioclimatic zone).

Assessment Form

An assessment form (see below) was designed using these criteria (based on Whaley *et al.* 1995; see also Beadel *et al.* 1996a, b; 1998b). High, medium and low values were defined for each criterion.

Status of Recommended Areas for Protection

Each significant site was assigned to one of five categories, reflecting its relative condition and importance in terms of the criteria described above. Some sites were found, on the basis of existing information, to be either fully protected; no longer present; comprised predominantly of exotic or adventive species; outside the Ecological District boundary; or otherwise too small or poor quality for inclusion. Those sites were excluded from the classification.

Recommended Area for Protection

These sites are the best quality, largest or only remaining unprotected representative examples of indigenous vegetation or wildlife habitats on particular land types within the bioclimatic zone in the Ecological District. This category also includes intact altitudinal or geographic sequences across the Ecological District, or diverse assemblages of land type, vegetation, and bioclimatic character. Only these sites are described and mapped in this report.

High

These sites are good quality representative examples of vegetation and/or wildlife habitat that complement RAPs, and existing protected natural areas. They may include:

- a. relatively small sites with vegetation types or plant taxa under-represented or not represented in protected natural areas;
- b. relatively large areas, with features represented in protected areas or RAPs, but which are nevertheless worthy of protection;
- c. sites containing vegetation types which would once have been more common in the ecological district and are unrepresented in protected natural areas or RAPs, but which have been degraded by weed invasion, animal damage, or other harmful agents.

Moderate-High

These sites are often smaller than RAPs or “High” sites, with interesting or special features, although the ecological unit(s) is (are) usually in a lower quality condition.

Moderate

These sites include natural areas that contain features represented in the above categories. These areas are often smaller, and may be considerably modified, but are nevertheless worthy of protection.

Unprotected natural areas not ranked as RAPs or of biological importance

These sites are generally those that do not support significant populations or communities of indigenous plants and animals. They are often highly modified and comprised predominantly of exotic species; or too small to be considered viable.

Ecological Assessment Sheet - Eastern Wairarapa 1997

Site no.
Area
Altitudinal range

Grid reference
Ecological district
Date

Primary
Modified primary
Secondary
Exotic
Induced

Landscape Diversity		
Bioclimatic Zone	No. of land types	No. of vegetation types

EVALUATION CRITERIA	L	M	H
Present versus past extent: Relative extent of vegetation class remaining in ecological district compared with that in 1853 reconstruction. H 0-10% vegetation class remaining in ecological district M 11-30% vegetation class remaining in ecological district L 31-100% vegetation class remaining in ecological district			
Landscape and ecological diversity: H An altitudinal sequence; or multiple vegetation types, land types, and bioclimatic zones M Spans more than 1 bioclimatic zone or more than 2 land types L Single feature (includes 1 land type in 1 bioclimatic zone, and 1 or more vegetation types)			
Naturalness: Involves the assessment of the degree to which an area (e.g. vegetation ecosystem) has been free from the effects of human disturbance and intervention. An assessment of the indigenous content of the area. H Low-level or nil human disturbance (includes secondary vegetation established following natural disturbance) M Moderate level of human disturbance (e.g. relatively good quality secondary vegetation developed following human disturbance, low levels of selective logging 20 or more years earlier) L Exotic/induced/heavily logged			
Size of area (ha)¹: Compared to mean size of remaining natural areas in Ecological District.			
Shape of area (ha) : H Primarily compact, no major constrictions M Irregular or convoluted L Highly convoluted or discontinuous			
Surrounding landscape : H Part of a continuous natural landscape M Part of a semi-continuous natural landscape/one of many discrete natural areas - some linkages L Very isolated from other areas			
Fragility and threat : H High level of threat, likely to destroy or substantially degrade/damage the vegetation or habitat M Threats present but low likelihood of occurrence; vegetation relatively resilient or able to recover from threatening process L No threats known			
Representativeness¹: Combination of above criteria; above rankings used as guide to evaluate representativeness. H Best, relatively large, good quality example; only example of type which was formerly more extensive M Similar to other areas that occur elsewhere in the district L Degraded, small; better quality examples exist elsewhere in the ecological district.			

¹ The values for **representativeness** and **size of area** will differ for each Ecological District depending on the extent of remaining indigenous vegetation.

Ecological Assessment Sheet (Page 2)

Secondary Criteria

Known notable features

None known

<i>Distribution limits</i>	
<i>Nationally rare veg. Types</i>	
<i>Taxa endemic to ED</i>	
<i>Features rare in district (incl. only known site for taxa in ED)</i>	
<i>SSWI rank</i>	
<i>Other</i>	

Threatened and local plants

Cameron *et al.* (1995)

Notes:

Class:	No:
<i>Extinct</i>	
<i>Critical</i>	
<i>Endangered</i>	
<i>Vulnerable</i>	
<i>Rare</i>	
<i>Insufficiently known</i>	
<i>Local</i>	

Wildlife

Molloy *et al.* (1994)

Category:	No. of spp.:
A	
B	
C	
I	
O	
M	

Category:	No. of spp.:
<i>Extinct</i>	
<i>Presumed extinct</i>	
<i>Endangered</i>	
<i>Threatened</i>	
<i>Rare</i>	
<i>Regionally threatened</i>	
<i>Occasionally rare</i>	

Category

Justification

RAP

High

Moderate-high

Moderate

X

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

The classification of sites into categories was reviewed and approved in a meeting with local Department of Conservation technical specialists, including discussion of all potential RAPs, and non-RAP sites, before the field survey commenced. High, Moderate-High and Moderate sites were later reviewed individually by DOC staff and their status confirmed or altered.

6.7 FIELD SURVEY

Field survey of 75 sites was undertaken (RAPs 1-49 and sites 431, 502a, 507, 513, 1443, 1517, 1803, 2003a, 2003b, 2003c, 2326, 2409, 2410, 2445, 2446, 2510, 2806, 2916, 3412, 3413, 3415, 3427b, 3428, 3501, 3802b, 3902) in 1998. Data was collected using the plot sheet in Appendix 11 (from Beadel 1994). Vegetation types were determined and mapped in the field onto aerial photographs. Significant features, conditions and threats to those sites were identified.

The above process identified 49 probable RAPs (comprising 98 study sites¹), and 18 study sites that could not be conclusively accorded RAP status on the basis of existing information. Field survey of all these sites was then undertaken. As the survey progressed, landowners were visited or contacted to obtain permission for access to their property. A letter outlining the reasons for the survey was given to the landowners visited. Access to part or all of six study sites was denied and descriptions and maps for these study sites have been prepared partially or wholly from existing sources. Twenty-six sites initially classed as RAPs were assigned to other categories following field survey.

Landowners denied access for field survey to a number of sites. Some of those sites have been listed as RAPs. They are: RAP 1 (Meech Pongaroa Bush); RAP 12 (Mt. Percy); RAP 29 (Wainuioru River Bush); RAP 34 (Rocky Hills Extension) and RAP 35 (Flat Point Dunelands).

In general High, Moderate-High and Moderate (see above section) ranked sites were not assessed during the 1998 field survey. Further field assessment is required to determine the final status of these sites. Some current classifications may require modification as some sites may no longer contain indigenous habitat, or may be of a different size or quality than perceived from available information.

¹ In several instances, several study sites were later combined to form a single RAP.

7. What natural vegetation remains?

The historical context provided under the heading Historical Vegetation Cover (see Section 2.5) was used to calculate the approximate extent and proportion of different vegetation/habitat classes previously present on the various land types in each bioclimatic zone. The baseline with which to compare present vegetation used is 1853 rather than the more commonly used 1840, because of the availability of historical information (e.g. Smith 1853; Hill 1962, 1963; Ropiha 1994).

Much of the 1853 vegetation cover had been affected by, or resulted from widespread fires that occurred c. 200 years previously, and, if allowed, would have continued to develop into different communities, such as forest. Maori were also settled along the coast in the 1850s and early European squatter farms were established, although it was still the eve of most European settlement and the radical changes to come (refer to Section 2.8; Hill 1962).

The Eastern Wairarapa Ecological District now retains little of its former natural cover (c. 45 000 ha or 11% of the land area). And of this only 1% occurs in protected natural areas. Most remnants are small, often fragmented, commonly with a grazing-depleted understorey, and many are secondary; however collectively they support a diverse flora and fauna (Appendices 1 and 3).

The greatest losses, in terms of indigenous vegetation cover, have been (in order of decreasing magnitude of loss): lowland and semi-coastal tussockland; semi-coastal freshwater wetlands; lowland forest; semi-coastal forest; and semi-coastal scrub and shrubland. Most of these vegetation classes now occupy less than 10% of their estimated extent in 1853. The semi-coastal bioclimatic zone has particularly suffered with less than 4% of indigenous vegetation cover remaining on many land types, including the substantial areas of riparian flats, alluvial terraces, marine benches, and easy terrain (each occupying greater than 10 000 ha). Only c. 12% of moderately steep hills (which at c. 238 452 ha comprises most of the land area in this zone) retains indigenous vegetation. The same land type comprises most of the lowland bioclimatic zone, also with only around 12% indigenous cover left.

The percentage cover of indigenous vegetation within land types of the coastal bioclimatic zone varies considerably. Within the six largest land types, those around 1 000 ha or more in extent, five (progradation plains, riparian flats, alluvial terraces, moderately steep hills and steep hills) have an indigenous vegetation cover of less than 10%. Of these five, riparian flats and alluvial terraces are the most denuded, each with 2% indigenous vegetation cover. However, one of the six largest land types (coastal platforms) has over 21% cover of indigenous vegetation. Of the six remaining land types, five (sand beaches, shingle beaches, estuarine channels, wetlands and river shingle beds) have between 12–58% indigenous cover, while one (incised gullies) has no indigenous vegetation cover.

Scrub and shrubland comprise the most common remaining indigenous vegetation (c. 25 300 ha; Table 4), consisting mainly of low grazed kanuka, tauhinu, and manuka, with varying proportions of other species. Some remnants are diverse and show excellent potential for continued development with suitable management, while

others exhibit less diversity and tend toward monocultures, but could potentially provide a nursery cover for other species.

Secondary forest totals c.6200 ha representing a range of states of development, condition, and size. Primary forest now covers only c.3200 ha, also in various states of condition and modification (Table 4). Black beech is widespread in the district whereas hard beech (*Nothofagus truncata*) and red beech are very local. There are small areas of podocarp forest and extensive areas of secondary forest without podocarps, beech species or tawa. Kamahi-dominant forest is notably absent from the Eastern Wairarapa Ecological District.

Stands of karaka become frequent nearer the coast although few are regenerating. Tall taupata, kohekohe and wharangi (*Melicope ternata*) also occur in the coastal zone and provide a transition to the beach cliff and sand dune communities.

Approximately 207 ha (Table 4) of freshwater wetlands remain; mainly in the semi-coastal zone, and c.807 ha of duneland and tussockland, most along the coast. Hill country taipos (such as Rocky Hills and Pahaoa Gorge) are floristically varied and provide a reservoir for non-forest species, while the forest and shrub remnants of the Mount Percy area are some of the most varied and important of the coastal part of the Ecological District (McEwen 1987).

8. What values are currently protected?

The term Protected Natural Area (PNA) was defined by the Department of Lands and Survey (1984) as ... *a legally protected area, characterised by indigenous species or ecosystems, in which the principal purpose of management is retention of the indigenous state...*

Existing PNAs in the Eastern Wairarapa Ecological District amount to 4466 ha, c.1% of the total area. These are described briefly in Appendix 6 and their locations marked on Figure 5 and include reserves administered by the Department of Conservation, QEII National Trust covenants and sites protected under the Tasman Accord. They exclude areas protected specifically for reasons other than wildlife conservation (e.g. recreation reserves, marginal strips).

QEII covenants total c.1312 ha of the protected areas in Eastern Wairarapa Ecological District. The majority of protected areas in the District is administered by the Department of Conservation.

The largest protected areas (>100 ha) are located in moderate to steep hill country in the upper semi-coastal and lowland bioclimatic zones. Rewa Bush Stewardship Area is the largest at c.1288 ha and includes both podocarp and beech forests, and broadleaved scrub. It is described as the “best remnant of Eastern Wairarapa forest types” (DOC 1996a: 297). The podocarp forest includes rimu, kahikatea (*Dacrycarpus dacrydioides*), miro (*Prumnopitys ferruginea*), matai (*Prumnopitys taxifolia*), totara (*Podocarpus totara*), and rewarewa (*Knightia excelsa*) (Sawyer *et al.* 1998).

Tora Bush Scenic Reserve (549 ha) protects the largest black beech remnant in south Wairarapa outside the Aorangi Range (DOC 1996a); also included are areas of mixed broadleaved forest and scrub. The reserve is described and mapped in Wassilieff, Clark & Gabites (1986).

The Rocky Hills Sanctuary Area (400 ha) is the only protected area managed by DOC which supports indigenous forest on a taipo landform. Forest types found at Rocky Hills include podocarp (totara, miro, rimu), podocarp-broadleaved, and broadleaved forests, all of which are now uncommon in the Ecological District. These three protected areas (above) are believed to be sufficiently large to provide long-term viability of their plant communities (Sawyer *et al.* 1998). The Rocky Hills Sanctuary area also benefits from the contiguous Rocky Hills QEII covenant (108 ha).

The Tinui Covenant covers 440 ha comprising five fragments of black beech-broadleaved forest. Substantial areas of black beech are also protected in the Ruamahanga Covenant (181 ha) and the Lindis Bush and Mt Percy Bush QEII covenants (124 ha and 203 ha respectively). The latter includes the only site of the endemic Mt Percy daisy, *Brachyglottis pentacopa*.

The Tauweru Stewardship is noteworthy for its uncommon rimu-tawa-miro-kamahi forest type (Sawyer *et al.* 1998). Castle Point Scenic Reserve (61.2 ha) includes the largest protected coastal community in the Eastern Wairarapa and features spectacular landforms (a limestone promontory, reef, coastal lagoon, and sheer-sided hill) as well as Nationally Endangered plants including the endemic Castle Point groundsel (*Brachyglottis compacta*). The high use and popularity of the area, in conjunction with the fragile dune habitat, indicate potential conflicts of land use (Sawyer *et al.* 1998).

Representativeness

The current protected area network in the Eastern Wairarapa Ecological District covers less than 1% of the former extent of many ecological units and requires substantial additions of carefully chosen areas. This is not possible for some vegetation classes such as tussockland (formerly widespread) because there are insufficient remaining areas of this cover type.

Scrub and shrubland continues to be the most common vegetation class but protected examples are not adequately represented for any bioclimatic zone or land type. This is particularly so for the coastal zone where only 0.4% (29 ha) of the previous extent of this vegetation class is protected. Forest also previously covered a large total area in the semi-coastal and lowland bioclimatic zones, although less than scrub and shrubland. A greater proportion of this (c.2.5% and c.4.3% in the semi-coastal and lowland bioclimatic zones respectively, including secondary and modified forest) is protected in both zones, but further representation is required for all previously forested land types.

Remaining semi-coastal freshwater wetlands (158 ha) amount to only c.4.5% of their former area and unless irreversibly degraded, should be protected and managed for restoration. At present only c.9.4 ha are protected for conservation purposes. In the coastal zone, only 0.1 ha of estuarine wetland are currently protected, which is less than 0.1% of the historical total (370.5 ha). Coastal duneland also requires further protection; at present c.5% of the former area of duneland (987.9 ha) is protected.

While a slight difference in the proportion of the total area protected is evident for the various bioclimatic zones, the figures are all extremely low: coastal 1.1%; semi-coastal 0.8%; and lowland 2.1%.

9. What values need protection?

Forty-nine RAPs totalling 12 786 ha were identified using the information gathering process and evaluation criteria detailed in Section 3. That is approximately 11% of the total area still covered by native vegetation in the District. The selection process emphasises selection of vegetation types and land type units inadequately protected in each of the bioclimatic zones, particularly where the greatest loss of these 'ecological units' has occurred. Some disparities could not be addressed as insufficient, or no areas of some ecological units have survived.

9.1 COASTAL BIOCLIMATIC ZONE

In the coastal zone, indigenous vegetation covers less than 25% of the main land types (i.e. those c.1 000 ha or greater). Of these, riparian flats (2% native cover; e.g. Whakataki River Mouth), alluvial terraces and marine benches (2%; e.g. Uruti Point Dunes, Glenburn Station Bush, Honeycomb Light/Kahu Rock Headland, Pahaoa, and Tora Coast) had their indigenous cover most depleted, and remaining remnants should be a priority for protection. Coastal tussockland (Mataikona Tussockland and Flat Point Dunelands) is now extremely rare. Freshwater wetlands (Whakataki River Mouth, Uruti Point Dunes, Waimoana Wetland, and Pahaoa) have been reduced by 93.3% and are very much depleted. No primary forest remains in the coastal bioclimatic zone and it is therefore worthy of restoration.

Increased protection of coastal forest, scrub, shrubland, duneland and saline or estuarine wetlands (e.g. Mt Percy Bush, Whareama River Mouth, Uruti Point Dunes, Flat Point Dunelands, Glenburn Station Bush, Tora Coast, and White Rock Beach) are warranted to improve their representation in the protected area network. Other important features include NZ fur seal haulouts and breeding areas, and habitats that support endangered or local species and do not currently have adequate protection.

9.2 SEMI-COASTAL BIOCLIMATIC ZONE

Since 1853, freshwater wetlands have been reduced by 95%. All remaining freshwater wetlands (Lagoon Hills-Heights, Bankview, Bush Stream Wetland, Makara River Bush Remnants, Castle River) warrant protection.

Protection of all remaining primary forest areas (Mt Percy Bush, Ngaumu Bush, Mt Adams-Pahaoa River, Lagoon Hills-Heights) is also warranted as based on the 1853 cover only 3% remains in the semi-coastal zone, and 4% in the lowland bioclimatic

zone. Substantial areas of scrub and shrubland should also be protected, particularly on riparian flats, alluvial terraces and marine benches, easy terrain, and moderate to steep hills (e.g. Mt Percy Bush, Kuamahanga Bush, Wainuioru River Bush, Pukunui Bush, Mt Adams–Pahaoa River).

Riparian flats, progradation plains, easy terrain, and especially alluvial terraces and marine benches retain a minimal amount of indigenous habitat (4%, 6%, 3% and 2% respectively)—urgent action is necessary to protect remaining areas. RAPs identified on these land types are Meech Pongaroa Bush, Turnberry Flats, Tauweru River Banks, Rewanui and Rorokoro Gorge Bush, Ngaumu Bush, Kuamahanga Bush, Wainuioru River Bush, Homewood Road Bush, Pukunui Bush, and Lagoon Hills-Heights.

9.3 LOWLAND BIOCLIMATIC ZONE

The comparatively small proportion of remaining lowland primary forest (only 4%) represents the only remnants of extensive tracts that covered most of this zone in the 1850s. To attain protection of c.9% of the former area will require the protection of all remaining examples of primary and secondary forest (see the following RAPs: Mokiri Bush, Patitapu Bush, Mt Percy Bush, Rocky Hills Extension, Pukunui Bush, Mt Adams–Pahaoa River, Lagoon Hills-Heights).

Scrub and shrubland (e.g. Neds Hill Bush–Tauweru Extension, Pukunui Bush, Mt Adams–Pahaoa River) is more extensive but is inadequately represented in protected areas. Tussockland was not found in the lowland zone during the current survey. If present, it would be a high priority for legal protection as it was a formerly extensive landscape component.

9.4 PRIORITIES FOR PROTECTION

In addition to the above specific ecological units, the eastern hills contain some large blocks of primary and regenerating vegetation. These have the potential to form the backbone of a semi-continuous natural habitat extending nearly the length of the Ecological District, to the forested Aorangi Range in the south. They are a particularly valuable ecological resource for the maintenance and restoration of some of the district's natural character. Several RAPs have been proposed to complement the existing protected natural network in this area (including Mt Percy Bush, Rewa Bush Extension, Rocky Hills Extension, Pukunui Bush, Mt Adams–Pahaoa River, Lagoon Hills-Heights).

The Wellington Conservancy Conservation Management Strategy (DOC 1996a) identified the following priorities for protection in the Wairarapa Area (that were incorporated in the evaluation of RAPs):

- natural vegetation in wetlands;
- riparian zones;
- significant habitats for threatened species or geological features;
- regenerating areas with links to larger areas of native vegetation;
- areas with some pre-European vegetation.

Forty-nine RAPs (12 786 ha) have been identified and mapped for the Eastern Wairarapa Ecological District. These areas are considered the highest priority for protection because they are the largest or best examples of unprotected indigenous vegetation in the district, or the largest or best areas of inadequately protected vegetation types on particular landforms in each bioclimatic zone, or they complement existing protected areas. However, even if all RAPs are secured, the sum total of protected areas would still represent only 11%, 10% and 12% of the indigenous vegetation in the coastal, semi-coastal and lowland bioclimatic zones respectively.

Ninety-five sites of High (13 750 ha), 139 sites of Moderate-High (7 236 ha) and 214 sites of Moderate biological importance (4 508 ha) were identified from the site information provided in Appendix 7, using the criteria in Section 6.6. While not necessarily the best or largest examples of their type, these sites are identified as significant indigenous vegetation or wildlife habitats and their protection is strongly recommended to improve the representativeness of the protected natural area network in the Eastern Wairarapa Ecological District.

The site information and comments in Appendix 7 have been reproduced from the draft PNAP reconnaissance report (Sawyer *et al.* 1998). Further information on existing and new study sites, from publications, reports, or discussion with DOC staff, has been incorporated where applicable. However most of the content has not been subsequently verified by field checking, and is reported 'as provided' with only minor editing.

Information presented on the 796 reconnaissance sites and subsequent additions includes their geographic location, size and dominant species, and in many cases includes comments on the ecological significance of the site. Information from Sawyer *et al.* (1998) for sites that are not Recommended Areas for Protection or of High, Moderate-High or Moderate biological importance is also provided (see Appendix 8).

10. Recommended areas for protection

Refer to Appendix 7 for information about other sites of High, Moderate-High or Moderate biological importance in the Eastern Wairarapa Ecological District.

RECOMMENDED AREAS FOR PROTECTION

1. Meech Pongaroa Bush
2. Turnberry Flats
3. Rara Bush
4. Ihuraua River
5. Alfredton Domain

6. Neds Hill Bush-Tauweru Extension
7. Mokiri Bush
8. Patitapu Bush
9. Mataikona Tussockland
10. Rahui Station Bush
11. Tinui River Bush
12. Mt Percy Bush
13. Springhill Station
14. Tauweru River Banks
15. Whakataki River Mouth
16. Rewanui and Rorokoro Gorge Bush
17. Mangapakeha Taipos Bush
18. Otahoua Swamp
19. Waipapa Stream Bush
20. Rewa Bush Extension
21. Whareama River Mouth
22. Makahaka Stream
23. Whakatahine River Remnants
24. Kourarau Valley & Pukemangamana
25. Ngaumu Bush
26. Uruti Point Dunes
27. Bankview
28. Kuamahanga Bush
29. Wainuioru River Bush
30. Homewood Road Bush
31. Te Wharau Bush
32. Moetapu Bush
33. Bush Stream Wetland
34. Rocky Hills Extension
35. Flat Point Dunelands
36. Pukunui Bush
37. Mt Adams-Pahaoa River
38. Waieokino Stream Bush
39. Waimoana Wetland
40. Glenburn Station Bush
41. Honeycomb Light/Kahu Rock Headland
42. Honeycomb Rock Terrace
43. Makara River Bush Remnants
44. Lagoon Hills-Heights
45. Pahaoa
46. Castle River
47. Tora Coastal Bush
48. Tora Coast
49. White Rock Beach

RAP 1 MEECH PONGAROA BUSH

Area:	13.2 ha
Altitudinal range:	140–180 m
Grid reference:	NZMS260 U25 807673
Geological and landform units:	Easy terrain
Study area no.:	513
Survey methodology:	Existing information, 1979 aerial photographs, site visit 22 February 2000 (A. Rebergen).

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. (Rimu)-(totara)-(kahikatea)/(kahikatea)-(tawa)/(<i>Coprosma areolata</i> - <i>C. rigida</i> - <i>C. propinqua</i> - <i>Melicytus micranthus</i> - <i>Melicope simplex</i> - <i>Lophomyrtus obcordata</i>) tree-shrubland.	Rolling downs

Landform

Rolling downs with swampy valley floors at the head of a tributary of the Owahanga River.

Vegetation

A very species-rich tree-shrubland regenerating following logging, with localised wetland sedges and rushes. If allowed to, this may develop into forest similar to the kahikatea-totara-rimu-matai/tawa-horoeka-rewarewa-kanuka type found nearby at Pongaroa Scenic Reserve (Wassilieff *et al.* 1986; A. Townsend, pers. comm.). Some large totara and kahikatea present. Locally dense regeneration of divaricating shrubs, especially *Coprosma areolata*. Tawa forests showed significant die-back

Flora

Recorded taxa include ramarama, pokaka, *Olearia virgata*, *Blechnum filiforme*, *Melicytus ramiflorus* × *M. micranthus* hybrids and *Mazus novaezeelandiae* subsp. *novaezeelandiae* (seen at three sites in the forest). The RAP also has a variety of small-leaved shrub species and may potentially contain other interesting or rare plants.

Fauna

Common forest birds present, including NZ pigeon (feeding in tawa on 22/2/2000), tui, fantail, grey warbler, Australasian harrier and welcome swallow.

Threat/modification

Extensively modified by relatively recent logging. The site is mostly fenced and grazed very occasionally.

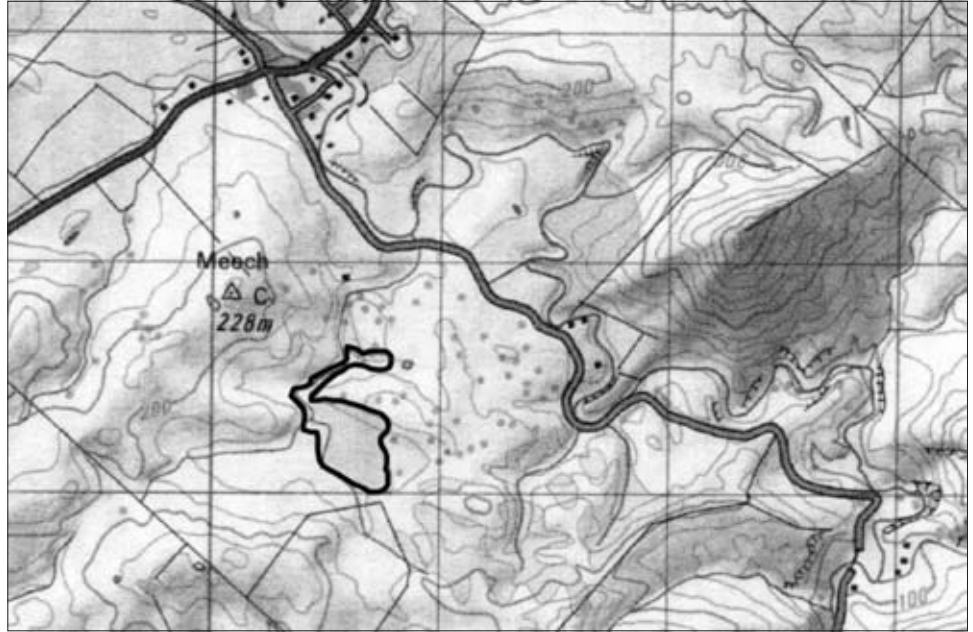
Discussion

The RAP is the largest remaining area of semi-coastal treeland on the easy terrain land type within the Eastern Wairarapa Ecological District. It is representative of a vegetation class that has been heavily reduced in extent (<1% of the original cover remains). It lies at the northern limit of the ecological district, and shows affinities with parts of the Eastern Hawkes Bay Ecological District (e.g. Pongaroa Scenic Reserve).

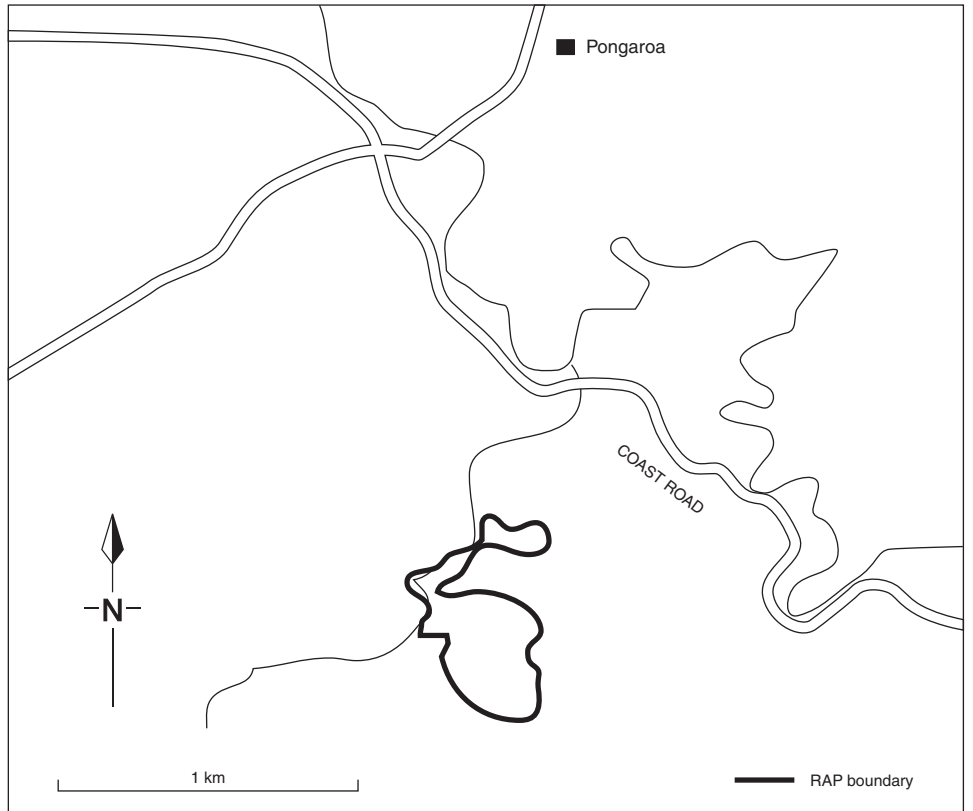
References

Wassilieff *et al.* 1986; Sawyer *et al.* 1998, Rebergen, 2000a.

Location of RAP 1, Meech Pongaroa Bush.



Site of RAP 1, Meech Pongaroa Bush.



RAP 2 TURNBERRY FLATS

Area:	12.2 ha
Altitudinal range:	140 m
Grid reference:	T25 567577; 563577
Geological and landform units:	Riparian flats
Study area no.:	321
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Kahikatea/tawa-kahikatea-(horoeaka) forest [understorey: poataniwha- <i>Melicytus micranthus</i> -(<i>Coprosma propinqua</i>)-(C. <i>areolata</i>)-(C. <i>rotundifolia</i>); canopy includes titoki, hinau, houhere, occasional kohuhu, rewarewa and kanuka, also localised matai-kanuka-kahikatea].	Alluvial terrace
Semi-coastal	2. Kahikatea/houhere-horoeaka-(kanuka) forest [understorey: <i>Coprosma propinqua</i> -C. <i>rotundifolia</i> -bush lawyer-New Zealand jasmine-(pohuehue)].	Alluvial terrace
Semi-coastal	3. (Kahikatea)-(ti kouka)/ <u>leafless rush</u> -gorse-Californian thistle/pasture rushland ⇆ pasture to west. Occasional, local kanuka.	Alluvial terrace
Semi-coastal	4. (<i>Juncus</i> sp.)-(<i>Rorippa palustris</i>)-(water pepper) mud-herbfield at pond edges ⇆ (Kahikatea)-(ti kouka)-(willow)/leafless rush-(purei)-(Carex sp.) sedge-rushland.	Pond and surroundings, depression in alluvial terrace
Semi-coastal	5. Houhere-kanuka-kahikatea-(kowhai)-(ti kouka) treeland.	Alluvial terrace
Semi-coastal	6. Houhere-hawthorn-(matai)-(tarata) forest [understorey: <u>poataniwha</u> - <i>Melicytus micranthus</i> -small-leaved milk tree-tawa-hawthorn].	Alluvial terrace
Semi-coastal	7. Tawa/houhere- <u>kanuka</u> -New Zealand jasmine-pohuehue-(horoeaka) forest.	Alluvial terrace
Semi-coastal	8. Kahikatea/kowhai-(matai)-(horoeaka)/ <u>leafless rush</u> -Californian thistle-pasture rush-treeland.	Alluvial terrace
Semi-coastal	9. <u>Matai</u> -kahikatea treeland.	Alluvial terrace

Landform

Floodplain occupying a bend of the Waipori Stream.

Vegetation

A mosaic of tawa, kahikatea and houhere forest, mixed treeland, and non-forest wetlands including an artificially deepened pond system. The latter wetlands blend into pasture in places.

Flora

Gratiola nana (classed as Gradual Decline, Hitchmough 2002) occurs in this RAP (Wellington Botanical Society 1996). This is the only known occurrence of this species in the Wellington Conservancy. A diverse assemblage of small leaved shrubs including rohutu, various *Coprosma* species, *Melicytus micranthus*, poataniwha,

rohutu × ramarama hybrids, and juvenile kowhai and houhere are present. The adjacent QEII covenant 'Suckling Bush' also contains the uncommon species kotukutuku, kamahi, and wheki ponga (Wellington Botanical Society 1996).

Fauna

Tui, shining cuckoo, kingfisher, fantail and grey warbler were recorded in 1997 (Rebergen 1997g).

Threat/modification

The area is grazed by sheep. Hawthorn, blackberry and Californian thistle are locally common.

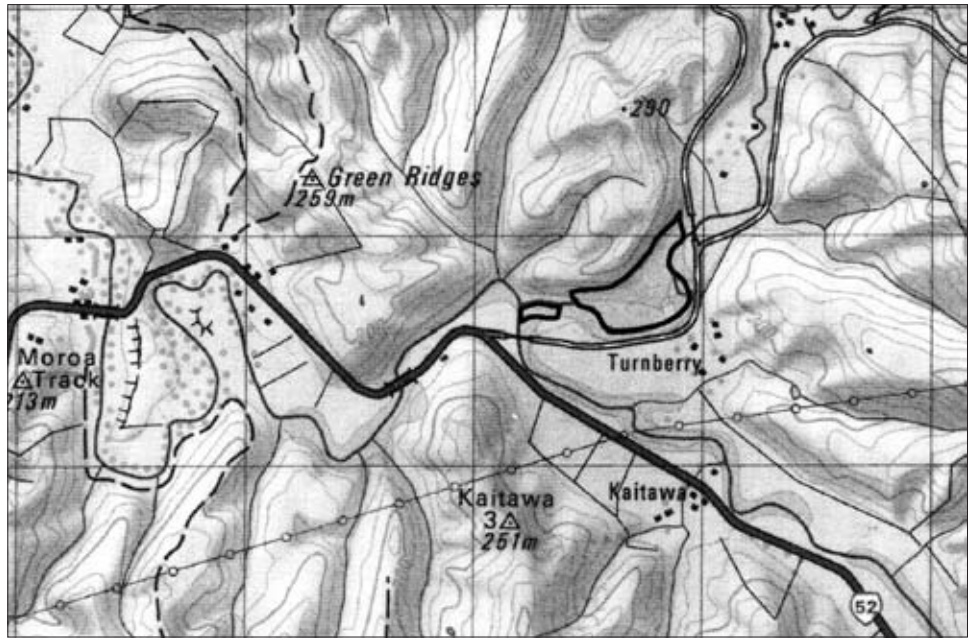
Discussion

Riparian forest and wetlands have largely been cleared or drained throughout the ecological district, and little of either vegetation type remains. This reasonably diverse RAP combines both wetlands and good quality forest in one site, including tawa forest. It complements the contiguous, Suckling Bush QEII covenant (on hill slopes), and will benefit from this proximity to a good seed source and buffer if managed for recovery. Most of the area is bounded by fences or by the stream itself.

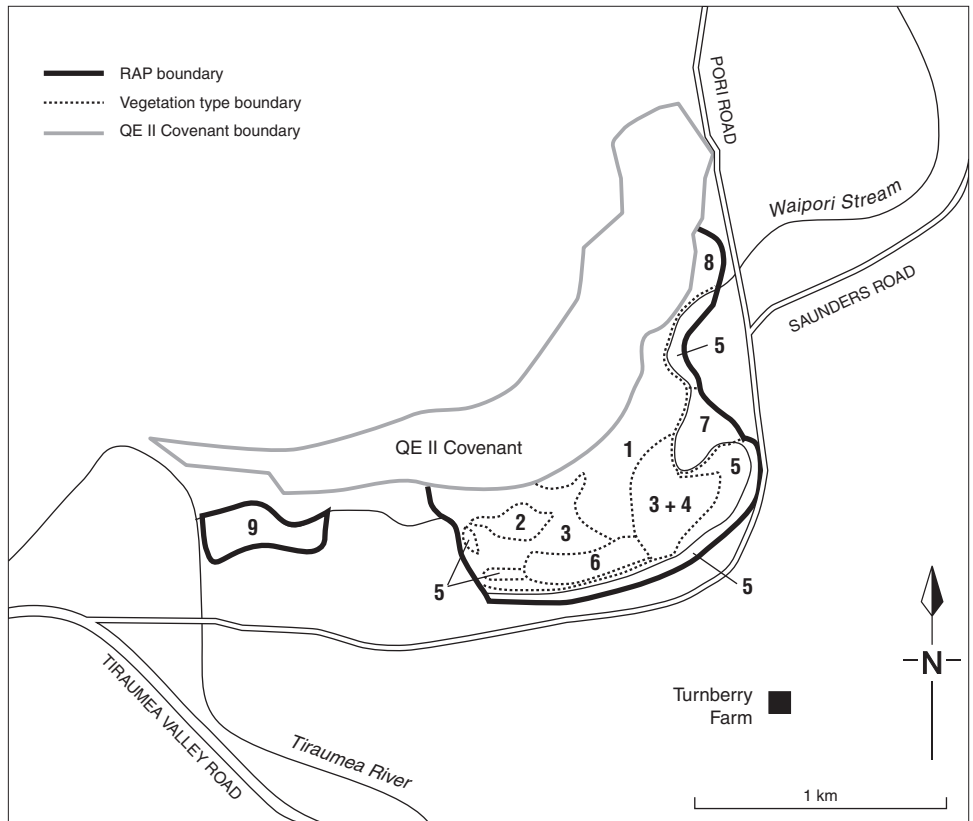
Comments

Rebergen 1997g; Wellington Botanical Society 1996.

Location of RAP 2,
Turnberry Flats.



Site of RAP 2, Turnberry Flats.



RAP 3 RARA BUSH

Area:	134.3 ha
Altitudinal range:	120–460 m
Grid reference:	NZMS260 U25 805530
Geological and landform units:	Moderately steep hills & steep hills
Study area no.:	502
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Rewarewa-tawa-(hinau)-(black beech)/ <u>titoki-porokaiwhiri</u> -tawa-kanuka-kowhai forest [understorey: <u>mahoe-porokaiwhiri-mamaku-kawakawa-kareao/ongaonga/bare ground-<i>Lastreopsis glabella</i></u> -(<i>Pellaea rotundifolia</i>); some small areas of almost pure tawa canopy].	Hillslope
Semi-coastal & lowland	2. Kanuka-houhere-mamaku-kohuhu-putaputaweta/ <u>manuka</u> forest.	Hillslope
	3. (Kanuka)-(houhere)/ <u>manuka</u> -gorse-tauhinu-kanuka scrub [understorey: kanuka- <i>Coprosma rhamnoides</i> / <u>pasture</u>].	Hillslope

Landform

A long stretch of southeast-facing hillslope connecting over a watershed ridge into a gully system in the headwaters of a tributary of the Pakowhai River. The gully system is contiguous with the gully system of a QEII covenanted area.

Vegetation

Large areas of secondary scrub and forest, induced through human clearance of the original forest cover for logging and agriculture.

Flora

Typical species only were recorded.

Fauna

Kereru and typical forest birds were recorded.

Threat/modification

Grazing by domestic stock and large numbers of feral goats has reduced both the abundance and diversity of understorey species and negatively affected the regeneration of canopy species. Fencing to exclude stock and the control of feral animals, particularly goats, is a high priority.

Discussion

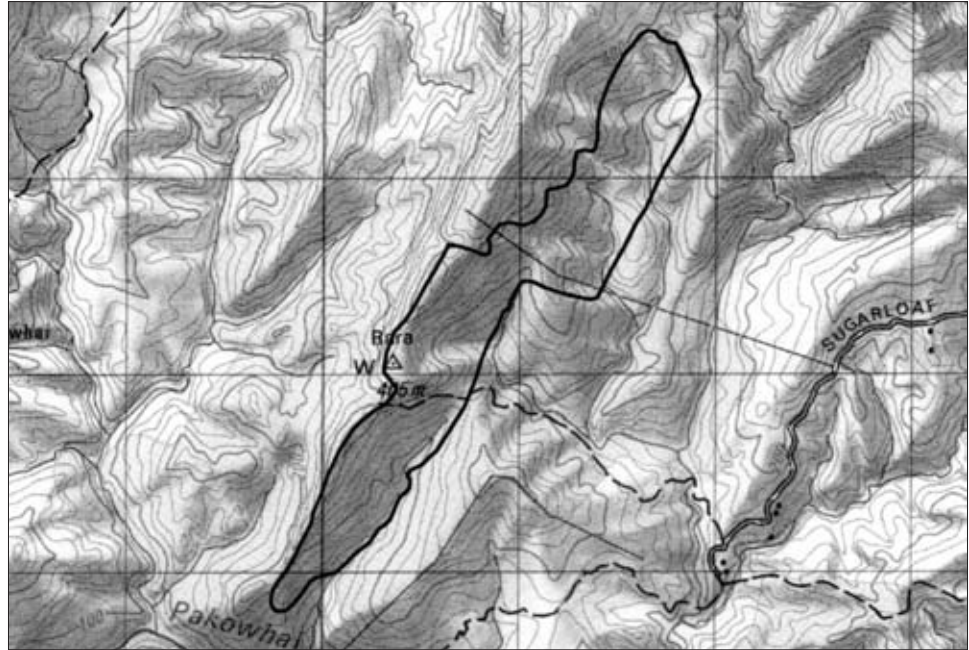
This RAP contains the largest remaining area of semi-coastal secondary forest on the steep hills land type within the ecological district. The titoki-porokaiwhiri forest is a particularly good example, having a diverse range of canopy species and being

in a relatively natural condition. The RAP is contiguous with a QEII covenant and together these comprise a large area with a diverse range of vegetation types.

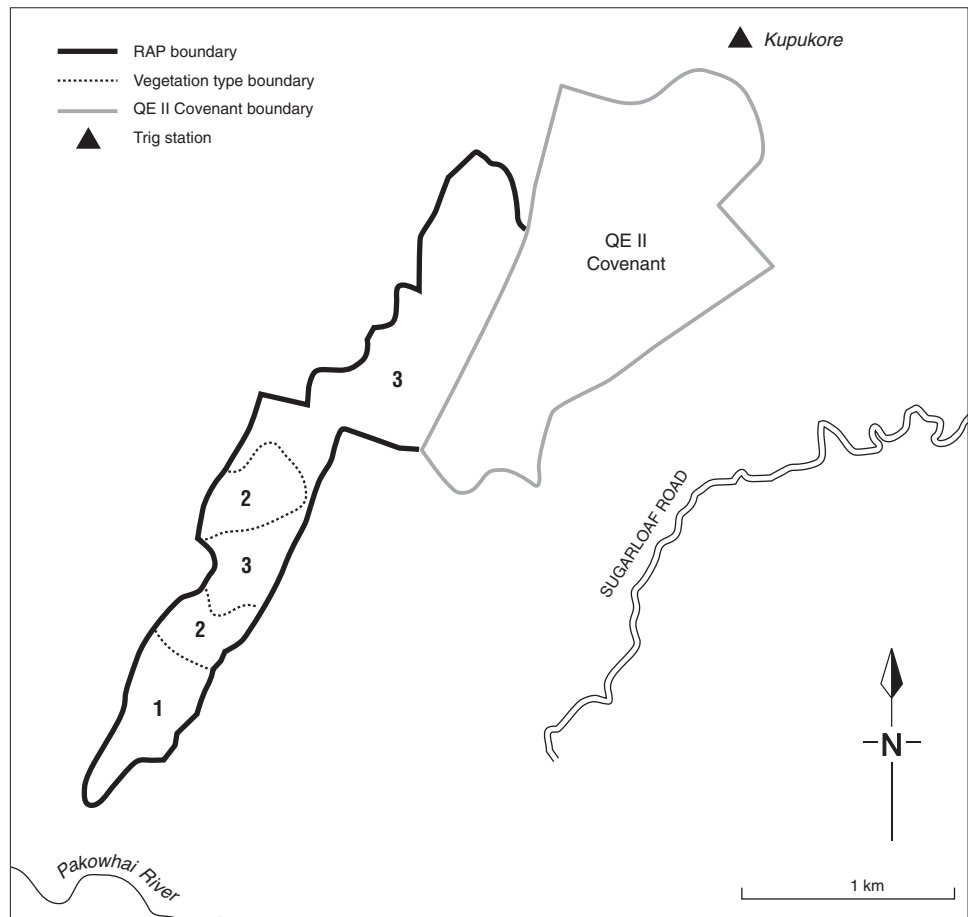
Comments

Accurate covenant boundaries were not available and the boundary shown on the map is approximate only. If the QEII covenant is smaller than the approximation shown on the map, then the RAP should be extended to cover the entire area of unprotected forest.

Location of RAP 3, Rara Bush.



Site of RAP 3, Rara Bush.



Area:	16.9 ha
Altitudinal range:	135-145 m
Grid reference:	NZMS 260 T25 517556
Geological and landform units:	Floodplain and terrace tread
Study area no.:	806
Survey methodology:	A.J. Townsend pers. comm.

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Lowland	1. Kahikatea-matai/kowhai-(rohutu) forest.	Terrace tread
	2. Kowhai forest.	Flood plain

Landform

Terrace tread and riparian marginal floodplain along the Ihurau River.

Vegetation

Two forest types are present in this RAP. The first comprises kahikatea and matai emergent over kowhai, rohutu, poataniwha, *Raukaua anomalus*, and *Melicytus micranthus*; and the second has a kowhai dominated canopy with an assortment of the above shrubs in the understorey.

Flora

About five hundred plants of *Teucrium parvifolium* (classed as Gradual Decline Hitchmough 2002) occur in this RAP. Also present in this RAP is *Melicytus ramiflorus* × *M. micranthus*, which is uncommon in the ecological district.

Fauna

Kereru are present in this RAP.

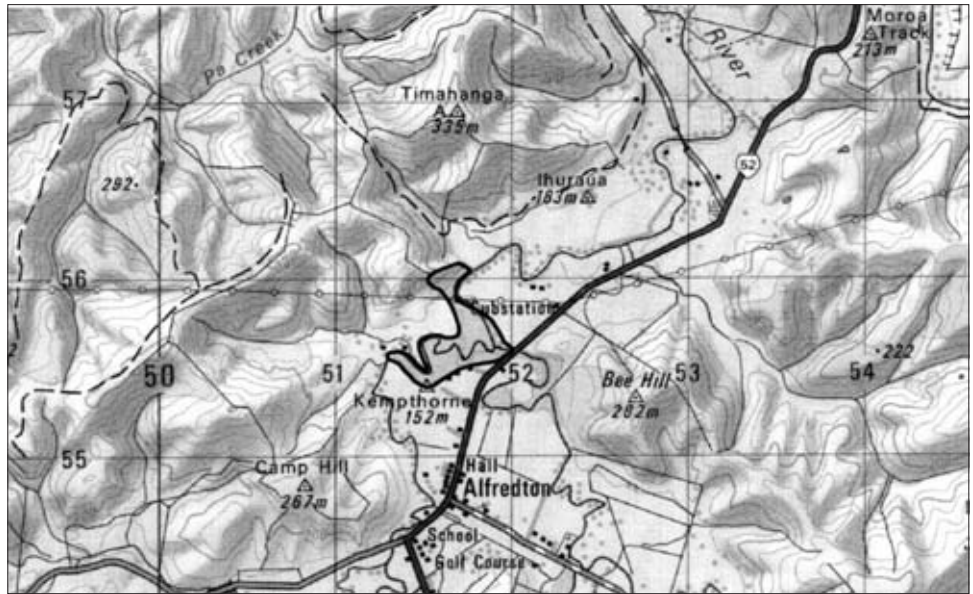
Threat/modification

A herd of feral red deer is present in the RAP, and domestic stock also gain access. The understorey species (including *Teucrium parvifolium*) are heavily browsed. Several invasive weed species are also present in the RAP, including periwinkle.

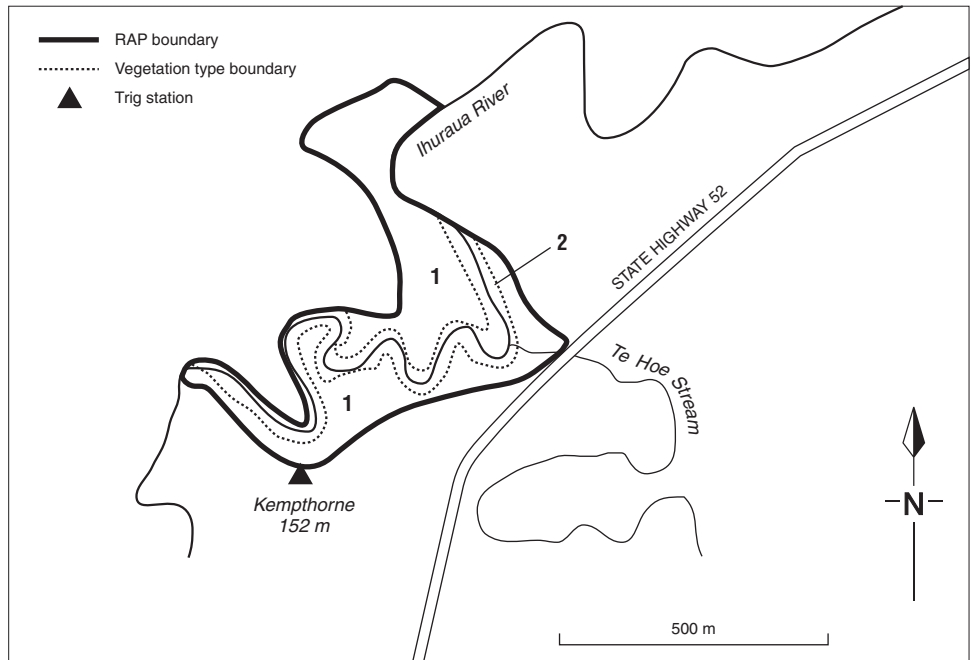
Comment

Although the deer are wild, the owner likes having them there. The landowner is keen to have the bush legally protected (but does not want the deer removed). This RAP contains the largest population of *Teucrium parvifolium* in the ecological district. Grazing impact on *T. parvifolium* has been monitored by DOC since 1995.

Location of RAP 4, Ihuraua River.



Site of RAP 4, Ihuraua River.



RAP 5 ALFREDTON DOMAIN

Area:	11.5 ha
Altitudinal range:	150 m
Grid reference:	NZMS260 T25 515537
Geological and landform units:	Floodplain, terrace tread and terrace riser
Study area no.:	836
Survey methodology:	A.J. Townsend pers. comm., site visit September 1998 (A. Rebergen).

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Lowland	1. Kahikatea/kahikatea- <i>Hoberia angustifolia</i> -ti kouka forest and tree-shrubland. 2. Kahikatea forest.	Floodplain, terrace tread terrace riser

Landform

Floodplain, terrace tread and terrace riser of the Ihuraua River.

Vegetation

This RAP is dominated by kahikatea, *Hoberia angustifolia*, kowhai (*Sophora microphylla*) and ti kouka, which form treeland and small patches of forest. Shrubs are scattered throughout this vegetation, and include the rare *Coprosma pedicellata* (11 individual shrubs), *Teucrium parvifolium*, *Olearia virgata*, *Neomyrtus pedunculata*, *Coprosma propinqua* subsp. *propinqua*, manuka and *Carmichaelia australis*. The highest quality vegetation occurs along the riverbank where there is a small area of pole-sized kahikatea forest that extends up onto the terrace riser.

Fauna

NZ pigeon, tui, fantail, grey warbler, NZ kingfisher, silvereve, shining cuckoo and pukeko were all observed during site visits in spring 1998.

Flora

Coprosma pedicellata (classified as Gradual Decline; Hitchmough 2002) was (re-) discovered at the site in 1998 and 11 individuals have since been found (Rebergen, 1998, Silbery and Rebergen, 2001). Approximately twenty plants of *Teucrium parvifolium* (classified as Gradual Decline; Hitchmough 2002) occur along the banks of the river, in this RAP. *Kortbalsella lindsayii*, a regionally threatened species in the Wellington conservancy (Empson and Sawyer 1996), is also present. A single (heavily browsed) *Tupeia antarctica* (classified as Gradual Decline; Hitchmough 2002) occurs on tarata.

Threat/modification

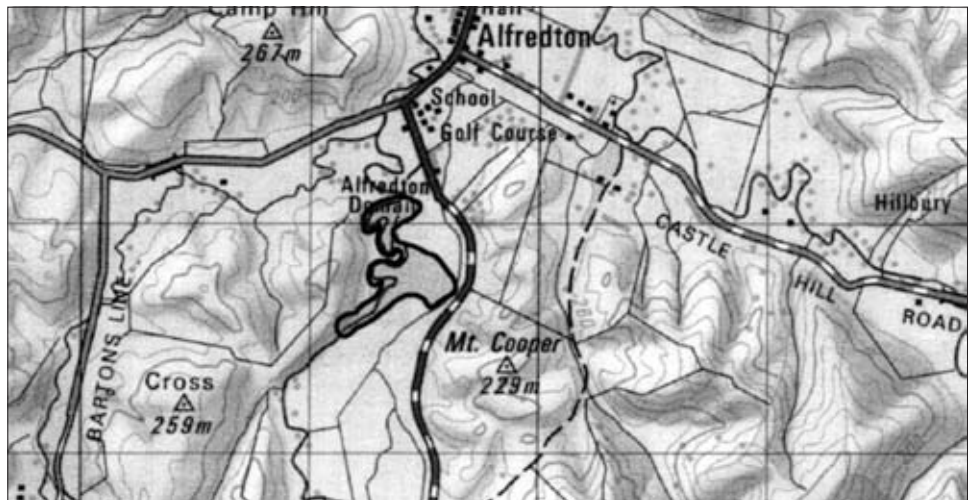
The RAP is grazed, the soil is compacted, and all species present show signs of stock damage (browsing and rubbing).

Discussion

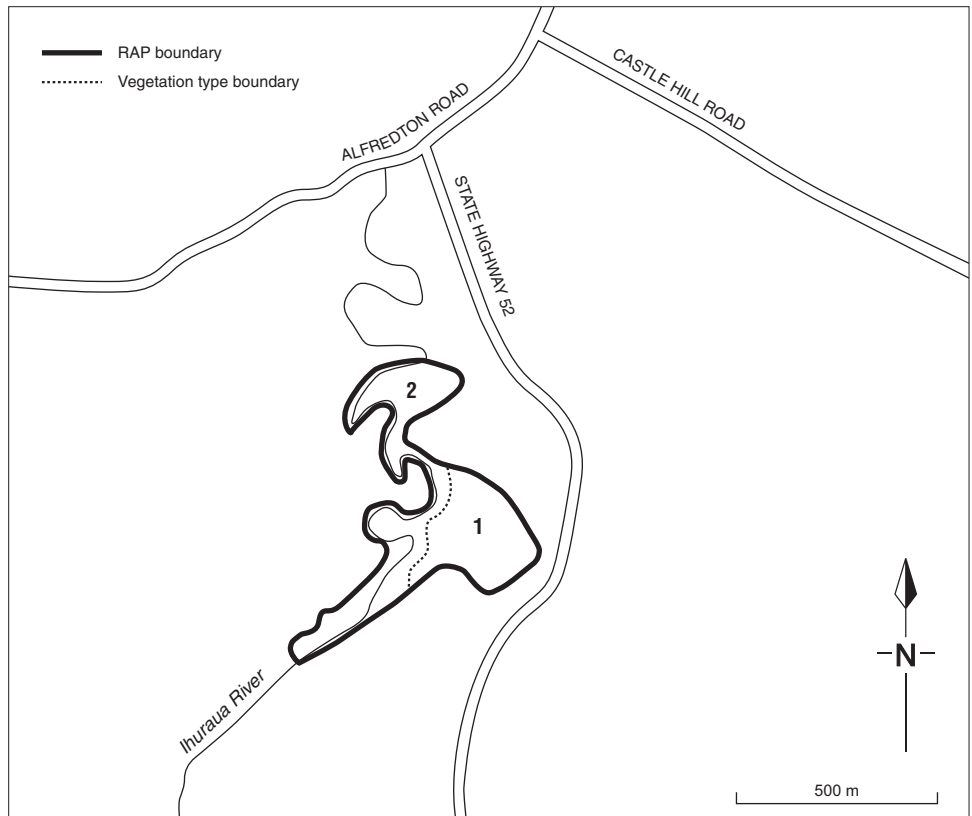
Part of this site comprises a Recreation Reserve, and the remainder is private land. The protection status for the Recreation Reserve should be changed to reflect the conservation values of the RAP. Legal protection of the remainder of the site is currently being negotiated with the landowners. Ecological restoration of this area has started, and includes plantings of *Coprosma pedicellata*. During flooding events the flat area, with *Hoberia angustifolia* and *Coprosma pedicellata*, can be covered in 2 m of water.

References Rebergen, 1998; Silbery and Rebergen, 2001.

Location of RAP 5, Alfredton Domain.



Site of RAP 5, Alfredton Domain.



RAP 6 NEDS HILL BUSH-TAUWERU EXTENSION

Area:	218.7 ha
Altitudinal range:	100–400 m
Grid reference:	NZMS260 T25 647520
Geological and landform units:	Moderately steep hills
Study area no.:	311 901
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. <i>Olearia virgata</i> -(ti kouka)-(horoeka)/ <i>Cortaderia toetoe</i> - <i>Coprosma rigida</i> -(manuka)-(gorse)-(<i>Coprosma propinqua</i>)-(<i>Raukawa anomalus</i>)/ <u>purei</u> - <i>Carex geminata</i> sedgeland [ground cover: tall fescue-cooksfoot- <i>Juncus edgarae</i> /creeping buttercup-Yorkshire fog-lotus].	Toe-slope
Semi-coastal & lowland	2. <u>Rewarewa</u> forest [understorey: (porokaiwhiri)-(kareao)/ <u>ponga</u> -rangiora/ <u>ponga/leaf litter</u> -(mouku)-(<i>Lastreopsis glabella</i>)].	Upper side-slope, gully
	3. (Rewarewa)/ <u>horoeka</u> -kanuka scrub [understorey: gorse-mingimingi-kanuka-mamaku-ponga-mahoe-rangiora-heketara/ <u>bare ground</u> -mouku-(hook sedge)-(kiwikiwi)].	Spurcrest, side-slope
	4. (Rewarewa)/ <u>gorse</u> - <u>manuka</u> - <u>mingimingi</u> scrub.	Side-slope
	5. Rewarewa-tawa-totara/rewarewa-hinau-tawa-porokaiwhiri-mamaku-mahoe-putaputaweta forest [understorey: <i>Coprosma rhamnoides</i> -(tawa)/ <u>bare ground</u> -hook sedge-(<i>Pellaea rotundifolia</i>)-(kiwikiwi)].	Gully, side-slope

Landform

The northern section of the RAP consists of a southeast facing ridge sideslope, including part of the opposite northwest facing slope at the southern end of the ridge. This southern part is a headwater catchment of a tributary of the Waitawhiti Stream. The southern section of the RAP is the headwater catchment of another Waitawhiti Stream tributary.

Vegetation

Secondary scrub induced through clearance of the original forest, probably for timber and agriculture. The areas of modified primary forest have probably been logged selectively.

Flora

Typical species only were noted.

Fauna

Kereru have previously been reported (DOC Ecological Site Inventory no. 1246), however during the current survey only common forest birds were noted.

Threat/modification

The northern section of the RAP is well fenced for most of its boundary except where there is an incised gully extending along the toe-slope. The gully is a relatively effective stock barrier, but should be fenced to stop occasional stock intrusions. The understorey showed signs of damage by pigs and deer. Possum sign was noted. Control of wild animals is a priority. The owner indicated that he does not plan to graze or clear the area. The southern section is completely enclosed by a fence. Extensive cattle grazing has had a severe impact on the understorey.

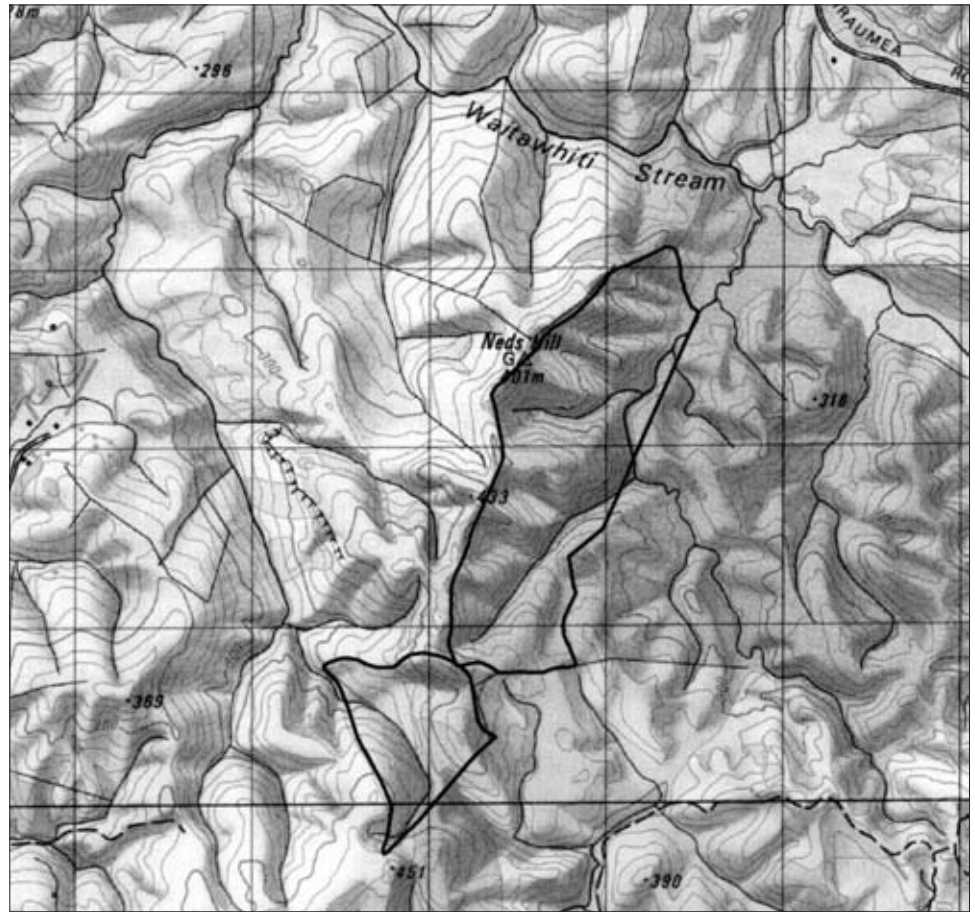
Discussion

The RAP is contiguous with the Tauweru Stewardship Area and contains relatively natural examples of modified primary forest and secondary scrub. Its protection would significantly increase both the diversity and availability of habitat for flora and fauna currently present within the stewardship area.

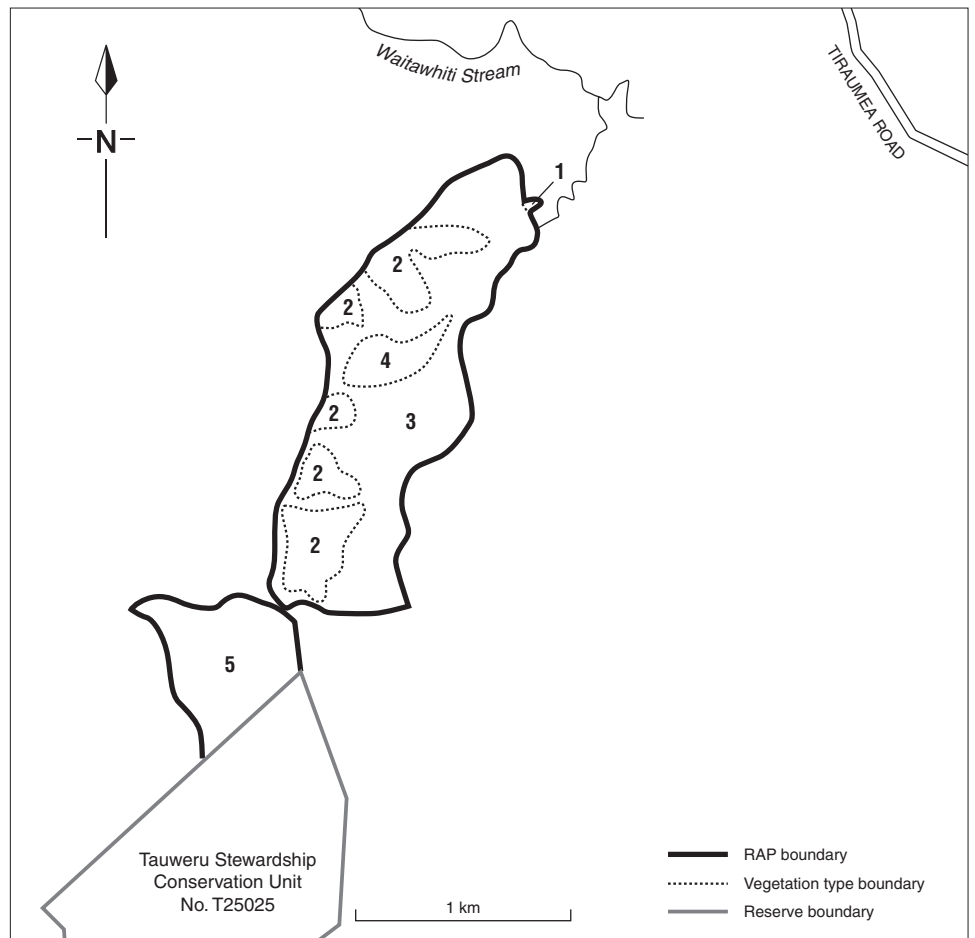
References

DOC 1998.

Location of RAP 6, Neds Hill Bush-Tauweru Extension.



Site of RAP 6, Neds Hill Bush-Tauweru Extension.



RAP 7 MOKIRI BUSH

Area:	144.1 ha
Altitudinal range:	240–500 m
Grid reference:	NZMS260 T25 580480
Geological and landform units:	Moderately steep hills
Study area no.:	910
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Lowland	1. Rewarewa-tawa-(rimu)-(matai)-(miro)-(kahikatea)/tawa-rewarewa-horoeka-totara-houhere-putaputaweta-mahoe-mamaku-kareao forest [understorey: horopito-rangiora-ponga-(kanono)-(<i>Coprosma rotundifolia</i>)/ <i>Coprosma rhamnoides</i> -ongaonga-kaikomako/ <u>bare ground</u> -hook sedge- <i>Pellaea rotundifolia</i> - <i>Polystichum richardii</i> - <i>Lastreopsis glabella</i>].	Upper hillslope, gully
Lowland & semi-coastal	2. <u>Manuka</u> -kanuka-(houhere)-(porokaiwhiri) scrub [understorey: <i>Coprosma rhamnoides</i> - <i>mingimingi</i> ; seedlings of rangiora, putaputaweta, horoeka, mahoe, porokaiwhiri, hangehange and heketara present].	Lower hillslope, toe-slope, gully

Landform

Hillslope is the dominant landform, dissected by three gullies. These are headwater gullies to a tributary of the Te Hoe Stream, with the boundaries of the RAP located on watershed divides to ensure high catchment integrity with respect to hydrological processes.

Vegetation

Secondary scrub induced by the clearance of the original forest cover (probably logged). A diverse range of canopy species seedlings indicates that the area may regenerate eventually into forest. Logging is the primary cause of modification in the modified primary forest.

Flora

A diverse range of plant species is present, including *Metrosideros robusta* and *Olearia virgata* var. *virgata*.

Fauna

Kereru and typical forest birds were recorded.

Threat/modification

Whilst most of the secondary scrub is not fenced, the understorey is relatively dense and it is probably ungrazed at present. However, it is recommended that the area be fenced in the long term to exclude stock. The modified primary forest is fenced, although the fence doesn't appear to be stock proof and stock may occasionally

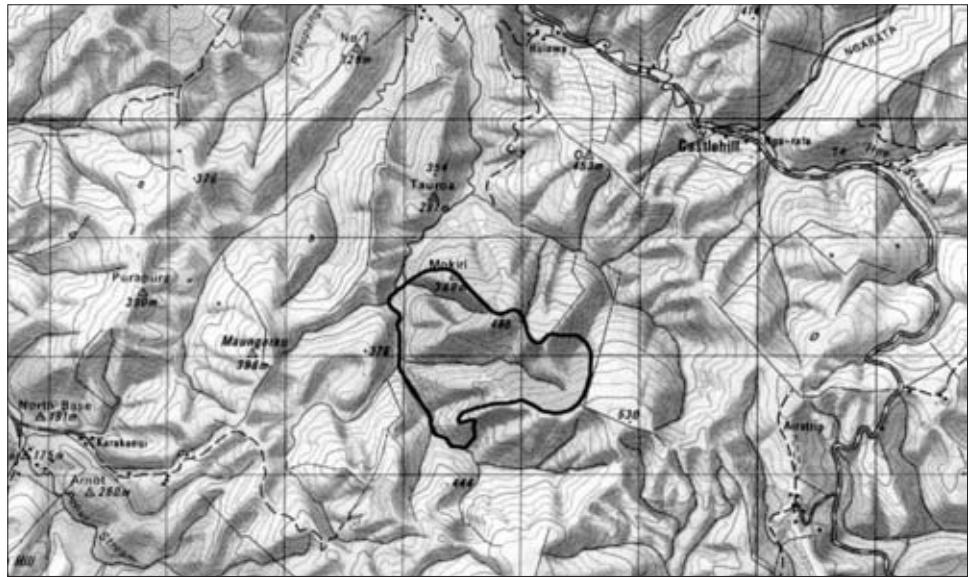
graze the forest. Of more concern in this area are the effects of possum and deer grazing. There are many dead standing northern rata, probably killed by possum browsing. Control of deer and possum (in both areas) and fence maintenance should be a high priority. The areas of scrub are threatened by clearance.

Discussion

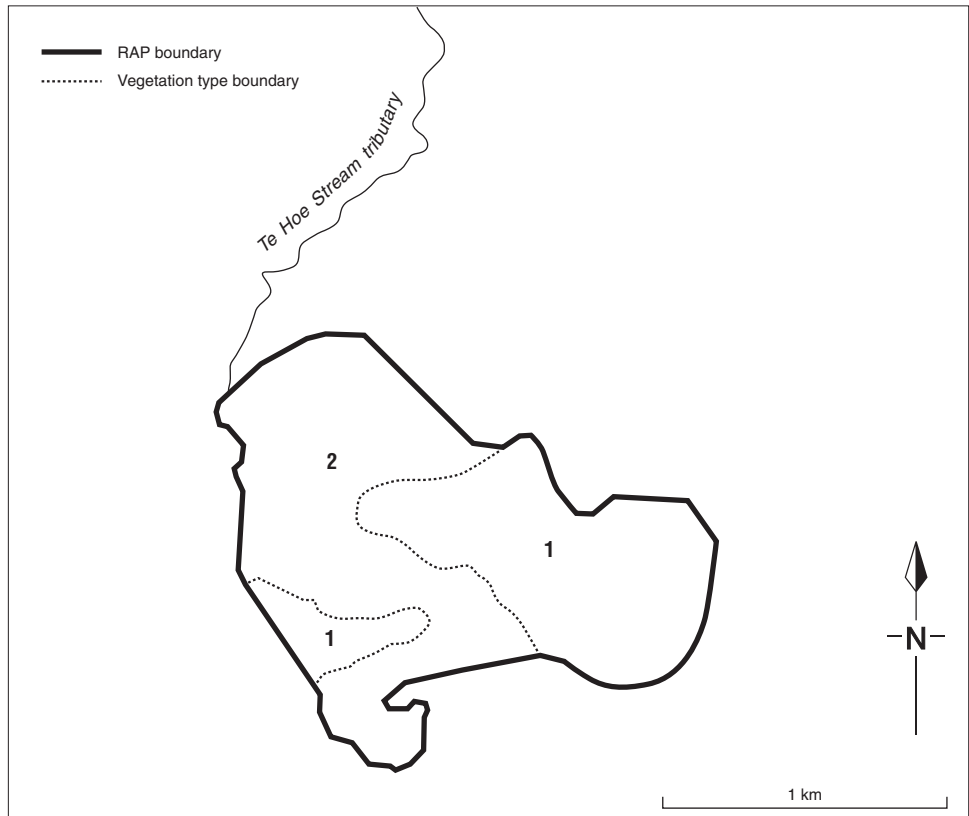
The RAP contains one of the largest remaining areas of lowland modified primary forest on the moderately steep hills land type and has relatively low numbers of adventive species. Both vegetation types are amongst the most diverse (species rich) examples of their types.

References Silbery & Rebergen 2001.

Location of RAP 7, Mokiri Bush.



Site of RAP 7, Mokiri Bush.



RAP 8 PATITAPU BUSH

Area:	363.0 ha
Altitudinal range:	180–410 m
Grid reference:	NZMS260 T25 550450; 547467; 547471; 535471; 539477
Geological and landform units:	Moderately steep hills
Study area no.:	0811, 0812, 0907
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Lowland & Semi-coastal	1. <u>Kanuka</u> -totara-horoeka forest ⇄ <u>Manuka</u> scrub [<u>kahikatea</u> forest in some gullies; on lower hillslopes totara becomes more abundant; <u>kanuka</u> forest understorey: <u>mingimingi-rangiora-ponga-niniaio-potataniwha-putaputaweta/leaf litter-hook sedge</u>].	Hillslope, ridge crest, gully, spur
	2. <u>Kanuka-houhere-ponga-horoeka-putaputaweta-mahoe-(rewarewa)-(tawa)-(totara)-(mamaku)</u> forest [understorey: <u>rangiora/leaf litter</u> -(hook sedge)-(petipeti)].	Hillslope, gully
	3. <u>Kahikatea-totara-matai</u> forest [understorey: (totara)-(matai)-(horoeka)-(putaputaweta)-(tawa)-(kohuhu)/ <i>Metrosideros diffusa</i> -turepo-pootaniwha-(matai)-(kahikatea)-(matai)/mouku-kiwikipi- <i>Metrosideros diffusa</i> -(hook sedge)-(heruheru)].	Hillslope, gully
	4. <u>Manuka</u> scrub [<u>kanuka</u> forest in some gullies; pasture species form the ground cover].	Hillslope, ridge crest, spur
Lowland	5. (Kowhai)-(kanuka)/manuka-gorse-harakeke-(niniao)-(koromiko)-(<i>Pomaderris</i> aff. <i>phyllicifolia</i>) shrubland [understorey: sweet vernal-cocksfoot- <i>Plantago lanceolata</i> -kawaowao- <i>Asplenium flabellifolium</i> - <i>Pyrrosia eleagnifolia</i>].	Rock bluff
Semi-coastal	6. Kahikatea-totara-matai-(rimu) forest [understorey: tawa-mahoe-turepo/turepo-pootaniwha-rohutu/ <u>leaf litter</u> - <i>Metrosideros diffusa</i> -mouku- <i>Pellaea rotundifolia</i>].	Hillslope

Landform

The RAP consists of a series of ridge crests and hillslopes in moderately steep hill country, forming several independent headwater catchments flowing in a north-west direction. Where possible, RAP boundaries have been located on watershed ridges to maintain catchment integrity with respect to hydrological processes.

Vegetation

The majority of the vegetation comprises secondary scrub and forest induced through clearance of the original forest cover. Small areas of remnant primary forest occur throughout, mainly in gullies. The example of kahikatea-totara-matai-(rimu) forest appears to have been modified. The canopy is c.25 m in height, however none of the understorey trees are above 6 m, suggesting that it is recovering from previous disturbance, probably through grazing.

Flora

A wide range of divaricating shrub species are present, including *Olearia virgata* var. *virgata*, *rohutu*, and *Neomyrtus pedunculatus*.

Fauna

Kereru are present. Pied tit were noted amongst other typical forest birds. Long-tail bats were recorded in this RAP in 1996 (G. Foster pers. comm.).

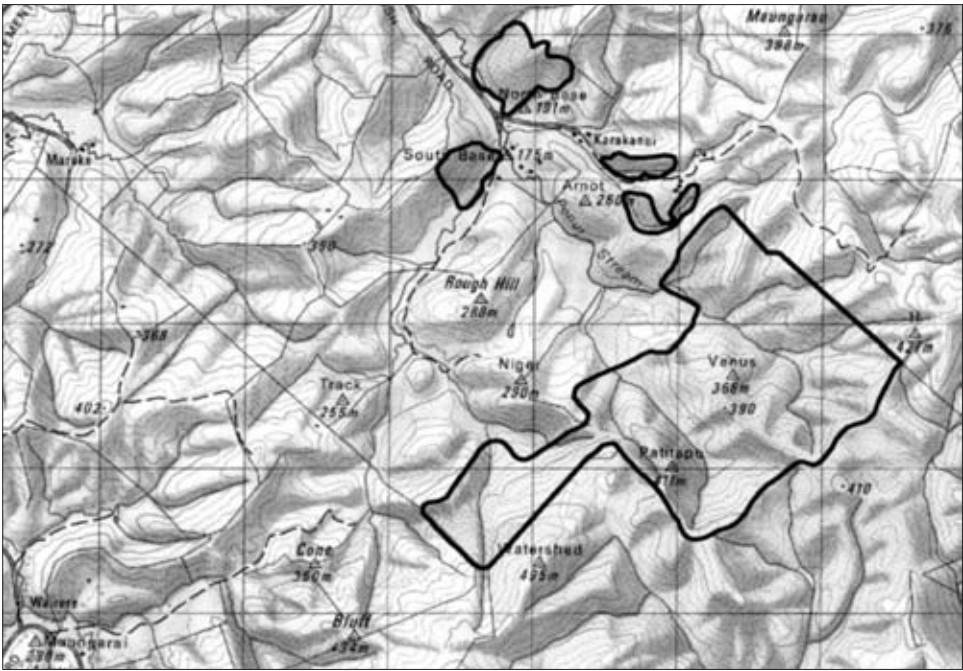
Threat/modification

Lower altitude, flatter areas, adjacent to this RAP, have recently been cleared. Browsing of the forest understorey by deer and stock was noted. There is good regeneration of canopy species and a high diversity of native species, although plant abundance has been reduced. Fencing to exclude stock, and the control of wild animals, particularly deer, is a high priority.

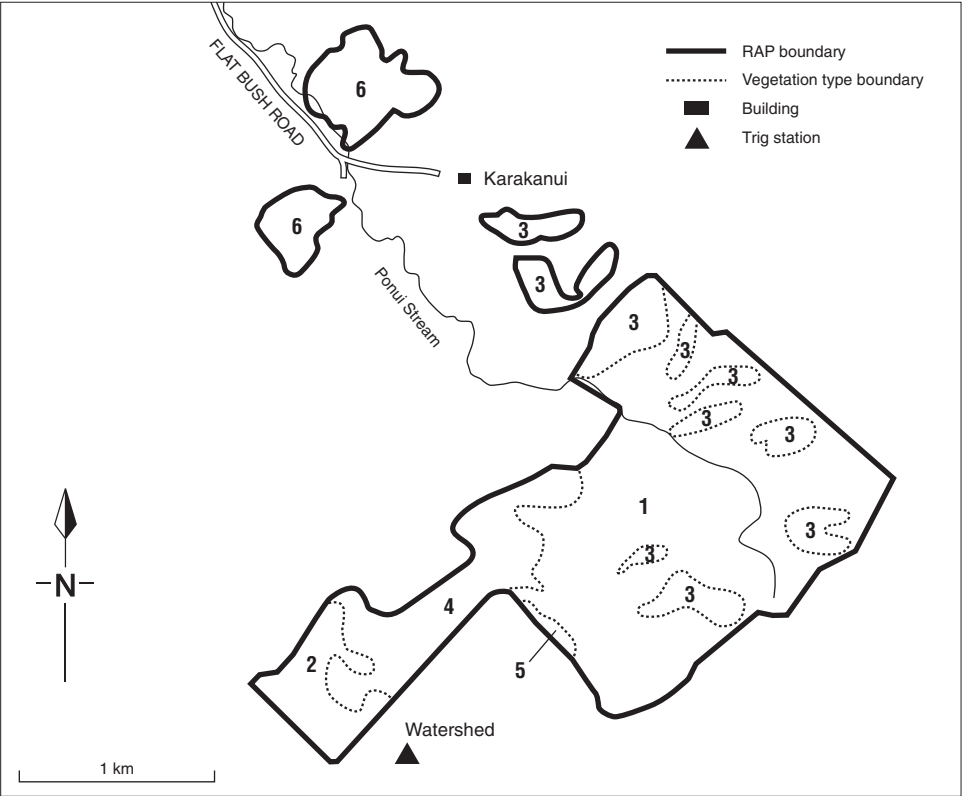
Discussion

Patitapu Bush RAP is a large area of relatively natural vegetation. It contains a diverse range of ecological units, some of which have been heavily reduced within the ecological district. For instance, only 7% remains of the 1853 cover of semi-coastal primary forest on the moderately steep hills land type. The primary forest in this RAP is of high quality with respect to naturalness and contains a diverse range of species.

Location of RAP 8, Patitapu Bush.



Site of RAP 8, Patitapu Bush.



RAP 9 MATAIKONA TUSSOCKLAND

Area:	82.0 ha
Altitudinal range:	0–160 m
Grid reference:	NZMS260 U25 865427
Geological and landform units:	Moderately steep hills, coastal platform & sand beaches
Study area no.:	1106
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <u>Marram</u> -(spinifex) tussockland.	Foredune
	2. (<i>Cortaderia toetoe</i>)/ <u>marram</u> - <i>Isolepis nodosa</i> -tauhinu tussockland [ground cover: catsear-haretail- <i>Calystegia sepium</i> -ratstail].	Dune crest
	3. <i>Schoenoplectus tabernaemontani</i> - <i>Cortaderia toetoe</i> - <i>Cyperus ustulatus</i> sedgeland [understorey: (<i>Schoenoplectus pungens</i>)/white clover-jointed rush].	Hollow
	4. <i>Isolepis nodosa</i> -(tauhinu)-(gorse) sedgeland [ground cover: <u>pasture</u> -variegated thistle].	Terrace
	5. Harakeke-(toetoe)/ <i>Cyperus ustulatus</i> - <u>raupo</u> sedgeland ⇆ Harakeke-(<i>Cortaderia toetoe</i>)/ <i>Cyperus ustulatus</i> - <u><i>Schoenoplectus tabernaemontani</i></u> sedgeland [groundlayer: (<i>Calystegia sepium</i>)].	Slack
	6. <u>Oioi</u> -toetoe-(sea rush) sedgeland [ground cover: Yorkshire fog-catsear-lotus].	Hollow
	7. Sand beach (unvegetated)	Beach

Landform

An area of coastline 4 km in length, extending inland across the coastal platform to include an east facing hillslope.

Vegetation

Duneland, tussockland and freshwater wetland modified through the introduction of exotic plants and domestic stock grazing. Exotic species now dominate the ground cover.

Flora

A small population of the native sand-binders, pingao, and spinifex is present on the foredune. *Coprosma acerosa* has been previously reported from this site (DOC 1996b). Pingao and *Coprosma acerosa* are regionally threatened (Empson and Sawyer 1996).

Fauna

Typical species only were noted.

Threat/modification

The presence of pampas and gorse is of particular concern. These are physiognomic dominants and their spread may result in considerable change to the natural character of the present vegetation. Grazing by domestic stock removes indigenous plant cover and provides opportunity for weed invasion. Trampling may also be a contributing factor in foredune erosion. Fencing and removal of domestic stock is a high priority.

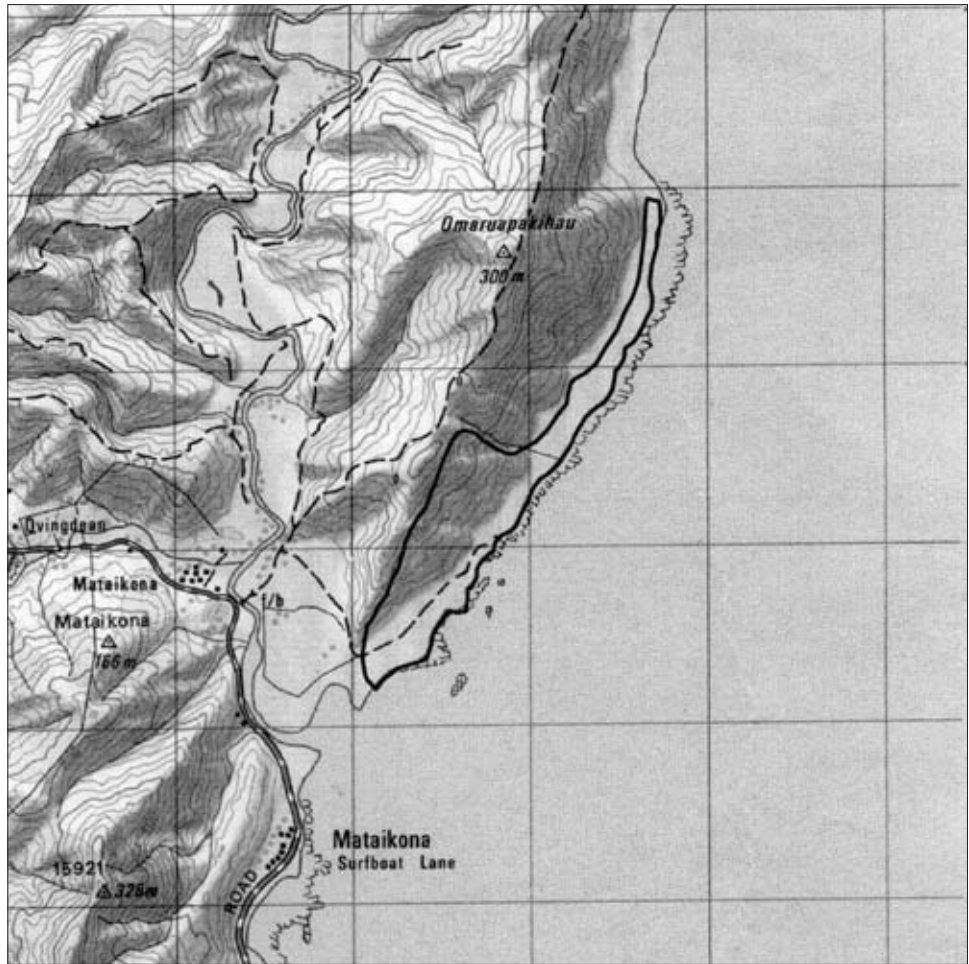
Discussion

The dunelands within the RAP are the largest on the coastal platform land type and the largest unprotected area on the moderately steep hills land type. The vegetation is relatively natural and contains two regionally threatened species.

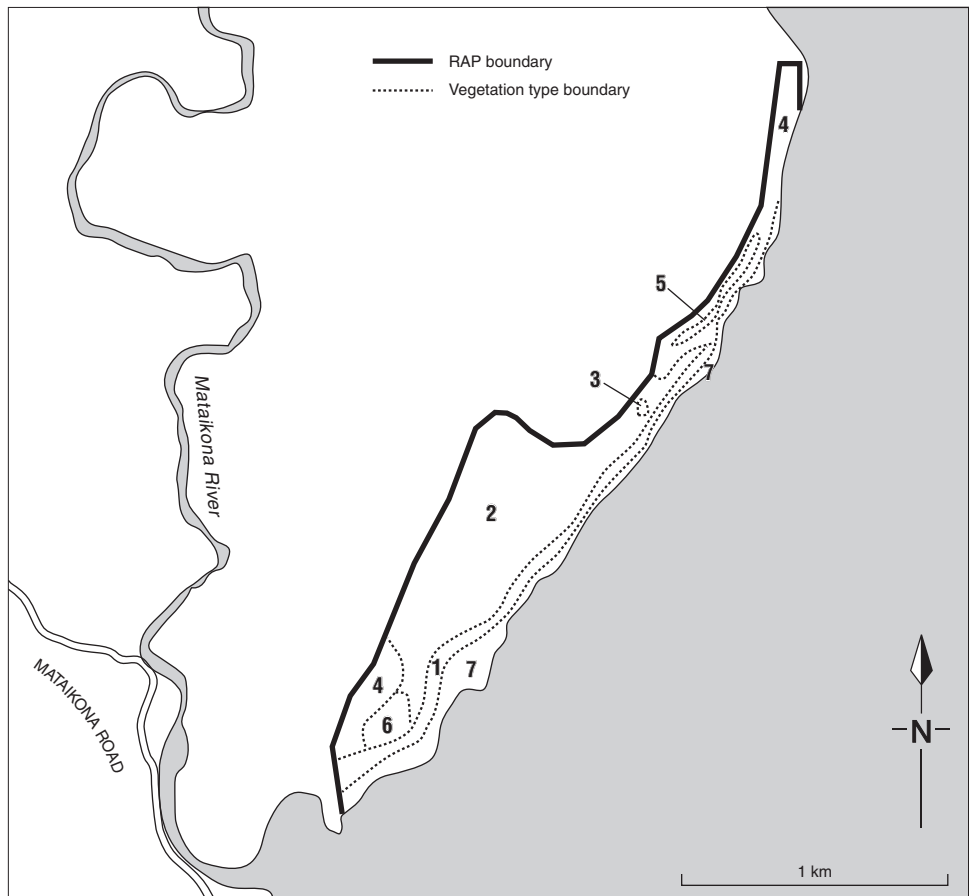
References

DOC 1996b; Empson & Sawyer 1996.

Location of RAP 9, Mataikona
Tussockland.



Site of RAP 9, Mataikona
Tussockland.



RAP 10 RAHUI STATION BUSH

Area:	12.0 ha
Altitudinal range:	220–300 m
Grid reference:	U25 712424
Geological and landform units:	Easy terrain
Study area no.:	1007
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Kowhai-totara-tawa-tarata/ti kouka-houhere-(tarata)-(mapou)-(titoki) scrub and treeland to the southwest [scrub understorey contains rangiora, grass and various saplings, with local <i>Cortaderia toetoe</i> , <i>Carex geminata</i> , tall grasses and seedlings of kowhai, koromiko and karamu in open patches].	Slope, alluvial flat
Semi-coastal	2. Tawa-(totara)/ <u>tawa</u> -houhere-tarata-titoki-(mahoe)-(ti kouka) forest [understorey: <u>kawakawa</u> -rangiora; various ferns and seedlings].	Slope, gully
Semi-coastal	3. Horoeke-tarata-houhere-kowhai-(tawa)-(kohuhu)-(ti kouka) forest [understorey: <u>kawakawa</u> - <u>rangiora</u> with local rarahu, manuka, ti kouka and tall fescue].	Upper slope
Semi-coastal	4. Ti kouka/ <u>houhere</u> - <u>koromiko</u> -(kohuhu)-(titoki)-(karamu) scrub and shrubland [includes local <i>Carex geminata</i> -tall fescue sedgeland in a depression].	Toe-slope, slope
Semi-coastal	5. A mosaic of: <u>rarahu</u> fernland; <u>manuka</u> shrubland; ti kouka/ <u>tall fescue</u> - <u>rarahu</u> - <u>pohuehue</u> - <u>kohuhu</u> - <u>horoeke</u> - <u>koromiko</u> -(<u>rangiora</u>)-(mahoe)-(Coprosma propinqua)-(karamu)-(wharariki)-(toetoe) shrub-grassland.	Terrace

Landform

Gentle slopes and a gully (or gullies) leading down from a plateau in hill country.

Vegetation

Mixed broadleaved forest and scrub up the gully and slopes merge into podocarp-broadleaf scrub and treeland at the foot of the block, and low houhere-koromiko scrub to the south.

Flora

A diverse flora including tawa and *Olearia virgata*.

Fauna

Typical species only were recorded.

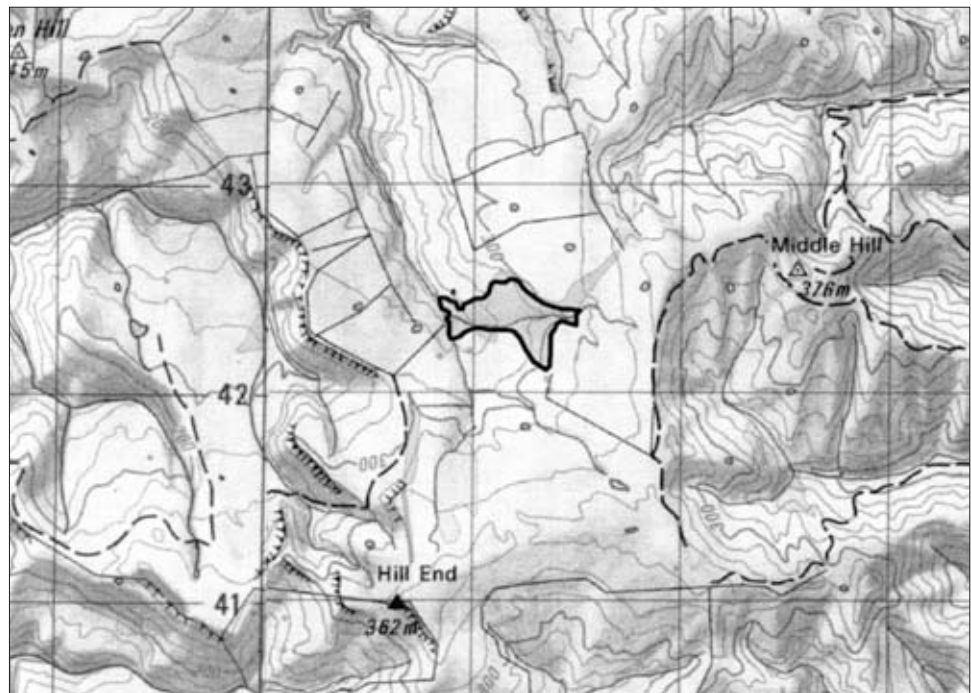
Threat/modification

Stock has been excluded from most of the area until recently but a deteriorating fence now allows cattle into the southwest portion. Possums (currently controlled) and feral red deer also occur here.

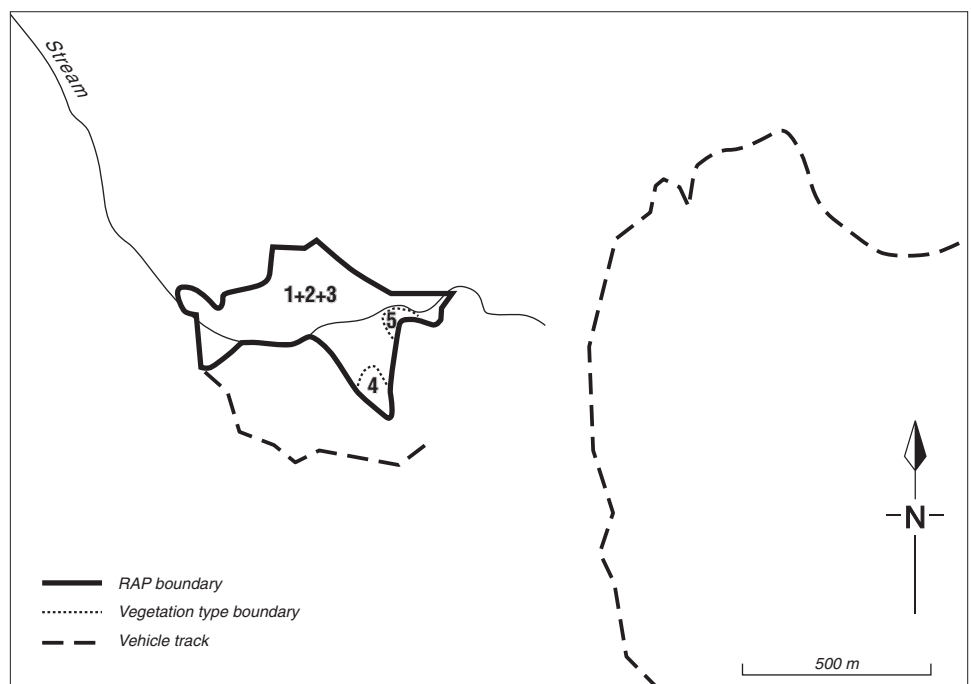
Discussion

Easy terrain in the eastern Wairarapa hill country has generally been cleared for farming, with only a very small proportion (<10% of the original cover) of forest remaining in both the lowland and semi-coastal bioclimatic zones. This RAP provides a good quality, species-rich example of modified primary forest on the easy terrain land type that differs from other examples of modified primary forest on easy terrain in having tawa, houhere, kowhai, tarata and horoeka-dominant vegetation.

Location of RAP 10, Rahui Station Bush.



Site of RAP 10, Rahui Station Bush.



RAP 11 TINUI RIVER BUSH

Area:	9.3 ha
Altitudinal range:	140 m
Grid reference:	U25 758415
Geological and landform units:	Riparian flats
Study area no.:	1015
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
semi-coastal	1. <u>Totara</u> -(manuka)-(kowhai) forest [understorey: matai- <i>Raukaua anomalus</i>].	Terrace, shallow gully slopes

Landform

A narrow riparian plain of the Tinui River valley, set amongst extensive hill country.

Vegetation

An apparently even-aged pole stand of young totara over a sapling matai layer, with *Raukaua anomalus*, occasional sapling totara, and scattered sapling kahikatea. Houhere, kowhai and occasional black maire join the canopy towards the river. Manuka shrubland buffers the stand to the southeast. *Sophora tetraptera* is the most common species along with *Hoberia sexstylosa*.

Flora and fauna

Regionally rare plant species were found including *Rumex flexuosus*, *Botrychium biforme* and *Viola cunninghamii*. Otherwise, only typical species were recorded during this survey.

Threat/modification

Willow grows along parts of the watercourse. Rabbits and possums are present, and when the river is low sheep have access to the northeast side.

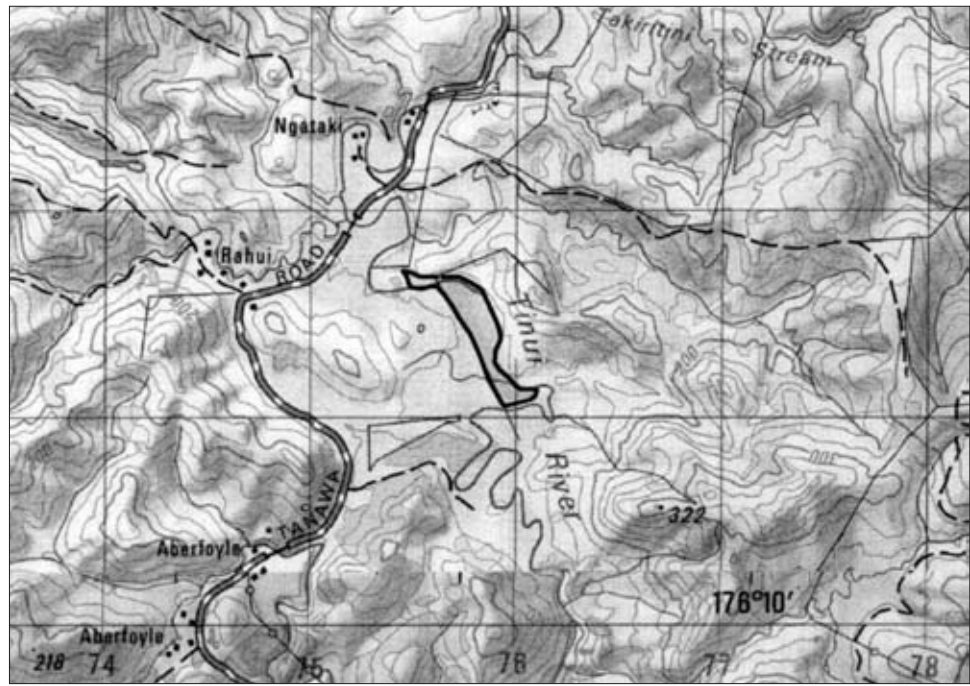
Discussion

This RAP is the only totara-dominated example of forest of this size on flat terrain. Although secondary, it is significant in terms of its unusual composition and riparian nature, and is representative of totara forest previously common on low hills in the east (Sawyer *et al.* 1998).

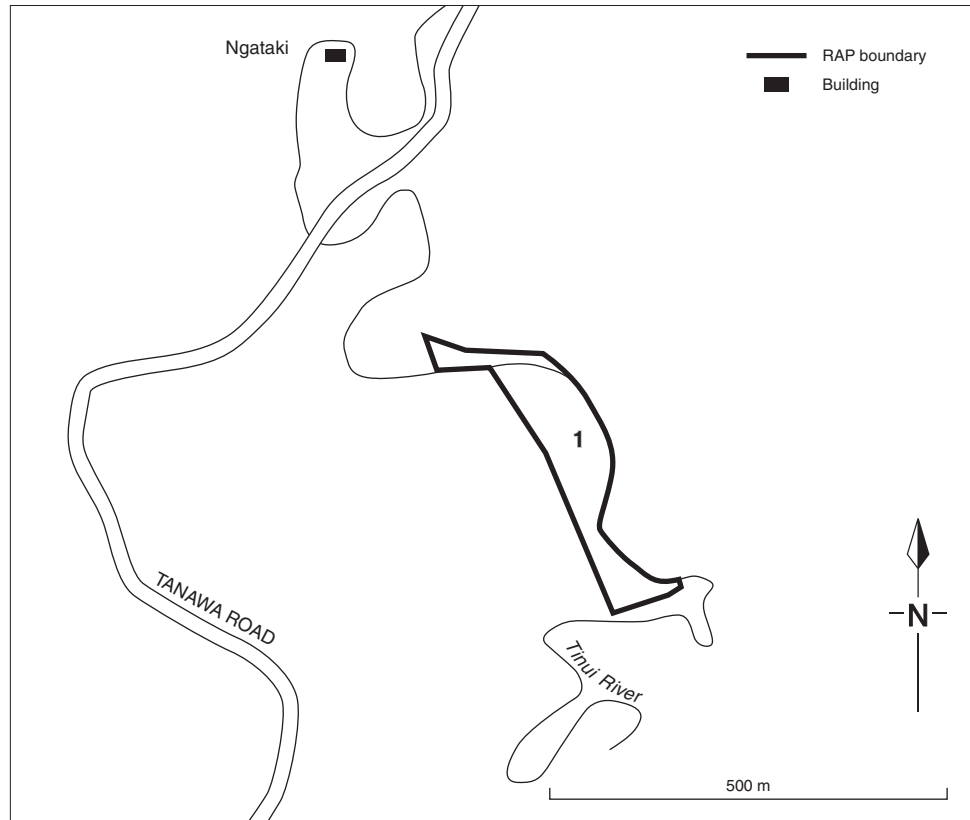
References

Sawyer *et al.* 1998; Rebergen 2002.

Location of RAP 11, Tinui River Bush.



Site of RAP 11, Tinui River Bush.



RAP 12 MOUNT PERCY BUSH

Area:	1,368.9 ha
Altitudinal range:	20–473 m
Grid reference:	NZMS260 U26 815375
Geological and landform units:	Moderately steep hills, steep hills
Study area no.:	1611a, b, c, d, 1105a, 1613
Survey methodology:	On site survey, aerial photographs (1989), field reconnaissance from nearby high point (1998).

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <u>Karaka</u> -ti kouka treeland [understorey: tauhinu-kanuka- <i>Cortaderia toetoe</i> / <u>pasture</u>].	Lower slope
Coastal, semi-coastal & lowland	2. <u>Kanuka</u> scrub and forest [understorey: <i>Coprosma rhamnoides</i> - <i>Brachyglottis pentacopa</i> -mingimingi-niniaio/ <u>bare ground</u> -(hook sedge) ⇔ <i>Brachyglottis pentacopa</i> -rangiora-(mahoe)-(putaputaweta)-(horoeke)/ <i>Coprosma rhamnoides</i> -niniaio-mingimingi/ <u>bare ground</u> -hook sedge].	Spur crest, side slope
	3. (Rewarewa)/kanuka-ngaio-houhere-mahoe-putaputaweta forest [understorey: putaputaweta-mahoe-heketara-rangiora/ <i>Coprosma rhamnoides</i> -mingimingi-(ponga)/ <u>hook sedge</u> - <u>bare ground</u>].	Upper slope, gully
	4. <u>Kanuka</u> scrub ⇔ Rewarewa-black beech/ <u>kanuka</u> - <u>manuka</u> scrub ⇔ <u>Black beech</u> forest.	Ridge crest, spur crest, side slope, gully
	5. <u>Harakeke</u> - <u>manuka</u> - <i>Coprosma rhamnoides</i> -niniaio-mingimingi- <i>Pomaderris</i> aff. <i>phyllicifolia</i> scrub [groundcover: <u>browntop</u> -kowaowao-patotara- <i>Rytidosperma clavatum</i>].	Steep upper slope
	6. <u>Kanuka</u> scrub ⇔ <u>Manuka</u> -gorse-tauhinu scrub.	Side slope, gully
	7. Titoki-(rewarewa)-(black beech)-(tawa)/ <u>mamaku</u> -kanuka-mahoe-(tawa)-(titoki)-(ti kouka)-(kohuhu) forest ⇔ <u>Black beech forest</u> [with a few emergent rimu, matai and totara in the gully floor].	Lower slope, toe-slope, gully
	8. <u>Manuka</u> scrub.	Side slope

Landform

Several adjacent catchments including the headwaters of the Okau Stream and a tributary to the Whakataki River. The catchments themselves comprise gullies and side slopes of hills and ridges.

Vegetation

Large areas of secondary scrub and forest induced through human clearance of the original forest cover. Primary and modified primary forest occur in many of the gullies.

Flora

Mt Percy Bush is the type locality for *Brachyglottis pentacopa* (classed as Range Restricted; Hitchmough 2002). A significant population of *Mazus novaezeelandiae*

subsp. *novaezeelandiae* (classified as Serious Decline; Hitchmough 2002) occurs here. Also present at this site are *Craspedia uniflora* var. *grandis*, *Genoplesium nudum*, *Asplenium appendiculatum* subsp. *appendiculatum*, *Elymus multiflorus*, *Hypolepis dicksonioides* and *Pterostylis foliata* (all identified as regionally threatened; Empson & Sawyer 1996).

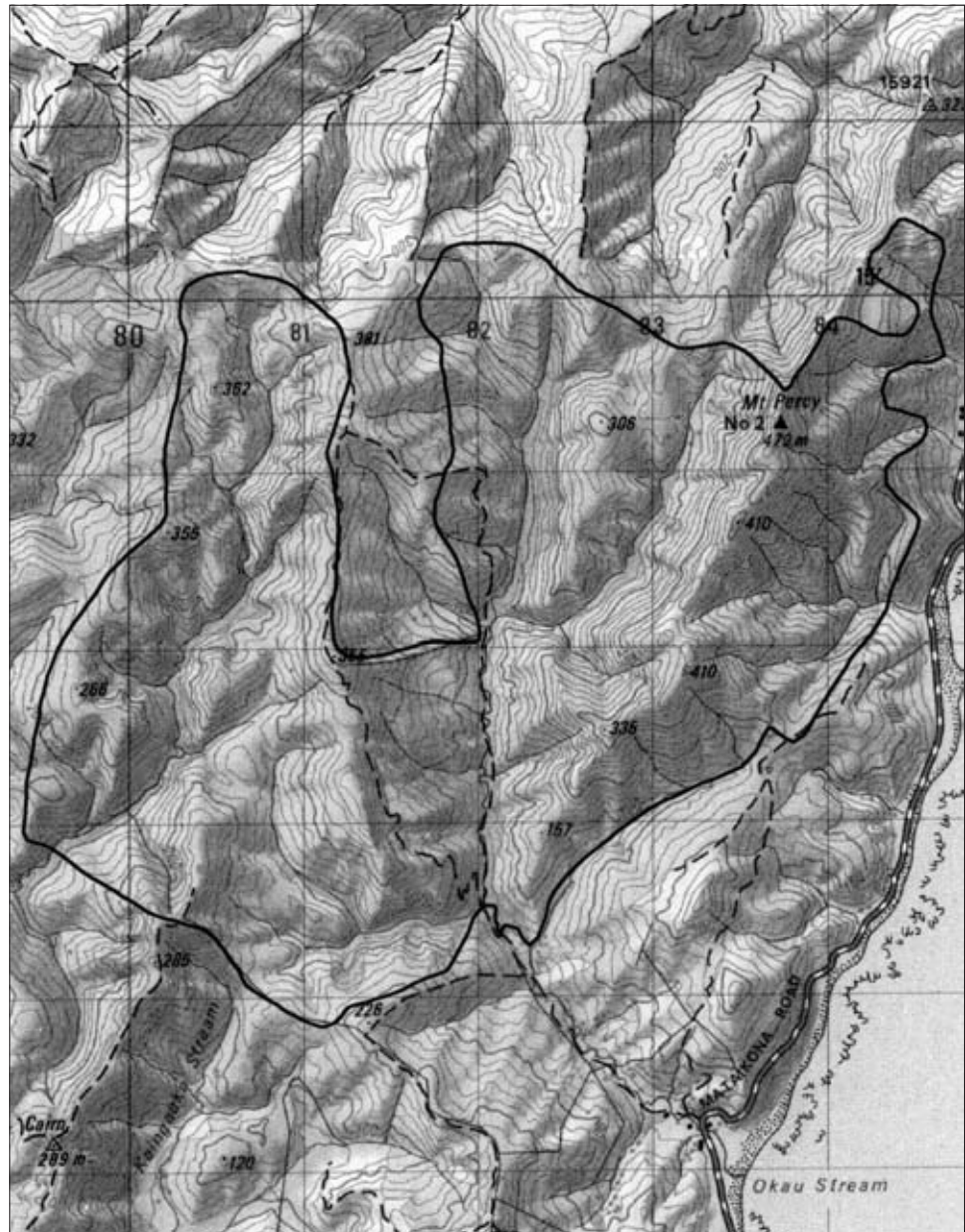
Fauna

Common forest birds are present.

Threat/modification

Grazing damage by domestic stock is evident in the coastal forest understorey. A much reduced diversity and abundance of understorey species can be seen in comparison with the adjacent stock free, fenced QEII area. Fencing and exclusion of stock for the entire RAP should be a high priority. Deer, pig, goat and possum were also noted to be present.

Location of RAP 12, Mount Percy Bush.



Discussion

Mt Percy Bush is the third largest RAP within the ecological district. It contains a diverse range of once common ecological units, including the largest remaining area of coastal secondary forest on the moderately steep hills land type and the second largest area of semi-coastal secondary forest on moderately steep hills. It is one of only two RAPs with a complete bioclimatic sequence, from coastal through to lowland. Mt Percy Bush is also significant for its botanical values with a range of regionally and nationally threatened plant species present.

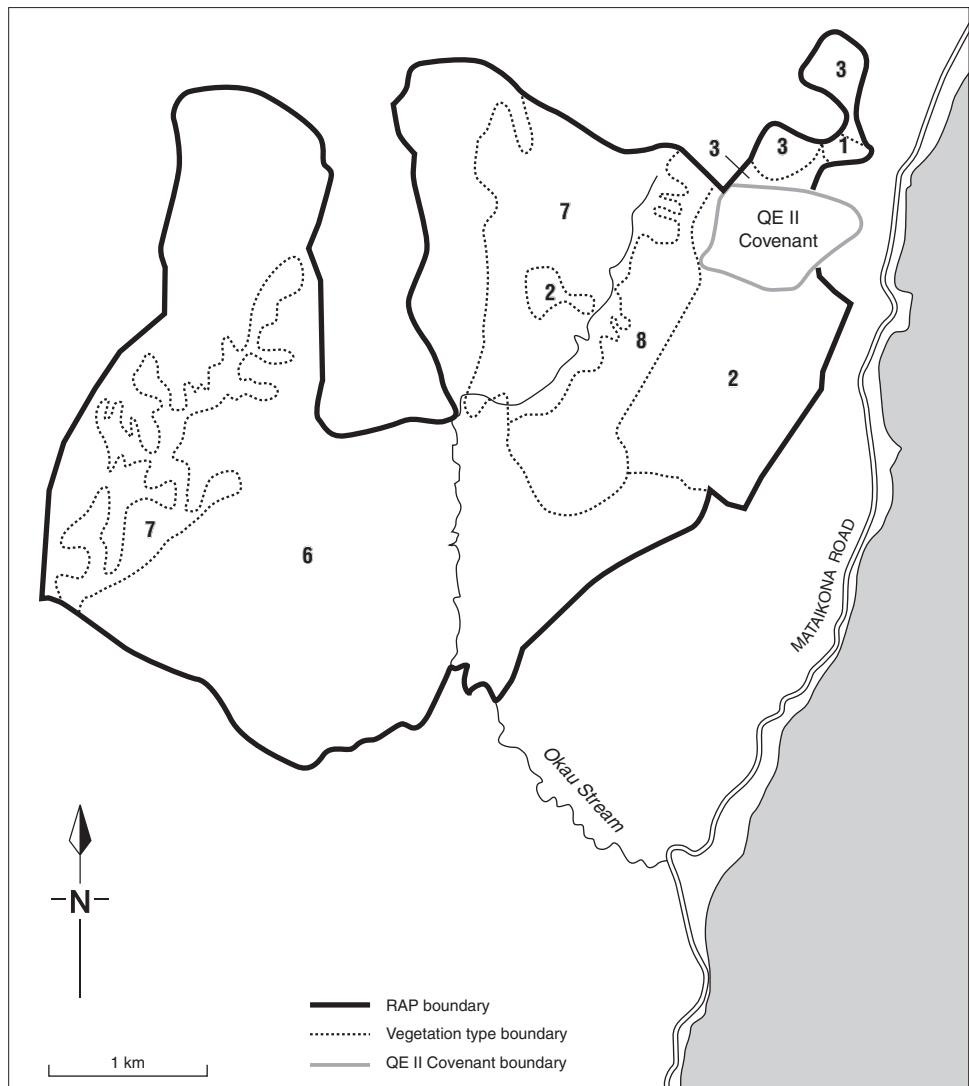
Comments

Access to much of the RAP was not granted, and aerial photographs, field reconnaissance from nearby high points and existing information were used to determine provisional boundaries for the RAP which may require adjustment following a site visit. The landowner, Gert Vermeer, pointed out in a letter to the Department dated 8 March 1999 that “the whole of Okau is a commercial property that has had in the past, present and into the future a range of options available to it’s owners. Most of these require the use of the RAP area. This would need to be taken into account should some authority plan to enforce the RAP in some way”.

References

DOC 1998.

Site of RAP 12, Mount Percy Bush.



RAP 13 SPRINGHILL STATION

Area:	7.1 ha
Altitudinal range:	120–160 m
Grid reference:	NZMS 260 T26 626384
Geological and landform units:	Moderately steep hills
Study area no.:	1457
Survey methodology:	A.J. Townsend pers. Comm., site visit (DOC Area staff)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
lowland	1. Titoki-totara forest	Hillslope
	2. (Manuka)/ <i>Juncus edgarae</i> rushland ⇄ Pasture.	Hillslope

Landform

The RAP is on a relatively steep, swampy hillslope on papa mudstone.

Vegetation

Vegetation comprises two small areas of titoki and totara forest with kanuka, mahoe and kowhai. There are also two clearings, dominated by pasture with scattered manuka and *Juncus edgarae*.

Flora

Two threatened plant species occur at this site. Two plants of *Olearia gardneri* (classed as Nationally Critical; Hitchmough 2002), and several plants of *Korthalsella salicornioides* (Sparse; Hitchmough 2002) occur in this RAP. The regionally threatened mistletoe *Ileostylus micranthus* is also present.

Fauna

Typical species only were recorded.

Threat/modification

This site was not fenced at the time of the field survey and stock could gain access. However the owner plans to fence the area. Some species present show signs of stock damage, and the soil is compacted.

Discussion

This RAP contains two of only 5 remaining *Olearia gardneri* plants in the ecological district. There are less than 100 known individual plants in the wild in New Zealand (all in the North Island) (2 at this site—see under Comments).

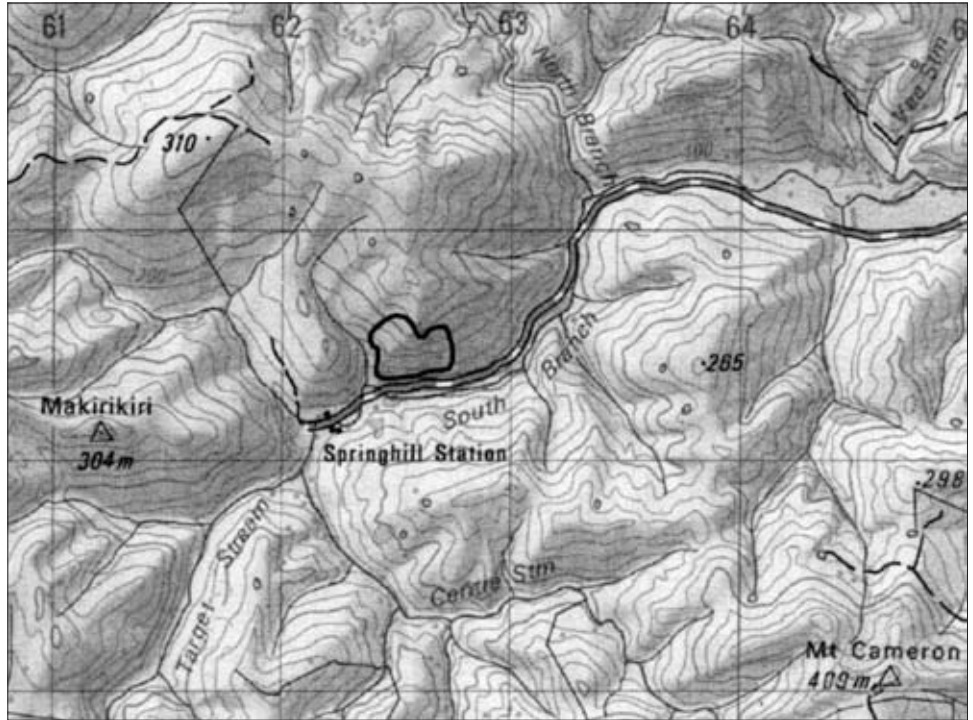
Comments

This site is now protected as a Conservation Covenant. One of the *O. gardneri* plants died during the dry summers of 1997 and 1998. Ten young *O. gardneri* were planted at the site in 2001.

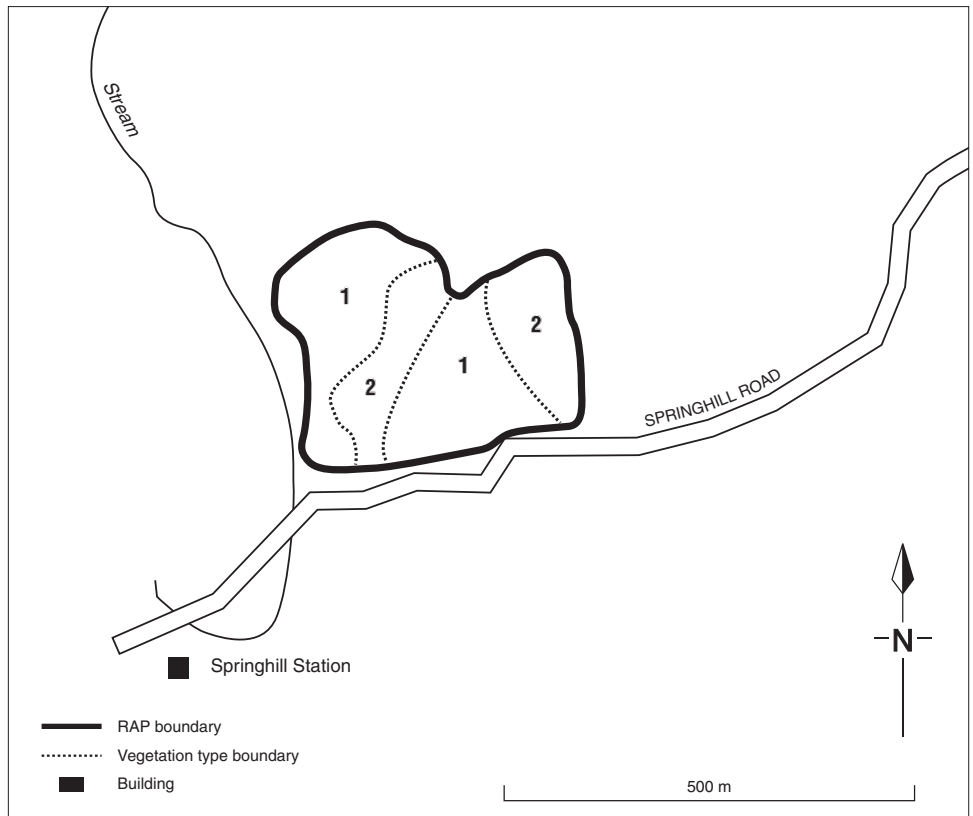
References

de Lange *et al.* 1996b.

Location of RAP 13, Springhill Station.



Site of RAP 13, Springhill Station.



RAP 14 TAUWERU RIVER BANKS

Area:	9.5 ha
Altitudinal range:	100–180 m
Grid reference:	NZMS260 T26 493 323; 500315; 506322; 503326
Geological and landform units:	Riparian flats, alluvial terraces
Study area no.:	1323, 1324
Survey methodology:	On site survey, aerial photographs (1977); field reconnaissance from a nearby high point (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. (Matai)–(totara)/ matai–totara–kanuka–(white maire)–(titoki)–(tawa) forest and treeland [understorey: houhere–akataramoa–ti kouka–akakiore–puka–(tarata)/ <i>Coprosma propinqua</i> – <i>Coprosma areolata</i> – <i>Coprosma rotundifolia</i> –mahoe wao–turepo–mahoe/ <u>bare ground</u> –(<i>Pellaea rotundifolia</i>)–(<i>Polystichum richardii</i>)].	Alluvial terrace
	2. Matai–totara–kahikatea forest [understorey: matai–totara–titoki–white maire–(tawa)/akakiore–(kaikomako)–(mingimingi)–(poataniwha)/ <i>Coprosma areolata</i> – <i>Coprosma rotundifolia</i> –mahoe wao–turepo–mahoe/ <u>bare ground</u> –(<i>Pellaea rotundifolia</i>)–(<i>Polystichum richardii</i>)].	Alluvial terrace
	3. <i>Coprosma propinqua</i> –weeping mapou–akataramoa–puka scrub [understorey: <i>Juncus edgarae</i> –purei/creeping buttercup–pennyroyal–Yorkshire fog].	Alluvial terrace
	4. Matai–totara–titoki–narrow leaved maire/(poataniwha)–(tawa) treeland [ground cover: <u>pasture</u> – <u>bare ground</u>].	Alluvial terrace
	5. Kanuka–kowhai–totara–(matai) forest [understorey: horoeka–kohuhu–houhere/sweet brier–mingimingi– <i>Coprosma rbamnoides</i> –(kowhai)–(<i>Coprosma propinqua</i>)/ <u>pasture</u> –(<i>Pellaea rotundifolia</i>)–(<i>Polystichum richardii</i>)].	Riparian flat, terrace scarp

Landform

The RAP consists of several small fragments, the largest of which occurs on an alluvial terrace. The other, smaller fragments are on riparian flats and a terrace scarp.

Vegetation

The primary forest has been modified by grazing, removal of surrounding vegetation, changes to drainage patterns and probably some logging. Secondary forest and scrub has been induced through human clearance of the original forest cover.

Flora

Ten adult plants of *Teucrium parvifolium* (classed as Gradual Decline, Hitchmough 2002) occur in the matai–totara–kahikatea forest (Townsend *et al* 1998). *Mazus novaezeelandiae* subsp. *novaezeelandiae* (classed as Serious Decline; Hitchmough 2002). The regionally threatened plant *Rumex flexuosus* also occurs at the site.

Fauna

Typical forest birds only were noted.

Threat/modification

Vegetation types 1 and 2 are fenced, however the fence does not appear to be stock proof and stock may occasionally access the area, causing damage to the understorey. This is of particular concern with respect to the *Teucrium parvifolium*. The rest of the vegetation within the RAP is grazed by domestic stock, causing a reduction in the diversity and abundance of understorey species. Fencing to exclude stock and repair of the present fence is a high priority. Possums are present. Human alterations to drainage patterns may affect the long-term relative abundance and dominance of certain species such as kahikatea.

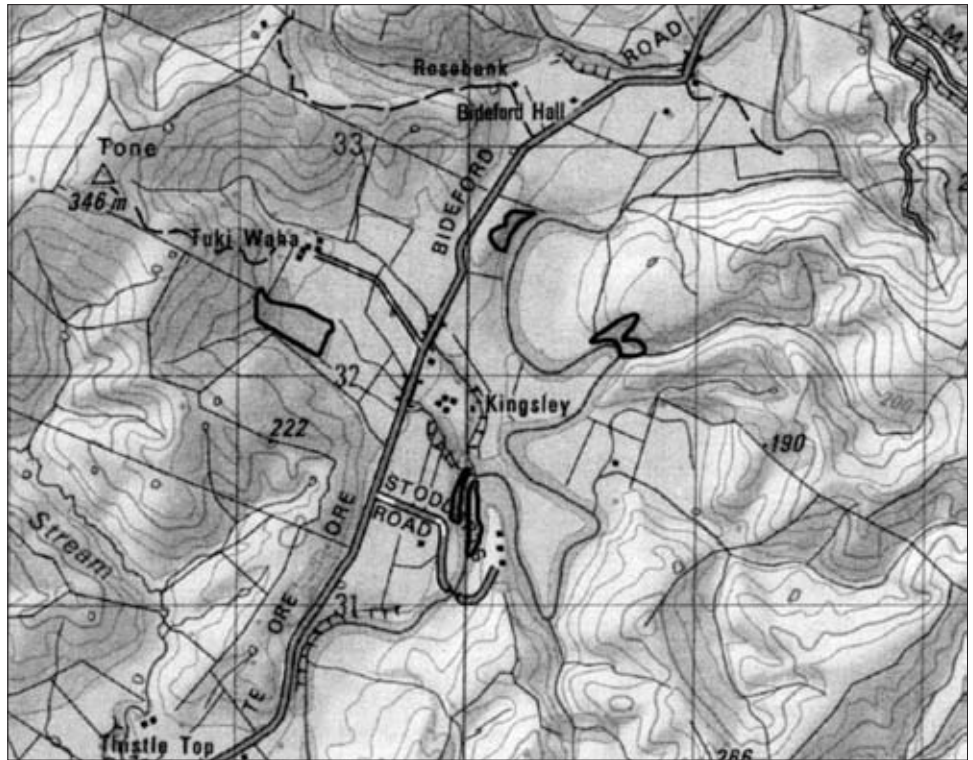
Discussion

Semi-coastal modified primary forest on the alluvial terraces land type has been heavily reduced in extent within the ecological district. This RAP contains the second largest remaining example of this ecological unit, and this is of high quality with respect to the diversity of plant species and naturalness, as suggested by the presence of a nationally threatened shrub species.

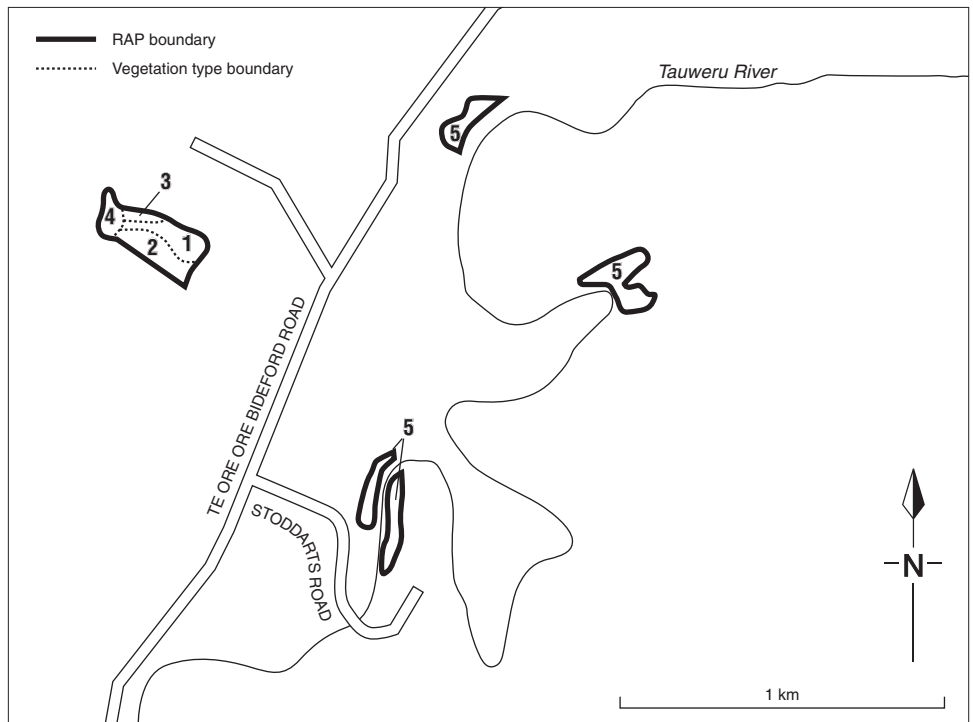
References

Townsend *et al.* 1998; Rebergen 2000a.

Location of RAP 14, Tauweru River banks.



Site of RAP 14, Tauweru River banks.



RAP 15 WHAKATAKI RIVER MOUTH

Area:	9.1 ha
Altitudinal range:	0–10 m
Grid reference:	NZMS260 U26 818325
Geological and landform units:	Riparian flats, estuarine channels, sand beaches
Study area no.:	1616
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. Sand beach (unvegetated).	Beach
	2. <u>Gorse</u> scrub [no ground cover].	Terrace
	3. <u>Isolepis nodosa</u> - <u>gorse</u> - <u>Carex geminata</u> sedgeland.	River bank
	4. <u>Cortaderia toetoe</u> -marsh ribbonwood/ <u>Bolboschoenus caldwellii</u> - <u>Cyperus ustulatus</u> - <u>Isolepis nodosa</u> -sea rush sedgeland [groundcover: <u>creeping bent</u> - <u>Eleocharis acuta</u>].	Oxbow wetland
	5. <u>Raupo</u> / <u>Bolboschoenus caldwellii</u> reedland.	Oxbow wetland
	6. Marsh ribbonwood- <u>Cyperus ustulatus</u> / <u>creeping bent</u> -tall fescue- <u>Isolepis nodosa</u> - <u>Eleocharis acuta</u> grassland [<u>white clover</u> dominates the ground cover].	Terrace
	7. <u>Raupo</u> reedland ⇄ <u>Bolboschoenus caldwellii</u> -sea rush sedgeland ⇄ <u>Carex geminata</u> sedgeland.	Duneslack
	8. <u>Gorse</u> / <u>Isolepis nodosa</u> -tall fescue sedgeland ⇄ <u>Isolepis nodosa</u> -marram/ <u>Calystegia soldanella</u> -catsear tussockland.	Dune
	9. <u>Bolboschoenus caldwellii</u> -(sea rush)/remuremu-(<u>Lilaeopsis</u> sp.)-(<u>Apium prostratum</u>)-(<u>Isolepis cernua</u>)-(arrow grass) sedgeland.	Estuary margin
	10. Open water.	Estuary

Landform

A small area at the mouth of the Whakataki River, including a sequence from beach through estuary, through associated dunes and duneslack to the terrace behind. On the terrace there is an incised river oxbow.

Vegetation

Several modified primary vegetation types present, including duneland, freshwater wetland, estuarine wetland and tussockland, have been modified through the invasion of adventive species and most of the vegetation is now relatively degraded.

Flora

Several species of limited distribution within the ecological district, including *Apium prostratum*, *Isolepis cernua*, *Bolboschoenus caldwellii*, *Lilaeopsis* sp. and *Plagianthus divaricatus* are present.

Fauna

The estuary provides feeding and breeding sites for variable oystercatcher and banded dotterel; Coastal Resource Inventory Site 09/0035.

Threat/modification

Gorse occurs in an area of c.0.25 ha within and beside the RAP. In areas where it forms a continuous cover, no indigenous species are present in the understorey. This species may expand into adjacent high quality sites. The removal and continued control of gorse must be a high priority. Numerous other weedy species are present. Domestic stock graze the area. Their disturbance of the substrate and removal of plant cover provides opportunity for further weed establishment. Fencing and exclusion of stock should be a high priority.

Discussion

Whakataki River mouth is used by variable oystercatcher and banded dotterel for feeding and breeding. There is a diverse range of vegetation types present, the estuarine wetlands on riparian flats being the only example of their type within the ecological district. Combined with the presence of several plants of limited distribution within the ecological district, the RAP has a high value for conservation.

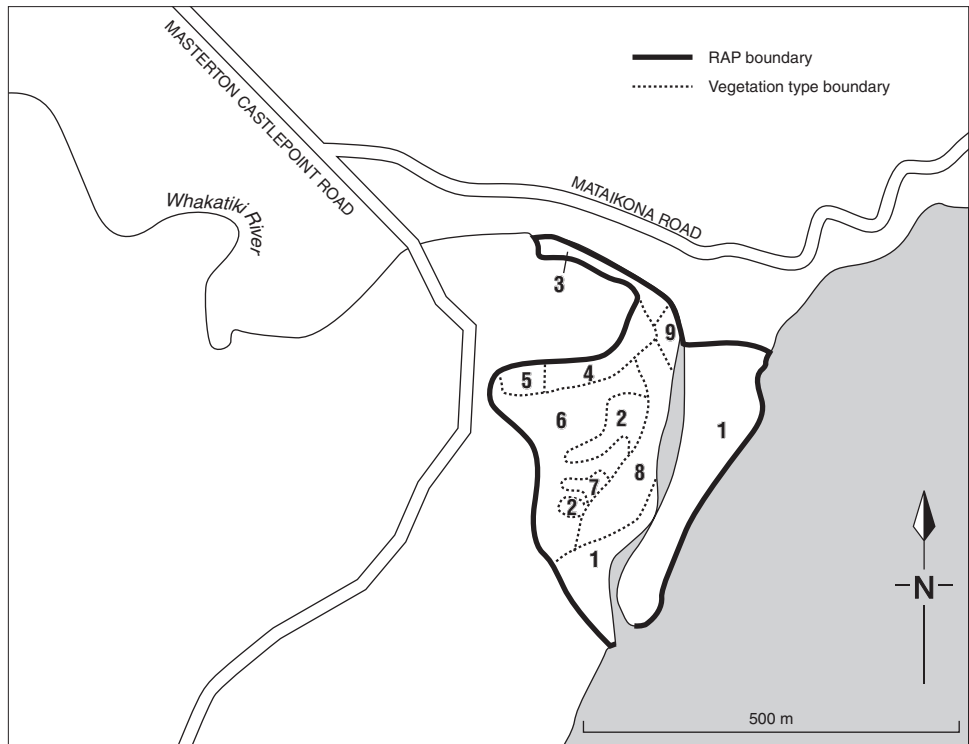
References

Coastal Resource Inventory.

Location of RAP 15, Whakataki River mouth.



Site of RAP 15, Whakataki River mouth.



RAP 16 REWANUI AND ROROKORO GORGE BUSH

Area:	117.6 ha
Altitudinal range:	160–440 m
Grid reference:	NZMS260 T26 542268; 547275; 545263; 556274; 562273
Geological and landform units:	Moderately steep hills, alluvial terraces and marine benches, incised gullies
Study area no.:	1414, 1415, 1416, 1417
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal, lowland	1. (Rewarewa)/ <u>kanuka-ngaio</u> -(putaputaweta)-(houhere)-(kowhai) forest.	Hillslope, gully
Semi-coastal	2. (Rewarewa)/ <u>titoki</u> forest.	Hillslope, gentle slope
Semi-coastal	3. <u>Rewarewa</u> forest.	Hillslope
Semi-coastal	4. Rewarewa/ <u>kanuka</u> forest.	Hillslope, gully
Semi-coastal	5. (Rewarewa)/ <u>titoki-kanuka-ngaio</u> forest.	Hillslope, gully
Semi-coastal	6. (Rewarewa)/ngaio-mahoe-putaputaweta-titoki-kanuka forest and scrub.	Gully
Semi-coastal	7. <u>Kanuka</u> -kowhai forest ⇔ <u>Matai-totara-kahikatea</u> /(black maire)-(white maire)-(narrow-leaved maire) forest.	Gully, narrow terrace, scarp

Landform

Most of this RAP is situated on moderately steep hills at the edge of a small riparian plain; part occupies a gorge cut by the Rorokoro Stream, separated from the remainder by a small alluvial plain.

Vegetation

The remnants are dominated by rewarewa, kanuka, ngaio and titoki. They include very occasional large remnant podocarps (totara, rimu) that were left after logging. The vegetation is mainly well-developed mixed secondary forest but includes discrete areas with an almost monospecific canopy.

Flora

At least one large northern rata occurs at this site, a species now very uncommon in the ecological district. The unusual combination of black maire, white maire, and narrow-leaved maire forms part of the subcanopy in Rorokoro Gorge. *Schizeilema trifoliata*, a regionally-rare plant species, occurs at this site. This species has a patchy distribution throughout Wellington Conservancy. *Botrychium bifforme* is another regionally-rare plant species that occurs at this site.

Fauna

Kereru appear common and are reported to nest nearby (B. Carter pers. comm.).

Other bird species recorded are tui, grey warbler, fantail, shining cuckoo, silvereve, welcome swallow, Australasian harrier and kingfisher. Previous reports of rifleman, whitehead and tit remain unconfirmed (New Zealand Wildlife Service National Habitat Register 33/16).

Threat/modification

The understorey and groundcover are sparse, with obvious trampling and tracking by stock, and heavy grazing is preventing forest regeneration. Fencing to exclude stock would improve long term viability.

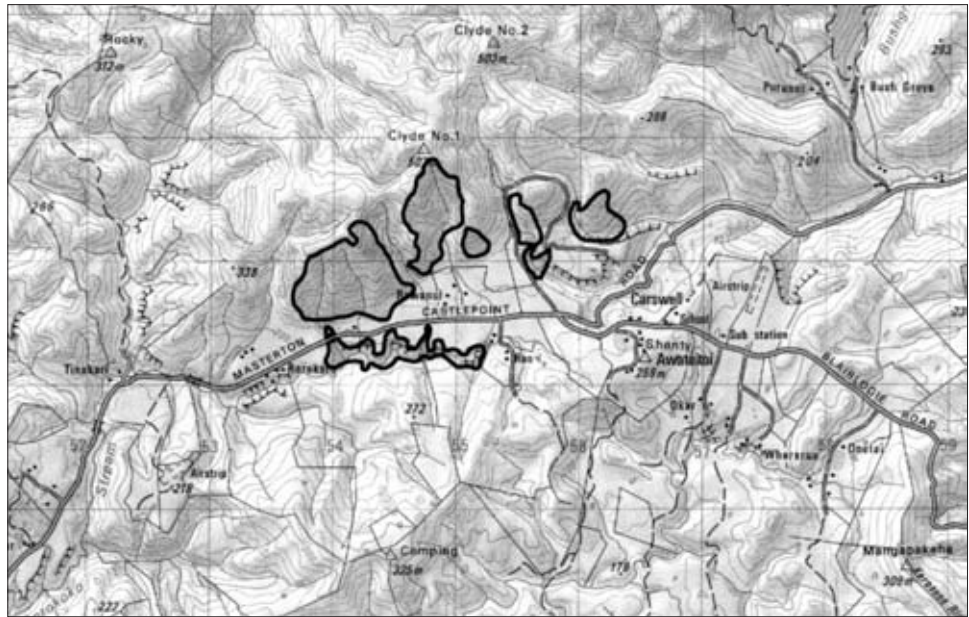
Discussion

This area is one of the best remaining examples of indigenous forest in the ecological district with a high species diversity, substantial numbers of kereru, and occupying a wide altitudinal range. The forested hillsides present a scenic aspect to the Masterton-Castlepoint Road.

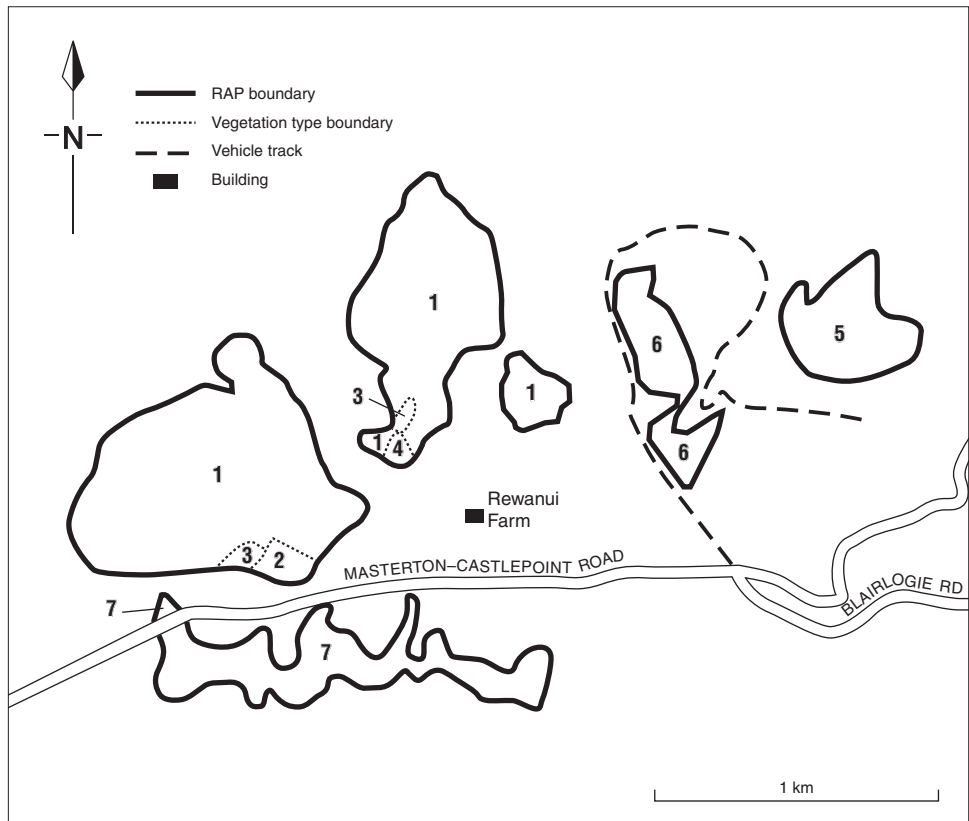
References

New Zealand Wildlife Service 1986; Enright *et al.* 2001b.

Location of RAP 16, Rewanui and Rorokoro Gorge Bush.



Site of RAP 16, Rewanui and Rorokoro Gorge Bush.



RAP 17 MANGAPAKEHA TAIPOS BUSH

Area:	46.9 ha
Altitudinal range:	140–310 m
Grid reference:	NZMS260 T26 630268; 638271; 628273; 617273
Geological and landform units:	Moderately steep hills & steep hills.
Study area no.:	1427, 1428, 1429
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. <u>Kanuka</u> forest and treeland [understorey: mahoe-(houhere)-(ti kouka)/ <i>Coprosma rhamnoides</i> -(<i>Coprosma crassifolia</i>)-(<i>Coprosma areolata</i>)-(ongaonga)].	Side-slope, gully, spur crest
	2. Pasture.	Steep side-slope
	3. (Kanuka)-(kowhai)/harakeke-(<i>Brachyglottis greyi</i>)/grasses-(kowaowao) rockland.	Bluff
	4. (Rewarewa)/ngaio-kowhai-titoki-tarata forest [understorey: (putaputaweta)-(<i>Coprosma areolata</i>)-(mahoe)/ <u>kawakawa</u> / <i>Doodia media</i>].	Steep side-slope, gully, spur crest
	5. <u>Kanuka</u> forest [understorey: <u><i>Coprosma crassifolia</i></u> /pasture].	Steep upper-slope, spur crest
	6. (Rewarewa)/ngaio-kowhai-ti kouka-porokaiwhiri treeland [understorey: (<i>Coprosma crassifolia</i>)-(ongaonga)/ <u>pasture</u>].	Mid to lower-slope, gully
	7. <u>Ngaio-mahoe-porokaiwhiri</u> forest [understorey: houhere/ <u>kawakawa</u> / <u>leaf litter</u> -(<i>Pellaea rotundifolia</i>)-(Pteris tremula)].	Spur crest, steep side-slope, gully
	8. <u>Kanuka</u> forest [understorey: (kowhai)-(ti kouka)/ (<i>Coprosma crassifolia</i>)-(<i>Coprosma rhamnoides</i>)-(ongaonga)/ <u>pasture</u>].	Spur crest, steep side-slope, gully

Landform

Three disjunct areas on the upper slopes of the Mangapakeha Taipos and a nearby hill. The areas comprise mainly steep hillslopes dissected by small gullies and guts, while the taipos themselves are steep sandstone peaks and bluffs.

Vegetation

Secondary forest and scrub dominate the RAP, induced through human clearance of the original forest cover, probably for agriculture. Modified primary forest is also present. Cliff vegetation is present on the taipos. The QEII covenanted area contains (Rewarewa)/ngaio-*Sophora tetraptera*-titoki-tarata forest.

Flora

Mangapakeha Taipo is the northern limit of *Brachyglottis greyi* (a regionally threatened plant—Empson and Sawyer 1996). *Nestegis lanceolata* and *Hymenophyllum cupressiforme* are also present.

Fauna

Kereru and typical forest birds such as fantail, grey warbler, tui and waxeye are present. Common geckos have been reported from the site (DOC 1996b).

Threat/modification

Grazing by domestic stock has reduced both the diversity and abundance of understorey species in areas outside the QEII covenant. Continued grazing will have negative effects on forest regeneration. Fencing and exclusion of stock are a high priority.

Discussion

This RAP complements the values of the QEII covenant. It would increase the diversity of protected ecological units and provide a larger habitat for flora and fauna. The largest identified area of unprotected semi-coastal cliff vegetation on the steep hills land type in the ecological district occurs within the RAP. The RAP is also the northern limit for *Brachyglottis greyi*, present on the rock bluffs of the taipo.

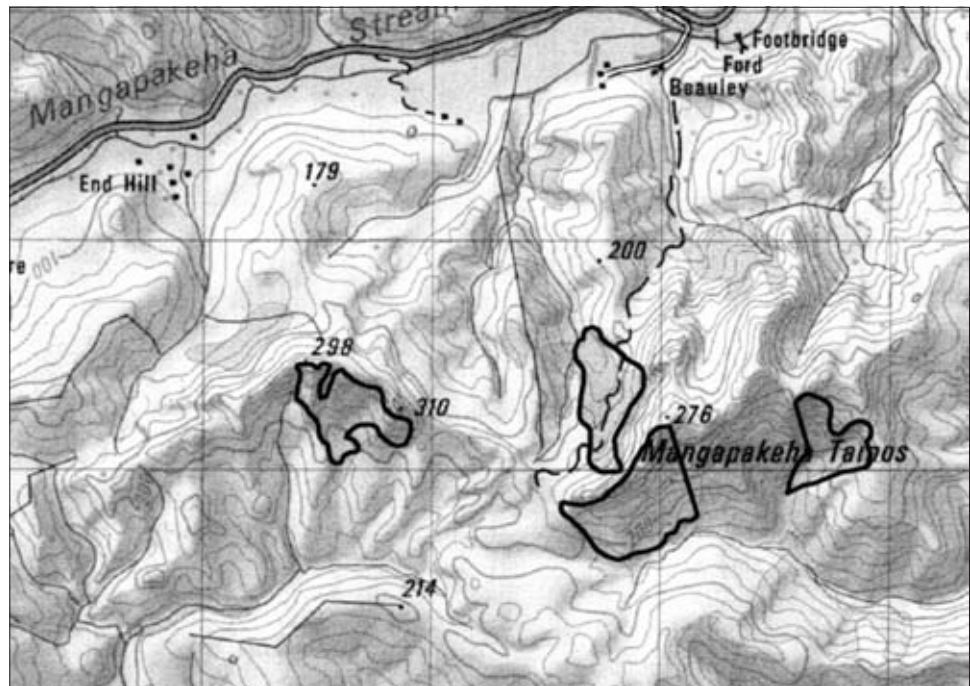
Comments

Accurate covenant boundaries were not available and the boundary shown on the map is approximate only. If the QEII covenant is smaller than the approximation shown on the map, then the RAP should be extended to cover the entire unprotected forest area.

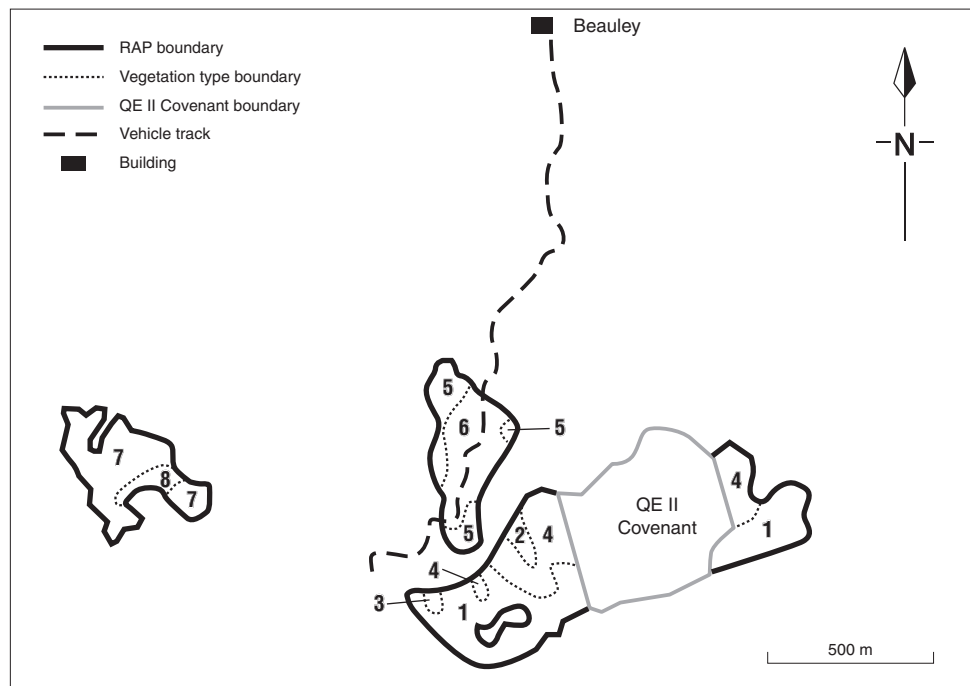
References

DOC 1996b; Enright *et al.* 2001a.

Location of RAP 17,
Mangapakeha Taipos Bush.



Site of RAP 17, Mangapakeha
Taipos Bush.



RAP 18 OTAHOUA SWAMP

Area:	9.1 ha
Altitudinal range:	80–100 m
Grid reference:	NZMS260 T26 427215
Geological and landform units:	Riparian flats
Study area no.:	1807
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. (Crack willow)/ <u>harakeke</u> -hukihuki- <i>Coprosma propinqua</i> -(raupo)/ <u>purei</u> flaxland.	Oxbow
	2. (Purei)-(<i>Juncus effusus</i>)-(<i>Juncus edgarae</i>)/jointed rush-white clover-pennyroyal- <i>Galium propinquum</i> -marsh bedstraw-celery-leaved buttercup-watercress herbfield [a few scattered pole kahikatea occur on margin].	Oxbow margins
	3. <i>Carex geminata</i> -purei- <i>Juncus effusus</i> - <i>Juncus edgarae</i> sedgeland [groundcover comprises white clover, creeping buttercup, jointed-leaved rush and Yorkshire fog].	Riparian flat
	4. Totara-titoki-kowhai-kahikatea-(tawa) forest [understorey: kohia-totara-houhere-horoeka-akataramoa/rangiora-elderberry-(koromiko)/ <i>Coprosma crassifolia</i> -ongaonga/ <u>bare ground</u> -pasture].	Terrace scarp
	5. <i>Juncus effusus</i> - <i>Juncus edgarae</i> -(purei) rushland [ground cover: <u>white clover</u> -Yorkshire fog-creeping buttercup-sweet vernal].	Riparian flat
	6. (Kahikatea)/totara-titoki-(houhere)-(kowhai)-(kanuka)/ <i>Coprosma propinqua</i> - <i>Coprosma crassifolia</i> / <u>pasture</u> treeland.	Riparian flat
	7. Kahikatea-(totara)/ <u>titoki</u> -tawa forest [understorey: elderberry/ <u>ongaonga</u> / <u>pasture</u>].	Riparian flat

Landform

A riparian flat is the major landform component of the RAP, with an oxbow occurring on the western side at the base of a terrace scarp. The scarp itself appears to have been formed through erosion of an alluvial terrace. An active meander loop has created a peninsula in the eastern half of the RAP.

Vegetation

Primary forest modified by logging; several large, partially decayed stumps were observed. The oxbow flaxland is in relatively good condition and is the best example of wetland vegetation in the RAP.

Flora

Korthalsella lindsayi occurs in the RAP (Sawyer *et al.* 1998).

Fauna

Typical bird species only were noted.

Threat/modification

Grazing by stock and horses has removed most of the forest understorey and there is no regeneration of canopy species. The rushland, herbfield, sedgeland and flaxland vegetation have been modified to varying degrees by stock, not only through grazing, but also by trampling and pugging. These vegetation types have been further modified by the introduction of exotic grasses and clovers. Fencing and removal of stock should be a high priority. Some fencing of Area 4 (see map) has already been carried out. Human-induced changes to drainage patterns and eutrophication from fertiliser runoff may also have modified the species composition.

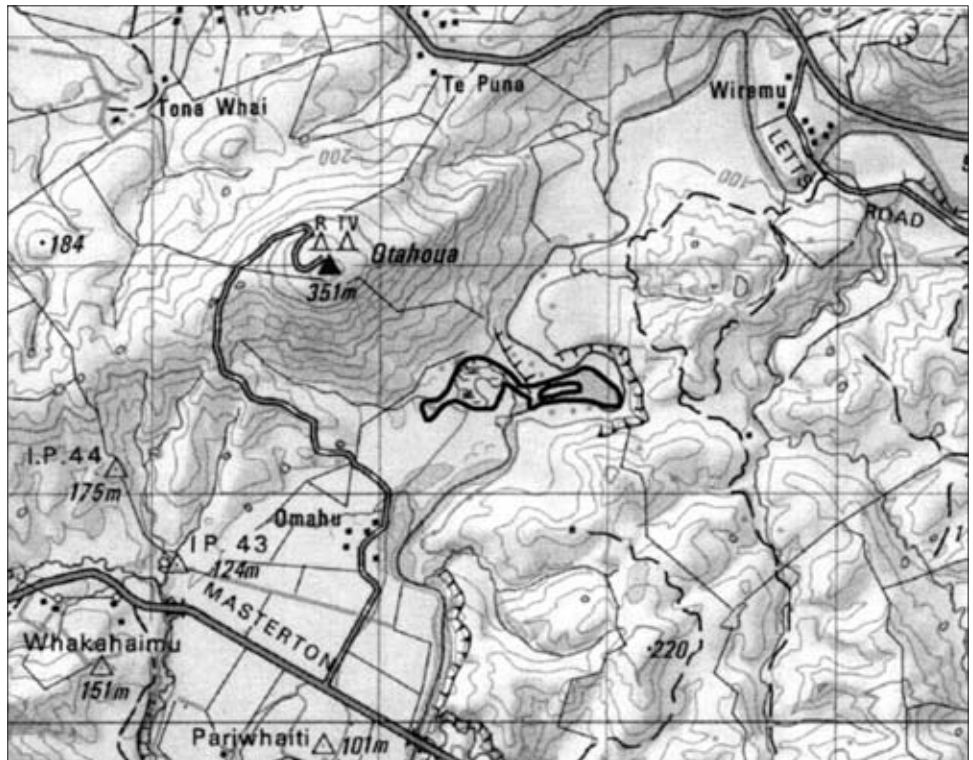
Discussion

Otahoua Swamp is the largest remaining semi-coastal freshwater wetland on the riparian flats land type within the ecological district. It is the best example of a freshwater wetland inspected in the Eastern Wairarapa Ecological District during the 1998 survey, containing a diverse range of plant species. The treeland and forest on the terrace scarp and riparian flats further increases the diversity and value of the RAP, as does the presence of regionally threatened mistletoe species.

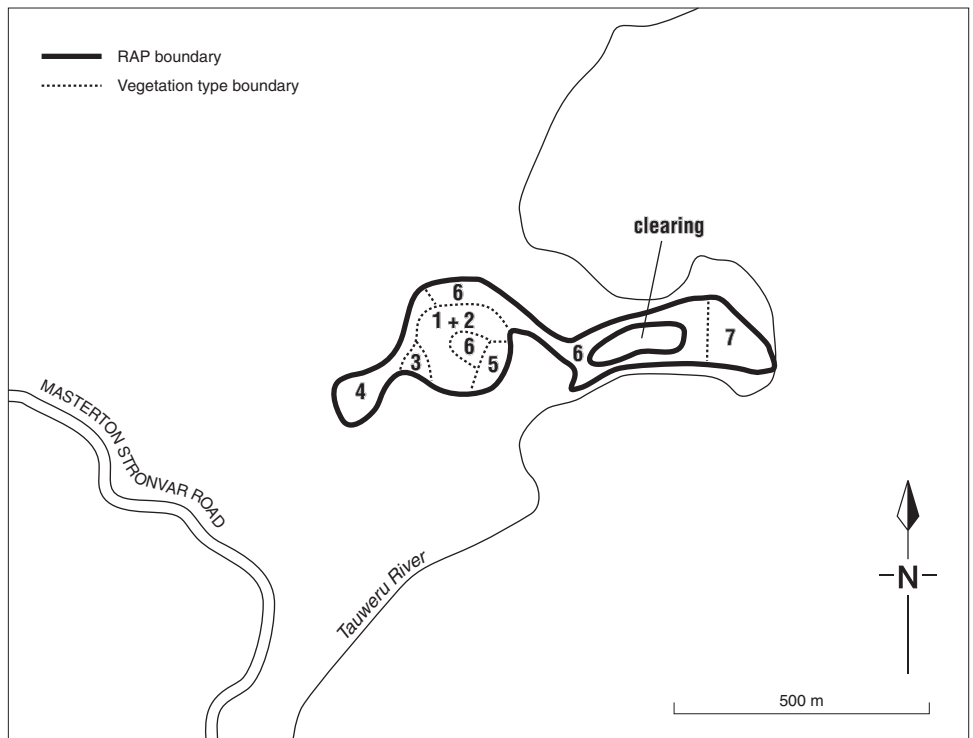
References

Sawyer *et al.* 1998.

Location of RAP 18, Otahoua Swamp.



Site of RAP 18, Otahoua Swamp.



RAP 19 WAIPAPA STREAM BUSH

Area:	3.8 ha
Altitudinal range:	220–260 m
Grid reference:	NZMS260 T26 455183
Geological and landform units:	Moderately steep hills
Study area no.:	1802
Survey methodology:	On site survey

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
semi-coastal	1. (Kahikatea)-(rewarewa)/ <u>titoki</u> -(houhere) forest [occasional emergent matai].	Hillslope, gully head

Landform

Hillslope and broad gully on moderately steep hills leading to riparian flats. Located at the head of the Waipapa Stream.

Vegetation

Podocarp-broadleaved forest, merging into titoki and kowhai treeland on some edges. Tarata, horoeka, houhere, tawa, white maire, supplejack, poataniwha, *Coprosma rotundifolia* and *C. areolata* are also present. The understorey and groundcover are relatively open on the hillslope.

Flora

This site contains the better of only two North Island populations of *Brachyglottis sciadophila* (Sparse; Hitchmough 2002; see Townsend 1997). It also contains dwarf mistletoe (*Korthalsella lindsayi*) (classed as regionally threatened; DOC 1996; de Lange *et al.* 1996c, Sawyer *et al.* 1998).

Fauna

Pukeko, welcome swallow, and typical forest bird species occur in this RAP.

Threat/modification

The forest is very small and fenced with a small margin of pasture within the fence. It is currently grazed by fallow deer.

Discussion

The forest has a diverse assemblage of plant species (de Lange *et al.* 1996c) in addition to the threatened plants noted above. An undeveloped understorey, sparse groundcover and lack of sapling canopy species indicate poor regeneration. Primary forest on this land type was previously a significant component of the eastern Wairarapa landscape but has been very much reduced in extent.

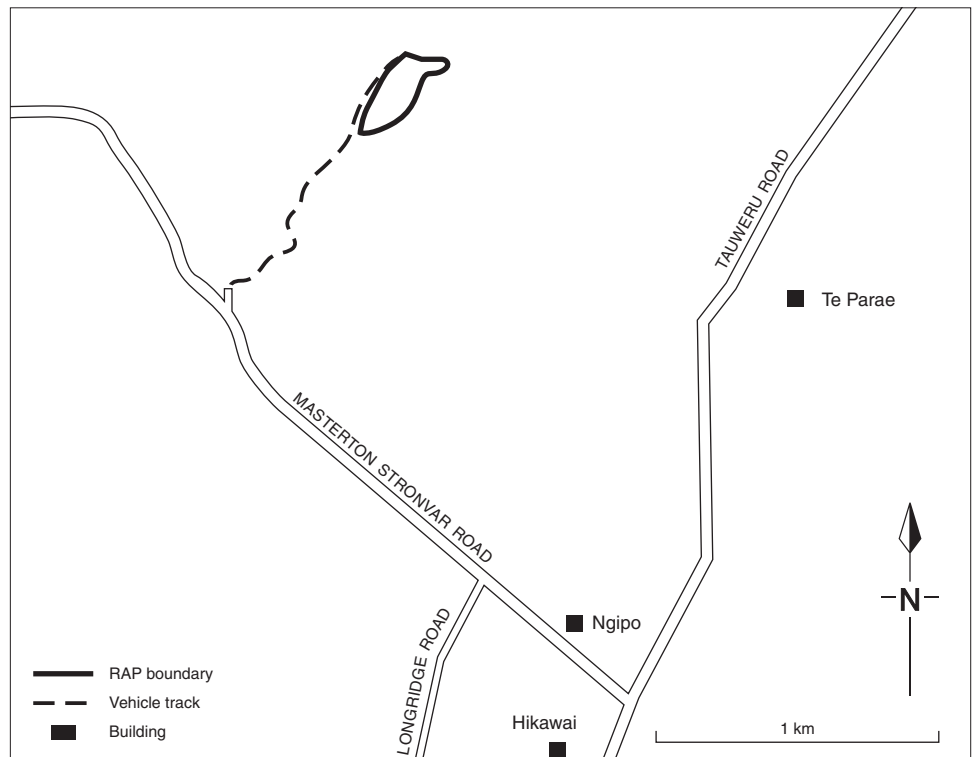
References

de Lange *et al.* 1996c; Sawyer *et al.* 1988; Townsend 1997.

Location of RAP 19, Waipapa Stream Bush.



Site of RAP 19, Waipapa Stream Bush.



RAP 20 REWA BUSH EXTENSION

Area:	302.3 ha
Altitudinal range:	100–534 m
Grid reference:	NZMS260 T26 627134
Geological and landform units:	Moderately steep hills, steep hills
Study area no.:	1911
Survey methodology:	On site survey (1998); aerial photographs (1977)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal & lowland	1. Rewarewa-(hinau)/ <u>ngaio</u> - <u>putaputaweta</u> -porokaiwhiri-mahoe-horoeka forest ⇄ <u>Black beech</u> -(matai) forest [understorey: ponga-putaputaweta- <i>Coprosma areolata</i> -hangehange/rangiora-kawakawa/ <u>bare ground</u> - <i>Polystichum richardii</i> - <i>Pteris macilenta</i> -(bush rice grass)-(rereti)-(<i>Adiantum cunninghamii</i>) ⇄ (totara)/ (kaikomako)-(horoeke)-(titoki)-(mahoe)/kawakawa- <i>Coprosma areolata</i> -(totara)-(rangiora)-(<i>Coprosma crassifolia</i>)/mingimingi- <i>Coprosma rhamnoides</i> - <i>Coprosma areolata</i> / <u>bare ground</u> -hook sedge-(kawakawa)-(<i>Polystichum richardii</i>)-(whauwhaupaku)-(porokaiwhiri)].	Gully, sideslope
Semi-coastal	2. <u>Kanuka</u> forest [understorey:putaputaweta-horoeka-mahoe/ <u>kawakawa</u> - <i>Coprosma areolata</i> -mingimingi-rangiora-kaikomako/ <u>bare ground</u> -hook sedge].	Gully, sideslope
Semi-coastal & lowland	3. <u>Kanuka</u> scrub [understorey: <i>Coprosma rhamnoides</i> -mingimingi-horoeka-rangiora-mahoe-ninia/ <u>bare ground</u> -hook sedge; a diverse range of shrubs and trees in understorey, including totara].	Ridgecrest, upper slope

Landform

The headwaters of tributaries, one of the Kohiwai stream and the other of the Motuwaireka stream, on the eastern slopes of Pukekumera. Both are gully systems on hillslopes.

Vegetation

Small areas of primary forest occur in the gully headwaters, surrounded by large areas of secondary forest and scrub induced by human clearance of the original forest cover.

Flora

Typical species only were recorded.

Fauna

Kereru and typical forest birds were observed within the RAP.

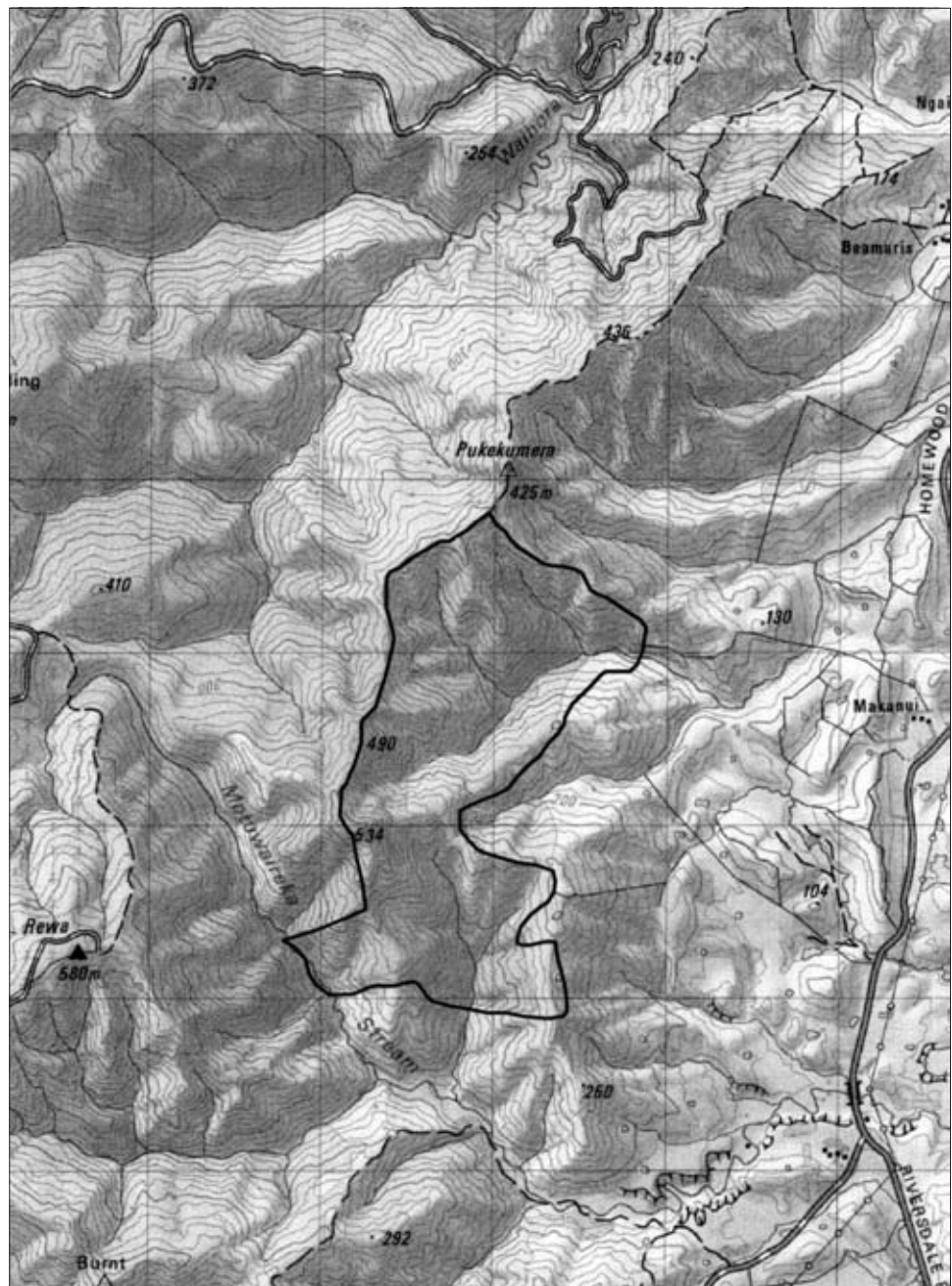
Threat/modification

Most of the RAP is fenced and is not currently grazed. However fencing and the removal of domestic stock from the RAP are recommended. Deer, pigs, goats and possums are present and should be controlled.

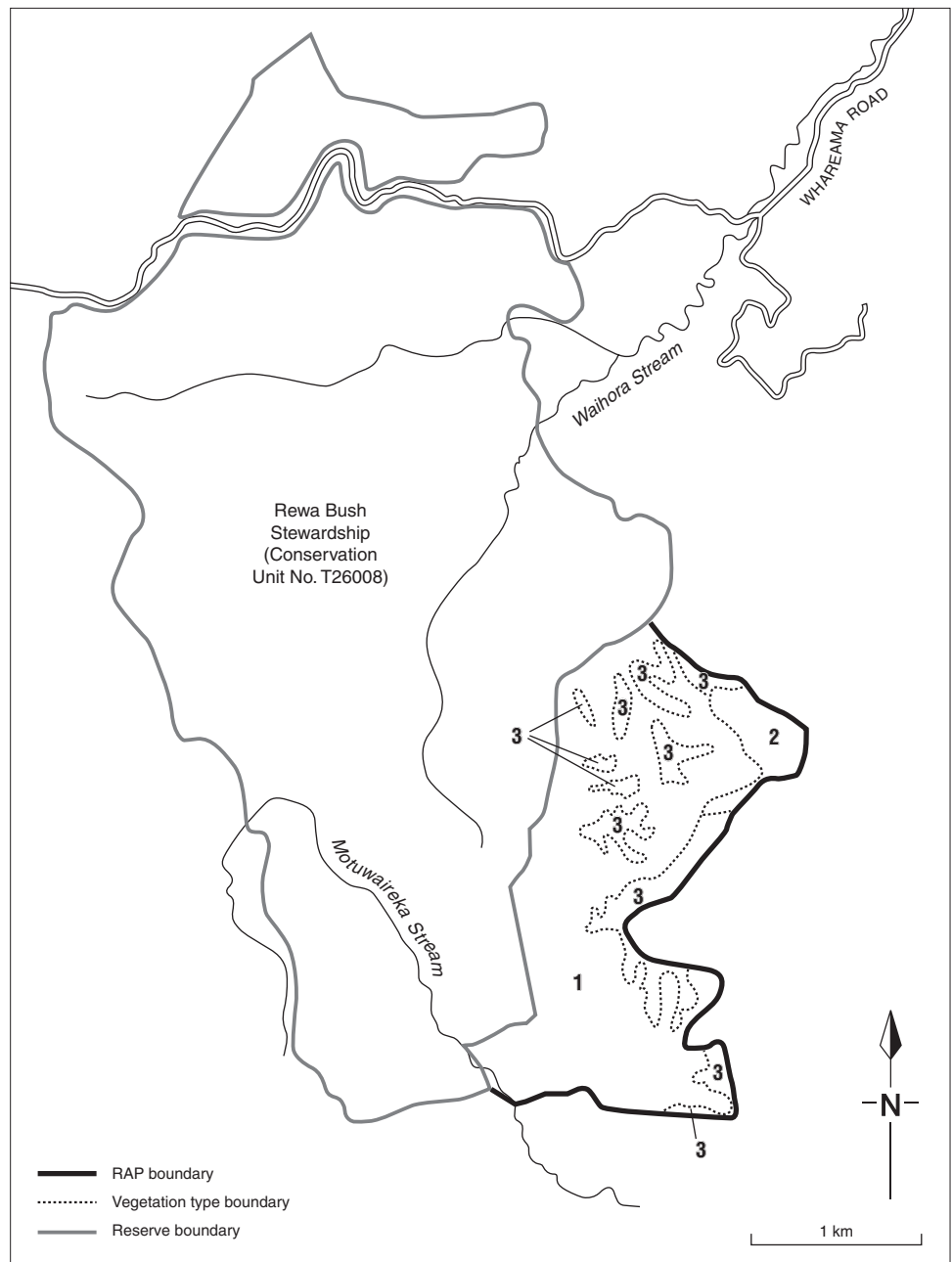
Discussion

Rewa Bush Extension contains the third largest unprotected example of semi-coastal and lowland secondary forest on the moderately steep hills land type within the ecological district. The forest is in excellent condition with a diverse and dense understorey and it is one of the best examples of its type within the district. It is contiguous and complementary to Rewa Bush Conservation Area (a reserve of high conservation value). Protection of the RAP would significantly increase the area of protected habitat available to plant and animal species. The southern part is legally protected through a private covenant agreement between landowners.

Location of RAP 20, Rewa Bush Extension.



Site of RAP 20, Rewa Bush Extension.



RAP 21 WHAREAMA RIVER MOUTH

Area:	23.8 ha
Altitudinal range:	<20 m
Grid reference:	NZMS260 U26 711160
Geological and landform units:	Sand beaches
Study area no.:	2004
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <i>Isolepis nodosa</i> -(<i>Muehlenbeckia complexa</i>)-(gorse)-(haretail) sedgeland [local areas of pasture, scattered shivery grass, local <i>Coprosma acerosa</i>].	Low dunes
	2. <u>Marram</u> -cocksfoot/(<i>Calystegia soldanella</i>) grassland [local wild rose and gorse].	Foredune
	3. <i>Isolepis nodosa</i> /pasture rushland [occasional <i>Muehlenbeckia complexa</i>].	Old, low dunes
	4. <u>Spinifex</u> -haretail/catsear grassland.	Low dunes
	5. <i>Carex geminata</i> - <i>Cyperus ustulatus</i> -cocksfoot-leafless rush-(soft rush) sedgeland.	Stream and adjacent low dune
	6. <u>Creeping bent</u> -watercress grassland (occasional jointed rush, <i>Schoenoplectus pungens</i>) ⇌ Pasture.	Stream and adjacent low dune
	7. <i>Cyperus ustulatus</i> -leafless rush- <i>Isolepis nodosa</i> /pennyroyal rush-sedgeland.	Low dunes
	8. <i>Cyperus ustulatus</i> - <i>Carex geminata</i> - <i>Isolepis nodosa</i> -(leafless rush) rush sedgeland [with occasional <i>Schoenoplectus tabernaemontani</i>].	Dune terraces
	9. <u>Jointed rush</u> -pennyroyal-(<i>Schoenoplectus pungens</i>) rushland ⇌ Pasture.	Dune terraces
	10. <i>Schoenoplectus pungens</i> - <u>sea rush</u> -pasture sedgeland (occasional clumps of <i>Carex geminata</i>).	Depression in dunes
	11. <u>Buck's-horn plantain</u> - <u>arrow grass</u> -grass herbfield (wild rose and <i>Muehlenbeckia complexa</i> around margins; occasional <i>Cyperus ustulatus</i> ; scattered leafless rush, local pennyroyal. <i>Nertera scapanioides</i> in centre where recently wet).	Depression in dunes
	12. <u>Arrow grass</u> herbfield.	Depression in dunes
	13. <i>Schoenoplectus pungens</i> /(arrow grass) sedgeland.	Depression in dunes

Landform

Low duneland extending south from the Whareama River mouth along the ocean beach, at the foot of low hills, merging into pasture. Small ephemeral creeks, most of which were dry during survey in 1998, flow into the ocean through the RAP.

Vegetation

Duneland and duneslack vegetation including ephemeral turfs and ponds. Most were dry during the 1998 field survey.

Flora

Coprosma acerosa, a species generally indicative of relatively good to very high quality duneland, is present. The only occurrence of *Nertera scapanioides* in the Eastern Wairarapa Ecological District is at this site.

Fauna

Bird species present include pipit and Australasian harrier.

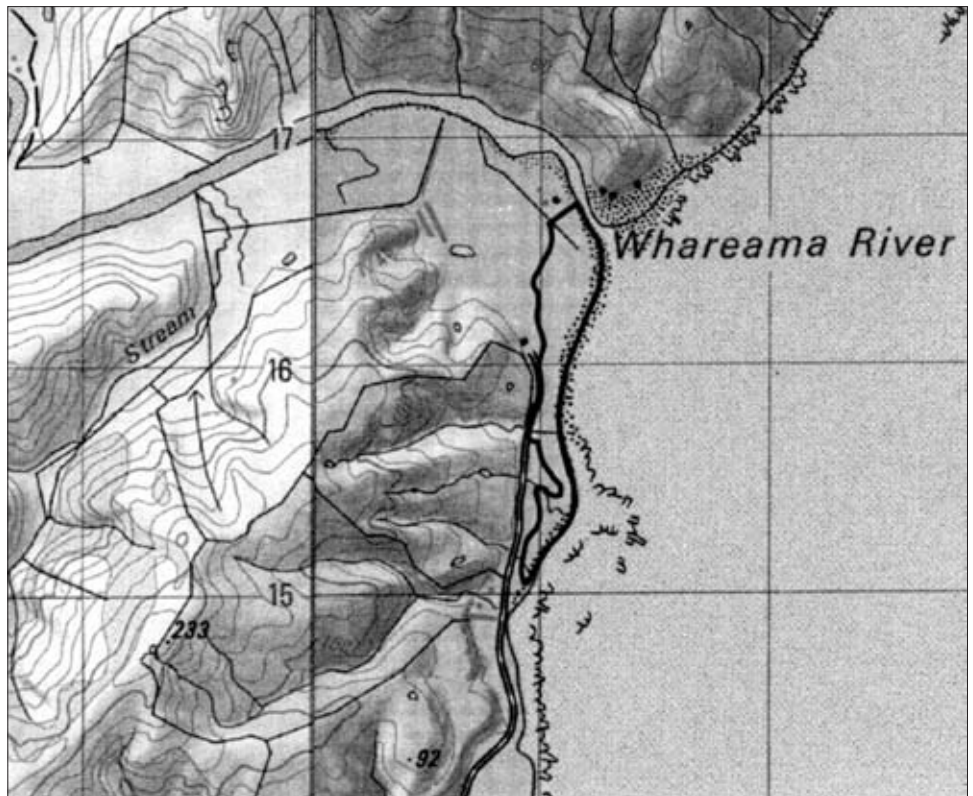
Threat/modification

Sheep have free access over the area, parts of which are heavily grazed, and rabbits are also likely to be present. Adjacent baches on the river may increase the fire risk. Marram is widespread along the foredune and around the river mouth. Wild rose, gorse, and haretail are established weeds, and Mercer grass and thorn apple were also found. Significant erosion is apparent along the foredune, and toward and into the surrounding pasture in the western part of the RAP.

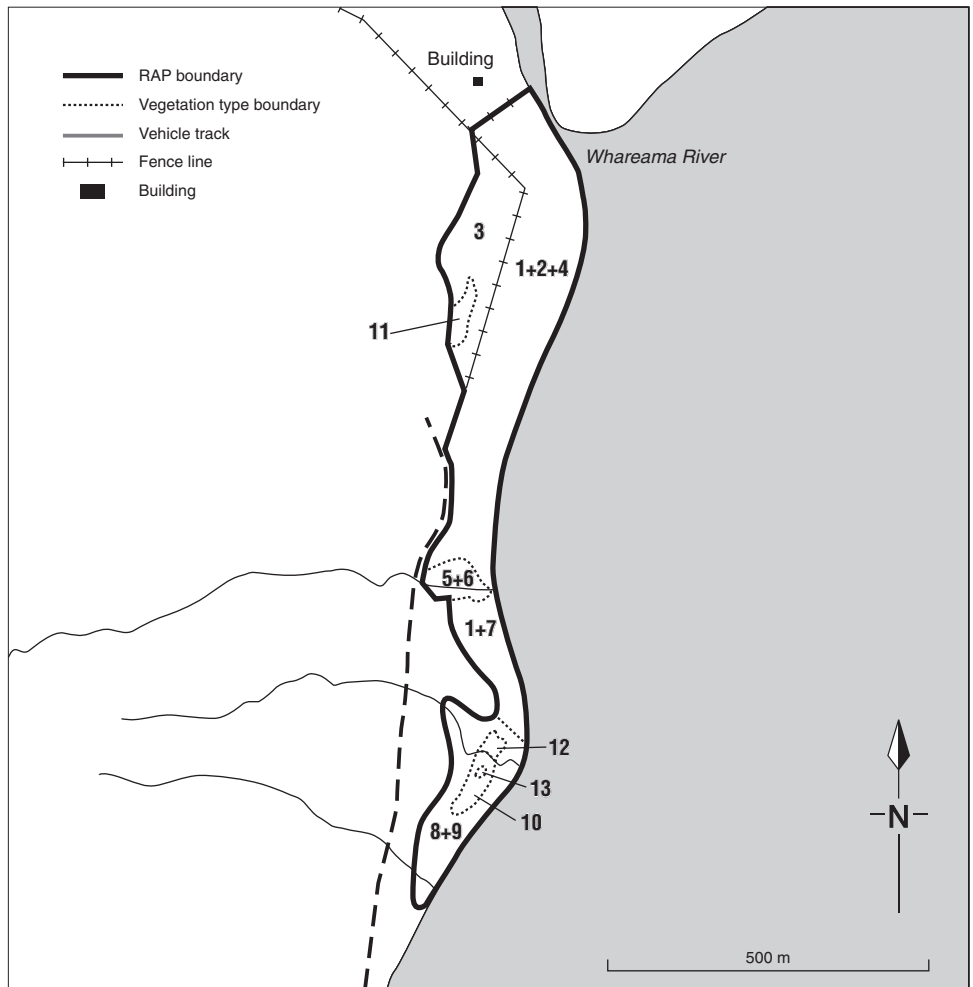
Discussion

This is one of the more intact areas of coastal wetland and duneland, and has good potential for restoration and the control of most weeds at this stage, however erosion may be a substantial problem and needs investigation. Native coastal vegetation continues to the south as a series of wetland vegetation types interspersed by pasture (dominant species include raupo, marsh ribbonwood, *Isolepis nodosa*, *Cyperus ustulatus*, sea rush and harakeke).

Location of RAP 21, Whareama River Mouth.



Site of RAP 21, Whareama River Mouth.



RAP 22 MAKAHAKA STREAM

Area:	14.2 ha
Altitudinal range:	240–280 m
Grid reference:	NZMS260 T26 575158
Geological and landform units:	Alluvial terraces & incised gullies.
Study area no.:	1907
Survey methodology:	On site survey (1998).

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. <u>Black beech</u> forest [a few totara and hinau in canopy [understorey: a mosaic of (whauwhaupaku)-(horoeka)-(Coprosma propinqua)-(karamu)/prickly mingimingi-mingimingi-rangiiora/niniaio-Coprosma rhamnoides-prickly mingimingi/Poa anceps-(kowaowao)-(Uncinia sylvestris) and (Coprosma rhamnoides)-leaf litter].	Steep gully side, terrace, gully
	2. (Horoeka)-(houhere)/ <u>manuka</u> -houhere-(whauwhaupaku)-(putaputaweta) scrub [understorey: mingimingi-prickly mingimingi-Coprosma propinqua/ <u>pasture</u>].	Steep gully side, terrace

Landform

Alluvial terrace, dissected by incised gullies, is the major landform component.

Vegetation

Modified primary black beech forest is the dominant cover of this RAP. Secondary vegetation, present as a minor component, has been induced through clearance of the original beech forest cover.

Flora and fauna

Typical species only were recorded.

Threat/modification

The understorey in areas accessible to stock has been almost entirely removed and there is no regeneration of canopy species. Fencing to exclude stock is highly recommended. Possum and deer sign were noted.

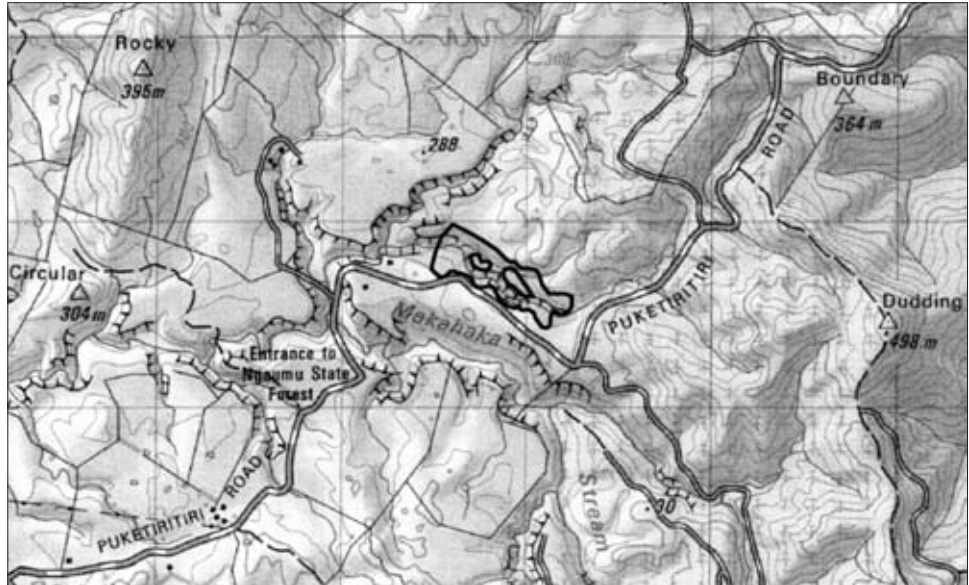
Discussion

Primary forest, some of it modified, on the incised gullies land system has been moderately reduced in extent within the ecological district. At present only 18% of the original cover remains. The combination of this RAP and the already protected adjacent covenant, forms one of the largest remaining areas of semi-coastal modified primary forest in the ecological district.

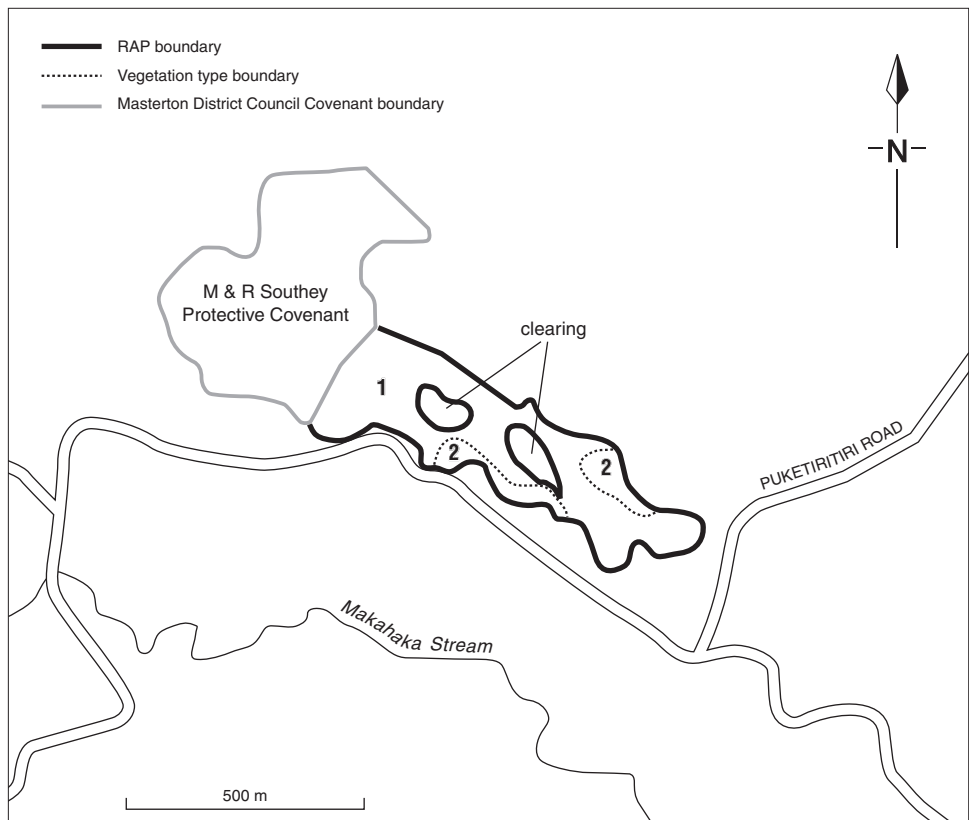
Comments

The adjacent covenanted area contains black beech forest with a more diverse and abundant understorey. Whilst the RAP has a fairly sparse understorey at present, removal of domestic stock would allow the recolonisation of a diverse understorey from the adjacent covenanted area.

Location of RAP 22, Makahaka Stream.



Site of RAP 22, Makahaka Stream.



RAP 23 WHAKATAHINE RIVER REMNANTS

Area:	43.4 ha
Altitudinal range:	180–280 m
Grid reference:	NZMS260 T26 497136; 514127; 508139
Geological and landform units:	Incised gullies, moderately steep hills
Study area no.:	1816, 1816b
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. <u>Horoeka</u> -kowhai-whauwhaupaku-(ti kouka)/whauwhaupaku-(koromiko)-(rangiora) forest and scrub [locally common canopy species include kowhai, horoeka, manuka and broom; occasional patches of conical kahikatea-horoeka-(ti kouka)/mingimingi-(broom) scrub].	Gully, hillslope
Semi-coastal	2. Manuka-(horoeka)/ <i>Coprosma propinqua</i> -broom-(gorse)-(mingimingi)/pasture shrubland [occasional whauwhaupaku].	Gully
Semi-coastal	3. <u>Manuka</u> /pasture shrubland [occasional horoeka].	Gully, hillslope
Semi-coastal	4. Totara-horoeka-manuka-(kahikatea)/mingimingi-(koromiko) forest and scrub.	Gully, hillslope
Semi-coastal	5. <u>Manuka</u> -(ti kouka)-(horoeka) scrub ↔ Horoeka-manuka-(black beech)-(totara)-(kowhai) forest.	Gully
Semi-coastal	6. <u>Black beech</u> -kowhai/rangiora-mingimingi-prickly mingimingi-(karamu)-(horoeka)-(whauwhaupaku) forest [kowhai locally common towards gully bottom].	Gully
Semi-coastal	7. Black beech-(horoeka)-(houhere)/rarahu-broom-pohuehue-grass treeland [occasional ti kouka, koromiko, <i>Coprosma propinqua</i> , and large kahikatea; rarahu- <i>Carex geminata</i> sedge-fernland occurs on the river bank].	Gully, hillslope

Landform

This RAP occupies part of an extensive, moderately steep to very steep gully system cut through alluvial terraces and marine benches by the Whakatahine River.

Vegetation

Pasture and pines occupy the flat terraces surrounding the gullies, and wharariki, toetoe, rarahu, broom and grasses are locally common on slips and scarp areas. A very small pond with raupo, *Carex geminata*, and purei lies in a hillslope depression at the end of the gully. Some large podocarps and black beech forest are primary remnants while the remaining forest, scrub and shrubland is secondary and probably regenerated after fires. Overall plant diversity in this RAP is quite high (Sawyer *et al.* 1998).

Flora

Pittosporum divaricatum has been recorded within the RAP (Sawyer *et al.* 1998).

Fauna

Tui, fantail, silvereye, grey warbler and Australasian harrier were seen. Bellbirds were noted during a previous survey (Sawyer *et al.* 1998).

Threat/modification

Spanish heath and gorse (locally common) occur along the forestry-RAP boundary, and old man's beard covers parts of the site. The manuka-dominated vegetation type is threatened by clearance for development.

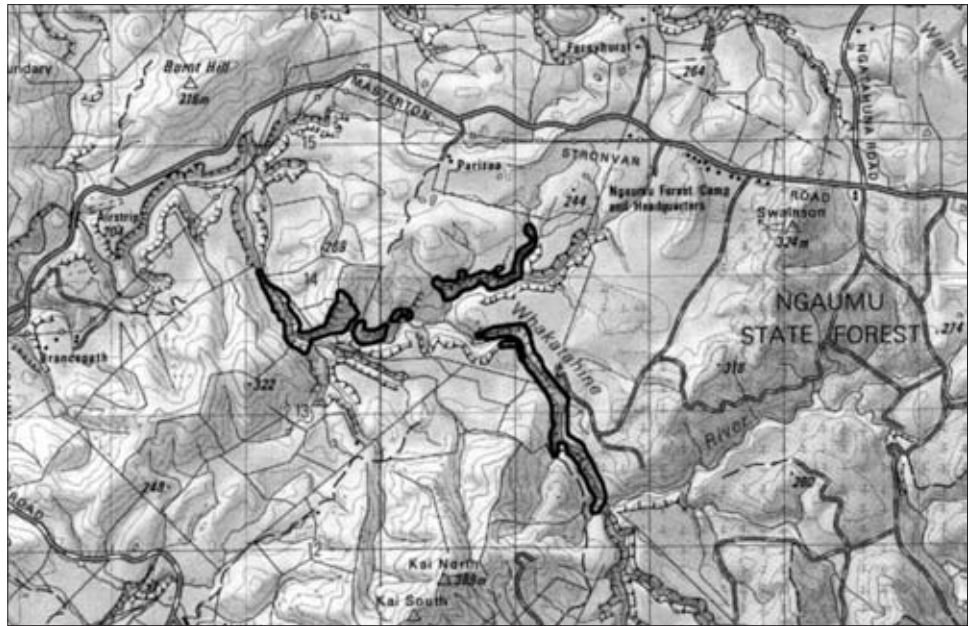
Discussion

This site includes some of the largest areas of primary and secondary forest on this land type. Much of the RAP is already fenced. Pine plantations adjoin the RAP to the southeast.

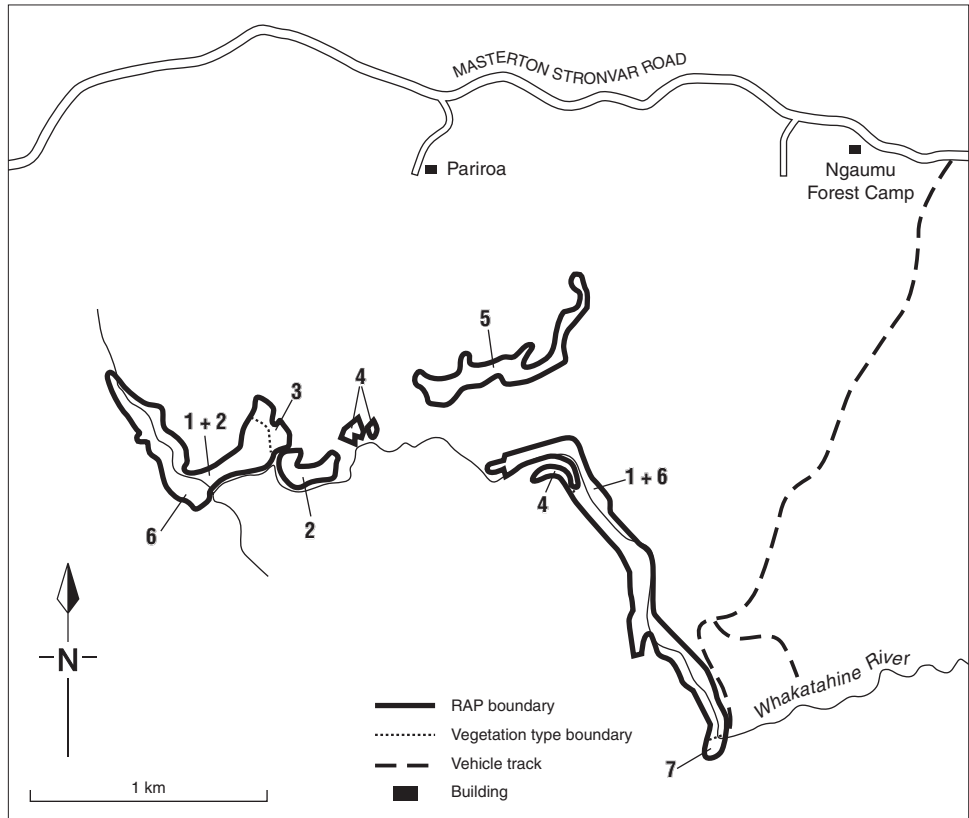
References

Sawyer *et al.* 1998.

Location of RAP 23, Whakatahine River Remnants.



Site of RAP 23, Whakatahine River Remnants.



RAP 24 KOURARAU VALLEY AND PUKEMANGAMANGA

Area:	64.5 ha
Altitudinal range:	310–460 m
Grid reference:	NZMS260 T27 372076; 358052; 343042; 343032; 323024
Geological and landform units:	Riparian flats, easy terrain
Study area no.:	2204, 2205, 2206, 2242, 2309
Survey methodology:	On site survey (1998); G. Foster pers. comm.

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Lowland	1. Kahikatea-rimu-totara-(matai)/mahoe forest [treeland/ <u>ongaonga</u> where grazed by road, tall adventive grasses at margins, porokaiwhiri seedlings within the forest].	Gentle slopes and gullies
	2. <u>Kanuka</u> treeland.	Hillslope
	3. Black maire-(rewarewa)/totara-kanuka-matai-(kowhai) forest ⇄ Kanuka treeland [understorey: mahoe-(elderberry); no ground cover].	Gully, ridge, hillslope
	4. (Kahikatea)-(black maire)-(totara)/ <u>houhere</u> -(tarata) forest ⇄ (White maire)-(ti kouka)/sapling radiata pine treeland.	Hillslope
	5. (Totara)-black maire/mahoe-horopito-(houhere) treeland [with local pohuehue, <i>Parsonia</i> sp.; occasional emergent matai and houhere].	Gently rolling slopes and plain
	6. <i>Coprosma wallii</i> -houhere-(<i>Myrsine divaricata</i>) treeland.	Toe of gentle slope
	7. Kahikatea-rimu-(matai)-(black beech)-(red beech)/white maire forest [understorey: horopito-(white maire)/ferns-grass-divaricating shrubs; around margins the canopy becomes sparse with groundcover comprising rushes and grasses].	Alluvial flat
	8. Rimu-matai-(totara)-(miro)-(rewarewa)-(kahikatea)/small-leaved milk tree-maire-kahikatea-porokaiwhiri-(mapou)-(horopito) forest [understorey: kawakawa-rangiora- <i>Carmichaelia australis</i> -whauwhaupaku-pate. Tarata, kaikomako, ribbonwood and houhere locally in the canopy toward the edges; low shrubland of <i>Myrsine divaricata</i> , <i>Coprosma propinqua</i> and <i>C. rotundifolia</i> occurs along one edge].	Gentle hillslope
	9. (Rewarewa)/white maire-mahoe-(narrow-leaved maire) forest.	Rolling tops

Landform

Lowland alluvial flats of the Kourarau Stream valley set between moderately steep hills and a long ridge. One remnant lies on easy terrain in the hills near Pukemangamanga.

Vegetation

Tall primary podocarp-broadleaved forest, reduced to treeland or with podocarps logged in parts. Black maire, white maire, totara, kahikatea, rimu, matai, and rewarewa are conspicuous emergent and canopy components while houhere, horopito and mahoe are often common in the subcanopy or in treeland.

Flora

Three plant species of national conservation concern are present, mostly in treeland. These consist of relatively large populations of *Tupeia antarctica* (classed as Gradual Decline; Hitchmough 2002), several *Coprosma wallii* (Gradual Decline), and two *Olearia gardneri* trees (Nationally Critical) (see Townsend *et al.* 1998). *C. virescens*, *Neomyrtus pedunculata*, raukawa, northern rata and red beech which are currently known from few Eastern Wairarapa Ecological District locations (Sawyer *et al.* 1998) also occur here.

Fauna

Birds include tui, fantail, grey warbler, Australasian harrier, spurwing plover and kereru. Common gecko, leaf-veined slugs and carabid beetles are also present. Potential bat habitats are present in the RAP, however no survey to establish their presence or otherwise, has been undertaken (G. Foster pers. comm.).

Threat/modification

Grazing varies from nil to heavy, with associated trampling, plant damage and lack of regeneration presenting a severe threat to some areas. However, parts of the RAP have been fenced for up to c.50 years and have well developed undergrowth, or are more intact and demonstrate excellent regenerative potential. Ill health and significant mortality in maire has occurred in at least part of the RAP over the last 8–9 years and may be associated with possum damage or disease. However a possum control operation has recently been undertaken over a substantial proportion of the ecological district, and there has been a visible improvement in flowering, fruiting and health of canopy trees in the RAP (R. Hunt, pers. comm.). The threat posed by weeds varies from low, in intact forest areas, to high in treeland (type 5) where old man's beard was found during the survey.

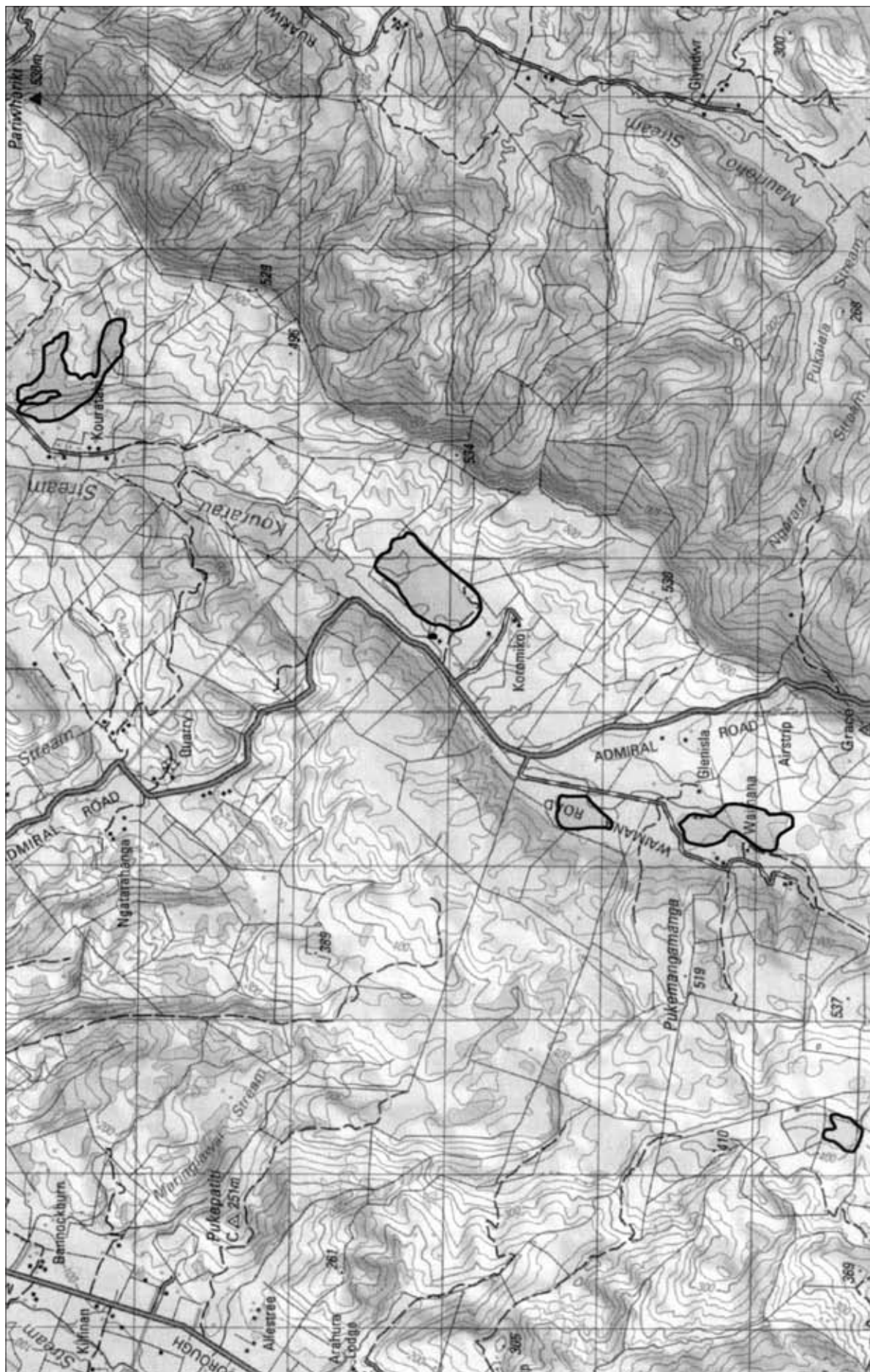
Discussion

These areas appear to contain most of the very small total area of primary forest remaining on the riparian flats and easy terrain land types in the lowland bioclimatic zone. They are also variously noteworthy for their outstanding rare plant populations, diversity, tall stature, and excellent understorey development. Forests with mature podocarps are rare reminders of the original vegetation of the ecological district, most other remnants having been selectively logged and lack older trees. These individuals are, therefore, valuable as seed sources for local regeneration and plantings *per se*, and as increasingly rare genetic stock. This RAP contains large kahikatea, rimu, totara, miro and matai, and mature broadleaved species including a large northern rata.

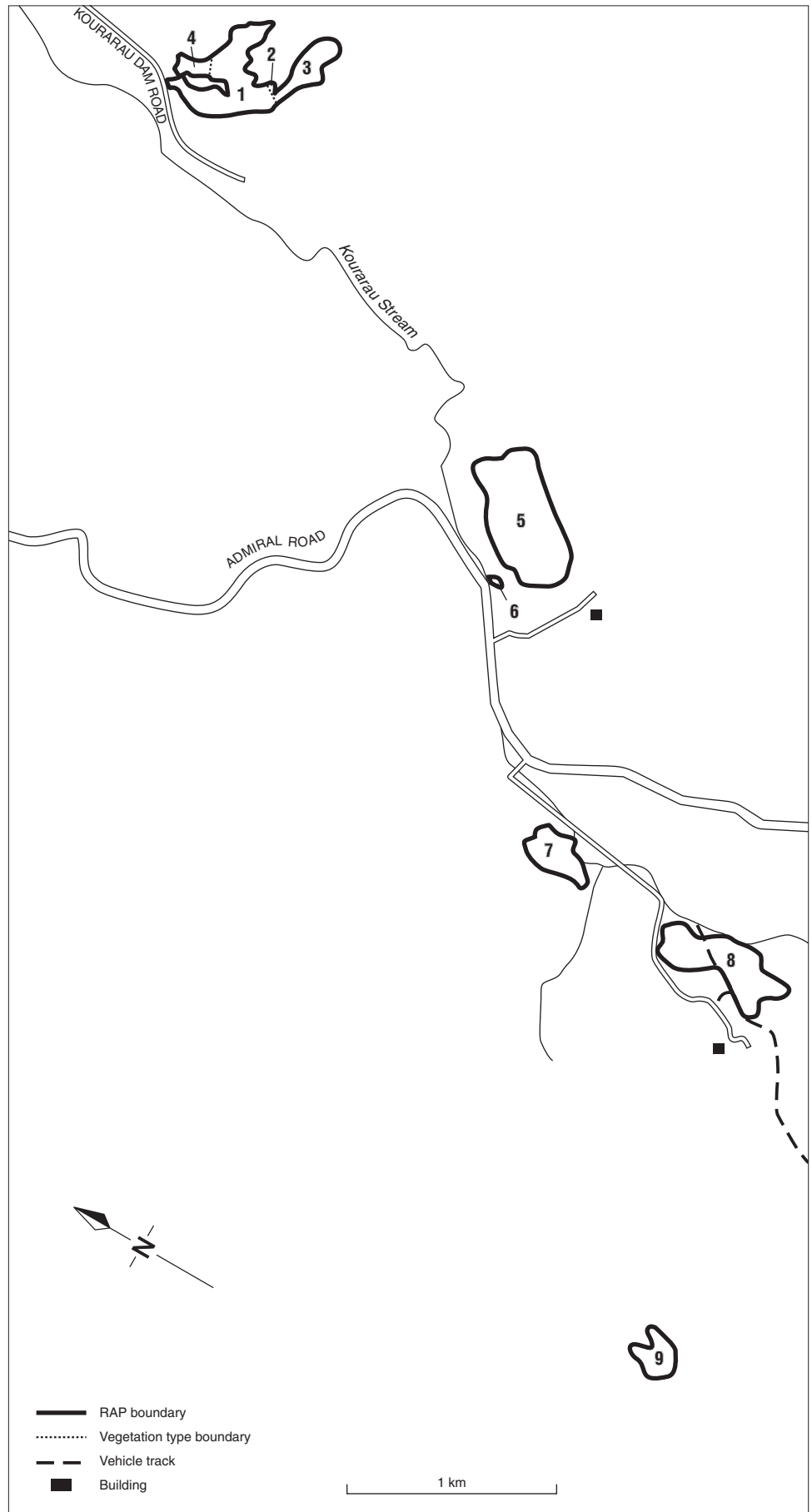
References

Sawyer *et al.* 1998; Townsend *et al.* 1998.

Location of RAP 24, Kourarau Valley and Pukemangamanga.



Site of RAP 24, Kourarau Valley and Pukemangamanga.



RAP 25 NGAUMU BUSH

Area:	59.5 ha
Altitudinal range:	180–380 m
Grid reference:	NZMS260 T27 495064
Geological and landform units:	Incised gullies, easy terrain, moderately steep hills.
Study area no.:	2401
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal & lowland	<ol style="list-style-type: none"> Black beech–(rimu) forest [understorey: (black beech)–(horoeaka)–(porokaiwhiri)/mingimangi–<i>Coprosma crassifolia</i>–(black beech)–(horoeaka)–(wheki)/leaf litter–turutu–(black beech)–(mingimangi)–(petipeti)–(kowaowao); seedlings of miro, matai, totara and pokaka present]. Manuka scrub [understorey: putaputaweta–<i>Coprosma propinqua</i>–(mahoe)–(horoeaka)/ mingimangi–prickly mingimangi–<i>Coprosma rhamnoides</i>–(<i>Coprosma rigida</i>)–(putaputaweta)/<i>Astelia fragrans</i>–<i>Polystichum vestitum</i>–hook sedge–<i>Hypolepis ambigua</i>]. 	Hillslope, gully

Landform

A hillslope grading into easy terrain dissected by several incised gullies.

Vegetation

Primary forest, little modification.

Flora

Typical species only were recorded.

Fauna

Pied tit was noted amongst other typical forest birds.

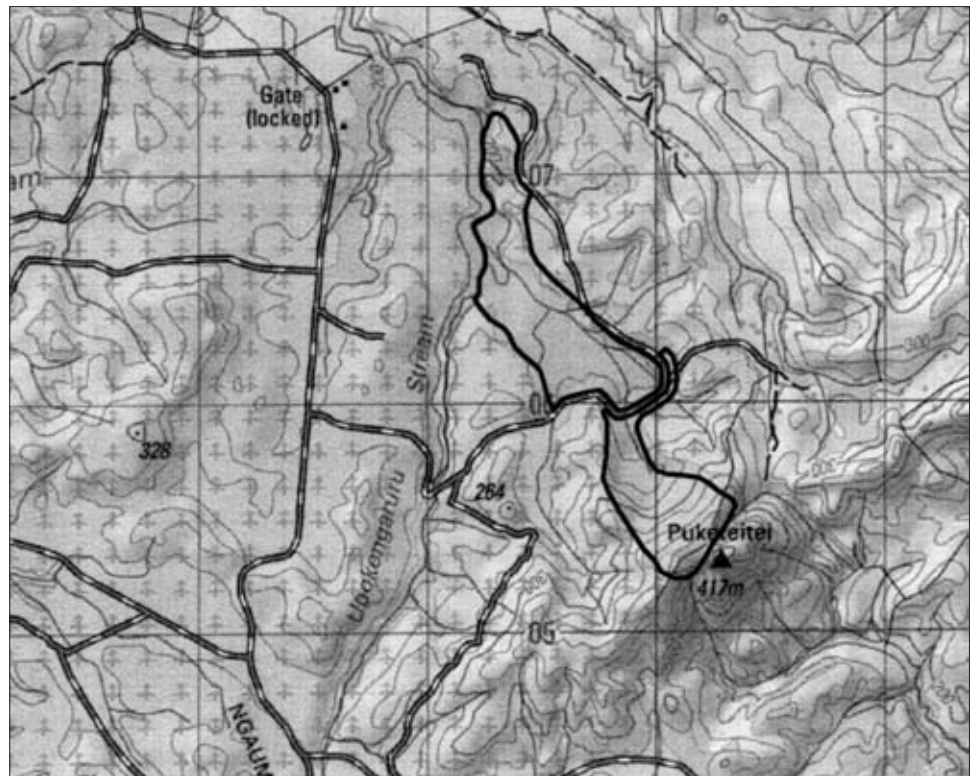
Threat/modification

There was no obvious sign of browsing damage by deer. Damage to margins of the RAP when the surrounding plantation forest is felled and possible encroachment during replanting are significant issues, however this could be minimised by liaison with the landowner and logging operators.

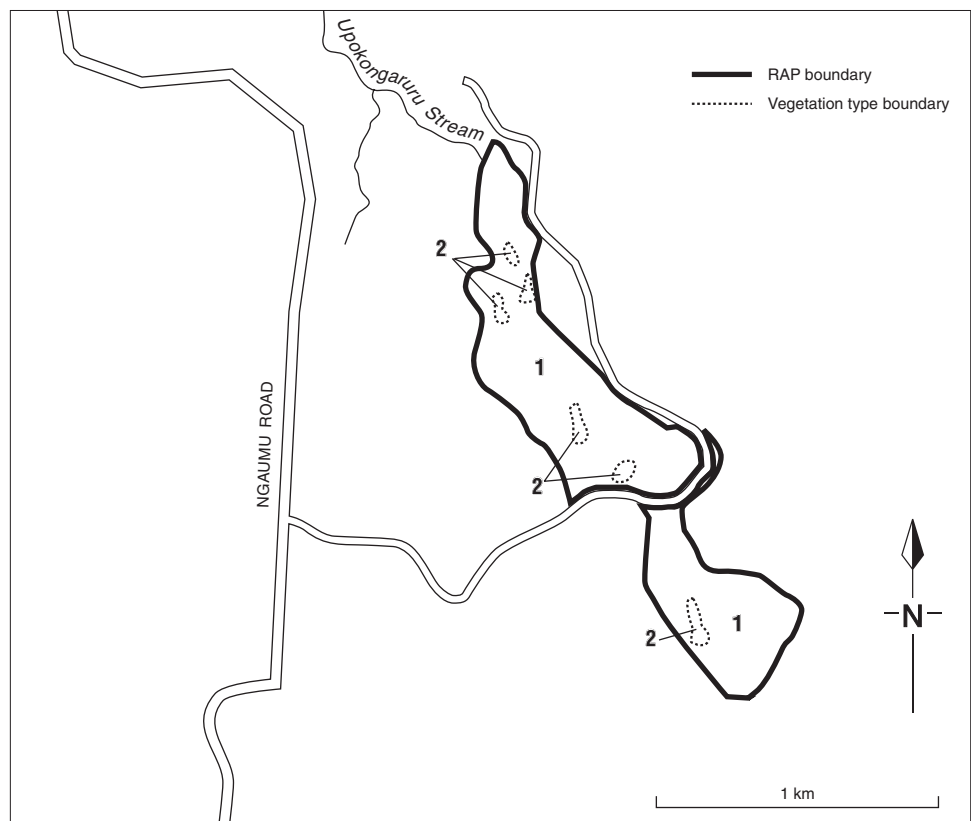
Discussion

Ngaumu bush is the largest remaining example of semi-coastal primary forest on the easy terrain land type and is an excellent example of primary forest. It is highly natural, diverse (species rich) and has a good understorey.

Location of RAP 25, Ngaumu Bush.



Site of RAP 25, Ngaumu Bush.



RAP 26 URUTI POINT DUNES

Area: 170.6 ha

Altitudinal Range: 0–20 m

Grid Reference: NZMS260 670040

Geological and Landform Units: Sand beaches, estuarine channels, coastal platform

Study Area No.: 2515, 2516

Survey Methodology: On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <u>Marram</u> -spinifex-(pingao) tussockland [ground cover: (<i>Calystegia sepium</i>)-(catsear)].	Foredune
	1a. <u>Marram</u> tussockland [ground cover: (<i>Calystegia sepium</i>)-(catsear)].	Terrace
	2. <u>Isolepis nodosa</u> /harestail-ratstail-catsear sedgeland ⇔ <u>Isolepis nodosa-rarahu</u> sedgeland.	Secondary dunes, terrace
	3. <u>Raupo</u> -(<i>Cyperus ustulatus</i>) reedland [ground cover: (<i>Eleocharis acuta</i>)/(tutanawai)].	Dune slack
	4. <u>Sea rush-marsh ribbonwood</u> rushland ⇔ <u>Schoenoplectus pungens-Bolboschoenus caldwellii/Cbenopodium sp.</u> herbfield.	Estuary/creek margins
	5. (Horokaka) rockface.	Cliff
	6. <u>Sea rush-Cyperus ustulatus</u> -pohue sedgeland [ground cover: tall fescue-water pepper/creeping bent].	Dune slack
	7. <u>Raupo</u> reedland.	Dune slack
	8. <u>Cortaderia toetoe</u> -(harakeke)/tall fescue- <u>Isolepis nodosa</u> -(<i>Cyperus ustulatus</i>)-(Baumea juncea) grassland.	Slack
	9. <u>Marsh ribbonwood</u> -oioi-(sea rush) sedgeland [ground cover: tall fescue- <u>Bolboschoenus medianus</u>].	River terrace
	10. <u>Marram-Isolepis nodosa</u> tussockland [ground cover: tall fescue-Californian thistle-sweet vernal/white clover-catsear].	River terrace
	11. <u>Bolboschoenus medianus</u> -oioi-marsh ribbonwood sedgeland.	River terrace
12. Sand beach (unvegetated).	Beach	

Landform

This RAP comprises a narrow coastal strip stretching c.7 km along the coast. The principal landform components are dunes and dune slacks; a few estuarine areas occur where streams flow into the ocean, and a small cliff occurs at the southern end near the Patanui Stream. At Uruti Point itself there is a small hillock.

Vegetation

Modified primary vegetation dominates the RAP, reflecting a history of burning, grazing, and subsequent introduction and invasion of weedy species such as marram. Stock grazing continues to contribute to modification of the vegetation by providing opportunities for weedy species to spread, and habitat for rabbits.

Flora

Extensive populations of *Pimelea* aff. *arenaria* (classed as Serious Decline; Hitchmough 2002) and *Coprosma acerosa*, matagouri, pingao, and spinifex, all regionally threatened (Empson and Sawyer 1996), were recorded. *Potentilla anserinoides* can also be found here.

Fauna

Katipo spiders occur in this RAP.

Threat/modification

Invasion of the foredunes by adventive species (e.g. marram) threatens to displace the native sand-binders, pingao and spinifex. Grazing and trampling of the dunes may be creating unvegetated surfaces that are vulnerable to wind erosion, as well as providing opportunities for weed establishment. The use of All Terrain Vehicles (ATVs) also appears to be a contributing factor in dune erosion. Fencing to exclude stock (and ATVs) from the foredune should be high priority. Artificial changes to the drainage pattern and eutrophication from fertilizer runoff may affect species composition and density in the wetland areas.

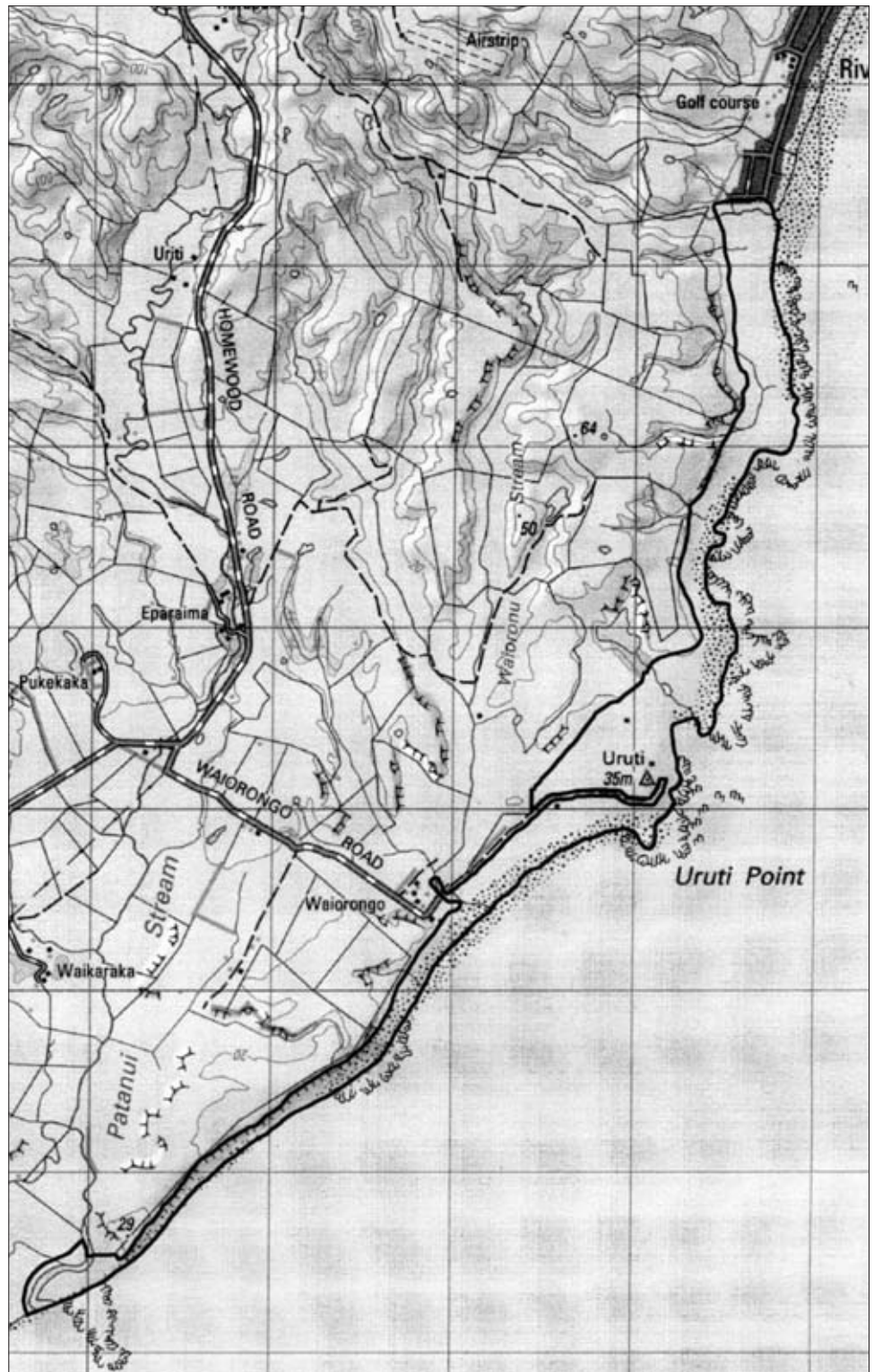
Discussion

Uruti Point is one of the largest coastal duneland areas in the Eastern Wairarapa Ecological District. It contains a diverse range of relatively intact indigenous plant communities that are amongst the best within the ecological district, in terms of naturalness and species diversity. In particular, it contains the largest single area of coastal duneland on the coastal platform land type. The RAP has many significant botanical values, including the most extensive population of matagouri within the ecological district and a good population of a nationally threatened shrub, *Pimelea* aff. *arenaria*.

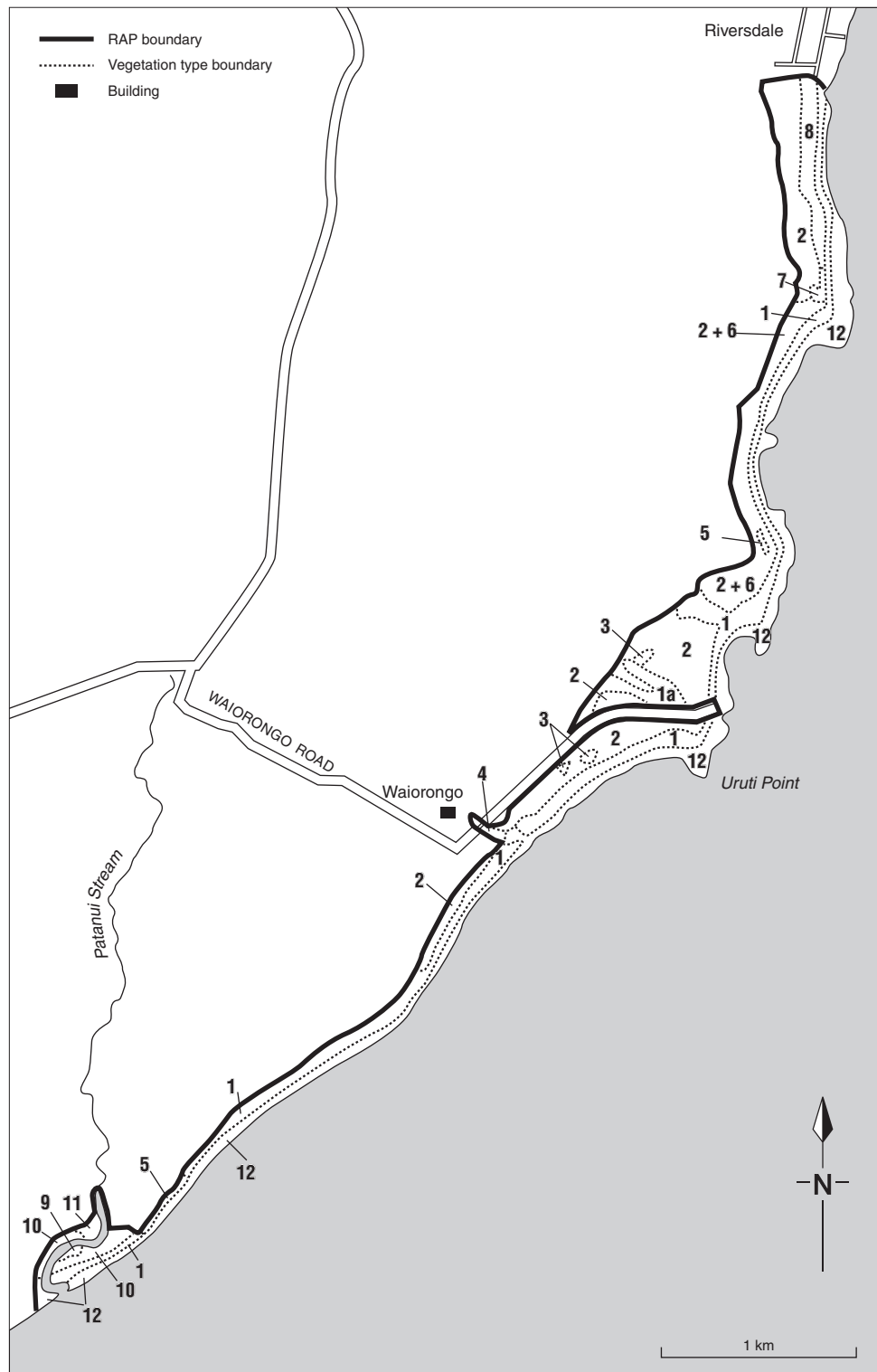
References

Empson & Sawyer 1996.

Location of RAP 26, Uruti Point Dunes.



Site of RAP 26, Uruti Point
Dunes.



RAP 27 BANKVIEW

Area:	31.6 ha
Altitudinal range:	130–200m
Grid reference:	NZMS260 T27 425 045
Geological and landform units:	Forest and wetland
Study area no.:	Not visited previously
Survey methodology:	Field survey (Rebergen 2000b).

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Raupo wetland with open water	
	2. <i>Carex geminata</i> sedgeland	
	3. Kahikatea/ <i>Coprosma pedicellata</i> / <i>Olearia virgata</i> swamp forest	
	4. Mahoe/ <i>Sophora microphylla</i> /kahikatea	Forest
	5. Black beech forest and secondary kanuka	
	6. Black beech forest/ <i>Pittosporum divaricatum</i> and mixed podocarp	

Vegetation

This area is made up of a heterogeneous mix of vegetation types including podocarp forest, carex sedgeland, raupo wetland, black beech forest and regenerating kanuka forest.

Flora and fauna

The best example of *Coprosma pedecillata* (Gradual Decline; Hitchmough 2002) in a natural habitat in Wellington Conservancy occurs here (55 plants are found at this site). At one site it forms the dominant subcanopy under kahikatea forest. *Pittosporum divaricatum* (locally rare in the Eastern Wairarapa) is common under black beech forest. Several small patches of *Mazus novaezeelandiae* subsp. *novaezeelandiae* (Serious Decline; Hitchmough 2002) are found at this site. Rifleman is common in the beech forest. Spotless crane was heard in the raupo swamp, and bats have been observed by a farm worker at the site.

Threat/modification

This area would be affected detrimentally by drainage activities. Despite grazing, the area is still in relatively good condition. However, grazing is preventing the regeneration of the native species including rare species such as *Coprosma pedicellata*.

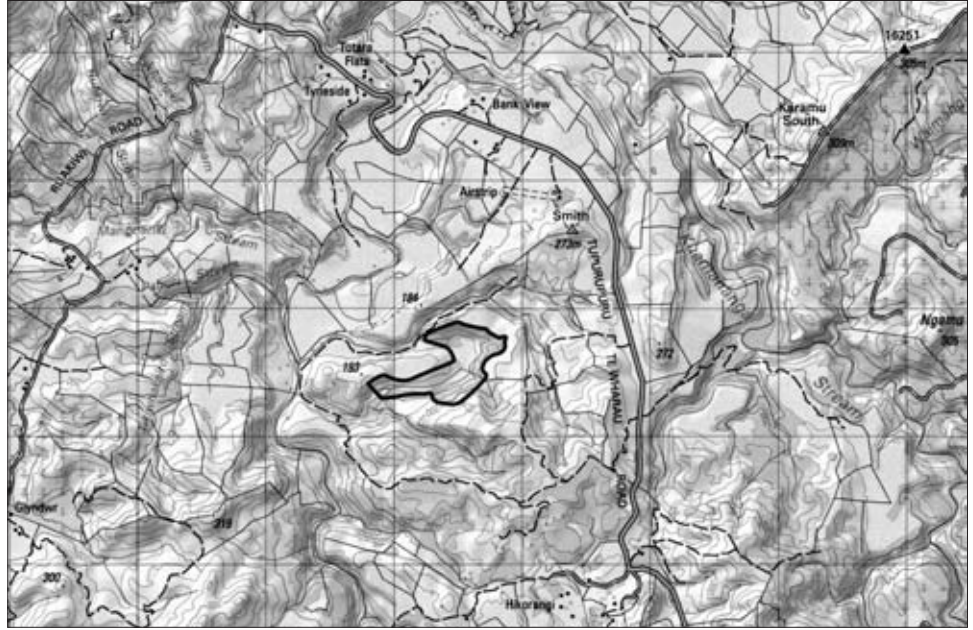
Discussion

This site is the best example of a wetland in the semi-coastal bioclimatic zone in the district. The rarity of wetlands surrounded by forest in the District make this a significant RAP. The combination of podocarp forest, beech forest and wetland in the same area is valuable.

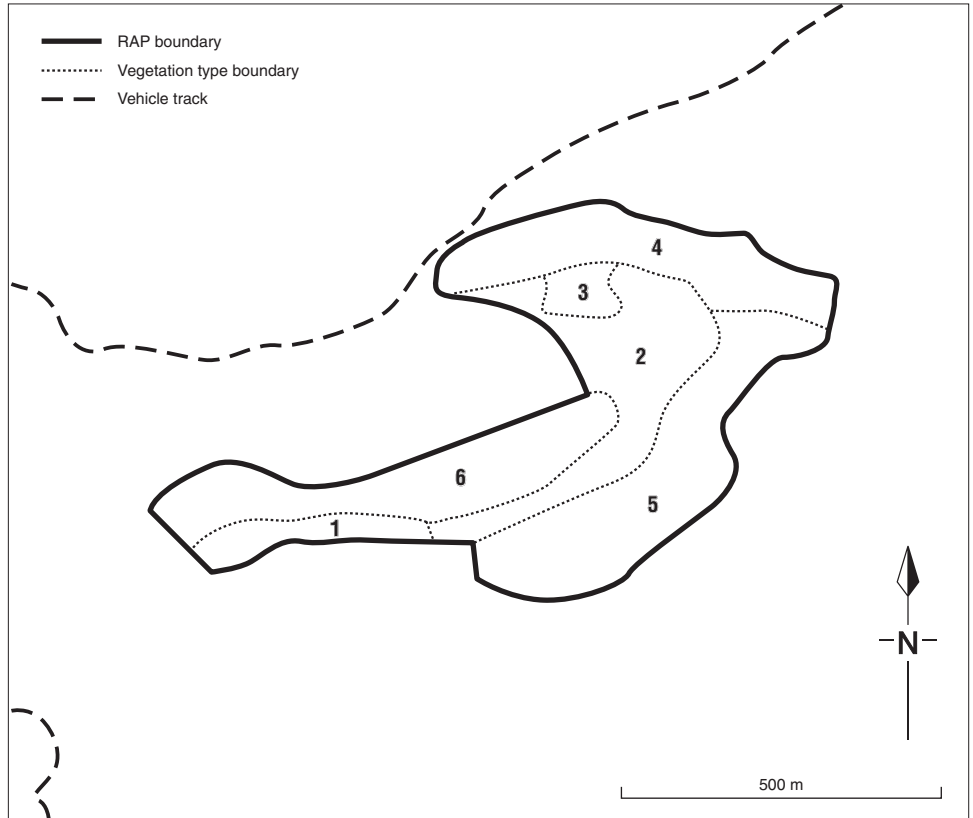
References

Rebergen (2000b).

Location of RAP 27, Bankview.



Site of RAP 27, Bankview.



RAP 28 KUAMAHANGA BUSH

Area:	83.3 ha
Altitudinal range:	160–260 m
Grid reference:	NZMS260 T27 448039
Geological and landform units:	Moderately steep hills; incised gullies; alluvial terraces.
Study area no.:	2330
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. <u>Black beech</u> forest [a few matai and rimu in canopy; understorey: (karamu)–(horoeka)–(putaputaweta)–(whauwhaupaku)/ <u>rangiora</u> –prickly mingimingi/mingimingi– <i>Coprosma rhamnoides</i> / kowaowao–(rereti)–(<i>Poa anceps</i>) bare ground ⇄ mingimingi–prickly mingimingi/ <i>Coprosma rhamnoides</i> –mingimingi–prickly mingimingi/bare ground].	Steep gully side, gully, terrace, hillslope
	2. <u>Manuka–kanuka</u> scrub [understorey: <u>mingimingi</u> –prickly mingimingi/ <i>Coprosma rhamnoides</i> –(<i>Coprosma propinqua</i>); pasture species are common in the ground cover tier].	Hillslope
	3. (Rewarewa)–(rimu)/horoeka–whauwhaupaku–putaputaweta–heketara–manuka scrub [understorey: mingimingi–prickly mingimingi/ <i>Hypolepis ambigua</i> –hook sedge– <i>Coprosma rhamnoides</i>].	Hillslope
	4. Kowhai/kowhai–manuka–(kohuhu)–(horoeka)/mingimingi–(<i>Carmichaelia australis</i>) treeland [ground cover comprises pasture species].	Steep gully side, landslide scar

Landform

Hillslopes of moderate inclination above the incised gullies of an alluvial terrace are the principal landform components of the RAP. The majority of Kuamahanga Bush occurs on these two landforms, alluvial terrace comprise only a small part of the RAP.

Vegetation

This area is dominated by modified, primary black beech forest. Secondary scrub contributes c.25% of the RAPs vegetation cover, probably induced through the clearance of the primary beech forest. Several seedlings of black beech, kohuhu and horoeka were noted in the understorey of this type, suggesting it may return to beech forest in the long term.

Flora and fauna

Typical plants and forest birds were recorded, including pied tit.

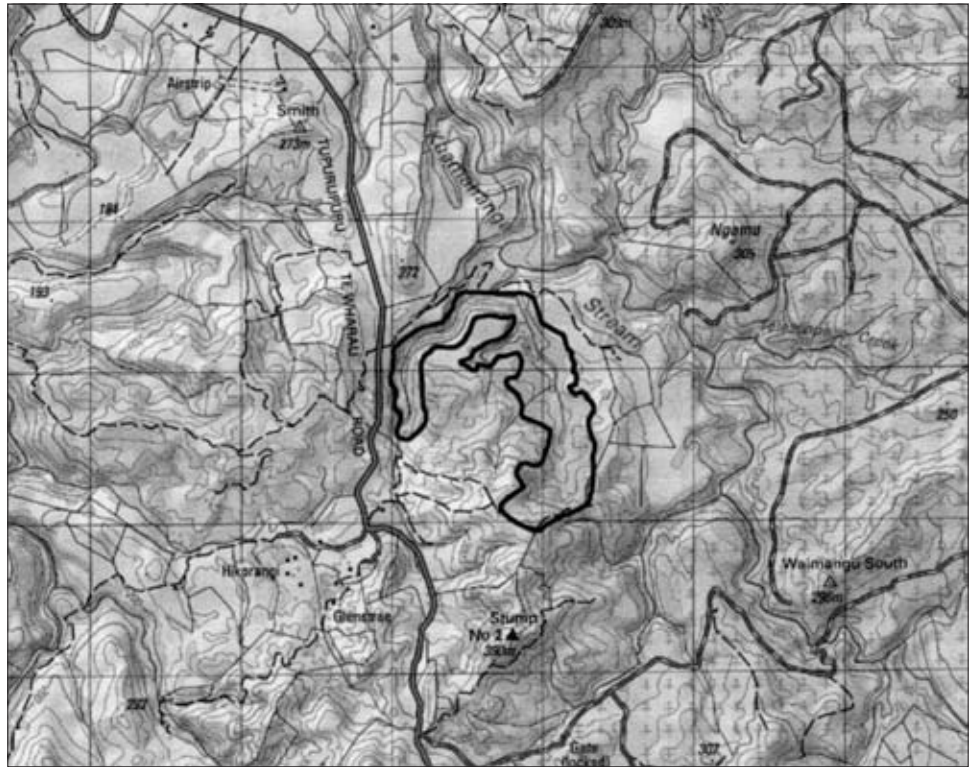
Threat/modification

Areas accessible to stock are generally depauperate of understorey species and lacking regeneration of canopy species. Fencing to exclude stock grazing should be a high priority. Possum, deer and pig sign were noted.

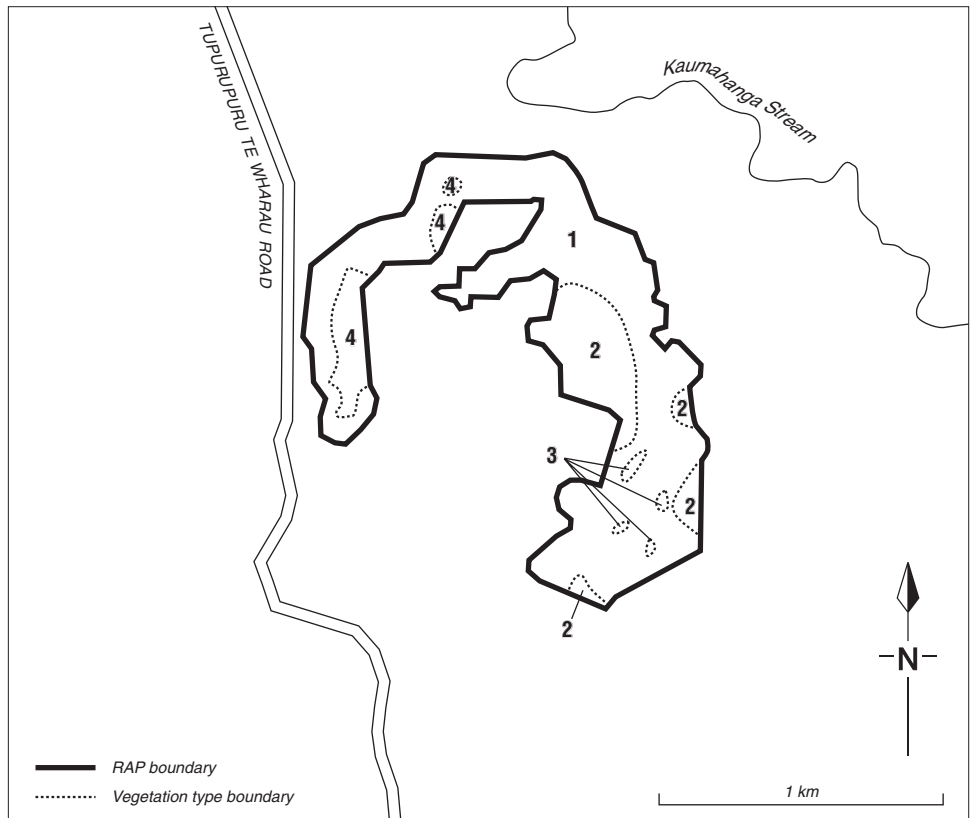
Discussion

Kuamahanga Bush is a good quality example of beech forest. It contains the largest area and the best example of modified primary forest on incised gullies and alluvial terraces land types within the ecological district.

Location of RAP 28, Kuamahanga Bush.



Site of RAP 28, Kuamahanga Bush.



RAP 29 WAINUIORU RIVER BUSH

Area:	208.4 ha
Altitudinal range:	100-400 m
Grid reference:	NZMS260 T27 383018; 393010; 406015; 395013; 396015; 397018; 422025
Geological and landform units:	Riparian flats, alluvial terraces, incised gullies, moderately steep hills
Study area no.:	2308, 2313a, b, c, 2314, 2315
Survey methodology:	On site survey (1998); aerial photographs (1989); existing information

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Totara-(rewarewa)-(matai)-(kahikatea)/ <u>titoki</u> -totara-hinau-kowhai forest and treeland [understorey: mahoe-ngaio-mamaku-(kowhai)/(<i>Coprosma crassifolia</i>)/(<i>Coprosma rbamnoides</i>)-(<i>Coprosma rotundifolia</i>)-(rarahu)/ <u>pasture</u>].	Upper slope
	2. (Houhere)-(kohuhu)-(rewarewa)-(totara)/mahoe-rangiora-koromiko-whauwhaupaku-karamu scrub [understorey: harakeke-manuka-tawiniwini-mingimingi].	Bluff
	3. <u>Kanuka</u> -totara-kowhai forest [understorey: (kanuka)-(<i>Coprosma crassifolia</i>)-(totara)-(Plagianthus divaricatus)-(<i>Coprosma rbamnoides</i>)/ <u>pasture</u>].	Lower slope, terrace scarp
	4. <u>Black beech</u> -totara treeland [understorey: <u>pasture</u>].	Terrace
	5. <i>Coprosma rigida</i> - <i>Coprosma propinqua</i> shrubland. ¹	Terrace
	6. Kahikatea-matai-totara treeland. ²	Terrace
	7. Kahikatea-matai-totara forest. ²	Terrace
Semi-coastal & lowland	8. Mosaic of: <ul style="list-style-type: none"> • Kahikatea-totara-(rimu)/black beech-matai-(white maire) forest.² • (Rimu)/totara forest.² • Totara-matai-(rewarewa)/titoki-ngaio forest.² • Manuka-whauwhaupaku-(black beech) shrubland.² • Black beech-(kahikatea)-(rimu)-(totara)-black beech-white maire forest.² 	Terrace tread, gorge, hillslope

¹ Townsend et al. 1998.

² Phase 1 survey information was used for vegetation types (DOC 1996b).

Landform

The main landform component of the area is incised gullies (including the gorge created by the Wainuioru River c.8km long). In some places, the RAP extends above the gullies and gorge to include terraces and hillslopes.

Vegetation

Secondary scrub and forest induced through logging of the original forest cover. Primary forest, including areas modified by logging.

Flora

Two nationally threatened plants, *Mazus novaezeelandiae* subsp. *novaezeelandiae* (classed as Serious Decline; Hitchmough 2002) and *Coprosma pedicellata* (Gradual Decline; Hitchmough 2002) have been recorded at this site (Townsend *et al.* 1997). Also reported is the regionally threatened species *Botrychium bifforme* (DOC 1998).

Fauna

Kereru is present, along with typical forest birds.

Threat/modification

In areas grazed by domestic stock there is a low abundance and diversity of understorey species and little sign of regeneration. Townsend *et al.* 1998 also noted that pugging and compaction from cattle were a threat to the population of *Mazus novaezeelandiae* subsp. *novaezeelandiae*. Fencing should be a priority for this RAP. Stock removal is recommended and is likely to necessitate control of weed species such as tall fescue (currently controlled by grazing) locally in and around the *M. novaezeelandiae* population. This will be required to prevent the weed species overgrowing and excluding the threatened native *M. novaezeelandiae*. Monitoring and control of weed species is a high priority in and around the *M. novaezeelandiae* population. Gorse and broom may pose a future threat to the regeneration of the *Coprosma pedicellata* population (Townsend *et al.* 1997).

Discussion

Wainuioru River Bush is a relatively large area containing a diverse range of ecological units, among which is the largest remaining area of semi-coastal modified primary forest on the incised gully land type. Several species of conservation significance are present within the RAP, including two nationally threatened plant species, one nationally threatened bird species and one regionally threatened plant species. The vegetation contains a diverse range of native species and is representative of many ecological units which are of reduced extent within the ecological district.

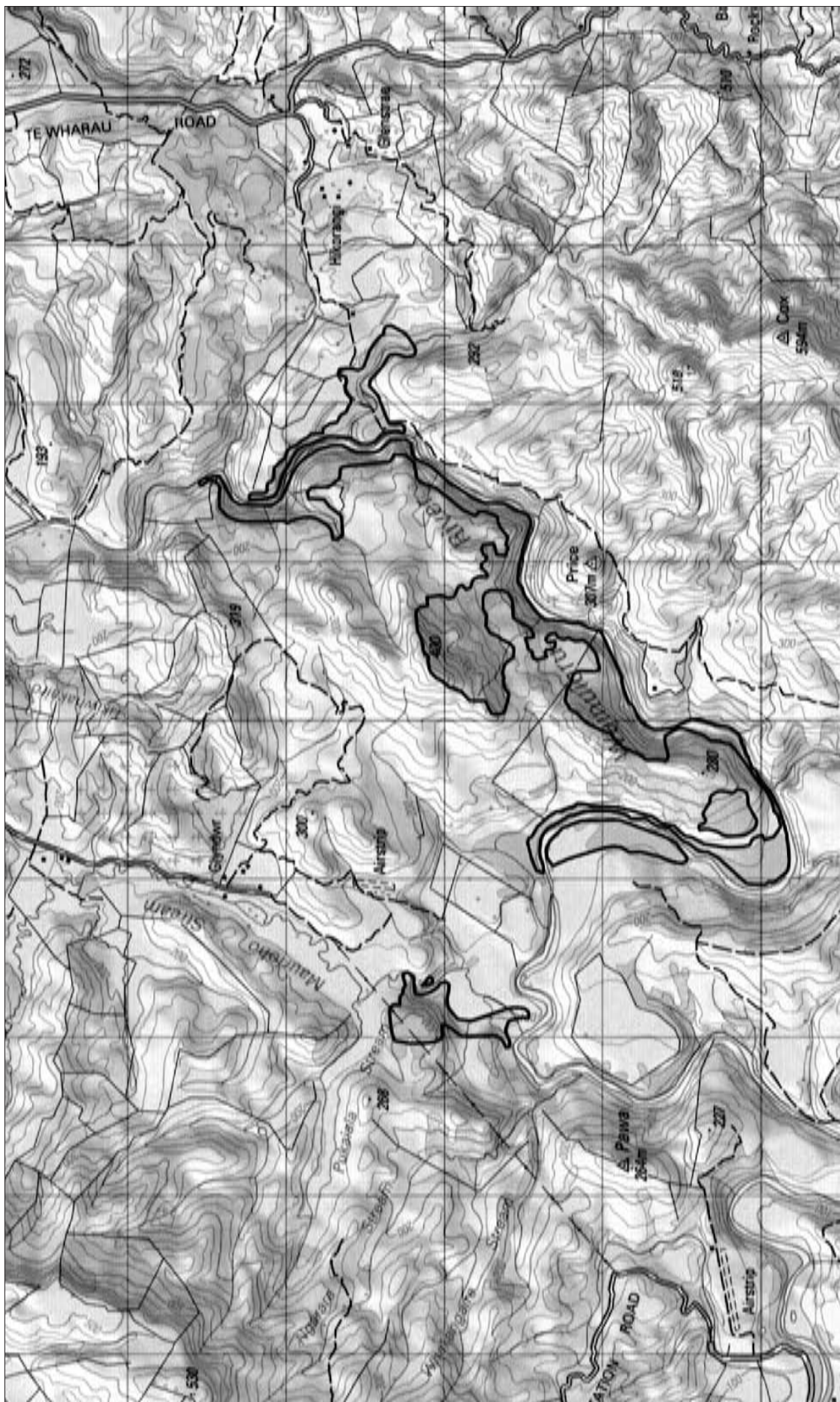
Comments

Access to most of the site was not granted for the 1998 survey and aerial photographs and existing information were used to determine boundaries for much of the RAP. The boundaries for vegetation types 5-8 are therefore provisional and may require adjusting following a site visit.

References

DOC 1996b & 1998; Townsend *et al.* 1998.

Location of RAP 29, Wainuioru River Bush.





RAP 30 HOMEWOOD ROAD BUSH

Area:	7.1 ha
Altitudinal range:	+/-20 m
Grid reference:	NZMS260 T27 616013; 612012
Geological and landform units:	Progradation plain
Study area no.:	2522
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Kahikatea/totara treeland [no understorey].	Terrace
	2. (Kahikatea)/ <u>titoki</u> -totara-pukatea treeland [<u>pasture</u> species form the ground cover].	Terrace
	3. (Kahikatea)/ <u>titoki</u> - <u>karaka</u> -totara-pukatea forest [no understorey].	Terrace

Landform

A small part of the only substantial area of flat progradation plain in the Eastern Wairarapa Ecological District.

Vegetation

Modified primary forest, modifying factors being logging and grazing.

Flora and fauna

Typical species only were recorded.

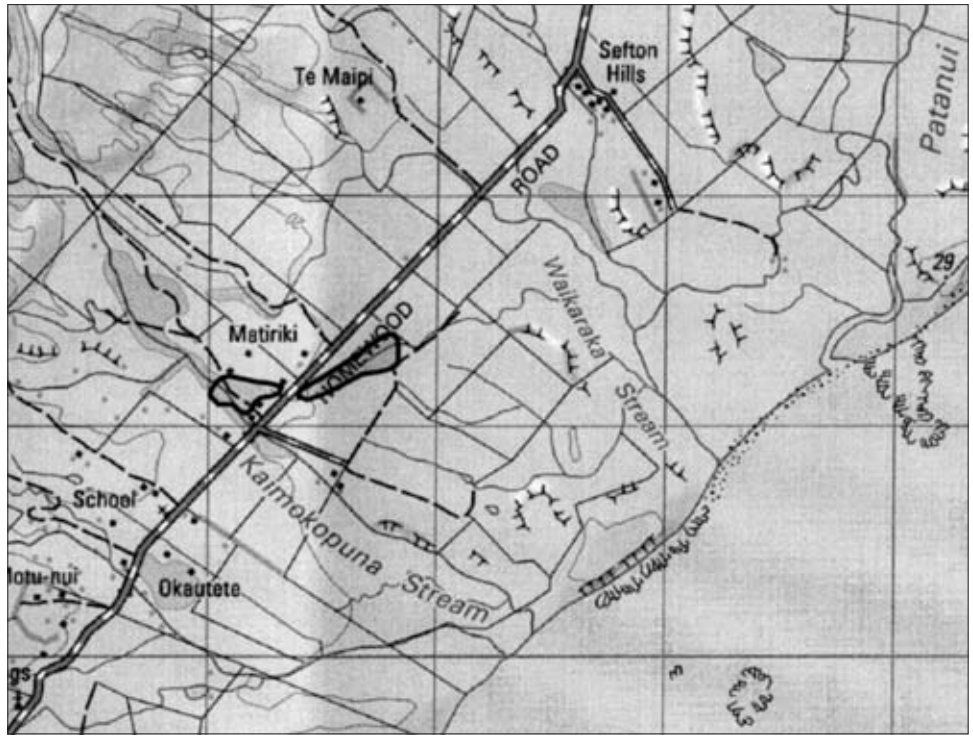
Threat/modification

Grazing has removed virtually all the understorey and prevents any regeneration of canopy species. Fencing and exclusion of stock is highly recommended. The ground under the kahikatea/totara treeland has been partially tilled for cropping, removing any native plants that may have been present. Clearance of the surrounding vegetation and human changes to drainage patterns may have resulted in a lowered water table, negatively affecting the establishment of kahikatea, and thus regeneration of the canopy.

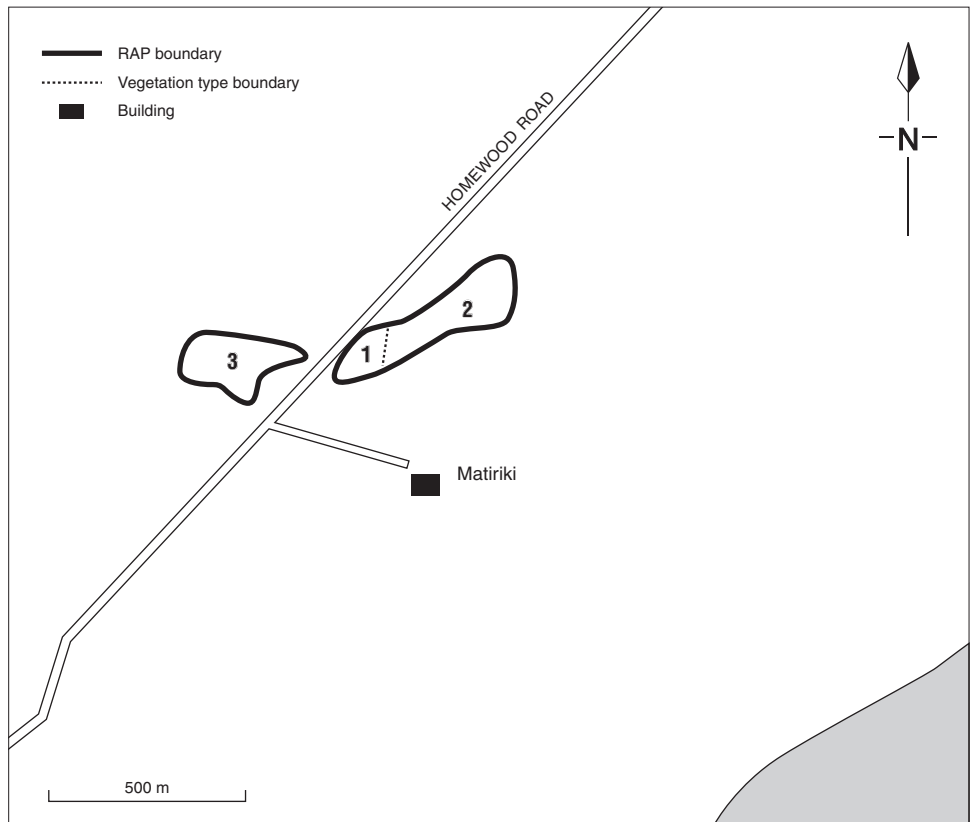
Discussion

There is less than 1% of the original forest cover remaining on the progradation plains land type. Homewood Bush, along with the already protected Okautete remnant nearby represent the only examples of semi-coastal modified primary forest on this land type, within the Eastern Wairarapa Ecological District.

Location of RAP 30, Homewood Road Bush.



Site of RAP 30, Homewood Road Bush.



RAP 31 TE WHARAU BUSH

Area:	41.8 ha
Altitudinal range:	280 m
Grid reference:	NZMS260 T27 485027; 495997
Geological and landform units:	Moderately steep hills and easy terrain
Study area no.:	2406, 2409
Survey methodology:	On site survey

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. <u>Black beech</u> forest [understorey: putaputaweta-black beech-whauwhaupaku/kanono- <i>Coprosma propinqua</i> -(horoeaka)/ mingimingi-prickly mingimingi-(<i>Coprosma rbarnoides</i>)-(karamu)-(<i>Coprosma macrocarpa</i>)-(poataniwha)-(tawiniwini)-(whauwhaupaku)/ <u>leaf litter</u> -kowaowao-(<i>Asplenium flabellifolium</i>); scattered rimu in canopy].	Hillslope
	2. <u>Black beech</u> forest [understorey: putaputaweta- <i>Coprosma linariifolia</i> -(black beech)-(white maire)-(whauwhaupaku)/ <u>mingimingi</u> - <i>Coprosma propinqua</i> -prickly mingimingi-(karamu)-(rangiora)/ <u>leaf litter</u> -kowaowao-(turutu); a few rimu and kahikatea in canopy].	Incised gully

Landform

A relatively small gully system on easy terrain draining into an incised gully, and a fragment of forest on hillslope in the south-east.

Vegetation

Modified primary forest is the dominant vegetation type of the RAP and logging is the most probable modifying factor. The northern part of the RAP is contiguous with the Kuamahanga Covenant which contains modified primary beech forest, most of which occurs on the incised gullies land type.

Flora and fauna

Typical and forest birds, including kereru, were recorded.

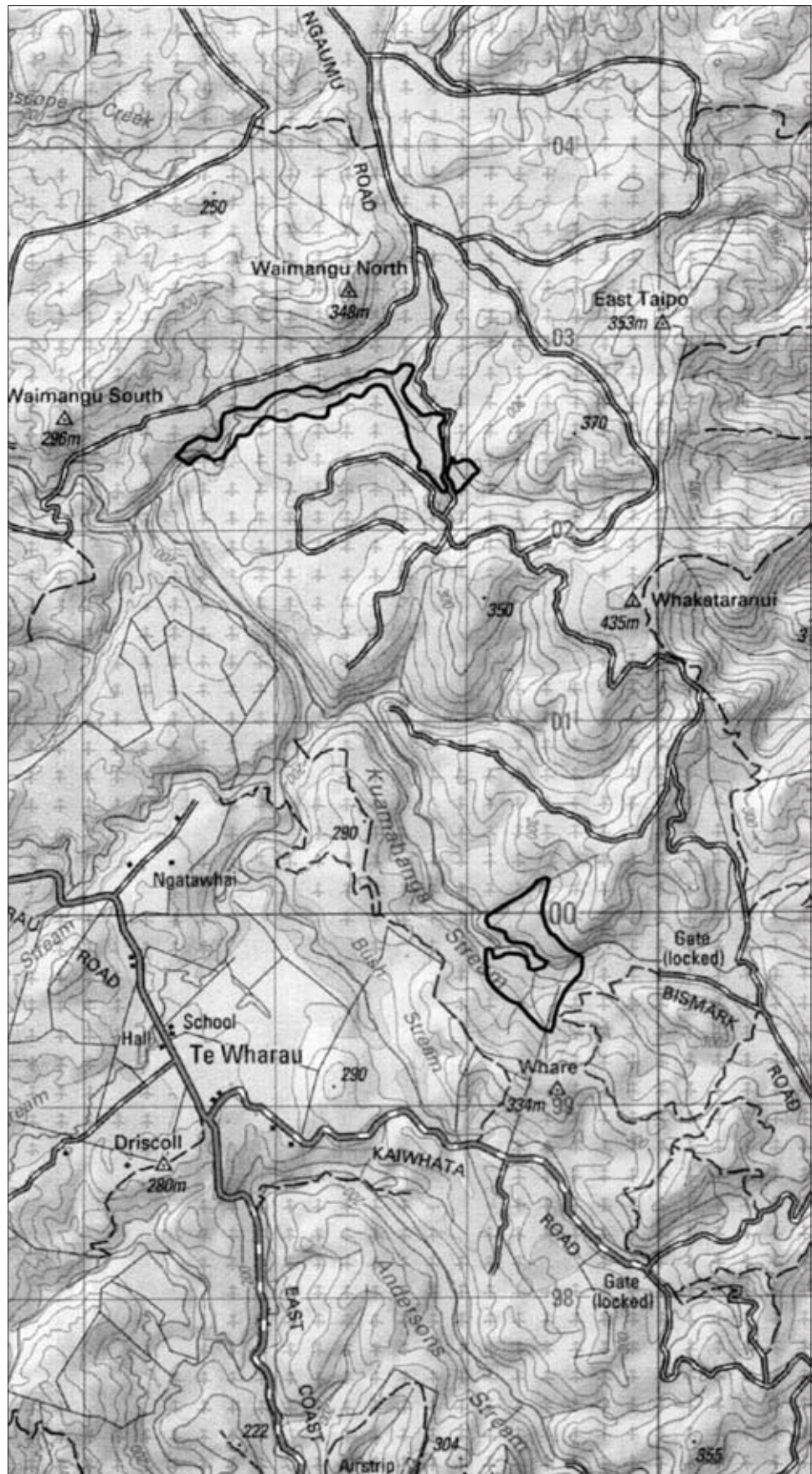
Threat/modification

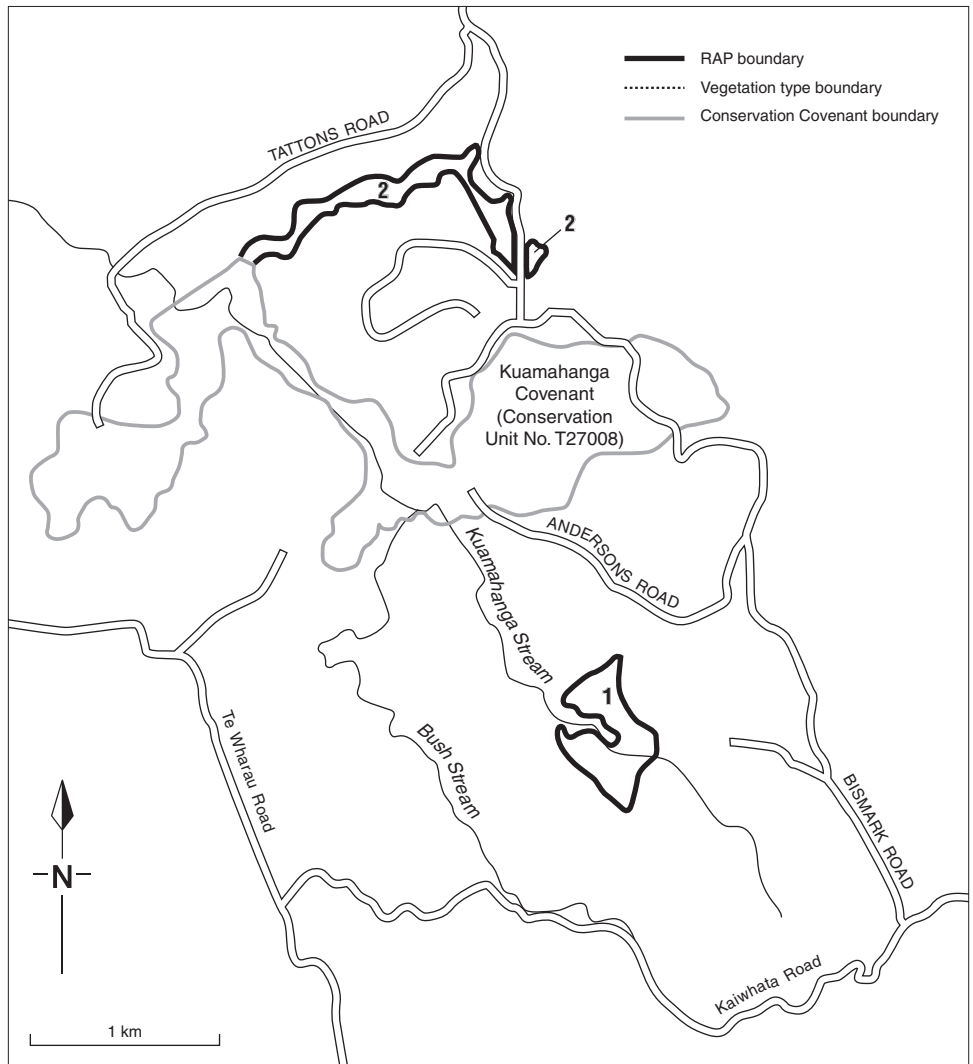
Surrounded by exotic pine plantation; potential threats include damage during the logging of adjacent pines and the subsequent preparation of adjacent land for replanting. Possum, deer and pig sign were noted.

Discussion

Semi-coastal modified primary forest on the easy terrain land type has been heavily reduced in extent within the ecological district with less than 2% of the original forest cover remaining. This RAP contains the second largest identified example of this ecological unit.

Location of RAP 31, Te Wharau Bush.





RAP 32 MOETAPU BUSH

Area:	13.8ha
Altitudinal range:	90–110 m
Grid reference:	NZMS 260 T27 350 995
Geological and landform units:	Riparian flats
Study area no.:	2208
Survey methodology:	A.J. Townsend pers. comm.

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
lowland	1. Kahikatea/kahikatea-totara forest	Floodplain, terrace tread

Landform

This RAP is on the floodplain and narrow terrace tread of the Wainuioru River. It also extends a short distance onto an adjacent footslope.

Vegetation

Vegetation comprises tall kahikatea, emergent over a canopy of pole kahikatea and totara. Other species in the canopy include titoki, white maire, and black beech. *Coprosma rotundifolia* and *Urtica ferox* dominate the understorey.

Flora

Both *Olearia gardneri* (classed as Nationally Critical; Hitchmough 2002) and *Coprosma pedicellata* (Gradual Decline) occur in this RAP. *Mazus novaezeelandiae* subsp. *novaezeelandiae* (classed as Serious Decline; Hitchmough 2002) also occurs at this site. This site contains some of the most easterly occurring black beech in the Eastern Wairarapa Ecological District. *Melicytus ramiflorus* × *M. micranthus*, an uncommon occurrence in the ecological district, is present. The regionally rare *Rumex flexuosus* has also been recorded at this site.

Fauna

Typical species only were recorded.

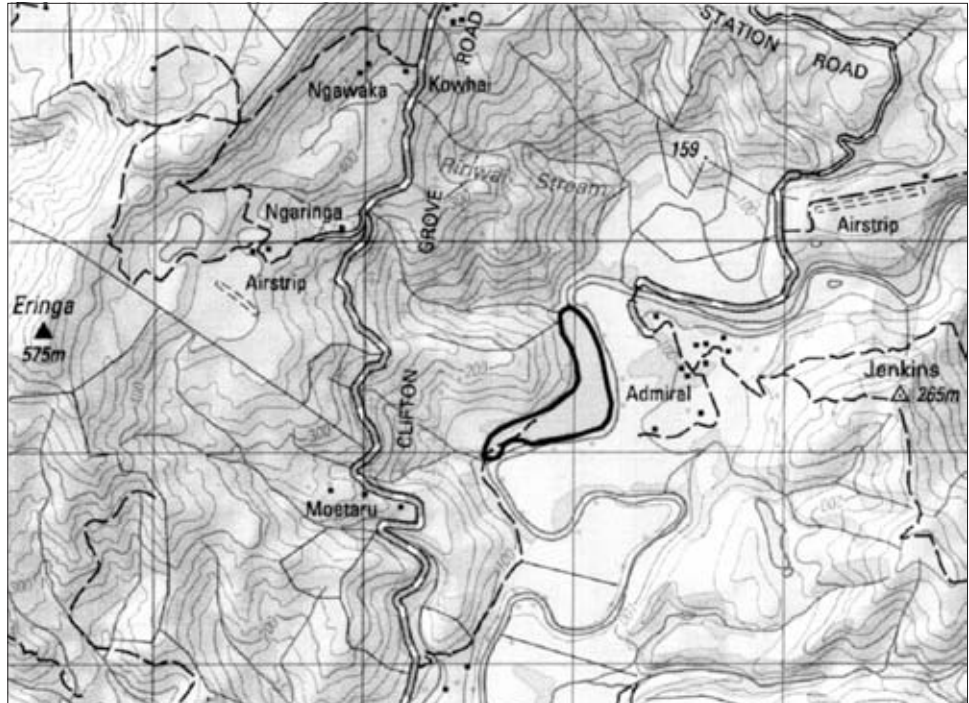
Threat/modification

The fence around the RAP is dilapidated, and stock occasionally break through. There was evidence of stock browsing. Crack willows are common along the Wainuioru River bank.

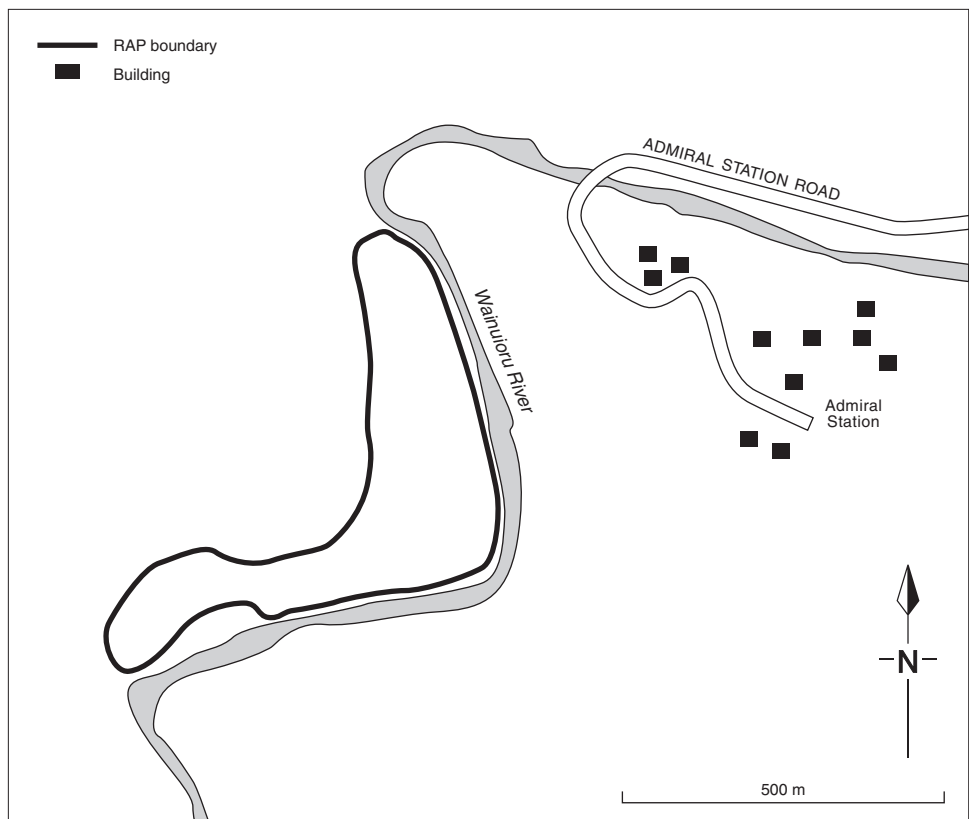
Discussion

This site is highly significant, as it contains one of the 60 or so plants of the Nationally Endangered *Olearia gardneri*, and one of the few populations of *Coprosma pedicellata*. Additional planting of *Coprosma pedicellata* (65 plants) has occurred at this site.

Location of RAP 32, Moetapu Bush.



Site of RAP 32, Moetapu Bush.



RAP 33 BUSH STREAM WETLAND

Area:	2.7 ha
Altitudinal range:	240-260 m
Grid reference:	NZMS260 T27 497984
Geological and landform units:	Moderately steep hills
Study area no.:	2437
Survey methodology:	On site survey

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Manuka-(ti kouka)/harakeke- <i>Cortaderia fulvida</i> -raupo-(karamu) flaxland ⇆ Manuka-(ti kouka)/raupo reedland [understorey: <u>swamp kiokio</u> -purei/(lotus)]	Gully floor

Landform

A long, narrow strip of gully floor in the upper catchment of Bush Stream, surrounded by moderately steep hills.

Vegetation

Unmodified freshwater wetland.

Flora and fauna

Typical species only were noted.

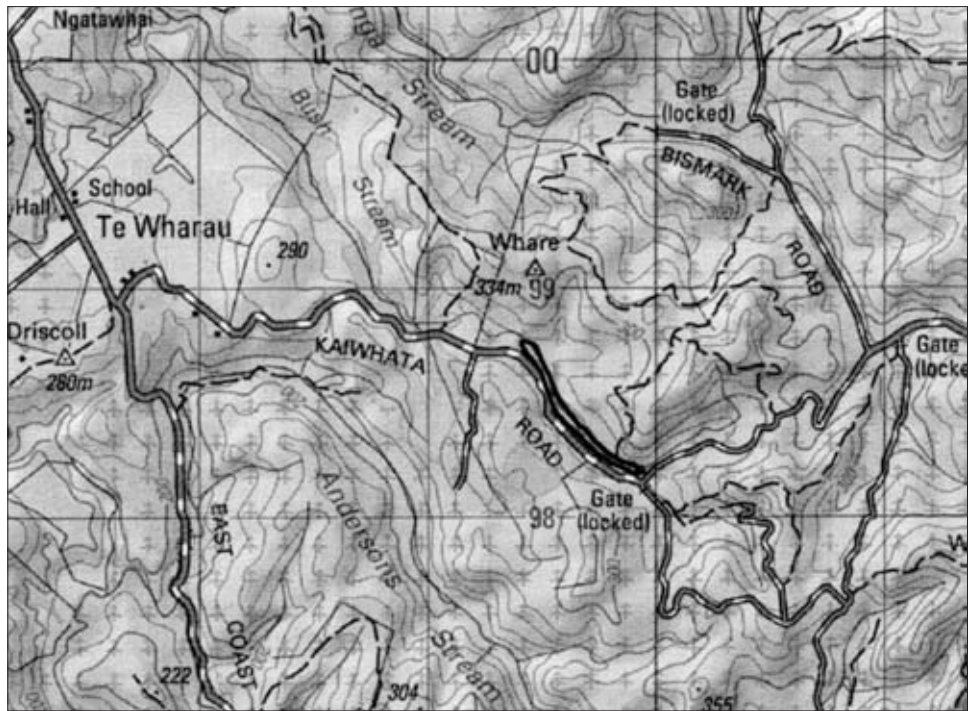
Threat/modification

The surrounding area has been developed for exotic plantation forestry; potential threats include damage during the logging of adjacent pines and subsequent preparation of the land for replanting.

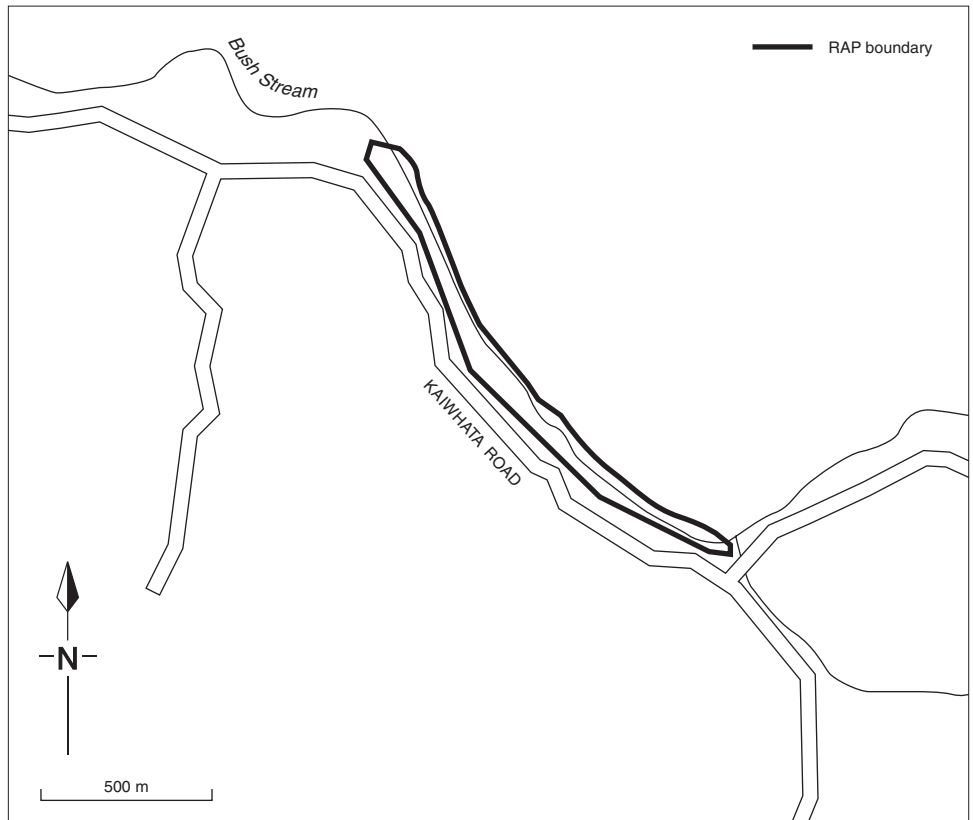
Discussion

Freshwater wetland has been heavily reduced in extent across all land types within the ecological district. Bush Stream Wetland is the most natural, largest and most species-diverse example of semi-coastal freshwater wetland on the moderately steep hills land type remaining within the ecological district.

Location of RAP 33, Bush Stream Wetland.



Site of RAP 33, Bush Stream Wetland.



RAP 34 ROCKY HILLS EXTENSION

Area:	230.2 ha
Altitudinal range:	80-580 m
Grid reference:	NZMS260 T27 420955; 412926; 404930
Geological and landform units:	Steep hills, moderately steep hills, easy terrain
Study area no.:	2316
Survey methodology:	Aerial photographs (1989); existing information

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal & lowland	1. Totara-rewarewa/mahoe-black beech forest	Ridge crest, spur & gully system
	2. Matai-rewarewa forest	
	3. Manuka-kanuka shrubland (DOC 1996b)	

Landform

Two parallel gullies aligned in a north-south direction. The southern gully is a near complete catchment of a tributary of the Pahaoa River, the major landform component being steep hill slopes. The north gully system is the mid-catchment area of the Waipunga Stream and again, the major landform component is steep hillslopes.

Vegetation

Three vegetation classes are present, primary forest, modified forest and secondary shrubland. The secondary shrubland was probably induced by human clearance of the original forest cover, which may have impacted on other parts of the RAP, resulting in the modified primary forest present today.

Flora

Teucrium parvifolium (classed as Gradual Decline; Hitchmough 2002) is present (Townsend *et al.* 1998). *Hymenophyllum cupressiforme* and *Clematis afoliata* (all classed as regionally rare in Sawyer and Empson 1996) have been reported (DOC 1996b).

Fauna

Common forest bird species present.

Threat/modification

Not known.

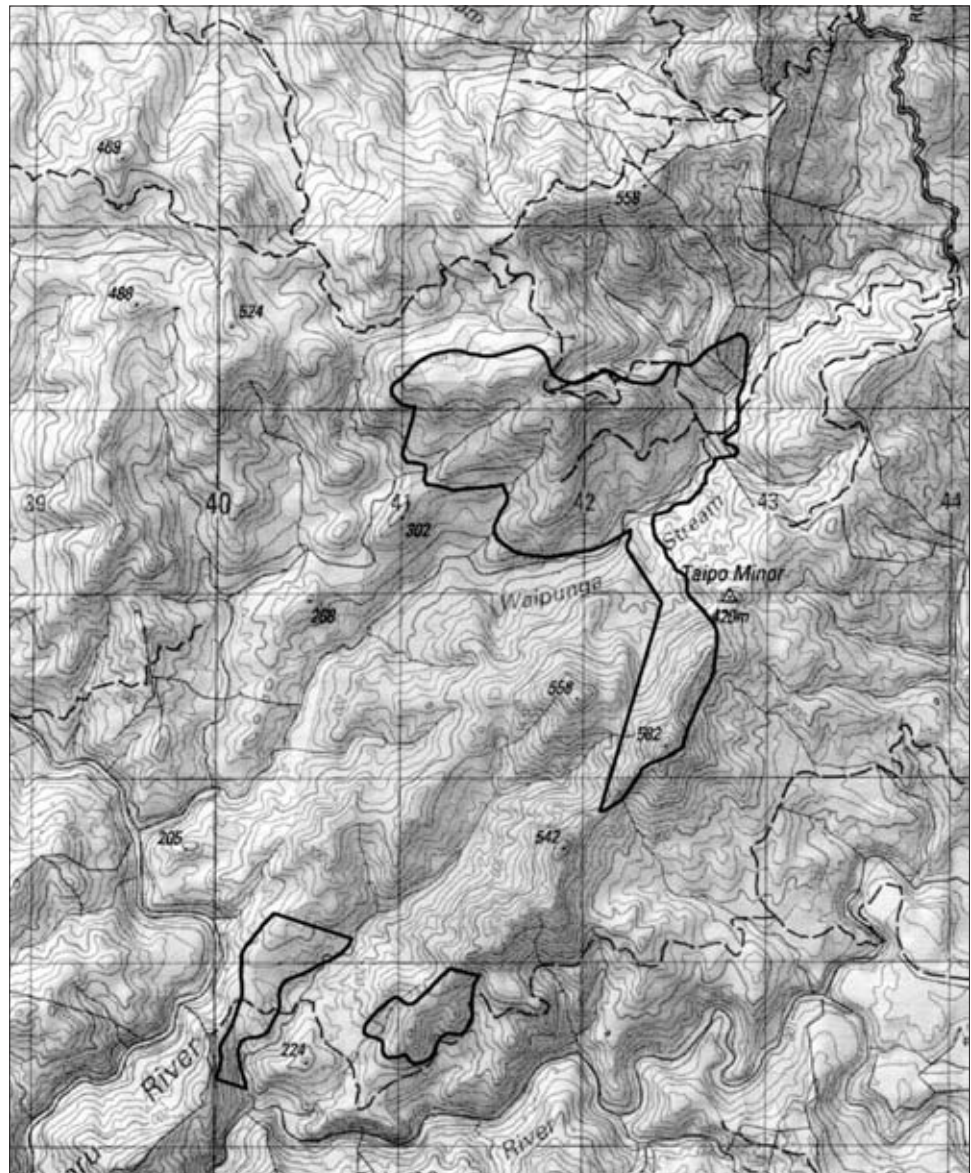
Discussion

This extension RAP contains vegetation that appears similar to that of the currently protected Rocky Hills Sanctuary. The extension is contiguous with the present sanctuary and its addition will significantly increase the size of the sanctuary, providing more habitat for flora and fauna. The surrounding vegetation is reported to have an excellent diversity of native species and is in a relatively natural condition. The high diversity of plant taxa is reflected in the occurrence of species such as nikau, rohutu and *Olearia paniculata*. Several nationally and regionally threatened species are also present.

Comments

Access to this RAP was not granted and aerial photographs and existing information were used to determine the boundaries of the RAP. These boundaries are therefore provisional and may require adjustment following a site visit. The landowners Mike and Rachel Butterick have responded in writing to the identification of the RAP, in a letter received on 11 March 1999. They state that the "Area quoted is ridiculously large and in context of the farm is over indulgence on behalf of the survey carried out. The vegetation type is extremely similar to the Government Reserve [Rocky

Location of RAP 34, Rocky Hills Extension.

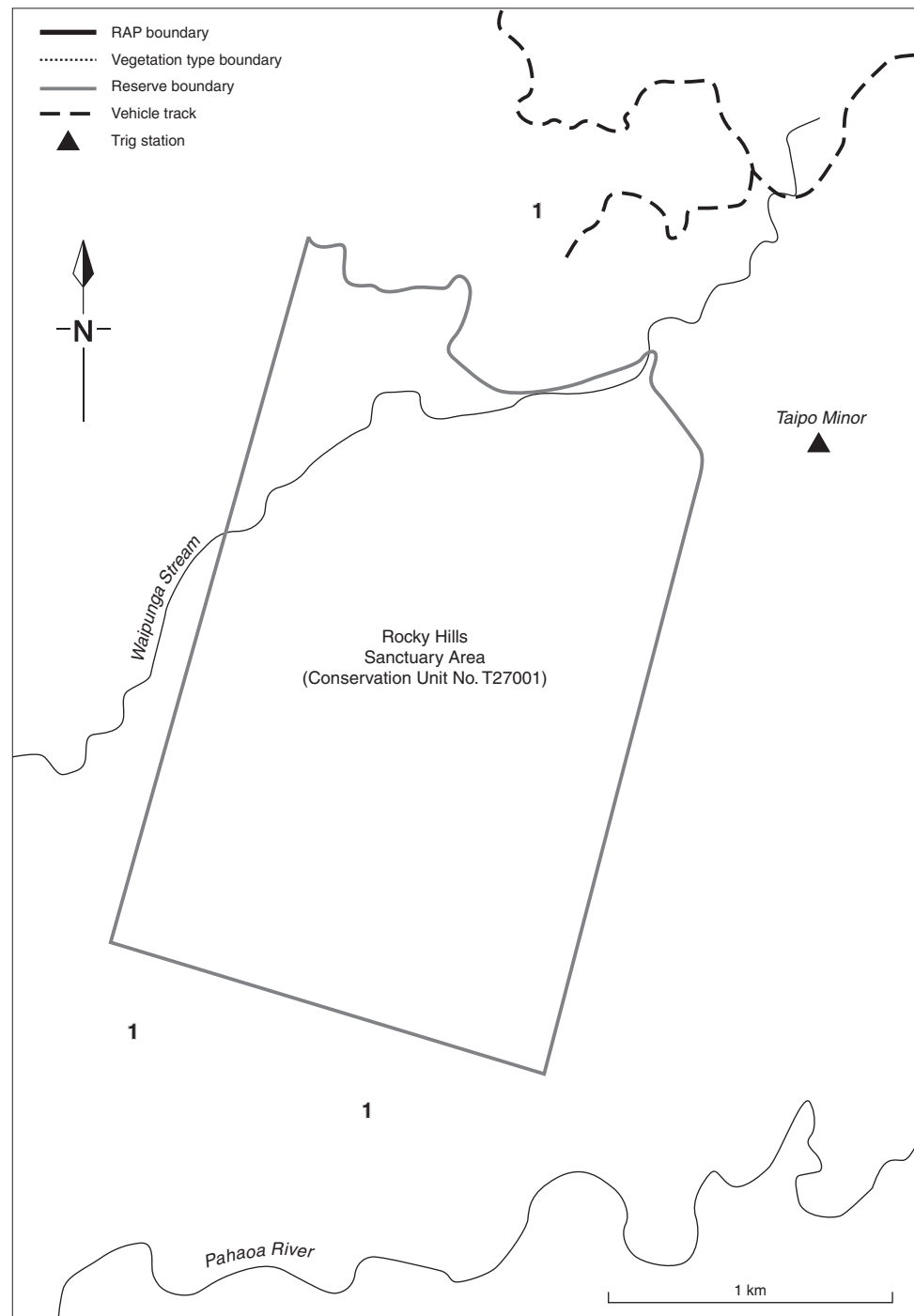


Hills] neighbouring the intended RAP and the QEII Covenant already existing on our property. The goal of the PNAP is 'to identify and protect representative examples of a full range of indigenous biological and landscape features in New Zealand'. I believe that the goal has already been achieved with the Government Reserve and the QEII Covenant." The final point the landowners make is that "the identification of this area cannot in any way affect the landowners ability to graze and/or sustainably harvest timber". Following this letter and discussions with the landowners it was decided that the boundary lines of the RAP would be removed from the map in this report.

References

DOC 1996b, Townsend *et al.* 1997.

Site of RAP 34, Rocky Hills Extension.



RAP 35 FLAT POINT DUNELANDS

Area:	122.3 ha
Altitudinal range:	0-10 m
Grid reference:	NZMS260 T27 566-911
Geological and landform units:	Sand beach
Study area no.:	2433, 2439
Survey methodology:	On site survey (1998), aerial photographs (1989) and existing information.

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <u>Marram-spinifex</u> -pingao tussockland ⇄ <u>Marram</u> -(spinifex) tussockland [groundcover: catsear-haretail-(<i>Calystegia soldanella</i>) ⇄ catsear-haretail-(<i>Calystegia sepium</i>)-(sea rocket)].	Foredune front
foredune	2. <u>Marram-Isolepis nodosa</u> tussockland ⇄ <u>Marram-Isolepis nodosa-Coprosma acerosa-Pimelea aff. arenaria</u> tussockland [ground cover: haretail-catsear- <i>Calystegia sepium</i> ⇄ haretail-catsear- <i>Calystegia sepium</i>].	Foredune crest, rear
	3. Mosaic of: ¹	
	• Marram-sea rush-(<i>Cyperus ustulatus</i>)-(oioi) tussockland;	Secondary dune crest
	• Marram-sea rush- <i>Coprosma acerosa</i> tussockland;	Secondary dune crest
	• Jointed leaved rush- <i>Potentilla anserinoides-Ranunculus macropus</i> sedgeland;	Slack
	• Raupo-oioi- <i>Cyperus ustulatus</i> sedgeland.	Slack
	4. Sand beach (unvegetated).	Beach

¹ Phase 1 survey information was used for these vegetation types (DOC 1996b); boundaries between these types could not be determined as access to the area was not granted. Accordingly they are not individually mapped.

Landform

A dune and slack sequence extending 6 km immediately south of Flat Point.

Vegetation

Duneland with areas modified by the invasion of adventive species, particularly marram.

Flora

Pimelea aff. arenaria (Serious Decline; Hitchmough 2002), *Ranunculus macropus* (Gradual Decline; Hitchmough 2002), *Coprosma acerosa* (regionally threatened; Empson and Sawyer 1996), and matagouri (also regionally threatened) are present (DOC 1998).

Fauna

Spotted skink and katipo spiders have been reported from the site (DOC Ecological Site Inventory No.881).

Threat/modification

There is little sign of stock damage to the foredunes, however there is some wave erosion at the southern end of the RAP. Further inland the dune slacks may be grazed and it appears that parts have been ploughed and developed. Domestic stock grazing, particularly by cattle, disturbs the substrate and removes vegetation cover, thus providing opportunity for adventive plant species to invade. Fencing and the exclusion of stock should be a high priority.

Discussion

The Flat Point duneland is the single largest area of coastal duneland vegetation on progradation plains remaining in the Ecological District. It contains a diverse range of vegetation types in a relatively natural state. The foredune vegetation, in particular, is amongst the most natural example of its type within the ecological district. The natural state of this vegetation is reflected in the extensive populations of pingao and spinifex; by contrast pingao populations elsewhere in the Ecological District appear to be substantially reduced from previous recorded levels (e.g. PNA 65 and RAPs 41, 49 and 283).

Comments

As access to most of the site was not granted for the 1998 field survey, aerial photographs and existing information were used to determine the boundaries of the RAP, which are therefore provisional and may require adjustment following a site visit.

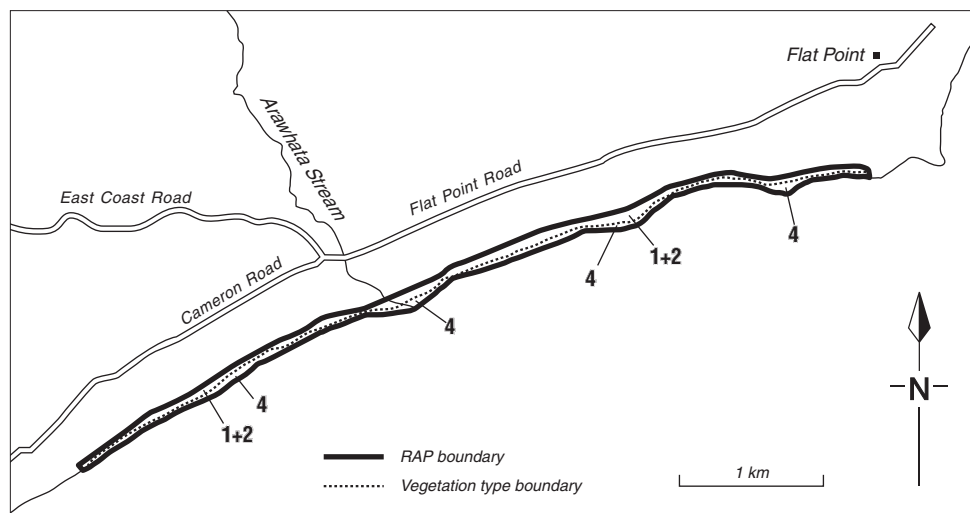
References

DOC 1996g & 1998.

Location of RAP 35, Flat Point Dunelands.



Site of RAP 35, Flat Point Dunelands.



RAP 36 PUKUNUI BUSH

Area:	472.9 ha
Altitudinal range:	160-520 m
Grid reference:	NZMS260 T27 445864; 452898; 420890
Geological and landform units:	Easy terrain, moderately steep hills & steep hills
Study area no.:	3004, 3009, 3010, 3014
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal & lowland	1. <u>Black beech-red beech-silver beech</u> forest [understorey: putaputaweta-kamaki-heketara/ <u>mingimingi</u> /(ponga)/ <u>leaf litter</u> -(petipeti); a few examples of matai and rewarewa in the canopy on toe-slopes in gullies].	Hillslope, gully
	2. Manuka-putaputaweta/ <u>mingimingi</u> -harakeke-rarahu shrubland [groundcover: <u>pasture</u> -(<i>Euphrasia cuneata</i>)].	Spur crest, hillslope, gully
	3. <u>Black beech</u> -(rimu)-(rewarewa) forest [understorey: <u>mingimingi</u> -(whauwhaupaku)-(putaputaweta)/(ponga)-(heketara)-(rangiora)/(whauwhaupaku)-(rarahu)/ <u>leaf litter</u>].	Lower hillslope, gully
	4. Kanuka-putaputaweta-whauwhaupaku/ <u>manuka-mingimingi</u> scrub ⇄ <u>Manuka-tauhinu</u> scrub [groundcover: <u>pasture</u>].	Upper hillslope
	5. <u>Black beech</u> -(rimu) forest [understorey: (kanuka)-(putaputaweta)-(rewarewa)-(horoecka)- <u>mingimingi/prickly mingimingi/leaf litter</u> ; a few kahikatea, matai, miro, rewarewa and totara present in canopy, particularly in gullies].	Hillslope, ridge crest, gully
	6. (Black beech)-(rewarewa)/kanuka-kamahi/ manuka-mingimingi-prickly mingimingi scrub ⇄ <u>Manuka-tauhinu</u> scrub [understorey: <u>leaf litter</u> -waewaekoukou ⇄ <u>pasture</u>].	Hillslope, ridge crest
	7. (Black beech)/putaputaweta-hangehange-mamaku-rangiora scrub ⇄ <u>Manuka-tauhinu</u> scrub [groundcover: mingimingi-prickly mingimingi ⇄ <u>pasture-bare ground</u>].	Hillslope, ridge crest

Landform

The RAP encompasses several large disjointed areas. All of the areas are generally similar in landform, comprising gully and hillslope systems of varying steepness. Easy terrain with incised gullies in the north-eastern area is the notable exception. Small areas of secondary scrub have been included around the area of black beech-(rimu)-(rewarewa) forest to increase the integrity of the proposed RAP.

Vegetation

Relatively large areas of primary and modified primary forest are a dominant feature of the RAP. Logging and partial clearance for agriculture are the most likely modifying influences. Areas of secondary black beech forest are present on the upper slopes in the western area of the RAP. This secondary forest, along with the secondary scrub, has been induced through human clearance of the original forest cover.

Flora

One nationally threatened species *Pimelea tomentosa* (Serious Decline; Hitchmough 2002) was recently discovered at this site by the Wellington Botanical Society. Eight regionally threatened species occur within the RAP; *Clematis afoliata*, *Coprosma virescens*, *Craspedia uniflora* var. *grandis*, *Asplenium appendiculatum* subsp. *appendiculatum*, *Elymus multiflorus*, *Gonocarpus incanus*, *Juncus pusillus* and *Rubus squarrosus* (DOC Ecological Site Inventory No. 611).

Fauna

Kereru were observed within the RAP. Pied tit, rifleman, whitehead, bellbird, tui, fantail, and grey warbler have been reported from the RAP (A. Rebergen 1997e).

Threat/modification

A high proportion of the RAP is currently grazed by domestic stock, causing a reduction in understorey diversity and density, and a decline in the regeneration of canopy species. Fencing to exclude stock should be a high priority. Deer, pigs and possums were also present and their control should also be prioritised. Current proposals for exotic forestry plantations in the area may include parts of the north-eastern area of the RAP.

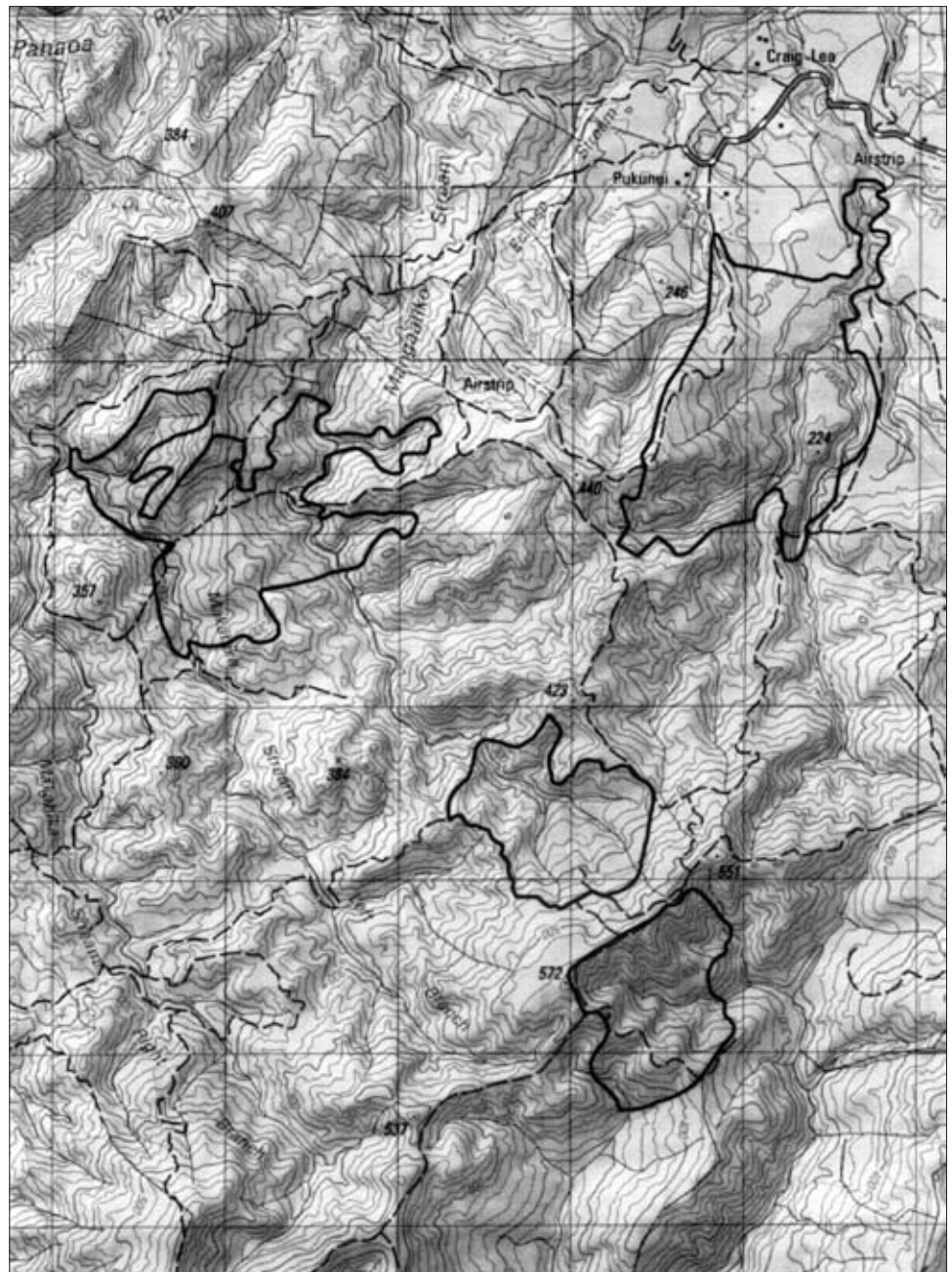
Discussion

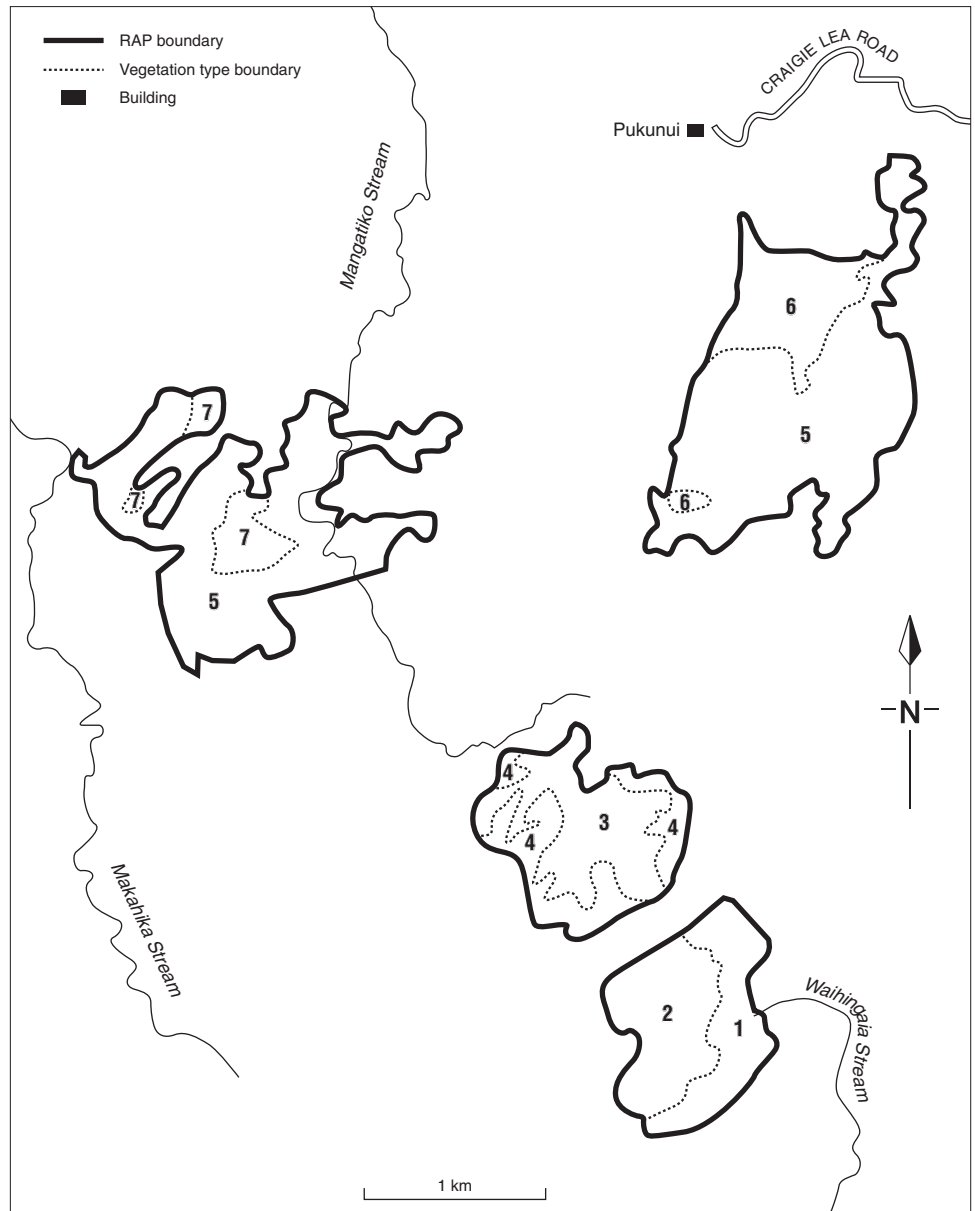
Semi-coastal and lowland primary and modified primary forest on the moderately steep hills and steep hills land types have been greatly reduced in extent in the ecological district. For instance, only 1% of the c.1853 extent of semi-coastal primary forest on the steep hills land type remains. This RAP contains a diverse range of these much reduced ecological units, all of which are amongst the largest and most natural examples of their type. They include the largest remaining areas of semi-coastal modified primary forest and secondary scrub on the easy terrain land type, and the second largest area of semi-coastal primary forest on the same land type. It also contains a number of nationally and regionally threatened plant and animal species. The RAP is an area of high conservation value and is the only site in the conservancy where the nationally threatened species *Pimelea tomentosa* has been recorded in the past 10 years.

References

Rebergen 1997e.

Location of RAP 36, Pukunui
Bush.





RAP 37 MOUNT ADAMS-PAHAOA RIVER BUSH

Area:	2,804.8 ha
Altitudinal range:	0-663 m
Grid reference:	NZMS260 T27 400810
Geological and landform units:	Riparian flats, moderately steep hills, steep hills
Study area no.:	2915, 2923, 3000, 3001, 3005, 3006, 3601, 3602, 3603
Survey methodology:	On site survey, aerial photographs (1989), existing information, field reconnaissance from a nearby high point (1998).

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal & lowland	1. <u>Red beech</u> forest [understorey: (mahoe)-(mamaku)/rangiora-whauwhaupaku-hupiro/ (<i>Astelia fragrans</i>)-(petipeti)-(kiokio)/ <u>leaf litter</u> -(kiwkiwi)].	Upperslope, gully
	2. <u>Kapuka</u> -mamaku-whauwhaupaku-(manuka)-(koromiko) scrub [groundcover: mingimangi-tawainiwini/(rarahu)-(kowaowao)-(waewaekoukou)].	Steep sideslope, gut
	3. <u>Black beech</u> -red beech-(silver beech) forest ⇄ (Houhere)-(kamahi)-(black beech)/kanuka-whauwhaupaku-kamahi-(rangiora)-(heketara) forest [understorey: mingimangi-(koromiko)/bare ground-hook sedge].	Upperslope, gully
	4. <u>Manuka</u> scrub [understorey: mingimangi-prickly mingimangi-(<i>Coprosma rhamnoides</i>)-(putaputaweta)/hook sedge ⇄ kamahi-hupiro-mingimangi/waewaekoukou- <i>Blechnum procerum</i> -(kiokio) ⇄ prickly mingimangi-mingimangi- <i>Coprosma rhamnoides</i> -(horoeka)-(whauwhaupaku)/waewaekoukou-(tawiniwini); small areas of <u>black beech</u> forest occur in gullies].	Sideslope, ridge crest, spur crest, gully
	5. <u>Manuka</u> - <u>tauhinu</u> scrub ⇄ <u>Kanuka</u> -putaputaweta-(houhere) forest [understorey: pasture ⇄ whauwhaupaku-horoeka-mahoe-kanuka/mingimangi- <i>Coprosma rhamnoides</i> -rangiora/ <u>leaf litter</u> -hook sedge; small areas of <u>black beech</u> forest in gullies].	Sideslope, ridge crest, spur crest, gully
Coastal & semi-coastal	6. <u>Manuka</u> - <u>tauhinu</u> scrub ⇄ <i>Olearia solandri</i> -(tauhinu) shrubland.	Lower slope
Semi-coastal	7. Shingle river bed ⇄ (Kanuka)/lupin-tauhinu/ (<i>Raoulia tenuicaulis</i>) gravelfield [small patches of broom occur on river bed].	River bed
	8. <u>Kanuka</u> - <u>kowhai</u> forest ⇄ <u>Kanuka</u> - <u>crack willow</u> forest [understorey: whauwhaupaku-(ngaio)-(mahoe)/koromiko-tutu-(karamu)/ <i>Coprosma rhamnoides</i> -(harakeke)-(tauhinu)/ <u>pasture</u> ⇄ (tauhinu)-(kanuka)/ <u>pasture</u> ; at the upstream end of the Pahaoa River, titoki and black beech are present in the canopy].	River bank
	9. <u>Kanuka</u> forest [understorey: rangiora-heketara-(whauwhaupaku)/ <i>Coprosma rhamnoides</i> -mingimangi-(<i>Coprosma propinqua</i>)/ <u>pasture</u> -(<i>Polystichum richardii</i>)-(Adiantum aethiopicum)].	Sideslopes
	10. Harakeke- <i>Coprosma crassifolia</i> -koromiko-(<i>Brachyglottis greyi</i>) rockfield ⇄ Kanuka-houhere-kowhai-kohuhu-whauwhaupaku scrub.	Bluff, steep sideslope
	11. <u>Black beech</u> forest ⇄ <u>Kanuka</u> forest [understorey: rangiora-heketara-ti kouka/ <i>Coprosma rhamnoides</i> -mingimangi-(<i>Coprosma crassifolia</i>)/ <u>pasture</u>].	Spur

Landform

An extensive area containing several independent headwater catchments draining into the Waihingata Stream, Waiouru Stream, Glendhu Creek, Pahaoa River and the Makahika Stream. The catchments consist of complex systems of gullies and ridges on moderately steep to steep hills. The RAP includes an altitudinal sequence extending inland from the coast for c.7.5 km, to the summit of Mt Adams, and the riparian and river bed landforms of the Pahaoa River.

Vegetation

Secondary scrub dominates the RAP, induced through human clearance of the original forest cover. The quality (species abundance and richness) of the understorey in the secondary scrub varies. A general trend of increasing species diversity and abundance with decreasing stock accessibility was noticeable. Secondary forest and modified primary forest are also present, human clearance being the most probable factor in determining their present status. Primary forest is a relatively minor component.

Flora

Two plants of national conservation concern are present, on the western side of the RAP near Pahaoa River (Townsend *et al.* 1998); *Anogramma leptophylla* (classed as Gradual Decline, Hitchmough 2002) and *Kortbalsella salicornioides* (Sparse). *Juncus holoschoenus* var. *holoschoenus* (endangered) was previously recorded in the Pahaoa Gorge area, but is now believed to be extinct (Townsend *et al.* 1996). *Aciphylla squarrosa*¹, *Brachyglottis greyi*¹, *Craspedia uniflora* var. *grandis*, *Leptinella tenella*, *Asplenium appendiculatum* subsp. *appendiculatum*, *Ileostylus micranthus*, *Chionochloa beddiei*, *Elymus multiflorus*, *Hymenophyllum cupressiforme*, *Pterostylis foliata*, *Rubus squarrosus*, *Clematis afoliata* and *Coprosma virescens* (all regionally threatened; Empson and Sawyer 1996) occur within the RAP (DOC Ecological Site Inventory No. 560).

Fauna

Kereru, pied tit and black fronted dotterel were recorded along with typical forest birds. Wellington green gecko has been recorded from Mt Adams (DOC Ecological Site Inventory No.560)

Threat/modification

Grazing by domestic stock has decreased both the diversity and abundance of species in the understorey over much of the RAP, and has also had flow-on negative effects on forest regeneration. Fencing and exclusion of stock should be a high priority. Threats to the *Kortbalsella salicornioides* population include shading of the kanuka host trees by pine trees, fire, clearance of host trees, little regeneration of kanuka, and the possibility of clearance for road works in the future (Townsend *et al.* 1998). Threats to the *Anogramma leptophylla* population include competition from introduced grasses and Mexican daisy, and destruction of the habitat by fire. Legal protection to secure the area against clearance, and control of weed species threatening the *A. leptophylla* population is highly recommended.

¹ Seen during current survey.

Discussion

Mount Adams–Pahaoa River is the second largest RAP and one of the largest natural areas in the Ecological District. It contains a diverse range of ecological units, most of which are of relatively high quality with respect to species diversity and abundance. It is one of only two RAPs in the ecological district to contain a complete bioclimatic sequence from coastal to lowland vegetation. The largest examples of coastal, semi-coastal and lowland secondary scrub on the moderately steep hills and steep hills land type in the ecological district occur in this RAP. The diversity of plant and wildlife is reflected in the presence of three nationally and twelve regionally threatened species.

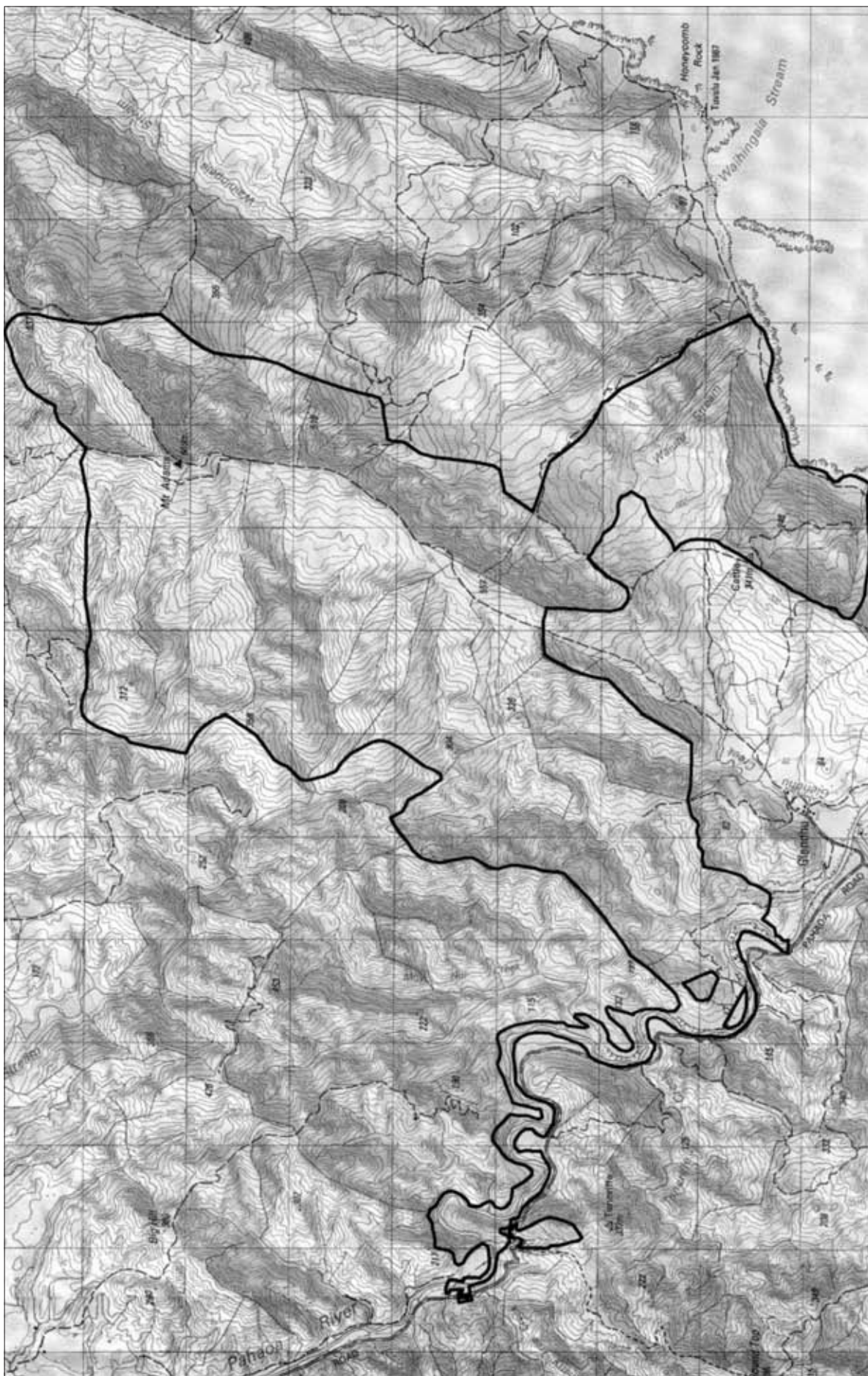
Comments

Vegetation type 6 was surveyed using binoculars, and boundaries may need revision.

References

DOC 1998; Townsend *et al.* 1998.

Location of RAP 37, Mount Adams-Pahoia River Bush.



RAP 38 WAIKEKINO STREAM BUSH

Area:	27.4 ha
Altitudinal range:	80-300 m
Grid reference:	NZMS260 T27 485875
Geological and landform units:	Steep hills
Study area no.:	3104
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. <u>Manuka-tauhinu</u> shrubland [ground cover: <u>pasture</u>].	Hillslope
	2. (Rewarewa)-hinau/karaka-putaputaweta-porokaiwhiri-ngaio-kareao forest [understorey: kaikomako-kawakawa-(hangehange)/ <u>Coprosma rhamnoides</u> -kaikomako/ <u>hook sedge</u> -pakau].	Hillslope, gully, spur crest

Landform

A spur on a steep hillslope including the gullies on either side.

Vegetation

Secondary shrubland induced through clearance, primary and modified primary forest; modifying factors being grazing and partial clearance, by either fire or logging.

Flora

Typical species only were recorded.

Fauna

Common forest birds are present; tui have been previously recorded (National Habitat Register No. 33/12-2).

Threat/modification

Domestic stock graze the area, causing damage to the understorey and limiting the regeneration of canopy species. Fencing to exclude stock is a high priority.

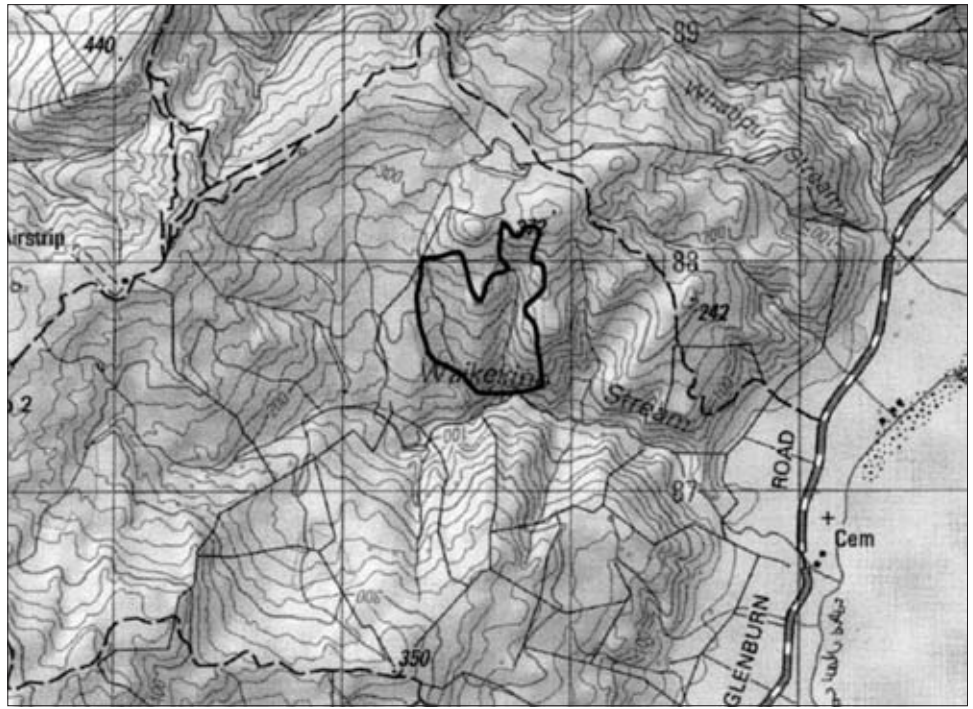
Discussion

This RAP is one of only four examples of primary forest on the steep hills land type left within the ecological district. It is a relatively large and natural area with a high diversity of plant species.

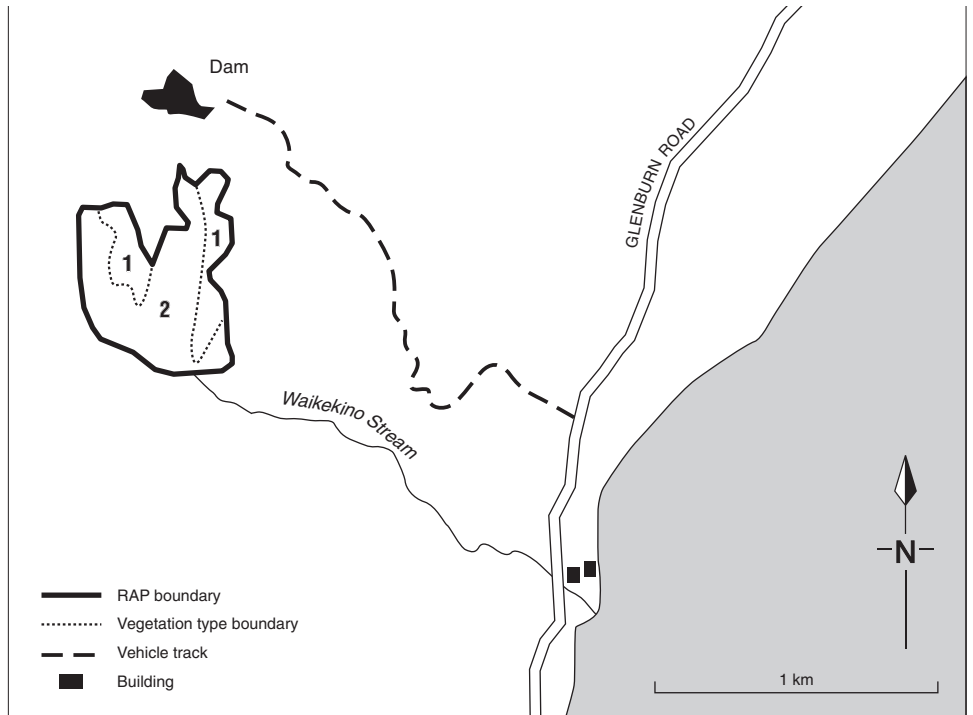
References

New Zealand Wildlife Service 1986.

Location of RAP 38, Waikokino Stream Bush.



Site of RAP 38, Waikokino Stream Bush.



RAP 39 WAIMOANA WETLAND

Area:	2.7 ha
Altitudinal range:	0-10 m
Grid reference:	NZMS260 T27 503869
Geological and landform units:	Progradation plains
Study area no.:	3106
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. (Ti kouka)/ <u>raupo</u> / <i>Baumea juncea</i> reedland.	Terrace hollow

Landform

A small hollow on a terrace behind coastal dunes.

Vegetation

Freshwater wetland modified through grazing and trampling by stock. Anecdotal information from the land owner (Mr Thompson), suggests that the wetlands were once dominated by harakeke, and the current raupo dominance may have been induced through nutrient enrichment from fertiliser runoff.

Flora

A diverse flora including *Schoenoplectus tabernaemontani*, *Bolboschoenus fluviatilis*, and *Baumea juncea* occurs within this RAP. One nationally threatened species, *Ranunculus macropus* (classed as Gradual Decline, DOC 2002), is present.

Fauna

An unconfirmed record of mudfish during the 1970s (Clinton Duffy pers. comm.).

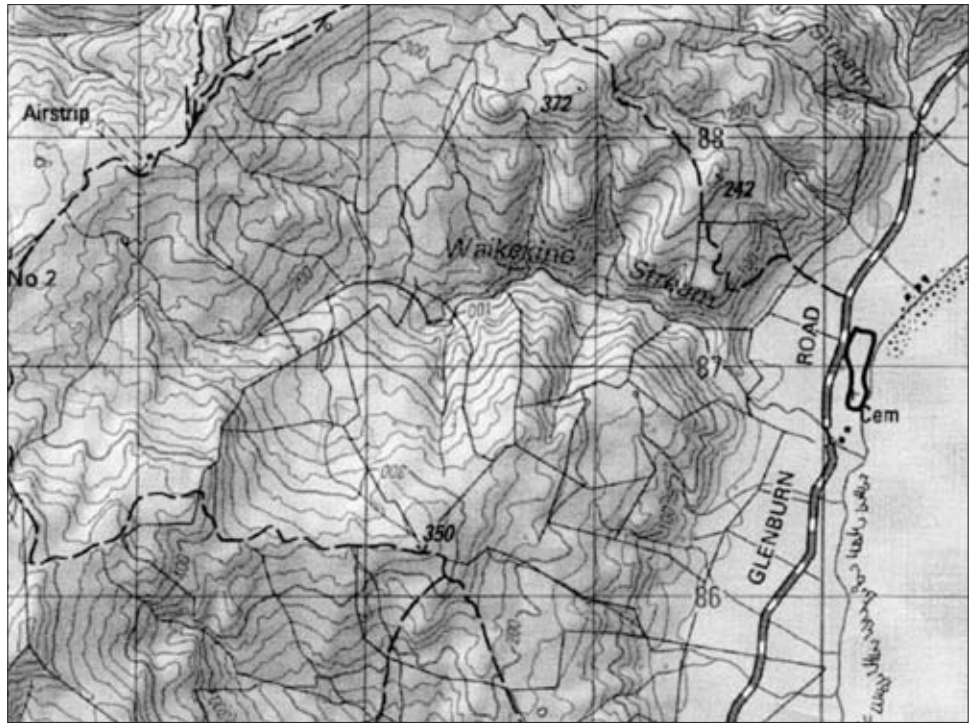
Threat/modification

Eutrophication from fertiliser runoff and human alterations to the drainage pattern may have resulted in changes in species composition. Domestic stock grazing is damaging the vegetation and disturbing the substrate. Fencing to exclude stock is a high priority.

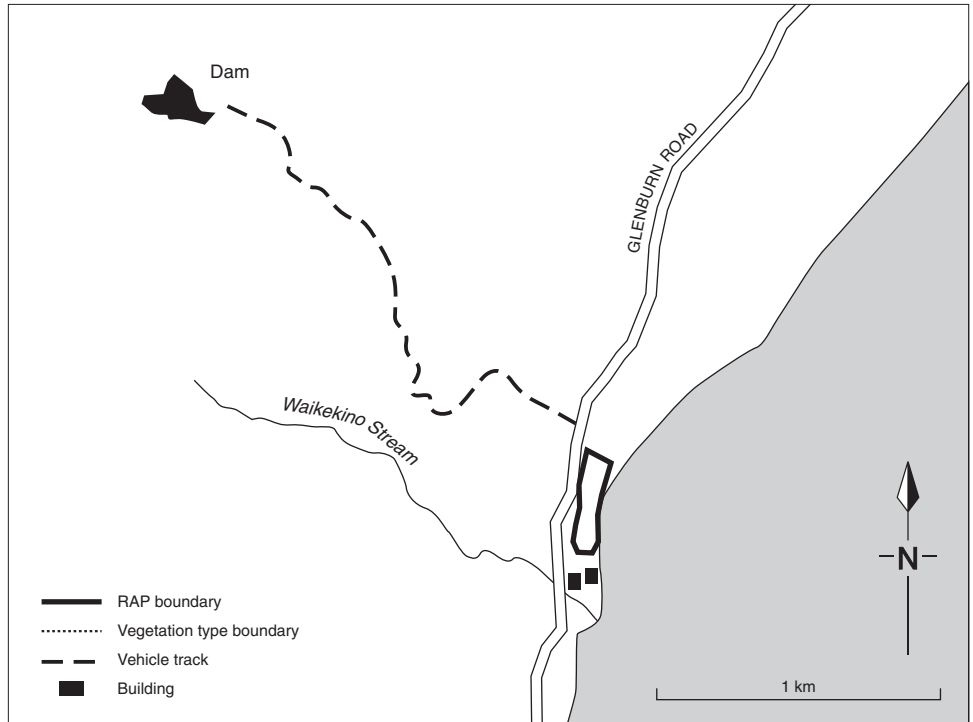
Discussion

Waimoana wetland is the only example of a coastal freshwater wetland on the progradation plains land type within the ecological district.

Location of RAP 39, Waimoana Wetland.



Site of RAP 39, Waimoana Wetland.



RAP 40 GLENBURN STATION BUSH

Area:	14.5 ha
Altitudinal range:	20-40 m
Grid reference:	NZMS260 T27 487844
Geological and landform units:	Progradation plains
Study area no.:	3107
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <u>Karaka</u> forest [understorey: predominantly <u>bare ground-pasture</u> ; a small area has been fenced off and the understorey here is ti kouka-elderberry-karaka/elderberry-ti kouka-pampas-karaka-(kawakawa)/ <u>pasture-bare ground</u>].	Terrace
	2. Ti kouka/ <u>pasture</u> treeland.	Terrace

Landform

An area at the rear of the progradation plain extending out from the foot of the hillslope. RAP Does not extend to the coast.

Vegetation

Primary forest modified through the removal of the understorey, and treeland induced by the clearance of canopy species.

Flora and fauna

Typical species only were recorded.

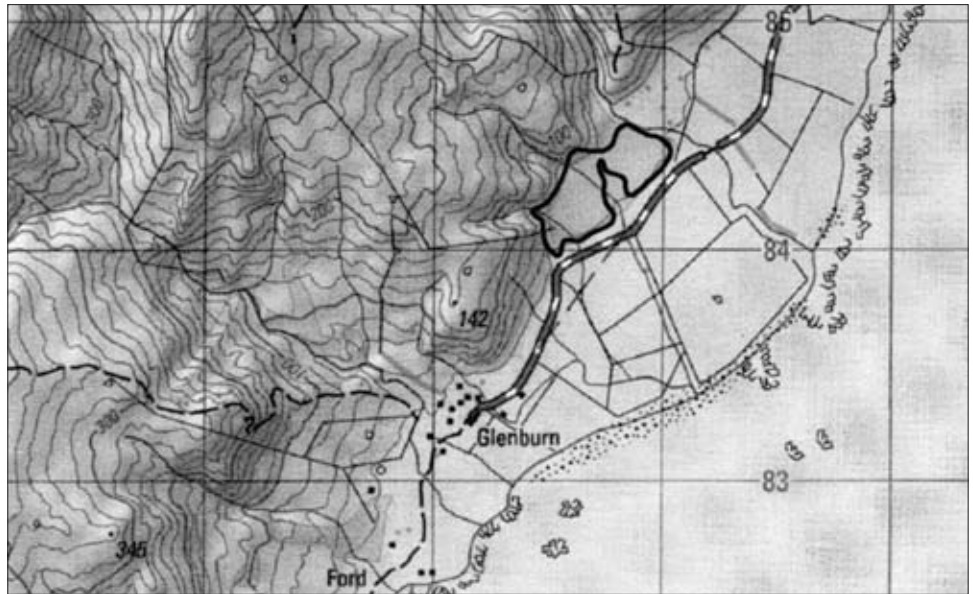
Threat/modification

Hardly any understorey remains in grazed areas, in stark contrast to the small fenced area. Dieback was observed in the canopy, and fencing and removal of grazing animals is a high priority to allow canopy species to re-establish. There are some tree elderberry present. Removal of these, while control is still an option, should be considered.

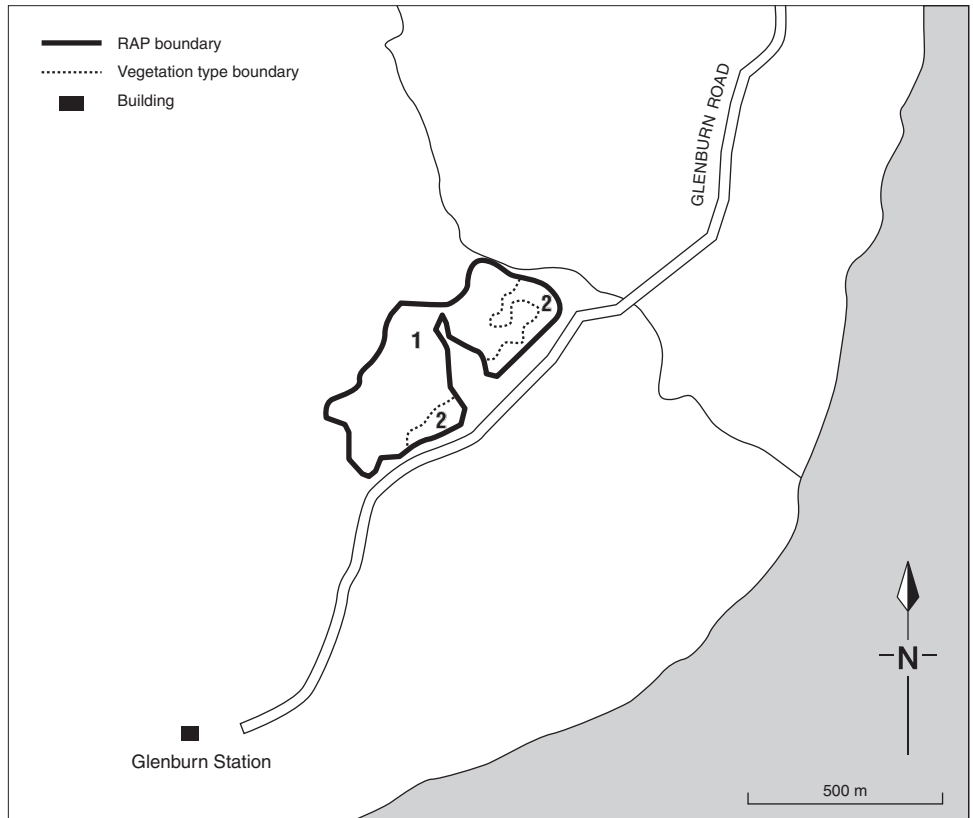
Discussion

Glenburn Station bush is the only example of modified primary forest on the progradation plains land type within the ecological district.

Location of RAP 40, Glenburn Station Bush.



Site of RAP 40, Glenburn Station Bush.



RAP 41 HONEYCOMB LIGHT/KAHU ROCK HEADLAND

Area:	15.4 ha
Altitudinal range:	<20 m
Grid reference:	NZMS260 T27 464808
Geological and landform units:	Progradation plains
Study area no.:	3012
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <i>Cyperus ustulatus</i> - <i>Juncus</i> sp.-(leafless rush)-(<i>Isolepis nodosa</i>) rush-sedgeland ⇆ Pasture (with scattered <i>Cyperus ustulatus</i> , sea rush, leafless rush, <i>Juncus</i> sp). A few small ponds with local <i>Schoenoplectus tabernaemontani</i> , grasses, clover, jointed rush.	Marine terrace
	2. A mosaic of: <ul style="list-style-type: none"> • <i>Isolepis nodosa</i>-(sea rush) rushland; • pasture (with sea rush); • <u>marram</u> grassland; • (marram)/harestalk-horned poppy/sand sedge/<i>Calystegia soldanella</i> grassland and sandfield. 	Marine terrace
	3. Unvegetated rockland (seal haulout; scattered horokaka, seaweed fringe).	Coastal rocks

Landform

A raised beach fringed by rocky and sandy shores. Low rock outcrops are scattered throughout.

Vegetation

Dune and wetland vegetation merges into pasture surroundings.

Flora

A population of *Muehlenbeckia astonii* (classed as Nationally Vulnerable; Hitchmough 2002) in a fenced enclosure marks the northern limit of this nationally threatened species, and is the biggest population in the Wellington Conservancy (P. de Lange, pers. comm.). *Crassula peduncularis* (Nationally Endangered) occurs in the ephemeral wetland and pasture (Townsend *et al.* 1998). Pingao (Gradual Decline; Hitchmough 2002) was previously recorded at this site (Sawyer *et al.* 1998) but was not found during this survey.

Fauna

The New Zealand fur seal haulout site is one of only two confirmed breeding sites in the Wellington Conservancy; only one other breeding site is known from the North Island (B. Dix, pers. Comm.). Fur seals also use the adjacent offshore Kahu Rock. Common skinks are present in good numbers (A. Rebergen pers. comm.).

Threat/modification

Pasture and weed species may threaten long term survival of populations of *M. astonii* and *C. peduncularis*, particularly if combined with agricultural run-off or topdressing, drainage, or changes in grazing regimes. Continued sheep grazing over part of the site may be necessary in the short term to maintain *C. peduncularis* in the presence of otherwise tall, competing adventive or native species (Townsend *et al.* 1998).

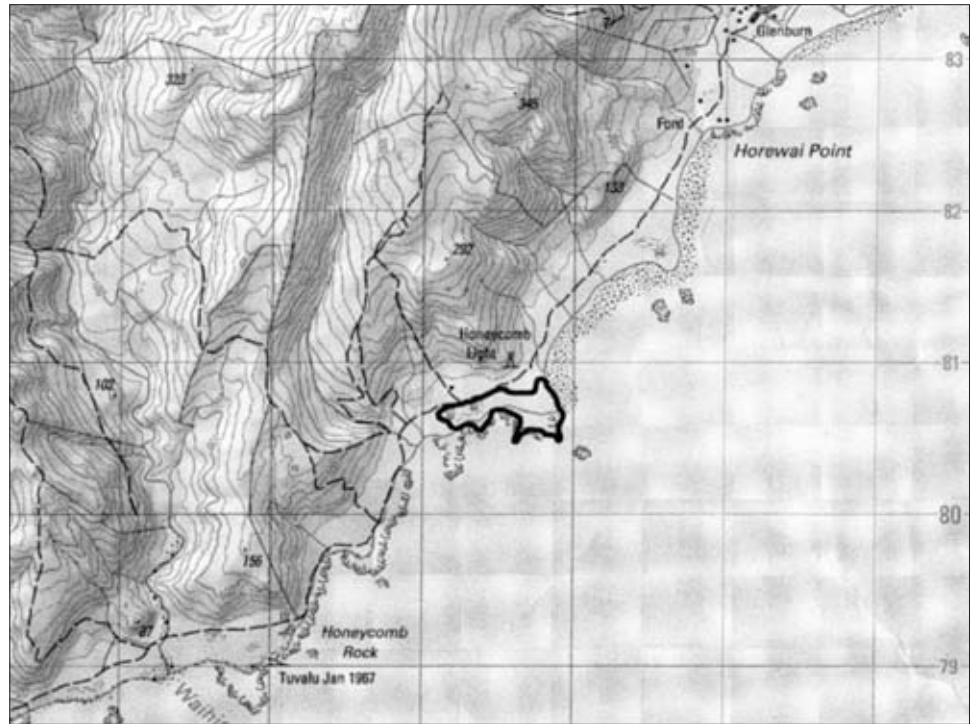
Discussion

Although degraded, this site is an important habitat for nationally threatened species and one of a series of coastal wetland and duneland fragments forming a network along the Wairarapa coast (see RAP 42 and 129).

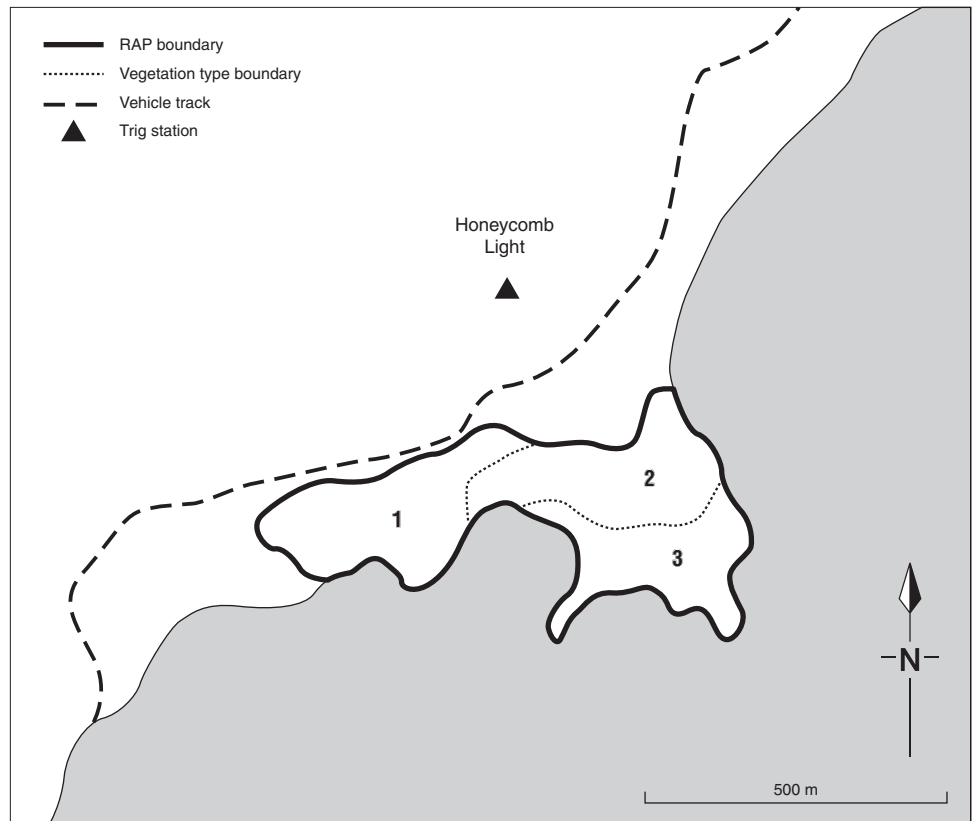
References

Sawyer *et al.* 1998; Townsend *et al.* 1998.

Location of RAP 41, Honeycomb Light/Kahu Rock Headland.



Site of RAP 41, Honeycomb Light/Kahu Rock Headland.



RAP 42 HONEYCOMB ROCK TERRACE

Area:	17.6 ha
Altitudinal range:	0-20 m
Grid reference:	NZMS260 T28 448791; 456798
Geological and landform units:	Coastal platform, sand beaches & shingle beaches
Study area no.:	3607
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <i>Carex geminata</i> - <i>Cyperus ustulatus</i> sedgeland [ground cover: creeping buttercup-white clover].	Terrace
	2. Pennyroyal-curled dock-(<i>Eleocharis acuta</i>)/ <i>Potentilla anserinioides</i> -catsear herbfield.	Hollow
	3. <i>Isolepis nodosa</i> / <u>pasture</u> grassland.	Secondary dune
	4. <i>Isolepis nodosa</i> /(pennyroyal)-(curled dock)/ <u>red clover</u> -catsear herbfield.	Dune slack
	5. <u>Marram</u> -pingao- spinifex tussockland ↔ <u>Marram</u> tussockland [ground cover: (<i>Calystegia sepium</i>)-(harestalk)-(catsear)].	Foredune
	6. (Harakeke)/horokaka rockland.	Rock outcrop
	7. (Raupo)-(Schoenoplectus tabernaemontani)/ <u>jointed leaved rush</u> - <i>Eleocharis acuta</i> rushland.	Hollow
	8. <u>Sea rush</u> -oioi rushland [ground cover: creeping bent].	Dune slack
	9. (Marsh ribbonwood)/(horned poppy)-(ratstail)/ (<i>Apium prostratum</i>)-(remuremu)-(sand buttercup)-(catsear) stonefield.	Foredune
	10. <u>Buck's-horn plaintain</u> - <u>creeping bent</u> -remuremu-(<i>Atriplex prostratum</i>)-(Calystegia sepium) herbfield.	Hollow
	11. Sand beach (unvegetated).	Beach

Landform

The RAP comprises two separate areas. The large area in the south presents a sequence, moving inland, from sandy beach through dunes and slacks to a terrace. It also includes Honeycomb Rock, a large rock outcrop on the foreshore. The area to the north is a small foredune and slack.

Vegetation

Vegetation in both areas is modified primary, modifying factors being stock grazing and the introduction of exotic plant species.

Flora

Three nationally threatened plant species are present, *Muehlenbeckia astonii* (classed as Nationally Vulnerable; Hitchmough 2002), *Isolepis basilaris* (Serious Decline), and pingao (Gradual Decline; Hitchmough 2002). The population of *I.*

basilaris is the only record of this species in the ecological district, while the *M. astonii* population is one of three. *Spinifex sericeus*, a species greatly reduced in the ecological district, is present.

Fauna

Spotted and common skinks are common in dunes (A. Rebergen pers. comm.). The dunes have been identified as a significant breeding site for the red billed gull (DOC Ecological Site Inventory No. 604; DOC 1998).

Threat/modification

Disturbance by cattle and sheep grazing provides opportunity for invasive weedy species to establish. The *M. astonii* has also been heavily browsed by stock (Townsend *et al.* 1998). Fencing the *M. astonii* population to exclude stock is a high priority. Sheep's sorrel and pasture species are competing with the *Isolepis basilaris* population and the site is also currently grazed. Appropriate management of the *I. basilaris* population requires further work to determine a suitable grazing regime and a weed control programme. Eutrophication of the wetland through fertiliser runoff and human changes to the drainage may affect species abundance and floral composition.

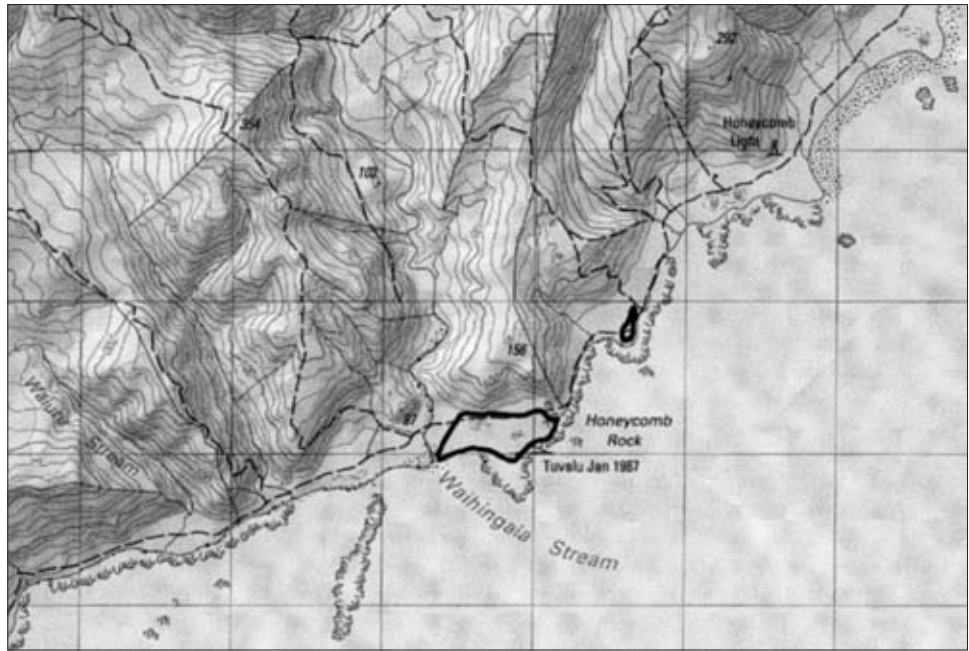
Discussion

A relatively diverse range of coastal vegetation. The duneland vegetation in particular is a relatively natural example of an ecological unit that has been much modified within the ecological district. This naturalness is reflected in the presence of populations of pingao and spinifex. Three nationally threatened plant species, and one regionally threatened species are present. This RAP complements the nearby Honeycomb Light/Kahu Rock Headland RAP (RAP 41).

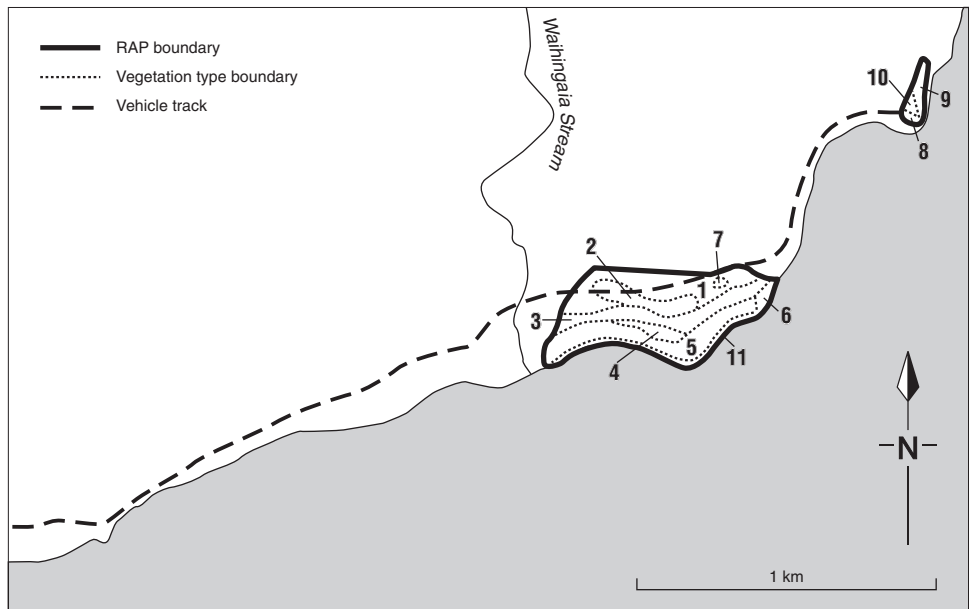
References

DOC 1998; Townsend *et al.* 1998.

Location of RAP 42, Honeycomb Rock Terrace.



Site of RAP 42, Honeycomb Rock Terrace.



RAP 43 MAKARA RIVER BUSH REMNANTS

Area:	67.4 ha
Altitudinal range:	160-220 m
Grid reference:	NZMS260 S28 154785
Geological and landform units:	Incised gullies, riparian flats
Study area no.:	3401
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal	1. Manuka-horoeka-houhere-kaikomako forest [understorey: <i>Raukahu anomalous-Coprosma rigida-C. areolata-C. rotundifolia</i>].	River terrace
	2. Matai-white maire-black beech-kahikatea-horoeka forest [understorey: <i>Raukahu anomalous-poataniwha-Coprosma areolata-C. rotundifolia-Melicytus micranthus-rohutu-C. rigida</i>].	River terrace, toe slope
	3. (Kahikatea)/manuka-houhere-(horoeka)-(totara)-(kanuka) scrub [understorey: <i>Raukahu anomalous-kaikomako-Coprosma rhamnoides-C. propinqua</i>)] ⇌ Black beech-(kahikatea)-(matai)/horoeka-houhere-kanuka forest [with local pole kahikatea, scattered totara, occasional tarata and red beech; small areas of black beech treeland occur along the river margins, with manuka-koromiko-tauhinu shrubland on river scarp].	River terrace Hillslope River terrace, scarp
	4. Totara-kahikatea-matai-whauwhaupaku-mahoe-kaikomako-horoeka-(tarata) treeland.	River terrace and edge
	5. Houhere-horoeka-mahoe forest [understorey: <i>Coprosma rotundifolia-whauwhaupaku-rangiora</i> -(houhere)]; occasional tall emergents include kahikatea, totara, white maire, matai; other canopy components include totara, koromiko, white maire, kowhai, ti kouka; local cliff vegetation (mainly tall grasses) on bluffs toward the top].	High scarp
	6. (Kahikatea)/black beech-totara-kahikatea-houhere-whauwhaupaku-(kowhai) forest ⇌ Kanuka scrub (on hillslopes).	River terrace
	7. Spike sedge-leafless rush- <i>Carex geminata</i> -pasture-(pukio) sedgeland.	River terrace
	8. Pukio- <i>Carex geminata</i> -leafless rush sedgeland.	Shallow gully

Landform

Alluvial terraces and a moderately steep gully along the Makara River including local steep-sided gully and scarp sections. There are bluffs in two parts and a scenic limestone gorge to the north.

Vegetation

Semi-continuous mixed beech-podocarp-broadleaved forest remnants with treeland and secondary shrubland in places, with occasional large, mature trees. A relatively large wetland occupies the western alluvial flat.

Flora

Scattered red beech occurs in this RAP. Several divaricating shrubs species are present, including rohutu.

Fauna

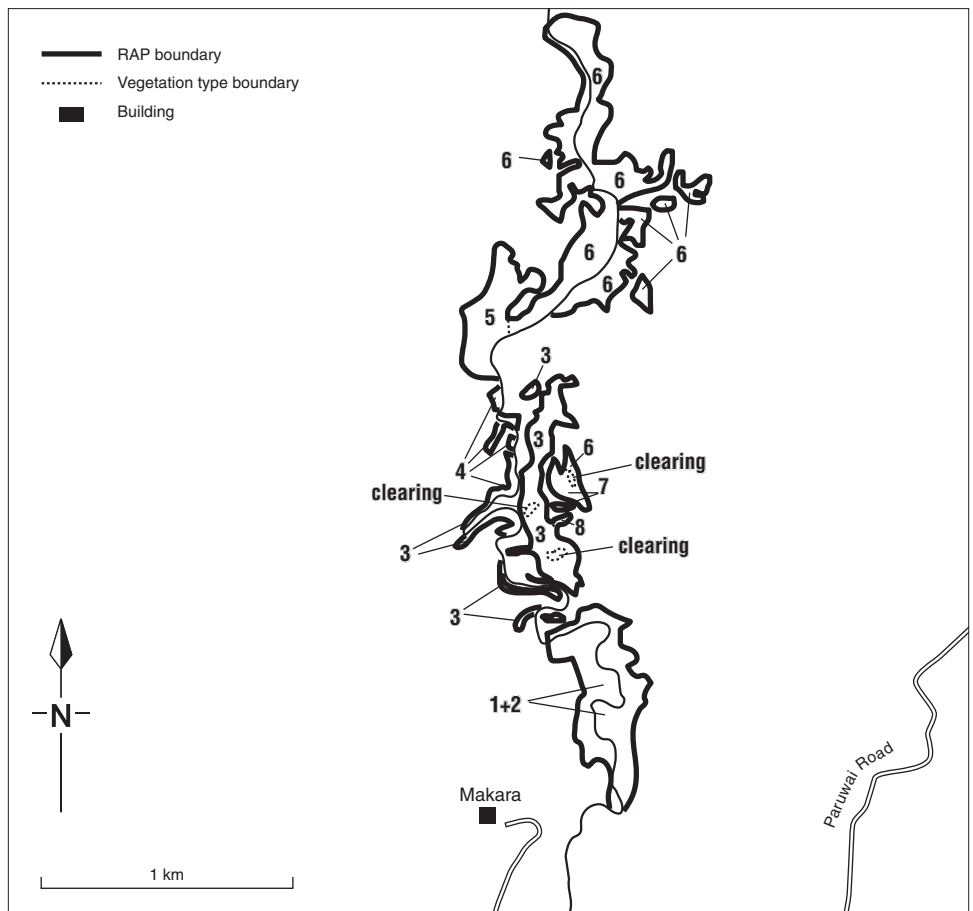
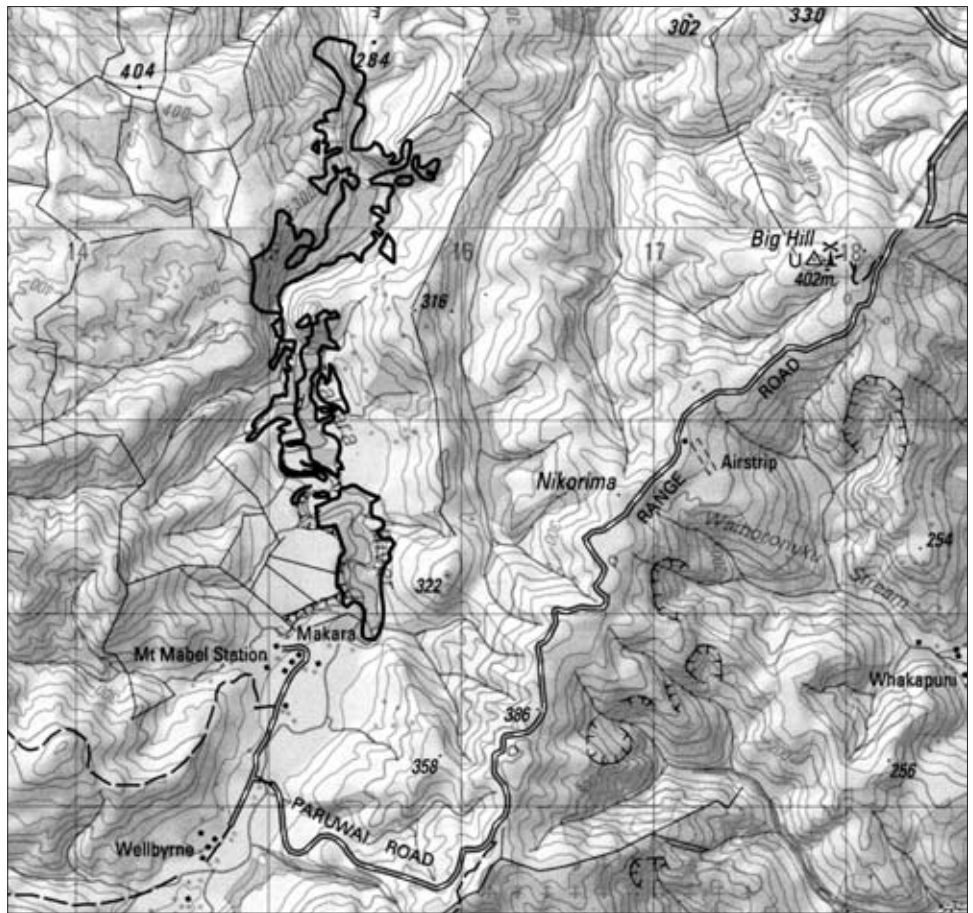
Tui, kereru, fantail, whitehead, grey warbler, eastern rosella, and pipit were recorded.

Threat/modification

Most large trees have been logged. Areas of manuka scrub have recently been cleared within the RAP and nearby, and further manuka and kanuka-dominated stands may be at risk. Understorey development and forest regeneration are restricted by sheep and cattle grazing, and the wetland areas are also grazed. Erosion associated with tracking and trampling by stock occurs in steep parts of the RAP.

Discussion

Forest and wetlands on these land types have been reduced to less than 10% of their former area. Riparian wetland reduction was particularly severe, making the sizeable although modified sedgeland and rushland found in this area very significant. This RAP is contiguous with RAP 128 on the north facing riparian corridor.



RAP 44 LAGOON HILLS-HEIGHTS

Area:	5267.9 ha
Altitudinal range:	40-527 m
Grid reference:	NZMS260 S28 280760
Geological and landform units:	Riparian flats, alluvial terraces, moderately steep hills, steep hills.
Study area no.:	3414, 3506, 3506a, 3511
Survey methodology:	On site survey (1998), field reconnaissance from a nearby high point, aerial photographs (1989).

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Semi-coastal & lowland	1. A mosaic of: <ul style="list-style-type: none"> • (Rewarewa)-<u>manuka</u>-(kanuka)-(putaputaweta) scrub [understorey: <u>mingimingi</u>-(manuka)-(kanuka)-(herektara)/<i>Gabnia pauciflora</i>-<i>Lepidosperma australe</i>-(tawiniwini)-<i>Pomaderris</i> aff. <i>phylicifolia</i>/waewaekoukou]. • (Rewarewa)-(black beech)-(kanuka)/<u>manuka</u>-(kanuka)-(rewarewa) scrub [understorey: <u>mingimingi</u>-putaputaweta-ponga-<i>Coprosma rbamnoides</i>/<u>bare ground</u>-hook sedge-(kiokio)-(<i>Blechnum procerum</i>)-(rereti)]. • <u>Manuka</u>-tauhinu scrub [understorey: <u>pasture</u>]. 	Side-slope, crest, gully
	2. (Rewarewa)-(hinau)/kanuka-mamaku-putaputaweta-mahoe-porokaiwhiri-heketara forest ⇌ <u>Kanuka</u> forest [understorey: <u>ponga-mingimingi</u> /ponga-mingimingi- <i>Coprosma rbamnoides</i> / <u>bare ground</u> -hook sedge-waewaekoukou ⇌ Ponga-kanuka-(putaputaweta)-(heketara)/ <u>mingimingi</u> - <i>Coprosma rbamnoides</i> -niniao/hook sedge-bush rice grass-(waewaekoukou); small areas of <u>beech</u> forest present in gullies].	Side-slope, crest, gully
	3. <u>Black beech</u> forest ⇌ (Rewarewa)-(black beech)/kanuka-rewarewa-kamahi-mamaku-(black beech)-(ti kouka) forest ⇌ <u>Kanuka-kamahi</u> -mamaku-rewarewa-(putaputaweta)-(white maire) forest [understorey: (rewarewa)-(kanuka)-(horoecka)/ <u>mingimingi-ponga</u> /mingimingi- <i>Coprosma rbamnoides</i> -(prickly mingimingi)-(niniao)/ <u>bush rice grass</u> ⇌ <u>ponga-mingimingi</u> / <i>Gabnia pauciflora</i> -bush rice grass].	Side-slope, crest, gully
	4. (Rewarewa)-(black beech)-kanuka/ <u>manuka</u> -kanuka-rewarewa-kamahi scrub [understorey: <u>mingimingi</u> -prickly mingimingi-putaputaweta-ponga- <i>Coprosma rbamnoides</i> / <u>bare ground</u> /hook sedge].	Side-slope, crest, gully
Lowland	5. Harakeke-tauhinu-manuka-koromiko-karamu-(<i>Brachyglottis greyi</i>) shrubland and rockland ⇌ <u>Kanuka</u> scrub [understorey: brown top-sweet vernal- <i>Rytidosperma unarede</i> -(kowaowao)-(<i>Vittadinia australis</i>)-(<i>Colobanthus muelleri</i>) ⇌ <u>mingimingi</u> -ponga-(niniao)-(putaputaweta)-(heketara)/ <i>Coprosma rbamnoides</i> -niniao-mingimingi-(prickly mingimingi)-(niniao)/ <u>bare ground</u> - <u>pasture</u> -hook sedge].	Taipos, rock outcrops

Landform

A very large area of moderately steep to steep hill country. It includes several large catchment headwaters, including Okoropunga Stream, Coles Creek and several tributaries of the Rerewhakaaitu River. Each catchment contains an extensive and complex system of gullies and ridges. In the south-east there is an area of taipos, steep sandstone peaks and bluffs, called 'Heights'.

Vegetation

Secondary forest and scrub, induced through human clearance of the original forest cover by fire, logging and for agriculture, dominate this RAP. The primary method of clearance was probably fire. There are lesser amounts of primary forest, some of it modified. Primary vegetation tends to occur in gullies, guts and on rock outcrops which provide fire refuge. Flatter areas, upper-slopes and ridges tend to be dominated by secondary vegetation.

Flora

With 329 indigenous plant species recorded (Druce 1988), the Heights taipos are the most species diverse in the ecological district (Sawyer 1995). Twelve regionally threatened plants are present; *Asplenium appendiculatum* subsp. *appendiculatum*, *Botrychium australe*, *Botrychium bifforme*, *Carex resectans*, *Craspedia uniflora* var. *grandis*, *Doodia australis*, *Gonocarpus incanus*, *Hymenophyllum minimum*, *Hymenophyllum cupressiforme*, *Leptinella tenella*, *Myosotis spathulata*, and *Pterostylis foliata*.

Fauna

Pied tit was observed amongst other typical forest birds.

Threat/modification

Much of the north-western half of the RAP (Lagoon Hills) is fenced and is not grazed by domestic stock. The owner has also initiated control measures of feral browsing animals (deer, pigs and goats). However most of the remaining area is currently grazed by domestic stock, resulting in a reduction of understorey species abundance and diversity, and, impeded forest regeneration. Fencing and exclusion of stock over the entire RAP should be a high priority to protect and enhance the area's notable ecological values. Deer, pigs, goats and possums were present. An area in the south-east (Heights) is the subject of a Forest Heritage Fund application to legally protect, by conservation covenant, 1,012 ha of forest within Te Awaiti Station.

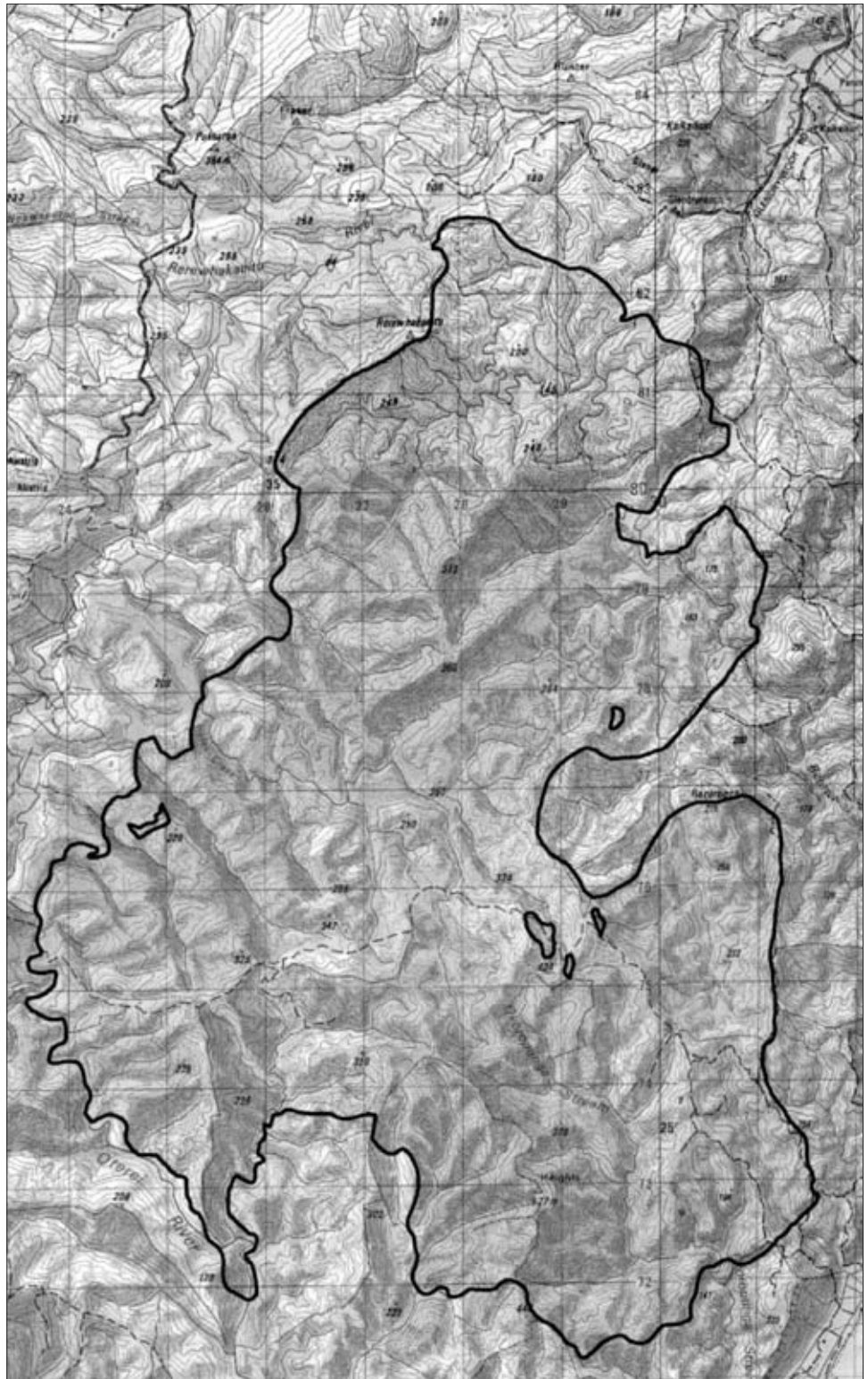
Discussion

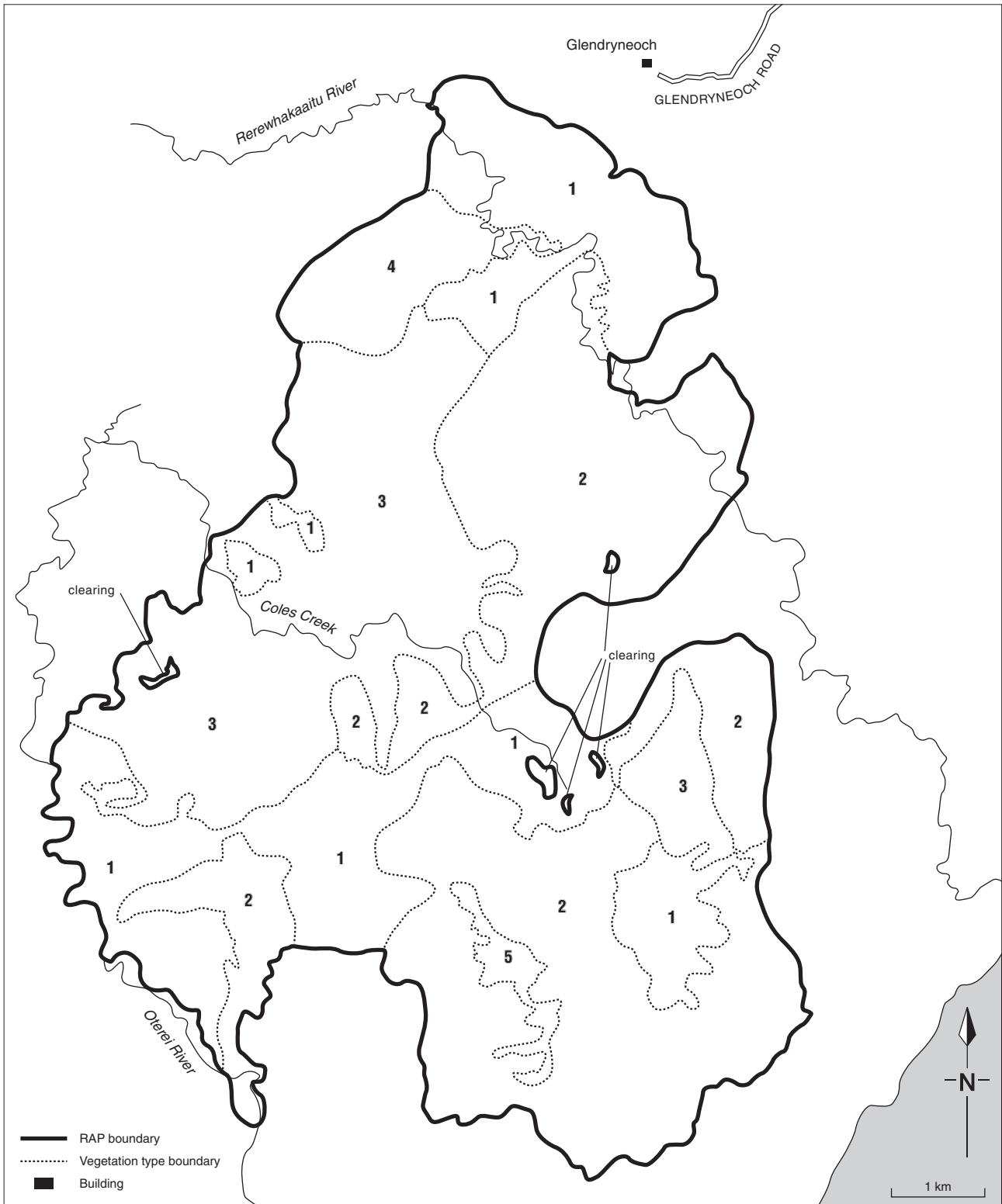
Lagoon Hills-Heights contains by far the highest quality and most extensive areas of semi-coastal and lowland primary, modified primary and secondary forest of any RAP in the Ecological District. The north-western part, in particular, contains vegetation of excellent quality with abundant regeneration of canopy species in the understorey. With twelve regionally threatened plant species also present, this RAP is of outstanding conservation value.

References

DOC 1998; Druce 1988; Department of Conservation 1992; Sawyer 1995.

Location of RAP 44, Lagoon Hills-Heights.





RAP 45 PAHAOA

Area:	12.9 ha
Altitudinal range:	<20 m
Grid reference:	NZMS260 T28 372751, 378756, 385760
Geological and landform units:	Coastal platform, wetlands, sand beaches
Study area no.:	3605, 3610, 3611
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
coastal	1. <u>Spinifex</u> -(marram) grassland.	Low dunes
	2. <u>Pingao-spinifex</u> grassland.	Low dunes
	3. <i>Poa</i> sp.-(wharariki) rockland.	Limestone outcrop
	4. (<i>Raoulia australis</i>) sandfield.	Sand basin in low dunes
	5. (Toetoe)/ <u>raupo-harakeke</u> - <i>Baumea rubiginosa</i> - <i>Isolepis nodosa</i> flax reedland.	Depression inland from coastal dunes
	6. <i>Isolepis cernua</i> - <i>Samolus repens</i> -(<i>Lilaeopsis</i> sp.)-(<i>Lobelia anceps</i>)-(arrow grass) turf.	Low dune
	7. <u>Haretail-sand sedge</u> sedge-grassland ↔ <i>Carex</i> spp. sedgeland [with a narrow strip of gravel and adventive grasses].	Low dunes
	8. Driftwood zone.	Sand beach/low foredune
	9. Exotic pasture.	Marine terrace

Landform

Low duneland on open coast around Pahaoa River with limestone outcrops on headlands and at estuary mouth.

Vegetation

West of the river mouth a driftwood zone merges into dune vegetation and coastal wetland in a mosaic of vegetation types. Coastal turf occurs at the landward base of a limestone outcrop and along the western edge of the mosaic. Extensive pingao and spinifex occur east of the river mouth, less extensively to the far west in the adjacent Pahaoa Scientific Reserve, and in small degraded patches on the foredune between the mapped areas.

Flora

Two plants of *Muehlenbeckia astonii* (classed as Nationally Vulnerable; Hitchmough 2002) occurred within vegetation type 9 in the RAP but recently died. Plants are in cultivation and the species could be reinstated at this site in the future.

Fauna

Variable oystercatcher, black shag, pipit, pied stilt, red billed gulls, welcome swallow and spurwinged plover were seen in the RAP. White-faced heron, paradise shelduck, black swan, mallard, little black shag and black-backed gulls were seen on the adjacent estuary.

Threat/modification

The RAP is heavily grazed by sheep and cattle. Parts appear affected by recent fire.

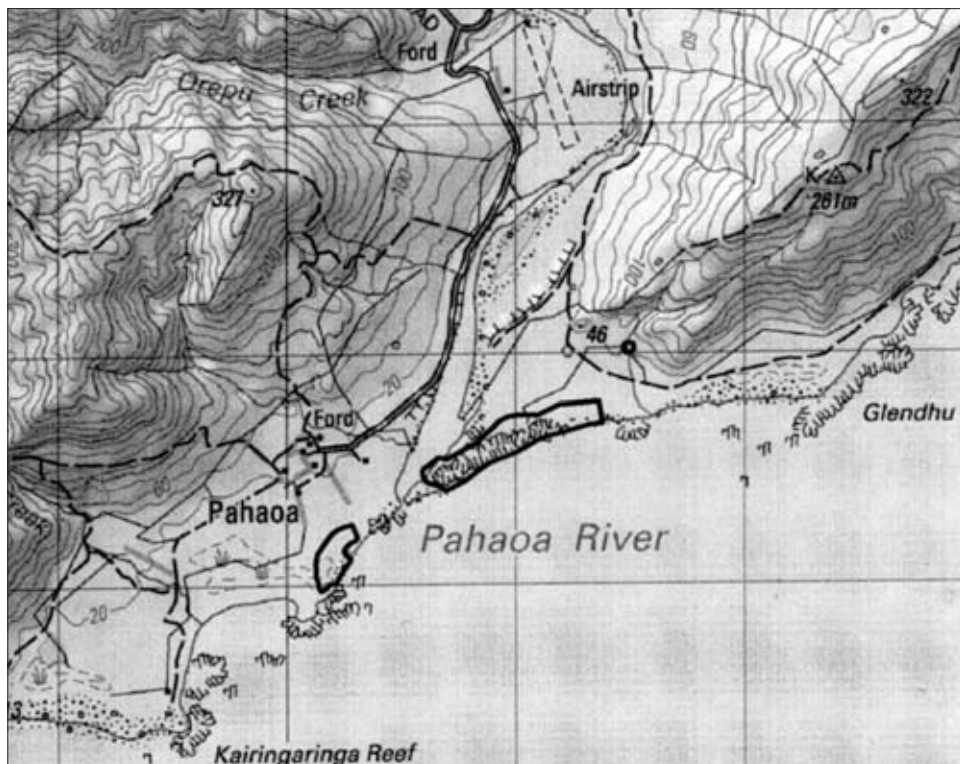
Discussion

The turf and wetland, although subject to grazing, are reasonably diverse and one of the better examples of these ecological types remaining on the Eastern Wairarapa coast. Healthy pingao and spinifex populations are uncommon elsewhere. The flora includes *Ranunculus acaulis*, *Selliera radicans*, *purei*, *Schoenoplectus tabernaemontani*, *Plantago raoulii*, and leafless rush. Devils Creek Bush (Site 275), comprising a patch of karaka, ngaio and tauhinu treeland on the hillslope to the north, contains *Brachyglottis greyi* (Sawyer *et al.* 1998). If the hillslope were allowed to naturally re-establish in indigenous vegetation, it would complement this RAP and result in an outstanding coastal vegetation sequence.

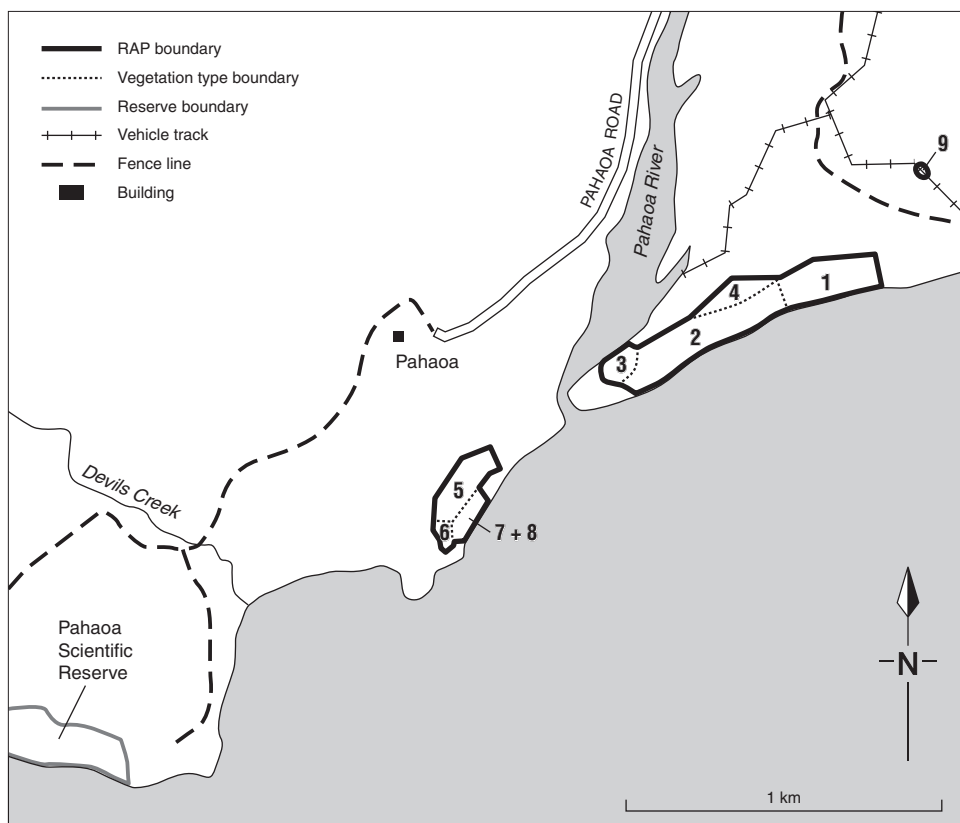
References

Sawyer *et al.* 1998.

Location of RAP 45, Pahaoa.



Site of RAP 45, Pahaoa.



RAP 46 CASTLE RIVER

Area: 3.3 ha
Altitude: 50-60 m
Grid reference: NZMS260 S28 126654; 128652
Geological and landform units: Riparian flats
Study area no.: 3303
Survey Method: On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION	LAND TYPE
Semi-coastal	1. <u>Leafless rush</u> - <i>Carex geminata</i> -(tauhinu)-(purei) rushland [occasional <i>Cyperus ustulatus</i> , <i>Lepidosperma australe</i>] ⇆ Pasture.	Alluvial terrace
	2. <u>Kanuka</u> / <i>Coprosma rhamnoides</i> -tauhinu-(<i>Coprosma propinqua</i>)-(<i>Muehlenbeckia complexa</i>) treeland.	Toe-slope
	3. <u>Kanuka/tauhinu</u> shrubland ⇆ Leafless rush- <i>Cyperus ustulatus</i> -Californian thistle sedge-rushland ⇆ Kanuka/ <i>Carex geminata</i> -leafless rush-(<i>Cyperus ustulatus</i>) tree-sedgeland. Partly fringed by kanuka.	River terrace, low terrace riser

Landform

Alluvial flats and low terraces at the foot of rolling hills between Castle River and Opouawe River.

Vegetation

Rush and sedgeland on river terraces with scattered trees and shrubs, surrounded by kanuka scrub (with occasional manuka and kowhai) on hillsides, and kanuka-tauhinu shrubland along the river.

Flora

Typical species only were recorded.

Fauna

Spurwinged plover, fantail, and high numbers of pipits were seen.

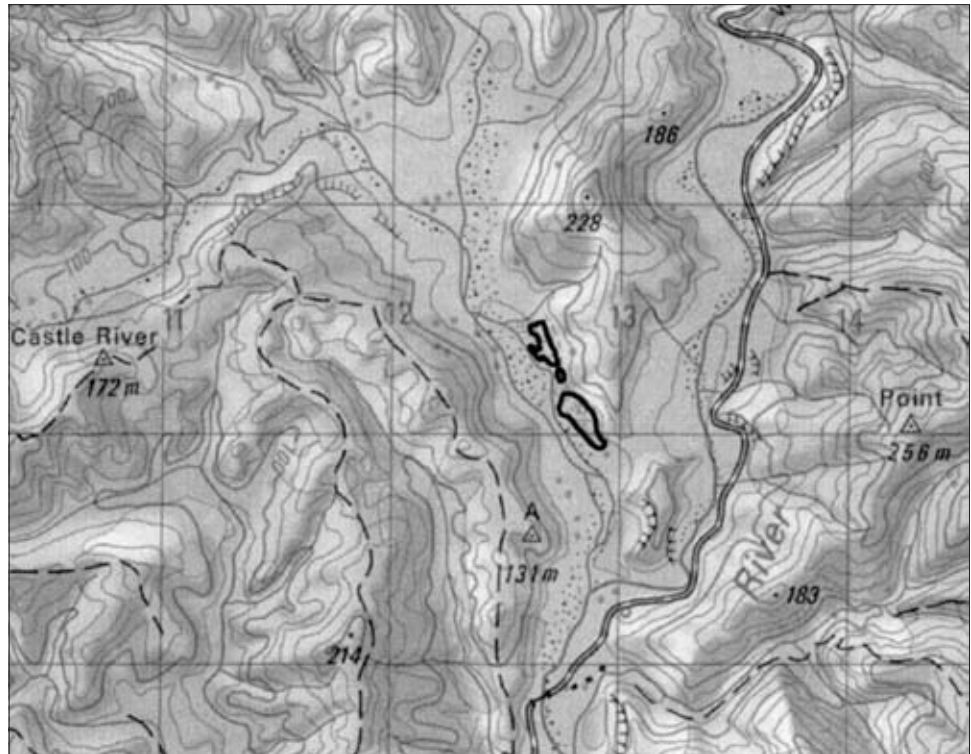
Threats/Modifications

The area is grazed by sheep and cattle, and hosts high numbers of rabbits.

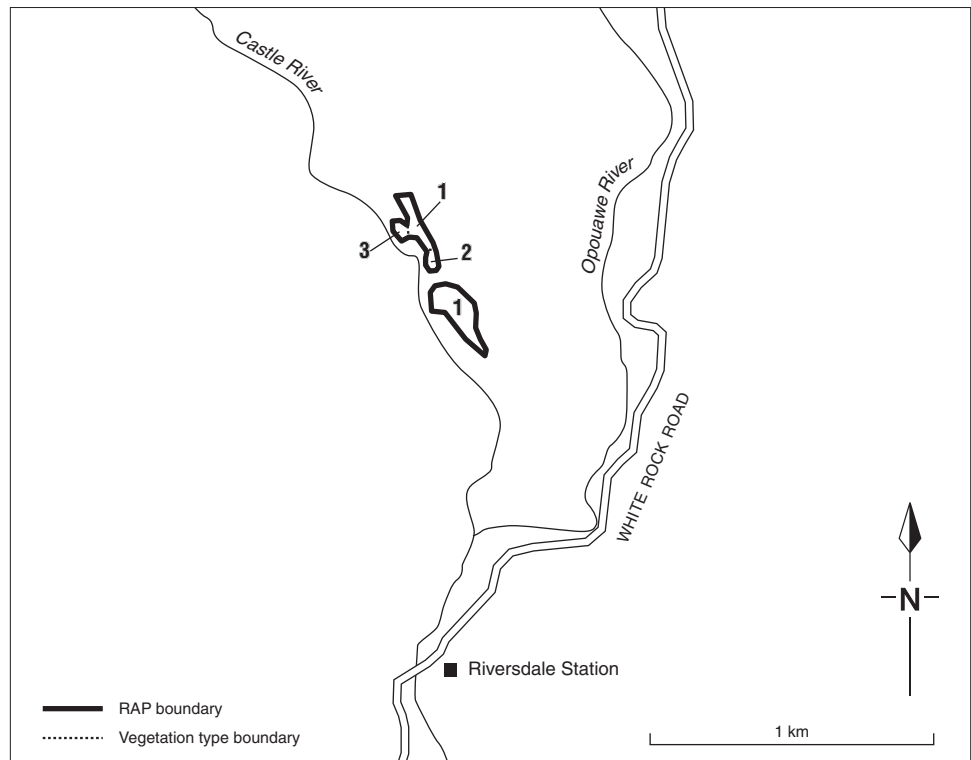
Discussion

Significant wetlands on riparian flats in the Eastern Wairarapa are now very uncommon and tend to be small and degraded. This area is distinguished from most remaining riparian wetlands by its size and proximity to a wide-bed shingle river system.

Location of RAP 46, Castle River.



Site of RAP 46, Castle River.



RAP 47 TORA COASTAL BUSH

Area:	14.1 ha
Altitudinal range:	<20-165 m
Grid reference:	NZMS260 S28 193637
Geological and landform units:	Moderately steep hills, coastal platform
Study area no.:	3427a
Survey methodology:	On site survey

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. Karaka-ngaio-whauwhaupaku-(porokaiwhiri)-(mahoe) forest [understorey: (kawakawa)-(rangiora)/hook sedge-(ferns)].	Hillslope
	2. <u>Pohuehue</u> -mahoe-ngaio-(ti kouka)-(kawakawa) tree-vineland. (No understorey.)	Marine terrace

Landform

This RAP lies on the seaward face of the eastern hills and extends down onto the gently sloping coastal platform.

Vegetation

The coastal forest on the steep hillside halts at the abrupt boundary between landforms, where scattered trees are covered in the native climber, pohuehue.

Flora

Arthropodium cirratum was found in Area 1 (see map).

Fauna

Common forest birds are present.

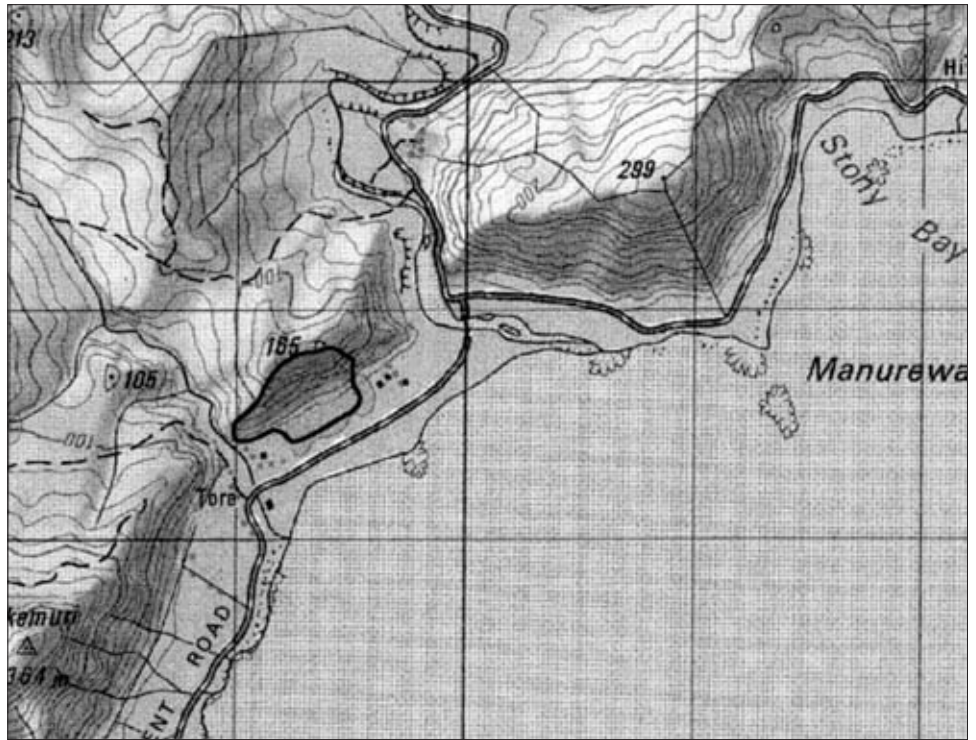
Threat/modification

The area is currently heavily grazed by sheep. There are distinctive animal tracks and erosion on the hillsides.

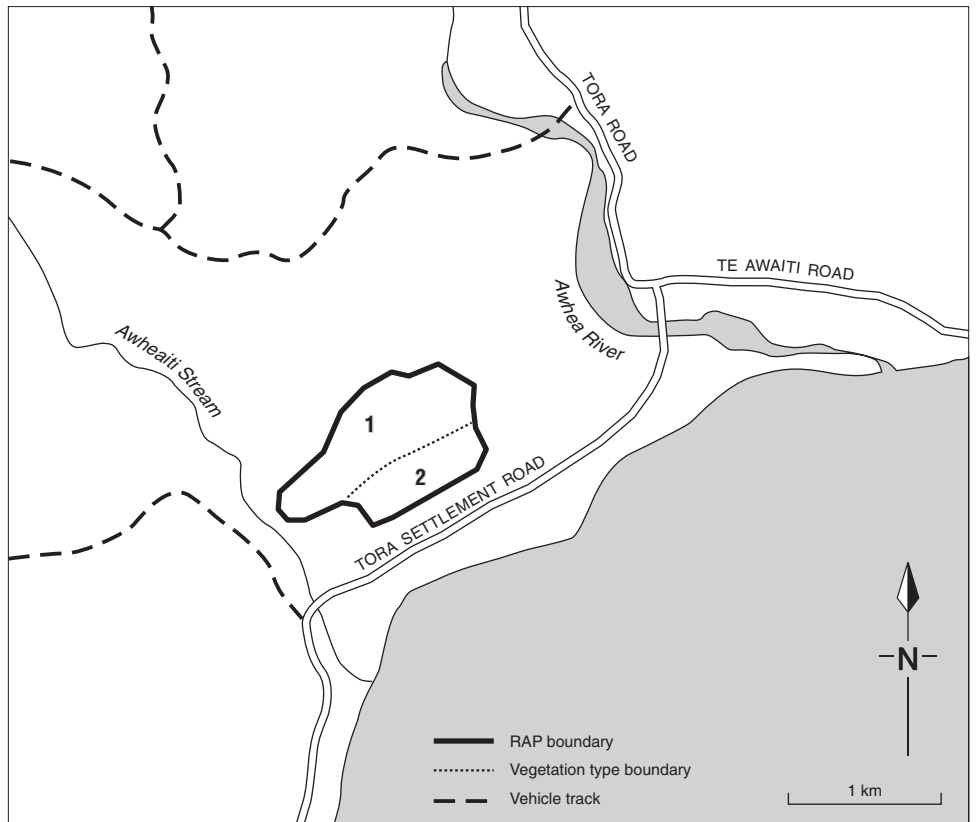
Discussion

Coastal forest remnants are extremely rare and of relatively small size in this land type. RAP 37 and RAP 12, both north of this site, are the only other sites in the Eastern Wairarapa Ecological District containing coastal forest.

Location of RAP 47, Tora Coastal Bush.



Site of RAP 47, Tora Coastal Bush.



RAP 48 TORA COAST

Area:	73.7 ha
Altitudinal range:	0-220 m
Grid reference:	NZMS260 S28 133571; 146583; 146588; 152594; 160594; 168603
Geological and landform units:	Coastal platform, steep hills
Study area no.:	3411, 3801, 3901, 3903, 3904
Survey methodology:	On site survey (1998)

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal terrace,	1. Unvegetated rocks [seal haulout; seaweed fringe].	Coastal rocks
	2. <i>Isolepis prolifer</i> -jointed rush sedgeland [<i>Schoenoplectus tabernaemontani</i> locally common, occasional raupo] ⇄ Sea rush- <i>Cyperus ustulatus</i> rushland ⇄ Pasture [occasional <i>Isolepis nodosa</i>].	Marine toe-slope
	3. <i>Cyperus ustulatus</i> -sea rush-(leafless rush) sedgeland ⇄ Pasture [includes very small raupo reedland; occasional ti kouka and tauhinu].	Marine terrace, toe-slope
	4. A mosaic of: • <i>Cyperus ustulatus</i> -sea rush-(leafless rush) sedgeland; • <i>Muehlenbeckia complexa</i> vineland; • Pasture; • <i>Tauhinu</i> -kanuka-(<i>Muehlenbeckia complexa</i>) shrubland [occasional tauhinu, wharariki, raupo, <i>Isolepis prolifer</i> , harakeke, <i>Carex testacea</i>].	Marine terrace, low rock outcrops
	5. Leafless rush- <i>Cyperus ustulatus</i> ⇄ Pasture. <i>Carex geminata</i> on fringes; occasional ti kouka, ongaonga.	Marine terrace
	6. <i>Tauhinu</i> -(kanuka)/pasture shrubland.	Marine terrace
	7. Raupo reedland [margins include harakeke, <i>Cortaderia toetoe</i> , tauhinu, leafless rush, <i>Cyperus ustulatus</i>].	Marine terrace
	8. Ti kouka/ <i>tauhinu</i> -(manuka)-(wharariki) shrubland.	Hillslope, ridge
	9. Kowhai-ngaio-pate-(ti touka) forest.	Hillslope
	10. <i>Karaka</i> treeland.	Toe-slope, gully
	11. Ti kouka/ <i>tauhinu</i> shrubland.	Hillslope
	12. <i>Ngaio</i> -(kanuka)-(ti kouka) forest.	Hillslope

Landform

This RAP extends from the rock-lined coastal platform up the steep coastal hills toward Mungaroa.

Vegetation

The vegetation is diverse, including coastal forest, secondary scrub and shrubland, and mosaics of wetland vegetation types toward the sea.

Flora

A reasonably diverse site but no regionally or nationally threatened species were recorded.

Fauna

Birds recorded include grey warbler, silvereye, white-faced heron, pipit, black shag, pied shag, reef heron, paradise shelduck, spur-winged plover, kingfisher, red billed gull, black-backed gull, variable oystercatcher, and Australasian harrier (Sawyer *et al.* 1998; current survey). Common skink have been recorded and common gecko are nearby and probably also present (Sawyer *et al.* 1998). The rocks at Te Kaukau Point are used as a haulout by New Zealand fur seals and may have potential as a breeding site (B. Dix pers. comm.).

Threat/modification

This RAP is heavily grazed by sheep and cattle, and may be subject to development proposals. The forest and shrubland are modified by previous clearance and continued grazing. The 1997-98 drought was severe in this area.

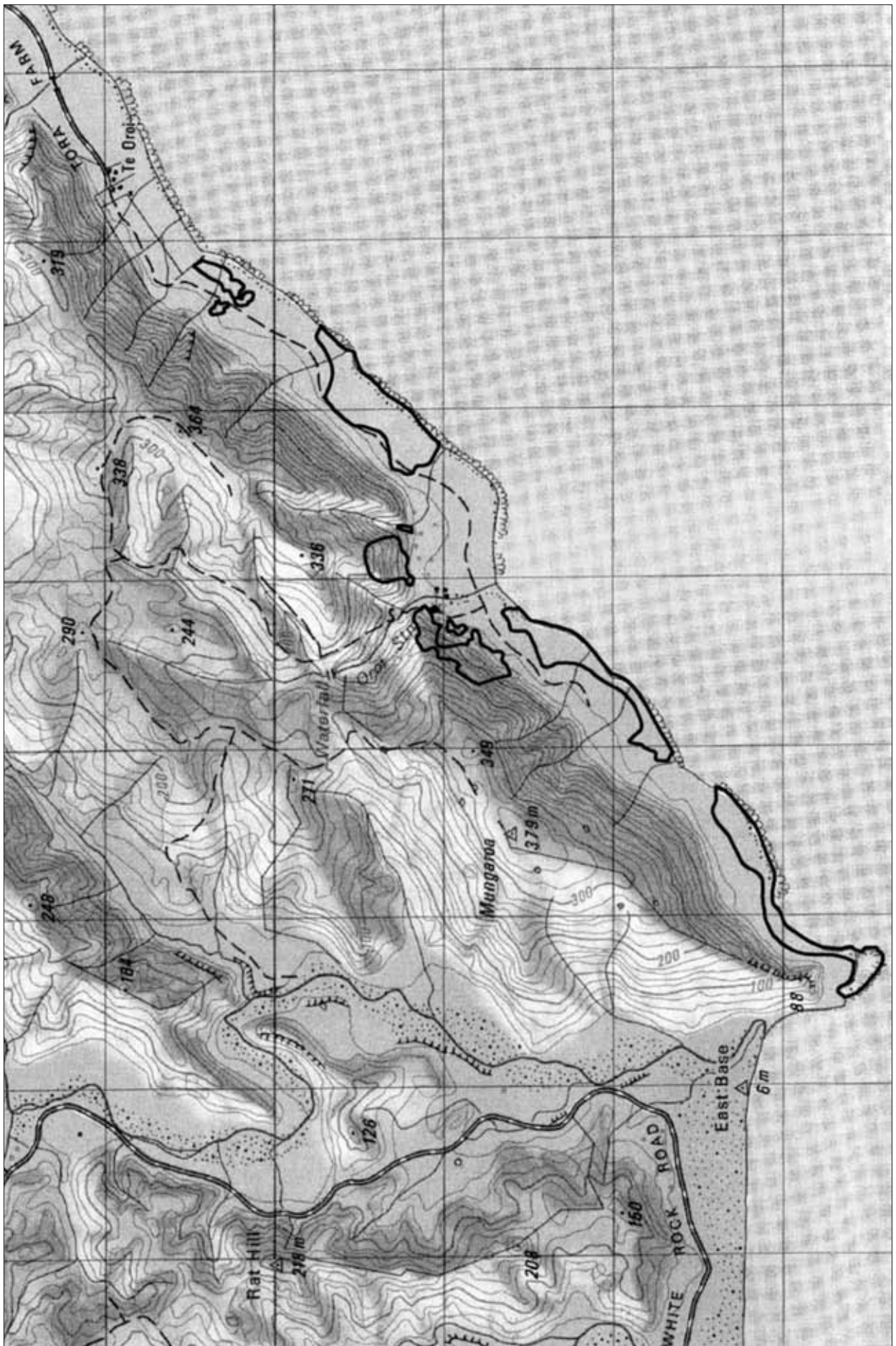
Discussion

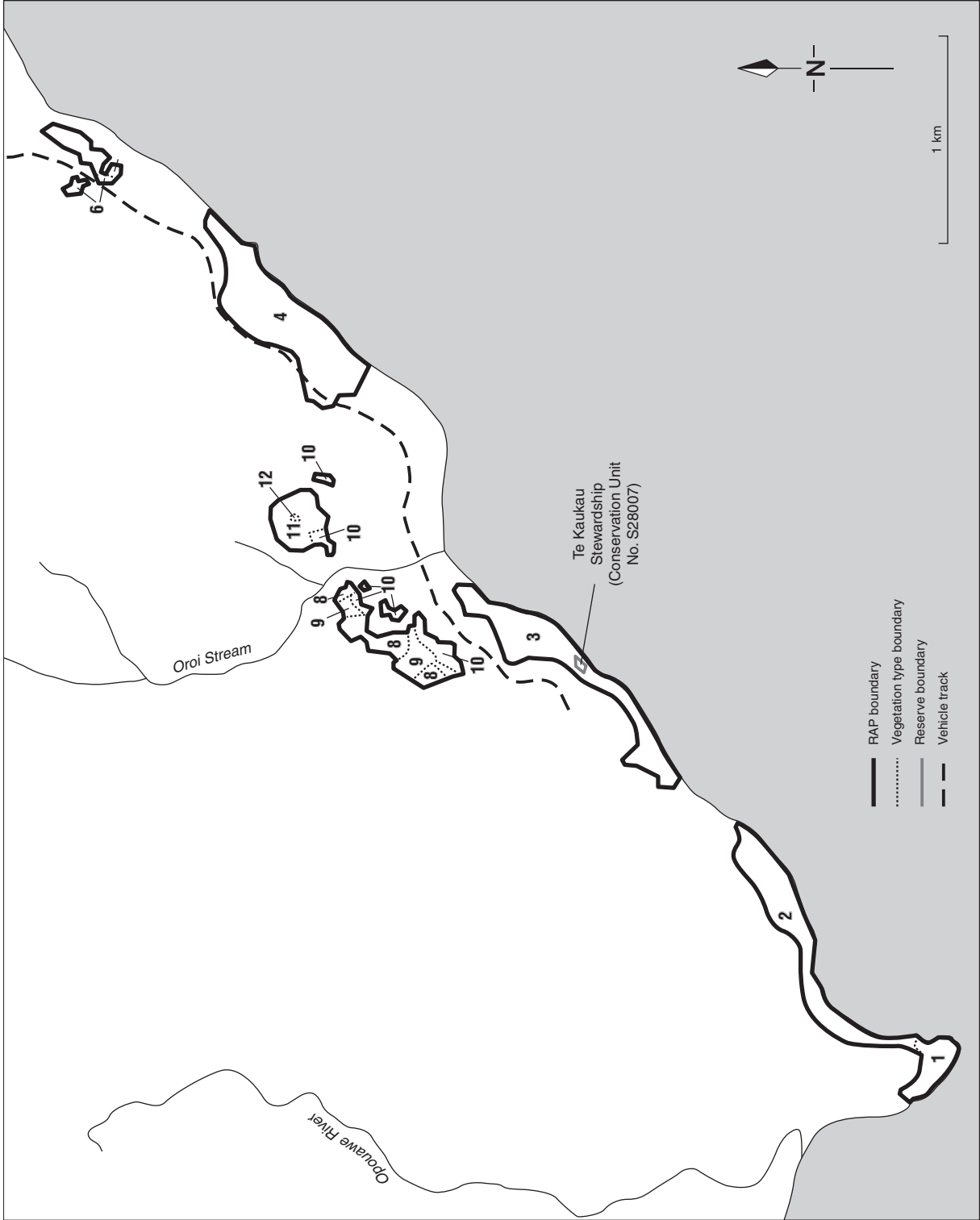
A large sequence of wetland and outcrop vegetation on marine terrace (Sawyer *et al.* 1998) which forms part of a coastal sequence from forested hillside to the rock foreshore. Although in several distinct parts, this sequence is significant as so little coastal shrubland remains, and rarely in association with other indigenous coastal vegetation.

References

Sawyer *et al.* 1998.

Location of RAP 48, Tora Coast.





RAP 49 WHITE ROCK BEACH

Area:	7.9 ha
Altitudinal range:	<20 m
Grid reference:	NZMS260 S28 082571; 090572; 098571; 017574
Geological and landform units:	Shingle beach
Study area no.:	3802a
Survey methodology:	On site survey (1998), existing information

BIOCLIMATIC ZONE	VEGETATION TYPE	LANDFORM
Coastal	1. <u><i>Centella uniflora</i></u> - <i>Potentilla anserinoides</i> -(water pepper) herbfield.	Depression between very low dunes
	2. <i>Cyperus ustulatus</i> -(<i>Isolepis nodosa</i>) sedgeland.	Rear of very low dune
	3. Mixed bluff vegetation. Sparse cover includes taupata, boxthorn, horokaka, <i>Sarcocornia quinqueflora</i> , catsear, sea celery.	Limestone outcrop
	4. <i>Zoysia minima</i> herbfield.	Low dunes
	5. <u>Leafless rush</u> - <i>Cyperus ustulatus</i> - <i>Isolepis nodosa</i> rushland ⇄ Oioi sedgeland [very occasional raupo].	Depression between low dunes

Landform

The Eocene, argillaceous limestone, White Rock is the main landscape feature. It is surrounded by sand and shingle beaches developed from alluvia from the adjacent Opouawe River and Waiarekeke Stream.

Vegetation

Local bluff vegetation on White Rock with fragmented coastal wetlands adjacent and nearby.

Flora

Twenty-five indigenous vascular species were recorded from White Rock in 1993 (de Lange and Crowcroft 1993) including *Chionochloa beddei* (regionally threatened; Empson & Sawyer 1996), and *Rytidosperma petrosum* (Range Restricted; Hitchmough 2002). Pingao (Gradual Decline) was previously extensive (de Lange and Crowcroft 1993) but was not found in 1998. *Potentilla anserinoides* is present (reported to be uncommon in the Eastern Wairarapa Ecological District in Sawyer *et al.* 1998).

Fauna

Banded dotterels are reported to nest here (DOC Ecological Site Inventory No. 605).

Threat/modification

Boxthorn, marram, cocksfoot and tall fescue occur in the RAP around White Rock. Marram is now common along the surrounding beach. Lupin is locally abundant toward the Opouawe River and could establish in some communities in this RAP in the future. The RAP is heavily grazed by sheep, cattle, and horses. Rabbits are also present.

Discussion

White Rock is a regionally significant geological site of scientific, educational and aesthetic importance (Kenny & Hayward 1996). The flora and communities in the RAP are also of interest and include several threatened or uncommon species. The White Rock coastline (this RAP and RAP 283) encompasses nearly all the remaining area of duneland vegetation on shingle beaches in the ecological district. RAP 283 is degraded by the invasion of adventive species but acts as a buffer to parts of this RAP. Future management of this RAP will be problematical due to its fragmented nature.

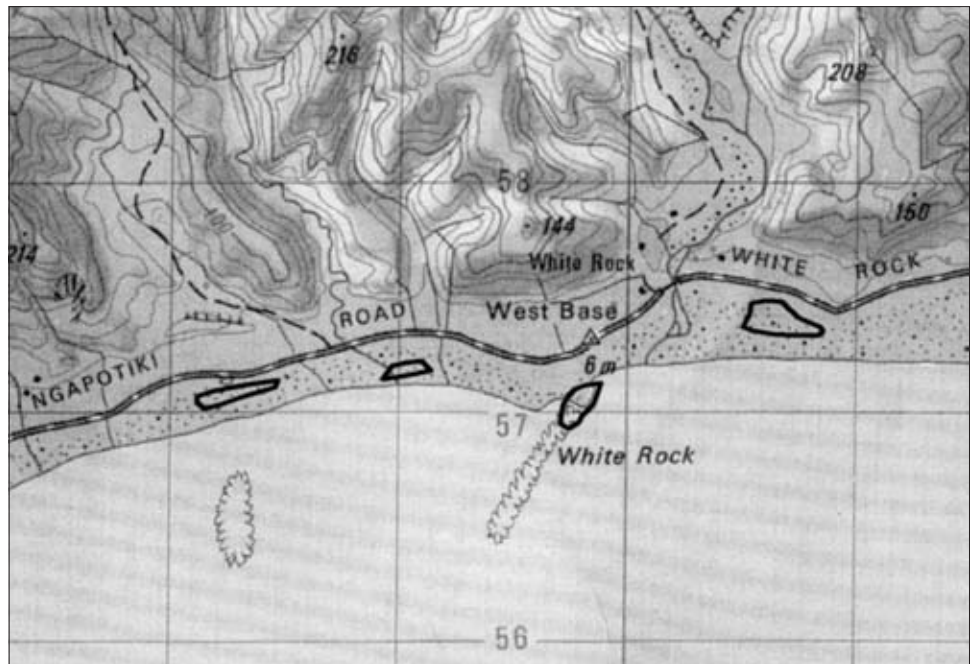
Comments

While most of White Rock is currently administered as an unclassified reserve by the Department of Conservation, the current and intended status of White Rock Reserve does not constitute legal protection of its natural values and hence it is accorded RAP status.

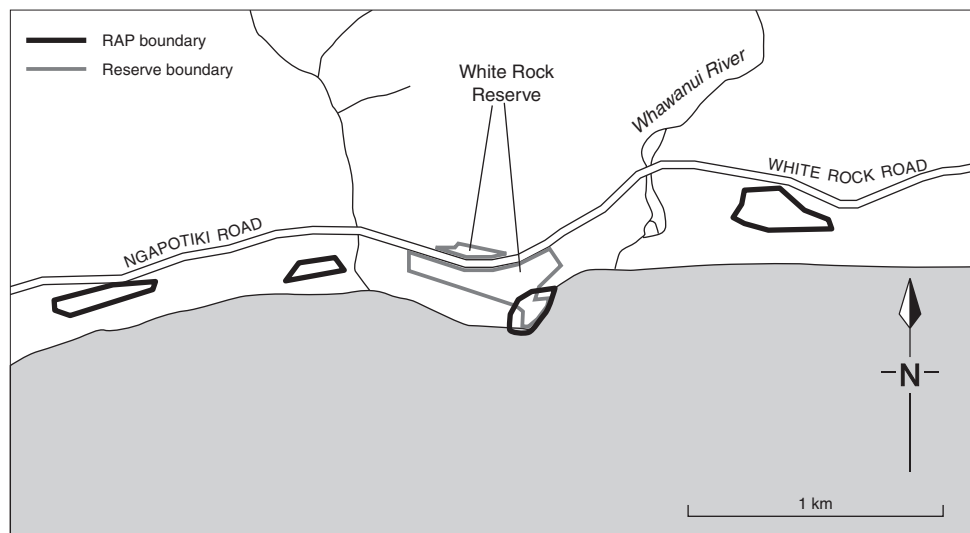
References

de Lange & Crowcroft 1993; Kenny & Hayward 1996; Empson & Sawyer 1996; Sawyer *et al.* 1998; DOC 1998.

Location of RAP 49, White Rock Beach.



Site of RAP 49, White Rock Beach.



Acknowledgements

We gratefully acknowledge the assistance of the following during the survey:

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Thanks to all the other people who have made information available and helped in the preparation, fieldwork, and reporting of this survey.

Glossary of technical terms

Adventive Arriving from outside; in contrast to native.

Airfall Deposition Shower-like fragments from an eruption.

Alluvial Deposited by a stream.

Alluvial Fan Refer to Landform.

Alluvial Flat Refer to Landform.

Alluvial Plain: Refer to Landform.

Alluvial Terrace Refer to Landform.

Argillaceous Containing clay-size particles or clay minerals.

Basin Refer to Landform.

Bioclimatic Zone One of the categories used in classifying natural climate and related biota. It refers to the broad distribution of vegetational zones along altitudinal gradients where a particular climatic regime dictates the character of the natural ecosystem. Three bioclimatic zones (coastal, semi-coastal and lowland) are recognised within the Eastern Wairarapa Ecological District. Refer to text.

Buffer A zone surrounding a natural area which reduces the effect of external influences upon the features within the natural area, e.g. vegetation such as modified forest/scrub or a stream.

Buffering Refer to Recommended Area for Protection Selection Criteria.

Canopy The layer or layers formed by the uppermost crown 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 (e.g. within an ecological region or ecological district).

Cretaceous Geological period (q.v.) c 135–65 million years ago.

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.

Drought At least 15 consecutive days of no measureable rainfall (Thompson 1982).

Dry Spell At least 15 consecutive days of <1 mm rain per day (Thompson 1982).

Dune Hollow Refer to Landform.

Ecological Character The distinguishing features of a particular place, definable in terms of biotic composition, 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, e.g. 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. New Zealand has been subdivided into 268 such districts, setting the level for assessing the representativeness of major ecosystem types.

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.

Ecological Unit Any combination of vegetation types (or suite of interrelated types), plus the landform it occurs on, for examples, kahikatea forest on riparian flats, tawa-kamahi forest on hill country-moderately steep to steep slopes. Other important attributes of the unit, such as the bioclimatic zone (for example, montane, coastal), may be added to the name. The concept of ecological units has been designed to give specific meaning to the Reserves Act 1977 phrase “all classes of natural ecosystems...”. Ecological units were used in the survey phase to determine the biological and physical composition of the study areas.

Endangered Refer to Threatened Species.

Endemic Occurring naturally in, and restricted to, a particular country, region or locality. Refer to Indigenous.

Estuarine Refer to Hydrological Class.

Eocene Geological epoch (q.v.), subdivision of Tertiary, c.54–38 million years ago.

Exotic Introduced from abroad.

Fernland Refer to Vegetation Structural Class.

Foredune Refer to Landform.

Forest Refer to Vegetation Structural Class.

Geological Periods and Epochs Main fossil-bearing geological periods and their approximate ages are as follows:

ERA	PERIOD	MILLION YEARS SINCE BEGINNING OF PERIOD
Cenozoic	Quaternary	1.5
	Tertiary	65
Mesozoic	Cretaceous	135
	Jurassic	190
	Triassic	225
Palaeozoic	Permian	280
	Carboniferous	345
	Devonian	395
	Silurian	440
	Ordovician	500
	Cambrian	570

The Quaternary period is subdivided into the Recent (or Holocene) epoch (since the last glaciation) and the Pleistocene epoch. The Tertiary period is subdivided into the following epochs (in brackets, millions of years since beginning of epoch): Pliocene (7), Miocene (26), Oligocene (38), Eocene (54), Palaeocene (65). Sometimes the Pleistocene, Pliocene and Miocene are grouped into the Neogene, and the Oligocene, Eocene and Palaeocene into the Palaeogene. The Cambrian and all subsequent periods are known as the Phanerozoic; the pre-Cambrian as the Cryptozoic. The Upper Palaeozoic is Devonian to Permian, the Lower is Cambrian to Silurian, inclusive.

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.

Holocene Geological period consisting of recent times since end of the last ice-age (about 10,000 years ago).

Hydrologic Class One of 6 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 (e.g. palustrine, lacustrine, estuarine) and its nutrient content.

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 seawater (Allaby 1994).

Terrestrial—Free water has an insignificant role in the ecological character of these areas.

Palustrine—A wetland community/environment characterised by emergent vegetation which may, or may not, have free-standing water present.

Lacustrine—A lake community/environment lacking persistent emergent vegetation.

Riverine—A system of flowing freshwater.

Indigenous Native to, occurring naturally in, characteristic of, a particular country, region or locality. All the indigenous features of New Zealand give it its own distinctive character.

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, e.g. bracken fernland, manuka scrub.

Induration The hardening of a rock or rock material by the action of heat, pressure, or the introduction of some cementing material not commonly contained in the original mass.

Lacustrine See Hydrologic Class.

Landform All the physical, recognisable, naturally formed features of land, having a characteristic shape, e.g. hill, valley or alluvial fan. In the PNA Programme, classification of a landform emphasises its ecological significance rather than its geomorphological or geological significance.

Landform Definitions (after Moore (1969), Soons and Selby (1982), Bayfield and Benson (1985) and interpretation by the authors):

Alluvial Fan—Alluvium deposited as a watercourse encounters a shallower gradient, resulting in a sloped, spreading build up of river-borne material.

Alluvial Flat or Plain—Flat area associated with river, over which the river course is unconfined (or was unconfined prior to construction of stopbanks).

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 sand dunes, may have groundwater at surface.

Foredune—A coastal sand 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 as a result of fluvial action.

Hillslope—Slope unit on which drainage lines are predominantly parallel.

Rear Dune—A coastal sand dune parallel to the shoreline landward of the foredune.

Ridge—The top (often acute angled) of a divide between two drainage ways.

Seepage Swamp—Swamp zone on hillside.

Land Systems Christian (1957) defines a land system as “an area throughout which there is recurring pattern of topography, soils and vegetation: a change in the pattern determines the boundary of a land system”. For the purposes of this study, geology and topography were the criteria used to delineate land systems. Defined in text (section 2).

Littoral Pertaining to the depth zone between low and high water.

Local Refer to Rarity.

Loess Unstratified deposits of loosely arranged, angular grains of silt deposited by the wind; buff to light-yellowish or yellowish-brown in colour. Generally of Pleistocene age, carried from desert surfaces, alluvial valleys, and outwash plains lying beyond the limits of the ice sheets; or from unconsolidated glacial or glaciofluvial deposits uncovered by successive glacial recessions.

Lowland Zone See Bioclimatic Zone.

Mesozoic This era (the age of great reptiles) occurred c.225–65 million years ago.

Miocene Geological epoch (q.v.), sub-division of Tertiary, occurring from c.25-7 million years ago.

Native Not known to have been introduced by human agency.

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 will also be study areas. Some of these may be of sufficient quality to become Recommended Areas for Protection. In some instances, one natural area may embrace more than one study area.

Natural Diversity Refer to Recommended Area for Protection Selection Criteria.

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 relative 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 For the purposes of the PNA Programme the 'original' state of an ecosystem or landscape is considered to equate to their pre-human condition, i.e. their character before the arrival of humans (and their associated, exotic plants and animals) in New Zealand. Areas which have remained in or returned to this state, and those in the process of returning to it, tend to be the main focus of nature conservation strategies.

Palustrine See Hydrologic Class.

Pattern Refer to Recommended Area for Protection Selection Criteria.

Pleistocene Geological epoch (q.v.); occurring c.1 million-10 thousand years ago, during which four major ice ages occurred. Succeeded by Recent epoch.

Pliocene Geological epoch (q.v.); sub-division of Tertiary, occurring between c. 7-1 million years ago.

Primary Native vegetation which has never been logged or cleared in any part.

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.

Quaternary Geological period comprising both Pleistocene (q.v.) and Recent.

Rapid Field Inventory Refer to Recommended Area for Protection Selection Criteria.

Rare Refer to Recommended Area for Protection Selection Criteria.

Rarity Refer to Recommended Area for Protection Selection Criteria.

Rear Dune Refer to Landform.

Recommended Area for Protection (RAP) An area identified as a high priority for protection because it contains the best example or good examples of its type or class of natural ecosystem and/or landscape in an ecological district. More than one area may require identification in certain circumstances. A RAP is intended to be the basis for a proposal for a new protected natural area that would supplement the existing system of protected natural areas to make it more fully representative of New Zealand's ecological diversity.

Recommended Area for Protection Selection Criteria 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, and buffering and surrounding landscape. The identification and evaluation of the key representative natural areas in all ecological districts is the principal objective of the PNA Programme.

Representativeness—The extent to which an area represents or exemplifies the components of the natural diversity of a larger reference area, e.g. representation in reserves of the current natural diversity of an ecological district, or representation of the original natural landscape.

The identification and evaluation of key representative natural areas in all ecological districts is the principal objective of the PNA Programme.

Natural Diversity—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.

Pattern—An ecological term describing the arrangement of species, communities and habitats according to spatial and environmental gradients.

Rarity—A measure of the paucity of numbers or occurrences of elements of natural diversity (e.g. species, communities).

Naturalness—Involves the assessment of the degree an area (e.g. 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 a “compact shape” are generally inherently more viable and better for the protection of the features present than smaller or more fragmented areas.

Buffering—Protection of an area (or a particular community) from outside modifying influences, given by natural features (surrounding vegetation, catchment boundaries, rock barriers) or, in some cases, fences or other artificial structures.

Surrounding Landscape—The environs which surround and influence a particular natural area, and are influenced by the same set of parameters as the natural area.

Rapid Field Inventory—Brief on-site or near-site inspection of sites identified as study areas, to describe the indigenous cover present.

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 depending on the degree of uniformity required for sampling.

Reedland Refer to Vegetation Structural Class.

Representativeness Refer to Recommended Area for Protection Selection Criteria.

Ridge Refer to Landform.

Riverine Refer to Hydrologic Class.

Sand dune Refer to Landform (foredune and reardune).

Sandfield Refer to Vegetation Structural Class.

Scrub Refer to Vegetation Structural Class.

Secondary Secondary native vegetation, seral regrowth after destruction or disturbance.

Seepage Swamp Refer to Landform.

Semi-coastal Zone Refer to Bioclimatic Zone.

Site Refer to Recommended Area for Protection Selection Criteria.

Size and Shape Refer to Recommended Area for Protection Selection Criteria.

Shrubland Refer to Vegetation Structural Class.

Study Area A tract of land, with indigenous vegetation, delineated as suitable for survey in rapid field inventory in order to identify the ecological patterns and the natural diversity of an ecological district. It 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.

Succession The process of change in the appearance, composition, and structure of a community, usually over a number of years. Change may occur as a result of biotic factors, site factors, or both.

Surrounding Landscape Refer to Recommended Area for Protection Selection Criteria.

Taipo A prominent, serrated, dark-coloured hill or ridge of steeply dipping strata which contrasts with the surrounding low-lying, lighter-coloured, more eroded rocks, and more moderate slopes, individually named (e.g. Otereia Taipo) and collectively called taipos. Taipo is a Maori term meaning an evil spirit or other sinister influence, perhaps applied because of landforms are so unusual (Kamp 1982; Clark 1989).

Terrestrial See Hydrologic Class.

Tertiary Geological period (q.v.); occurring from c.65–1 million years ago.

Threatened species *Nationally threatened species* are those whose national presence in the wild is threatened and which are in danger of national extinction. For *national status* categories see Molloy *et al.* 2002.
Regionally threatened species are those whose regional presence in the wild is threatened and which are in danger of regional extinction. For *regional status* categories see Appendix 3.

Trefernland Refer to Vegetation Structural Class.

Treeland Refer to Vegetation Structural Class.

Tussockland Refer to Vegetation Structural Class.

Understorey The layer or layers of vegetation in a site or habitat which do not form part of the canopy (refer to canopy).

Vegetation Structural Class Vegetation classification based on the type of plant which is dominant in the canopy, e.g. forest, reedland. These are based on Atkinson (1985), with the following abbreviated definitions :

Forest—More than 80% trees and shrubs in the canopy, most of this being trees.

Treeland—20–80% trees in the canopy. Treeland is often degraded forest.

Scrub—More than 80% trees and shrubs in the canopy, most being shrubs.

Shrubland—20–80% shrubs in the canopy.

Tussockland—Dominated by herbaceous plants, including grasses, land sedges and rushes, with leaves densely bunched at the base. This includes flax (sometimes specified as flaxland) and toetoe.

Grass/Sedge/Rusbland—Dominated by herbaceous monocotyledons with narrow linear leaves not densely bunched at the base.

Reedland—Dominated by tall herbaceous monocotyledons with linear leaves containing spongy mesophyll tissue.

Fernland—Dominated by ferns (including small treeferns).

Sandfield—Bare sand exceeds the area covered by any one class of plant growth form.

Treefernland—Dominated by treeferns.

Vineland—Dominated by vines.

Herbfield—Dominated by small herbaceous plants not included in the above categories.

Vegetation type A term which includes the dominant canopy species and structural class of an area of vegetation, e.g. rimu/tawa-kamahi forest, *Isolepis nodosa*/*Muehlenbeckia complexa* sedge-vineland.

In addition, cover values and tiers are included, i.e. :

(tawa) Less than 5 percent cover of the bracketed species.

tawa 5-20% cover of species listed.

tawa (one underline) 20-50% cover of species underlined.

tawa (double underline) 50-100% cover of species underlined.

e.g. (rimu)/tawa-rewarewa-pukatea forest indicates rimu (< 5% cover) is emergent over tawa (>50% cover), rewarewa (20-50% cover) and pukatea (5-20% cover).

⇔ Mosaic.

+ Small amount (e.g. less than 0.5%).

Viability Refer to Recommended Area for Protection Selection Criteria.

Vineland Refer to Vegetation Structural Class.

Vulnerable See Rarity in Recommended Area for Protection Selection Criteria.

Terms used in this section (from Sawyer *et al.* 1998).

ED Ecological District

WERI Wetland of Ecological and Representative Importance. Rankings used by this database are:

0 insufficient information

1 nothing special

2 local significance (within the ecological district)

3 regional significance

4 national significance

5 international significance

SSWI Sites of Special Wildlife Interest. Rankings used by this database are; potential, moderate, moderate-high, high, outstanding (Moore *et al.* 1984).

References and selected bibliography

*n.d.= no date

- Allom A.J. 1849: Stock-farming in the Wairarapa. *New Zealand Journal* 9: 199–202.
- Beadel S.M. 1994: Otanewainuku Ecological District survey report for the Protected Natural Areas Programme. Department of Conservation, Rotorua. 241 p.
- Beadel S.M.; Mackinnon S.M., Shaw W.B. 1996a: Geothermal vegetation of the Bay of Plenty Region. *Wildland Consultants Ltd Contract Report No. 155*. 234 p.
- Beadel S.M.; Shaw W.B., Gosling D.S. 1996b: Taneatua Ecological District survey report for the Protected Natural Areas Programme. Department of Conservation, Whakatane. 256 p.
- Beadel S.M.; Shaw W.B. and Nicholls J.L. 1998a: Rotorua Lakes Ecological District – natural area survey. *Wildland Consultants Ltd Contract Report No. 175*. Prepared for Rotorua District Council and Environment BOP. 551 pp.
- Beadel S.M., Bibby C.J. and Perfect A.J. 1998b: Eastern Wairarapa Ecological District – survey report for the protected natural areas programme. *Wildland Consultants Ltd Contract Report No. 221*. 444 pp.
- Bull P.C.; Gaze P.D., Robertson C.J.R. 1985: The atlas of bird distribution in New Zealand. The Ornithological Society of New Zealand Inc.
- Cameron E.K.; de Lange P.J.; Given D.R.; Johnson P.N., Ogle C.C. 1995: New Zealand Botanical Society. New Zealand threatened and local plant lists. *New Zealand Botanical Society Newsletter* 39: 15–28.
- Clark R.H. 1989: New Zealand from the Road. Heinemann Reid, Auckland. 177 p.
- de Lange P.J. 1993: New plant finds (Ngatapa Station site). *Unpublished list*, Department of Conservation.
- de Lange P.J., Crowcroft G.N. 1993: Vascular flora of White Rock, southern Wairarapa coast. *Auckland Botanical Society Journal* 48: 20–22.
- de Lange P.J.; Foster G.; Sawyer J.W.D., Townsend A.J. 1996a: Pahaoa Gorge, PNA site number 2915 (NZMS260 T27 343811). *Unpublished list*, Department of Conservation.
- de Lange P.J.; Foster G.; Sawyer J.W.D., Townsend A.J. 1996b: Springhill Station, PNA site number 1457 (NZMS 260 T26 627385). *Unpublished list*, Department of Conservation.
- de Lange P.J.; Sawyer J.W.D., Townsend A.J. 1996c: Tom William's Bush (*Brachyglottis sciadophila* site). *Unpublished list*, Department of Conservation. 3p.
- Department of Conservation 1990: New Zealand Wetlands Inventory. *Unpublished database*. Wellington Conservancy, Department of Conservation.
- Department of Conservation 1992: Protection of the Heights Block, Te Awaiti Station, East Wairarapa. *Forest Heritage Fund Application*. Wellington.
- Department of Conservation 1995: Distribution of reptiles in Wellington Conservancy, with a key to lizard species. Department of Conservation, Wellington. 71 p.
- Department of Conservation 1996a: Conservation management strategy for Wellington 1996–2005. Wellington Conservancy, Department of Conservation. Volumes 1 and 2.
- Department of Conservation 1996b: Unpublished site record sheets for areas visited as part of a reconnaissance survey of the Eastern Wairarapa Ecological District. Held by Department of Conservation, Wellington Conservancy.
- Department of Conservation 1998: Ecological site inventory details. *Unpublished database*, Wellington Conservancy, Department of Conservation.

- Department of Lands and Survey 1984: Register of Protected Natural Areas in New Zealand. Department of Lands and Survey, Wellington.
- Diamond J.M. 1975: The island dilemma: lessons of modern biogeographical studies for the design of natural reserves. *Biological Conservation* 7 (2): 129-145.
- Druce A.P. 1965: Indigenous vascular plants of Makara Limestone Gorge, Southern Wairarapa (revised in 1987). *Unpublished species list No. 32* held by ERANZ, Wellington.
- Druce A.P. 1967a: Indigenous vascular plants of Pahaoa Gorge Taipos, Eastern Wairarapa, sealevel to 1500 feet (Revised June 1972, May 1974, April 1975, June 1976, May 1977, June 1979, May 1980, July 1986, June 1986, July 1987). *Unpublished species list No. 16*. Botany Division, Department of Scientific and Industrial Research, Lower Hutt. 8 pp.
- Druce A.P. 1967b: Indigenous higher plants (lycopods, ferns, gymnosperms, flowering plants) of Forest Sanctuary, Waipunga Stream, Rocky Hill Taipos, Wairarapa, 180-450 metres (600-1500 feet). (Revised June 1983, No. 1986, May 1987. *Unpublished species list No. 238*. Botany Division, Department of Scientific and Industrial Research, Lower Hutt. 5 pp.
- Druce A.P. 1986: Indigenous higher plants of Rocky Hills Forest Sanctuary, Waipunga Stream, Rocky Hill Taipos, Wairarapa, 180-450 m (600-1500 ft). *Unpublished species list No. 238* held by ERANZ, Wellington.
- Druce A.P. 1988: Indigenous vascular plants in vicinity of Mount Rewa and Mount Meredith, Eastern Wairarapa. *Unpublished species list No. 88* held by ERANZ, Wellington.
- Druce A.P. 1972: Vascular plants of the Wairarapa Taipos. *Unpublished species list No. 81* held by ERANZ, Wellington.
- Druce A.P. 1990a: Indigenous vascular plants in Forest Reserve at Pongaroa, east of Puketoi Range, northern Wairarapa. *Unpublished species list No. 68* held by ERANZ, Wellington.
- Druce A.P. 1990b: Indigenous vascular plants in Waimana Bush, Kourarau Valley. *Unpublished species list No. 14* held by ERANZ, Wellington. 3 p.
- Druce A.P. 1992: Indigenous vascular plants of area east of Ruamahanga River (including Maungaraki Range), Wairarapa. *Unpublished species list No. 116* held by ERANZ, Wellington.
- Druce A.P., Park G.N. 1972: Indigenous vascular plants of Castle Point, Wairarapa. *Unpublished species list No. 21* held by ERANZ, Wellington.
- Druce A.P., Park G.N. 1991: Indigenous vascular plants of Mount Percy, Eastern Wairarapa, sea-level to 1557 ft. *Unpublished species list No. 18* held by ERANZ, Wellington.
- Empson R.A.; Sawyer J.W.D. 1996: Plant Conservation Strategy for the Wellington Conservancy. Department of Conservation, Wellington.
- Enright P., Horne C. 1995: Indigenous vascular plants in Kaiwhata River Valley. *Unpublished list*.
- Enright, P., Kirby, J, Palmer, C. 2001. List of vascular plants in QEII Open Space Covenant, Maungapakeha Taipos (T26 635 271), Eastern Wairarapa. Unpublished list.
- Enright, P., John, O., Silbery, T. 2001. List of vascular plants in bush area on Rewanui Farm and adjacent areas (T26 540 267), Eastern Wairarapa. Unpublished list.
- Findlay J.F. 1992: Pahiatua Ecological Region survey report for the Protected Natural Areas Programme. Department of Conservation, Napier.
- Fyfe F. 1990: The great drive. Hillary Court Print, Lower Hutt.
- Hill R.D. 1962: The land and the squatter - Wairarapa 1843-1853: an essay in human ecology. *Unpublished MA (Hons, geography) thesis*, Victoria University of Wellington. 91 p.
- Hill R.D. 1963: The vegetation of the Wairarapa in mid-nineteenth century. *Tuatara* 11: 83-89.
- Hitchmough, R. (compiler), 2002. New Zealand Threat Classification System lists. Threatened Species Occasional Publication no.23. Department of Conservation, Wellington
- Kamp P.J.J. 1982: Landforms of Wairarapa in a geological context. pp 367-381 in Soons J.M. and M.J. Selby (eds) Landforms of New Zealand. Longman Paul, Auckland.

- Kelly G.C., Park G.N.(eds) 1986: The New Zealand Protected Natural Areas Programme, a scientific focus. DSIR, Wellington.
- Kenny J.A., Hayward B.W. 1996: Inventory and maps of important geological sites and landforms in the Manawatu and Wellington regions. *Geological Society of New Zealand Miscellaneous Publication 89*. Geological Society of New Zealand, Lower Hutt.
- King L.C. 1930. Raised beaches and other features of the south-east corner of the North Island of New Zealand. *Transactions of the New Zealand Institute 61*: 498-523.
- Kingma J.T. 1967. Sheet 12 Wellington (1st ed.). Geological map of New Zealand 1:250,000. Department of Scientific and Industrial Research, Wellington.
- Kite R.L. 1952. The geomorphic history of the Lower Wairarapa Valley, New Zealand. *Unpublished MSc Thesis*, University of New Zealand. pp 11-19, 196-205.
- Maxwell F.; Adams J., Walls G. 1993: Eastern Hawkes Bay Ecological District survey report for the Protected Natural Areas Programme. Department of Conservation, Napier.
- McEwen W. M. 1987a: Ecological Regions and Districts of New Zealand. Part 2: Districts in the central North Island, from Meremere to Eastern Hawkes Bay. *New Zealand Biological Resources Centre Publication No. 5*. Department of Conservation, Wellington.
- McEwen W. M. 1987b. Ecological Regions and Districts of New Zealand. Part 3: Districts in the central New Zealand from Eastern Wairarapa in the North Island to Akaroa in the South Island; also Chathams. *New Zealand Biological Resources Centre Publication No. 5*. Department of Conservation, Wellington.
- Mitcalfe B.; Sherrett D.; Horne C., Lewington R. 1997: Tora Bush Scenic Reserve. *Unpublished plant species list*. 6 p.
- Molloy, J.; Bell, B.D.; Clout, M.; de Lange, P.; Gibbs, G.; Given, D.; Norton, D.; Smith, N.; Stephens, T. 2002: Classifying species according to threat of extinction-a system for New Zealand. *Threatened Species Occasional Publication 22*. Department of Conservation, Wellington. 26 p.
- Molloy J., Davis A. 1994: Setting priorities for the conservation of New Zealand's threatened plants and animals. 2nd edition collated by Christine Tisdall. 64 p.
- Moore P.J.; Ogle C.C., Moynihan K.T. 1984: Habitat requirements of wetland birds in the Lake Wairarapa wetlands. *Occasional Paper No. 5*, New Zealand Wildlife Service, Department of Internal Affairs, Wellington. 282 p.
- Myers S.C.; Park G.N.; Overmars F.B. 1987: A guidebook for the rapid ecological survey of natural areas. *New Zealand Biological Resources Centre Publication No. 6*. Department of Conservation, Wellington.
- New Zealand Wildlife Service 1986: National Habitat Register. New Zealand Wildlife Service, Wellington.
- Nicholls J.L. 1974: Ecological survey of New Zealand's indigenous forests. Sheet No. 14 Tararua. Forest Service Mapping Series 6. Forest Research Institute, New Zealand Forest Service. 4pp plus map.
- Nicholls J.L. 1997a: Land types and bioclimatic zones of Eastern Wairarapa and Wairarapa Plains Ecological Districts. *Unpublished topographical maps*.
- Nicholls J.L. 1997b: Boundaries of Eastern Wairarapa Ecological District. *Unpublished memo*, June 1997. 1 p.
- O'Connor K.F.; Overmars F.B.; Ralston M.M. 1990: Land evaluation for nature conservation. *Conservation Sciences Publication No. 3.*, Department of Conservation, Wellington. 328 pp.
- Ogle C.C. 1981: The ranking of wildlife habitats. *New Zealand Journal of Ecology 4*: 115-123.
- Ogle C.C. 1987: Riversdale Beach Reserve and private land, immediately south of urban area. *Unpublished list with notes*.
- Ogle C., Parrish R. 1982: Wildlife report of Tora Bush - sections 245/258. Awhea district and Lot 6DP22170. *Unpublished list*. 6 p.

- Park G.N. 1967: The vegetation and flora of Castle Point and Cape Turnagain. *Wellington Botanical Society Bulletin* 34: 6-18.
- Partridge T. R. 1992: The Sand Dune and Beach Vegetation Inventory of New Zealand. I. North Island. *DSIR Land Resources Scientific Report Number 15*. DSIR Land Resources, Lincoln.
- Rebergen A. 1997a: Forest remnant with *Kortbalsella lindsayii* at Riverside Road, Martinborough, S27 189017. *Unpublished report*, Department of Conservation, Masterton. 2 p.
- Rebergen A. 1997b: *Ileostylus micranthus* at Station Bush, Martinborough, grid S27 192022. *Unpublished report*, Department of Conservation, Masterton. 2 p.
- Rebergen A. 1997c: Station Bush, Martinborough, forest remnant, grid S27 189019 265.06.1997. *Unpublished report*, Department of Conservation, Masterton. 2 p.
- Rebergen A. 1997d: Visit to fenced off forest remnant near Station Bush, Riverside Road, Martinborough, 25.06.97, grid S27 192019. *Unpublished report*. Department of Conservation, Masterton. 2 p.
- Rebergen A. 1997e: Exotic forest development, Craigie Lea Station, Eastern Wairarapa. *Unpublished report*. Department of Conservation, Masterton.
- Rebergen A. 1997f: *Coprosma virescens* near Makahakaha Stream at Gladstone, follow up of 1970 Druce record. *Unpublished report*. Department of Conservation, Masterton. 4 p.
- Rebergen A. 1997g: Visit to Mr Carthew, Alfredton - paper road and QEII covenant. *Unpublished report*. Department of Conservation, Masterton. 2 p.
- Rebergen, A. 2000a. Plant list Tuki Waha, Eastern Wairarapa. Unpublished report held by the DOC.
- Rebergen, A. 2000b. *Coprosma pedicellata* in a remnant of kahikatea forest in a stream valley at Bankview Station, Eastern Wairarapa (July 2000). Unpublished report.
- Rebergen, A. 2002. Site report for Tinui River Bush, Eastern Wairarapa. Unpublished report held by the DOC.
- Ropiha D. 1994: Scandinavian settlement. *New Zealand Historic Places* 48: 4-6.
- Sawyer J. 1995: The taipos of the Eastern Wairarapa. *Unpublished report*. Department of Conservation, Wellington.
- Sawyer J. 1996: Protection and restoration of Okautete (Homeward Road) Bush, Eastern Wairarapa. *Unpublished report*, Department of Conservation, Wellington. 2 p.
- Sawyer J.W.D. 2001: A bibliography of plant checklists of vascular and non-vascular plants and vegetation survey data sets for areas in Wellington Conservancy (excluding Chatham Islands). Department of Conservation, Wellington.
- Sawyer J., Keenan J. 1997: Draft list of indigenous vascular plants of the Eastern Wairarapa Ecological District (compiled with assistance from Jeremy Rolfe, Ian St George and Patrick Brownsey). *Unpublished*. Department of Conservation.
- Sawyer J.W.D.; Townsend A.J; Beadel S.M.; de Lange P.J.; Shaw W.B. 1998: Plants of national conservation concern in Wellington Conservancy. Department of Conservation, Wellington.
- Sawyer J.; Townsend A., Preddey J. 1998: Eastern Wairarapa Ecological District reconnaissance survey (draft). Department of Conservation, Wellington. 270 p.
- Shaw W.B. 1994. Botanical rankings for nature conservation. *Science and Research Series No. 72*. Department of Conservation, Wellington. 17p.
- Shaw W.B. 1998: Pest plants of Carters Scenic Reserve and Castle Point Scenic Reserve. *Wildland Consultants Ltd Contract Report No. 213*.
- Silbery, T., Rebergen, A. 2001. Checklist of indigenous vascular plants seen at Mokiri Bush (NZMS 260 T25 581 480), Eastern Wairarapa. Unpublished plant checklist.
- Simpson P. 1982: Ecological Regions and Districts of New Zealand. *Biological Resources Centre Publication No 1*. Sheet 3.

- Simpson P. 1997: Ecological restoration in the Wellington Conservancy. Department of Conservation, Wellington. 112 p plus maps.
- Smith W. M. 1853: Report of a journey from the upper part of the Wairarapa Valley, through the valley of the Kopuaranga to the river Mangatainoka and back through a part of the Forty-Mile Bush into Wairarapa November 10th 1853. *Unpublished manuscript*. 13 p.
- Thompson C.S. 1982: The weather and climate of the Wairarapa region. New Zealand Meteorological Service, Ministry of Transport, Wellington. 60 p.
- Townsend A.J. 1996a: Cherry Creek species list, South Pahaoa Gorge Taipos. *Unpublished plant species list*, Department of Conservation, Wellington. 5 p.
- Townsend A.J. 1996b: *Brachyglottis sciadophila* in the Eastern Wairarapa. *New Zealand Botanical Society Newsletter* 46: 9.
- Townsend A.J.; Beadel S.M.; Sawyer J.W.D.; Shaw W.B. 1998: Plants of national conservation concern in Wellington Conservancy - Current status and future management. *Wildland Consultants Ltd Contract Report No. 181*. 204 p.
- Turner G.A., Carlin W.F. 1975: Higher plants of the proposed reserve, Castle Point. *Unpublished report*. Held by Department of Conservation.
- Wassilieff M.C.; Clark D.J., Gabites I. 1986: Scenic reserves of the Lower North Island. *Biological Survey of Reserves Series No. 14*. Department of Lands and Survey, Wellington. 297 p.
- Wellington Botanical Society 1996: List of indigenous vascular plants in and around "Suckling Bush", QEII National Trust Open Space Covenant, Turnberry, Alfredton, owned by Mr and Mrs Bill Carthew, R.D.3, Ekatahuna. *Unpublished plant species list*. 3 p.
- WERI 1990: Wetlands of Ecological and Representative Importance: The New Zealand Wetlands Inventory. *Unpublished report*, Department of Conservation, Wellington.
- Whaley K.J.; Clarkson B.D., Leathwick J.R. 1995: Assessment of criteria used to determine 'significance' of natural areas in relation to section 6(c) of the Resource Management Act (1991). *Landcare Research Contract Report* prepared for Environment Waikato, Hamilton.
- Worthy T.H. 1987: Osteological observations of the larger species of skink *Cyclodina* and the subfossil occurrence of these and the gecko *Hoplodactylus duvaucelii* in the North Island, New Zealand. *New Zealand Journal of Zoology* 14: 219-229.
- Young A., Mitchell N. 1994: Microclimate and vegetation edge effects in a fragmented podocarp-broadleaf forest in New Zealand. *Biological Conservation* 67. 63-72.

Appendix 1

INDIGENOUS VASCULAR PLANTS IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT

The following list was completed from information collected during the PNAP survey. Reference was made to a database of plant checklists held by the Department of Conservation in Wellington (Sawyer 2001). Reference was also made to Sawyer and Keenan 1997; Ogle *et al.* 1990a; Druce 1971a & b, 1990; Hill 1962; Mason 1951). Information was also used from field excursions by the authors, often with members of the Wellington Botanical Society. In addition, Pat Enright and Tony Silbery helped with and provided advice for the preparation of this list.

Abbreviations used:

- aff. affinities with
- agg. aggregate, comprising more than one species.
- auct. of authors
- cf. compare with
- f. forma, form
- incl. including
- sp. species (singular)
- spp. species (plural)
- subsp. subspecies
- s.s. *sensu stricto*, in the narrow sense
- × hybrid
- var variety
- * possibly adventive

Gymnosperm trees

<i>Dacrydium cupressinum</i>	rimu
<i>Dacrycarpus dacrydioides</i>	kahikatea
<i>Podocarpus hallii</i>	Hall's totara
<i>Podocarpus totara</i>	totara
<i>Prumnopitys ferruginea</i>	miro
<i>Prumnopitys taxifolia</i>	matai

Monocot. trees

<i>Cordyline australis</i>	ti kouka
<i>Cordyline australis</i> × <i>C. banksii</i>	
<i>Cordyline banksii</i>	ti ngahere, forest cabbage tree
<i>Rhopalostylis sapida</i>	nikau

Dicot. trees and shrubs

<i>Alectryon excelsus</i> subsp. <i>excelsus</i>	titoki
<i>Alepis flavida</i> ¹ (CHR82231)	

¹ Believed to be extinct in the ED.

<i>Aristotelia serrata</i>	makomako, wineberry
<i>Beilschmiedia tawa</i>	tawa
<i>Brachyglottis greyi</i> (incl. <i>B. laxifolius</i>)	
<i>Brachyglottis greyi</i> × <i>Brachyglottis lagopus</i>	
<i>Brachyglottis compacta</i>	
<i>Brachyglottis pentacopa</i>	
<i>Brachyglottis repanda</i> s.s.	rangiora
<i>Carmichaelia australis</i>	makaka, maukoro
<i>Carmichaelia odorata</i> var. <i>odorata</i> (incl. <i>C. odorata</i> var. <i>pilosa</i>)	
<i>Carpodetus serratus</i>	putaputaweta
<i>Coprosma acerosa</i> (incl. <i>C. brunnea</i>)	
<i>Coprosma areolata</i>	
<i>Coprosma crassifolia</i>	
<i>Coprosma grandifolia</i>	kanono
<i>Coprosma linariifolia</i>	
<i>Coprosma lucida</i> s.s.	karamu
<i>Coprosma microcarpa</i> (Druce 1972)	
<i>Coprosma pedicellata</i>	
<i>Coprosma propinqua</i> subsp. <i>propinqua</i>	
<i>Coprosma propinqua</i> × <i>C. robusta</i>	
<i>Coprosma repens</i>	taupata
<i>Coprosma repens</i> × <i>C. rhamnoides</i>	
<i>Coprosma rhamnoides</i>	
<i>Coprosma rigida</i>	
<i>Coprosma robusta</i>	karamu
<i>Coprosma rotundifolia</i>	
<i>Coprosma rubra</i>	
<i>Coprosma tenuicaulis</i>	
<i>Coprosma virescens</i>	
<i>Coprosma wallii</i>	
<i>Coriaria arborea</i>	tutu
<i>Coriaria kingiana</i>	
<i>Coriaria sarmentosa</i>	
<i>Corokia cotoneaster</i> var. <i>cotoneaster</i>	
<i>Corynocarpus laevigatus</i>	karaka
<i>Cyathodes juniperina</i>	prickly mingimingi
<i>Discaria toumatou</i>	matagouri
<i>Dracophyllum longifolium</i> var. (incl. <i>D. filifolium</i> and <i>D. oliveri</i>)	
<i>Elaeocarpus dentatus</i> (incl. <i>E. d.</i> var. <i>obovatus</i>)	hinau
<i>Elaeocarpus hookerianus</i>	pokaka
<i>Fuchsia excorticata</i>	fuchsia
<i>Fuchsia excorticata</i> × <i>F. perscandens</i>	
<i>Gaultheria antipoda</i>	tawiniwini
<i>Gaultheria antipoda</i> × <i>G. rupestris</i>	
<i>Gaultheria rupestris</i>	
<i>Geniostoma rupestre</i> var. <i>ligustrifolium</i>	hangehange
<i>Griselinia littoralis</i>	broadleaf, puka

<i>Griselinia lucida</i>	kapuka
<i>Hebe stricta</i> var. <i>atkinsonii</i>	
<i>Hebe stricta</i> var. <i>macrourea</i>	koromiko
<i>Hebe stricta</i> var. <i>stricta</i>	koromiko
<i>Hebe venustula</i>	
(incl. <i>H. brachysiphon</i>) (Druce 1972)	
<i>Hebe parviflora</i>	
<i>Hebe</i> sp. (b) (<i>Veronica squalida</i>)	
<i>Hedycarya arborea</i>	porokaiwhiri, pigeonwood
<i>Helichrysum aggregatum</i>	niniaio
<i>Hoheria angustifolia</i>	narrow-leaved lacebark
<i>Hoheria sexstylosa</i>	
(<i>H. populnea</i> var. <i>lanceolata</i>)	houhere, lacebark
<i>Hoheria angustifolia</i> × <i>H. sexstylosa</i> (Druce 1992)	
<i>Ileostylus micranthus</i>	
<i>Knightia excelsa</i>	rewarewa
<i>Kortbalsella lindsayi</i> s.s.	
<i>Kortbasella salicornioides</i>	
<i>Kunzea ericoides</i> var. <i>ericoides</i>	kanuka
<i>Laurelia novae-zelandiae</i>	pukatea
<i>Leptospermum scoparium</i>	manuka
<i>Leucopogon fasciculatus</i>	mingimingi
<i>Leucopogon fraseri</i> s.s.	patotara
<i>Lophomyrtus bullata</i> (Druce 1992)	
<i>Lophomyrtus obcordata</i>	rohutu
<i>Lophomyrtus bullata</i> × <i>L. obcordata</i>	
<i>Macropiper excelsum</i> subsp. <i>excelsum</i>	kawakawa
<i>Melicope simplex</i>	poataniwha
<i>Melicope ternata</i>	wharangi
<i>Melicytus</i> aff. <i>alpinus</i> (AK 230826)	
<i>Melicytus crassifolius</i> var. <i>crassifolius</i> (Druce 1972)	
<i>Melicytus micranthus</i> (incl. <i>M. micranthus</i> var. <i>microphyllus</i>)	
<i>Melicytus micranthus</i> × <i>M. ramiflorus</i>	
<i>Melicytus</i> aff. <i>obovatus</i> (Roberts 1941; CHR 59 372)	
<i>Melicytus ramiflorus</i> subsp. <i>ramiflorus</i>	mahoe
<i>Metrosideros robusta</i>	northern rata
<i>Muehlenbeckia astonii</i>	Shrubby tororaro
<i>Myoporum laetum</i>	ngaio
<i>Myrsine australis</i>	mapou
<i>Myrsine divaricata</i>	mapou
<i>Myrsine salicina</i>	toro
<i>Myrsine divaricata</i> × <i>M. australis</i>	
<i>Myrsine divaricata</i> × <i>M. salicina</i> (Druce 1992)	
<i>Neomyrtus pedunculata</i>	rohutu
<i>Nestegis cunninghamii</i>	black maire

<i>Nestegis lanceolata</i>	white maire
<i>Nestegis montana</i>	
<i>Nothofagus fusca</i>	red beech
<i>Nothofagus solandri</i> var. <i>solandri</i>	black beech
<i>Nothofagus solandri</i> var. <i>solandri</i> × <i>N. fusca</i>	
<i>Nothofagus truncata</i>	hard beech
<i>Olearia arborescens</i>	
<i>Olearia furfuracea</i> s.s. (incl. <i>O. f.</i> var. <i>angustata</i>)	akepiro
<i>Olearia gardneri</i>	
<i>Olearia paniculata</i>	
<i>Olearia rani</i> var. <i>colorata</i>	heketara
<i>Olearia solandri</i>	
<i>Olearia virgata</i> subsp. <i>virgata</i> (incl. <i>O. virgata</i> var. <i>ramuliflora</i>)	
<i>Ozothamnus leptophyllus</i>	tauhinu
<i>Pennantia corymbosa</i>	kaikomako
<i>Pimelea</i> aff. <i>arenaria</i> (AK 216133)	
<i>Pimelea gnidia</i>	
<i>Pimelea prostrata</i>	pinatoro
<i>Pimelea tomentosa</i>	
<i>Pimelea urvilleana</i>	
<i>Pittosporum cornifolium</i>	karo
<i>Pittosporum divaricatum</i>	
<i>Pittosporum eugenioides</i>	tarata; lemonwood
<i>Pittosporum obcordatum</i>	Heart-leaved kohuhu
<i>Pittosporum tenuifolium</i> subsp. <i>tenuifolium</i>	kohuhu
<i>Plagianthus divaricatus</i>	
<i>Plagianthus regius</i> var. <i>regius</i>	ribbonwood
<i>Pomaderris</i> aff. <i>phylicifolia</i>	
<i>Pseudopanax arboreus</i>	whauwhaupaku, five finger
<i>Pseudopanax crassifolius</i>	horoeaka, lancewood
<i>Pseudowintera axillaris</i>	horopito
<i>Pseudowintera colorata</i>	horopito
<i>Raukaua anomalus</i>	
<i>Raukawa edgerlyi</i>	
<i>Schefflera digitata</i>	pate
<i>Solanum aviculare</i> var. <i>aviculare</i>	poroporo
<i>Solanum laciniatum</i>	poroporo
<i>Sophora microphylla</i>	kowhai
<i>Sophora microphylla</i> × <i>S. tetraptera</i>	
<i>Sophora tetraptera</i>	kowhai
<i>Streblus heterophyllus</i>	turepo
<i>Syzygium maire</i> (Druce 1992)	maire tawake, swamp maire
<i>Teucrium parvifolium</i> (incl. <i>T. parvifolium</i> var. <i>luxurians</i>)	
<i>Tupeia antarctica</i>	
<i>Urtica ferox</i>	ongaonga
<i>Weinmannia racemosa</i> var. <i>racemosa</i>	kamahi

Monocot. lianes

<i>Freycinetia banksii</i>	kiekie
<i>Ripogonum scandens</i>	kareao, supplejack

Dicot. lianes

<i>Brachyglottis sciadophila</i>	
<i>Calystegia sepium</i>	pohue
<i>Calystegia soldanella</i>	
<i>Calystegia tuguriorum</i>	
<i>Clematis afoliata</i>	
<i>Clematis afoliata</i> × <i>C. foetida</i> (Druce 1972)	
<i>Clematis foetida</i>	akakaiku
<i>Clematis forsteri</i>	poananga
<i>Clematis paniculata</i>	puawananga
<i>Clematis quadribacteolata</i>	
<i>Fuchsia perscandens</i>	
<i>Metrosideros colensoi</i>	rata
<i>Metrosideros diffusa</i>	rata
<i>Metrosideros fulgens</i>	rata
<i>Metrosideros perforata</i>	aka
<i>Muehlenbeckia australis</i>	
<i>Muehlenbeckia axillaris</i>	
<i>Muehlenbeckia complexa</i>	pohuehue
<i>Parsonsia capsularis</i>	akakiore
<i>Parsonsia heterophylla</i>	akakaikiore, New Zealand jasmine
<i>Parsonsia capsularis</i> × <i>P. heterophylla</i> (Druce 1992)	
<i>Passiflora tetrandra</i>	kohia, New Zealand passion flower, passionvine
<i>Rubus australis</i>	tataramoa
<i>Rubus cissoides</i>	tataramoa
<i>Rubus schmidelioides</i> var. <i>schmidelioides</i>	akatataramoa, bush lawyer
<i>Rubus squarrosus</i>	
<i>Rubus australis</i> × <i>R. schmedelioides</i>	
<i>Scandia geniculata</i>	
<i>Tetragonia trigyna</i>	

Psilopsids and Lycopods

<i>Huperzia variua</i>	Whiri-o-Raukatauri
<i>Lycopodium scariosum</i>	matukutuku
<i>Lycopodium volubile</i>	waewaekoukou
<i>Tmesipteris elongata</i>	
<i>Tmesipteris tannensis</i>	

Ferns

<i>Adiantum aethiopicum</i> (Druce 1972)	
<i>Adiantum cunninghamii</i>	huruhuru tapairu, maidenhair fern
<i>Adiantum diaphanum</i>	huruhuru tapairu, maidenhair fern

<i>Anarthropteris lanceolata</i>	
<i>Anogramma leptophylla</i>	
<i>Arthropteris tenella</i>	
<i>Asplenium appendiculatum</i>	
subsp. <i>appendiculatum</i>	
<i>Asplenium appendiculatum</i>	
subsp. <i>martinum</i>	
<i>Asplenium bulbiferum</i>	
<i>Asplenium flabellifolium</i>	
<i>Asplenium flaccidum</i>	makawe
<i>Asplenium gracillimum</i>	petako-paraharaha
<i>Asplenium hookerianum</i>	petako-paraharaha
<i>Asplenium lyalli</i> (CHR 158849)	
<i>Asplenium oblongifolium</i>	huruhuru whenua, shining spleenwort
<i>Asplenium polyodon</i>	
<i>Asplenium</i> aff. <i>trichomanes</i>	
<i>Asplenium bulbiferum</i> × <i>A. hookerianum</i> (Druce 1972)	
<i>Asplenium flaccidum</i> × <i>A. hookerianum</i>	
<i>Asplenium flaccidum</i> × <i>A. gracillimum</i>	
<i>Asplenium flaccidum</i> × <i>A. lyalli</i>	
<i>Asplenium flaccidum</i> × <i>A. appendiculatum</i> subsp. <i>appendiculatum</i> (Druce 1972)	
<i>Asplenium gracillimum</i> × <i>A. hookerianum</i>	
<i>Asplenium hookerianum</i> × <i>A. appendiculatum</i> subsp. <i>appendiculatum</i> (Druce 1972)	
<i>Asplenium oblongifolium</i> × <i>A. appendiculatum</i> subsp. <i>appendiculatum</i>	
<i>Asplenium oblongifolium</i> × <i>A.</i> sp.	
<i>Azolla filiculoides</i>	floating water fern
<i>Blechnum blechnoides</i> (Park 1967)	
<i>Blechnum chambersii</i>	rereti
<i>Blechnum discolor</i>	petipeti, crown fern
<i>Blechnum filiforme</i>	panako
<i>Blechnum fluviatile</i> agg.	kiwikiwi
<i>Blechnum membranaceum</i>	
<i>Blechnum montanum</i>	
<i>Blechnum novae-zelandiae</i> (dryland form)	kiokio
<i>Blechnum novae-zelandiae</i> (wetland form)	swamp kiokio
<i>Blechnum penna-marina</i>	
<i>Blechnum procerum</i>	
<i>Blechnum triangularifolium</i>	
<i>Blechnum vulcanicum</i>	korokio
<i>Blechnum procerum</i> × <i>B. novae-zelandiae</i>	
<i>Botrychium australe</i> (Druce 1972)	
<i>Botrychium bifforme</i>	
<i>Cheilanthes distans</i>	
<i>Cheilanthes humilis</i>	
<i>Ctenopteris heterophylla</i>	

<i>Cyathea cunninghamii</i>	punui
<i>Cyathea dealbata</i>	ponga
<i>Cyathea medullaris</i>	mamaku
<i>Cyathea smithii</i>	katote
<i>Dicksonia fibrosa</i>	wheki-ponga
<i>Dicksonia squarrosa</i>	wheki
<i>Diplazium australe</i>	
<i>Doodia australis</i>	
<i>Doodia squarrosa</i>	
<i>Grammitis billardierei</i>	
<i>Grammitis ciliata</i> (Druce 1972)	
<i>Gleichenia microphylla</i> (Druce and Park 1991)	
<i>Histiopteris incisa</i>	matata
<i>Hymenophyllum bivalve</i>	mauku
<i>Hymenophyllum cupressiforme</i>	
<i>Hymenophyllum demissum</i>	irirangi
<i>Hymenophyllum dilatatum</i>	matua mauku
<i>Hymenophyllum flabellatum</i>	mauku
<i>Hymenophyllum flexuosum</i>	mauku
<i>Hymenophyllum minimum</i> (Druce 1972)	mauku
<i>Hymenophyllum multifidum</i>	mauku
<i>Hymenophyllum pulcherrimum</i>	
<i>Hymenophyllum rarum</i>	mauku
<i>Hymenophyllum revolutum</i>	mauku
<i>Hymenophyllum sanguinolentum</i> agg.	piripiri
<i>Hymenophyllum scabrum</i>	mauku
<i>Hypolepis ambigua</i>	
<i>Hypolepis dicksonioides</i>	
<i>Hypolepis distans</i>	
<i>Hypolepis lactea</i> (Druce 1972)	
<i>Hypolepis rufobarbata</i>	
<i>Hypolepis ambigua</i> × <i>H. rufobarbata</i>	
<i>Lastreopsis glabella</i>	
<i>Lastreopsis hispida</i>	
<i>Lastreopsis microsora</i>	
<i>Lastreopsis velutina</i>	
<i>Leptolepia novae-zelandiae</i>	
<i>Leptopteris hymenophylloides</i>	heruheru
<i>Lindsaea linearis</i> (Druce 1972)	
<i>Microsorium pustulatum</i>	kowaowao
<i>Microsorium scandens</i>	mokimoki
<i>Ophioglossum lusitanicum</i> agg.	
<i>Paesia scaberula</i>	matata
<i>Pellaea rotundifolia</i>	tarawera
<i>Pellaea</i> aff. <i>rotundifolia</i>	
<i>Pneumatopteris pennigera</i>	pakau
<i>Polystichum richardii</i>	pikopiko
<i>Polystichum silvaticum</i>	
<i>Polystichum vestitum</i>	puriru

<i>Polystichum</i> deep purple”	
<i>Pteridium esculentum</i>	rarahu, bracken
<i>Pteris macilenta</i>	
<i>Pteris tremula</i>	turawera
<i>Pyrrosia eleagnifolia</i>	
<i>Rumobra adiantiformis</i>	
<i>Trichomanes endlicherianum</i>	
<i>Trichomanes reniforme</i>	konehu
<i>Trichomanes venosum</i>	

Orchids

<i>Acianthus sinclairii</i>	
<i>Adenochilus gracilis</i>	
<i>Aporostylis bifolia</i>	
<i>Cladenia atradenia</i>	
<i>Caladenia carnea</i> var. <i>minor</i> (Druce 1967)	
<i>Caladenia chlorostyla</i>	
<i>Caladenia lyallii</i> (Druce and Park 1991)	
<i>Corybas cheesemanii</i>	
<i>Corybas iridescens</i>	
<i>Corybas macranthus</i>	
<i>Corybas oblongus</i>	
<i>Corybas orbiculatus</i>	
<i>Corybas trilobus</i> s.s.	
<i>Corybas</i> aff. <i>trilobus</i> (“C. Trotters”)	
<i>Cyrtostylis reniformis</i> s.s. (Druce 1972)	
<i>Drymoanthus adversus</i>	
<i>Earina autumnalis</i>	raupeka
<i>Earina mucronata</i> s.s.	peka-a-waka
<i>Gastrodia cunninghamii</i>	huperei
<i>Genoplesium nudum</i>	
<i>Microtis unifolia</i>	onion-leaved orchid
<i>Microtis</i> aff. <i>parviflorum</i>	
<i>Nematoceras longipetala</i> (<i>Corybas</i> “Waiouru”)	
<i>Orthoceras novae-zeelandiae</i>	maikaika
<i>Prasophyllum colensoi</i> (Druce 1972)	
<i>Pterostylis alobula</i>	
<i>Pterostylis banksii</i>	tutukiwi
<i>Pterostylis cardiostigma</i>	
<i>Pterostylis foliata</i>	
<i>Pterostylis graminea</i>	
<i>Pterostylis irsoniana</i> (Druce 1972)	
<i>Pterostylis montana</i> s.s.	
<i>Pterostylis porrecta</i>	
<i>Pterostylis trullifolia</i> (Druce 1972)	
<i>Pterostylis</i> sp. (unnamed aff. <i>montana</i>).	
<i>Simpliglottis cornuta</i>	
<i>Thelymitra hatchii</i> (Druce 1972)	
<i>Thelymitra intermedia</i>	

<i>Thelymitra longifolia</i>	maikuku
<i>Thelymitra nervosa</i>	
<i>Thelymitra pauciflora</i>	
“ <i>Thelymitra</i> aff. <i>ixioides</i> ”	
<i>Winika cunninghamii</i>	

Grasses

<i>Amphibromus fluitans</i>	
<i>Anemantbele lessoniana</i>	
<i>Chionochloa beddiei</i>	
<i>Cortaderia fulvida</i>	toetoe
<i>Cortaderia toetoe</i>	toetoe
<i>Dichelachne crinita</i>	plume grass
<i>Dichelachne inaequiglumes</i>	
<i>Echinopogon ovatus</i>	
<i>Elymus solandri</i>	
<i>Elymus multiflorus</i> (Druce 1972)	
<i>Festuca multinodis</i> (Druce 1972)	
<i>Hierochloa redolens</i>	karetu
<i>Lachnagrostis billardieri</i>	perehia
<i>Lachnagrostis filiformis</i>	
<i>Lachnagrostis littoralis</i> subsp. <i>littoralis</i>	
<i>Lachnagrostis lyalli</i> (Druce 1972)	
<i>Lachnagrostis pilosa</i> subsp. <i>pilosa</i> (Druce 1972)	
<i>Lachnagrostis striata</i> (Druce 1992)	
<i>Microlaena avenacea</i>	bush rice grass
<i>Microlaena polynoda</i>	
<i>Microlaena stipoides</i>	patiti
<i>Poa anceps</i> subsp. <i>anceps</i>	
<i>Poa cita</i>	silver tussock
<i>Poa colensoi</i> (Druce 1972)	
<i>Poa imbecilla</i>	
<i>Poa mathewsii</i>	
<i>Poa pusilla</i>	
<i>Poa anceps</i> × <i>P. cita</i> (Druce 1972)	
<i>Puccinellia stricta</i> (Druce 1972)	
<i>Rytidosperma buchananii</i> (Druce 1972)	
<i>Rytidosperma clavatum</i> (Druce 1972)	
<i>Rytidosperma gracile</i>	
<i>Rytidosperma merum</i> (Druce 1972)	
<i>Rytidosperma petrosum</i> (de Lange and Crowcroft 1993)	
<i>Rytidosperma unarede</i>	
<i>Simplicia laxa</i> ¹	
<i>Spinifex sericeus</i>	kowhangatara
<i>Trisetium arduanum</i>	
<i>Trisetium lepidum</i>	
<i>Zoysia minima</i>	

¹ *S. laxa* was historically found on the north side of Haurangi forest in limestone river beds (see Townsend *et al.* 1998), however it is not clear whether it was within the Eastern Wairarapa Ecological District.

Sedges

<i>Apodasmia similis</i>	oioi, jointed sedge
<i>Baumea juncea</i>	
<i>Baumea rubiginosa</i> (Druce 1972)	
<i>Baumea tenax</i> (Druce 1972)	
<i>Bolboschoenus caldwellii</i> (Druce 1972)	
<i>Bolboschoenus fluviatilis</i>	ririwaka, Purua grass
<i>Carex breviculmis</i>	
<i>Carex buchananii</i> (CHR 59229 1947 Record)	
<i>Carex colensoi</i> (Druce 1972)	
<i>Carex diandra</i> (1966 record, WELT number not known)	
<i>Carex dissita</i>	
<i>Carex flagellifera</i>	manaia
<i>Carex forsteri</i>	
<i>Carex geminata</i> s.s.	
<i>Carex inversa</i>	
<i>Carex lambertiana</i>	
<i>Carex lessoniana</i> (Druce 1972)	
<i>Carex maorica</i>	
<i>Carex pumila</i>	sand carex
<i>Carex raoulii</i>	
<i>Carex resectans</i> (Druce 1972)	
<i>Carex secta</i> s.s.	purei
<i>Carex solandri</i>	
<i>Carex testacea</i> s.s.	
<i>Carex virgata</i>	purei
<i>Cyperus ustulatus</i>	
<i>Desmoschoenus spiralis</i>	pingao
<i>Eleocharis acuta</i>	sharp spike sedge
<i>Eleocharis gracilis</i>	slender spike sedge
<i>Gahnia pauciflora</i>	takahikahi
<i>Gahnia setifolia</i>	mapere
<i>Isolepis basilaris</i>	
<i>Isolepis cernua</i>	
<i>Isolepis distigmatosa</i>	
<i>Isolepis nodosa</i>	wiwi, club rush
<i>Isolepis pottsii</i> (Druce 1972)	
<i>Isolepis reticularis</i>	
<i>Isolepis subtilissima</i>	
<i>Lepidosperma australe</i>	
<i>Morelotia affinis</i>	
<i>Schoenoplectus pungens</i>	three square
<i>Schoenoplectus tabernaemontani</i>	kapungawha
<i>Schoenus apogon</i>	
<i>Schoenus maschalinus</i>	
<i>Uncinia banksii</i>	matau
<i>Uncinia ferruginea</i>	matau
<i>Uncinia gracilentia</i>	matau
<i>Uncinia laxiflora</i>	
<i>Uncinia leptostachya</i>	

<i>Uncinia rupestris</i>	
<i>Uncinia scabra</i>	matau
<i>Uncinia uncinata</i>	
<i>Uncinia</i> sp. (cf. <i>U. rupestris</i>) (Druce 1972)	

Rushes

<i>Juncus australis</i>	wiwi
<i>Juncus caespiticius</i>	
<i>Juncus distegus</i>	
<i>Juncus edgariae</i>	wiwi
<i>Juncus holoschoenus</i> var. <i>holoschoenus</i> ¹ (CHR189748)	
<i>Juncus kraussii</i> var. <i>australiensis</i>	sea rush
<i>Juncus novae-zelandiae</i> (Druce 1972)	
<i>Juncus pallidus</i>	wiwi
<i>Juncus planifolius</i>	
<i>Juncus pusillus</i> (Druce 1972)	wiwi
<i>Juncus sarophorus</i>	wiwi
<i>Luzula banksiana</i> s.s. (Druce 1972)	
<i>Luzula picta</i> var. <i>limosa</i>	
<i>Luzula picta</i> var. <i>picta</i>	
<i>Luzula subclavata</i>	

Monocot. herbs (other than orchids, grasses, sedges, rushes)

<i>Arthropodium candidum</i>	
<i>Arthropodium cirratum</i>	
<i>Astelia fragrans</i>	kakaha
<i>Astelia solandri</i>	kowharawhara
<i>Collopermum hastatum</i>	kahakaha
<i>Dianella nigra</i>	turutu
<i>Lemna</i> sp. (<i>L. minor</i> auct.)	duckweed
<i>Libertia grandiflora</i>	mikoikoi
<i>Libertia ixioides</i>	mikoikoi
<i>Phormium cookianum</i>	
<i>Phormium tenax</i>	harakeke, flax
<i>Potamogeton cheesemanii</i> (Druce 1972)	pondweed
<i>Potamogeton pectinatus</i>	pondweed
<i>Potamogeton suboblongus</i>	
<i>Ruppia polycarpa</i> (WELT 10692, 1940 record)	
<i>Triglochin striata</i>	arrow grass
<i>Typha orientalis</i>	raupo

Composite herbs

<i>Anaphalioides bellidioides</i>	
<i>Anaphalioides trinervis</i> (Druce 1972)	puatea
<i>Anaphalioides subrigidum</i> (Druce 1972)	
<i>Anaphalioides bellidioides</i> × <i>Helichrysum lanceolatum</i> (Druce 1972)	

¹ Believed to be extinct in the Eastern Wairarapa Ecological District (Townsend *et al.* 1997).

Anaphalioides keriensis × *A. subrigidum*
Brachyscome radicata var. *radicata*
Brachyglottis lagopus
Celmisia gracilentata var. pekapeka
Celmisia spectabilis subsp. *lanceolata*
Celmisia gracilentata × *C. spectabilis* (Druce 1972)
Centipeda aoteorana
Cotula australis
Cotula coronopifolia bachelor's button
Craspedia minor var. *minor* (incl. *C. major*)
Craspedia uniflora var. *grandis*
Craspedia viscosa (Druce 1992)
Euchiton audax cudweed
Euchiton gymnocephalus
Euchiton involucratus cudweed
Euchiton limosus s.s. (Druce 1972) cudweed
Euchiton ruabiniensis
Euchiton sphaericus
Euchiton sp. (unnamed, included in
E. paludosus, as var. *polylepis* by
Drury, 1972) (Druce 1965)
Helicbrysum filicaule
Lagenifera pumila papataniwharuwha
Lagenifera strangulata
Leptinella pusilla
Leptinella squalida s.s.
Leptinella tenella (Druce 1972)
Microseris scapigera
Pseudognaphalium aff. *luteoalbum* pukatea
Raoulia glabra
Raoulia tenuicaulis (incl. *R. t.* var.
dimorpha and *R. t.* var. *pusilla*)
Raoulia sp. (*R. australis* agg.)
Senecio banksii var.
Senecio biserratus
Senecio glomeratus fireweed
Senecio hispidulus fireweed
Senecio lautus subsp. *lautus*
Senecio minimus fireweed
Senecio rufiglandulosus
Senecio quadridentatus
Sonchus kirkii (Sawyer and Keenan 1997)
Vittadinia australis s.s.

Dicot. herbs (other than composite)

Acaena anserinifolia piripiri
Acaena juvenca
Aciphylla colensoi
Aciphylla squarrosa s.s.
Apium prostratum New Zealand celery

Australina pusilla
Callitriche muelleri
Callitriche petrei subsp. *petrei*
Cardamine sp. (a) (*C. debilis* agg.)
("Narrow Petal" of Pritchard 1957)
(Druce 1972)
Cardamine sp. (b) (*C. debilis* agg.)
("Long Style" of Pritchard)
(Druce 1972)
Cardamine sp. (c) (*C. debilis* agg.)
("Glossy Leaf" of Pritchard)
(Druce 1972)
Centella uniflora
Colobanthus muelleri (Druce 1972)
Colobanthus strictus (Druce 1972)
Crassula mataikona
Crassula peduncularis
Crassula sieberiana
Crassula tetrameria
Daucus glochidiatus
Dichondra brevifolia
Dichondra repens agg.
Dichondra sp. (unnamed)
(plant slender, flowers small)
Disphyma australe subsp. *australe* horokaka
Drosera peltata
Einadia triandra
Epilobium alsinoides s.s. (Druce 1972)
Epilobium atriplicifolium s.s.
(Druce 1972)
Epilobium billardioreanum s.s.
(Druce 1972)
Epilobium brunnescens s.s. (Druce 1972)
Epilobium cbionanthum
Epilobium insulare willow herb
Epilobium komarovianum (Druce 1972) willow herb
Epilobium microphyllum (Druce 1972)
Epilobium nerterioides
Epilobium nummulariifolium willow herb
Epilobium pedunculare
Epilobium pubens
Epilobium rotundifolium
Euphrasia cuneata
Galium propinquum mawe
Geranium microphyllum
Geranium potentilloides
var. *potentilloides*
Geranium retrorsum (Druce 1972)
Geranium sessiliflorum
var. *novae-zelandiae* (Druce 1972)

<i>Geranium solanderi</i> var. "large petals"	
<i>Geranium</i> aff. <i>trilobum</i>	
<i>Gingidia montana</i> (Druce 1972)	
<i>Glossostigma elatinoides</i> (Druce 1972)	
<i>Gonocarpus aggregatus</i>	
<i>Gonocarpus incanus</i> (incl. <i>G. montanus</i>) (WELT 6879, 1940 record)	piripiri
<i>Gonocarpus micranthus</i> subsp. <i>micranthus</i>	
<i>Gratiola nana</i> (A.P. Druce pers. comm.)	
<i>Gunnera monoica</i> (incl. <i>G. albocarpa</i> and <i>G. strigosa</i>) (Druce 1972)	
<i>Haloragis erecta</i> subsp. <i>erecta</i>	toatoa
<i>Hydrocotyle elongata</i>	
<i>Hydrocotyle heteromeria</i>	
<i>Hydrocotyle hydrophila</i> (Druce 1972)	
<i>Hydrocotyle microphylla</i> (Druce 1972)	
<i>Hydrocotyle moschata</i>	
<i>Hydrocotyle novae-zelandiae</i> s.s.	
<i>Hydrocotyle sulcata</i>	
<i>Hypericum japonicum</i>	
<i>Leptostigma setulosa</i> (Druce 1972)	
<i>Lilaeopsis novae-zelandiae</i>	
<i>Lilaeopsis ruthiana</i> (Druce 1972)	
<i>Linum monogynum</i>	
<i>Lobelia anceps</i>	shore lobelia
<i>Mazus novaezeelandiae</i> subsp. <i>novaezeelandiae</i>	
<i>Mimulus repens</i>	
<i>Myosotis pygmaea</i> (Druce & Park 1991)	
<i>Myosotis spathulata</i> (incl. <i>M. s.</i> var. <i>radicata</i>) (Druce 1972)	
<i>Myosotis</i> .sp. (cf. <i>M. forsteri</i>) (Druce 1972)	
<i>Myriophyllum propinquum</i>	water milfoil
<i>Nertera depressa</i> (incl. <i>N. cunninghamii</i>)	
<i>Oreomyrrhis ramosa</i>	
<i>Oxalis exilis</i>	
<i>Oxalis magellanica</i>	
<i>Parabebe diffusa</i> (Druce 1972)	
<i>Parietaria debilis</i>	
<i>Pelargonium inodorum</i>	kopata
<i>Plantago lanigera</i>	
<i>Plantago raoulii</i>	kopakopa
<i>Plantago spathulata</i> subsp. <i>spathulata</i>	
<i>Potentilla anserinoides</i>	kowai
<i>Pratia angulata</i>	panekenake
<i>Ranunculus acaulis</i>	sand buttercup
<i>Ranunculus amphitrichus</i>	kawariki
<i>Ranunculus glabrifolius</i>	
<i>Ranunculus multiscapus</i>	
<i>Ranunculus reflexus</i>	maruru

<i>Rumex flexuosus</i>	
<i>Samolus repens</i> var. <i>repens</i>	makaokao
<i>Sarcocornia quinqueflora</i>	
<i>Schizeilema trifoliolatum</i>	
<i>Scleranthus biflorus</i>	
<i>Scleranthus uniflorus</i> (Druce 1972)	
<i>Selliera radicans</i>	remuremu
<i>Spergularia media</i>	
<i>Stellaria decipiens</i> (incl. <i>S. minuta</i> and <i>S. parviflora</i>)	kohukohu
<i>Stellaria gracilentia</i>	
<i>Tetragonia tetragonioides</i>	kokihi
<i>Urtica incisa</i>	stinging nettle
<i>Urtica linearifolia</i>	
<i>Viola cunninghamii</i> (Druce 1972)	
<i>Viola filicaulis</i>	
<i>Wahlenbergia ramosa</i>	
<i>Wahlenbergia rupestris</i>	
<i>Wahlenbergia violacea</i>	

Appendix 2

ADVENTIVE VASCULAR PLANTS IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT

Gymnosperms

<i>Araucaria heterophylla</i>	Norfolk Island pine (planted)
<i>Cryptomeria japonica</i>	Japanese cedar
<i>Cupressus macrocarpa</i>	macrocarpa
<i>Pinus pinaster</i>	maritime pine
<i>Pinus radiata</i>	radiata pine

Dicot. trees and shrubs

<i>Acacia melanoxydon</i>	Tasmanian blackwood
<i>Acacia mearnsii</i> (Sawyer <i>et al.</i> 1998)	black wattle
<i>Banksia</i> sp.	banksia
<i>Berberis glaucocarpa</i>	barberry
<i>Chamaecytisus palmensis</i>	tree lucerne
<i>Cotoneaster glaucophylla</i>	
<i>Cotoneaster lacteus</i>	cotoneaster
<i>Crataegus monogyna</i>	hawthorn
<i>Cytisus scoparius</i>	broom
<i>Erica lusitanica</i>	Spanish heath
<i>Eucalyptus</i> sp.	eucalypt
<i>Lavatera arborea</i>	tree mallow
<i>Leycesteria formosa</i>	Himalayan honeysuckle
<i>Lupinus arboreus</i>	lupin
<i>Lycium ferocissimum</i>	boxthorn
<i>Malus × domestica</i>	apple
<i>Myoporum insulare</i>	Tasmanian ngaio
<i>Paraserianthes</i> sp.	wattle
<i>Pittosporum ralphii</i>	
(native but not to the district)	
<i>Populus alba</i> var. <i>nivea</i>	silver poplar
<i>Populus nigra</i> cv. <i>Italica</i>	Lombardy poplar
<i>Prunus laurocerasus</i>	
<i>Rosa rubiginosa</i>	sweet brier
<i>Salix cinerea</i>	grey willow
<i>Salix fragilis</i>	crack willow
<i>Sambucus nigra</i>	elder
<i>Teline monspessulana</i>	Montpellier broom
<i>Tropaeolum majus</i>	garden nasturtium
<i>Ulex europaeus</i>	gorse

Dicot. lianes

<i>Clematis vitalba</i>	old man's beard
<i>Hedera helix</i>	ivy
<i>Lonicera japonica</i> (Druce 1972)	Japanese honeysuckle
<i>Senecio angulatus</i>	Cape ivy
<i>Vinca major</i>	periwinkle

Grasses

<i>Agropyron pungens</i>	sea couch
<i>Agrostis capillaris</i>	brown top
<i>Agrostis stolonifera</i>	creeping bent
<i>Aira caryophyllea</i> (Druce 1972)	silvery hair grass
<i>Aira praecox</i>	early hair grass
<i>Ammophila arenaria</i>	marram
<i>Anthoxanthum odoratum</i>	sweet vernal
<i>Arrhenatherum elatius</i>	tall oat grass
<i>Bromus diandrus</i>	ripgut brome
<i>Bromus bordaceus</i> (Druce 1972)	soft brome
<i>Bromus sterilis</i> (Druce 1972)	barren brome
<i>Bromus willdenowii</i>	prairie grass
<i>Cortaderia jubata</i>	pampas
<i>Cortaderia selloana</i>	pampas
<i>Cynodon dactylon</i>	Indian doab
<i>Cynosurus cristatus</i>	crested dogstail
<i>Dactylis glomerata</i>	cocksfoot
<i>Digitaria sanguinalis</i>	summer grass
<i>Echinochloa crus-galli</i>	barnyard grass
<i>Elymus rectisetus</i> s.s. (Druce 1972)	blue wheat grass
<i>Festuca nigrescens</i> (Druce 1972)	chewing fescue
<i>Festuca rubra</i>	red fescue
<i>Glyceria declinata</i> (Druce 1972)	floating sweetgrass
<i>Glyceria fluitans</i>	floating sweetgrass
<i>Holcus lanatus</i>	Yorkshire fog
<i>Holcus mollis</i>	creeping fog
<i>Hordeum murinum</i>	barley grass
<i>Lagurus ovatus</i>	hare's tail
<i>Lolium perenne</i>	perennial rye grass
<i>Paspalum dilatatum</i>	paspalum
<i>Pennisetum clandestinum</i>	kikuyu grass
<i>Phalaris aquatica</i>	phalaris
<i>Poa annua</i>	annual poa
<i>Poa pratensis</i>	Kentucky blue grass
<i>Polypogon monspeliensis</i>	beard grass
<i>Rytidosperma laeve</i> (Druce 1972)	danthonia
<i>Rytidosperma penicillatum</i> (Druce 1972)	danthonia
<i>Rytidosperma racemosum</i>	danthonia
<i>Schenodorus phoenix</i>	tall fescue
<i>Sporobolus africanus</i>	ratstail
<i>Stenotaphrum secundatum</i>	buffalo grass
<i>Vulpia bromoides</i>	vulpia hair grass

Sedges

Carex divulsa
Carex birta (Druce 1972)
Carex ovalis
Carex sylvatica (Druce 1972)
Cyperus eragrostis
Isolepis marginata (Druce 1972)
Isolepis sepulcralis

Rushes

Juncus articulatus jointed-leaved rush
Juncus bufonius toad rush
Juncus conglomeratus
Juncus effusus soft rush
Juncus inflexus
Juncus subnodulosus

Monocots (other than grasses, sedges, and rushes)

Agapanthus praecox agapanthus
Iris foetidissima stinking iris
Yucca gloriosa yucca

Composite herbs

Achillea millefolium yarrow
Bellis perennis lawn daisy
Carduus tenuiflorus winged thistle
Centipeda cunninghamii sneezeweed
Cirsium arvense Californian thistle
Cirsium vulgare Scotch thistle
Conyza albida fleabane
Conyza canadensis fleabane
Crepis capillaris hawksbeard
Erigeron karvinskianus Mexican daisy
Gazania linearis coastal daisy
Gnaphalium coarctatum cudweed
Hypochoeris radicata catsear
Lactuca serriola prickly lettuce
Leontodon taraxacoides hawkbit
Leucanthemum vulgare oxeye daisy
Mycelis muralis wall lettuce
Picris echioides ox tongue
Senecio bipinnatisectus Australian fireweed
Senecio elegans purple groundsel
Senecio jacobaea ragwort
Silybum marianum (Druce 1972) variegated thistle
Sonchus asper prickly sowthistle
Sonchus oleraceus puha, sowthistle
Tanacetum parthenium feverfew
Taraxacum officinale dandelion

Dicot. herbs (other than Composites)

<i>Acaena agnipila</i>	Australian burrweed
<i>Acaena novae-zelandiae</i> (Druce 1972)	bidibid
<i>Alyssum alyssoides</i>	small alyssum
<i>Amaranthus deflexus</i>	mat amaranth
<i>Amaranthus powellii</i>	redroot
<i>Anagallis arvensis</i>	scarlet pimpernel
<i>Aphanes inexpectata</i>	parsley piert
<i>Arctotheca calendula</i>	cape weed
<i>Arctotis stoechadifolia</i>	arctotis
<i>Atriplex patula</i>	orache
<i>Brassica oleracea</i>	wild cabbage
<i>Cakile maritima</i>	sea rocket
<i>Callitriche stagnalis</i>	starwort
<i>Cardamine flexusosa</i>	
<i>Cardamine hirsuta</i> (Druce 1972)	bitter-cress
<i>Carpobrotus edulis</i>	ice plant
<i>Centaurium erythraea</i> (Druce 1972)	centaury
<i>Cerastium fontanum</i> subsp. <i>vulgare</i> (Druce 1972)	mouse-eared chickweed
<i>Cerastium glomeratum</i> (Druce 1972)	annual mouse-ear chickweed
<i>Chenopodium album</i>	fathen
<i>Chenopodium murale</i>	nettle-leaved fathen
<i>Coronopus didymus</i>	twin cress
<i>Cotyledon orbiculata</i>	pig's ear
<i>Datura stramonium</i>	thorn apple
<i>Daucus carota</i>	wild carrot
<i>Digitalis purpurea</i>	foxglove
<i>Erodium cicutarium</i> (Druce 1972)	storksbill
<i>Erodium moschatum</i> (Druce 1972)	musky storksbill
<i>Euphorbia peplus</i>	milkweed
<i>Foeniculum vulgare</i>	fennel
<i>Galium aparine</i>	cleavers
<i>Galium palustre</i>	marsh bedstraw
<i>Geranium molle</i>	dove's foot cranesbill
<i>Glaucium flavum</i>	horned poppy
<i>Hypericum humifusum</i> (Druce 1972)	trailing St John's wort
<i>Lepidium pseudo-tasmanicum</i>	narrow-leaved cress
<i>Linum bienne</i>	
<i>Linum tryginum</i>	
<i>Lotus pedunculatus</i>	lotus
<i>Lychnis coronaria</i>	rose campion
<i>Lytbrum hyssopifolia</i>	loosestrife
<i>Malva neglecta</i>	dwarf mallow
<i>Marrubium vulgare</i>	horehound
<i>Matthiola incana</i>	hoary stock
<i>Melilotus indica</i>	King Island melilot
<i>Mentha pulegium</i>	pennyroyal
<i>Mimulus moschatus</i>	
<i>Myosotis discolor</i>	forget-me-not

<i>Myosotis laxa</i> subsp. <i>caespitosa</i> (Druce 1972)	water forget-me-not
<i>Nepeta catarina</i> (Druce 1972)	cat mint
<i>Nymphaea mexicana</i>	Mexican water lily
<i>Orobanche minor</i>	broomrape
<i>Osteospermum fruticosum</i>	dimorphotheca
<i>Oxalis corniculata</i>	
<i>Oxalis</i> sp. (rootstock tuberous; fls yellow)	oxalis
<i>Parentucellia viscosa</i> (Druce 1972)	tarweed
<i>Petroselinum crispum</i>	wild parsley
<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>Polycarpon tetraphyllum</i>	allseed
<i>Polygonum aviculare</i>	wireweed
<i>Polygonum hydropiper</i>	water pepper
<i>Polygonum persicaria</i>	willow weed
<i>Portulaca oleracea</i>	portulaca
<i>Prunella vulgaris</i>	selfheal
<i>Ranunculus parviflorus</i> (Druce 1972)	small-flowered buttercup
<i>Ranunculus repens</i>	creeping buttercup
<i>Ranunculus sardous</i>	hairy buttercup
<i>Ranunculus sceleratus</i>	celery-leaved buttercup
<i>Rorippa microphylla</i>	one rowed watercress
<i>Rorippa nasturtium-aquaticum</i>	watercress
<i>Rumex acetosella</i>	sheep's sorrel
<i>Rumex conglomeratus</i>	clustered dock
<i>Rumex crispus</i>	curled dock
<i>Rumex obtusifolius</i>	broad-leaved dock
<i>Rumex sagittatus</i>	climbing dock
<i>Sagina procumbens</i>	pearlwort
<i>Sanguisorba minor</i> (Druce 1972)	salad burnet
<i>Sherardia arvensis</i> (Druce 1972)	field madder
<i>Silene gallica</i>	catchfly
<i>Sisymbrium officinale</i>	hedge mustard
<i>Solanum chenopodioides</i>	Jerusalem cherry
<i>Solanum nigrum</i>	black nightshade
<i>Stachys sylvatica</i>	hedge stachys
<i>Stellaria alsine</i>	bog stichwort
<i>Stellaria media</i>	chickweed
<i>Torilis nodosa</i> (Druce 1972)	hedgehog parsley
<i>Trifolium arvense</i> (Druce 1972)	haresfoot trefoil
<i>Trifolium dubium</i>	suckling clover
<i>Trifolium micranthum</i>	lesser suckling clover
<i>Trifolium pratense</i>	red clover
<i>Trifolium repens</i>	white clover
<i>Trifolium striatum</i>	striated clover
<i>Trifolium subterraneum</i>	subterraneum clover
<i>Verbascum creticum</i> (Druce 1972)	Cretan mullein

<i>Verbascum thapsus</i>	woolly mullein
<i>Veronica arvensis</i>	field speedwell
<i>Veronica persica</i>	scrambling speedwell
<i>Veronica serpyllifolia</i> (Druce 1972)	turf speedwell
<i>Vicia hirsuta</i> (Druce 1972)	hairy vetch
<i>Vicia sativa</i>	narrow-leaved vetch
<i>Vicia tetrasperma</i>	four-seeded vetch

Appendix 3

REGIONALLY THREATENED PLANTS IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT

SCIENTIFIC NAME	COMMON NAME	REGIONAL MAINLAND STATUS (EMPSON AND SAWYER 1996*)
<i>Atribopodium cirratum</i>	Rengarenga lily	Vulnerable
<i>Asplenium lyallii</i>		Susceptible
<i>Asplenium appendiculatum</i> subsp. <i>appendiculatum</i>		Low risk
<i>Baumea juncea</i>		Indeterminate
<i>Botrychium australe</i>	Parsley fern	Vulnerable
<i>Botrychium bifforme</i>	Parsley fern	Susceptible
<i>Brachyglottis greyi</i> var. <i>greyi</i>		Low risk
<i>Carex buchananii</i>		Vulnerable
<i>Carex diandra</i>		Vulnerable
<i>Carex resectans</i>		Indeterminate
<i>Celmisia spectabilis</i> var. <i>lanceolata</i>		Low risk
<i>Chionochloa beddiei</i>		Indeterminate
<i>Clematis afoliata</i>	Leafless clematis	Susceptible
<i>Coprosma acerosa</i>	Sand coprosma	Endangered
<i>Coprosma virescens</i>		Vulnerable
<i>Craspedia uniflora</i> var. <i>grandis</i>		Indeterminate
<i>Discaria toumatou</i>	Matagouri	Vulnerable
<i>Doodia media</i>		Low risk
<i>Elymus multiflorus</i>		Susceptible
<i>Genoplesium nudum</i>		Susceptible
<i>Gonocarpus incanus</i>		Indeterminate
<i>Hymenophyllum cupressiforme</i>		Indeterminate
<i>Hymenophyllum minimum</i>		Low risk
<i>Hypolepis dicksonioides</i>	Giant hypolepis	Low risk
<i>Juncus pusillus</i>		Indeterminate
<i>Kortbalsella lindsayi</i>	Mistletoe	Susceptible
<i>Leptinella pusilla</i>		Endangered
<i>Leptinella tenella</i>		Susceptible
<i>Melicytus</i> aff. <i>obovatus</i>		Vulnerable
<i>Morelotia affinis</i>		Vulnerable
<i>Myosotis spathulata</i>	Forget-me-not	Indeterminate
<i>Pimelea urvilleana</i>		Susceptible
<i>Pterostylis foliata</i>		Susceptible
<i>Rubus squarrosus</i>	Leafless lawyer	Susceptible
<i>Scandia geniculata</i>		Vulnerable
<i>Schoenus apogon</i>		Indeterminate

* The categories are (Empson and Sawyer, 1996):

Critical: Taxon facing very high probability of extinction in the wild in the near future.

Endangered: Taxon facing high probability of extinction in the wild in the near future.

Vulnerable: Taxon facing high probability of extinction in the wild in the medium-term.

Susceptible: Taxon of concern because its range is restricted or it is found at few locations which makes it susceptible to effects of human activities.

Low risk: Taxon which does not qualify for any threatened categories listed above but is of sufficient conservation concern to warrant listing.

Indeterminate: Taxon with indeterminate or unknown status.

Appendix 4

WILDLIFE SPECIES RECORDED IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT (FROM SAWYER *et al.* 1998)

Mammals

Native

Andrew's beaked whale	<i>Mesoplodon bowdoinii</i>
elephant seal	<i>Mirounga leonina</i>
long-tailed bat	<i>Chalinobus tuberculata</i>
New Zealand fur seal	<i>Arctocephalus forsteri</i>

Introduced (feral)

cat	<i>Felis catus</i>
cow	<i>Bos taurus</i>
ferret	<i>Mustela furo</i>
hare	<i>Lepus sp.</i>
hedgehog	<i>Erinaceus europeaeus occidentalis</i>
horse	<i>Equus caballus</i>
leopard seal	<i>Hydrurga lepterix</i>
mouse	<i>Mus musculus</i>
pig	<i>Sus scrofa</i>
possum	<i>Trichosurus vulpecula</i>
rabbit	<i>Oryctolagus cuniculus cuniculus</i>
rat	<i>Rattus sp.</i>
red deer	<i>Cervus elaphus scoticus</i>
sheep	<i>Ovis aries</i>
stoat	<i>Mustela erminea</i>

Birds

Native

Australasian gannet	<i>Sula bassana serrator</i>
Australasian harrier	<i>Circus approximans gouldi</i>
banded dotterel	<i>Charadrius bicinctus</i>
bellbird	<i>Anthornis melanura</i>
black-billed gull	<i>Larus bulleri</i>
black-fronted dotterel	<i>Charadrius melanops</i>
black shag	<i>Phalacrocorax carbo</i>
Buller's shearwater	<i>Puffinus bulleri</i>
Caspian tern	<i>Hydroprogne caspia</i>
fantail	<i>Rhipidura fuliginosa</i>
fluttering shearwater	<i>Puffinus garia</i>
giant petrel	<i>Macronectes sp.</i>
grey duck	<i>Anas superciliosa</i>
grey warbler	<i>Gerygone igata</i>

little shag	<i>Phalacrocorax melanoleucos</i>
long-tailed cuckoo	<i>Eudynamys taitensis</i>
Morepork	<i>Ninox novaeseelandiae</i>
New Zealand dabchick	<i>Podiceps rufopectus</i>
New Zealand falcon	<i>Falco novaeseelandiae</i>
New Zealand kingfisher	<i>Halcyon sancta vagans</i>
New Zealand pigeon	<i>Hemiphaga novaeseelandiae</i>
New Zealand pipit	<i>Anthus novaeseelandiae</i>
New Zealand shoveler	<i>Anas rhynchotis</i>
paradise shelduck	<i>Tadorna variegata</i>
pieb shag	<i>Phalacrocorax varius</i>
pieb stilt	<i>Himantopus himantopus leucocephalus</i>
pieb tit	<i>Petroica macrocephala</i>
pukeko	<i>Porphyrio porphyrio melanotus</i>
red-billed gull	<i>Larus novarhollandiae scopulinus</i>
reef heron	<i>Egretta sacra</i>
rifleman	<i>Acanthisitta chloris</i>
shining cuckoo	<i>Chrysococcyx lucidus</i>
silveryeye	<i>Zosterops lateralis</i>
sooty shearwater	<i>Puffinus griseus</i>
South Island pieb oystercatcher	<i>Haematopus ostralegus finschii</i>
Southern black-backed gull	<i>Larus dominicanus</i>
spotless crake	<i>Porzana tabuensis</i>
tui	<i>Prosthemadera novaeseelandiae</i>
variable oystercatcher	<i>Haematopus unicolor</i>
wandering albatross	<i>Diomedea exulans</i>
welcome swallow	<i>Hirundo tabitica neoxena</i>
white-faced heron	<i>Ardea novaehollandiae</i>
white-fronted tern	<i>Sterna striata</i>
whitehead	<i>Moboua albicilla</i>

Introduced

Australian magpie	<i>Gymnorhina tibicen</i>
blackbird	<i>Turdus merula</i>
black swan	<i>Cygnus atratus</i>
California quail	<i>Lophortyx californica</i>
Canada goose	<i>Branta canadensis</i>
cape pigeon	<i>Daption capense</i>
chaffinch	<i>Fringilla coelebs</i>
feral pigeon	<i>Columba livia</i>
goldfinch	<i>Carduelis carduelis</i>
greenfinch	<i>Carduelis chloris</i>
hedge sparrow	<i>Prunella modularis</i>
house sparrow	<i>Passer domesticus</i>
mallard	<i>Anas platyrhynchos</i>
redpoll	<i>Carduelis flammea</i>
rook	<i>Corvus frugilegus</i>
skylark	<i>Alauda arvensis</i>
song thrush	<i>Turdus philomelos</i>
spur-winged plover	<i>Vanellus miles novaehollandiae</i>
starling	<i>Sturnus vulgaris</i>

turkey
yellowhammer

Meleagris gallopavo
Emberiza citrinella

Reptiles

Lizards

common gecko
common skink
forest gecko
ornate skink
spotted skink
Wellington green gecko

Hoplodactylus maculatus
Oligosoma nigriplantare polychroma
Hoplodactylus granulatus
Cyclodina ornata
Oligosoma lineocellatum
Naultinus elegans punctatus

Fish

banded kokopu
brown trout
giant bully
giant kokopu
inanga
koaro
lamprey
red-finned bully

Galaxias fasciatus
Salmo trutta
Gobiomorphus. gobioides
Galaxias argenteus
Galaxias maculatus
Galaxias brevipinnis
Geotria australis
Gobiomorphus huttoni

Appendix 5

REGIONALLY THREATENED ANIMALS IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT

(From Department of Conservation 1996a)

COMMON NAME	SCIENTIFIC NAME	REGIONAL MAINLAND STATUS (DOC 1996A)
Birds		
Australasian harrier	<i>Circus approximans gouldi</i>	Low risk
Bellbird	<i>Anthornis melanura</i>	Susceptible
Black-fronted dotterel	<i>Charadris melanops</i>	Susceptible
Black shag	<i>Phalacrocorax carbo</i>	Vulnerable
Fantail	<i>Rhipidura fuliginosa</i>	Low risk
Fluttering shearwater	<i>Puffinus gavia gavia</i>	Low risk
Grey warbler	<i>Gerygone igata</i>	Susceptible
Little shag	<i>Phalacrocorax melanoleucos</i>	Vulnerable
Long-tailed cuckoo	<i>Eudynamis taitensis</i>	Vulnerable
Marsh crake	<i>Porzana pusilla affinis</i>	Indeterminate
Morepork	<i>Ninox novaeseelandiae novaeseelandiae</i>	Low risk
New Zealand kingfisher	<i>Halcyon sancta vagrans</i>	Low risk
New Zealand pipit	<i>Antbus novaeseelandiae</i>	Susceptible
New Zealand shoveler	<i>Anas rhynchotis variegata</i>	Low risk
North Island rifleman	<i>Acanthisitta chloris granti</i>	Susceptible
Paradise shelduck	<i>Tadorna variegata</i>	Low risk
Pied shag	<i>Phalacrocorax varius</i>	Susceptible
Pied stilt	<i>Himantopus himantopus leucocephalus</i>	Low risk
Pied tit	<i>Petroica macrocephala macrocephala</i>	Susceptible
Pukeko	<i>Porphyrio porphyrio melanotus</i>	Low risk
Red-billed gull	<i>Larus novaezeelandiae scopulinus</i>	Low risk
Shining cuckoo	<i>Chrysococcyx lucidus lucidus</i>	Low risk
Silvereye	<i>Zosterops lateralis lateralis</i>	Low risk
Sooty shearwater	<i>Puffinus griseus</i>	Extinct
South Island pied oystercatcher	<i>Haematopus ostralegus finschii</i>	Susceptible
Southern black-backed gull	<i>Larus dominicanus</i>	Low risk
Spotless crake	<i>Porzana tabuensis plumbea</i>	Indeterminate
Spur-winged plover	<i>Vanellus miles novaehollandiae</i>	Low risk
Tui	<i>Prosthemadera novaeseelandiae</i>	Susceptible
Welcome swallow	<i>Hirundo tabitica neoxena</i>	Low risk
White-faced heron	<i>Ardea novaehollandiae novaehollandiae</i>	Low risk
Whitehead	<i>Moboua albicilla</i>	Susceptible
Reptiles		
Common gecko	<i>Hoplodactylus maculatus</i>	Low risk
Forest gecko	<i>Hoplodactylus granulatus</i>	Susceptible
Wellington green gecko	<i>Naultinus elegans punctatus</i>	Indeterminate
Ornate skink	<i>Cyclodina ornata</i>	Low risk
Spotted skink	<i>Oligosoma lineocellatum</i>	Susceptible
Invertebrate		
Katipo spider	<i>Latrodectus katipo</i>	Endangered

Appendix 6

PROTECTED NATURAL AREAS¹ (PNA) IN THE EASTERN WAIRARAPA ECOLOGICAL DISTRICT

(Source: Wassilief *et al.* 1986; Clark 1989; Ogle *et al.* 1990; DOC 1996a & b, and 1998; Townsend *et al.* 1997; Sawyer *et al.* 1998b)

¹ Conservation values are legally protected.

PNA NO. ¹	SITE NAME AND PROTECTION STATUS	STUDY SITES ²	CMS ³ / QEII REF. NO.	GRID REF. NZMS 260	AREA (ha)	ECOLOGICAL INFORMATION	VEGETATION TYPE
1	Greenhollow QEII O.S.C.	0532	TR 5/07/143	U25 836668	5.8	Podocarp-broadleaved forest on rolling hill country.	Totara-matai-(manuka) forest.Matai-tawa/mahoe forest.
2	Greenhollows QEII O.S.C.	-	TR 5/07/032 TR 5/07/92	U25 836664	4.35	Podocarp-broadleaved forest on rolling hill country.	Unknown.
3	Falls Bush QEII O.S.C.	-	TR 5/07/097a	U25 816652	2.7	Podocarp-broadleaved forest on rolling hill country.	Unknown.
4	Kohiku Stewardship	-	U25007	U25 766648 (approx.)	2.2196	Unknown; on rolling hill country and/or floodplain.	Unknown.
5	Falls QEII O.S.C.	511	TR 5/07/097b	U25 827640	15.5	Podocarp-broadleaved-kanuka forest on rolling hill country.	Unknown. Podocarp-broadleaved forest. Kanuka-kowhai(houhere) shrubland.
6	Benarty Bush QEII O.S.C.	0427	TR 5/07/146	U25 781612	6.6	Broadleaved forest on terrace.	(Kahikatea)/tawa forest.
7	Waihoki Bush QEII O.S.C.	0430	TR 5/07/147	U25 771579	70.2	Podocarp-broadleaved-kanuka forest on rolling hill country.	Matai forest.Kowhai-kanuka-totara forest.
8	Suckling Bush QEII O.S.C.	(adjacent to 321)	TR 5/07/230	T25 565578	15.45	Podocarp-broadleaved forest on rolling hill country. Birds include shining cuckoo, kingfisher.	Kahikatea/tawa forest.
9	Pakowhai QEII O.S.C.	0416	TR 5/07/137	U25 749572	7.9	Podocarp-broadleaved forest on rolling hill country.	(Rimu)-(kanukatea)/(tawa)-(hinau)-(rewarewa)-(kowhai) forest.
10	Pakowhai QEII O.S.C.	0416	TR 5/07/138	U25 754571	21.7	Podocarp-broadleaved forest on rolling hill country.	(Rimu)-(kanukatea)/(tawa)-(hinau)-(rewarewa)-(kowhai) forest.
11	Forest Flat Stewardship	320	T25022	T25 593567	11.6347	Riparian podocarp forest. Birds include kereru.	Kahikatea-matai-totara/hinau-mixed podocarps and broadleaved spp. forest.
12	Twin River 2 QEII O.S.C.	303	TR 5/07/06b	T25 644569	6.31	Podocarp-broadleaved forest on rolling hills and downs.	Kahikatea/matai-(totara)-(horoeaka) forest.
13	Twin River 1 QEII O.S.C.	-	TR 5/07/06a	T25 645557	2.56	Podocarp-broadleaved forest on rolling hills and downs.	Kahikatea/matai-(totara)-(horoeaka) forest.

¹ See Figure 5.

² From Sawyer *et al.* 1998.

³ CMS = Conservation Management Strategy (see DOC 1996a).

PNA NO. ¹	SITE NAME AND PROTECTION STATUS	STUDY SITES ²	CMS ³ / QEII REF. NO.	GRID REF. NZMS 260	AREA (ha)	ECOLOGICAL INFORMATION	VEGETATION TYPE
14	Lindis Bush QEII O.S.C.	503	TR 5/07/014.1-5	U25 822540	124.2	Broadleaved-manuka forest and shrubland on hill country and taipo. Plants include <i>Blechnum filiforme</i> .	Black beech forest. Kanuka-(manuka)/heketara-(kareao) shrubland.
15	Kebbell Memorial Bush QEII O.S.C.	309, 310	TR 5/07/261	T25 610518, T25 610511	77.823	Podocarp-broadleaved forest on rolling hill country. Birds include kereru, moreponk.	(Kahikatea)/horoeke forest. Kahikatea/tawa-matai forest. Kahikatea/matai-black maire-horoeka forest. (Rimu)-(totara)/tawa-(rewarewa) forest. (Rimu)-(northern rata)/tawa-(black maire)-(matai) forest.
16	Tauweru Stewardship	901	T25023	T25 640495	176.6452	Forest on hill country. Tawa-kamahi forest unusual in this district. Birds include kereru.	Black beech-(rewarewa)-(hinau)-(tawa) forest. Rimu-tawa-miro-kamahi forest.
17	Anerley QEII O.S.C.	1009	MS 5/07/105	U25 746455	4.9	Broadleaved forest on hill country.	Tawa forest.
18	Anerley QEII O.S.C.	-	MS 5/07/154	U25 758443	15.8	Podocarp-broadleaved forest on floodplain.	Unknown.
19	Wairere QEII O.S.C.	813, 816	MS 5/07/071	T25 502438	58.07	Podocarp-broadleaved forest on rolling hill country.	(Rimu)-kahikatea-totara/totara-kahikatea-tawa forest.
20	Mt Percy Bush QEII O.S.C.	1613	U26 843387	U26 843387	203	Forest and shrubland on hill country.	Kanuka forest and scrub.
21	Waio Bush QEII O.S.C.	1610	MS 5/07/211	U26 796346	58	Broadleaved forest on hill country. Plants include nikau.	Kanuka-kowhai forest.
22	Erindale Stewardship	1603	U26001	U26 782334 (approx.)	0.4173	Forest on hill country.	Pine forest.
23	Bagshot Bush QEII O.S.C.	1204	MS 5/07/190	T26 432333	15.608	Podocarp-broadleaved forest on terrace. Birds include kereru.	Kahikatea/tawa forest.
24	Bush Grove QEII O.S.C.	1419	MS 5/07/043	T26 565304	58.2	Broadleaved forest on hill country.	Unknown. Kowhai-kanuka-(manuka) forest. <i>Olearia paniculata</i> -kowhai shrubland.

¹ See Figure 5.

² From Sawyer et al. 1998.

³ CMS = Conservation Management Strategy (see DOC 1996a).

PNA NO. ¹	SITE NAME AND PROTECTION STATUS	STUDY SITES ²	CMS ³ / QEII REF. NO.	GRID REF. NZMS 260	AREA (ha)	ECOLOGICAL INFORMATION	VEGETATION TYPE
25	Castle Point 1 Stewardship	-	U26005	U26 818288 (approx.)	0.1532	Dune community on sandy shore.	Spinifex sedge/land.
26	Timakori QEII O.S.C.	1825	MS 5/07/091	T26 530287	59.5	Podocarp-broadleaved forest on taipo.	Kanuka-kowhai forest.
27	Castle Point Scenic Reserve	1605	U26007	U26 812284	61.2	Duneland, tussockland, coastal forest and herbfield on a coastal reef, sand beach, limestone hills and bluff. Plant species include: native carrot, type locality and only wild site of Castle Point groundsel (<i>Brachyglottis compacta</i>), <i>Coprosma acerosa</i> , <i>Elymus</i> sp., <i>Pimelea arenaria</i> , pingao. Birds include: banded dotterel, Caspian tern, reef heron, black shag (breeding), red-billed gull (breeding), white-fronted tern (breeding). Other animals: common green gecko.	Taupata- <i>Senecio compactus</i> -wharariki-silver tussock/ <i>Isolepis nodosa</i> sedge-shrubland. Taupata-tussock-iceplant grass-shrubland. Taupata-tussock-grass-iceplant grass-shrub. <i>Senecio</i> sp.-wharariki-grass- <i>Aplium</i> sp.-iceplant shrubland. <i>Poa</i> sp./spp. grassland.Kanuka-kawakawa-ngaio-poroporo-toetoe-flax shrubland. Openland/iceplant herbfield.
28	Te Roto Bush QEII O.S.C.	1824	MS 5/07/116	T26 490283	10.2	Podocarp-broadleaved forest on hill country.	Kanuka treeland.
29	Beuley Taipo QEII O.S.C.	1429	MS 5/07/094	T25 491448	41	Podocarp-broadleaved forest on taipo. Plants include <i>Brachyglottis greyi</i> , <i>Wahlenbergia</i> sp., <i>Epilobium</i> sp., <i>Cheilanthes distans</i> . Birds include kereru.	Houhere-kowhai-mahoe forest. Forest.
30	- QEII O.S.C.	837	MS 5/07/072	T26 627247	2.9	Podocarp-broadleaved forest on rolling hill country.	Totara/tawa-totara forest.
31	Tinui Conservation Covenant	1505, 1603, 2003a, 2003b, 2003c	U26004	U26 742285 U26 745304 U26 778308 U26 747309 U26 762322	440.1	Forest on hill country and gullies.	Black beech-(rewarewa)-(hinau)-(tawa) forest. Black beech-(rewarewa)/kanuka forest. ffRewarewa-manuka forest.Kanuka-(kamahi)-(porokaitiwhiri)-(mahoe)-(mapou) forest.

¹ See Figure 5.

² From Sawyer et al. 1998.

³ CMS = Conservation Management Strategy (see DOC 1996a).

PNA NO. ¹	SITE NAME AND PROTECTION STATUS	STUDY SITES ²	CMS ³ / QEII REF. NO.	GRID REF. NZMS 260	AREA (ha)	ECOLOGICAL INFORMATION	VEGETATION TYPE
32	Otahome Stewardship	-	U26008	U26 744234	1.1622	Paddock; low hills.	Unknown.
33	Pakaraka Bush QEII O.S.C.	-	MS 5/07/117	T26 375199	9.3284	Podocarp-broadleaved forest on hill country.	Unknown.
34	Cavelands QEII O.S.C.	1704	MS 5/07/093	T26 358174	2.175	Podocarp-broadleaved forest on rolling hill country.	Totara-kowhai-kanuka forest.
35	Seaview QEII O.S.C.	1433	MS 5/07/084	T26 627247	51.7	Broadleaved forest on rolling hill country.	Rewarewa-hinai/kanuka forest.
36	Rewa Bush Stewardship	1911	T26008	T26 610150	1288.32	Forest on hill country.	(Rimu)-(kahikatea)-(miro)-(matai)-(totara)-(rewarewa) forest. Black beech-(<i>Mida salicifolia</i>)-(hinai) forest.
37	Ngahere Bush QEII O.S.C.	-	MS 5/07/120	T26 490108	6.1	Broadleaved forest on rolling hill country.	Unknown.
38	Hinewaka QEII O.S.C.	2241	CA 5/07/065	T27 354097	5.42	Broadleaved forest on rolling hill country.	Totara-kahikatea treeland and forest.
39	Strathmiglo Bush QEII O.S.C.	-	MS 5/07/172	T27 652090	14.9	Podocarp-broadleaved forest on hill country.	Unknown.
40	Ahiaruhe Bush QEII O.S.C.	2222	MS 5/07/177	S27 290085	6.7	Broadleaved forest on rolling downs.	Kanuka-(totara) forest.
41	Admiral Bush QEII O.S.C.	2245	MS 5/07/173	T27 334081	3.0581	Forest on rolling hill country and downland.	Kanuka-totara forest.
42	- QEII O.S.C.	2223	CA 5/07/111	S27 277049	6.2	Podocarp-broadleaved forest on downland.	Ngaio-kanuka-(totara) forest.
43	Tawera QEII O.S.C.	2224	CA 5/07/067	S27 260018	3.51	Broadleaved forest on hill country and downland.	Totara-kanuka forest. Broadleaved-(podocarp) forest.
44	Ruamahanga Conservation Covenant	2326, 2328, 2408	T27008	T27 480014	180.985	Forest on floodplain, rolling downs and gullies. Birds include kereru.	(Kahikatea)-(rimu)/black beech-(rewarewa) forest. Kahikatea/black beech-matai-rimu-(putaputaweta) forest. Black beech forest.
45	Stansborough Bush QEII O.S.C.	2419a	CA 5/07/171	T27 541005	4.7	Forest on rolling hill country.	Black beech forest. Putaputaweta-whauwhaupaku-manuka shrubland.
46	Te Apti Bush QEII O.S.C.	2419a	CA 5/07/233	T27 540005	3.5	Forest on rolling hill country.	Black beech forest. Putaputaweta-whauwhaupaku-manuka shrubland.

¹ See Figure 5.

² From Sawyer et al. 1998.

³ CMS = Conservation Management Strategy (see DOC 1996a).

PNA NO. ¹	SITE NAME AND PROTECTION STATUS	STUDY SITES ²	CMS ³ / QEII REF. NO.	GRID REF. NZMS 260	AREA (ha)	ECOLOGICAL INFORMATION	VEGETATION TYPE
47	Rocky Hills QEII O.S.C.	2320	MS 5/07/019	T27 439975	108	Podocarp-beech forest on rolling hill country.	Black beech-black maire forest. Rimu-rewarewa-totara-kahikatea forest.
48	Glendoon Bush QEII O.S.C.	2226	So 5/07/148	S27 253958	4.308	Podocarp-broadleaved forest on terrace.	Totara-kanuka forest.
49	Ahi Paku QEII O.S.C.	2229	So 5/07/064	S27 288956	17.3	Podocarp-broadleaved forest on rolling hill country.	Matai-titoki-mahoe-totara-rewarewa-black maire forest. Kanuka-kohuhu-whauwhaupaku forest.
50	Pukera Bush QEII O.S.C.	2232	So 5/07/282	S27 283956	3.4	Podocarp-broadleaved forest on rolling hill country.	Kahikatea/totara-kanuka-(matai) forest.
51	Spring Rock QEII O.S.C.	2226	So 5/07/075	S27 250955	3.8	Podocarp-broadleaved forest on terrace.	Totara-kanuka forest.
52	Oystershell QEII O.S.C.	2226	So 5/07/074	S27 250952	2.9	Podocarp-broadleaved forest on terrace.	Totara-kanuka forest.
53	Taharoa QEII O.S.C.	2233	So 5/07/063	S27 290950	21.9	Broadleaved and exotic forest on rolling hill country.	Manuka-kanuka-(titoki)-(kowhai)-(ti kouka) tree -shrubland.
54	Spring Grove QEII O.S.C.	2231	So 5/07/085	S27 262946	4.647	Broadleaved forest on rolling hill country.	Kanuka forest.
55	Rocky Hills Sanctuary Area	2316	T27001	T27 416945	403.6106	Forest on hill country and taipos. Birds include kereru.	Miro-rimu-totara forest.
56	Blue Rock Stewardship (near 2703)		S27023	S27 119845 (approx.)	0.0260	Unknown; on rolling hill country.	Unknown.
57	Kaikuri QEII O.S.C.	-	So 5/07/030	T27 316837	1.6	Broadleaved forest and shrubland on hill country.	Unknown.
58	Waivingaia Stewardship	-	T27003	T27 457835 (approx.)	1.9222	Paddock on hill country.	Unknown.
59	Ruatuna QEII O.S.C.	2704	So 5/07/183	S27 130830	15.588	Beech-podocarp-broadleaved forest on terrace.	Black beech-manuka-kanuka forest.
60	Greycliffs QEII O.S.C.	2706	So 5/07/080	S27 126815	28	Beech-broadleaved forest on rolling hill country.	Black beech forest.
61	Chasm Bush QEII O.S.C.	3309	So 5/07/204	S28 092794	22.5	Broadleaved-beech forest on hill country.	Mixed broadleaved-beech forest.
62	- QEII O.S.C.	3422a	So 5/07/175	S28 178748	18	Wetland ponds and shrubland on floodplain.	Manuka shrubland. <i>Carex</i> spp.-raupo tussockland.

¹ See Figure 5.

² From Sawyer *et al.* 1998.

³ CMS = Conservation Management Strategy (see DOC 1996a).

PNA NO. ¹	SITE NAME AND PROTECTION STATUS	STUDY SITES ²	CMS ³ / QEII REF. NO.	GRID REF. NZMS 260	AREA (ha)	ECOLOGICAL INFORMATION	VEGETATION TYPE
65	Pahaoa Scientific Reserve	3604	T28001	T28 357745	7.68	Duneland on coastal platform. Plants include pingao. Potential altitudinal sequence in combination with indigenous coastal shrubland to northwest.	<u>Spinifex-pingao sedge-grassland.</u> <u>Lupin/marram shrub-grassland.</u>
66	M.and R. Southey Masterton District Council Protective Covenant	1907	-	T26 574159	20	Beech forest in gullies.	<u>Black beech forest.</u>
67	Razorback QEII OSC	431	-	U25 780554	54.3	Podocarp and beech forest on hill country.	Red and silver beech forest. Miro and matai. Podocarp forest.

¹ See Figure 5.

² From Sawyer et al. 1998.

³ CMS = Conservation Management Strategy (see DOC 1996a).

Appendix 7

OTHER AREAS OF BIOLOGICAL IMPORTANCE IN EASTERN WAIRARAPA ECOLOGICAL DISTRICT

1 High

TARAORA JUNCTION - MANGATITI STREAM SHRUBLAND

Site No: EW0422 **Grid ref:** U25 745674 **Source:** Sawyer *et al.* 1998
Area: 100 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 200 m
Other landform: Gully, sideslope, river terrace **Land system:** Rolling hill country
Principal landform: Spur

Vegetation type: Open forest, shrubland, treeland: tree-shrubland.

Dominant species: *Leptospermum scoparium*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Pennantia corymbosa*, *Carpodetus serratus*, *Blechnum fluviatile*, grass, *Hoberia populnea*.

Other species: Not known.

Significance: Presence of rifleman is unusual in Ecological District (Isobel Gabites 30/11/94). Scrub is now primarily on true left (minor patches on true right). Core block is fenced, but cattle grazing, so just unpalatable. Good profile in stream: heron, shag, kingfisher, ducks. Birds in scrub: riroriro.

Comments: Dead trees throughout suggest site has been burnt - no sign of pale trees when visited. Birds in scrub: silvereye, blackbird, starling, magpie.

WAIHOKI HILL SHRUBLAND

Site no: EW0510 **Grid ref:** U25 800630 **Source:** Sawyer *et al.* 1998
Area: 250 ha **Bioclimatic zone:** Lowland; semi-coastal **Altitude:**
Other landform: Topslope, ridgeline, gully, valley **Land system:** Hill country
Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Pinus radiata*, *Dacrydium dacrydioides*, *Prumnopitys taxifolia*, *Knightia excelsa*, *Beilschmiedia tawa*, *Weinmannia racemosa*, *Elaeocarpus dentatus*.

Other species: *Hedycarya arborea*, *Pittosporum eugenioides*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Olearia rani*, *Beilschmiedia tawa*, *Weinmannia racemosa*, *Sophora tetraptera*, *Geniostoma rupestre* var. *ligustrifolium*, *Melicytus ramiflorus*.

Significance: Large areas of regenerating scrub and forest.

Comments: Mixed forest & scrub. Maybe a valuable site with *Weinmannia racemosa* and *Beilschmiedia tawa* present in the canopy. Not fenced and grazed. Some exotics present throughout the site. Sandstone bluffs throughout site.

PAKOWHAI STREAM / TE TUMU

Site No: EW601 & 601a&b **Grid ref:** U25 915627 **Source:** Sawyer *et al.* 1998
Area: 430 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Bluff, sideslope, gully, valley, stream channel **Land system:** Dissected rolling hill country, low Taipo
Principal landform: Slips car

Vegetation type: Tall closed forest, open forest, shrubland.

Dominant species: *Beilschmiedia tawa*, *Kunzea ericoides*, *Dacrydium cupressinum*, *Podocarpus totara*, *Dacrydium dacrydioides*.

Other species: *Notofagus solandri*, *Melicytus ramiflorus*, *Cyathea medullaris*, *Lycopodium scarisum*,

Knightsia excelsa, *Carpodetus serratus*, *Griselinia littoralis*, *Myoporum laetum*, *Schefflera digitata*, *Alectryon excelsus*, *Fuchsia excorticata*, *Kunzea ericoides*, *Corynocarpus laevigatus*, *Dicksonia squarrosa*, *Hoberia populnea*, *Olearia rani*, *Cyathea dealbata*, *Hedycarya arborea*, *Weinmannia racemosa*, *Cordyline australis*, *Pennantia corymbosa*, *Prumnopitys*, *Nothofagus solandri*, *Pseudopanax crassifolius*, *Nestegis lanceolata*, *Laurelia novae-zelandiae*, *Myrsine australis*, *Olearia virgata*, *Coprosma robusta* × *C. propinqua*, *Coprosma rhamnoides*, *Urtica ferox*, *Macropiper excelsum*, *Coprosma areolata*, *Geniostoma rupestre* var. *ligustrifolia*, *Raukaua anomalus*, *Brachyglottis repanda*, *Ozothamnus leptophyllus*, *Helichrysum lanceolatum*, *Leucopogon fasciculatus*, *Pbormium* sp., *Coprosma robusta*, *Leptospermum scoparium*, *Prumnopitys spicata*.

Significance: Unusual species assemblage *Olearia virgata*, *Gaultheria antipoda*, *Olearia solandri*, *Pomaderris* sp. Contiguous with Eastern Hawkes Bay sites: U25/1 and U15/9. Not a key site. Right on edge of Ecological District. Not fenced and grazed. Primary and secondary. Kereru present. Contiguous with Eastern Hawkes Bay sites: U25/9 and 0601.

Recommendation: Needs field check, may be one of Eastern Hawkes Bay RAPs.

Comments: Reference: Maxwell *et al.* 1993.

GLENCOE SHRUBLAND

Site No: EW0526 **Grid ref:** U25 881625 **Source:** Sawyer *et al.* 1998
Area: 150 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Ridgeline, crest, sideslope, gully **Land system:** Hill country
Principal landform: Spur

Vegetation type: Shrubland, closed forest.

Dominant species: *Kunzea ericoides*, *Sophora* sp., *Leptospermum scoparium*.

Other species: Not known.

Significance: Not known.

Comments: Steep bluffs and active slips along the southern side of the site.

WAIOKURA STREAM SHRUBLAND

Site no.: EW0508 **Grid ref:** U25 820610 **Source:** Sawyer *et al.* 1998
Area: 50 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope, toeslope, spurline **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest with scattered emergents, shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Pseudopanax crassifolius*.

Other species: *Podocarpus totara*, *Leucopogon fasciculatus*, *Hoberia populnea*, *Cordyline australis*, *Ozothamnus leptophyllus*, *Kunzea ericoides*, *Leptospermum scoparium*, *Pseudopanax crassifolius*.

Significance: Not known.

BRANSCOMBE BUSH

Site no.: EW0525 **Grid ref:** U25 890605 **Source:** Sawyer *et al.* 1998
Area: 30 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Hill country
Principal landform: Sideslope

Dominant species: *Prumnopitys taxifolia*, *Knightsia excelsa*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Laurelia novae-zelandiae*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Cordyline australis*.

Other species: *Corynocarpus laevigatus*, *Hedycarya arborea*, *Alectryon excelsus*, *Melicytus ramiflorus*, *Hebe* sp., *Rhopalostylis sapida*, *Pseudopanax crassifolius*, *Cordyline australis*, *Cyathea medullaris*, *Cyathea dealbata*, *Coprosma rhamnoides*, *Cyathea cunninghamii*.

Significance: Key site. Unusual landform. Presence of unusual species for ED (*Rhopalostylis sapida*, *Laurelia novae-zelandiae*, *Corynocarpus laevigatus*, *Cyathea cunninghamii*).

KERERU STREAM

Site no.: EW0604

Grid ref: U25 954604

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, valley
taipo

Land system: Rolling hill country,

Principal landform: Gully

Dominant species: *Leptospermum scoparium*, *Nothofagus solandri* (local), *Nothofagus solandri*, *Podocarpus totara*, *Dacrydium cupressinum*, *Beilschmiedia tawa*, *Rhopalostylis sapida* (locally common), *Knightia excelsa* (occasional), *Alectryon excelsus* (occasional), *Dacrycarpus dacrydioides* (scattered).

Other species: *Cordyline australis*, *Kunzea ericoides*, *Ozothamnus leptophyllus*, *Hoberia populnea*, *Myoporum laetum*, *Asplenium oblongifolium*, *Laurelia novae-zelandiae*, *Juncus kraussii* var. *australiensis*, *Juncus effusus*, *Metrosideros colensoi*, *Coprosma areolata*, *Urtica ferox*, *Prumnopitys taxifolia*, *Helicbrysum lanceolatum*, *Coprosma rubra*, *Asplenium bookerianum*, *Pteris tremula*, *Ranunculus repens*, *Clematis paniculata*, *Prunella vulgaris*, *Ranunculus reflexus*, *Metrosideros diffusa*, *Dichondra repens*, *Dacrydium cupressinum*, *Raukaua anomalus*, *Pseudopanax crassifolius*, *Pittosporum tenuifolium*, *Leucopogon fasciculatus*, *Carmichaelia australis*, *Adiantum cunninghamii*, *Passiflora tetrandra*, *Macropiper excelsum*, *Senecio jacobaea*, *Hierochloe redolens*, *Melicytus ramiflorus*, *Pittosporum eugenioides*, *Cyathea dealbata*, *Asplenium flaccidum*, *Pennantia corymbosa*, *Asplenium bulbiferum*, *Ripogonum scandens*, *Hypolepis ambigua*, *Gnaphalium gymnocephalum*, *Rubus cissoides*, *Alectryon excelsus*, *Geniostoma rupestre* var. *ligustrifolium*, *Phymatosorus scandens*, *Echinopogon ovatus*, *Uncinia uncinata*, *Freycinetia banksii*, *Carpodetus serratus*, *Microlaena avenacea*, *Hedycarya arborea*, *Cyathea medullaris*.

Significance: Key site. Species richness, relatively good example of these vegetation types. Use of large numbers of birds species: bellbird, tui, kereru, kingfisher, fantail, Australasian harrier, ruru. Also puriri moth present. Goats & cattle present.

Comments: Birds:blackbird, silvereeye, chaffinch, starling, magpie, yellowhammer. Goats & cattle present.

BRANSCOMBE BUSH

Site no.: EW0523

Grid ref: U25 881596

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Sideslope

Dominant species: *Prumnopitys taxifolia*, *Knightia excelsa*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Laurelia novae-zelandiae*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Cordyline australis*.

Other species: *Elaeocarpus dentatus*, *Corynocarpus laevigatus*, *Hedycarya arborea*, *Alectryon excelsus*, *Hebe* sp., *Rhopalostylis sapida*, *Pseudopanax crassifolius*, *Cordyline australis*, *Cyathea medullaris*, *Cyathea cunninghamii*, *Coprosma rhamnoides*, *Ulex europaeus*.

Significance: Unusual canopy composition.

Comments: Not fenced, grazed.

OWAHANGA RIVER GORGE SHRUBLAND

Site no.: EW0524

Grid ref: U25 873592

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Cordyline australis*, *Phormium cookianum*, *Clematis paniculata*, *Brachyglottis repanda*.

Other species: *Podocarpus totara*, *Brachyglottis repanda*, *Cordyline australis*, *Myoporum laetum*, *Hebe stricta*, *Phormium cookianum*, *Olearia paniculata*, *Carmichaelia australis*, *Ulex europaeus*.

Significance: Key site. Significant, unusual geological landform. The gorge is the result of uplift and subsequent cutting through of the Owahanga River. Presence of unusual species for ED associated with bluffs and steep rock faces.

WAIHOKI VALLEY

Site no.: EW0415 **Grid ref:** U2 **Source:** Sawyer *et al.* 1998
Area: 25 ha **Bioclimatic zone:** Semi-coastal, lowland **Altitude:** 330 m
Other landform: Foothlope, toeslope **Land system:** Hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Beilschmiedia tawa*, *Elaeocarpus dentatus*, *Nestegis lanceolata*, *Dacrydium cupressinum*, (*Metrosideros robusta*), *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*.

Other species: *Juncus edgarae*, *Berberis glaucocarpa*, *Aristolelia serrata*, *Leptospermum scoparium*, *Cortaderia toetoe*, *Metrosideros robusta*, *Griselinia lucida*, *Knightia excelsa*, *Kunzea ericoides*, *Dacrydium cupressinum*, *Myrsine australis*, *Carpodetus serratus*, *Ozothamnus leptophyllus*, *Nestegis lanceolata*, *Hoberia populnea*, *Coprosma robusta*, *Beilschmiedia tawa*, *Pseudopanax crassifolius*, *Elaeocarpus dentatus*, *Ulex europaeus*, *Dacrycarpus dacrydioides*, *Pittosporum eugenioides*, *Cyathea dealbata*, *Cyathea medullaris*, *Prumnopitys taxifolia*.

Significance: Key site. Presence of northern rata is unusual for ED. Relatively intact emergent podocarp - tawa forest. Presence of rare emergent rata, *Dacrycarpus dacrydioides*, *Prumnopitys spicata*.

Comments: Potential rare plants site. Massive rata emergent at eastern end. Owner would like to fence it but (i) difficulty with slip area on back boundary, (ii) no discretionary finance.

Notes: Ref. Ecol. Site Inventory No. 1182.

SPUR ROAD SHRUBLAND

Site no.: EW0504 **Grid ref:** U25 835565 **Source:** Sawyer *et al.* 1998
Area: 220 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:**
Other landform: **Land system:**
Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Kunzea ericoides*, *Olearia furfuracea*, *Pseudopanax arboreus*, *Leptospermum scoparium*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Weinmannia racemosa*.

Other species: *Brachyglottis repanda*, *Pseudopanax arboreus*, *Phormium cookianum*, *Pinus radiata*, *Coprosma robusta*, *Coprosma grandifolia*, *Pomaderris aff. phyllicifolia*, *Elaeocarpus dentatus*, *Knightia excelsa*, *Coprosma rhamnoides*, *Coriaria arborea*, *Sophora tetraptera*, *Leucopogon fasciculatus*, *Ozothamnus leptophyllus*.

Significance: Contains species unusual for ED: *Celmisia spectabilis*, *Olearia furfuracea*. Key site in conjunction with 0502.

Comments: Taller trees mostly in the gullies. Very large leaved form of *celmisia* in this site.

RAKAUHAU SHRUBLAND

Site no.: EW0528, 0514 **Grid ref:** U25 909558 **Source:** Sawyer *et al.* 1998
Area: 3700 ha **Bioclimatic zone:** Lowland **Altitude:**
Other landform: Spur, gully head, sideslope, hillcrest, ridge line, crest, gully **Land system:** Hill country
Principal landform: Ridge crest, spur

Vegetation type: Shrubland, closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Ozothamnus leptophyllus*, *Ulex europaeus*, *Leucopogon fasciculatus*, *Pomaderris aff. phyllicifolia*, *Clematis forsteri*, *Parsonsia heterophylla*, *Knightia excelsa*, *Cordyline australis*, *Hedycarya arborea*, *Nothofagus solandri*, *Griselinia sp.*, *Sophora sp.*

Other species: *Carpodetus serratus*, *Brachyglottis repanda*, *Meliccytus ramiflorus*, *Macropiper excelsum* (uncommon), *Cyathea dealbata*, *Hoberia populnea*, *Rhopalostylis sapida* (uncommon), *Myoporum laetum* (uncommon), *Pittosporum tenuifolium*, *Coprosma rhamnoides*, *Parsonsia capsularis*, *Helichrysum lanceolatum*, *Olearia rani*, *Olearia paniculata*, *Hebe stricta*, *Phormium cookianum*, *Coprosma robusta*, *Pseudopanax crassifolius*, *Rubus schmidelioides*, *Cortaderia toetoe*.

Significance: Key site. *Olearia serpentina* (or variation on *Olearia virgata*). Large area of scrub and forest, contiguous with 0514 which has a total area of about 37,000 ha. Presence of coastal spp. unusual in ED (*Rhopalostylis sapida* and *Olearia paniculata*). Birds: pipit, bellbird, silvereve, grey warbler, quail, fantail, whitehead, hawk, chaffinch, blackbird, lark, shining cuckoo, tui, thrush. Possible green gecko sighting. Pine wildings through S & SW areas of *Leptospermum scoparium* shrub. Entire Owahanga shrubland regenerating well; most streams and gullies have *Nothofagus solandri*. Clearance for pine afforestation may be imminent.

Comments: Birds: pipit, bellbird, silvereve, grey warbler, quail, fantail, whitehead, hawk, chaffinch, blackbird, lark, shining cuckoo, tui, thrush.

RAZORBACK

Site no.: EW0431a&b **Grid ref:** U25 784555 **Source:** Current survey
Area: 200 ha **Bioclimatic zone:** **Altitude:** 220-500 m
Other landform: **Land system:** Moderately steep hills, steep hills
 Principal landform: Hillslope

Vegetation types: 1. Manuka-tauhinu-gorse scrub [Understorey: pasture]
2. Manuka-kanuka-(houhere) scrub [Understorey: putaputaweta-mingimingi/*Coprosma rhamnoides*/*Paesia scaberula*]

Notes: Area grazed, low species diversity, many vehicle tracks and clearings.

BENMORE - TIRAUMEA SHRUBLAND

Site no.: EW0401 **Grid ref:** T25 670545 **Source:** Sawyer *et al.* 1998
Area: 400 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 410 m
Other landform: Gully **Land system:** Rolling hill country
 Principal landform: Spur

Vegetation type: Shrubland, closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Ulex europaeus*.

Other species: *Melicytus ramiflorus*, *Cyathea medullaris*, *Ulex europaeus*, *Knightia excelsa*, *Dicksonia squarrosa*, *Carex*, *Pittosporum tenuifolium*, *Brachyglottis repanda*, *Cyathea dealbata*, *Olearia virgata*, *Carex geminata*, *Pseudopanax crassifolius*, *Cordyline banksii*, *Leucopogon fasciculatus*.

Significance: Significant plant: *Olearia virgata*. Area at present has a significant gorse component, but is a relatively large area of regenerating scrub and forest. South facing position best quality. Goats present.

Notes: Ref. Ecol. Site Inventory No. 1188.

TE HOE VALLEY BUSH

Site no.: EW0316 **Grid ref:** T25 573539 **Source:** Sawyer *et al.* 1998
Area: 40 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 408 m
Other landform: Sideslope, gully **Land system:** Rolling hill country
 Principal landform: Topslope

Dominant species: *Dacrycarpus dacrydioides*, *Dacrydium cupressinum*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Podocarpus totara*.

Other species: *Nestegis lanceolata*, *Laurelia novaezelandiae*, *Hedycarya arborea*, *Knightia excelsa*, *Hoberia populnea*, *Schefflera digitata*, *Pseudopanax crassifolius*, *Pittosporum eugenioides*, *Fuchsia excorticata*, *Cordyline australis*, *Brachyglottis repanda*, *Coprosma rhamnoides*, *Melicope simplex*, *Cyathea medullaris*, *Cyathea cunninghamii*.

Significance: Presence of kereru and rifleman. Natural spring is dammed, forming attractive wetland, with raupo, flax, and open water adjacent to forest. Birds: shining cuckoo, riroriro, fantail.

Comments: Broken uneven canopy from aerial photo. Mature canopy trees. Unfenced - gully and eastern fringe open treeland with no understorey.

WAI ITI BUSH A

Site no.: EW0315

Grid ref: T25 596538

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Nestegis lanceolata*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Melicope simplex*, *Coprosma rotundifolia*, *Raukaua anomalus*, *Urtica ferox*.

Other species: *Fuchsia excorticata*, *Hymenophyllum pulcherrimum*, *Coprosma tenuicaulis*, *Olearia rani*, *Clematis foetida*, *Rubus schmidelioides*, *Hydrocotyle*, *Blechnum chambersii*, *Blechnum fluviatile*, *Urtica ferox*, *Pennantia corymbosa*, *Coprosma areolata*, *Pittosporum eugenioides*, *Brachyglottis repanda*, *Coprosma rhamnoides*, *Carpodetus serratus*, *Earina autumnalis*, *Earina mucronata*, *Coprosma robusta*, *Myrsine australis*, *Lophomyrtus obcordata*, *Pennantia corymbosa*, *Coprosma areolata*, *Coprosma rubra*, *Hoberia populnea*, *Coprosma rhamnoides*, *Kunzea ericoides*, *Pseudopanax crassifolius*, *Parsonsia capsularis*, *Streblus heterophyllus*, *Asplenium bookerianum*, *Leptospermum scoparium*, *Juncus edgarrae*, *Carex geminata*, *Metrosideros diffusa*, *Knightia excelsa*, *Schefflera digitata*, *Coprosma grandifolia*, *Podocarpus totara*, *Asplenium polyodon*.

Significance: Key site. Species rich. *Coprosma tenuicaulis* present, not common in ED. QEII surveyed but not yet registered.

Comments: Stock have recently been present. Selectively logged - stumps present throughout.

WAI ITI BUSH B

Site no.: EW0314

Grid ref: T25 602537

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Pseudopanax crassifolius*, *Sophora tetraptera*, *Kunzea ericoides*, *Coprosma rubra*, *Raukaua anomalus*, *Melicope simplex*.

Other species: *Earina mucronata*, *Nestegis lanceolata*, *Olearia rani*, *Hydrocotyle* sp., *Raukaua anomalus*, *Prumnopitys ferruginea*, *Jovellana repens*, *Myrsine australis*, *Carmichaelia australis*, *Cordyline australis*, *Dacrycarpus dacrydioides*, *Carex geminata*, *Urtica ferox*, *Coprosma robusta*, *Pittosporum tenuifolium*, *Asplenium flaccidum*, *Lophomyrtus obcordata*, *Rubus schmidelioides*, *Cyathea dealbata*, *Schefflera digitata*, *Earina autumnalis*, *Coprosma rhamnoides*, *Coprosma rotundifolia*, *Coprosma rubra*, *Leucopogon fasciculatus*, *Melicope simplex*, *Coprosma areolata*, *Melicytus ramiflorus*, *Streblus heterophyllus*, *Brachyglottis repanda*, *Sophora tetraptera*, *Leptospermum scoparium*, *Hoberia populnea*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Dacrydium cupressinum*, *Pseudopanax crassifolius*, *Coprosma crassifolia*, *Clematis paniculata*, *Pittosporum eugenioides*, *Coprosma propinqua*, *Beilschmiedia tawa*, *Dicksonia squarrosa*, *Dicksonia fibrosa*, *Pellaea rotundifolia*.

Significance: Same as for 0315. Fenced. Highly natural primary forest. QEII surveyed but not yet registered.

THREE KINGS SCRUB

Site no.: EW0502¹

Grid ref: U25 815565

Source: Current survey

Area: 100 ha

Bioclimatic zone:

Altitude: 520-300 m

Other landform: Sideslope, gully

Land type: Steep hills

Principal landform: Steep bluffs

Vegetation types: 1. Kanuka-gorse-tauhinu/Coprosma rhamnoides-mingimingi-prickly mingimingi/pasture-bare ground scrub.
2. (Kanuka)-(gorse)-(mingimingi)/*Celmisia spectabilis* rockland.
3. Kanuka-(porokaiwhiri)-manuka/mingimingi-prickly mingimingi/Coprosma rhamnoides-ninia/puniu-matata-(kiwikiwi)-bare ground scrub.
4. Gorse-(manuka)-(Ozothamnus leptophyllus) scrub.

¹ Part of EW0502 has been identified as RAP 3 Rara Bush.

Other species: Rewarewa, black beech, monterey pine.

Significance: *Celmisia spectabilis*.

Comments: Birds: silvereye, sparrow, magpies.

Notes: Heavily grazed by goats, scattered wilding pines; low species diversity; sparse understorey.

OWAHANGA RIVER MOUTH

Site no.: EW0606

Grid ref: U25 934533

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Crest, blowout, treat

Land system: Duneland, terrace

Principal landform: Ridge

Vegetation type: Tussockland.

Dominant species: *Juncus kraussii* var. *australiensis*, *Ammophila arenaria*.

Other species: *Plagianthus divaricatus*, *Pbormium cookianum*, *Muehlenbeckia complexa*.

Significance: Possible estuarine environment at Owahanga River Mouth. Sand river mouth, diverse avifauna in good numbers, a feeding area. Good numbers and wide variety of bird species. Good feeding areas for all species. WERI Ranking = 2. SSWI Ranking = Moderate.

Comments: NZWSNHR, CRI 09/0036, SSWI 37/19 2.

Notes: Ref. Ecol. Site Inventory No. 105.

NEW HOMESTEAD' TUSSOCKLAND DUNE FLAT

Site no.: EW0610

Grid ref: U25 931529

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Sideslope, footslope, outcrop

Land system: Duneland, rolling hill country

Principal landform: Dune

Vegetation type: Tussockland.

Dominant species: *Muehlenbeckia complexa*, *Juncus kraussii* var. *australiensis*, *Ammophila arenaria*, *Pbormium cookianum*, *Coprosma acerosa*, *Muehlenbeckia axillaris*, *Spinifex sericeus*, *Hebe stricta* var. *macroura*, *Cyperus ustulatus*.

Other species: Not known.

Significance: Key site. *Coprosma acerosa*. *Hoplodactylus maculatus* sign present - no animals seen.

PAKOWHAI

Site no.: EW0432

Grid ref: U25 770525

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone: Semi-coastal, lowland

Altitude:

Other landform: Ridgeline, spur, gully, sideslope, terrace tread

Land system: Taipo, terrace

Principal landform: Ridge crest

Site description: 3 patches of forest surrounded by shrubland.

Vegetation type: Tall closed forest, scrub.

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*, *Leptospermum scoparium*, *Ulex europaeus*.

Other species: *Knightia excelsa*, *Alectryon excelsus*, *Leucopogon fasciculatus*.

Significance: Not known.

PAKOWHAI RIVER BUSH / SHRUBLAND

Site no.: EW0501, 0436

Grid ref: U25 780508

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spurline, spurend, sideslope, gully

Land system: Rolling hill country

Principal landform: Ridgeline and gully

Vegetation type: Shrubland, tall closed forest with scattered emergents, tall closed forest, scrub.

Dominant species: *Kunzea ericoides*, *Dacrycarpus dacrydioides*, *Knightia excelsa*, *Nothofagus solandri*, *Beilschmiedia tawa*, *Elaeocarpus dentatus*, *Leptospermum scoparium*.

Other species: *Podocarpus totara*, *Sophora microphylla*, *Cordyline australis*, *Hedycarya arborea*, *Hoheria populnea*, *Alectryon excelsus*, *Melicope simplex*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Olearia rani*, *Ozothamnus leptophyllus*, *Ulex europaeus*, *Phormium cookianum*. Birds: kereru

Significance: Birds: fantail, grey warbler, pied tit.

Comments: Area is a mixture of bush and shrub, with the shrub being quite heavily browsed. Site is along the Pakowhai River. Site may not exist now - not as much as what is marked on the map was detectable on the aerial photographs. Birds: silvereye.

PAHAU SWAMP

Site no.: EW0824

Grid ref: T25 505505

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully floor.

Land system: Terrace?, rolling hill country

Principal landform: Tread

Site description: Aerial photo 27C; 28C.

Vegetation type: Shrubland, tussockland.

Dominant species: *Leptospermum scoparium*, *Podocarpus totara*, *Carex secta*, *Carex geminata*, *Typha orientalis*, *Phormium tenax*.

Other species: *Typha orientalis*, *Ulex europaeus*, *Salix* sp.

Significance: Not known.

Comments: Willow present in site.

INVERNELL BUSH

Site no.: EW1001

Grid ref: T25 694497

Source: Sawyer *et al.* 1998

Area: 18 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: 694497

Land system: Rolling hill country

Principal landform: Slumped terrace

Dominant species: *Knightia excelsa*, *Beilschmiedia tawa*.

Other species: *Prumnopitys taxifolia*, *Laurelia novae-zelandiae?*, *Macropiper excelsum*, *Coprosma areolata*, *Brachyglottis repanda*, *Coprosma rhamnoides*, *Melicytus ramiflorus*, *Metrosideros robusta*, *Griselinia lucida*, *Dacrydium cupressinum*, *Weinmannia racemosa*, *Dacrycarpus dacrydioides*, *Rhopalostylis sapida*.

Significance: Key site. Relatively intact forest remnant. Best example of landsystem. Presence of plants which are unusual for ED, e.g. *Rhopalostylis sapida*. Very few podocarps present (selectively logged). Fenced, but not stock proof. Sheltered by a macrocarpa hedge.

Comments: Needs a proper look.

Notes: Ref. Ecol. Site Inventory No. 1245.

NGARATA BUSH

Site no.: EW0908

Grid ref: T25 610465

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Spur

Site description: Alfredton-Tinui Road.

Vegetation type: Tall closed forest with scattered emergents, tall closed forest, shrubland.

Dominant species: *Dacrydium cupressinum*, *Knightia excelsa*, *Beilschmiedia tawa*, *Weinmannia racemosa*, *Leptospermum scoparium*.

Other species: *Hebe stricta*, *Pseudopanax arboreus*, *Cordyline banksii*, *Leucopogon fasciculatus*, *Coriaria arborea*, *Coprosma robusta*, *Cyathea medullaris*, *Brachyglottis repanda*, *Elaeocarpus dentatus*, *Prumnopitys taxifolia*, *Cordyline australis*.

Significance: Key site. Kamahi forest is unusual in ED. High species richness. Relatively intact forest. Site is now a discrete unit, with no shrubland unit linking it to 0902. Appears to be primary forest, with some selective logging. Birds : tui.

Comments: Site appears to be poor (low fertility?). Sandstone which is quite friable.

Notes: Ref. Ecol. Site Inventory No. 752.

TE MAI

Site no.: EW1012a,b

Grid ref: U25 780475

Source: Sawyer *et al.* 1998

Area: 320 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, ridgeline, crest, sideslope

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Closed forest, tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Beilschmiedia tawa*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Leucopogon fasciculatus*, *Pomaderris* aff. *phyllicifolia*.

Other species: *Carpodetus serratus*, *Cyathea dealbata*, *Pseudopanax crassifolius*, *Sophora microphylla*, *Coprosma rhamnoides*, *Metrosideros colensoi*, *Helicbrysum lanceolatum*, *Polystichum richardii*, *Hypolepis ambigua*, *Melicytus ramiflorus*, *Parsonsia heterophylla*, *Brachyglottis repanda*, *Adiantum cunninghamii*, *Blechnum chambersii*, *Pneumatopteris pennigera*, *Leptopteris hymenophylloides*, *Dacrycarpus dacrydioides*, *Hoberia populnea*, *Cordyline australis*, *Hydrocotyle moschata*, *Myrsine australis*, *Pittosporum tenuifolium*, *Nestegis lanceolata*, *Ulex europaeus*, *Pittosporum eugenioides*, *Carex geminata*, *Uncinia* sp., *Pellaea rotundifolia*, *Phormium cookianum*, *Rubus schmidelioides*, *Hebe stricta*, *Cyathea medullaris*, *Pteris tremula*, *Knightia excelsa*.

Significance: Kereru noted at site. *Pomaderris* aff. *phyllicifolia* forms small mats over the most exposed part of one of the tops.

Notes: Ref. Ecol. Site Inventory No. 795.

AUPIRIPIRI - PACKSPUR

Site no.: EW1101

Grid ref: U25 824456

Source: Sawyer *et al.* 1998

Area: 550 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur crest, gully, ridgeline - crest

Land system: Rollnig hill country

Principal landform: Spur line

Vegetation type: Shrubland, scrub.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Knightia excelsa*, *Ulex europaeus*, *Ozothamnus leptophyllus*.

Other species: *Olearia solandri*, *Olearia virgata*, *Pinus radiata*, *Paesia scaberula*, *Melicytus ramiflorus*, *Carex geminata* (local), *Brachyglottis repanda*, *Hebe stricta*, *Pittosporum eugenioides*, *Pseudopanax crassifolius*, *Coprosma robusta*, *Cyathea dealbata*, *Cyathea medullaris*, *Leucopogon fasciculatus*, *Geniostoma rupestre* var. *ligustrifolium*, *Blechnum novae-zelandiae*, *Carpodetus serratus*, *Clematis paniculata*, *Pseudopanax arboreus*, *Cordyline banksii*, *Phormium cookianum*, *Weinmannia racemosa*, *Olearia rani*, *Hierochloe redolens*, *Coriaria arborea*, *Coprosma rhamnoides*, *Thelymitra longifolia*, *Simpliglottis cornuta*, *Ctenopteris heterophylla*, *Celmisia gracilentia*, *Hymenophyllum pulcherrimum*, *Pomaderris* aff. *phyllicifolia*, *Elaeocarpus dentatus*, *Asplenium flaccidum*, *Acianthus forsterii*, *Pterostylis alobula*, *Phymatosorus pustalatus*, *Pteridium esculentum*, *Myrsine australis*, *Coprosma microcarpa*, *Pratia angulata*, *Craspedia minor*, *Urtica ferox*.

Significance: Key site? Large area of regenerating vegetation. In good condition (intact).

ALFREDTON - TINUI ROAD BUSH

Site no.: EW0902b

Grid ref: T25 653454

Source: Sawyer *et al.* 1998, aerial photography

Area: 200 ha

Bioclimatic zone: Semi-coastal

Altitude: 180-300 m

Other landform: Spur, sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Knightia excelsa*, *Kunzea ericoides*, *Leptospermum scoparium*, *Pseudopanax arboreus*, *Weinmannia racemosa*, *Elaeocarpus dentatus*.

Other species: *Leucopogon fasciculatus*, *Melicytus ramiflorus*, *Cyathea medullaris*, *Olearia rani*, *Beilschmiedia tawa*, *Coprosma robusta*, *Hebe stricta*, *Pomaderris* aff. *phylicifolia*, *Lepidosperma australe*, *Schoenus apogon*, *Leucopogon fraseri*, *Gaultheria antipoda*, *Luzula picta*.

Significance: *Schoenus apogon* is a regionally rare species. The site is of some wildlife significance but limited by size and modification. Of potential value if managed for wildlife (SSWD).

Comments: Brown sandstone/yellow-grey mudstone in roadcutting.

Notes: Ref. Ecol. Site Inventory No. 753.

NGA PUKA BUSH

Site no.: EW0906

Grid ref: T25 586439

Source: Sawyer *et al.* 1998

Area: 200 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully, terrace tread, riser

Land system: Rolling hill country, terrace

Principal landform: Spur

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Dacrydium cupressinum*, *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Pennantia corymbosa*, *Olearia rani*, *Brachyglottis repanda*, *Nothofagus solandri*, *Metrosideros robusta*, *Knightia excelsa*, *Beilschmiedia tawa*, *Schefflera digitata*, *Melicytus ramiflorus*, *Carpodetus serratus*, *Hoberia populnea*, *Pseudopanax colensoi*.

Significance: Not known.

Comments: Site secondary. Information from QEII survey. OSC not yet finished, but rated as Priority 1.

TAUWERU RIVER BUSH

Site no.: EW0904

Grid ref: T25 596413

Source: Sawyer *et al.* 1998

Area: 31 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gorge

Land system: Rolling hill country

Principal landform: Hill face

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Kunzea ericoides*, *Pseudopanax crassifolius*.

Other species: *Nestegis lanceolata*, *Knightia excelsa*, *Hoberia populnea*, *Pittosporum tenuifolium*, *Sophora tetraptera*, *Cordyline australis*, *Carpodetus serratus*, *Pittosporum eugenioides*.

Significance: Key site? Riparian vegetation, protection of waterway & water qualities.

WAI-ITI BUSH

Site no.: EW1326

Grid ref: T25 422402

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur line, spur, sideslope, footslope, gully

Land system: Hill country

Principal landform: Spur end

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Kunzea ericoides*, *Dacrydium cupressinum*, *Knightia excelsa*.

Other species: *Prumnopitys taxifolia*, *Cyathea dealbata*, *Hoberia populnea*, *Sophora microphylla*, *Pseudopanax crassifolius*, *Geniostoma rupestre* var. *ligustrifolium*, *Cyathea medullaris*, *Alectryon excelsus*, *Elaeocarpus dentatus*, *Leptospermum scoparium*, *Metrosideros robusta*, *Ripogonum scandens*.

Significance: Key site. Species diversity/richness. High impact from road. Northern rata, *Dicksonia fibrosa?*, *Nothofagus solandri* present. Contiguous with 0833, a large area.

TAUWERU RIVER (COOPERS ROAD)

Site no.: EW1402

Grid ref: T26 561373

Source: Sawyer *et al.* 1998

Area: 60 ha

Bioclimatic zone: Semi-coastal

Altitude: c.170 m

Other landform: Gully risers

Land system: Terrace

Principal landform: Terrace

Site description: Tauweru River Gorge, Coopers Road.

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Leptospermum scoparium*.

Other species: *Elaeocarpus dentatus*, *Sophora microphylla*, *Leptospermum scoparium*, *Pseudopanax crassifolius*, *Cordyline australis*, *Hobertia populnea*.

Significance: Significant site. Protection of corridor of vegetation along the Tauweru River. Preliminary investigation suggest this may be better quality than 1405.

Comments: Not very visible from the road. Visited southern end T26 561373 4/5/94

Notes: Ref. Ecol. Site Inventory 766.

TINUI GORGE

Site no.: EW1516

Grid ref: U26 765390

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope, gully riser

Land system: Taipo, rolling hill country

Principal landform: Bluffs

Vegetation type: Scrub, openland.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Coriaria arborea*, *Brachyglottis repanda*, *Sophora tetraptera*, *Pittosporum tenuifolium*, *Leptospermum scoparium*, *Phormium cookianum*.

Other species: *Hobertia populnea*, *Pseudopanax crassifolius*, *Olearia solandri*, *Melicytus ramiflorus*, *Pseudopanax arboreus*, *Pittosporum eugenioides*, *Cordyline australis*, *Solanum laciniatum*, *Salix fragilis*, *Carex geminata*, *Hebe stricta*, *Coprosma rhamnoides*, *Coprosma robusta*, *Pteridium esculentum*, *Ozothamnus leptophyllus*, *Pomaderris aff. phyllicifolia*, *Olearia solandri*, *Hierochloa redolens*, *Leucopogon fasciculatus*, *Agrostis capillaris*, *Senecio jacobaea*, *Clematis paniculata*, *Festuca arundinacea*, *Holcus lanatus*, *Juncus edgarae*, *Pteris tremula*, *Salix fragilis*, *Trifolium repens*, *Myrsine australis*, *Cotoneaster*, *Ranunculus repens*, *Pellaea rotundifolia*, *Hypolepis ambigua*, *Asplenium oblongifolium*, *Blechnum fluviatile*, *Rubus schmidelioides*, *Cyathea dealbata*, *Lastreopsis glabella*, *Parsonsia capsularis*, *Polystichum richardii*, *Hydrocotyle novae-zeelandiae*, *Coprosma rubra*, *Olearia virgata*, *Annogramma leptophylla*.

Significance: Site is to be protected by a catchment board fencing subsidy scheme. Significant plants: *Olearia virgata* and *Annogramma leptophylla*.

Comments: Gorge worth a look - superficially like Kaikoura area. Ref Townsend *et al.* 1997.

COOPERS BUSH ROAD

Site no.: EW1404

Grid ref: T26 568365

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude: 180 m

Other landform:

Land system: Hill country

Principal landform: Gully

Site description: Section of vegetation in a SW facing gully 400 m south of Coopers Road Roadend.

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Sophora sp.*, *Leptospermum scoparium*.

Other species: *Pinus radiata*, *Alectryon excelsus*, *Ulex europaeus*, *Hobertia populnea*, *Phormium cookianum*, *Melicytus ramiflorus*, *Dacrycarpus dacrydioides*, *Pseudopanax crassifolius*, *Cordyline australis*.

Significance: Not known.

TAUWERU (COOPERS ROAD) RIPARIAN BUSH

Site no.: EW1405 **Grid ref:** T26 549365 **Source:** Sawyer *et al.* 1998
Area: 50 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 160 m
Other landform: Terrace riser, terrace tread **Land system:** Terrace, hill country
Principal landform: Gully

Site description: Discontinuous strip of forest along the Tauweru River.

Vegetation type: Tall closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Sophora microphylla*, *Leptospermum scoparium*, *Myrsine divaricata*, *Melicytus micranthus*.

Other species: *Nestegis montana*, *Pseudopanax crassifolius*, *Podocarpus totara*, *Coprosma robusta*, *Coprosma rhamnoides*, *Coprosma rubra*, *Hoheria populnea*, *Pittosporum eugenoides*, *Pyrrosia eleagnifolia*, *Prumnopitys taxifolia*, *Rubus schmidelioides* subsp., *Parsonsia capsularis*, *Pennantia corymbosa*, *Melicope simplex*, *Raukaua anomalus*, *Melicytus micranthus*, *Streblus heterophyllus*, *Lophomyrtus obcordata*, *Clematis foetida*, *Hypolepis ambigua*, *Cordyline australis*, *Coprosma rotundifolia*, *Pseudopanax crassifolius*, *Juncus edgarae*, *Carex geminata*, *Carex secta*.

Significance: Key site. Interesting site with the possibility of rare plants occurring. Riparian/river protection.

Comments: Possibility of rare plants. May be seasonally wet Site fragment with an open broken canopy in places. Willows throughout site along the river.

Notes: Ref. Ecol. Site Inventories 764 and 765.

MANGAPURUPURU ROAD BUSH #2

Site no.: EW1406 **Grid ref:** T26 555354 **Source:** Sawyer *et al.* 1998
Area: 40 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 200 m
Other landform: Sideslope **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest with emergents, shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Nestegis lanceolata*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Carmichaelia australis*, *Leptospermum scoparium*, *Sophora microphylla*.

Other species: *Rubus schmidelioides*, *Hoheria populnea*, *Nestegis cunninghamii*, *Nestegis montana*, *Coprosma robusta*, *Coprosma propinqua*, *Coprosma areolata*, *Coprosma rhamnoides*, *Coprosma rotundifolia*, *Coprosma grandifolia*, *Coprosma crassifolia*, *Prumnopitys taxifolia*, *Cordyline australis*, *Hebe stricta*, *Cordyline australis*, *Hebe stricta*, *Brachyglottis repanda*, *Kunzea ericoides*, *Leucopogon fasciculatus*, *Metrosideros colensoi*, *Raukaua anomalus*, *Parsonsia capsularis*, *Coprosma robusta* × *C. propinqua*, *Pseudopanax crassifolius*, *Pittosporum eugenoides*, *Carpodetus serratus*, *Pennantia corymbosa*, *Clematis foetida*, *Melicope simplex*, *Lophomyrtus obcordata*, *Pinus radiata*, *Myrsine australis*, *Parsonsia heterophylla*.

Significance: Good quality forest in gully, grading into shrubland up the hillside. One part fenced, the other is not. Significant plant: *Carmichaelia australis* (flagelliformis). Kereru present.

BRAEBOURNE BUSH

Site no.: EW1337 **Grid ref:** T26 486348 **Source:** Sawyer *et al.* 1998
Area: 40 ha **Bioclimatic zone:** Lowland **Altitude:**
Other landform: Topslope **Land system:** Rolling hill country,
dissected
Principal landform: Gully

Dominant species: *Dacrycarpus dacrydioides*, *Kunzea ericoides*.

Other species: *Hoheria populnea*, *Cordyline australis*.

Significance: Large area of relatively intact secondary forest and scrub (see 1336).

TINUI TAIPO

Site no.: EW1502 **Grid ref:** T26 696340 **Source:** Sawyer *et al.* 1998
Area: 160 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Taipo **Principal landform:** Scarp face

Vegetation type: Treeland, shrubland

Dominant species: *Pinus radiata*, *Brachyglottis repanda*, *Hebe stricta*, *Coprosma grandifolia*, *Pseudopanax arboreus*.

Other species: *Pinus pinaster*. See Druce (1972) for plant checklist.

Significance: Area has some mature pine trees on it which will be shortly logged. Wilding pine trees are common. High usual impact - rock pinnacles. Area visited in 1990 (August?).

MANGAREIA ROAD #3

Site no.: EW1318 **Grid ref:** T26 515347 **Source:** Sawyer *et al.* 1998
Area: 2 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 140 m
Other landform: Floodplain, oxbow **Land system:** Hill country **Principal landform:** Gully

Vegetation type: Shrubland-grassland, tall closed forest with emergents.

Dominant species: *Coprosma rotundifolia*, *Coprosma propinqua*, *Festuca arundinacea*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Hoberia populnea*, *Sophora tetraptera*.

Other species: *Melicytus ramiflorus*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Iris foetidissima*, *Solanum nigrum*, *Polystichum richardii*, *Crataegus monogyna*, *Sophora microphylla*, *Hydrocotyle elongata*, *Pyrrosia eleagnifolia*, *Cordyline australis*, *Festuca arundinacea*, *Parsonsia heterophylla*, *Muehlenbeckia complexa*, *Myrsine divaricata*, *Melicytus micranthus*, *Coprosma propinqua*, *Teucrium parvifolium*, *Urtica ferox*, *Pellaea rotundifolia*, *Nestegis lanceolata*, *Coprosma rhamnoides*, *Pennantia corymbosa*, *Ulex europaeus*, *Pteridium esculentum*, *Carex dissita*, *Rubus fruticosus*, *Fuchsia excorticata*, *Carex solandri*, *Asplenium bulbiferum*, *Carmichaelia australis*, *Coprosma rubra*, *Prumnopitys taxifolia*, *Streblus heterophyllus*, *Raukaua anomalous*, *Melicope simplex*, *Kunzea ericoides*, *Astelia fragrans*, *Brachyglottis repanda*, *Lophomyrtus obcordata*, *Blechnum fluviatile*, *Carex geminata*, *Pneumatopteris pennigera*, *Digitalis purpurea*, *Uncinia uncinata*, *Uncinia* sp., *Aristolelia serrata*, *Coprosma robusta* × *C. propinqua*, *Blechnum novae-zelandiae*, *Asplenium flabellifolium*, *Clematis paniculata*, *Helichrysum lanceolatum*, *Asplenium flaccidum*, *Ligustrum* sp., *Cytisus scoparius*, *Hypolepis ambigua*, *Lophomyrtus bullata*, *Coprosma areolata*, *Coprosma crassifolia*, *Australina pusilla*, *Ranunculus repens*, *Coprosma grandifolia*, *Galium aparine*, *Muehlenbeckia australis*, *Leucopogon fasciculatus*, *Rubus schmidelioides*, *Clematis forsteri*.

Significance: Threatened plants present: *Teucrium parvifolium* (c.50 plants occur around an oxbow and along floodzone of a tributary of Tauweru River), *Sophora microphylla*. High quality (but small) site. Diverse habitat - species rich. Farmer has been controlling gorse in this site and it has been fenced for approx 18 years.

Birds : tui, fantail, grey warbler.

Comments: Ref. Townsend *et al.* 1997. Birds : silvereye, magpie, chaffinch, Californian quail.

EARLYHURST BUSH

Site no.: EW1336 **Grid ref:** T26 480343 **Source:** Sawyer *et al.* 1998
Area: 28 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully, spur, sideslope, footslope, topslope **Land system:** Dowland **Principal landform:** Downs

Dominant species: *Knightia excelsa*, *Kunzea ericoides*, *Leptospermum scoparium*, *Hebe stricta*.

Other species: *Dacrydium cupressinum*, *Pteridium esculentum*, *Brachyglottis repanda*, *Melicytus ramiflorus*, *Cordyline australis*, *Coprosma rhamnoides*, *Polystichum richardii*, *Ulex europaeus*, *Carpodetus serratus*, *Rubus schmidelioides*, *Coprosma robusta*, *Pittosporum eugenioides*, *Podocarpus totara*, *Hoberia populnea*, *Pseudopanax arboreus*, *Pseudopanax crassifolius*, *Pittosporum tenuifolium*, *Leucopogon fasciculatus*, *Pomaderris* aff. *phylicifolia*

Significance: Key site. Contiguous with 1337. Large area of relatively intact regenerating forest & scrub. High species diversity.

Comments: Owners (Earlyhurst Stn) interested in covenanting. Site partially fenced - problems with neighbours fence at bottom of stream/gully.

DITTON BUSH

Site no.: EW1205

Grid ref: T26 399340

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone: Lowland

Altitude: 280 m

Other landform:

Land system:

Principal landform: Gully

Site description: Photo # C33-34.

Vegetation type: Treeland, scattered trees (possibly totara).

Dominant species: *Podocarpus totara*, *Alectryon excelsus*, *Beilschmiedia tawa*.

Other species: *Kunzea ericoides*, *Leptospermum scoparium*, *Coprosma rhamnoides*, *Pittosporum eugenioides*, *Sophora tetraptera*, *Melicytus ramiflorus*, *Hoberia populnea*, *Elaeocarpus dentatus*, *Hedycarya arborea*, *Carpodetus serratus*, *Knightia excelsa*, *Metrosideros colensoi*, *Ripogonum scandens*, *Dacrycarpus dacrydioides*, *Coprosma rotundifolia*.

Significance: QEII OSC surveyed - not yet registered. Appears to be fenced with large buffers - may really be a shelter paddock. 500 m south of ED boundary.

MANGAPAKEHA BUSH STREAM #2

Site no.: EW1412

Grid ref: T26 559312

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform:

Land system:

Principal landform: Gully

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Leptospermum scoparium*, *Myoporum laetum*, *Olearia paniculata*, *Kunzea ericoides*, *Sophora microphylla*.

Other species: *Cordyline australis*.

Significance:

Comments: Pine trees planted in northern part of the site. "An example of climatic inversion causing coastal vegetation associations inland at high altitudes. This zone continues along the Kourarau Range just to the east of the plains" (A. Townsend pers. comm.).

MARANGI STREAM

Site no.: EW1421

Grid ref: T26 620310

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Closed forest, tall closed forest, shrubland.

Dominant species: *Kunzea ericoides*, *Myoporum laetum*, *Nestegis montana*.

Other species: *Cyathea medullaris*, *Coriaria arborea*, *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Carex geminata*, *Thelymitra longifolia*, *Libertia ixioides*, *Asplenium oblongifolium*, *Brachyglottis repanda*, *Sophora tetraptera*, *Carpodetus serratus*, *Pittosporum eugenioides*, *Cordyline australis*, *Beilschmiedia tawa*, *Cyathea dealbata*, *Salix fragilis*, *Leucopogon fasciculatus*, *Macropiper excelsum*, *Carex solandri*, *Pteris tremula*, *Coprosma robusta*, *Prunella vulgaris*, *Geniostoma rupestre* var. *ligustrifolium*, *Coprosma propinqua*, *Craspedia minor*, *Coprosma rhamnoides*, *Pseudopanax arboreus*, *Hebe stricta*, *Uncinia uncinata*, *Pteridium esculentum*, *Ranunculus reflexus*, *Polystichum richardii*, *Senecio jacobaea*, *Hedycarya arborea*, *Pellaea rotundifolia*, *Asplenium bulbiferum*, *Dianella nigra*, *Gnaphalium kerriense*, *Pterostylis alobula*, *Blechnum novae-zelandiae*, *Paesia scaberula*, *Brachyscome radicata*, *Coprosma areolata*, *Microtis unifolia*, *Hydrocotyle moschata*, *Blechnum chambersii*, *Senecio banksii*, *Trifolium repens*, *Aciforsin*,

Coprosma robusta × *C. propinqua*, *Rubus schmidelioides*, *Asplenium flaccidum*, *Gaultheria antipoda*, *Hymenophyllum pulcherrimum*, *Myrsine australis*, *Helicbrysum lanceolatum*, *Cyatbodes fraseri*, *Adiantum cunninghamii*, *Hierochloe redolens*, *Astelia fragrans*, *Chionochloa conspicua*, *Asplenium flabellifolium*, *Asplenium terrestre*, *Galium propinquum*, *Echinopogon ovatus*, *Microlaena stipoides*, *Pittosporum tenuifolium*, *Conyza albida*, *Solanum nigrum*, *Asplenium bookerianum*, *Parsonsia heterophylla*, *Hoberia populnea*, *Cardamine debilis*, *Prunus* sp., *Nestegis cunninghamii*, *Olearia paniculata*, *Knightia excelsa*, *Asplenium gracillimum*, *Olearia rani*, *Myrsine salicina*, *Hypolepis ambigua*, *Uncinia uncinata*, *Bellis perennis*, *Nestegis montana*, *Elaeocarpus dentatus*, *Pyrrosia eleagnifolia*, *Carex secta*, *Pneumatopteris pennigera*.

Significance: Key site. Species rich with diverse habitat. High quality regenerating forest. Significant plants: *Nestegis montana*, *Nestegis cunninghamii*, *Simpliglottis cornuta*, *Thelymitra longifolia*, *Pterostylis alobula*, *Acianthus fornicatus* var. *sinclairii*, *Microtis unifolia*, *Thelymitra* sp. all noted on 29/5/96.

BEAULEY SHRUBLAND

Site no.: EW1443

Grid ref: T26 632279

Source: Sawyer *et al.* 1998

Area: 12ha

Bioclimatic zone: Semi-coastal

Altitude: 100–220 m

Other landform: Gully

Land system: Moderately steep hills

Principal landform: Sideslope

Site description: Photo #3B.

Vegetation type: 1. Kanuka-(*Sophora tetraptera*)/(*Sophora tetraptera*)-(mahoe) forest. [Understorey: (*Coprosma crassifolia*)-(*Coprosma rhamnoides*)-*Urtica ferox* pasture]
2. Pasture.

Other species: *Podocarpus totara*, *Urtica ferox*, *Leptospermum scoparium*, *Urtica urens*, *Haloragis erecta*, *Cordyline australis*, *Coprosma rubra*, *Carex secta*, *Carex geminata*, *Sophora tetraptera*, *Juncus edgarrae*, *Muehlenbeckia australis*, *Coprosma propinqua*, *Passiflora tetrandra*, *Polystichum richardii*, *Pneumatopteris pennigera*, *Dicksonia squarrosa*, *Parsonsia heterophylla*, *Macropiper excelsum*, *Solanum laciniatum*.

Comments: Birds: pipit, sparrow, goldfinch, yellowhammer, blackbird, chaffinch, silveryeye, fantail.

Notes: Low plant species diversity, heavily grazed, open understorey.

ICA STATION

Site no.: EW2015

Grid ref: T26 675253

Source: Current survey

Area: 0.002 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform: Riverbed

Vegetation type: Herbfield.

Dominant species: Not known.

Other species: Not known.

Significance: *Amphibromus fluitans* (Critically endangered - de Lange *et al.* 1999)

Comments: Ref. Townsend *et al.* 1997:14.

OTAHOME STREAM COAST

Site no.: EW2014

Grid ref: U26 756239

Source: Current survey

Area: 10 ha

Bioclimatic zone: Coastal

Altitude:

Other landform:

Land system:

Principal landform: Low bluffs

Vegetation type: Tussockland, rest pasture (in mosaic).

Dominant species: Not known.

Other species: Marram, *Isolepis nodosa*, pasture spp.

Significance: Katipo, various lizards incl. *Oligosoma lincoocellatum*.

Comments: A.J. Townsend pers. comm.

KAUMINGI STREAM 1

Site no.: EW1814

Grid ref: T26 500223

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Gully

Vegetation type: Tall closed forest with emergents, shrubland.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Dacrydium cupressinum*, *Dacrydium dacrydioides*, *Alectryon excelsus*.

Other species: *Prumnopitys taxifolia*, *Griselinia littoralis*, *Cyathea medullaris*, *Schefflera digitata*, *Pittosporum eugeniioides*, *Sophora tetraptera*, *Hedycarya arborea*, *Nestegis cunninghamii*, *Nestegis montana*, *Beilschmiedia tawa*, *Knightia excelsa*, *Leptospermum scoparium*, *Hoberia populnea*, *Nestegis lanceolata*, *Myoporum laetum*, *Melicytus ramiflorus*, *Metrosideros diffusa*, *Cyathea medullaris*, *Cyathea dealbata*, *Carpodetus serratus*.

Significance: Key site. Large area (relatively) of very high quality emergent podocarp primary forest. Surrounded by a shrubland buffer, forest enclosed in a gully - appears to be fenced. Looks nice.

Comments: Worth botanising with Wellington Botanical Society.

OTAHOME/WAI-NGAIO DUNE SYSTEM

Site no.: EW2005

Grid ref: U26 736206

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Crest, foredune, slack, terrace tread, riser

Land system: Terrace, duneland

Principal landform: Dune crest

Vegetation type: Duneland.

Dominant species: *Isoelipsis nodosa*, *Coprosma acerosa*, *Pteridium esculentum*, *Muehlenbeckia complexa*, *Spinifex sericeus*, *Ammophila arenaria*.

Other species: *Cordyline australis*, *Desmoschoenus spiralis*, *Rorippa*, *Coprosma propinqua*, *Cortaderia selloana*, *Carex pumila*, *Phormium tenax*, *Leptospermum scoparium*, *Cyperus ustulatus*, *Rumex conglomeratus*, *Calystegia*, *Lagurus ovatus*, *Taraxacum officinale*, *Cortaderia fulvida*, *Ulex europaeus*, *Pimelea* aff. *arenaria*.

Significance: Key site. Presence of threatened species: *Coprosma acerosa*, Pingao, *Pimelea* aff. *arenaria*, *Calystegia soldanella*, *Carex pumila*, *Oligosoma lineocellatum* (spotted skink) 2 individuals (1 adult, 1 subadult) seen in a log below old shed below trig. *Steatoda* sp. but no katipo seen.

Comments: Wai - Ngaio Station 06. 3723676. Site extends c.1/2-1 km NE up coast from area indicated on maps in Sawyer *et al.* 1998.

Notes: Ref. Ecol. Site Inventory No. 814.

KAHUMINGI GORGE

Site no.: EW1902

Grid ref: T26 565190

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude: 160 m

Other landform: Gully, cliff face, steep slope

Land system: Terrace, hill country

Principal landform: Terrace riser

Site description: Steep-sided gorge.

Vegetation type: Tall closed forest, tree-shrubland, shrubland.

Dominant species: *Pseudopanax crassifolius*, *Ozothamnus leptophyllus*, *Jasminum* sp., *Podocarpus* sp., *Pteridium esculentum*.

Other species: *Sophora* sp., *Clematis forsteri*, *Podocarpus totara*, *Kunzea ericoides*, *Muehlenbeckia* sp., *Cordyline australis*, *Coprosma crassifolia*, *Rubus* sp., *Coprosma rhamnoides*, *Leptospermum scoparium*.

Significance: Fenced in part for soil conservation. Bird: falcon.

Comments: Little regeneration under patches on near side. Slightly modified, currently grazed. Birds : falcon. Rabbits present.

“BIG HILL NO. 2”

Site no.: EW1817 **Grid ref:** T26 529180 **Source:** Sawyer *et al.* 1998
Area: 30 ha **Bioclimatic zone:** Semi-coastal, lowland **Altitude:** 300 m
Other landform: Spur **Land system:** Hill country
Principal landform: Gully

Site description: Largish patches of bush on SE facing hillside.

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Nothofagus solandri*, *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Knightia excelsa*.

Other species: *Nestegis cunninghamii*, *Alectryon excelsus*, *Melicytus ramiflorus*, *Carpodetus serratus*, *Hedycarya arborea*, *Myrsine australis*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Coprosma rotundifolia*, *Coprosma rhamnoides*, *Coprosma areolata*, *Leucopogon fasciculatus*.

Significance: Not known.

Comments: SSWI info.

Notes: Ref. Ecol. Site Inventory No. 741.

TE PARAE GORGE

Site no.: EW1805 **Grid ref:** T26 476168 **Source:** Sawyer *et al.* 1998
Area: 19 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Cliffs **Land system:**
Principal landform: Steep faces

Site description: Steep faces/cliffs along the Wainuiouru River.

Vegetation type: Closed forest, shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Sophora tetraptera*, *Leptospermum scoparium*, *Prumnopitys taxifolia*, *Nestegis lanceolata*, *Podocarpus totara*, *Kunzea ericoides*, *Salix fragilis*, *Nothofagus solandri*.

Other species: *Pneumatopteris pennigera*, *Cotula squalida*, *Hoberia augustifolia*, *Urtica ferox*, *Blechnum fluviatile*, *Juncus articulatus*, *Pittosporum tenuifolium*, *Pteridium esculentum*, *Urtica incisa*, *Hebe stricta*, *Parsonsia heterophylla*, *Coprosma robusta*, *Coprosma propinqua*, *Cyathodes juniperina*, *Coprosma rhamnoides*, *Cordyline australis*, *Pennantia corymbosa*, *Lophomyrtus obcordata*, *Pittosporum eugenioides*, *Carex secta*, *Hoberia populnea*, *Myrsine divaricata*, *Adiantum cunninghamii*, *Polystichum richardii*, *Phormium cookianum*, *Rubus schmidelioides*, *Phymatosorus pustalatus*, *Pseudopanax crassifolius*, *Muehlenbeckia complexa*, *Nestegis montana*, *Coprosma robusta* × *C. propinqua*, *Pellaea rotundifolia*, *Asplenium hookerianum*, *Urtica urens*, *Asplenium flabellifolium*, *Hydrocotyle moschata*, *Solanum nigrum*, *Cytisus scoparius*, *Carex secta*, *Clematis vitalba*, *Juncus edgarae*, *Juncus articulatus*, *Carmichaelia australis*, *Cortaderia toetoe*, *Coprosma rotundifolia*, *Melicytus micranthus*, *Melicope simplex*, *Brachyglottis repanda*, *Astelia fragrans*, *Pseudopanax arboreus*, *Leucopogon fasciculatus*, *Metrosideros colensoi*, *Hydrocotyle novae-zeelandiae*, *Coprosma rubra*, *Muehlenbeckia complexa*, *Carpodetus serratus*, *Melicytus ramiflorus*, *Hypolepis distans*, *Juncus sarophorus*, *Pteris tremula*, *Knightia excelsa*, *Ranunculus reflexus*.

Significance: Significant plants: *Cotula squalida*, *Nestegis montana*, *Hypolepis distans*. Two patches of forest which the owner is planning on retaining to the north of 1805 : *Kunzea ericoides*, *Podocarpus totara*, *Pseudopanax crassifolius*. Small wetland adjacent to these comprises: *Pseudopanax crassifolius*, *Coprosma propinqua*, *Carex secta* shrub tussockland should be retained as this contains *Hypolepis distans* in relatively high numbers. This is the only population of this fern in the Ecological District. It is about 0.3 ha & at present trampled by cattle around its margins. Birds: thush, fantail, grey warbler, tui.

Comments: Small wetland of lancewood, *Coprosma propinqua*, *Carex secta* shrub tussockland should be retained, as this contains *Hypolepis distans* in relatively high numbers. Rabbit present. Two small areas of *Nothofagus solandri* forest, *Salix fragilis* along riverbank. Additional tongue of bush and wetland to east of site (not shown on map) supports *Hypolepis distans* (J. Sawyer pers. comm.). Birds : geese, chaffinch, spur-winged plover, magpie, blackbird, silvereve.

ORUI DUNE SYSTEM

Site no.: EW2001

Grid ref: U26 701119

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Ccoastal

Altitude:

Other landform: Dune crest, ridge, slack (all low), terrace tread

Land system: Duneland, terrace (marine)

Principal landform: Headland

Vegetation type: Tussockland, shrubland.

Dominant species: *Coprosma acerosa*, *Muehlenbeckia complexa*, *Juncus kraussii* var. *australiensis*.

Other species: *Disphyma australe*, *Pbormium cookianum*, *Pyrrosia eleagnifolia*, *Plantago* sp., *Spinifex sericeus*, *Ammophila arenaria*, *Calystegia soldanella*, *Taraxacum officinale*, *Cyperus ustulatus*.

Significance: Key site. *Coprosma acerosa* present. Relatively good example of habitat potential for restoration. Area has large boulders throughout it with vegetation (mostly *Muehlenbeckia complexa* and lichens) but could contain rare plants. Seals present on headland and rocks. *Steatoda* sp., *Porrhothele* sp. (spiders) present.

Recommendation: Potential for restoration.

Notes: Ref. Ecol. Site Inventory Nos. 806 and 826.

PUKETIRO GORGE BUSH

Site no.: EW2343

Grid ref: T26 375102

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope, gully floor

Land system: Downland (limestone)

Principal landform: Gully

Vegetation type: Tussockland, tall closed forest, wetland.

Dominant species: *Typha orientalis*, *Coprosma propinqua*, *Carex secta*, *Pneumatopteris pennigera*, *Carex* sp., *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Nestegis lanceolata*, *Pseudopanax crassifolius*, *Leptospermum scoparium*.

Other species: *Coprosma robusta*, *Clematis paniculata*, *Clematis* sp., *Metrosideros colensoi*, *Dicksonia fibrosa*, *Sophora tetraptera*, *Salix* sp., *Coprosma robusta* × *C. propinqua*, *Carpodetus serratus*, *Urtica urens*, *Carmichaelia australis*, *Typha orientalis*, *Juncus articulatus*, *Myrsine divaricata*, *Hebe stricta*, *Urtica ferox*, *Rubus schmidelioides*, *Parsonsia heterophylla*, *Olearia virgata*, *Pittosporum tenuifolium*, *Myrsine australis*, *Aristolelia serrata*, *Hoberia populnea*, *Asplenium hookerianum*, *Podocarpus totara*, *Cordyline australis*, *Raukahu anomalus*, *Pbormium tenax*.

Significance: Significant plant: *Olearia virgata*.

Comments: Site has willows in it. Mosaic of shrubland and tussockland in gully, but very little (A. Townsend pers. comm.).

Notes: Ref. Ecol. Site Inventory No. 848.

NGAHERE BUSH

Site no.: EW2342

Grid ref: T27 386096

Source: Sawyer *et al.* 1998

Area: 18 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Rolling tops

Land system:

Principal landform: Topslope

Vegetation type: Treeland, closed forest.

Dominant species: *Alectryon excelsus*, *Melicytus ramiflorus*, *Dacrycarpus dacrydioides*.

Other species: *Ripogonum scandens*, *Earina mucronata*, *Cordyline australis*, *Nestegis lanceolata*, *Myrsine australis*, *Carpodetus serratus*, *Sophora tetraptera*, *Brachyglottis repanda*, *Myrsine divaricata*, *Coprosma rotundifolia*, *Streblus heterophyllus*, *Pennantia corymbosa*, *Coprosma areolata*, *Podocarpus totara*, *Knightsia excelsa*, *Schefflera digitata*, *Sambucus nigra*, *Hedycarya arborea*, *Pseudopanax crassifolius*, *Rubus schmidelioides*, *Urtica ferox*, *Hoberia populnea*, *Lophomyrtus obcordata*, *Metrosideros colensoi*.

Notes: Ref. Ecol. Site Inventory No. 849.

DEEP GORGE BUSH

Site no.: EW2445

Grid ref: T27 486097

Source: Current survey

Area: 54 ha

Bioclimatic zone:

Altitude: 160–200 m

Other landform: Gorge

Land system: Alluvial terrace, incised gullies

Principal landform: Terrace riser

Vegetation types: 1. *Nothofagus solandri*-(matai)/horoeka-putaputaweta/karamu-rangiora-*Coprosma propinqua*-mingimingi-broom-*Coprosma rhamnoides*-mingimingi-(poataniwha)-(prickly mingimingi)/*Uncinia uncinata*-*Blechnum fluviatile*-~~cocksfoot~~-~~sweet vernal~~ treeland.
2. Broom-~~tutu~~-(rangiora)-(koromiko)-(gorse)/(harakeke)-(*Cortaderia fulvida*)/~~kiokio~~-~~pasture~~ rockland.
3. *Hoberia sexstylosa*-kohuhu/manuka-horoeka scrub.[Understorey: mingimingi-gorse-broom-*Coprosma propinqua*/~~pasture~~].
4. ~~Pasture~~ grassland.

Significance: Spectacular landform.

Comments: Many exotic tree species present in canopy, canopy open and patchy. Silver poplar and crack willow abundant on stream bank. Area extensively grazed.

TE MAIPA BUSH

Site no.: EW2422

Grid ref: T27 545085

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope

Land system: Taipo

Principal landform: Steep face

Vegetation type: Closed forest, tree-shrubland.

Dominant species: *Knightsia excelsa*, *Melicytus ramiflorus*.

Other species: *Podocarpus totara*, *Hoberia populnea*, *Brachyglottis repanda*, *Nothofagus solandri*, *Pteridium esculentum*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*.

Notes: Ref. Ecol. Site Inventory No. 779.

TE MAIPA

Site no.: EW2423

Grid ref: T27 536083

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system: Taipo

Principal landform: Steep face

Vegetation type: Closed forest, shrubland.

Dominant species: *Melicytus ramiflorus*, *Carpodetus serratus*, *Leptospermum scoparium*.

Other species: *Podocarpus totara*, *Pseudopanax arboreus*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Knightsia excelsa*

PUKEKOWAI BUSH

Site no.: EW2424

Grid ref: T27 534076

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope

Land system: Taipo

Principal landform: Steep face

Vegetation type: Closed forest, shrubland.

Dominant species: *Knightsia excelsa*, *Melicytus ramiflorus*, *Carpodetus serratus*.

Other species: *Podocarpus totara*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Leptospermum scoparium*.

NGAUMU A

Site no.: EW2402

Grid ref: T27 505060

Source: Sawyer *et al.* 1998

Area: 32 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully

Land system: Rolling hill - Downs

Principal landform: Spur

Vegetation type: Treeland.

Dominant species: *Nothofagus solandri*, *Prumnopitys taxifolia*, *Dacrydium cupressinum*, *Kunzea ericoides*, *Podocarpus totara*.

Other species: *Pseudopanax anomalus*, *Coprosma areolata*, *Nestegis lanceolata*, *Elaeocarpus dentatus*, *Knightia excelsa*, *Nestegis cunninghamii*, *Nestegis montana*, *Brachyglottis repanda*, *Cyathodes juniperina*, *Coprosma microcarpa*, *Carpodetus serratus*, *Leucopogon fasciculatus*, *Schefflera digitata*, *Coprosma robusta*, *Muehlenbeckia complexa*, *Coprosma crassifolia*, *Pennantia corymbosa*, *Coprosma areolata*, *Coprosma rotundifolia*, *Coprosma rhamnoides*.

EPARAIMA / URUTI

Site no.: EW2510

Grid ref: T27 655060

Source: Current survey

Area: 100 ha

Bioclimatic zone:

Altitude: 10-40 m

Other landform: Wetland, contains a dam

Land system: Riparian flats, moderately steep hills

Principal landform: Gully

Vegetation types: 1. *Juncus edgarae*-(*Cyperus ustulatus*)-*Carex geminata*/pennyroyal-bare ground rushland.
2. Pasture grassland.
3. Tauhinu/pasture grassland.
4. (Manuka)/(*Coprosma propinqua*)-(*Coprosma rhamnoides*)/exotic pasture grassland.
5. Ngaio forest. [Understorey: mahoe-kawakawa/bareground].
6. *Carex geminata*-(*Cyperus ustulatus*)-(*Juncus edgarae*)/*Eleocharis acuta*-*Polygonum hydropiper*-*Juncus articulatus* sedgeland.

Notes: Wetland is very modified and disturbed from cattle and sheep grazing. Forest understorey completely removed, no regeneration. Forest is a minor component of area, <2 ha.

BANKVIEW SHRUBLAND

Site no.: EW2347

Grid ref: T27 422058

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Floodplain

Land system: Alluvial plain

Principal landform: Oxbow

Vegetation type: Shrubland, tussockland

Dominant species: *Coprosma propinqua*, *Leptospermum scoparium*, *Olearia virgata*, *Carex secta*, *Carex geminata*.

Other species: *Cordyline australis*, *Pseudopanax crassifolius*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Rubus schmidlioides*, *Juncus edgarae*.

Comments: Willows in site.

Notes: Ref. Ecol. Site Inventory No. 858.

NGAUMU BUSH

Site no.: EW2338

Grid ref: T27 462043

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Dominant species: *Nothofagus solandri*.

Other species: Not known.

GLENSTRAE SHRUBLAND

Site no.: EW2310

Grid ref: T27 415035

Source: Sawyer *et al.* 1998

Area: 45 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, terrace riser

Land system: Dissected hill country, rolling country, downland

Principal landform: Gully

Site description: Area of forest on gully, terrace tread and terrace riser along Wainuioru River.

Vegetation type: Tall closed forest, shrubland, treeland.

Dominant species: *Leptospermum scoparium*, *Nothofagus solandri*.

Other species: *Erica lusitanica*, *Dacrydium cupressinum*, *Melicactus ramiflorus*, *Pseudopanax crassifolius*, *Carpodetus serratus*, *Kunzea ericoides*

Notes: Ref. Ecol. Site Inventory No. 860.

STATION BUSH

Site no.: EW2107

Grid ref: S27 191019

Source: Current survey

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser, sideslope, terrace tread

Land system: Downland, alluvial plain

Principal landform: Gully

Vegetation type: Closed forest, treeland.

Dominant species: *Podocarpus totara*, *Alectryon excelsus*, *Dacrycarpus dacrydioides*, *Leucopogon fasciculatus*.

Other species: Alluvial Plain: *Coprosma crassifolia*, *Beilschmiedia tawa*, *Sophora tetraptera*, *Plagianthus regius*, *Prumnopitys taxifolia*, *Leptospermum scoparium*, *Cordyline australis*; Downland: *Leptospermum scoparium*, *Kunzea ericoides*, *Myoporum laetum*, *Prumnopitys taxifolia*.

Significance: *Korthalsella lindsayi* on various hosts, species rich and unusual species. A very large and healthy population of *Ileostylis micranthus* in northern parts of site. Possible *Pittosporum obcordatum* site (Rebergen 1997a).

Comments: At edge of ED. Grazed. "Interesting forest remnant with characteristic shrubs". Part fenced with previously planted exotics which could now be removed, as native regeneration now provides flood protection. (A. Rebergen pers. comm.). Refs: Rebergen 1997a,b,c,d.

Notes: Ref. Ecol. Site Inventory No. 591.

WAIMANGU SOUTH

Site no.: EW2328

Grid ref: T27 468012

Source: Sawyer *et al.* 1998

Area: 55 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Face

Land system: Rolling downs

Principal landform: Hillside

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Nothofagus solandri*, *Cyathodes juniperina*, *Leucopogon fasciculatus*.

Other species: *Clematis paniculata*, *Pittosporum tenuifolium*, *Cordyline banksii*, *Pseudopanax crassifolius*, *Pseudopanax arboreus*, *Dacrydium cupressinum*, *Coprosma robusta*, *Coprosma microcarpa*, *Coprosma linarifolia*, *Coprosma rubra*, *Hebe stricta*, *Pteridium esculentum*, *Coprosma grandifolia*, *Dacrycarpus dacrydioides*, *Pomaderris* aff. *phylicifolia*, *Pittosporum divaricatum*, *Helichrysum lanceolatum*, *Cyathodes fraseri*, *Erica lusitanica*, *Pbormium cookianum*, *Astelia grandis*, *Dianella nigra*.

Recommendation: Part is Kuamahanga Covenant (T27008 in CMS) - see 2326 attachment.

Significance: Significant plant: *Pittosporum divaricatum*.

Comments: Patch of forest amongst pine trees. May have been cleared..

Notes: Ref. Ecol. Site Inventory No. 256.

WHARAU STREAM BUSH

Site no.: EW2325

Grid ref: T27 460994

Source: Sawyer *et al.* 1998

Area: 255 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully

Land system: Rolling downs

Principal landform: Spur

Vegetation type: Shrubland, treeland, closed forest.

Dominant species: Not known.

Other species: Not known.

Significance: Significant plant: *Nothofagus solandri*.

Comments: Large area - mostly regenerating. SSW1 & QEII information.

Notes: Ref. Ecol. Site Inventory No. 873.

KAIWHATA RIVER OXBOW

Site no.: EW2419C

Grid ref: T27 543987

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Floodplain

Land system: Alluvial plain, terrace

Principal landform: Oxbow

Vegetation type: Tussockland, open water.

Dominant species: *Typha orientalis*, *Carex secta*.

Other species: Not known.

Comments: Birds: paradise ducks, mallard, grey teal.

Notes: Ref. Ecol. Site Inventory No. 891.

KAIWHATA RIVER BUSH

Site no.: EW2417

Grid ref: T27 570980

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Alectryon excelsus*, *Corynocarpus laevigatus*, *Hedycarya arborea*.

Other species: *Kunzea ericoides*, *Pyrrosia eleagnifolia*, *Coprosma rhamnoides*, *Macropiper excelsum*, *Cordyline australis*.

Notes: Ref. Ecol. Site Inventory No. 773.

LITTLE KAIWHATA STREAM BUSK

Site no.: EW2413

Grid ref: T27 516980

Source: Sawyer *et al.* 1998

Area: 300 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Gully

Land system: Rolling hill-downs

Principal landform: Spur

Site description: Sites all linked by tree-shrubland so considered as one study site.

Vegetation type: Shrubland, tall closed forest with emergents.

Dominant species: *Nothofagus solandri*, *Knightsia excelsa*, *Leptospermum scoparium*.

Other species: *Pseudopanax arboreus*, *Pittosporum eugenioides*, *Leucopogon fasciculatus*, *Hebe* sp., *Griselinia littoralis*, *Coprosma robusta*, *Coriaria arborea*, *Sophora microphylla*, *Pittosporum tenuifolium*, *Brachyglottis repanda*, *Phormium tenax*.

Significance: Significant plant: *Griselinia littoralis*.

Comments: Large but contains very little primary forest (restricted to the gully floors). Site mostly burnt

Notes: Ref. Ecol. Site Inventory No. 892.

NGATAPA - "GOOSE"

Site no.: EW2216

Grid ref: T27 348951

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Tread

Vegetation type: Treeland.

Dominant species: *Nothofagus solandri*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Salix fragilis*.

Other species: *Sophora tetraptera*, *Sophora microphylla*, *Myrsine divaricata*, *Hoberia augustifolia*, *Teucrium parvifolium*, *Coprosma virescens*, *Coprosma pedicellata*, *Korthalsella lindsayi*, *Cordyline australis*.

Significance: Significant plants: *Teucrium parvifolium* (On left-hand side of drain where it joins a natural channel), *Coprosma virescens*, *Coprosma pedicellata*; vulnerable, *Korthalsella lindsayi*. Extensive divaricating flora.

Comments: Browsed & cutover. *Dacrycarpus dacrydioides* - *Podocarpus totara* mostly pole sized regeneration 20/4/94. Reference - de Lange 30/8/93 Ref: Townsend *et al.* 1997.

Notes: Ref. Ecol. Site Inventory No. 609.

PAHAOA RIVER TRIBUTARY BUSH

Site no.: EW2319

Grid ref: T27 463942

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Dissected rolling hill country, terrace (lake?)

Principal landform: Terrace tread

Site description: On banks of Pahaoa River.

Vegetation type: Tall closed forest, tall closed forest with emergents.

Dominant species: *Nothofagus solandri*, *Leucopogon fasciculatus*, *Dacrycarpus dacrydioides*.

Other species: *Craspedia* sp., *Ranunculus* sp., *Cordyline australis*, *Metrosideros diffusa*, *Nestegis montana*, *Prumnopitys taxifolia*, *Neomyrtus pedunculata*, *Helichrysum lanceolatum*, *Gaultheria depressa*, *Blechnum colensoi*, *Cyathea smithii*, *Pratia angulata*, *Podocarpus totara*, *Melicytus ramiflorus*, *Olearia rani*, *Carmichaelia australis*, *Coprosma rotundifolia*, *Thelymitra longifolia*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Cyathodes juniperina*, *Pseudopanax crassifolius*, *Raukaua anomalus*, *Pittosporum eugenioides*, *Pittosporum tenuifolium*, *Brachyglottis repanda*, *Clematis paniculata*, *Hebe stricta*, *Pseudopanax arboreus*, *Nothofagus solandri*, *Dacrydium cupressinum*, *Coprosma propinqua*, *Coprosma rubra*, *Coprosma rhamnoides*, *Coprosma crassifolia*, *Coprosma microcarpa*, *Coprosma robusta*, *Coprosma grandifolia*, *Coprosma lucida*.

Significance: Significant plants: *Craspedia* sp., *Ranunculus* sp., *Neomyrtus pedunculata*. Birds: bellbird, whitehead, silvereye, fantail.

Notes: Ref. Ecol. Site Inventory No. 869.

WHANGAIOTEKAPINGA STREAM TRIBUTARY

Site no.: EW2214

Grid ref: T27 335937

Source: Sawyer *et al.* 1998

Area: 45 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, gorge, scarp

Land system: Dissected rolling hill country

Principal landform: Gully

Site description: Long thin strip of vegetation with best vegetation downstream, and treeland/ shrubland in upper part. Links into 2213.

Vegetation type: Tall closed forest with emergents.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Nestegis* sp., *Hoberia sexstylosa*, *Sophora microphylla*.

Other species: Not known.

Significance: Significant plants: *Nothofagus?*, *Kunzea ericoides*, *Sophora microphylla*, *Nestegis* sp. Dense vegetation in central area looks interesting & less affected by grazing.

Comments: Affected by grazing, especially on margin. Limestone substrate.

OUMUKURA STREAM FOREST

Site no.: EW2352

Grid ref: T27 448919

Source: Sawyer *et al.* 1998

Area: c.35 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform: Hillslope

Vegetation type: Forest.

Dominant species: *Nothofagus solandri*.

Other species: See species list in Rebergen 1997e.

Comments: Beech-podocarp forest.

WAINUIORU RIVER

Site no.: EW2920

Grid ref: T27 367893

Source: Sawyer *et al.* 1998

Area: 40 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser, limestone bluffs (steep)

Land system: Dissected terrace, rolling hill country

Principal landform: Terrace tread

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Nothofagus fusca*, *Dacrycarpus dacrydioides*, *Sophora* sp., *Knightia excelsa*, Broadleaf shrubs, *Phormium* sp., *Cyathea medullaris*, *Cordyline* sp., *Myoporum laetum*, *Nothofagus solandri*.

Other species: Not known.

Significance: Significant plants: *Nothofagus*. Survey extended upstream along scarp - infestation of *Clematis vitalba* on south margin. A combination of species & landforms not seen elsewhere. Limestone bluffs *Simplicia* habitat ?

RUAKOKOPUTUNA RIVER BUSH

Site no.: EW2818

Grid ref: S27 154862

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone:

Altitude: 100 m

Other landform: Terrace riser

Land system: Alluvial plain

Principal landform: Cliff

Vegetation type: Forest.

Dominant species: *Nothofagus solandri*.

Other species: *Kunzea ericoides*, *Pseudopanax arboreum*, *Podocarpus totara*, *Pittosporum tenuifolium*, *Myoporum laetum*, *Phormium cookianum*.

Significance: Size, undergrowth, species richness, key site.

Comments: Further look recommended. Good vegetation representation on escarpment, good cover, easy to protect.

WAITETUNA BUSH

Site no.: EW2918

Grid ref: T27 364852

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Hill country (rolling)

Principal landform: Terrace tread

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*.

Other species: *Pseudopanax crassifolius*, *Dacrycarpus dacrydioides*, *Cordyline australis*, *Hoberia populnea*, *Pseudopanax arboreus*, *Phormium cookianum*, *Meliclytus ramiflorus*.

MAKARA RIVER - RUAOKOKOPUTUNA

Site no.: EW2806 **Grid ref:** S27 153814 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** **Altitude:**
Other landform: **Land system:**
Principal landform: Gully

Vegetation type: Shrubland

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Sophora tetraptera*.

Other species: *Alectryon excelsus*, *Coprosma rubra*, *Lophomyrtus obcordata*, *Pennantia corymbosa*, *Pseudopanax anomalus*, *Clematis foetida*, *Rubus schmidelioides*, *Cyathea dealbata*, *Metrosideros colensoi*, *Phormium cookianum*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Coprosma rotundifolia*, *Helicbrysum lanceolatum*, *Streblus heterophyllus*, *Melicytus micranthus*, *Pittosporum tenuifolium*, *Carpodetus serratus*, *Myrsine australis*, *Pseudopanax arboreus*, *Pittosporum eugeniioides*, *Nestegis lanceolata*, *Cordyline australis*, *Brachyglottis repanda*, *Urtica ferox*, *Podocarpus totara*, *Hebe stricta*, *Ripogonum scandens*, *Pseudopanax crassifolius*, *Carmichaelia australis*, *Gnaphalium kerriense*, *Schefflera digitata*, *Coprosma areolata*, *Nothofagus solandri*, *Nothofagus fusca*, *Hedycarya arborea*, *Olearia rani*, *Ozothamnus leptophyllus*, *Olearia paniculata*, *Melicope simplex*, *Carex secta*, *Melicytus ramiflorus*.

Significance: Limestone gorge has high scenic impact. May have caves. Could be a site for *Chionochloa beddei*.

GLENBURN STATION

Site no.: EW3015 **Grid ref:** T27 475817 **Source:** Sawyer *et al.* 1998
Area: 5 ha **Bioclimatic zone:** Coastal **Altitude:**
Other landform: **Land system:**
Principal landform: Terrace

Vegetation type: Tussockland.

Dominant species: *Typha orientalis*, *Schoenoplectus tabernaemontani*.

Other species: *Carex secta*, *Juncus kraussii* var. *australiensis*.

Significance: Most beach wetlands have been cut through to the coast and drained - this one has not, and is therefore higher quality.

CHERRY CREEK

Site no.: EW2924 **Grid ref:** T27 330807 **Source:** Current survey.
Area: c.5 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully, bluffs **Land system:**
Principal landform:

Vegetation type: Forest, exotic grassland.

Dominant species: Kanuka, black beech.

Other species: *Phymatosorus pustulatus*, *Brachylottis lagopus*, *Targionia hypophylla*.

Significance: *Anogramma leptophylla*, *Kortbalsella salicorniodes*.

Comments: Ref: Townsend *et al.* 1997.

TENERIFFE BUSH

Site no.: EW3501 **Grid ref:** T28 350790 **Source:** Viewed from nearby high
point; existing information
Area: 700 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:** 140-415 m
Other landform: Steep ridges, gullies, toeslope **Land system:** Moderately steep hills,
steep hills
Principal landform: Hillslope

Vegetation type: Kanuka forest ↔ kanuka-manuka forest and scrub. Black beech forest. Rewarewa/kaikomako-tarata-mahoe-ti kouka-mingimigi-(black maire)-(nikau) forest. Tauhinu shrubland.

Significance: A large regenerating natural area between the adjacent Lagoon Hills and Heights Block (RAP 44), and the large Mt Adams Pahaoa River complex (RAP 37) to the northwest.

Comments: A large area. Gully forest vegetation is regenerating with good potential to spread if grazing pressure is reduced or removed.

WELLBYRNE

Site no.: EW3405

Grid ref: S28 139757

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Downs, rolling hills

Principal landform: Riser

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Nothofagus solandri*, with sparsely scattered emergent podocarps.

Other species: *Cyathodes juniperina*, *Coprosma rhamnoides*, *Coprosma rotundifolia*, *Coprosma areolata*, *Coprosma rubra*, *Raukaua anomalus*, *Pittosporum divaricatum*, *Helichrysum lanceolatum*, *Nestegis montana*, *Prumnopitys ferruginea*, *Myrsine australis*, *Pseudopanax crassifolius*, *Hedycarya arborea*, *Dacrydium cupressinum*, *Prumnopitys taxifolia*, *Rubus schmidelioides*, *Melicytus micranthus*, *Ozothamnus leptophyllus*, *Elaeocarpus bookerianus*, *Metrosideros diffusa*, *Freycinetia baueriana*, *Coprosma grandifolia*, *Metrosideros perforata*, *Griselinia littoralis*, *Melicytus ramiflorus*, *Coprosma crassifolia*, *Lophomyrtus obcordata*, *Cyathea dealbata*, *Olearia rani*, *Coprosma robusta*, *Leptospermum scoparium*, *Elaeocarpus dentatus*, *Pennantia corymbosa*, *Cordyline banksii*, *Cordyline australis*.

Significance: Significant plants: *Nothofagus solandri*, *Pittosporum divaricatum*, *Nestegis montana*, *Prumnopitys ferruginea*. Birds: grey warbler, bellbird, whitehead, kereru.

Notes: Ref. Ecol. Site Inventory No. 593.

TUTURUMURI SWAMP

Site no.: EW3422

Grid ref: S28 177747

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: ??

Altitude:

Other landform:

Land system: Alluvial plain ? terrace ?

Principal landform: Floodplain

Vegetation type: Shrubland, tussockland

Dominant species: *Carex*, *Typha orientalis*, *Leptospermum scoparium*, *Juncus edgarae*.

Other species: Not known.

Significance: Unusual looking, "Threatened by very fine river silt". Part is a very dense raupo unit - threatened by willows.

Notes: Ref. Ecol. Site Inventory Nos. 150, 569, 570.

OTEREI RIVER

Site no.: EW3415

Grid ref: S28 230730

Source:

Area: 250 ha

Bioclimatic zone:

Altitude: 40-300 m

Other landform: Gully

Land type: Moderately steep hills

Principal landform: Spur

Vegetation types: 1. (Black beech)-(rewarewa)/(maire)-ti kouka-*Sophora tetraptera*-(ngaio)-houhere treeland [Understorey: kanuka/*Coprosma rhamnoides*-(*Coprosma rigida*)-ongaonga/*Laestrepopsis glabella*-pasture]
2. (Rewarewa)/kanuka-putaputaweta-mamaku-whauwhaupaku treeland [Understorey: mingimingi-heketara-rangiora/ponga-*Coprosma rhamnoides*/*Uncinia uncinata*-(pikopiko)-bareground.
3. Kanuka-manuka scrub [Understorey: mingimingi/mingimingi-karamu/*Uncinia uncinata*-bareground]

Other species: *Pbormium cookianum*, *Aciphylla squarrosa*, *Helichrysum lanceolatum*, *Ozothamnus leptophyllus*, *Pomaderris* aff. *phylicifolia* (Sawyer *et al.* 1998).

Notes: Extensive area of scrub.

PAHAOA COASTAL FOREST #1

Site no.: EW3502 **Grid ref:** T28 346743 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Coastal **Altitude:**
Other landform: Spur **Land system:** Hill county, taipo
Principal landform: Gully

Site description: Steep scrub from spur-crest down to coastal cliffs.

Vegetation type: Tree-shrubland, tussockland, openland.

Dominant species: *Corynocarpus laevigatus*, *Ozotamnus leptophyllus*, *Cordyline australis*, *Urtica ferox*, *Desmoschoenus spiralis*, *Spinifex sericeus*, *Juncus kraussii* var. *australiensis*, *Raoulia australis*, *Coprosma acerosa*.

Other species: *Ammophila arenaria*, *Lupinus arboreus*, *Urtica ferox*, *Leptospermum scoparium*, *Olearia paniculata*, *Kunzea ericoides*.

Significance: Significant plants: *Desmoschoenus spiralis*, *Raoulia australis*, *Coprosma acerosa*.

Comments: Coastal site, but probably secondary scrub.

ROUGH HILL BUSH

Site no.: EW3301 **Grid ref:** S28 123716 **Source:** Sawyer *et al.* 1998
Area: 900 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:**
Other landform: Gully, ridgecrest, sideslope, braided shingle flat **Land system:** Hill country
Principal landform: Spur

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Ozotamnus leptophyllus*, *Nothofagus solandri*.

Other species: *Prumnopitys taxifolia*, *Hoberia populnea*, *Pinus radiata*, *Cyathea dealbata*, *Dacrydium cupressinum*, *Leucopogon fasciculatus*, *Nestegis lanceolata*, *Hebe stricta*, *Coprosma rubra*, *Coprosma crassifolia*, *Pennantia corymbosa*, *Helichrysum lanceolatum*, *Coprosma rhamnoides*, *Sophora tetraptera*, *Dacrycarpus dacrydioides*, *Cordyline australis*, *Pseudopanax crassifolius*, *Elaeocarpus dentatus*, *Carpodetus serratus*, *Knightia excelsa*, *Alectryon excelsus*.

Comments: Pines on spur.

Notes: Ref. Ecol. Site Inventory No. 526.

MANUREWA POINT HERBFIELD

Site no.: EW3432 **Grid ref:** S28 213639 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** **Altitude:**
Other landform: **Land system:** Coastal platform
Principal landform: Marine terrace

Vegetation type: Fellfield.

Dominant species: Not known.

Other species: *Samolus repens* - *Plantago* sp. herbfield.

Significance: Uncommon vegetation type in this ED.

Recommendation: Investigate area and condition of site.

Comments: Identified from Table 9.2 in Sawyer *et al.* 1998. Not protected for conservation.

NEAR BROWNS HILL

Site no.: EW3425 **Grid ref:** S28 178712 **Source:** Sawyer *et al.* 1998
Area: 150 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully, sideslope, topslope **Land system:** Rolling hill country
Principal landform: Spur

Vegetation type: Scrub.

Dominant species: *Kunzea ericoides*, *Knightia excelsa*, *Cyathea medullaris*, *Pseudopanax arboreus*, *Leptospermum scoparium*, *Leucopogon fasciculatus*.

Other species: *Cordyline australis*, *Sophora tetraptera*, *Asplenium flaccidum*, *Senecio jacobaea*, *Hypolepis ambigua*, *Blechnum fluviatile*, *Asplenium flabellifolium*, *Pratia angulata*, *Eleocharis acuta*, *Pittosporum tenuifolium*, *Pseudopanax arboreus*, *Coprosma rubra*, *Carex geminata*, *Melicactus ramiflorus*, *Coprosma propinqua*, *Helichrysum lanceolatum*, *Pteridium esculentum*, *Craspedia minor*, *Holcus lanatus*, *Hebe stricta*, *Pinus radiata*, *Acaena anserinoides*, *Agrostis capillaris*, *Clematis foetida*, *Olearia rani*, *Carpodetus serratus*, *Juncus edgarrae*, *Juncus effusus*, *Nothofagus solandri*, *Pomaderris* aff. *phyllicifolia*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Brachyglottis repanda*, *Coprosma robusta*, *Coprosma robusta* × *C. propinqua*, *Taraxacum officinale*, *Gaultheria antipoda*, *Parsonsia heterophylla*, *Cirsium vulgare*, *Cyathodes fraseri*, *Lotus pedunculatus*.

Significance: Key site. Diverse habitat & species rich. Relatively large area. Some scrub has been fenced & some interplanted with pines.

Comments: Birds: grey warbler, fantail, magpie, silvereye, pipit, bellbird.

LITTLE TORA

Site no.: EW3413

Grid ref: S28 240710

Source: On site survey

Area: 400 ha

Bioclimatic zone: Semi-coastal

Altitude: 40-300 m

Other landform: Gully

Land system: Moderately steep hills

Principal landform: Spur

Vegetation types: 1. (Black beech)-(rewarewa)/(maire)-ti kouka-*Sophora tetraptera*-(ngaio)-houhere treeland [Understorey: *kanuka*/*Coprosma rhamnoides*-(*Coprosma rigida*)-ongaonga/*Laestrepopsis glabella*-pasture]

2. (Rewarewa)/*kanuka*-putaputaweta-mamaku-whauwhaupaku treeland [Understorey: *mingimingi*-heketara-rangiora/ponga-*Coprosma rhamnoides*/*Uncinia uncinata*-(pikopiko)-bareground.

3. *Kanuka*-manuka scrub [Understorey: *mingimingi*/mingimingi-*karamu*/*Uncinia uncinata*-bareground]

Significance: Significant plant: *Sophora microphylla* (Sawyer *et al.* 1998)

Notes: Extensive area of scrub.

LITTLE TORA BUSH

Site no.: EW3412

Grid ref: S28 220670

Source: Current survey

Area: 400 ha

Bioclimatic zone:

Altitude: 60-300 m

Other landform: Gully, sideslope

Land system: Moderately steep hills

Principal landform: Spur

Vegetation types: 1. *Black beech forest* D treeland [Understorey: (*Sophora microphylla*)-(horoeke)-(putaputaweta)/*mingimingi-rangiora*-prickly mingimingi/harakeke-(niniao)/pikopiko]

2. *Kanuka*/*manuka*-*mingimingi*-tauhinu-(putaputaweta)-(whauwhaupaku) scrub [Understorey: mingimingi-*Coprosma rhamnoides*-(rangiora)-(whauwhaupaku)-(harakeke)-(Pomphy)/*Uncinia uncinata*-Waewaekoukou-litter]

3. *Kanuka* forest [Understorey: (akakaikiore)/*mingimingi*-(putaputaweta)/*Coprosma rhamnoides*-(kakahā)/*Uncinia uncinata*-(pikopiko)-(kiwikiwi)]

Other species: *Cordyline australis*, *Helichrysum lanceolatum*, *Knightsia excelsa*, *Sophora tetraptera*, *Craspedia* sp., *Coprosma robusta*, *Clematis foetida*, *Olearia rani*, *Pteridium esculentum*, *Aciphylla squarrosa*, *Phormium cookianum*, (Sawyer *et al.* 1998).

Significance: Significant plants: *Craspedia* sp. (Sawyer *et al.* 1998).

Comments: Birds: Grey warbler, fantail, tomtit.

Notes: Mostly dominated by manuka scrub. Good regeneration.

TORA

Site no.: EW3408 **Grid ref:** S28 164671 **Source:** Sawyer *et al.* 1998
Area: 1450 (800) ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:**
Other landform: Gully, ridgeline, ridgecrest **Land system:** Hill country
Principal landform: Spur

Vegetation type: Tall closed forest, closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*, *Helichrysum aggregatum*, mixed broadleaved species, *Carpodetus serratus*, *Brachyglottis repanda*, *Leptospermum scoparium*, *Cyatbodes juniperina*, *Ozothamnus leptophyllus*, *Cordyline australis*.

Other species: Not known.

Significance: Significant plants: *Carmichaelia australis*, *Gabnia pauciflora*, *Acaena anserinifolia*, *Aciphylla colensoi*, *Nestegis cunninghamii*, *Pomaderris* aff. *phylicifolia*, *Botrychium australe*, *Melicytus micranthus*, *Nestegis montana*. Some of the site is not in Tora Bush Scenic Reserve.

Comments: Reference : Wassilief, Clark & Gabities, 1986; DOC 1996a.

Notes: Ref. Ecol. Site Inventory No. 524. The above information is based on the original study site (EW3408), which comprised 1450 ha; RAP 141 is estimated to be c.800 ha.

OPOUAWE SWAMP

Site no.: EW3308 **Grid ref:** S28 135649 **Source:** Sawyer *et al.* 1998
Area: 8 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope, terrace tread **Land system:** Terrace ?
Principal landform: Alluvial plain

Site description: Small swamp along White Rock Road.

Vegetation type: Tussockland, tussock-shrubland, shrubland, wetland.

Dominant species: *Leptospermum scoparium*, *Cyperus ustulatus*, *Carex geminata*, *Carex secta*, *Isolepis prolifer*, *Juncus edgarae*, *Kunzea ericoides*, *Coprosma rubra*, *Coprosma rhamnoides*

Other species: *Hypolepis ambigua*, *Blechnum minus*, *Carex* sp., *Muehlenbeckia complexa*, *Helichrysum lanceolatum*, *Rubus schmidelioides*, *Coprosma propinqua* × *C. robusta*, *Coprosma propinqua*, *Parsonsia heterophylla*, *Carmichaelia australis*, *Sophora microphylla*, *Pseudopanax arboreus*, *Ozothamnus leptophyllus*.

Significance: Unusual site in that it has an ecotone between wetland & terrestrial units in it.

Comments: Wetland formed from alluvial plain or poorly drained low lying terrace tread of Opouawe River.

Notes: Ref. Ecol. Site Inventory No. 631.

WHAWANUI RIVER BUSH

Site no.: EW3305 **Grid ref:** S28 095615 **Source:** Sawyer *et al.* 1998
Area: 800 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:**
Other landform: Gully, ridgeline, footslope, sideslope **Land system:** Hill country
Principal landform: Spur

Vegetation type: Shrubland, closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Sophora tetraptera*, *Nothofagus solandri*.

Other species: *Ozothamnus leptophyllus*, *Cordyline australis*.

Notes: Ref. Ecol. Site Inventory No. 525.

OROI STREAM

Site no.: EW3902 **Grid ref:** S28 154587, 154589 **Source:** On-site survey
Area: **Bioclimatic zone:** Coastal **Altitude:** <10 m
Other landform: Rock outcrops **Land system:** Coastal platform
Principal landform: Marine bench

Vegetation type: Tauhinu-(kanuka) shrubland. Giant umbrella sedge-(sea rush) sedgeland ⇌ pasture. Raupo reedland.

Significance: Indigenous shrubland on this land type is known only from this part of coastline in the Eastern Wairarapa Ecological District (RAPs 47 and 48, and here). These RAPs together comprise only a small fraction of the former coastal shrub cover of the ecological district. The area is also a nearly contiguous link with the larger fragments found in RAP 48.

Comments: Common gecko (*Hoplodactylus maculatus*) and common skink (*Oligosoma nigriplantare polychroma*) are recorded from here (Sawyer *et al.* 1998).

Reference: Sawyer *et al.* 1998.

2. MODERATE-HIGH

PUKETOI SHRUBLAND

Site no.: EW0104

Grid ref: U24 752713

Source: Sawyer *et al.* 1998

Area: 9 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Podocarpus totara*.

Other species: *Pittosporum tenuifolium*, *Cyathea medullaris*, *Pseudopanax crassifolius*, *Olearia furfuracea*, *Melicytus ramiflorus*, *Leucopogon fasciculatus*, *Brachyglottis repanda*, *Coprosma robusta*.

Significance: Not known.

TARAORA JUNCTION SHRUBLAND

Site no.: EW0437

Grid ref: U25 740688

Source: Sawyer *et al.* 1998

Area: 60 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Bluff

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Beilschmiedia tawa*.

Other species: *Melicytus ramiflorus*, *Hoberia populnea*, *Cordyline banksii*, *Geniostoma rupestre* var. *ligustrifolium*, *Phormium cookianum*.

Significance: Not known.

WAIHOKI STREAM SHRUBLAND

Site no.: EW0428

Grid ref: U25 785590

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope, spur line, spur crest, ridgeline

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*, *Knightia excelsa*.

Other species: *Myrsine australis*, *Cordyline australis*, *Pinus radiata*, *Dicksonia squarrosa*, *Hebe stricta*, *Melicytus ramiflorus*, *Pseudopanax crassifolius*, *Pittosporum eugenioides*, *Carpodetus serratus*, *Leptospermum scoparium*, *Hoberia populnea*.

Significance: Not known.

OWAHANGA RIVER

Site no.: EW0512

Grid ref: U25 827651

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Tread

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Beilschmiedia tawa*.

Other species: *Metrosideros colensoi*, *Metrosideros diffusa*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Alectryon excelsus*, *Pittosporum tenuifolium*, *Nestegis lanceolata*, *Salix* sp., *Cordyline australis*, *Sophora tetraptera*, *Elaeocarpus dentatus*, *Leptospermum scoparium*.

Significance: Key site ?. Intact example of forest, with an high visual impact from the road.

THE PEAK - MT ATTLIA

Site no.: EW0527

Grid ref: U25 880647

Source: Sawyer *et al.* 1998

Area: 120 ha

Bioclimatic zone: Semi-coastal

Altitude: 339 m

Other landform: Gully head, sideslope

Land system: Hill country

Principal landform: Gully

Vegetation type: Shrubland, forest.

Dominant species: *Kunzea ericoides*, *Nothofagus solandri*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*.

Other species: *Ulex europaeus*, *Cordyline australis*, *Podocarpus totara*.

Significance: Not known.

OWAHANGA RIVER

Site no.: EW0520

Grid ref: U25 841595

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully head, sideslope, spur, hillcrest

Land system: Hill country

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Sophora* sp., *Beilschmiedia tawa*, *Melicytus ramiflorus*.

Other species: *Coprosma rubra*, *Coprosma crassifolia*, *Knightia excelsa*, *Sophora tetraptera*, *Coprosma rhamnoides*, *Cordyline australis*, *Leptospermum scoparium*, *Hoberia populnea*, *Pyrrosia eleagnifolia*, *Hydrocotyle novae-zeelandiae*, *Myrsine australis*, *Asplenium flabellifolium*, *Helichrysum lanceolatum*, *Pellaea rotundifolia*, *Trifolium repens*, *Galium propinquum*, *Alectryon excelsus*, *Macropiper excelsum*, *Parsonsia heterophylla*, *Cyathea dealbata*, *Coprosma lucida*, *Brachyglottis repanda*, *Pittosporum eugenioides*, *Coprosma robusta*, *Phormium cookianum*, *Hebe stricta*, *Phymatosorus pustulatus*, *Carex geminata*, *Ozothamnus leptophyllus*, *Polystichum richardii*, *Asplenium bookerianum*, *Carpodetus serratus*, *Cyathea medullaris*, *Asplenium oblongifolium*, *Geniostoma rupestre* var. *ligustrifolium*, *Pneumatopteris pennigera*, *Asplenium bulbiferum*, *Pseudopanax crassifolius*, *Ulex europaeus*, *Agrostis capsularis*, *Festuca arundinacea*, *Asplenium flaccidum*, *Muehlenbeckia australis*, *Podocarpus totara*, *Corynocarpus laevigatus*, *Blechnum chambersii*, *Lastreopsis glabella*, *Prunella vulgaris*, *Echinopogon ovatus*, *Ranunculus reflexus*, *Urtica ferox*, *Adiantum cunninghamii*, *Blechnum fluviatile*, *Fuchsia excorticata*, *Uncinia uncinata*, *Coprosma grandifolia*, *Rubus schmidelioides*, *Callitride stagnalis*, *Haloragis erecta*, *Gnaphalium gymnocephalum*, *Coprosma propinqua*, *Juncus edgarrae*, *Hierochloa redolens*.

Comments:** Birds: grey warbler, magpie, silvereye, fantail, spur-winged plover.

KERERU STREAM BUSH

Site no.: EW0608

Grid ref: U25 948617

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, gully

Land system: Taipo

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*, *Podocarpus totara*.

Other species: *Prumnopitys taxifolia*, *Beilschmiedia tawa*, *Pseudopanax crassifolius*, *Cyathea medullaris*,

Pittosporum eugenioides, *Coprosma robusta*, *Elaeocarpus dentatus*, *Ozothamnus leptophyllus*, *Knightia excelsa*, *Dacrycarpus dacrydioides*, *Kunzea ericoides*, *Carpodetus serratus*, *Melicytus ramiflorus*.

Significance: Not known.

BRANSCOMBE SHRUBLAND

Site no.: EW0609

Grid ref: U25 951611

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Taipo, hill country

Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Nothofagus solandri*.

Other species: *Myoporum laetum*, *Hoberia populnea*, *Pomaderris aff. phyllicifolia*, *Ozothamnus leptophyllus*, *Beilschmiedia tawa*, *Cordyline australis*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Prumnopitys taxifolia*.

Significance: Significant plant : *Rhopalostylis sapida*.

Comments: Needs further investigation. Small patch of tall closed forest in gully. Unusual species composition

AKITIO BUSH

Site no.: EW0605

Grid ref: U25 983602

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope, spur

Land system: Hill country

Principal landform: Gully

Vegetation type: Open forest, treeland.

Dominant species: *Myoporum laetum*, *Melicytus ramiflorus*, *Corynocarpus laevigatus*.

Other species: *Myrsine australis*, *Ozothamnus leptophyllus*, *Cordyline australis*, *Leptospermum scoparium*, *Knightia excelsa*, *Cyathea medullaris*, *Cyathea dealbata*, *Pseudopanax crassifolius*, *Kunzea ericoides*.

Significance: Not known.

Notes: Mostly outside ED.

TIRAUMEA - GREENSIDE SHRUBLAND

Site no.: EW0403

Grid ref: T25 654605

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Treeland, shrubland, closed forest.

Dominant species: *Hoberia populnea*, *Kunzea ericoides*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Ulex europaeus*.

Other species: *Raukaua anomalus*, *Ulex europaeus*, *Coprosma rigida*, *Coprosma rhamnoides*.

Significance: Significant plant: *Coprosma rigida*. One gully of quite good bush.

TABLE 479 M

Site no.: EW0414A

Grid ref: U25 725574

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system:

Principal landform: Hill country

Vegetation type: Tall closed forest.

Dominant species: *Elaeocarpus dentatus*, *Knightia excelsa*, *Beilschmiedia tawa*, *Hoberia populnea*, *Carpodetus serratus*, *Prumnopitys ferruginea*, *Kunzea ericoides*, *Ripogonum scandens*.

Other species: *Melicytus ramiflorus*, *Leucopogon fasciculatus*, *Dicksonia squarrosa*, *Olearia rani*, *Metrosideros colensoi*, *Hedycarya arborea*, *Coprosma grandifolia*, *Cyathea dealbata*, *Pseudopanax crassifolius*, *Myrsine australis*, *Olearia virgata*, *Coprosma rhamnoides*, *Muehlenbeckia australis*, *Pteridium esculentum*, *Blechnum fluviatile*, *Schefflera digitata*, *Metrosideros diffusa*, *Parsonsia heterophylla*, *Pteris macilenta*, *Asplenium flaccidum*, *Clematis corsteri*, *Syzygium maire*, *Asplenium bulbiferum*, *Clematis paniculata*, *Hymenophyllum demissum*, *Polystichum richardii*, *Blechnum filiforme*, *Asplenium bookerianum*, *Lastreopsis glabella*, *Pellaea rotundifolia*, *Phymatosorus pustalatus*, *Parsonsia capsularis*, *Metrosideros fulgens*, *Rubus schmidelioides*, *Elaeocarpus dentatus*, *Hoberia populnea*.

Significance: Notable for hinau. Good canopy and subcanopy, but heavily grazed. Birds : NZ pigeon, riroriro.

Comments: Would respond well to fencing and buffer. See 0414 , 0414b,c for further site information.

TABLE

Site no.: EW0414	Grid ref: U25 724570	Source: Sawyer <i>et al.</i> 1998
Area: 80 ha	Bioclimatic zone: Lowland	Altitude: 400 m
Other landform: Sideslope		Land system: ill country
		Principal landform: HGully

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Carpodetus serratus*, grass.

Other species: Not known.

Significance: Key site. Presence of *Syzygium maire* is unusual for ED. Also present are kereru, riflemen. High species diversity.

Comments: All sites would respond well to fencing and buffer. All areas grazed (few goats, mostly stock) See 0414a, b, c for further site information.

WATERFALLS SHRUBLAND

Site no.: EW0413	Grid ref: U25 705560	Source: Sawyer <i>et al.</i> 1998
Area: 450 ha	Bioclimatic zone: Semi-cosatal, lowland	Altitude:
Other landform: Gully, ridgeline, sideslope		Land system: Hill country
		Principal landform: Spur

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Ulex europaeus*, *Coprosma rhamnoides*, *Blechnum fluviatile*, *Hypolepis ambigua*, *Hoberia populnea*, *Kunzea ericoides*, *Carpodetus serratus*, *Melicytus ramiflorus*.

Other species: Not known.

Significance: Large areas of regenerating forest and scrub. Probably will not be cleared by present owner. Mature *Kunzea ericoides* at low levels. Grazed (cattle and goats). One mature area on 'High Range', two on 'Waterfalls' property. Birds: shining cuckoo, riroriro, tui.

Comments: Possibly has been cleared. Large chunk of shrubland not marked on map, it has regenerated since DOSLI photographs taken. Birds: blackbird, quail.

ALFREDTON BUSH B

Site no.: EW0826	Grid ref: T25 527566	Source: Sawyer <i>et al.</i> 1998
Area: 6 ha	Bioclimatic zone: Semi-coastal	Altitude:
Other landform: Floodplain		Land system: Terrace
		Principal landform: Tread

Site description: Small area of terrace & floodplain on Alfredton/Pa Valley Road corner.

Dominant species: *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Prumnopitys taxifolia*, *Dacrydium cupressinum*, *Beilschmiedia tawa*, *Melicope simplex*, *Melicytus micranthus*.

Other species: *Coprosma rhamnoides*, *Myrsine australis*, *Pittosporum tenuifolium*, *Sophora tetraptera*, *Pseudopanax crassifolius*, *Gnaphalium gymnocephalum*, *Pittosporum eugenioides*, *Schefflera digitata*, *Olearia virgata*, *Coprosma rubra*, *Melicytus ramiflorus*, *Lophomyrtus obcordata*, *Streblus heterophyllus*, *Carmichaelia australis*, *Coprosma rotundifolia*, *Elaeocarpus dentatus*, *Tradescantia fluminensis*, *Brachyglottis repanda*, *Coprosma areolata*, *Muehlenbeckia complexa*, *Cyathea dealbata*, *Nestegis lanceolata*, *Urtica ferox*, *Dacrycarpus dacrydioides*, *Alectryon excelsus*, *Knightia excelsa*, *Dicksonia squarrosa*, *Coprosma grandifolia*, *Hedycarya arborea*, *Olearia rani*, *Muehlenbeckia australis*, *Raukaua anomalus*, *Lophomyrtus obcordata* × *bullata*, *Neomyrtus pedunculata*, *Lophomyrtus bullata*, *Elaeocarpus bookerianus*.
Significance: Key site. High species diversity. kereru present.

ALFREDTON SHRUBLAND

Site no.: EW0827 **Grid ref:** T25 500555 **Source:** Sawyer *et al.* 1998
Area: 90 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope (steep) **Land system:** Rolling hill country
Principal landform: Face

Vegetation type: Shrubland, closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Melicytus ramiflorus*, *Beilschmiedia tawa*, *Pseudopanax crassifolius*.

Other species: *Cyathea dealbata*, *Knightia excelsa*, *Pittosporum eugenioides*, *Metrosideros robusta*, *Dacrycarpus dacrydioides*, *Elaeocarpus dentatus*, *Cordyline australis*, *Hoberia populnea*, *Pittosporum tenuifolium*, *Cyathea medullaris*, *Podocarpus totara*.

Significance: Not known.

Comments: Mainly scrub with some forest patches.

BEE HILL TIRAUMEA

Site no.: EW0805 **Grid ref:** T25 527553 **Source:** Sawyer *et al.* 1998
Area: 80 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope, topslope **Land system:** Rolling hill country
Principal landform: Hillslope

Vegetation type: Shrubland, closed forest.

Dominant species: *Leptospermum scoparium*, *Hoberia populnea*, *Prumnopitys taxifolia*.

Other species: *Pseudopanax crassifolius*, *Dacrycarpus dacrydioides*, *Cordyline australis*, *Dicksonia fibrosa*, *Podocarpus totara*, *Cyathea medullaris*, *Ulex europaeus*.

Comments: Regenerating sideslope & topslope. Small patches of closed forest in gullies.

MARA BUSH BIRCH FARM (PUKERURU)

Site no.: EW0516 **Grid ref:** U25 846549 **Source:** Sawyer *et al.* 1998
Area: 25 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope **Land system:** Low taipo, hill country
Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Alectryon excelsus*, *Nothofagus solandri*, *Beilschmiedia tawa*.

Other species: *Cyathea dealbata*, *Elaeocarpus dentatus*, *Melicytus ramiflorus*, *Cordyline australis*, *Kunzea ericoides*, *Hoberia populnea*, *Coriaria arborea*.

Significance: Not known.

MARA SHRUBLAND BIRCH FARM (PUKERURU)

Site no.: EW0517A,B,C,D, **Grid ref:** U25 86547 **Source:** Sawyer *et al.* 1998
Area: 230 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 100-200 m
Other landform: Ridge, crest, sideslope, gully **Land system:** Low taipo
Principal landform: Spur

Vegetation type: Shrubland

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Hoberia populnea*, *Sophora tetraptera*, *Cordyline australis*, *Carpodetus serratus*, pines (emergent), *Myoporum laetum*, *Ozothamnus leptophyllus*, *Corynocarpus laevigatus*, *Coprosma rhamnoides*, *Helichrysum lanceolatum*, *Phormium* sp., *Raukahu anomalus*, grass.

Other species: *Melicytus ramiflorus*, *Cyathea dealbata*, *Polystichum richardii*, *Blechnum fluviatile*, *Brachyglottis repanda*, *Asplenium bulbiferum*, *Pellaea rotundifolia*, *Coprosma rotundifolia*, *Urtica ferox*, *Pteridium esculentum*, *Thelymitra longifolia*, *Phymatosorus pustalatus*, *Clematis paniculata*, *Geniostoma rupestre* var. *ligustrifolium*, *Adiantum cunninghamii*, *Macropiper excelsum*, *Asplenium hookerianum*, *Lastreopsis glabella*, *Nothofagus solandri*, *Ripogonum scandens*, *Dicksonia squarrosa*, *Beilschmiedia tawa*, *Parsonia heterophylla*, *Asplenium flaccidum*, *Melicytus micranthus*, *Pterostylis* sp., *Parsonia capsularis*, *Pyrrosia eleagnifolia*, *Muehlenbeckia australis*, *Olearia rani*, *Coprosma propinua* × *C. robusta*, *Coprosma robusta*, *Pomaderris* aff. *phylicifolia*, *Melicytus macrophyllus*, *Hedycarya arborea*.

Significance: *Melicytus macrophyllus*. *Myoporum laetum* forest at bottom of gully 0517a and north aspect of gully significant. (Fencing complete ? Not sure if retired or not.) Below scarp (Sim. Te Awaiti). Interesting canopy mix in other gullies but all heavily grazed.

Recommendation: Areas not big but significant canopy - may still respond to fencing, although dense grass.

Significance: Abundant birdlife: tomtit, grey warbler, fantail, shining cuckoo, whitehead, Australasian harrier.

Comments: On increasingly damp clay to fine sand clay as the gullies go north. Birds: chaffinch, blackbird, magpie.

WAI ITI BUSH C

Site no.: EW0307 **Grid ref:** T25 605545 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Closed forest, tall closed forest, shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Nestegis lanceolata*, *Pseudopanax crassifolius*.

Other species: *Coprosma rubra*, *Coprosma rotundifolia*, *Melicope simplex*, *Raukahu anomalus*, *Kunzea ericoides*, *Sophora tetraptera*, *Dacrydium cupressinum*, *Podocarpus totara*, *Cordyline australis*, *Leptospermum scoparium*.

Significance: Not known.

Comments: Not fenced (used as stock shelter). Visited 18/12/93.

ALFREDTON - TIRAUMEA "BUSH"

Site no.: EW0804 **Grid ref:** T25 548545 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Face **Land system:** Rolling hill country
Principal landform: Hillslope (steep)

Vegetation type: Tall closed forest.

Dominant species: *Knightia excelsa*, *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Pseudopanax crassifolius*.

Other species: *Pittosporum eugenioides*, *Hoberia populnea*, *Schefflera digitata*, *Pseudopanax crassifolius*, *Fuchsia excorticata*, *Hebe* sp., *Cordyline australis*, *Sophora tetraptera*, *Brachyglottis repanda*, *Coprosma*

rotundifolia, *Coprosma rhamnoides*, *Melicope simplex*, *Leptospermum scoparium*, *Kunzea ericoides*, *Cyathea medullaris*, *Nestegis cunninghamii*, *Podocarpus totara*.

Significance: Not known.

Comments: Broken uneven canopy.

TIRAUMEA TRIBUTARY (NGA RATA STATION ?)

Site no.: EW0306A,B,C,D, **Grid ref:** T25 626539

Source: Sawyer *et al.* 1998

Area: 39 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope, face

Land system: Rolling hill country

Principal landform: Hillside

Vegetation type: Closed forest, scrub.

Dominant species: *Knightia excelsa*, *Pseudopanax crassifolius*, *Hoberia populnea*, *Leptospermum scoparium* (3-4m), *Podocarpus totara*, *Weinmannia racemosa*, *Olearia rani*, *Pittosporum tenuifolium*, *Leucopogon fasciculatus*, *Melicytus ramiflorus*, *Brachyglottis repanda*, *Cyathea dealbata*, *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Kunzea ericoides*, *Coprosma rotundifolia*, *Lophomyrtus obcordata*, *Helichrysum laneolatum*.

Other species: *Cordyline australis*, *Prumnopitys taxifolia*, *Coprosma rhamnoides*, *Coprosma robusta*, *Myrsine australis*, *Hebe stricta*, *Parsonsia capsularis*, *Urtica ferox*, *Nestegis cunninghamii*, *Nestegis lanceolata*, *Pittosporum eugenoides*.

Significance: Presence of kereru and rifleman, unusual for ED. A number of closed areas of scrub and forest. Continuity significant, especially for tui and pigeon. No areas fenced. Heavy stocking, unless too steep or scrub too dense. Rabbits, possum, feral (?) cat present also. Pole totara, in places, some matai and kahikatea down by the stream. Negligible seedling growth; ragwort locally common.

Comments: Other birds: pigeon, riroriro, shining cuckoo, bellbird, pipit, harrier, blackbird.

HAPPY CREEK - TIRAUMEA (NGA RATA STATION)

Site no.: EW0308

Grid ref: T25 608533

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Face

Land system: Rolling hill country

Principal landform: Hillside

Vegetation type: Tall closed forest.

Dominant species: *Dacrydium cupressinum*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Podocarpus totara*, *Knightia excelsa*, *Coprosma rotundifolia*, *Melicope simplex*, *Raukaua anomalus*.

Other species: *Pseudopanax crassifolius*, *Hoberia populnea*, *Melicytus ramiflorus*, *Cyathea dealbata*, *Dicksonia squarrosa*, *Coprosma areolata*, *Coprosma rhamnoides*, *Urtica ferox*, *Carpodetus serratus*, *Rubus schmidelioides*, *Metrosideros colensoi*, *Metrosideros fulgens*, *Ripogonum scandens*, *Muehlenbeckia australis*, *Clematis paniculata*, *Pennantia corymbosa*, *Asplenium flaccidum*, *Asplenium bulbiferum*.

Significance: Presence of kereru & rifleman (unusual for ED). Recently fenced (has had cattle through in 1994 and is heavily tracked from past grazing). Adjacent small pine plantation. Good continuity with nearby scrub and forest patches (0315, 0307, 0314 & gully). QEII surveyed, not yet registered. Excellent regeneration of podocarps (seedlings & juv) including pole stand of *Dacrycarpus dacrydioides* 4-5 m. Milled stumps 1.2-1.5 m chain.

Comments: Birds: pigeon, shining cuckoo, tui, bellbird, lark, blackbird, magpie, riroriro, silvereye, fantail, chaffinch.

ISLAND PEAK

Site no.: EW0408

Grid ref: U25 728527

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone: Semi-coastal

Altitude: 427 m

Other landform: Gully, spur

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Laurelia novae-zelandiae*, *Knightia excelsa*, *Beilschmiedia tawa*.

Other species: *Hedycarya arborea*, *Hoheria sexstylosa*, *Melicytus ramiflorus*, *Griselinia littoralis*, *Carpodetus serratus*, *Rhopalostylis sapida*, *Pseudopanax crassifolius*, *Sophora microphylla*, *Olearia rani*, *Macropiper excelsum*, *Coprosma rhamnoides*.

Significance: Area of emergent forest, with some species present which are unusual for ED (*Laurelia novae-zelandiae* and *Rhopalostylis sapida*) and one “indeterminate” species (*Sophora microphylla*) present. Partially fenced with some grazing, but canopy and understorey regenerating. Some stream-side habitat.

Notes: Ref. Ecol. Site Inventory No. 1244.

PAHAU BUSH

Site no.: EW0820

Grid ref: T25 504516

Source: Sawyer *et al.* 1998

Area: 150 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, sideslope

Land system:

Principal landform: Spur

Site description: Aerial photo # 26C, 29C, 30C, 28C

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Beilschmiedia tawa*, *Dacrycarpus dacrydioides*.

Other species: *Cyathea dealbata*, *Hoheria populnea*, *Cyathea medullaris*, *Dicksonia fibrosa*, *Knightia excelsa*, *Leptospermum scoparium*.

Significance: Not known.

WAIORUTOKI STREAM BUSH

Site no.: EW0810

Grid ref: T25 549509

Source: Sawyer *et al.* 1998

Area: 52 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Tall closed forest with emergents.

Dominant species: *Knightia excelsa*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Dacrydium cupressinum*, *Metrosideros robusta*, *Prumnopitys taxifolia*, *Beilschmiedia tawa*, *Sophora* sp.

Other species: *Melicope simplex*, *Cyathea dealbata*, *Urtica ferox*, *Brachyglottis repanda*, *Coprosma crassifolia*, *Nestegis montana*, *Nestegis cunninghamii*, *Sophora tetraptera*, *Cordyline australis*, *Hoheria populnea*, *Pittosporum eugenioides*, *Alectryon excelsus*, *Leptospermum scoparium*, *Metrosideros diffusa*, *Raukaua anomalus*, *Hedycarya arborea*, *Carpodetus serratus*, *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Coprosma areolata*, *Coprosma rhamnoides*, *Dicksonia fibrosa*.

Significance: Key site. Large size. Relatively species rich. Fenced in 1984.

Comments: 50% of area has no canopy. Dead rata scattered down spur crest.

BARTONS SWAMP

Site no.: EW0840

Grid ref: T25 491505

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Wet valley

Land system: Rolling hill country

Principal landform: Floodplain

Vegetation type: Tussockland, open water.

Dominant species: *Typha orientalis*.

Other species: *Carex secta*, *Juncus effusus*, *Leptospermum scoparium*.

Significance: Key site? Token wetland. Very few wetlands occurs in Eastern Wairarapa Ecological District.

HUIAWA BUSH

Site no.: EW0313

Grid ref: T25 594510

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*.

Other species: *Cordyline australis*, *Sophora tetraptera*.

Significance: Not known.

WINGATE STREAM TRIBUTARY

Site no.: EW0406

Grid ref: U25 717505

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope

Land system: Hill country

Principal landform: Gully

Dominant species: *Beilschmiedia tawa*, *Elaeocarpus dentatus*, *Knightsia excelsa*, *Kunzea ericoides*, *Phormium cookianum*, *Coriaria arborea*, *Hebe stricta*.

Other species: *Hedycarya arborea*, *Olearia solandri*, *Earina mucronata*, *Crocasmia × crocosmiiflora*, *Macropiper excelsum*, *Blechnum novae-zelandiae*, *Hobelia populnea*, *Melicytus ramiflorus*, *Pseudopanax arboreus*, *Festuca arundinacea*, *Blechnum fluviatile*, *Blechnum chambersii*, *Coprosma rhamnoides*, *Pneumatopteris pennigera*, *Schefflera digitata*, *Carpodetus serratus*, *Senecio jacobaea*, *Ulex europaeus*, *Metrosideros diffusa*, *Olearia rani*, *Brachyglottis repanda*, *Olearia virgata*, *Pseudopanax crassifolius*, *Cyathea dealbata*, *Cordyline banksii*, *Earina autumnalis*, *Asplenium hookerianum*, *Pyrrosia eleagnifolia*, *Hypolepis ambigua*, *Asplenium bulbiferum*, *Geniostoma rupestre* var. *ligustrifolium*, *Cyathea medullaris*, *Ripogonum scandens*, *Dicksonia squarrosa*, *Elaeocarpus dentatus*, *Solanum nigrum*, *Lastreopsis glabella*, *Coprosma grandifolia*, *Coprosma areolata*, *Asplenium flaccidum*, *Digitalis purpurea*, *Leptospermum scoparium*, *Carex virgata*, *Parsonsia heterophylla*, *Ozothamnus leptophyllus*, *Pellaea rotundifolia*, *Cyathea smithii*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Alectryon excelsus*, *Myrsine australis*, *Weinmannia racemosa*, *Blechnum filiforme*, *Ranunculus reflexus*, *Solanum aviculare*, *Pteris tremula*, *Adiantum cunninghamii*, *Leptopteris hymenophylloides*, *Gnaphalium gymnocephalum*, *Galium aparine*, *Hierochloe redolens*, *Cordyline australis*, *Coprosma robusta*, *Nestegis lanceolata*, *Dendrobium cunninghamii*, *Rubus cissoides*, *Leucopogon fasciculatus*, *Glyceria fluitans*, *Prunella vulgaris*, *Asplenium oblongifolium*.

Significance: Birds: kereru, tui, thrush, grey warbler, fantail.

Comments: *Beilschmiedia tawa* - *Elaeocarpus dentatus* forest. Also *Knightsia excelsa* locally common. *Kunzea ericoides* around northern margins. Steep bluffs with *Phormium cookianum*, *Coriaria arborea*, *Hebe stricta* etc. Birds: blackbird.

OWAHANGA TUSSOCKLAND

Site no.: EW0607A,B,C,D,E

Grid ref: U25 912507

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Coastal

Altitude:

Other landform: Stream, wetland seep.

Land system: Duneland

Principal landform: Duneslack

Vegetation type:

Dominant species: *Cyperus ustulatus*, *Schoenoplectus tabernaemontani*, *Cortaderia toetoe*, *Hypolepis ambigua*, *Juncus kraussii* var. *australiensis*, *Samolus repens*, *Ranunculus acaulis*, *Isolepis prolifer*, *Typha orientalis*, pasture.

Other species: *Cordyline australis*, *Spinifex sericeus*, *Disphyma australe*, *Plantago* sp., *Ranunculus* sp., *Juncus articulatus*, *Ozothamnus leptophyllus*, *Phormium cookianum*, *Ulex europaeus*, *Ammophila arenaria*, *Paesia scaberula*, *Plagianthus divaricatus*, *Isolepis cernua*, *Carex geminata*, *Apodasmia similis*.

Significance: Significant plant: *Schoenoplectus tabernaemontani*. *Steatoda migas* present.

Comments: No katipo noted.

WAIPAUA STREAM SHRUBLAND - TUSSOCKLAND

Site no.: EW1111

Grid ref: U25 895485

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Foothlope, sideslope

Land system: Terrace, hill country

Principal landform: Terrace (marine)

Vegetation type: Tussockland, openland, shrubland.

Dominant species: *Juncus kraussii* var. *australiensis*, *Ozothamnus leptophyllus*, *Lupinus arboreus*.

Other species: *Ammophila arenaria*, *Cordyline australis*.

Significance: Not known.

Comments: Terrace is covered by colluvium.

NAMOI SHRUBLAND

Site no.: EW0818

Grid ref: T25 487487

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Site description: Appears to be a dam, with a wetland behind it. On the northern side of the Ihuraua River, just north of township on SH52. Bartons line may provide easier access.

Vegetation type: Tussock, shrubland.

Dominant species: *Leptospermum scoparium*, *Carex geminata*, *Carex secta*.

Other species: Not known.

Significance: Not known.

Comments: Only gully portion remains.

TANAWA STREAM

Site no.: EW1011

Grid ref: U25 759473

Source: Sawyer *et al.* 1998

Area: 9 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest, scrub.

Dominant species: *Knightia excelsa*, *Weinmannia racemosa*, *Beilschmiedia tawa* (local), *Kunzea ericoides*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*.

Other species: *Elaeocarpus dentatus*, *Cordyline australis*, *Metrosideros robusta*, *Urtica ferox*, *Hoberia populnea*, *Melicytus ramiflorus*, *Hypolepis ambigua*, *Coprosma areolata*, *Pittosporum tenuifolium*, *Earina mucronata*, *Coprosma rhamnoides*, *Cyathea medullaris*, *Cyathea dealbata*, *Pseudopanax crassifolius*, *Raukaua anomalus*, *Carpodetus serratus*, *Pyrrhosia eleagnifolia*, *Leucopogon fasciculatus*, *Juncus effusus*, *Histiopteris incisa*, *Pteridium esculentum*, *Coprosma grandifolia*, *Geniostoma rupestre* var. *ligustrifolium*, *Olearia virgata*, *Ulex europaeus*, *Carex secta*, *Carex geminata* (local), *Rubus cissoides*, *Coprosma rotundifolia*, *Olearia rani*, *Blechnum novae-zelandiae*, *Orthoceras novaezeelandiae*, *Rubus schmidelioides*.

Significance: Birds: tui, grey warbler, fantail, silvereye, paradise duck.

TANAWA HUT

Site no.: EW1009 **Grid ref:** U25 745456 **Source:** Sawyer *et al.* 1998
Area: 30 ha (25) **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully head, sideslope, spur line **Land system:** Hill country
Principal landform: Gully

Dominant species: *Beilschmiedia tawa*, *Kunzea ericoides*, *Eucalyptus* sp.

Other species: *Knightia excelsa*, *Myoporum laetum*, *Alectryon excelsus*, *Passiflora tetrandra*, *Carpodetus serratus*, *Pseudopanax crassifolius*, *Carpodetus serratus*, *Leptospermum scoparium*.

Significance: Not known.

Comments: Partially protected - QEII MS 5/07/105 (5 ha).

Notes: The above information is based on the original study site, which comprised 30 ha; the RAP is estimated to be c.25 ha.

AUPIRIPIRI SHRUBLAND

Site no.: EW1114 **Grid ref:** U25 847454 **Source:** Sawyer *et al.* 1998
Area: 100 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:**
Principal landform:

Vegetation type: Scrub.

Dominant species: *Pinus radiata*, *Leptospermum scoparium*, *Kunzea ericoides*, *Ulex europaeus*.

Other species: *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Juncus edgarrae*, *Ozothamnus leptophyllus*.

Comments: Birds: silvereye, fantail, grey warbler, blackbird.

AUPIRIPIRI SHRUBLAND

Site no.: EW1113 **Grid ref:** U25 840440 **Source:** Sawyer *et al.* 1998
Area: 150 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:**
Principal landform:

Vegetation type: Scrub.

Dominant species: *Pinus radiata*, *Leptospermum scoparium*, *Kunzea ericoides*, *Ulex europaeus*.

Other species: *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Juncus edgarrae*, *Ozothamnus leptophyllus*.

Significance: Not known.

WAIMAPU-GIBSON BUSH

Site no.: EW0814 **Grid ref:** T25 534425 **Source:** Sawyer *et al.* 1998
Area: 30 ha **Bioclimatic zone:** Lowland **Altitude:**
Other landform: Gully, sideslope **Land system:** Rolling hill country
Principal landform: Spur

Vegetation type: Treeland, tree-shrubland, closed forest.

Dominant species: *Knightia excelsa*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Cyathea dealbata*.

Other species: Not known.

Significance: Not known.

Comments: Only a small portion of the steep south facing sideslope (visible from the road) has been investigated.

PACKSPUR

Site no.: EW1112 **Grid ref:** U25 800420 **Source:** Sawyer *et al.* 1998
Area: 200 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:**
Principal landform:

Vegetation type: Scrub.

Dominant species: *Leptospermum scoparium*.

Other species: *Leucopogon fasciculatus*, *Pinus radiata*, *Coprosma rhamnoides*, *Ozothamnus leptophyllus*, *Ulex europaeus*, *Kunzea ericoides*, *Elaeocarpus dentatus*, *Cyathea medullaris*, *Melicytus ramiflorus*.

Significance: Not known.

CLELANDS ROAD BUSH

Site no.: EW0828

Grid ref: T25 444413

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, riser footslope

Land system: Rolling hill country, terrace

Principal landform: Sideslope

Vegetation type: Tree shrubland, closed forest with emergents.

Dominant species: *Podocarpus totara*, *Prumnopitys taxifolia*, *Beilschmiedia tawa*, *Alectryon excelsus*.

Other species: *Leptospermum scoparium*, *Dacrydium cupressinum*, *Knightia excelsa*, *Cordyline australis*, *Sophora microphylla*, *Elaeocarpus dentatus*, *Hoberia populnea*, *Dacrycarpus dacrydioides*.

Significance: A natural form of *Podocarpus totara* 'aurea'. Noted in 1996 (when other sites surveyed) as still growing & apparently healthy.

MANAWA-ANNENDALE

Site no.: EW0903

Grid ref: T25 660410

Source: Sawyer *et al.* 1998

Area: 400 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Scrub.

Dominant species: *Kunzea ericoides*, *Knightia excelsa*, *Leptospermum scoparium*, *Ulex europaeus*.

Other species: *Cordyline australis*, *Cyathea medullaris*, *Phormium cookianum*, *Geniostoma rupestre* var. *ligustrifolium*, *Hoberia populnea*, *Melicytus ramiflorus*, *Sophora tetraptera*, *Brachyglottis repanda*, *Cortaderia fulvida*, *Pittosporum tenuifolium*, *Leucopogon fasciculatus*, *Pittosporum eugenioides*, *Carpodetus serratus*.

Comments: Substantially reduced from its former extent.

PERRY - DREYERS ROCK

Site no.: EW0833

Grid ref: T25 433407

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 312 m

Other landform: Sideslope, spur, gully

Land system: Rolling hill country

Principal landform: Hillside

Vegetation type: Closed forest, plantation.

Dominant species: *Beilschmiedia tawa*, *Knightia excelsa*, *Kunzea ericoides*, *Podocarpus totara*, *Dacrydium cupressinum*, *Nothofagus solandri*, *Pseudotsuga menziesii*.

Other species: *Hebe stricta*, *Brachyglottis repanda*, *Leptospermum scoparium*, *Cyathea smithii*, *Cyathea dealbata*, *Cyathea medullaris*, *Dicksonia squarrosa*, *Melicytus ramiflorus*, *Pittosporum eugenioides*, *Elaeocarpus dentatus*, *Metrosideros perforata*, *Pseudopanax crassifolius*, *Hoberia populnea*, *Hedycarya arborea*, *Sophora tetraptera*, *Pseudopanax arboreus*, *Phormium cookianum*, *Coprosma robusta*, *Coprosma areolata*.

Significance: Not known.

Comments: Key site. Diverse forest types, also species rich. High quality site. Part exotic plantation.

NGAPOPOATU BUSH

Site no.: EW1509

Grid ref: U26 704399

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill-Downs

Principal landform: Hillslope

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*, *Knightia excelsa*, *Kunzea ericoides*, *Sophora tetraptera*, *Pittosporum tenuifolium*, *Phormium cookianum*, *Leptospermum scoparium*, *Pseudopanax crassifolius*.

Other species: *Pittosporum eugenoides*, *Ozotamnus leptophyllus*, *Coprosma rhamnoides*, *Coprosma lucida*, *Cordyline australis*, *Carpodetus serratus*, *Hebe stricta*, *Pyrrosia eleagnifolia*, *Olearia solandri*, *Elaeocarpus dentatus*, *Cyathea dealbata*, *Pinus radiata*, *Olearia virgata*, *Melicytus ramiflorus*, *Urtica ferox*, *Nestegis cunninghamii*, *Rubus schmidelioides*, *Juncus effusus*, *Juncus edgarae*, *Polystichum richardii*, *Pneumatopteris pennigera*, *Carex geminata*, *Myrsine australis*, *Myoporum laetum*, *Pteridium esculentum*, *Pteris tremula*, *Coprosma robusta*, *Coprosma propinqua*, *Hedycarya arborea*, *Macropiper excelsum*, *Coprosma rubra*, *Coprosma rotundifolia*, *Coprosma rigida*, *Clematis foetida*, *Coprosma areolata*, *Lastreopsis glabella*, *Ripogonum scandens*, *Pellaea rotundifolia*, *Asplenium bulbiferum*, *Hypolepis ambigua*, *Streblus heterophyllus*, *Hoberia populnea*, *Alectryon excelsus*, *Parsonsia heterophylla*, *Metrosideros diffusa*, *Melicope simplex*, *Nestegis lanceolata*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Eucalyptus* sp.

Significance: Birds: kereru, silvereye, fantail.

Comments: Birds: chaffinch.

TANAWA ROAD OUTCROP

Site no.: EW1515

Grid ref: U26 749394

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Bluff

Land system: Taipo

Principal landform: Outcrop

Dominant species: *Coprosma rhamnoides*, *Pinus* sp., *Phormium cookianum*.

Other species: Not known.

Significance: Outcrop/bluff of greywacke with indigenous vegetation on it. Potential rare plants on bluff. Area recently planted in pine trees.

Comments: Worth a look for potential rare plants.

188 KOTU WETLAND

Site no.: EW1517

Grid ref: U26 723390

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone:

Altitude: 160 m

Other landform: Valley, wetland

Land system: Moderately steep hills, steep hills

Principal landform: Gully

Vegetation types: 1. (*Juncus edgarae*)/*Carex geminata*/pasture grassland.

2. (Purei)/(water forget-me-not)-(celery buttercup)/duckweed-open water.

Other species: *Juncus effusus*, *Olearia solandri*, *Leptospermum scoparium*, *Olearia virgata*, *Carex secta*, *Coprosma rhamnoides*, *Ozotamnus leptophyllus*, *Salix fragilis*, *Carex fascicularis*, *Festuca arundinacea*.

Notes: Very modified, dominated by exotic species, heavily grazed by cattle and sheep.

TERANGI BUSH

Site no.: EW1301

Grid ref: T26 441385

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude: 190 m

Other landform: Terrace tread

Land system: Hill country, terrace

Principal landform: Spurline

Site description: Bush on terrace tread and spur running NE. Photo # D40-41.

Vegetation type: Tall closed forest with scattered emergents, closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Sophora microphylla*.

Other species: *Cordyline australis*, *Leptospermum scoparium*, *Pittosporum tenuifolium*, *Pittosporum eugenioides*, *Weinmannia racemosa*, *Ripogonum scandens*, *Melicytus ramiflorus*, *Geniostoma rupestre* var. *ligustrifolium*, *Podocarpus totara*, *Pseudopanax crassifolius*, *Dacrydium cupressinum*, *Elaeocarpus dentatus*, *Schefflera digitata*, *Brachyglottis repanda*, *Muehlenbeckia complexa*, *Alectryon excelsus*, *Coprosma grandifolia*, *Metrosideros diffusa*, *Knightia excelsa*.

Significance: Significant plants: *Dacrydium cupressinum*

Comments: Looks good, most probably fenced.

MANGAREIA BUSH

Site no.: EW1340

Grid ref: T26 486377

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrydium cupressinum*, *Knightia excelsa*, *Prumnopitys taxifolia*, *Beilschmiedia tawa*, *Weinmannia racemosa*.

Other species: *Rubus schmidelioides*, *Pyrrosia eleagnifolia*, *Cyathea dealbata*, *Carpodetus serratus*, *Nestegis cunninghamii*, *Passiflora tetrandra*, *Melicytus ramiflorus*, *Podocarpus totara*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*, *Coprosma grandifolia*, *Elaeocarpus dentatus*, *Hoberia populnea*, *Nestegis lanceolata*, *Pseudopanax crassifolius*, *Pittosporum eugenioides*, *Leptospermum scoparium*.

Significance: Not known.

MATAIKONA DUNE SYSTEM C

Site no.: EW1620a,b,c

Grid ref: U26 847379

Source: Sawyer *et al.* 1998

Area: 29 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Dunecrest, ridge, slack, foredune

Land system:

Principal landform: Duneland,

rolling hill country Sideslope

Vegetation type:

Dominant species: *Cordyline australis*, *Cyperus ustulatus*, *Isolepis nodosa*, *Ammophila arenaria*.

Other species: *Lagurus ovatus*, *Cortaderia selloana*, *Olearia solandri*, *Cordyline australis*, *Lupinus arboreus*, *Plagianthus divaricatus*, *Cortaderia fulvida*, *Ozothamnus leptophyllus*, *Taraxacum officinale*, *Spinifex sericeus*.

Significance: Relatively good quality dune system. Significant plants: *Plagianthus divaricatus*, *Olearia solandri*.

Notes: Ref. Ecol. Site Inventory No. 802.

WAVERLY DOWNS BUSH

Site no.: EW1511B

Grid ref: U26 760374

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace, rolling hill country

Principal landform: Gully head

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*.

Other species: Not known.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 798.

WAVERLY DOWNS BUSH

Site no.: EW1511A
Area: 10 ha
Other landform:

Grid ref: U26 755370
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace, rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*, *Laurelia novae-zelandiae*.

Other species: *Parsonsia heterophylla*, *Coprosma robusta*, *Prumnopitys taxifolia*, *Elaeocarpus dentatus*, *Knightia excelsa*, *Myoporum laetum*, *Pittosporum eugenioides*, *Podocarpus totara*, *Leptospermum scoparium*, *Pseudopanax crassifolius*, *Hoberia populnea*, *Cordyline australis*, *Dacrycarpus dacrydioides*

Significance: Parts protected by the Catchment Board.

Comments: See 1511b,c,d for further site information.

WHANGAEHU RIVER BUSH

Site no.: EW1302
Area: 8 ha
Other landform:

Grid ref: T26 435365
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: 200 m
Land system: Terrace, floodplain
Principal landform: Terrace tread

Site description: Treeland and scrub on steep slip faces. Photo # D40-41.

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Alectryon excelsus*, *Beilschmiedia tawa*.

Other species: *Melicytus ramiflorus*, *Nestegis lanceolata*, *Sophora* sp., *Salix* sp., *Pseudopanax crassifolius*.

Significance: Significant plants: *Sophora* sp.

Comments: May be an interesting site for uncommon/rare plants.

MANGAPURUPURU STREAM BUSH

Site no.: EW1439
Area: 10 ha
Other landform:

Grid ref: T26 568357
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform: Rolling hill

countrySideslope

Site description: Sideslopes above Mangapurupuru Stream.

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*.

Other species: *Cordyline australis*, *Nestegis montana*, *Pseudopanax crassifolius*, *Carpodetus serratus*, *Coprosma propinqua*, *Nestegis lanceolata*, *Coprosma* sp., *Sophora microphylla*, *Pittosporum tenuifolium*, *Leptospermum scoparium*.

Significance: Key site. High species diversity/richness. Likely to contain rare plants (*Korthalsella lindsayi* etc). River/water quality protection.

Comments: Site downstream (565356) is open shrubland over long grass - may contain some interesting shrubs. Area around sites planted in pine trees.

CAMERON BUSH

Site no.: EW1425
Area: 25 ha
Other landform: Gully, gullyhead

Grid ref: T26 655363
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Spur

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Coprosma rhamnoides*, *Knightia excelsa*, *Macropiper excelsum*, *Melicytus ramiflorus*.

Other species: *Pseudopanax crassifolius*, *Elaeocarpus dentatus*, *Brachyglottis repanda*, *Cyathea dealbata*, *Coprosma robusta*, *Hoheria populnea*, *Podocarpus totara*, *Sophora microphylla*, *Beilschmiedia tawa*, *Ozothamnus leptophyllus*, *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Myrsine australis*, *Coprosma robusta* × *C. propinqua*, *Carex geminata*, *Pittosporum tenuifolium*, *Cordyline australis*, *Cyathea medullaris*, *Metrosideros perforata*, *Geniostoma rupestre* var. *ligustrifolium*, *Hedycarya arborea*, *Ripogonum scandens*, *Carpodetus serratus*, *Rubus cissoides*, *Asplenium oblongifolium*, *Asplenium bookerianum*, *Asplenium bulbiferum*, *Polystichum richardii*, *Pellaea rotundifolia*, *Hypolepis ambigua*, *Parsonsia heterophylla*, *Myoporum laetum*, *Lastreopsis glabella*, *Asplenium flaccidum*, *Alectryon excelsus*, *Coprosma grandifolia*, *Phymatosorus pustalatus*, *Doodia media*, *Pseudopanax arboreus*, *Clematis paniculata*, *Coprosma propinqua*, *Coprosma rubra*, *Rubus schmidelioides*, *Helichrysum lanceolatum*, *Asplenium flaccidum*, *Muehlenbeckia australis*, *Nestegis lanceolata*, *Myrsine salicina*.

Significance: Key site. Presence of threatened plants: *Doodia media* subsp. *australis*, only site in Ecological District where this was noted. Rich in species diversity. Birds: fantail, thush. *Megadromis capito* & *Miturga* sp. present.

Comments: Visited 25/5/94. Owners : Mr & Mrs Cameron, ph 06 3726827 (end of Rewarewa Road, Tinui). Birds: starling, silvereye.

Notes: Ref. Ecol. Site Inventory No. 789.

MANGAREIA GORGE RIPARIAN BUSH

Site no.: EW1317

Grid ref: T26 503353

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude: 250 m

Other landform: Terrace riser

Land system:

Principal landform: Gully

Vegetation type: Tree-shrubland, closed forest, tall closed forest, tall closed forest with emergents.

Dominant species: *Sophora tetraptera*, *Leptospermum scoparium*, *Kunzea ericoides*, *Knightsia excelsa*.

Other species: *Pomaderris* aff. *phylicifolia*, *Sophora tetraptera*, *Beilschmiedia tawa*, *Cyathea medullaris*, *Brachyglottis repanda*, *Coprosma grandifolia*, *Sophora microphylla*, *Pseudopanax arboreus*, *Cordyline australis*, *Hebe stricta*, *Hoheria populnea*, *Ulex europaeus*, *Coprosma robusta*, *Phormium cookianum*, *Pinus radiata*, *Dacrycarpus dacrydioides*

Significance: Area has high scenic value with large pools fed by a small stream.

Comments: Area may now be significantly reduced or planted in pine trees. Site becomes willow downstream.

Notes: Ref. Ecol. Site Inventory No. 760.

MANGAPURUPURU ROAD BUSH

Site no.: EW1407a

Grid ref: T26 541354

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Hillside, terrace tread, terrace riser

Land system: Hill country, terrace

Principal landform: Gully

Vegetation type: Gully; tall closed forest with emergents.

Dominant species: *Sophora microphylla*, *Leptospermum scoparium*, *Cordyline australis*, *Podocarpus totara*, *Alectryon excelsus*.

Other species: *Pseudopanax crassifolius*, *Hoheria populnea*, *Kunzea ericoides*, *Sophora microphylla*, *Laurelia novae-zelandiae*, *Nestegis montana*, *Prumnopitys taxifolia*, *Elaeocarpus dentatus*.

Significance: Key site. Quite diverse. Good example of vegetation types present on landsystems. Site ranges from wetland forest to shrubland on limestone bluffs. Appears to be fenced.

MATAIKONA ROAD

Site no.: EW1612

Grid ref: U26 825350

Source: Sawyer *et al.* 1998

Area: 60 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Sideslope, topslope, crest

Land system: Hill country

Principal landform: Gully

Vegetation type: Tussockland, scrub.

Dominant species: *Pine*, *Juncus edgarae*, *Leptospermum scoparium*, *Kunzea ericoides*, *Pasture*, *Ulex europaeus*.

Other species: *Festuca arundinacea*.

Significance: Not known.

OKAU STREAM MOUTH

Site no.: EW1618

Grid ref: U26 834350

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Coastal

Altitude:

Other landform: Estuarine slack

Land system: Dunelands

Principal landform: Foredune

Vegetation type: Tussockland, herbfield.

Dominant species: *Spinifex sericeus*, *Ammophila arenaria*, *Juncus kraussii* var. *australiensis*, *Ranunculus acaulis*, *Sarcocornia quinqueflora*, *Samolus repens*, *Selliera radicans*.

Other species: Not known.

Significance: Key site. Unusual vegetation composition. Links into 1617 (RAP 204).

Notes: Ref. Ecol. Site Inventory Nos. 803, 828.

BOWLANDS BUSH #2

Site no.: EW1328

Grid ref: T26 528343

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur

Land system:

Principal landform: Sideslope

Vegetation type: Tree-shrubland.

Dominant species: *Alectryon excelsus*, *Podocarpus totara*, *Leptospermum scoparium*.

Other species: Not known.

Significance: Not known.

Comments: Up a small gully and difficult to see from the road.

BOWLANDS BUSH # 1

Site no.: EW1321

Grid ref: T26 524341

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude: 200 m

Other landform: Footslope colluvial, swamp

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tree-shrubland.

Dominant species: *Leptospermum scoparium*, adventive grasses.

Other species: *Lophomyrtus obcordata*, *Dacrycarpus dacrydioides*, *Sophora microphylla*, *Podocarpus totara*, *Leptospermum scoparium*, *Kunzea ericoides*, *Myrsine divaricata*, *Raukaua anomalus*, *Carex geminata*, *Parsonsia capsularis*, *Leucopogon fasciculatus*, *Alectryon excelsus*, *Cordyline australis*, *Carex secta*, *Melicope simplex*, *Helechrysum glomeratum*, *Coprosma crassifolia*, *Coprosma rubra*, *Juncus edgarae*, *Melicytus ramiflorus*, *Nestegis montana*, *Nestegis lanceolata*.

Significance: Interesting area. Dry hillside vegetation grading into a seasonal wetland at the bottom of the slope.

Notes: Ref. Ecol. Site Inventory No. 761.

WHAKATAKI

Site no.: EW1609

Grid ref: U26 816340

Source: Sawyer *et al.* 1998

Area: 80 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Spur line, gully head, ridgeline, crest

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland, scrub, plantation.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Pinus* sp., *Ulex europaeus*.

Other species: *Pseudopanax arboreus*, *Melicytus ramiflorus*, *Phormium cookianum*, *Cordyline australis*, *Pinus radiata*, *Juncus edgarrae*, *Ozothamnus leptophyllus*, *Festuca arundinacea*, *Knightia excelsa*.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 747.

WAIPORI DUNE SYSTEM

Site no.: EW1617

Grid ref: U26 833341

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Coastal

Altitude:

Other landform: Foredune, crest

Land system:

Principal landform: Duneslack

Dominant species: *Phormium tenax*, *Typha orientalis*, *Schoenoplectus tabernaemontani*, *Juncus kraussii* var. *australiensis*, *Ulex europaeus*, *Ammophila arenaria*, *Pimelea* aff. *arenaria*.

Other species: *Cortaderia fulvida*, *Olearia solandri*, *Cordyline australis*, *Taraxacum officinale*.

Significance: Keysite. Presence of nationally threatened plant *Pimelea* aff. *arenaria*.

Notes: Ref. Ecol. Site Inventory No. 804.

MAUNGAPAKEHA STREAM SITE 1

Site no.: EW1410

Grid ref: T26 565348

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 300 m

Other landform:

Land system: Hill country

Principal landform: Hillside

Vegetation type: Tall closed forest, treeland.

Dominant species: *Dacrydium cupressinum*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Alectryon excelsus*, *Nestegis lanceolata*.

Other species: *Urtica ferox*, *Pennantia corymbosa*, *Asplenium bookerianum*, *Ranunculus reflexus*, *Microlaena stipoides*, *Knightia excelsa*, *Rubus schmidelioides*, *Nestegis montana*, *Coprosma crassifolia*, *Coprosma rhamnoides*, *Nestegis lanceolata*, *Pinus radiata*, *Agrostis capillaris*, *Holcus lanatus*, *Kunzea ericoides*, *Leptospermum scoparium*, *Beilschmiedia tawa*, *Muehlenbeckia australis*, *Muehlenbeckia complexa*, *Coprosma areolata*, *Metrosideros perforata*, *Hydrocotyle moschata*, *Prunella vulgaris*, *Carex secta*, *Polystichum richardii*, *Pellaea rotundifolia*, *Melicytus ramiflorus*, *Myrsine australis*, *Pittosporum eugenioides*, *Asplenium bulbiferum*, *Pseudopanax crassifolius*, *Lophomyrtus obcordata*, *Alectryon excelsus*, *Ripogonum scandens*, *Passiflora tetrandra*, *Metrosideros colensoi*, *Macropiper excelsum*, *Hedycarya arborea*, *Pteris tremula*, *Hoheria populnea*, *Parsonsia heterophylla*, *Coprosma rotundifolia*, *Clematis paniculata*, *Coprosma propinqua*, *Streblus heterophyllus*, *Melicytus micranthus*.

Significance: Key Site. Threatened species present: *Korthalsella lindsayi* on *Coprosma crassifolia*. Diverse habitat and species rich.

Comments: Scope for regeneration. Hares and rabbits present.

UPPER WAIHONGA STREAM

Site no.: EW1333

Grid ref: T26 473331

Source: Sawyer *et al.* 1998

Area: 11 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope, topslope

Land system: Hill country

Principal landform: Gully

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Alectryon excelsus*, *Melicytus ramiflorus*.

Other species: *Hoheria populnea*, *Coprosma rhamnoides*, *Pennantia corymbosa*, *Leptospermum scoparium*, *Blechnum filiforme*, *Pyrrosia eleagnifolia*, *Nestegis lanceolata*, *Coprosma areolata*, *Pittosporum eugenioides*, *Coprosma propinqua*, *Coprosma crassifolia*, *Dacrycarpus dacrydioides*, *Muehlenbeckia australis*, *Parsonsia heterophylla*, *Leucopogon fasciculatus*, *Elaeocarpus dentatus*, *Coprosma crassifolia*, *Pseudopanax*

crassifolius, *Olearia rani*, *Pittosporum eugenioides*, *Nestegis lanceolata*, *Beilschmiedia tawa*, *Carpodetus serratus*, *Metrosideros colensoi*, *Blechnum fluviatile*, *Ripogonum scandens*, *Hedycarya arborea*, *Prunella vulgaris*, *Hypolepis ambigua*, *Blechnum penna-marina*, *Passiflora tetrandra*, *Senecio jacobaea*, *Melicytus ramiflorus*, *Asplenium bulbiferum*, *Hydrocotyle novae-zeelandiae*, *Passiflora tetrandra*, *Geniostoma rupestre* var. *ligustrifolium*, *Coprosma rotundifolia*, *Cyathea medullaris*, *Pneumatopteris pennigera*, *Blechnum chambersii*, *Acaena anserinoides*, *Lophomyrtus obcordata*, *Blechnum discolor*, *Rubus schmidelioides*, *Leucopogon fasciculatus*, *Uncinia uncinata*, *Raukaua anomalus*, *Plantago* sp., *Pteridium esculentum*, *Metrosideros perforata*, *Brachyglottis repanda*, *Alectryon excelsus*, *Streblus heterophyllus*, *Polystichum richardii*, *Phymatosorus pustulatus*, *Ranunculus reflexus*, *Asplenium bookerianum*, *Pratia angulata*, *Asplenium flabellifolium*, *Asplenium flaccidum*, *Clematis paniculata*, *Pteris tremula*, *Lastreopsis glabella*, *Lastreopsis microsora*, *Knightia excelsa*, *Prumnopitys taxifolia*, *Sophora microphylla*, *Myrsine australis*, *Nestegis montana*, *Pellaea rotundifolia*, *Melicytus micranthus*, *Nestegis cunninghamii*, *Cyathea medullaris*, *Collospermum bastatum*, *Earina mucronata*, *Asplenium polyodon*.

Significance: Birds: fantail, tui, silvereye. Puriri moth present.

Comments: Birds: magpie, chaffinch.

WAIKAIA BUSH REMNANT

Site no.: EW1332

Grid ref: T26 446318

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Treeland.

Dominant species: *Beilschmiedia tawa*.

Other species: *Dacrycarpus dacrydioides*, *Sophora microphylla*, *Podocarpus totara*, *Hoberia populnea*, *Alectryon excelsus*, *Coprosma robusta*, *Melicytus ramiflorus*.

Significance: Not known.

Comments: Mostly cleared - thin strip along river bank. Would have been an interesting site.

PORONUI BUSH

Site no.: EW1453

Grid ref: T26 566298

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country, taipo

Principal landform: Gully

Vegetation type:

Dominant species: *Sophora microphylla*, *Kunzea ericoides*, *Coprosma crassifolia*, *Coprosma rhamnoides*.

Other species: Not known.

Significance: Not known.

Comments: Not fenced. Farm track through site.

'SULPHUR WELLS' BUSH

Site no.: EW1827a,b,c

Grid ref: T26 450290

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Footslope, sideslope

Land system:

Principal landform: Terrace tread

Vegetation type: Shrubland, tall closed forest with emergents,

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Prumnopitys taxifolia*, *Dacrydium cupressinum*, *Alectryon excelsus*, *Podocarpus totara*.

Other species: *Cordyline australis*, *Parsonsia capsularis*, *Coprosma propinqua*, *Streblus heterophyllus*, *Metrosideros colensoi*, *Muehlenbeckia australis*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Coprosma areolata*, *Sophora microphylla*, *Knightia excelsa*, *Pyrrosia eleagnifolia*.

Significance: Key site. High quality forest and wetland (stream margins). May contain rare plants.

Comments: Unfenced. Old man's beard noted in site. Ref. Ecol. Site Inventory No. 758.

TAUWERU RIVER "GORGE"

Site no.: EW1823 **Grid ref:** T26 482296 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 105 m
Other landform: Terrace riser, slip face **Land system:** Terrace
Principal landform: Gorge

Site description: Steep banks on either side of Tauweru River. Photo #D43-44.

Vegetation type: Closed forest, shrub-grassland, pine forest.

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*, *Pinus* sp., *Ulex europaeus*, *Agrostis capillaris*.

Other species: *Cytisus scoparius*, *Pteridium esculentum*, *Juncus edgarae*, *Carex geminata*, *Cordyline australis*, *Podocarpus totara*, *Salix fragilis*, *Cortaderia seloana*, *Pittosporum tenuifolium*, *Hebe stricta*.

Significance: Not known.

Comments: Pine forest - blue areas on map in Sawyer *et al.* 1998.

CLYDE NO. 2

Site no.: EW1418a,b **Grid ref:** T26 560284 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 200 m
Other landform: Spur, sideslope **Land system:**
Principal landform: Gully, face.

Vegetation type: Shrubland, forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Sophora microphylla*, *Olearia paniculata*.

Other species: *Anogramma leptophylla* (Jersey fern - Vulnerable - de Lange *et al.* 1999), *Clematis afoliata* (leafless clematis), *Craspedia uniflora* var. *grandis*.

Significance: *Anogramma leptophylla* (Jersey fern - vulnerable - de Lange *et al.* 1999), *Clematis afoliata* (leafless clematis), *Craspedia uniflora* var. *grandis*

Comments: On steep greywacke.

Notes: Ref. Ecol. Site Inventory No. 783.

MANGATOPITOPI STREAM BUSH

Site no.: EW1822 **Grid ref:** T26 464283 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 200 m
Other landform: Spur **Land system:**
Principal landform: Gully

Vegetation type: Tall closed forest with emergents, tall closed forest.

Dominant species: *Kunzea ericoides*, *Nothofagus solandri*, *Podocarpus totara*, *Knightia excelsa*, *Beilschmiedia tawa*, *Alectryon excelsus*.

Other species: *Nestegis cunninghamii*, *Metrosideros diffusa*, *Coprosma rhamnoides*, *Metrosideros perforata*, *Leucopogon fasciculatus*, *Coprosma crassifolia*, *Prumnopitys taxifolia*, *Pseudopanax crassifolius*, *Hydrocotyle moschata*, *Pellaea rotundifolia*, *Asplenium bookerianum*, *Melicytus ramiflorus*, *Coprosma areolata*, *Polystichum richardii*, *Ripogonum scandens*, *Hedycarya arborea*, *Lophomyrtus obcordata*, *Lastreopsis glabella*, *Hoheria populnea*, *Cyathea dealbata*, *Pennantia corymbosa*, *Asplenium bulbiferum*, *Urtica ferox*, *Hypolepis ambigua*, *Uncinia uncinata*, *Brachyglottis repanda*, *Coprosma propinqua*, *Nestegis lanceolata*, *Collospermum hastatum*, *Pyrrosia eleagnifolia*, *Gnaphalium gymnocephalum*, *Uncinia* sp., *Dichondra repens*, *Ranunculus reflexus*, *Echinopogon ovatus*, *Asplenium polyodon*, *Asplenium flaccidum*, *Cordyline australis*, *Hydrocotyle elongata*, *Asplenium flabellifolium*, *Solanum aviculare*, *Myrsine australis*, *Asplenium oblongifolium*, *Nestegis montana*, *Clematis paniculata*, *Pteris tremula*, *Raukaua anomalus*, *Olearia rani*, *Pseudopanax arboreus*, *Hebe parviflora*, *Gabnia pauciflora*, *Phymatosorus pustulatus*, *Pseudopanax arboreus*, *Coprosma linarifolia*, *Dacrycarpus dacrydioides*, *Hymenophyllum pulcherrimum*, *Digitalis purpurea*, *Rubus schmidelioides*, *Melicope simplex*, *Juncus planifolius*, *Paesia scaberula*, *Geniostoma rupestre* var. *ligustrifolium*, *Carex geminata*, *Thelymitra longifolia*, *Ozothamnus leptophyllus*, *Callitride stagnalis*, *Prunella vulgaris*, *Coprosma rotundifolia*, *Coprosma robusta*, *Elaeocarpus*

dentatus, *Pteridium esculentum*, *Macropiper excelsum*, *Streblus heterophyllus*, *Blechnum fluviatile*, *Blechnum chambersii*, *Phymatosorus scandens*, *Nestegis lanceolata*, *Metrosideros fulgens*, *Senecio jacobaea*, *Taraxacum officinale*.

Significance: Key site. Diverse habitat & species rich. Presence of a species not common in ED: *Hebe parvifolia* (appears in Hawkes Bay & on Rimutaka Hill, but is uncommon in the Eastern Wairarapa Ecological District). Birds: grey warbler, fantail, silvereye.

Comments: Birds: magpie. Possum and deer present. *Kunzea ericoides*, *Nothofagus solandri* - ridges, scree slopes. Beech with podocarps in valley.

COAST SLOPE

Site no.: EW1607

Grid ref: U26 797275

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Face

Land system:

Principal landform: Sideslope

Vegetation type: Tussockland.

Dominant species: *Phormium cookianum*.

Other species: *Juncus kraussii* var. *australiensis*, *Cortaderia toetoe*, *Carex geminata*, *Poa colensoi*, *Ozotamnus leptophyllus*, *Coprosma acerosa*, *Coprosma rhamnoides*.

Significance: Not known.

WHAREAMA/"SEAVIEW"

Site no.: EW1431

Grid ref: T26 640256

Source: Sawyer *et al.* 1998

Area: 120(80) ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland, closed forest.

Dominant species: *Knightia excelsa*, *Elaeocarpus dentatus*, *Kunzea ericoides*.

Other species: *Myoporum laetum*, *Beilschmiedia tawa*, *Podocarpus totara*, *Macropiper excelsum*, *Melicytus ramiflorus*, *Carpodetus serratus*, *Cordyline australis*, *Hoberia populnea*, *Hedycarya arborea*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*.

Significance: Significant plants: *Rhopalostylis sapida*. QEII covenant over part of this block.

Comments: QEII Covenant MS 5/7/84.

Notes: The above information is based on the original study site, which comprised 120 ha; the RAP is estimated to be c.80 ha. Ref. Ecol. Site Inventory No. 749.

ROROKOKO STREAM

Site no.: EW1809

Grid ref: T26 525247

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Gully

Site description: Forest filled gully on tributary of Rorokoko Stream (and stream as well).

Vegetation type: Tall closed forest with emergents.

Dominant species: *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Kunzea ericoides*, *Sophora* sp.

Other species: *Pseudopanax crassifolius*, *Rubus schmidelioides*, *Cordyline australis*, *Salix fragilis*, *Leptospermum scoparium*, *Hoberia populnea*, *Pseudopanax arboreus*, *Alectryon excelsus*, *Aristotelia serrata*, *Elaeocarpus dentatus*.

Significance: Podocarps.

Comments: Primary, dense. Does not appear to be fenced. Largely gone - areas of pasture.

PURUNUI BUSH

Site no.: EW1833

Grid ref: T26 465240

Source: Sawyer *et al.* 1998

Area: 11 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Floodplain

Land system: Terrace

Principal landform: Terrace riser

Vegetation type: Tall closed forest, closed forest.

Dominant species: *Podocarpus totara*, *Sophora tetraptera*, *Leptospermum scoparium*, *Salix* sp.

Other species: *Kunzea ericoides*, *Nestegis lanceolata*, *Cordyline australis*, *Dacrycarpus dacrydioides*, *Hoberia populnea*, *Prumnopitys taxifolia*, *Pseudopanax arboreus*, *Sophora microphylla*?

Significance: Not known.

Comments: Area infested with climbing plant (*Muehlenbeckia australis*?). Macrocarpa planted along top of terrace riser.

Notes: Ref. Ecol. Site Inventory No. 808.

BRAMMERTON FARM BUSH

Site no.: EW1812

Grid ref: T26 488234

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude: 160 m

Other landform: Spur

Land system: Hill country

Principal landform: Gully

Site description: Patch of scrub on north-facing open gully.

Vegetation type: Tall closed forest with emergents.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Sophora microphylla*, *Leptospermum scoparium*, *Myoporum laetum*, *Beilschmiedia tawa*.

Other species: *Hoberia populnea*, *Pseudopanax arboreus*, *Pittosporum tenuifolium*, *Pittosporum eugenioides*, *Hebe stricta*, *Melicytus ramiflorus*, *Pseudopanax crassifolius*, *Nestegis lanceolata*, *Myrsine australis*, *Coprosma propinqua*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Alectryon excelsus*, *Cordyline australis*.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 810.

KAHUMINGI BUSH

Site no.: EW1811

Grid ref: T26 500233

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Foothlope, spu, gully, terrace tread

Land system: Terrace, rolling hill country

Principal landform: Sideslope

Site description: Two small patches of vegetation on both sides of a small ridge.

Vegetation type: Closed forest, tall closed forest, treeland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Podocarpus totara*, *Sophora microphylla*, *Dacrycarpus dacrydioides*, *Nestegis montana*.

Other species: *Nestegis montana*, *Prumnopitys taxifolia*, *Alectryon excelsus*, *Cordyline australis*, *Nestegis cunninghamii*, *Pittosporum eugenioides*.

Significance: Not known.

Comments: Two patches (c.7 + 3 ha) on map in Sawyer *et al.* 1998.

Notes: Ref. Ecol. Site Inventory No. 809.

KAHUMINGI STREAM BUSH

Site no.: EW1810

Grid ref: T26 518227

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude: 20 m

Other landform: Riser, gully, sideslope (very steep faces)

Land system: Terrace, rolling hill country

Principal landform: Terrace tread

Vegetation type: Tall closed forest with emergents, shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Sophora microphylla*, *Myrsine divaricata*, *Raukaua anomalus*, *Coprosma* spp., *Kunzea ericoides*.

Other species: *Hedycarya arborea*, *Polystichum richardii*, *Lophomyrtus obcordata*, *Pseudopanax crassifolius*, *Coprosma propinqua*, *Carex geminata*, *Leptospermum scoparium*, *Hoheria populnea*, *Rubus schmidelioides*, *Hoheria augustifolia*, *Cordyline australis*, *Elaeocarpus dentatus*, *Melicytus micranthus*, *Nestegis lanceolata*, *Melicope simplex*, *Sophora tetraptera*, *Pittosporum tenuifolium*, *Juncus effusus*, *Coprosma rubra*, *Coprosma microcarpa*.

Significance: Not known.

Comments: Very little or no current regeneration. Logged with major trees having been removed. Not fenced and stock have access.

Notes: Ref. Ecol. Site Inventory No. 744.

MOORES TAIPO

Site no.: EW1906a,b,c

Grid ref: T26 577177

Source: Sawyer *et al.* 1998

Area: 31 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude: 300 m

Other landform:

Land system: Taipo, hill country

Principal landform: Taipo faces

Site description: Forest/treeland along NW face.

Vegetation type: Treeland, shrubland, closed forest, interspersed pasture.

Dominant species: *Podocarpus totara*, *Nothofagus solandri*, *Melicytus ramiflorus*, *Hoheria populnea*, *Kunzea ericoides*.

Other species: *Urtica ferox*, *Metrosideros* sp., *Aristolelia serrata*, *Rubus* sp., *Parsonsia* sp., *Hedycarya arborea*, *Ozothamnus leptophyllus*, *Cordyline* sp., *Myrsine australis*, *Sophora* sp., *Myoporum laetum*, *Alectryon excelsus*, *Beilschmiedia tawa* (see Druce 1972 for plant checklist).

Recommendation: Needs cattle removed - heavily browsed.

Comments: Looked at T26 578144, T26 580173 on 12/5/94 (from a distance). Some timber milling.

Notes: Ref. Ecol. Site Inventory No. 775.

CAVELAND ROAD BUSH

Site no.: EW1704

Grid ref: T26 340156

Source: Sawyer *et al.* 1998

Area: 90(88) ha

Bioclimatic zone: Semi-coastal

Altitude: 170 m

Other landform: Gully, sideslope

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Sophora microphylla*.

Other species: *Cordyline australis*.

Significance: *Coprosma virescens* present.

Comments: Patches of *Leptospermum scoparium* on hillsides and gully risers. Partially protected - QEII 5/07/93 (2 ha). Ref. Regeger 1997f.

Notes: The above information is based on the original study site, which comprised 90 ha; the RAP is estimated to be c.88 ha. Ref. Ecol. Site Inventory No. 813.

MAKAHAKA STREAM BUSH

Site no.: EW1908

Grid ref: T26 573154

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone: Semi-coastal

Altitude: 260 m

Other landform: Riser, cliff face

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest

Dominant species: *Podocarpus totara*, *Dacrydium dacrydioides*, *Nothofagus solandri*.

Other species: Not known.

Comments: What was visible of site when visited (12/5/94) was a small remnant of bush on terrace tread, interplanted with young pine trees.

KINTAIL BUSH

Site no.: EW1914

Grid ref: T26 577116

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, gully, topslope

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Not known.

Dominant species: *Nothofagus solandri*, *Leucopogon fasciculatus*, *Dacrydium cupressinum*, *Pseudopanax arboreus*, *Leptospermum scoparium*, *Carpodetus serratus*.

Other species: *Rubus* sp., *Pteridium esculentum*, *Hebe stricta*, *Carmichaelia australis*, *Knightia excelsa*, *Cyathea medullaris*, *Cyathea dealbata*, *Coprosma rhamnoides*.

Significance: Possible keystone. Good example of beech forest. Birds: tui, silvereye, rifleman.

BUSHY

Site no.: EW1909

Grid ref: T26 568114

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Lowland

Altitude: 310 m

Other landform: Ridgeline, spur

Land system: Hill country

Principal landform: Gully

Vegetation type: Tall closed forest, tall closed forest with emergents.

Dominant species: *Dacrydium cupressinum*, *Nothofagus solandri*, *Knightia excelsa*, *Elaeocarpus dentatus*, *Nestegis cunninghamii*, *Pittosporum eugenioides*, *Melicactus ramiflorus*, *Pseudopanax crassifolius*, *Carpodetus serratus*, *Hoheria populnea*, *Pseudopanax arboreus*.

Other species: Not known.

Comments: Two vegetation types southern portion appears to have emergent trees present, while northern may be secondary. Heavily modified by logging and grazing. Not fenced.

ORUI WETLAND

Site no.: EW2521

Grid ref: T27 693100

Source: Sawyer *et al.* 1998

Area: 1.5 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Ridge

Land system: Duneland

Principal landform: Dune slack

Vegetation type: Tussockland

Dominant species: *Bolboschoenus caldwellii*, *Phormium tenax*, *Typha orientalis*, *Carex geminata*, *Rosa* sp., *Ulex europaeus*, *Salix alba*.

Other species: Not known.

Significance: Significant plant: *Bolboschoenus caldwellii*.

HINEWAKA / KOURARAU DAM BUSH

Site no.: EW2241

Grid ref: T27 351096

Source: Sawyer *et al.* 1998

Area: 30 (25) ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest? (gully), treeland.

Dominant species: *Podocarpus totara*, *Dacrycarpus dacrydioides*.

Other species: *Prumnopitys taxifolia*, *Sophora tetraptera*, *Myoporum laetum*, *Laurelia novae-zelandiae*, *Knightia excelsa*, *Griselinia lucida*.

Comments: Partially protected - QEII CA 5/07/065 (5.4 ha).

Notes: Ref. Ecol. Site Inventory No. 845. The above information is based on the original study site, which comprised 30 ha; the RAP is estimated to be c.25 ha.

RIVERSDALE SWAMP

Site no.: EW2517

Grid ref: T27 982091

Source: Sawyer *et al.* 1998

Area: 0.25 ha

Bioclimatic zone: Coastal

Altitude:

Other landform:

Land system:

Principal landform: Wetland

Vegetation type: Wetland, tussockland.

Dominant species: *Typha orientalis*, *Juncus kraussii* var. *australiensis*, *Salix fragilis*.

Other species: *Albizia*.

Comments: Quite degraded.

Notes: Ref. Ecol. Site Inventory No. 770.

HARARAKI

Site no.: EW2511

Grid ref: T27 653082

Source: Sawyer *et al.* 1998

Area: 18 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform: TerraceGully

Vegetation type: Shrubland, treeland.

Dominant species: Broadleaved spp.

Other species: Not known.

TOTARA FLATS BUSH

Site no.: EW2349

Grid ref: T27 420073

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Floodplain

Land system: Terrace, alluvial plain

Principal landform: Terrace tread

Dominant species: *Podocarpus totara*, *Coprosma virescens*, *Sophora tetraptera*.

Other species: *Korthalsella lindsayi*, *Ulex europaeus*, *Cordyline australis*, *Parsonsia heterophylla*, *Pittosporum tenuifolium*, *Coprosma rubra*, *Plagianthus regius*, *Myrsine divaricata*, *Nestegis lanceolata*, *Raukaua anomalus*, *Streblus heterophyllus*, *Coprosma propinqua*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Melicope simplex*, *Lophomyrtus obcordata*, *Pennantia corymbosa*, *Rubus schmidelioides*, *Carpodetus serratus*.

Significance: Significant plants: *Coprosma virescens*, *Korthalsella lindsayi* on *Myrsine divaricata* in small patch of shrubland up-stream of main part of bush. Proposed QEII OSC site.

Comments: Understorey eaten out by stock - will recover with fencing.

Notes: Ref. Ecol. Site Inventory No. 862.

MARINGIAWAI STREAM SHRUBLAND

Site no.: EW2201b **Grid ref:** T27 326073 **Source:** Sawyer *et al.* 1998
Area: 80 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 200 m
Other landform: Sideslope, ridgeline **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Podocarpus totara*.

Other species: *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Melicytus ramiflorus*, *Coprosma propinqua*, *Coprosma robusta* × *C. propinqua*, *Coprosma rotundifolia*, *Nestegis lanceolata*, *Alectryon excelsus*, *Myoporum laetum*, *Dacrycarpus dacrydioides*.

KOURATAHI TREELAND

Site no.: EW2346 **Grid ref:** T27 366064 **Source:** Sawyer *et al.* 1998
Area: 5 ha **Bioclimatic zone:** **Altitude:**
Other landform: **Land system:** Downland
Principal landform: Rolling tops

Vegetation type: Treeland.

Dominant species: Not known.

Other species: *Plagianthus regius*, *Melicope simplex*, *Metrosideros colensoi*, *Pseudopanax crassifolius*, *Carpodetus serratus*, *Pittosporum tenuifolium*, *Coprosma rubra*, *Nestegis lanceolata*, *Myrsine divaricata*, *Melicytus ramiflorus*, *Pennantia corymbosa*, *Podocarpus totara*, *Hoberia populnea*, *Sophora tetraptera*, *Streblus heterophyllus*, *Lophomyrtus obcordata*.

Notes: Ref. Ecol. Site Inventory No. 855.

PUKEKAKA / FERNGLEN

Site no.: EW2513 **Grid ref:** T27 615065 **Source:** Sawyer *et al.* 1998
Area: 200 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully **Land system:** Rolling hill-downs
Principal landform: Spur

Vegetation type: Shrubland, treeland, patches open forest, closed forest.

Dominant species: Not known.

Other species: Not known.

Comments: Same as 2512 (RAP 236).

BANKVIEW BUSH TYNESIDE

Site no.: EW2348 **Grid ref:** T27 416063 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 140 m
Other landform: Floodplain **Land system:** Terrace, alluvial plain
Principal landform: Terrace tread

Vegetation type: Treeland, tree-shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Sophora tetraptera*, *Salix fragilis*.

Other species: *Cordyline australis*, *Coprosma crassifolia*, *Myrsine australis*, *Leptospermum scoparium*, *Parsonsia capsularis*, *Prumnopitys taxifolia*, *Cytisus scoparius*, *Ulex europaeus*, *Pseudopanax crassifolius*, *Coprosma rubra*, *Coprosma areolata*, *Carex geminata*, *Festuca arundinacea*, *Ranunculus repens*, *Lotus pedunculatus*.

Significance: Significant plants: *Olearia gardneri*. Birds: grey warbler, spur-winged plover, pied tit.

Comments: 2347 (RAP 112) on other side of river, but really is all one site. *Salix fragilis* treeland along river margin. Birds: magpie, goldfinch.

Notes: Ref. Ecol. Site Inventory No. 859.

NGAUMU BUSH

Site no.: EW2339

Grid ref: T27 460060

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace?

Principal landform: Tread

Vegetation type: Tree-shrubland.

Dominant species: *Nothofagus solandri*, *Leptospermum scoparium*, *Coprosma areolata*, *Leucopogon fasciculatus*.

Other species: *Coprosma propinqua*, *Carpodetus serratus*, *Elaeocarpus bookerianus*, *Dacrycarpus dacrydioides*, *Nestegis lanceolata*.

ALNARUKE STREAM SHRUBLAND

Site no.: EW2240

Grid ref: S27 257054

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Topslope, gully

Land system: Downland

Principal landform: Sideslope

Vegetation type: Shrubland, closed forest

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Sophora tetraptera*.

Other species: *Knightia excelsa*, *Myoporum laetum?*, *Leptospermum scoparium*.

FERNGLADE / PUKEKAKA

Site no.: EW2512

Grid ref: T27 613054

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur

Land system: Rolling hill-downs

Principal landform: Gully

Vegetation type: Shrubland, closed forest remnants.

Dominant species: Not known.

Other species: Not known.

PUKETEITEI

Site no.: EW2403

Grid ref: T27 504050

Source: Sawyer *et al.* 1998

Area: 37 ha

Bioclimatic zone: Semi-coastal, lowland

Altitude:

Other landform: Spur, gully

Land system: Taipo

Principal landform: Face

Vegetation type: Shrubland, closed forest (scattered pockets).

Dominant species: *Meliclytus ramiflorus*, *Nothofagus solandri*, *Kunzea ericoides*.

Other species: *Leucopogon fasciculatus*, *Prumnopitys taxifolia*, *Elaeocarpus bookerianus*, *Pittosporum eugenioides*, *Sophora tetraptera*, *Pittosporum tenuifolium*, *Coprosma rotundifolia*, *Cordyline australis*, *Hedycarya arborea*, *Leptospermum scoparium*, *Knightia excelsa*, *Podocarpus totara*, *Elaeocarpus dentatus*, *Coprosma rhamnoides*, *Helicbrysum lanceolatum*, *Coprosma microcarpa*, *Carpodetus serratus*, *Urtica ferox*, *Elaeocarpus bookerianus*, *Coprosma propinqua*, *Coprosma rhamnoides*, *Coprosma rubra*, *Macropiper excelsum*, *Brachyglottis repanda*, *Podocarpus ballii*, *Carex geminata*, *Olearia virgata*, *Rubus schmidelioides*, *Raukaua anomalus*, *Carex virgata*, *Parsonsia heterophylla*, *Hoheria populnea*, *Lophomyrtus obcordata*.

Significance: Birds: silvereye, grey warbler, fantail, tui, bellbird, rifleman.

Comments: *Kunzea ericoides* scattered throughout, *Nothofagus solandri* is locally on steep country around the stream. Birds: starling, blackbird, chaffinch, magpie.

MARINGIAWAI STREAM BUSH

Site no.: EW2203

Grid ref: T27 330047

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Lowland

Altitude: 380 m

Other landform: Sideslope

Land system: Downland

Principal landform: Topslope

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrydium cupressinum*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Nestegis lanceolata*, *Knightsia excelsa*.

Other species: *Coprosma rotundifolia*, *Alectryon excelsus*, *Cordyline australis*, *Podocarpus totara*, *Melicytus ramiflorus*, *Hoberia populnea*, *Hedycarya arborea*.

Comments: Size of this area has reduced since 1968 and 1977 (see aerial photographs). Degraded to treeland.

TELESCOPE CREEK BUSH

Site no.: EW2341

Grid ref: T27 466045

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Tread, sideslope, topslope, footslope

Land system: Terrace, downland

Principal landform: Terrace riser

Vegetation type:

Dominant species: *Nothofagus solandri*, *Leptospermum scoparium*, *Kunzea ericoides*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Carpodetus serratus*, *Coprosma linarifolia*, *Raukaua anomalus*, *Cyathodes juniperina*, *Leucopogon fasciculatus*.

Other species: *Elaeocarpus bookerianus*, *Gabnia* sp., *Melicytus micranthus*, *Melicytus ramiflorus*, *Pittosporum divaricatum*, *Pittosporum tenuifolium*, *Melicope simplex*, *Brachyglottis repanda*, *Neomyrtus pedunculata*, *Parsonsia heterophylla*, *Coprosma propinqua*, *Coprosma rotundifolia*, *Coprosma crassifolia*, *Coprosma rubra*, *Coprosma grandifolia*, *Coprosma robusta*, *Coprosma tenuicaulis*, *Coprosma virescens*, *Coprosma robusta* × *C. propinqua*, *Galium trilobium*, *Podocarpus totara*, *Cordyline australis*, *Microlaena avenacea*, *Myrsine divaricata*, *Lophomyrtus obcordata*, *Blechnum penna-marina*, *Astelia grandis*, *Carex secta*, *Carex geminata*, *Pseudopanax crassifolius*, *Pseudopanax arboreus*, *Nestegis lanceolata*, *Nestegis montana*, *Dianella nigra*, *Schefflera digitata*, *Olearia paniculata*, *Carmichaelia australis*, *Pennantia corymbosa*.

Significance: Significant plants: *Coprosma virescens* ? *Clematis vitalba*, *Pittosporum divaricatum*. Birds : whitehead, tomtit, tui, fantail, grey warbler, kereru. *Megadromis*, *Plochamostethus* present.

Recommendation: Needs further investigation.

Comments: *Clematis vitalba* present.

Notes: Ref. Ecol. Site Inventory No. 256, Refer PNA 2326.

TOKAROA SHRUBLAND

Site no.: EW2105

Grid ref: S27 236034

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude: 174 m

Other landform: Riser

Land system: Terrace, downland

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*

Other species: Not known.

Comments: Regenerating dense *Nothofagus solandri*.

HIKORANGI BUSH

Site no.: EW2312

Grid ref: T27 435034

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur line, crest

Land system: Rolling hill country, rolling hill-downs

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*, *Dacrydium cupressinum*, *Leucopogon fasciculatus*.

Other species: *Olearia rani*, *Nestegis cunninghamii*, *Melicytus ramiflorus*, *Cyatbodes juniperina*, *Coprosma* sp., *Podocarpus totara*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Pennantia corymbosa*, *Coprosma rugosa*, *Coprosma rubra*, *Coprosma propinqua*, *Coprosma robusta*, *Leptospermum scoparium*, *Carpodetus serratus*, *Carex* sp.

Comments: Area not fenced, grazed.

Notes: Ref. Ecol. Site Inventory No. 861.

NGAHAPE BUSH

Site no.: EW2421

Grid ref: T27 538032

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser

Land system:

Principal landform: Terrace tread

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Alectryon excelsus*, *Melicytus ramiflorus*, *Nestegis montana*, *Podocarpus totara*, *Nothofagus solandri*, *Coprosma rhamnoides*.

Other species: *Metrosideros diffusa*, *Kunzea ericoides*, *Hoheria populnea*, *Hebe stricta*, *Raukaua anomalus*, *Pseudopanax crassifolius*, *Myrsine salicina*, *Melicope simplex*, *Nestegis lanceolata*, *Pinus radiata*, *Coprosma* sp., *Brachyglottis repanda*, *Fuchsia excorticata*, *Melicytus micranthus*, *Nestegis cunninghamii*, *Coprosma propinqua*, *Coprosma crassifolia*, *Coprosma rotundifolia*, *Coprosma rubra*, *Coprosma rugosa*, *Coprosma areolata*, *Elaeocarpus dentatus*, *Cyathea dealbata*, *Pseudopanax colensoi*, *Carex secta*, *Leptospermum scoparium*, *Lophomyrtus obcordata*, *Prumnopitys taxifolia*, *Streblus heterophyllus*, *Parsonsia heterophylla*, *Passiflora tetrandra*, *Carmichaelia australis*, *Pennantia corymbosa*, *Urtica ferox*, *Ozothamnus leptophyllus*, *Ulex europaeus*.

Significance: Birds: bellbird, tui, fantail, grey warbler. *Megadromis capito* present.

Notes: Ref. Ecol. Site Inventory No. 778.

TURUMATAKOKO BUSH

Site no.: EW2418

Grid ref: T27 514015

Source: Sawyer *et al.* 1998

Area: 150 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Tree-shrubland, shrubland.

Dominant species: *Nothofagus solandri*, *Knightia excelsa*, *Leptospermum scoparium*, *Pseudopanax arboreus*, *Pteridium esculentum*.

Other species: *Gabnia* sp., *Myrsine australis*.

Notes: Ref. Ecol. Site Inventory No. 900.

ERINGA BUSH

Site no.: EW2207

Grid ref: S27 298013

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 140 m

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Alectryon excelsus*

Other species: *Leptospermum scoparium*, *Podocarpus totara*, *Nestegis lanceolata*, *Hoheria populnea*, *Coprosma rhamnoides*, *Elaeocarpus dentatus*, *Streblus heterophyllus*, *Kunzea ericoides*, *Cordyline australis*, *Pittosporum tenuifolium*, *Coprosma rubra*, *Salix* sp.

Significance: Site may have *Pittosporum obcordatum* (possible *P. obcordatum* was observed in floodplain at upstream end of block).

Comments: Some *Pinus radiata* and wattle in site.

KAIWHATA SHRUBLAND

Site no.: EW2442

Grid ref: T27 580020

Source: Sawyer *et al.* 1998

Area: 1200 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Foothlope, sideslope

Land system: Terrace, rolling hill country

Principal landform: Tread

Vegetation type: Shrubland, pasture

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, pasture.

Other species: *Nothofagus solandri*.

Comments: Areas of shrubland interspersed with pasture.

KAIWHATA RIVER BUSH

Site no.: EW2419B

Grid ref: T27 541995

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Floodplain

Land system: Alluvial plain

Principal landform: Oxbow

Vegetation type: Tussockland, tall closed forest, shrubland.

Dominant species: *Carex secta*, *Carex geminata*, *Nothofagus solandri*, *Elaeocarpus dentatus*, *Alectryon excelsus*, *Nestegis lanceolata*, *Dacrycarpus dacrydioides*, *Olearia virgata*, *Leptospermum scoparium*.

Other species: *Metrosideros perforata*, *Ozothamnus leptophyllus*, *Laurelia novae-zelandiae*, *Freycinetia baueriana*, *Ripogonum scandens*, *Pseudopanax crassifolius*, *Knightia excelsa*, *Coprosma rubra*, *Prumnopitys ferruginea*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Coprosma propinqua*, *Agrostis capillaris*, *Juncus edgarae*, *Rubus schmidelioides*, *Hoheria populnea*, *Cyathea dealbata*, *Cordyline australis*, *Juncus effusus*, *Juncus australis*, *Streblus heterophyllus*, *Coprosma areolata*, *Pennantia corymbosa*, *Dacrycarpus dacrydioides*, *Melicytus ramiflorus*, *Coprosma rhamnoides*, *Ozothamnus leptophyllus*, *Parsonsia heterophylla*, *Metrosideros perforata*.

Significance: Significant plant: *Freycinetia baueriana*. Birds: kereru, tui, whitehead, grey warbler, harrier hawk, bellbird, thrush.

Comments:

Notes: Ref. Ecol. Site Inventory No. 890.

HOMEWOOD BUSH

Site no.: EW2426a,b

Grid ref: T27 597993

Source: Sawyer *et al.* 1998

Area: 18 ha

Bioclimatic zone:

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Terrace tread

Site description: *Nothofagus solandri* dominates the canopy on steep faces & stream side bluffs. *Dacrycarpus dacrydioides* & *Cordyline australis* form a tree-shrubland on swampy flats with *Leptospermum scoparium*, *Coprosma crassifolia*, *Pseudopanax crassifolius* & pasture.

Dominant species: *Eucalyptus* sp., *Nothofagus solandri*, *Pinus radiata*, *Dacrycarpus dacrydioides*, *Elaeocarpus bookerianus*, *Podocarpus totara*, *Cordyline australis*, *Myoporum laetum*, *Kunzea ericoides*,

Laurelia novae-zelandiae, *Prumnopitys taxifolia*.

Other species: *Melicytus ramiflorus*, *Brachyglottis repanda*, *Agrostis capillaris*, *Trifolium repens*, *Parsonia heterophylla*, *Pneumatopteris pennigera*, *Astelia fragrans*, *Hydrocotyle moschata*, *Pennantia corymbosa*, *Uncinia uncinata*, *Leptospermum scoparium*, *Coprosma rhamnoides*, *Pseudopanax crassifolius*, *Carex virgata*, *Carex secta*, *Pittosporum tenuifolium*, *Coprosma crassifolia*, *Pseudopanax arboreus*, *Myrsine australis*, *Cytisus scoparius*, *Raukaua anomalus*, *Asplenium bookerianum*, *Coprosma areolata*, *Alectryon excelsus*, *Freycinetia banksii*, *Ripogonum scandens*, *Macropiper excelsum*, *Metrosideros diffusa*, *Pellaea rotundifolia*, *Carex dissita*, *Leucopogon fasciculatus*, *Coprosma rubra*, *Digitalis purpurea*, *Hydrocotyle novae-zeelandiae*, *Hoberia populnea*, *Carex geminata*, *Coprosma propinqua*, *Polystichum richardii*, *Melicytus micranthus*, *Ranunculus reflexus*, *Helichrysum lanceolatum*, *Adiantum cunninghamii*, *Geniostoma rupestre* var. *ligustrifolium*, *Clematis paniculata*, *Asplenium flaccidum*, *Pteridium esculentum*, *Pteris tremula*, *Carex geminata*, *Elaeocarpus bookerianus*, *Craspedia minor*, *Phormium cookianum*, *Taraxacum officinale*, *Poa colensoi*, *Ozothamnus leptophyllus*, *Hypolepis ambigua*.

Significance: Birds: tui, harrier, grey warbler.

WAITAWA BUSH

Site no.: EW2108

Grid ref: S27 192987

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, sideslope

Land system: Alluvial plain, terrace

Principal landform: Floodplain

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*

Other species: *Pseudopanax crassifolius*, *Leptospermum scoparium*, *Coprosma propinqua*, *Ozothamnus leptophyllus*, *Pittosporum tenuifolium*.

Significance: Not known.

Comments: On border of ED.

Notes: Ref. Ecol. Site Inventory No. 534.

WAINUIORU - PEKA PARAE

Site no.: EW2220

Grid ref: T27 341974

Source: Sawyer *et al.* 1998

Area: 40 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest with emergents, shrubland, treeland, pasture.

Dominant species: *Podocarpus totara*, *Dacrydium cupressinum*, *Prumnopitys taxifolia*, *Hoberia populnea*, *Kunzea ericoides*, *Leptospermum scoparium*, pasture, *Salix* sp.

Other species: *Nestegis lanceolata*, *Dacrycarpus dacrydioides*, *Pseudopanax crassifolius*, *Cordyline australis*, *Plagianthus regius*, *Sophora tetraptera*.

Recommendation: May contain rare plants.

Comments: Willow forest along river. Small area along right side of river is Wainuioru Marginal Strip (not protected for conservation). Looks similar to 2216 (Ngatapa).

Notes: Ref. Ecol. Site Inventory No. 843.

KAIWHATA RIVER MOUTH

Site no.: EW2441

Grid ref: T27 608967

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Shingle bank

Land system:

Principal landform: River mouth

Vegetation type: Openland.

Dominant species: Not known.

Other species: Not known.

Significance: Birds: pied shag, little shag, kingfisher, black back gull, grey duck, spur wing plover, black oyster catcher, white-faced heron, pied stilt, black fronted dotterel. Spider of the Genus *Steatoda* present at the site.

Comments: No significant natural vegetation. Birds: geese, black swan, mallard.

Notes: Ref. Ecol. Site Inventory No. 35.

WIDOWS BUSH

Site no.: EW2416

Grid ref: T27 556970

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Gully riser

Land system: Slumped basin, colluvial system (B)

Principal landform: Sideslope

Site description: A long thin strip up a south east facing gully.

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*, *Ulex europaeus*, *Leptospermum scoparium*.

Other species: *Brachyglottis repanda*, *Cyathea dealbata*, *Cyathea medullaris*, *Melicytus ramiflorus*, *Pittosporum tenuifolium*, *Knightia excelsa*, *Pseudopanax crassifolius*, *Ozothamnus leptophyllus*, *Alectryon excelsus*, *Cordyline australis*, *Podocarpus totara*, *Pinus radiata*, *Corynocarpus laevigatus*, *Carpodetus serratus*, *Hoheria populnea*.

Notes: Ref. Ecol. Site Inventory No. 773.

CALEDONIA WETLAND

Site no.: EW2427

Grid ref: T27 596941

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Dune system ?

Land system: Marine terrace (old beaches)

Principal landform: Wetland

Vegetation type: Shrub, tussockland.

Dominant species: *Ammophila arenaria*, *Juncus kraussii* var. *australiensis*, *Coprosma acerosa*, *Cyperus ustulatus*, *Plagianthus divaricatus*, *Schoenoplectus tabernaemontani*.

Other species: *Carex geminata*.

Significance: Significant plant: *Schoenoplectus tabernaemontani*. Birds: black back gull, variable oyster catcher, Southern black-backed gull.

Comments: "Good wetland with raupo" (A. Townsend pers. comm.).

Notes: Ref. Ecol. Site Inventory No. 887.

WAINUIORU RIVER PENINSULA BUSH

Site no.: EW2301

Grid ref: T27 365934

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude: 100 m

Other landform: Sideslope

Land system: Terrace, rolling hill country

Principal landform: Spur crest

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Dacrycarpus dacrydioides*.

Other species: *Pittosporum tenuifolium*, *Coprosma rubra*, *Cordyline australis*, *Hoheria populnea*, *Melicytus ramiflorus*, *Coprosma rhamnoides*, *Carmichaelia australis*, *Pseudopanax crassifolius*, *Knightia excelsa*, *Nestegis lanceolata*, *Leptospermum scoparium*, *Nestegis montana*, *Podocarpus totara*, *Sophora tetraptera*

Comments: Willow present in site along riser banks. Binocular viewed from road. A few unidentifiable small leaved divaricate plants present.

Notes: Ref. Ecol. Site Inventory No. 856.

OUMUKURA STREAM BUSH

Site no.: EW2331

Grid ref: T27 474928

Source: Sawyer *et al.* 1998

Area: 18 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser, gully riser

Land system: Terrace, downland

Principal landform: Terrace tread

Vegetation type: Tall closed forest with emergents, shrubland.

Dominant species: *Nothofagus solandri*, *Leucopogon fasciculatus*, *Leptospermum scoparium*.

Other species: *Ozothamnus leptophyllus*, *Pittosporum tenuifolium*, *Olearia paniculata*, *Coprosma rhamnoides*, *Raukaua anomalus*, *Podocarpus totara*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Dacrydium cupressinum*, *Nothofagus solandri*, *Pseudopanax crassifolius*.

Significance: Significant plant: *Nothofagus* in gully.

Recommendation: Needs a detailed inspection.

Notes: Ref. Ecol. Site Inventory No. 870.

HUANGARUA RIVER TRIBUTARY SHRUBLAND

Site no.: EW2114

Grid ref: S27 204924

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Stream terraces

Land system:

Principal landform:

Dominant species: *Cordyline australis*, *Melicytus ramiflorus*.

Other species: *Leptospermum scoparium*, *Kunzea ericoides*, *Korthalsella salicornioides*.

Significance: Very high numbers of mistletoe plants.

Comments: Grazed.

PAHAOA RIVER BUSH

Site no.: EW2353

Grid ref: T27 430925

Source: Sawyer *et al.* 1998

Area: c.80 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Dominant species: Not known.

Other species: Not known.

Comments: Secondary forest on steep gully. Refer Rebergen 1997e.

MARTINBOROUGH-MASTERTON RAOD SHRUBLAND?

Site no.: EW2113

Grid ref: S27 210920

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Steep stream terraces

Land system:

Principal landform:

Vegetation type:

Dominant species: *Pittosporum tenuifolium*, *Kunzea ericoides*, *Cordyline australis*, *Melicytus ramiflorus*, *Leptospermum scoparium*.

Other species: *Korthalsella salicornioides*.

Significance: Some very mature *Pittosporum tenuifolium*; manuka covered with mistletoes (not noted on kanuka at this site).

LOWER PAHAOA RIVER SHRUBLAND

Site no.: EW2354

Grid ref: T27 417922

Source: Sawyer *et al.* 1998

Area: c.14 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Kaikomako dominant scrub-shrubland.

Dominant species: Not known.

Other species: Not known.

Comments: Ref. Rebergen 1997e.

MAPAPA STREAM BUSH

Site no.: EW2432

Grid ref: T27 496917

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Flats on either side of a stream

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Closed forest, tall closed forest.

Dominant species: *Nothofagus solandri*, *Leptospermum scoparium*, *Pittosporum tenuifolium*, *Kunzea ericoides*.

Other species: *Erica lusitanica*, *Pseudopanax crassifolius*, *Phormium cookianum*, *Cordyline australis*, *Cyathea dealbata*, *Nothofagus fusca?*, *Ozotamnus leptophyllus*, *Hoheria populnea*, *Pseudopanax arboreus*, *Weinmannia racemosa?*, *Leucopogon fasciculatus*, *Coprosma microcarpa*.

Significance: Significant plant: *Nothofagus* spp.

Comments: Area of forest amongst shrubland.

Notes: Ref. Ecol. Site Inventory No. 876.

NGAWAKA

Site no.: EW2237

Grid ref: S27 277915

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform:

Land system:

Principal landform: Gully (x2, west aspect)

Vegetation type: Treeland, shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Cordyline* sp., *Sophora microphylla*.

Other species: Not known.

Comments: Remnant patches in 2 adjacent gullies. Heavy grazing disturbance.

NGAKONUI STREAM

Site no.: EW2221

Grid ref: T27 360914

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude: 100 m

Other landform: Terrace tread (N/S aspect)

Land system: Dissected rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Griselinia* sp., *Cordyline* sp., *Sophora* sp., *Nothofagus fusca*.

Other species: Not known.

Significance: Significant plants: *Nothofagus fusca*.

Recommendation: Worth a closer look.

Comments: Canopy health generally good, occasional standing dead & root thrown trees. Grazing disturbance, especially on the margins.

Notes: Ref. Ecol. Site Inventory No. 557.

CRAIGIELEA BUSH

Site no.: EW2351

Grid ref: T27 455915

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Tread, sideslope

Land system: Terrace, downland

Principal landform: Terrace riser

Vegetation type: Treeland.

Dominant species: *Nothofagus solandri*.

Other species: *Leptospermum scoparium*, *Cordyline australis*, *Hoberia populnea*, *Myrsine divaricata*, *Leucopogon fasciculatus*, *Kunzea ericoides*, *Ozothamnus leptophyllus*, *Olearia paniculata*, *Nestegis lanceolata*, *Dacrycarpus dacrydioides*, *Aciphylla squarrosa*, *Phormium cookianum*, *Coprosma rhamnoides*, *Coprosma propinqua*, *Coprosma crassifolia*, *Helicbrysum lanceolatum*, *Prumnopitys taxifolia*, *Raukaua anomalus*, *Pseudopanax crassifolius*.

Significance: Plants; *Aciphylla squarrosa*.

Comments: Contains suitable habitat for rare plants.

WHAITIRI STREAM

Site no.: EW2217

Grid ref: T27 328907

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude: 300 m

Other landform: Spur (valley runs E/W)

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Treeland, shrubland, pasture.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Myoporum laetum*, *Hoberia populnea*, *Sophora* sp.

Other species: Not known.

Comments: Heavily grazed understorey.

CANNOCK ROAD SHRUBLAND

Site no.: EW2101

Grid ref: S27 233905

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Terrace

Principal landform: Gully

Vegetation type: Shrubland

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Pseudopanax arboreus*

Other species: *Cordyline australis*, *Pittosporum tenuifolium*, *Leptospermum scoparium*, *Hebe stricta*, *Brachyglottis repanda*, *Ozothamnus leptophyllus*, *Coprosma robusta*, *Coprosma propinqua*, *Coprosma robusta* × *C. propinqua*, *Hoberia populnea*.

WAIMOANA DUNELAND

Site no.: EW3103

Grid ref: T27 516886

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Colluvial fan

Land system: Terrace (marine)

Principal landform: Terrace tread

Vegetation type: Tussockland.

Dominant species: *Juncus kraussii* var. *australiensis*, *Ammophila arenaria*, *Coprosma acerosa*, *Cyperus ustulatus*, *Typha orientalis*, *Phormium tenax*, *Carex geminata*.

Other species: *Juncus edgarrae*, *Cortaderia toetoe*, *Rumex flexuosus*, *Carex* sp (fine tufted), *Cordyline australis*, *Carex* sp. (*C. secta?*), *Juncus articulatus*, *Olearia solandri*, *Schoenoplectus tabernaemontani*, *Juncus australis*, *Juncus effusus*, *Taraxacum officinale*, *Lagurus ovatus*, *Apodasmia similis*, *Spinifex sericeus*.

Significance: Significant plants: *Apodasmia similis*, *Coprosma acerosa*, *Schoenoplectus tabernaemontani*. *Oligosoma nigriplantare polychroma* and katipo present. Possible dune pond system.

Comments: Terrace tread has some overlaying colluvial fan on part of it.

Notes: Ref. Ecol. Site Inventory No. 896.

HIKAWERA SHRUBLAND

Site no.: EW2921

Grid ref: S27 277884

Source: Sawyer *et al.* 1998

Area: 18 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Closed forest, shrubland.

Dominant species: *Kunzea ericoides*.

Other species: Not known.

BLUE ROCK ROAD SHRUBLAND

Site no.: EW2703

Grid ref: S27 115845

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser, gully, sideslope

Land system: Terrace, downland

Principal landform: Gully

Vegetation type: Tall closed forest, tree-shrubland.

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*, *Pittosporum eugenioides*, *Pittosporum tenuifolium*.

Other species: *Leptospermum scoparium*, *Podocarpus totara*, *Melicytus ramiflorus*, *Nothofagus solandri*, *Myrsine australis*.

KUREMOA STREAM BUSH

Site no.: EW2917

Grid ref: T27 356845

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Lowland

Altitude: 300 m

Other landform: Gully, sideslopes, bluff

Land system: Taipo

Principal landform: Spur

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*.

Other species: *Melicytus ramiflorus*, *Nothofagus* sp. (*N. solandri*?) *Knightia excelsa*, *Ozothamnus leptophyllus*, *Cordyline australis*, *Brachyglottis greyi*, *Leptospermum scoparium*, *Phormium cookianum*, *Myoporum laetum*.

Significance: Significant plant: *Brachyglottis greyi*.

WAIPUNA BUSH

Site no.: EW2702

Grid ref: S27 123838

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser, terrace tread

Land system: Terrace

Principal landform: Gully

Vegetation type: Tree-shrubland, tall closed forest.

Dominant species: *Podocarpus totara*, *Nestegis lanceolata*, *Prumnopitys taxifolia*, *Nothofagus solandri*.

Other species: *Kunzea ericoides*, *Brachyglottis repanda*, *Carpodetus serratus*, *Cordyline australis*, *Myrsine australis*, *Coprosma rubra*, *Melicytus ramiflorus*, *Coprosma linarifolia*, *Pittosporum eugenioides*, *Lophomyrtus obcordata*, *Coprosma rhamnoides*, *Macropiper excelsum*, *Urtica incisa*, *Hedycarya arborea*, *Hedera helix*, *Coprosma areolata*, *Dacrycarpus dacrydioides*, *Carmichaelia australis*, *Coprosma rhamnoides*, *Helicbrysum lanceolatum*, *Cyatodes juniperina*, *Microlaena avenacea*.

Recommendation: Upstream requires a better look.

Comments: Dead stock dumped in creek from off ford. Pest plant species: *Hedera helix*.

Notes: Ref. Ecol. Site Inventory Nos. 530 and 592.

PATUNA BUSH

Site no.: EW2701
Area: 8 ha
Other landform:

Grid ref: S27 120833
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Downland, rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*, *Ulex europaeus*.

Other species: *Knightia excelsa*, *Myoporum laetum*, *Sophora microphylla*, *Cordyline australis*, *Pittosporum eugenioides*, *Hoberia populnea*, *Melicytus ramiflorus*, *Olearia rani*, *Myrsine australis*, *Pseudopanax arboreus*.

WHAKAPUNI

Site no.: EW2808
Area: 8 ha
Other landform:

Grid ref: S27 230814
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace
Principal landform: Terrace tread

Vegetation type: Treeland.

Dominant species: *Cordyline australis*, *Plagianthus regius*.

Other species: *Kunzea ericoides*, *Sophora tetraptera*, *Hoberia populnea*, *Ozothamnus leptophyllus*, *Carex geminata*, adventive grasses.

Significance: Birds: fantail, Australasian harrier, paradise duck.

MAKARA RIVER - NIKORIMA BUSH REMNANT

Site no.: EW3402
Area: 35 ha
Other landform: Spurline, supr crest, rolling tops?

Grid ref: S28 162788
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully

Site description: Approach via Paruwai Range Road.

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*, *Nothofagus truncata*.

Other species: *Leptospermum scoparium*, *Kunzea ericoides*, *Dacrycarpus dacrydioides*, *Collospermum bastatum*, *Earina mucronata*, *Cordyline australis*, *Pseudopanax crassifolius*, *Pittosporum tenuifolium*, *Prumnopitys taxifolia*, *Sophora microphylla*.

Significance: Some very large *Dacrycarpus dacrydioides* and *Prumnopitys taxifolia* - primary forest.

Comments: Area observed from Range Road with binoculars : S28 162785 (28/4/94).

Notes: Ref. Ecol. Site Inventory Nos. 571 and 572.

NIKORIMA BUSH REMNANT

Site no.: EW3419
Area: 60 ha
Other landform: Gully, sideslope, slump scarp, pinnacle erosion

Grid ref: S28 180790
Bioclimatic zone: Semi-coastal; lowland

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Spur

Vegetation type: Tall closed forest, shrubland, tussockland.

Dominant species: *Nothofagus solandri*, *Elaeocarpus dentatus*, *Knightia excelsa*, *Nothofagus truncata*, *Pseudopanax arboreus*, *Brachyglottis repanda*, *Helichrysum glomeratum*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Leptospermum scoparium*, *Cordyline australis*, *Sophora microphylla*, *Phormium cookianum*, *Cortaderia fulvida*.

Other species: *Melicytus ramiflorus*, *Hedycarya arborea*, *Hoberia sexstylosa*, *Ripogonum scandens*, *Rubus cissoides*, *Pseudopanax arboreus*, *Olearia rani*, *Coprosma grandifolia*, *Leucopogon fasciculatus*,

Macropiper excelsum, *Myrsine australis*, *Brachyglottis repanda*, *Cordyline banksii*, *Cyathea dealbata*, *Cyathea medullaris*, *Paesia scaberula*, *Blechnum discolor*, *Blechnum novae-zeelandiae*, *Astelia grandis*, *Coprosma propinqua*, *Coprosma areolata?* *Pseudopanax crassifolius*, *Clematis foetida*, *Carpodetus serratus*, *Polystichum richardii*, *Pittosporum eugenioides*, *Hebe stricta*, *Asplenium bulbiferum*, *Schefflera digitata*, *Hedycarya arborea*, *Asplenium bulbiferum*, *Coprosma robusta*, *Cortaderia fulvida*, *Pinus radiata*.

Significance: Area was given a moderate habitat rating (Weri - SSW1 ?). Has a large gully, with some pinnacles and a good understorey. Beech present. *Pinus radiata* invading site (up gully). Kereru flight heard in site. 2-3-(4) Ecological units present. Worthy of a full survey.

Recommendation: Ecological units present - worthy of full survey.

Notes: Ref. Ecol. Site Inventory No. 532.

WHAKAPUNI / TAUKARE STREAM

Site no.: EW3416

Grid ref: S28 220787

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Colluvial fan

Land system: Terrace

Principal landform: Terrace tread

Site description: Small patches of forest on river flats.

Vegetation type: Treeland

Dominant species: *Cordyline australis*, *Dacrycarpus dacrydioides*, *Podocarpus totara*.

Other species: *Coprosma rubra*, *Pseudopanax crassifolius*, *Carmichaelia australis*, *Pittosporum tenuifolium*, *Leptospermum scoparium*, *Prumnopitys taxifolia*, *Coprosma rhamnoides*, *Raukaua anomalus*, *Pennantia corymbosa*, *Typha orientalis*, *Pyrrosia eleagnifolia*, *Carex geminata*, *Plagianthus regius*, *Salix fragilis*, *Holcus lanatus*, *Rubus schmidelioides*, *Juncus edgarrae*, *Hoberia populnea*.

Comments: Birds: grey warbler, fantail, blackbird, starling, chaffinch, paradise duck.

PAHAOA TREELAND

Site no.: EW3609

Grid ref: T28 361753

Source: Sawyer *et al.* 1998

Area: 2 ha

Bioclimatic zone: Coastal

Altitude:

Other landform:

Land system:

Principal landform: Sideslope

Vegetation type: Treeland.

Dominant species: *Corynocarpus laevigatus*, *Myoporum laetum*, *Melicytus ramiflorus*, *Urtica ferox*.

Other species: *Ozothamnus leptophyllus*, *Sambucus nigra*, *Lycium ferrocissimum*, *Cordyline australis*, *Phormium cookianum*, *Leptospermum scoparium*, *Brachyglottis greyi*, *Muehlenbeckia complexa*.

Significance: Significant plant: *Brachyglottis greyi*.

Notes: Ref. Ecol. Site Inventory No. 597.

TORA STATION

Site no.: EW3426

Grid ref: S28 186697

Source: Sawyer *et al.* 1998

Area: 70 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gullyhead

Land system:

Principal landform: Gully

Vegetation type: Not known.

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*.

Other species: *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Cordyline australis*, *Sophora tetraptera*, *Ozothamnus leptophyllus*, *Pseudopanax arboreus*, *Coprosma rhamnoides*, *Melicytus ramiflorus*.

Significance: Birds: whitehead, fantail, tui, Australasian harrier, grey warbler.

Comments: Goats present.

OTEREI

Site no.: EW3515

Grid ref: S28 270700

Source: Sawyer *et al.* 1998

Area: 220 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, gully, basin

Land system: Taipo, dissected rolling hill country

Principal landform: Hillcrest

Vegetation type: Scrub.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Kunzea ericoides*, *Cordyline australis*, *Juncus kraussii* var. *australiensis*, *Phormium cookianum*.

Other species: *Sophora tetraptera*, *Aciphylla squarrosa*, *Coprosma rhamnoides*, *Nothofagus solandri*, *Melicytus crassifolius*, *Coprosma crassifolia*, *Juncus edgarrae*, *Cyperus ustulatus*, *Haloragis erecta*, *Muehlenbeckia complexa*, *Carmichaelia australis*.

Comments: Birds: grey warbler, silvereye, magpie, goldfinch, spur-winged plover.

KAIWAKA - POLEY STREAM

Site no.: EW3306

Grid ref: S28 100641

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Gully

Vegetation type: Tall closed forest with emergents.

Dominant species: *Leptospermum scoparium*, *Sophora* sp., *Nothofagus solandri*, *Knightia excelsa* (scattered emergent), *Kunzea ericoides*.

Other species: *Ozothamnus leptophyllus*, *Pinus radiata*, *Carex geminata*, *Cordyline australis*, *Ulex europaeus*.

Significance: Birds: tui, bellbird, grey warbler, kereru.

Comments: Birds: chaffinch, magpie, goldfinch.

EWE RIDGE

Site no.: EW3410

Grid ref: S28 150625

Source: Sawyer *et al.* 1998

Area: 120 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Ridge crest, gully head

Land system: Hill country

Principal landform: Gully

Vegetation type: Tall scrub - forest.

Dominant species: *Leptospermum scoparium*.

Other species: *Kunzea ericoides*, *Ozothamnus leptophyllus*.

EWE RIDGE, OPOUAWA STREAM

Site no.: EW3304

Grid ref: S28 143620

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Ridge face

Land system: Hill country

Principal landform: Spur

Vegetation type: Open forest, closed forest, shrub.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Kunzea ericoides*.

Other species: *Cordyline australis*, *Coprosma rhamnoides*.

Comments: Birds: paradise duck, black fronted dotterel, welcome swallow.

TORA COASTAL FLATS

Site no.: EW3428

Grid ref: S28 177611

Source: Survey from adjacent natural area

Area: 11 ha

Bioclimatic zone:

Altitude: <20 m

Other landform:

Land system: Coastal platform

Principal landform: Marine bench

Vegetation type: Giant umbrella sedge-leafless rush sedgeland ⇆ small-leaved pohuehue shrubland (leafless rush fringe; occasional sea rush, Scotch thistle, *Centella unifolia*; local *Potentilla anserinoides*, marsh ribbonwood, buck-horned plantain). Spike sedge/penny royal-(cocksfoot) sedgeland.

Significance: Part of a semi-continuous coastal wetland network along the south eastern Wairarapa coast. Spike sedge sedgeland is no longer common.

Comments: A degraded mosaic of wetland sedgelands and shrublands amongst pasture. Parts are in deer paddocks, heavily grazed by sheep and red deer. This RAP includes part of the Tora Recreation Reserve (note recreation reserves are not primarily managed to protected indigenous values).

WHITE ROCK - WHAWANUI RIVER

Site no.: EW3803

Grid ref: S28 085590

Source: Sawyer *et al.* 1998

Area: 45 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Hill country

Principal landform: Spur

Vegetation type: Tree-shrubland, scrub.

Dominant species: *Knightia excelsa*, *Kunzea ericoides*, *Olearia paniculata*, *Meliccytus ramiflorus*, *Leptospermum scoparium*, *Cordyline australis*.

Other species: *Carmichaelia australis*, *Corynocarpus laevigatus*, *Myoporum laetum*, *Pittosporum tenuifolium*, *Sophora tetraptera*, *Pyrrosia eleagnifolia*, *Aciphylla squarrosa*, *Cyperus ustulatus*, *Ulex europaeus*, *Juncus edgarrae*, *Ozothamnus leptophyllus*, *Phormium cookianum*, *Muehlenbeckia complexa*, *Helicbrysum lanceolatum*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Agrostis capillaris*, *Pteris tremula*, *Brachyscome radicata*, *Coprosma robusta*, *Brachyglottis repanda*, *Clematis paniculata*, *Hebe stricta*, *Blechnum chambersii*, *Parsonsia heterophylla*, *Phymatosorus pustalatus*, *Ctenopteris heterophylla*, *Polystichum richardii*, *Asplenium bookerianum*, *Craspedia minor*, *Asplenium flaccidum*, *Pratia angulata*, *Cortaderia fulvida*, *Digitalis purpurea*, *Urtica ferox*, *Blechnum fluviatile*, *Uncinia uncinata*, *Pellaea rotundifolia*, *Adiantum cunninghamii*, *Hypolepis ambigua*, *Juncus planifolius*, *Anthoxanthum odoratum*.

Comments: Birds: grey warbler, silvereye, bellbird, fantail.

WHITE ROCK DUNES

Site no.: EW3802b

Grid ref: S28 101573

Source: On-site survey

Area: 70 ha

Bioclimatic zone:

Altitude: <20 m

Other landform: Shingle river fan, beach, river mouth

Land system: Sand beaches, shingle beaches

Principal landform: Low dune

Vegetation type: Marram/sand sedge grassland and sandfield. Pasture (occasional local small-leaved pohuehue). Gorse gravelfield. Lupin/marram grass-shrubland (occasional manuka, *Isolepis nodosa*). Manuka-tauhinu shrubland. (Tauhinu)-exotic grasses rockfield.

Dominant species: Not known.

Other species: Not known.

Significance: Opouawe River mouth and Waiarekeke Stream gravel fans are interesting features. Banded dotterels reported to nest here (DOC Ecological Site Inventory No. 605).

Comments: Buffers and surrounds the partially embedded fragments comprising RAP 49 (White Rock Beach).

References: DOC Ecological Site Inventory.

3. MODERATE

PONGAROA

Site no.: EW0424 **Grid ref:** U25 777695 **Source:** Sawyer *et al.* 1998
Area: 30 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope, spur **Land system:** Hill country
Principal landform: Gully

Vegetation type: Shrubland, closed forest.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Leptospermum scoparium*.

Other species: *Pittosporum tenuifolium*, *Myrsine australis*, *Leucopogon fasciculatus*.

Significance: Not known.

KOHIKU BUSH B

Site no.: EW0426B **Grid ref:** U25 783646 **Source:** Sawyer *et al.* 1998
Area: 5 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Foothill, sideslope **Land system:** Terrace, rolling hill country
Principal landform: Terrace tread

Site description: Tributary to Tiraumea River (in headwaters).

Vegetation type: Tall closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Dacrydium cupressinum*, *Podocarpus totara*, *Prumnopitys taxifolia*.

Other species: *Beilschmiedia tawa*, *Sophora tetraptera*, *Coprosma crassifolia*, *Kunzea ericoides*, *Leptospermum scoparium*, *Knightia excelsa*, *Hoheria populnea*, *Pseudopanax crassifolius*, *Myrsine australis*, *Nestegis lanceolata*.

Significance: Podocarp forest on flood plain. May have rare plants.

Comments: May be presence of rare plants with a detailed survey; or be suitable for re-vegetation.

'BREAKDOWN"/OWAHANGA RIVER

Site no.: EW0509 **Grid ref:** U25 820620 **Source:** Sawyer *et al.* 1998
Area: 110 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 250 m
Other landform: Foothill **Land system:** Downland
Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Melicetyus ramiflorus*, *Coprosma rhamnoides*, *Rubus fruticosus*, *Leucopogon fasciculatus*.

Other species: *Rubus schmidelioides*, *Dicksonia squarrosa*, *Podocarpus totara*, *Ripogonum scandens*, *Polystichum richardii*, *Helicbrysum lanceolatum*, *Clematis forsteri*, *Coprosma robusta*, *Hebe stricta*, *Pseudopanax crassifolius*, *Cordyline australis*, *Pellaea rotundifolia*, *Parsonsia heterophylla*, *Brachyglottis repanda*, *Asplenium bulbiferum*, *Dicksonia fibrosa*, *Sophora tetraptera*, *Hoheria populnea*, *Blechnum fluviatile*, *Lastreopsis glabella*, *Cyathea dealbata*, *Carpodetus serratus* (juv), *Parsonsia capsularis*, *Pittosporum tenuifolium*, *Asplenium flaccidum*.

Significance: Birds: fantail.

Comments: Mosaic of immature and mature regeneration over entire block. Some broadleaf species in gullies.

HAUNUI BUSH

Site no.: EW0405A,B,C&D **Grid ref:** T25 677613
Area: 1 ha **Bioclimatic zone:** Semi-coastal
Other landform: Riser

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace; rolling hill country; low relief
Principal landform: Tread

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Sophora tetraptera*, *Beilschmiedia tawa*, *Elaeocarpus dentatus*.

Other species: *Hoberia populnea*, *Pseudopanax crassifolius*, *Salix* sp., *Podocarpus totara*, *Olearia virgata*, *Leptospermum scoparium*, *Pittosporum tenuifolium*, *Coprosma rhamnoides*, *Kunzea ericoides*, *Pittosporum tenuifolium*, *Cordyline australis*, *Knightia excelsa*.

Comments: Small scrappy remnants. Small-leaved divaricate species present.

GLENCOE TREELAND

Site no.: EW0521 **Grid ref:** U25 864612
Area: 30 ha **Bioclimatic zone:** Semi-coastal
Other landform: Terrace riser, sideslope, bluff

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace, hill country
Principal landform: Terrace tread

Vegetation type: Closed forest, treeland

Dominant species: *Sophora tetraptera*, *Pittosporum tenuifolium*, *Cordyline australis*, *Kunzea ericoides*.

Other species: *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Coriaria arborea*, *Coprosma robusta*, *Podocarpus totara*, *Hedera helix*, *Phormium cookianum*, *Leptospermum scoparium*, *Ulex europaeus*.

Significance: Not known.

WAIHOKI VALLEY BUSH

Site no.: EW0433 **Grid ref:** U25 781607
Area: 4 ha **Bioclimatic zone:** Semi-coastal
Other landform:

Source: Sawyer *et al.* 1998
Altitude:
Land system: Hill country
Principal landform: Terrace tread

Vegetation type: Shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Cordyline australis*, *Sophora tetraptera*, *Leptospermum scoparium*, *Juncus edgarae*.

Other species: *Pseudopanax crassifolius*, *Nestegis lanceolata*, *Lophomyrtus obcordata*, *Hoberia populnea*, *Leptospermum scoparium*, *Pennantia corymbosa*, *Coprosma areolata*, *Sophora tetraptera*, *Beilschmiedia tawa*, *Alectryon excelsus*, *Elaeocarpus dentatus*, *Kunzea ericoides*.

Significance: Could have rare plant species present.

HUIA CREEK SHRUBLANDS

Site no.: EW0420 **Grid ref:** U25 732600
Area: 10 ha **Bioclimatic zone:** Lowland
Other landform: Gully

Source: Sawyer *et al.* 1998
Altitude: 300 m
Land system: Hill country
Principal landform: Hillslopes

Vegetation type: Tree-shrubland.

Dominant species: *Leptospermum scoparium*, *Melicytus ramiflorus*, *Carpodetus serratus*, *Hoberia populnea*, *Coprosma rhamnoides*.

Other species: *Leucopogon fasciculatus*, *Ozothamnus leptophyllus*, *Polystichum richardii*, *Blechnum chambersii*, *Parsonsia heterophylla*, *Beilschmiedia tawa*, *Pseudopanax crassifolius*, *Schefflera digitata*, *Rubus schmidelioides*, *Hedycarya arborea*, *Blechnum fluviatile*, *Macropiper excelsum*.

Significance: Presence of rifleman is unusual in ED. Birds: riroriro, shining cuckoo.

Comments: Open scrub with remnants of sub-canopy. Farm track cuts through middle. Surrounding vegetation all *Leptospermum scoparium*. Some clearance since topo map.

BROOKLANDS BUSH

Site no.: EW0304 **Grid ref:** T25 641599 **Source:** Sawyer *et al.* 1998
Area: 50 ha **Bioclimatic zone:** Semi-coastal, lowland **Altitude:**
Other landform: Sideslope, gully **Land system:** Rolling hill country
Principal landform: Spur

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*, *Sophora tetraptera*, *Kunzea ericoides*, *Podocarps*.

Other species: *Hoberia populnea*, *Leucopogon fasciculatus*, *Knightia excelsa*, *Dacrydium cupressinum*, *Prumnopitys taxifolia*, *Elaeocarpus dentatus*, *Pseudopanax crassifolius*, *Dacrycarpus dacrydioides*, *Carpodetus serratus*.

Significance: Not known.

WAIWAKA STREAM SHRUBLAND

Site no.: EW0506 **Grid ref:** U25 826594 **Source:** Sawyer *et al.* 1998
Area: 25 ha **Bioclimatic zone:** **Altitude:**
Other landform: Spur crest, spur, sideslope, footslope, topslope **Land system:** Hill country
Principal landform: Spurline

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*.

Other species: *Sophora tetraptera*, *Cordyline australis*, *Prumnopitys taxifolia*, *Podocarpus totara*.

Significance: Not known.

Comments: *Prumnopitys taxifolia* mainly along stream banks in floodplains. Site extends to NE of area. Marked on map.

WAIOWAKA ROAD

Site no.: EW0505 **Grid ref:** U25 807587 **Source:** Sawyer *et al.* 1998
Area: 7 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope **Land system:** Hill country
Principal landform: Slip scar

Vegetation type: Open forest.

Dominant species: *Podocarpus totara*, *Beilschmiedia tawa*, *Sophora tetraptera*, *Leptospermum scoparium*.

Other species: *Pseudopanax crassifolius*, *Knightia excelsa*, *Hoberia populnea*, *Cordyline australis*, *Dacrycarpus dacrydioides*, *Myoporum laetum*, *Alectryon excelsus*.

Significance: Not known.

WAIHOKI VALLEY ROAD

Site no.: EW0417 **Grid ref:** U25 726586 **Source:** Sawyer *et al.* 1998
Area: 9 ha **Bioclimatic zone:** Lowland **Altitude:** 350 m
Other landform: Sideslope **Land system:** Hill country
Principal landform: Gully

Vegetation type: Tall closed forest with emergents, open forest.

Dominant species: *Knightia excelsa*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Hoberia populnea*, *Carpodetus serratus*, *Olearia rani*, *Dicksonia squarrosa*, *Myrsine australis*, *Coprosma rhamnoides*, ferns, grass.

Other species: *Prumnopitys taxifolia*, *Metrosideros colensoi*, *Ripogonum scorders*, *Ozothamnus leptophyllus*, *Schefflera digitata*, *Macropiper excelsum*, *Rubus schmidelioides*, *Blechnum chamber sii*, *Metrosideros perforata*, *Metrosideros fulgens*, *Coprosma robusta*, *Corybas macranthus*, *Asplenium flaccidum*, *Coprosma tenuifolia*, *Blechnum procerum*, *Asplenium bulbiferum*. Around margin: *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Clematis paniculata*, *Polystichum richardii*, *Cyathea dealbata*, *Coprosma grandifolia*, *Blechnum fluviatile*, *Parsonsia heterophylla*, *Olearia virgata*.

Significance: Birds: tui, fantail, grey warbler.

Comments: Shrubland occurs further up the gully than the tall closed forest with emergents. *Leptospermum scoparium* or tauhinu in headwater. Badly degraded, open canopy, wind damage, goats and sheep.

SPUR ROAD SHRUBLAND

Site no.: EW0535 **Grid ref:** U25 821583 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Topslope, gully **Land system:**
Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Sophora tetraptera*, *Nothofagus solandri*, *Helicbrysum lanceolatum*.

Other species: *Coprosma robusta*, *Coprosma rhamnoides*, *Pseudopanax crassifolius*, *Ozothamnus leptophyllus*, *Phormium cookianum*, *Hebe stricta*, *Melicytus ramiflorus*, *Hoheria populnea*, *Knightia excelsa*, *Pseudopanax arboreus*, *Cordyline australis*.

Significance: *Nothofagus solandri* is the area marked in green on the site map.

TIRAUMEA - MOROA BUSH

Site no.: EW0801 **Grid ref:** T25 545580 **Source:** Sawyer *et al.* 1998
Area: 5 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Riser, footslope, floodplain **Land system:** Terrace
Principal landform: Tread

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Pseudopanax crassifolius*, *Sophora tetraptera*.

Other species: *Kunzea ericoides*, *Myrsine australis*, *Leptospermum scoparium*, *Earina mucronata*, *Salix* sp.

Significance: Not known.

MOROA - TIRAUMEA BUSH

Site no.: EW0802 **Grid ref:** T25 538576 **Source:** Sawyer *et al.* 1998
Area: 8 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Hillslope

Site description: One large recently dead tawa tree still standing - covered in epiphytes.

Vegetation type: Tall closed forest with emergents.

Other species: Not known.

WAIPORI STREAM BUSH

Site no.: EW0323A&B **Grid ref:** T25 555571 **Source:** Sawyer *et al.* 1998
Area: 7 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope **Land system:** Terrace, rolling hill
country
Principal landform: Tread

Vegetation type: Tall closed forest with emergents/tall closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Beilschmiedia tawa*, *Sophora tetraptera*, *Dacrydium cupressinum*, *Podocarpus totara*, *Knightia excelsa*.

Other species: *Melicope simplex*, *Melicytus micranthus*, *Rubus schmidelioides*, *Myrsine australis*, *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Leptospermum scoparium*.

Significance: *Coprosma rigida*.

TIRAUMEA RIVER BANKS BUSH

Site no.: EW0303

Grid ref: T25 647585

Source: Sawyer *et al.* 1998

Area: 21 (12) ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Foothlope, sideslope, terrace riser

Land system: Rolling hills—dissected (& terrace)

Principal landform: Gully riser

Vegetation type: Tall closed forest with emergents, shrubland, treeland, closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Podocarpus totara*, *Pseudopanax crassifolius*, *Sophora tetraptera*, *Kunzea ericoides*.

Other species: *Elaeocarpus dentatus*, *Carpodetus serratus*, *Knightia excelsa*, *Nestegis lanceolata*, *Cordyline australis*, *Pittosporum eugenioides*, *Hoberia populnea*.

Significance: Riparian and water quality protection. Diverse vegetation types, from small pockets of emergent forest, through to regenerating scrub.

Comments: Also a number of other similiar sites down stream have been included in this site number: T25 648573, T25 645571, T25 643564. T25 643564 is QEII is O.S.C. 5/7/6A (2.6 ha). T25 645571 is QEII O.S.C 5/7/6B (6.3 ha).

Notes: The above information is based on the original study site, which comprised 21 ha; the RAP is estimated to be c.12 ha.

TABLE 479M

Site no.: EW0414B

Grid ref: U25 723573

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system:

Principal landform: Hill country

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*, *Knightia excelsa*, *Prumnopitys taxifolia*, *Carpodetus serratus*, *Melicytus ramiflorus*, *Hedycarya arborea*.

Other species: *Griselinia lucida*, *Pseudopanax crassifolius*, *Schefflera digitata*, *Hoberia populnea*, *Cyathea dealbata*, *Ripogonum scandens*, *Clematis forsteri*, *Metrosideros* sp., *Elaeocarpus dentatus*, *Leptospermum scoparium*, *Pennantia corymbosa*.

Significance: Valley mostly *Leptospermum scoparium* with this forest remnant at head, some in side gullies (useful as corridor). *Leptospermum scoparium* extends over west side of ridge. Birds: riroriro, shining cuckoo

Comments: See 0414 , 0414a,c for further site information. Birds: blackbird, magpie.

TABLE 479M

Site no.: EW0414C

Grid ref: U25 720565

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system:

Principal landform: Hill country

Vegetation type: Open forest.

Dominant species: *Beilschmiedia tawa*, *Knightia excelsa*, *Hoberia populnea*, *Melicytus ramiflorus*, *Parsonsia heterophylla*, *Carpodetus serratus*, *Coprosma rhamnoides*, ferns.

Other species: *Metrosideros robusta*, *Pseudopanax crassifolius*, *Dicksonia squarrosa*, *Blechnum discolor*, *Astelia solandri?*, *Metrosideros* sp., *Parsonsia heterophylla*, *Griselinia lucida*.

Significance: Extensive area of *Leptospermum scoparium* contiguous with 0413 around SE flanks of Table. Small remnant of tawa on SW flank. Well buffered by scrub. Bush—2–3 ha?.

Comments: See 0414 , 0414a,b for further site information. Birds: Australasian harrier

TIRAUMEA RIVER

Site no.: EW0319

Grid ref: T25 587560

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace, riser, terrace tread

Land system: Terrace, rolling hill country

Principal landform: Gully

Vegetation type: Open forest, tree shrubland, shrubland.

Dominant species: *Salix* sp., *Kunzea ericoides*, *Sophora tetraptera*.

Other species: Not known.

Significance: Not known.

Comments: Riparian protection/water quality?

BURLING BUSH

Site no.: EW0325

Grid ref: T25 620563

Source: Sawyer *et al.* 1998

Area: 13 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser (stream margin)

Land system:

Principal landform: Flood plain

Dominant species: (*Dacrycarpus dacrydioides*), *Podocarpus totara*, (*Prumnopitys taxifolia*), *Salix* sp.

Other species: *Cordyline australis*, *Hoheria populnea*.

Significance: Not known.

TIRAUMEA VALLEY BUSH

Site no.: EW0402

Grid ref: T25 655562

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hills—downs

Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest with emergents.

Dominant species: *Leptospermum scoparium*, *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*.

Other species: *Melicytus ramiflorus*, *Hoheria populnea*, *Knightia excelsa*, *Elaeocarpus dentatus*, *Nestegis lanceolata*, *Pittosporum tenuifolium*, *Cordyline australis*, *Pseudopanax crassifolius*, *Dacrydium cupressinum*, *Sophora tetraptera*, *Elaeocarpus hookerianus*.

Significance: High scenic impact with waterfall below road. Small area of relatively intact emergent forest. Presence of small leaved divaricating sp. and possible threatened plants.

Comments: Possibility of revegetation. 2 small remnants. Shrubland unit much reduced. Small-leaved divaricates.

TIRAUMEA TRIBUTARY - ALFREDTON - MOROA

Site no.: EW0803

Grid ref: T25 545557

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, gully head

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Knightia excelsa*, *Beilschmiedia tawa*, *Elaeocarpus dentatus*, *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Cyathea medullaris*, *Alectryon excelsus*, *Podocarpus totara*, *Pittosporum eugenioides*, *Hoheria populnea*, *Schefflera digitata*, *Pseudopanax crassifolius*, *Fuchsia excorticata*, *Hebe* sp., *Cordyline australis*, *Sophora microphylla*, *Brachyglottis repanda*, *Coprosma rotundifolia*, *Coprosma rhamnoides*, *Melicope simplex*.

Significance: *Kortbalsella lindsayi* may be present. Fenced ?

Comments: Broken uneven canopy.

WAI ITI KAITAWA BUSH

Site no.: EW0318

Grid ref: T25 580556

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, sideslope

Land system: Rolling hill country

Principal landform: Slipface

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Sophora tetraptera*.

Other species: *Macrocarpa*, *Leucopogon fasciculatus*, *Melicytus ramiflorus*, *Cordyline australis*, *Leptospermum scoparium*, *Prumnopitys taxifolia*, *Knightia excelsa*, *Urtica ferox*, *Podocarpus totara*, *Kunzea ericoides*, *Beilschmiedia tawa*.

Significance: Not known.

WAIHOKI

Site no.: EW0411

Grid ref: U25 744550

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude: 260 m

Other landform: Sideslope

Land system: Hill country

Principal landform: Gully

Vegetation type: Open treeland.

Dominant species: *Beilschmiedia tawa*, *Hoberia populnea*, *Kunzea ericoides*, *Knightia excelsa*, *Cordyline australis*, *Coprosma rotundifolia*, *Melicytus ramiflorus*, *Melicope simplex*, grass.

Other species: *Coprosma areolata* (5-6m), *Coprosma rhamnoides*, *Myrsine australis*, *Carpodetus serratus*, *Muehlenbeckia australis*, *Leptospermum scoparium*, *Pyrosia eleagnifolia*, *Asplenium flaccidum*, *Cyathea medullaris*, *Rubus schmidelioides*, *Ripogonum scandens*, *Metrosideros colensoi*, *Clematis paniculata*, *Dicksonia squarrosa*, *Hedycarya arborea*, *Parsonsia heterophylla*, *Leucopogon fasciculatus*, *Raukaua anomalus*, *Myoporum laetum*.

Significance: Birds: grey warbler.

Comments: Unfenced. Very disturbed fragment, deteriorating. Birds: magpie, greenfinch.

BARTONS LINE/ALFREDTON ROAD BUSH

Site no.: EW0825

Grid ref: T25 503544

Source: Sawyer *et al.* 1998

Area: 2 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Tread

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Sophora tetraptera*, *Hoberia populnea*, *Pseudopanax crassifolius*

Other species: *Dicksonia squarrosa*, *Nestegis lanceolata*, *Kunzea ericoides*, *Nestegis cunninghamii*, *Cordyline australis*, *Parsonsia heterophylla*.

Significance: Not known.

Comments: Significant but small—needs more investigation.

MAKOURA STREAM "TOTARA BUSH"

Site no.: EW0409

Grid ref: U25 731543

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude: 280 m

Other landform: Topslope, gully, spur

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Pinus* sp., *Beilschmiedia tawa*, *Dacrycarpus dacrydioides*, *Knightia excelsa*, *Macropiper excelsum*, *Coprosma areolata*, *Lophomyrtus obcordata*.

Other species: *Sophora tetraptera*, *Hoheria populnea*, *Melicytus ramiflorus*, *Cordyline australis*, *Pseudopanax crassifolius*, *Leptospermum scoparium*, *Carpodetus serratus*, *Elaeocarpus dentatus*, *Griselinia lucida*, *Parsonia capsularis*, *Asplenium polyodon*, *Earina mucronata*, *Asplenium flaccidum*, *Hedycarya arborea*, *Pittosporum eugenioides*, *Cyathea dealbata*, *Metrosideros colensoi*, *Alectryon excelsus*, *Podocarpus totara*, *Geniostoma rupestre* var. *ligustrifolium*, *Ripogonum scandens*, *Pellaea rotundifolia*, *Coprosma rotundifolia*, *Brachyglottis repanda*, *Asplenium bulbiferum*, *Polystichum richardii*, *Lophomyrtus obcordata*, *Prumnopitys taxifolia*, *Coprosma areolata*, *Parsonia heterophylla*, *Muehlenbeckia australis*, *Melicope simplex*, *Collospermum bastatum*, *Uncinia uncinata*, *Asplenium hookerianum*, *Rubus schmidelioides*, *Urtica ferox*, *Blechnum filiforme*, *Adiantum cunninghamii*, *Metrosideros diffusa*, *Metrosideros perforata*.

Significance: Has been fenced for 25 years. Possum trapping annually.

Comments: Shrubland—now pine trees, will be due for second crop shortly (Catchment board). Regenerating canopy of previous podocarps (mostly totara/tawa forest). Occasional deer. Kowhai and broadleaf sp. in gullies. Fringes of gorse (will increase when pines logged).

ALFREDTON ROAD BUSH

Site no.: EW0823

Grid ref: T25 491540

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Colluvial face

Land system: Terrace, hill rolling country

Principal landform: Terrace tread

Vegetation type: Treeland.

Dominant species: *Salix* sp., *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Kunzea ericoides*, *Leptospermum scoparium*, *Carex secta*.

Other species: *Cordyline australis*, *Pseudopanax crassifolius*, *Prumnopitys taxifolia*, *Hoheria populnea*, *Olearia virgata*, *Pittosporum tenuifolium*, *Olearia solandri*.

Significance: *Olearia virgata*, *Olearia solandri*. Springs maybe present at site.

Comments: May be a garden.

BRANNIGAN (TE HOE FARM)

Site no.: EW0317A

Grid ref: T25 561535

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude: 280 m

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Open forest (young adult canopy).

Dominant species: *Podocarpus totara*, *Pseudopanax crassifolius*, *Hoheria populnea*, *Urtica* sp.

Other species: *Kunzea ericoides*, *Melicytus ramiflorus*, *Coriaria arborea*, *Pennantia corymbosa*, *Carpodetus serratus*, *Melicope simplex*, *Myrsine divaricata*, *Coprosma grandifolia*, *Cyathodes juniperina*, *Pittosporum eugenioides*, *Olearia rani*, *Cyathea dealbata*, *Cordyline australis*, *Metrosideros colensoi*, *Pseudopanax arboreus*, *Coprosma rotundifolia*.

Significance: Cattle have access so although steep, well tracked. Discontinuous canopy. *Podocarpus totara* and *Pseudopanax crassifolius* predominant on spurs, *Hoheria populnea* and *Kunzea ericoides* elsewhere. Possum control is undertaken.

BARTONS LINE BUSH

Site no.: EW0822

Grid ref: T25 498533

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Sophora tetraptera*.

Other species: *Beilschmiedia tawa*, *Podocarpus totara*, *Pseudopanax crassifolius*, *Nestegis cunninghamii*, *Cordyline australis*, *Salix* sp., *Melicytus ramiflorus*, *Cyathea dealbata*, *Leptospermum scoparium*, *Knightia excelsa*, *Elaeocarpus dentatus*, *Hoheria populnea*.

Significance: Not known.

Comments: Pine acts as a buffer/shelterbelt to site.

SUGARLOAF ROAD BUSH

Site no.: EW0515

Grid ref: U25 834532

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Low taipo

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: *Elaeocarpus dentatus*, *Sophora tetraptera*, *Carpodetus serratus*, *Kunzea ericoides*, *Cordyline australis*, *Hedycarya arborea*, *Melicytus ramiflorus*, *Cyathea dealbata*, *Myoporum laetum*, *Pseudopanax arboreus*, *Coprosma robusta*, *Nothofagus solandri*, *Knightia excelsa*.

Significance:

Comments: Understorey eaten out, but has the potential to recover if fenced. Eucalyptus planted around the outside margin of the site.

MANGATAKOTO ROAD BUSH

Site no.: EW821

Grid ref: T25 494530

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Closed forest, tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*.

Other species: *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Cyathea dealbata*, *Leptospermum scoparium*, *Knightia excelsa*, *Elaeocarpus dentatus*, *Hoheria populnea*.

Significance: Not known.

MAKOURA STREAM BUSH

Site no.: EW0435

Grid ref: U25 743528

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system:

Principal landform: Sideslope

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*, *Cordyline australis*.

Other species: *Beilschmiedia tawa*, *Alectryon excelsus*, *Knightia excelsa*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*.

CASTLE HILL ROAD - "BOAR" BUSH

Site no.: EW0808

Grid ref: T25 533527

Source: Sawyer *et al.* 1998

Area: 11 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Hillside (steep, east facing)

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Beilschmiedia tawa*, *Dacrycarpus dacrydioides*, *Knightia excelsa*.

Other species: *Cyathea medullaris*, *Podocarpus totara*, *Dacrydium cupressinum*, *Melicytus ramiflorus*, *Leptospermum scoparium*, *Pittosporum eugenioides*, *Pseudopanax crassifolius*

Significance: Not known.

Comments: Shrubland component appears to be reduced further.

TE HOE BUSH SHRUBLAND

Site no.: EW0324

Grid ref: T25 553524

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, river

Land system: Rolling hill country, terrace, floodplain

Principal landform: Slipface (steep)

Vegetation type: Closed forest.

Dominant species: *Prumnopitys taxifolia*, *Podocarpus totara*, *Dacrycarpus dacrydioides*.

Other species: *Melicope simplex*, *Lophomyrtus obcordata*, *Sophora tetraptera*, *Coprosma rotundifolia*, *Raukaua anomalus*, *Rubus schmidelioides*, *Coprosma rubra*, *Pseudopanax crassifolius*, *Streblus heterophyllus*, *Nestegis cunninghamii*, *Melicytus ramiflorus*, *Coprosma robusta*, *Coprosma areolata*, *Carmichaelia australis*, *Pittosporum tenuifolium*, *Elaeocarpus bookerianus*, *Parsonsia heterophylla*.

Significance: Not known.

PONUI STREAM SHRUBLAND

Site no.: EW0807a,b,c

Grid ref: T25 522523

Source: Sawyer *et al.* 1998

Area: 40 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Gully head, gully, gully floor, spur, sideslope

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Shrubland

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Knightsia excelsa*, *Pseudopanax crassifolius*, *Beilschmiedia tawa*.

Other species: *Hoheria populnea*, *Pittosporum eugenioides*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Elaeocarpus dentatus*, *Dacrydium cupressinum*.

Comments: Shrubland with a patch of closed forest on its NE side.

CASTLE HILL ROAD - MT MARSH

Site no.: EW0809

Grid ref: T25 540517

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Hillside

Site description: 3 small patches of closed forest - shrubland.

Vegetation type: Closed forest, shrubland.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Leptospermum scoparium*, *Beilschmiedia tawa*.

Other species: Not known.

Significance: Not known.

Comments: Looked at site at the same time as RAP 169 and considered vegetation type to be the same.

MT MARSH SHRUBLAND

Site no.: EW0843

Grid ref: T25 533513

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Hoheria populnea*, *Leptospermum scoparium*.

Other species: *Podocarpus totara*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Cordyline australis*.

Significance: Not known.

HUIAWA SHRUBLAND

Site no.: EW0312

Grid ref: T25 575508

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser, terrace

Land system: Terrace, rolling hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Podocarpus totara*, *Pittosporum tenuifolium*.

Other species: *Sophora tetraptera*, *Pseudopanax arboreus*, *Pseudopanax crassifolius*, *Cordyline australis*, *Hoberia populnea*, *Elaeocarpus dentatus*, *Sophora microphylla*.

Significance: Significant.

NGAPIRI BUSH

Site no.: EW0842

Grid ref: T25 511501

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*, *Prumnopitys taxifolia*, *Beilschmiedia tawa*, *Elaeocarpus dentatus*.

Other species: *Pittosporum tenuifolium*, *Pittosporum eugenioides*, *Cordyline australis*, *Kunzea ericoides*, *Knightia excelsa*, *Dacrycarpus dacrydioides*, *Nestegis lanceolata*, *Pseudopanax crassifolius*.

Significance: Not known.

MT YORK

Site no.: EW1019

Grid ref: U25 777498

Source: Current survey

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform: Sideslope

Dominant species: Not known.

Other species: Not known.

Significance: Not known.

Comments: Forest with emergents, identified from aerial photos and marked (no label originally) on Map 10 in reconnaissance report.

TE MOI

Site no.: EW1104

Grid ref: U25 798491

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: Not known.

Significance: 1103 and 1104 (RAP 326 and 325).

Comments: See 1103.

LOWER TE MOI

Site no.: EW1103

Grid ref: U25 797481

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Bluff, scarp, riser

Land system: Rolling? Hill country

Principal landform: Gorge

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa* (occasional), *Knightia excelsa*, *Nothofagus solandri*, *Olearia solandri* (local), *Sophora tetraptera*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Carpodetus serratus*, *Melicytus ramiflorus*, *Cyathea medullaris*, *Ozothamnus leptophyllus*, *Coriaria arborea*, *Holcus lanatus*, *Ranunculus reflexus*, *Blechnum novae-zelandiae*, *Pneumatopteris pennigera*, *Juncus edgarae*, *Coprosma rhamnoides*, *Hoheria populnea*, *Carex secta*, *Hierochloa redolens*, *Hebe stricta*, *Callitriche stagnalis*, *Cordyline australis*, *Alectryon excelsus*, *Carex geminata* (local), *Juncus effusus*, *Pyrrosia eleagnifolia*, *Brachyglottis repanda*, *Pseudopanax crassifolius*, *Phormium cookianum*, *Prumnopitys taxifolia*, *Muehlenbeckia complexa*, *Sophora tetraptera*, *Helicbrysum lanceolatum*, *Rubus schmidelioides*, *Coprosma robusta*, *Macropiper excelsum*, *Agrostis capillaris*, *Polystichum richardii*, *Solanum nigrum*, *Hypolepis ambigua*, *Paesia scaberula*, *Cyathea dealbata*, *Pittosporum tenuifolium*, *Pellaea rotundifolia*, *Geniostoma rupestre* var. *ligustrifolium*, *Pteris tremula*, *Parsonsia heterophylla*, *Ripogonum scandens*, *Asplenium flaccidum*, *Hedycarya arborea*.

Significance: 1103 & 1104 (RAP 326 and 325) are joined. Now surrounded by pines.

Comments: *Beilschmiedia tawa* forest W-S,E *Knightia excelsa*. *Nothofagus solandri* forest and local *Olearia solandri* on bluffs. Now surrounded by pines.

IHURAU BUSH

Site no.: EW0841

Grid ref: T25 464480

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrydium cupressinum*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Beilschmiedia tawa*.

Other species: *Cordyline australis*, *Elaeocarpus dentatus*, *Pseudopanax crassifolius*, *Knightia excelsa*.

Significance: Not known.

NGA MATAI BUSH

Site no.: EW0839

Grid ref: T25 469475

Source: Sawyer *et al.* 1998

Area: 2 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace, rolling hill country

Principal landform: Terrace tread

Site description: Ihuraua Stream

Vegetation type: Tall closed forest with emergent.

Dominant species: *Dacrycarpus dacrydioides*, *Cordyline australis*.

Other species: Not known.

Significance: Not known.

Comments: Small leaved divaricating shrubs present.

MATAIKONA RIVER

Site no.: EW1109

Grid ref: U25 840475

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace riser

Vegetation type: Tall closed forest.

Dominant species: *Corynocarpus laevigatus*, *Kunzea ericoides*, *Sophora* sp., *Hoheria populnea*.

Other species: *Alectryon excelsus*, *Leptospermum scoparium*, *Cordyline australis*, *Urtica ferox*, *Asplenium oblongifolium*, *Prunella vulgaris*, *Holcus lanatus*, *Pyrrosia eleagnifolia*, *Carex secta*, *Coprosma rhamnoides*,

Corynocarpus laevigatus, *Podocarpus totara*, *Ulex europaeus*, *Melicytus ramiflorus*, *Cyperus ustulatus*, *Hypolepis ambigua*, *Solanum nigrum*, *Solanum pseudocapsicum*, *Callitride stagnalis*, *Ranunculus repens*, *Festuca arundinacea*, *Hedycarya arborea*, *Beilschmiedia tawa*, *Pteris tremula*, *Dacrycarpus dacrydioides*, *Hebe stricta*, *Parsonsia heterophylla*, *Myoporum laetum*, *Brachyglottis repanda*, *Carex geminata* (local), *Senecio jacobaea*, *Ozothamnus leptophyllus*, *Bellis perennis*, *Coprosma robusta*, *Geniostoma rupestre* var. *ligustrifolium*, *Digitalis purpurea*, *Polystichum richardii*, *Hierochloe redolens*, *Pellaea rotundifolia*, *Galium aparine*, *Asplenium bulbiferum*, *Asplenium flabellifolium*, *Adiantum cunninghamii*, *Clematis paniculata*, *Conyza* sp., *Uncinia uncinata*, *Pratia angulata*, *Ranunculus reflexus*, *Asplenium hookerianum*, *Macropiper excelsum*, *Echinopogon ovatus*, *Cyathea dealbata*, *Laurelia novae-zelandiae*.

Significance: Birds: tui, paradise duck.

MOALANDS BUSH A

Site no.: EW0817

Grid ref: T25 490466

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Sideslope

Site description: Aerial photo #23C, 24C, 25C.

Dominant species: *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Melicytus ramiflorus*.

Other species: *Metrosideros robusta*, *Cordyline australis*, *Pseudopanax crassifolius*.

Significance: Not known.

KARAKANUI

Site no.: EW0909

Grid ref: T25 569469

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Treeland.

Dominant species: *Prumnopitys taxifolia*, *Podocarpus totara*, *Beilschmiedia tawa*, *Knightia excelsa*, *Melicytus ramiflorus*.

Other species: *Cordyline australis*, *Carex geminata*, *Metrosideros colensoi*, *Phymatosorus pustalatus*, *Earina mucronata*, *Asplenium flaccidum*, *Cyathea smithii*, *Pyrrosia eleagnifolia*, *Nestegis lanceolata*, *Dacrycarpus dacrydioides*, *Pseudopanax crassifolius*, *Pennantia corymbosa*, *Coprosma rhamnoides*, *Carpodetus serratus*, *Juncus edgarae*, *Hymenophyllum pulcherrimum*, *Blechnum fluviatile*, *Prumnopitys ferruginea*, *Dacrycarpus dacrydioides*, *Hoberia populnea*, *Lycopodium varium*, *Collospermum microspermum*, *Griselinia littoralis*, *Coprosma rubra*, *Pittosporum tenuifolium*, *Olearia virgata*, *Astelia solandri*, *Coprosma areolata*, *Hedycarya arborea*, *Coprosma rhamnoides*, *Cyathea dealbata*, *Schefflera digitata*, *Hypolepis ambigua*, *Metrosideros diffusa*, *Polystichum richardii*, *Muehlenbeckia complexa*, *Urtica ferox*, *Asplenium hookerianum*, *Dicksonia squarrosa*, *Coprosma rotundifolia*, *Pseudopanax arboreus*, *Leucopogon fasciculatus*, *Ripogonum scandens*, *Weinmannia racemosa*, *Parsonsia capsularis*, *Blechnum chambersii*, *Streblus heterophyllus*, *Blechnum filiforme*, *Cyathea medullaris*, *Elaeocarpus dentatus*, *Rubus cissoides*, *Lastreopsis glabella*, *Hydrocotyle novae-zeelandiae*, *Kunzea ericoides*, *Leptospermum scoparium*, *Pteridium esculentum*, *Raukaua anomalus*.

MOALANDS BUSH B

Site no.: EW0838

Grid ref: T25 483456

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*.

Other species: *Dacrycarpus dacrydioides*.

Significance: Not known.

MOALANDS BUSH

Site no.: EW0837

Grid ref: T25 492448

Source: Sawyer *et al.* 1998

Area: 5 ha (2)

Bioclimatic zone: Lowland

Altitude:

Other landform: Footslope

Land system:

Principal landform: Sideslope

Dominant species: *Podocarpus totara*, *Beilschmiedia tawa*

Other species: *Elaeocarpus dentatus*, *Prumnopitys taxifolia*, *Knightia excelsa*.

Significance: Not known.

Comments: Partially protected - QEII MS 5/07/72 (2.9 ha).

Notes: The above information is based on the original study site, which comprised 5 ha; the RAP is estimated to be c.2 ha.

OMARUAPAKIHAU

Site no.: EW1108

Grid ref: U25 865444

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Ulex europaeus*.

Other species: Not known.

Significance: *Pseudopanax arboreus*, *Knightia excelsa*, *Cordyline australis*.

Comments: Not significant.

OMARUAPAKIHAU

Site no.: EW1107

Grid ref: U25 871443

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone: Coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Ozothamnus leptophyllus*, *Coriaria arborea*.

Other species: *Leptospermum scoparium*.

Significance: Not known.

Comments: Coastal. Probably only scattered scrub.

WAINUIOMAPU STREAM

Site no.: EW0905

Grid ref: T25 570428

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser, terrace ette

Land system: Narrow terrace in rolling hill

Principal landform: Terrace tread

Vegetation type: Tall closed forest with emergents, tall closed forest on top, open forest terrace tread.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Melicytus ramiflorus*, *Nestegis lanceolata* (occasional), *Pittosporum tenuifolium* (occasional), *Pseudopanax crassifolius* (occasional), *Kunzea ericoides*.

Other species: *Melicope simplex*, *Urtica ferox*, *Nestegis lanceolata*, *Cordyline australis*, *Pseudopanax crassifolius*, *Hoheria populnea*, *Helichrysum lanceolatum*, *Hebe stricta*, *Leptospermum scoparium*, *Sophora tetraptera*, *Coriaria arborea*, *Leucopogon fasciculatus*, *Carex geminata*, *Podocarpus totara*, *Alectryon excelsus*, *Beilschmiedia tawa*, *Coprosma areolata*, *Streblus heterophyllus*, *Raukaua anomalus*, *Parsonsia heterophylla*.

Significance: Not known.

Comments: Still needs a detailed inspection (11/6/96).

DREYERS ROCK BUSH

Site no.: EW0830

Grid ref: T25 454427

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope, gully

Land system: Rolling hill country

Principal landform: Rolling tops

Vegetation type: Tall closed forest.

Dominant species: *Dacrydium cupressinum*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Beilschmiedia tawa*.

Other species: Not known.

Significance: Not known.

TAKITAKI, DREYERS ROCK

Site no.: EW0829

Grid ref: T25 434419

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Rolling tops

Vegetation type: Tree shrubland, patchy closed forest.

Dominant species: *Beilschmiedia tawa*.

Other species: *Dacrycarpus dacrydioides*, *Knightia excelsa*, *Nestegis lanceolata*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Leucopogon fasciculatus*.

Significance: Not known.

MARINGI BUSH

Site no.: EW0911

Grid ref: T25 606403

Source: Sawyer *et al.* 1998

Area: 9 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Spur, gully

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*, *Podocarpus totara*.

Other species: *Sophora tetraptera*, *Brachyglottis repanda*, *Juncus edgarae*, *Ripogonum scandens*, *Leptospermum scoparium*, *Rubus schmidelioides*, *Cyathea dealbata*, *Myrsine australis*, *Hedycarya arborea*, *Olearia rani*, *Elaeocarpus dentatus*, *Geniostoma rupestre* var. *ligustrifolium*, *Melicytus ramiflorus*, *Carpodetus serratus*, *Lophomyrtus obcordata*, *Ozothamnus leptophyllus*, *Coprosma rhamnoides*, *Juncus effusus*, *Raukaua anomalous*, *Parsonsia heterophylla*, *Prumnopitys taxifolia*, *Myoporum laetum*, *Beilschmiedia tawa*, *Cordyline australis*, *Pseudopanax crassifolius*, *Nestegis cunninghamii*, *Pittosporum eugenioides*, *Coprosma areolata*, *Olearia virgata*, *Melicope simplex*.

Significance: Not known.

Comments: 2 small blocks, c.7 + 2 ha, according to map.

ABERFOYLE

Site no.: EW1004

Grid ref: U25 717404

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Topslope

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest, scrub.

Dominant species: *Kunzea ericoides*, *Elaeocarpus dentatus*, *Pittosporum tenuifolium*, *Pseudopanax crassifolius*, *Leptospermum scoparium*.

Other species: *Knightia excelsa*, *Raukaua anomalous*, *Myrsine australis*, *Urtica ferox*, *Leucopogon fasciculatus*, *Hypolepis ambigua*, *Passiflora tetrandra*, *Prumnopitys taxifolia*, *Pneumatopteris pennigera*, *Pittosporum tenuifolium*, *Pseudopanax arboreus*, *Olearia solandri*, *Myrsine salicina*, *Coprosma*

rhamnoides, *Helicbrysum lanceolatum*, *Coprosma areolata*, *Hebe stricta*, *Carex secta*, *Brachyglottis repanda*, *Geniostoma rupestre* var. *ligustrifolium*, *Phormium cookianum*, *Carpodetus serratus*, *Hedycarya arborea*, *Cyathea dealbata*, *Cordyline australis*, *Pyrrosia eleagnifolia*, *Hydrocotyle moschata*, *Clematis paniculata*, *Olearia rani*, *Hydrocotyle novae-zeelandiae*, *Nestegis lanceolata*, *Dacrycarpus dacrydioides*, *Pennantia corymbosa*, *Podocarpus totara*, *Sophora tetraptera*, *Nestegis cunninghamii*, *Asplenium flaccidum*, *Asplenium bookerianum*, *Ranunculus reflexus*, *Beilschmiedia tawa*, *Asplenium flabellifolium*, *Beilschmiedia tawa*, *Phymatosorus pustalatus*, *Rubus schmidelioides*, *Macropiper excelsum*, *Myoporum laetum*, *Pittosporum eugenioides*.

Significance: Birds: tui, fantail, grey warbler.

NGAPOPATU

Site no.: EW1504

Grid ref: T26 697395

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Treeland.

Dominant species: *Beilschmiedia tawa*, *Cordyline australis*, *Sophora tetraptera*.

Other species: *Kunzea ericoides*, *Podocarpus totara*, *Pinus radiata*, *Cordyline australis*.

Significance: Not known.

TANAWA ROAD

Site no.: EW1510

Grid ref: U26 715396

Source: Sawyer *et al.* 1998

Area: 70 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser

Land system: Terrace ?

Principal landform: Terrace tread?
(tipped)

Vegetation type: Scrub, closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Ozothamnus leptophyllus*, *Knightia excelsa*.

Other species: *Cyathea medullaris*, *Hebe stricta*, *Coprosma rubra*, *Coprosma robusta*, *Pomaderris* aff. *phyllicifolia*, *Cortaderia selleana*, *Sophora tetraptera*, *Salix fragilis*, *Olearia solandri*, *Coprosma rhamnoides*, *Olearia virgata*, *Coprosma robusta* × *C. propinqua*, *Coprosma propinqua*, *Melicytus ramiflorus*, *Parsonsia heterophylla*, *Pteris tremula*, *Olearia paniculata*, *Pseudopanax arboreus*, *Brachyglottis repanda*, *Clematis paniculata*, *Hoberia populnea*, *Leucopogon fasciculatus*, *Ulex europaeus*.

Significance: Unusual landform. *Rhopalostylis sapida* present.

THE TAIPOS TREELAND

Site no.: EW1601

Grid ref: U26 779383

Source: Sawyer *et al.* 1998

Area: 60 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope, spur, gullyhead

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tree shrubland, shrubland.

Dominant species: *Sophora microphylla*, *Podocarpus totara*, *Leptospermum scoparium*.

Other species: Not known.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 797.

WAVERLY DOWNS BUSH

Site no.: EW1551C
Area: 8 ha
Other landform:

Grid ref: U26 754377, 757377
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace, rolling hill country
Principal landform: Terrace tread

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: Not known.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 798.

WAVERLY DOWNS BUSH

Site no.: EW1511D
Area: 8 ha
Other landform:

Grid ref: U26 755373
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform: Terrace, rolling hill country

Vegetation type: Shrubland.

Dominant species: *Podocarpus totara*, *Leptospermum scoparium*, *Pinus radiata*.

Other species: Not known.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 798.

MATIKONA BUSH

Site no.: EW1619
Area: 2 ha
Other landform: Gully head, sideslope, topslope

Grid ref: U26 843372
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully

Vegetation type: Shrubland, treeland.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Corynocarpus laevigatus*, *Cordyline australis*, *Coprosma rhamnoides*.

Other species: *Sophora microphylla*.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 757.

RATA HILLS

Site no.: EW1319
Area: 20 ha
Other landform:

Grid ref: T26 521384
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: 200 m
Land system: Hill country
Principal landform: Gully

Site description: Vegetation in a roughly NW/SE running gully.

Vegetation type: Tall closed forest, tree-shrubland, shrubland.

Dominant species: *Pinus radiata*, *Leptospermum scoparium*, *Sophora microphylla*.

Other species: *Pseudopanax arboreus*, *Kunzea ericoides*, *Leucopogon fasciculatus*.

Comments: Gully area at the southern end may be worth a look.

MT CAMERON SHRUBLAND

Site no.: EW1455
Area: 40 ha
Other landform:

Grid ref: T26 660370
Bioclimatic zone: Lowland

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Leucopogon fasciculatus*.

Other species: *Pinus radiata*.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 790.

MT MISERY

Site no.: EW1508
Area: 6 ha
Other landform:

Grid ref: U26 736370
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Hill country
Principal landform: Gully

Dominant species: *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Ozothamnus leptophyllus*, *Nothofagus solandri*.

Other species: *Pteridium esculentum*, *Lycopodium volubile*, *Coprosma rhamnoides*, *Coprosma rubra*, *Pinus radiata*, *Pomaderris* aff. *phylicifolia*, *Rubus cissoides*, *Cyathea medullaris*, *Blechnum fluviatile*, *Coprosma robusta*, *Paesia scaberula*, *Helichrysum lanceolatum*, *Carex geminata* (local), *Senecio jacobaea*, *Gaultheria antipoda*, *Coprosma rubra*, *Sophora tetraptera*, *Blechnum discolor*, *Podocarpus totara*, *Rhopalostylis sapida*, *Beilschmiedia tawa*, *Nestegis lanceolata*, *Carpodetus serratus*, *Knightia excelsa*, *Pittosporum divaricatum*, *Melicetyus ramiflorus*, *Earina mucronata*.

Significance: Key site. Presence of threatened species *Pittosporum divaricatum*, *Pterostylis alobula* in flower (24/5/96). Also presence of plants which are unusual for Eastern Wairarapa e.g. *Rhopalostylis sapida*. Birds: grey warbler, pipit, fantail.

Comments: Birds: silvereye, chaffinch, goldfinch.

WHANGAEHU HEADWATERS TRIBUTARY BUSH

Site no.: EW1207
Area: 8 ha
Other landform: Sideslope, riser (south facing)

Grid ref: T26 426361
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Hill country
Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*.

Other species: Not known.

Significance: Not known.

Comments: Probably not fenced, but slightly better looking than 1206.

WHANGAEHU VALLEY #2 BUSH

Site no.: EW1304
Area: 5 ha
Other landform:

Grid ref: T26 433360
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: 170 m
Land system: Alluvial plain, terrace tread
Principal landform: Floodplain

Site description: Photo #D40-41.

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*, *Alectryon excelsus*.

Other species: Not known.

Significance: Not known.

Comments: Possibly grazed, possibly swampy. Surrounded by willows.

MT MISERY

Site no.: EW1507
Area: 8 ha
Other landform:

Grid ref: U26 719359
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Hill country
Principal landform: Gully

Vegetation type: Treeland.

Dominant species: *Myoporum laetum*, *Nothofagus solandri*.

Other species: *Cyathea medullaris*, *Hebe stricta*, *Melicytus ramiflorus*, *Carpodetus serratus*, *Leptospermum scoparium*, *Ozotamnus leptophyllus*, *Agrostis capillaris*, *Coprosma rhamnoides*, *Lolium perenne*, *Cordyline australis*, *Knightia excelsa*, *Cyathea dealbata*, *Juncus edgarae*, *Carex geminata*, *Pinus radiata*, *Hoberia populnea*, *Antboxanthum odoratum*.

Significance: Not known.

MANGAREIA ROAD SHRUBLAND # 2

Site no.: EW1316
Area: 60 ha
Other landform:

Grid ref: T26 510355
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: 300 m
Land system: Hill country
Principal landform: Gully

Site description: 2 patches of vegetation in gullies.

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Ulex europaeus*.

Other species: Not known.

Significance: Not known.

Comments: Secondary shrubland/scrub in gully. (A. Townsend pers. comm.)

REWAREWA SHRUBLAND

Site no.: EW1456
Area: 25 ha
Other landform: Spur, shallow gullies

Grid ref: T26 657357
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Ozotamnus leptophyllus*, *Ulex europaeus*.

Other species: Not known.

Significance: Not known.

TUI GLEN, TINUI VALLEY

Site no.: EW1506
Area: 9 ha
Other landform:

Grid ref: U26 733355
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Hill country
Principal landform: Gully

Vegetation type: Scrub.

Dominant species: *Pinus radiata*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Coprosma robusta*, *Pomaderris aff. phyllicifolia*, *Pseudopanax arboreus*, *Ulex europaeus*, *Hebe stricta*, *Leptospermum scoparium*, *Cotoneaster*, *Podocarpus totara*, *Melicytus ramiflorus*, *Brachyglottis repanda*, *Pittosporum tenuifolium*, *Coriaria arborea*.

Significance: Birds: song thrush, grey warbler, fantail.

Comments: Shrubland forms a buffer around site. Higher proportion of broadleaved species in the gully.

Notes: Ref. Ecol. Site Inventory No. 793.

DITTON BUSH

Site no.: EW1206

Grid ref: T26 419350

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*, *Dacrycarpus dacrydioides*.

Other species: *Pseudopanax crassifolius*, *Leptospermum scoparium*, *Elaeocarpus dentatus*, *Pittosporum eugenioides*, *Podocarpus totara*, *Alectryon excelsus*, *Melicytus ramiflorus*.

Significance: Not known.

Comments: Probably not fenced. Two areas (4 ha and 4 ha) on map.

TRIG 31 BUSH

Site no.: EW1338

Grid ref: T26 523354

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Shrubland-scrub.

Dominant species: *Alectryon excelsus*, *Podocarpus totara*, *Leptospermum scoparium*.

Other species: *Myrsine divaricata*, *Dacrycarpus dacrydioides*, *Nestegis lanceolata*, *Alectryon excelsus*, *Pseudopanax crassifolius*, *Coprosma rhamnoides*, *Coprosma areolata*, *Melicytus ramiflorus*, *Sophora tetraptera*, *Sophora microphylla*, *Kunzea ericoides*.

Significance: Not known.

Comments: Worth botanising this area with Wellington Botanical Society. Possible *Teucrium parvifolium* site (A. Townsend pers. comm.).

DODGSHUN BUSH

Site no.: EW1331

Grid ref: T26 441349

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Treeland

Dominant species: *Knightia excelsa*, *Beilschmiedia tawa*, *Alectryon excelsus*.

Other species: *Myrsine divaricata*, *Nestegis lanceolata*, *Melicytus ramiflorus*, *Kunzea ericoides*, *Myrsine australis*, *Alectryon excelsus*, *Dacrycarpus dacrydioides*, *Elaeocarpus dentatus*, *Sophora tetraptera*, *Cordyline australis*.

Significance: *Rhopalostylis sapida* present.

BERWYN BUSH

Site no.: EW1329

Grid ref: T26 528346

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tree-shrubland.

Dominant species: *Alectryon excelsus*, *Podocarpus totara*, *Leptospermum scoparium*.

Other species: Not known.

Significance: Not known.

FLAG CREEK

Site no.: EW1423

Grid ref: T26 656344

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Face

Land system: Rolling hill country

Principal landform: Hillside

Vegetation type: Scrub.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Leucopogon fasciculatus*, *Carex geminata*, *Juncus edgarrae*, *Sophora tetraptera*, *Cordyline australis*.

Significance: Not known.

TAUWERU RIVER RIPARIAN STRIP

Site no.: EW1327

Grid ref: T26 502340

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace riser

Land system:

Principal landform: Terrace tread

Vegetation type: Closed forest.

Dominant species: *Salix* sp., *Podocarpus totara*, *Kunzea ericoides*.

Other species: *Cordyline australis*.

Significance: Not known.

Comments: Mostly willows with a few patches of totara-kanuka closed forest along top of a terrace riser.

DOGSHUN BUSH

Site no.: EW1335

Grid ref: T26 444334

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Site description: Photo #7C.

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*, *Melicytus ramiflorus*.

Other species: *Hedycarya arborea*.

Significance: Not known.

Comments: Appears to be fenced. Appears that native plantings have been undertaken in this area.

TE ORE ORE BIDEFORD ROAD

Site no.: EW1305

Grid ref: T26 467318

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 235 m

Other landform: Spur

Land system: Hill country

Principal landform: Gully

Site description: 3 small patches of bush on hillside and gullies. Photo D43-44.

Vegetation type: Scrub.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Pittosporum eugenioides*, *Podocarpus totara*.

Significance: Not known.

Comments: May be fenced.

MAUNGAPAKEHA STREAM #2

Site no.: EW1411

Grid ref: T26 552330

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude: 280 m

Other landform: Gully

Land system: Hill country

Principal landform: Hillside

Site description: Numerous small patches of bush on south facing hillside.

Vegetation type: Scrub

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Podocarpus totara*, *Sophora tetraptera*.

Other species: *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Dacrycarpus dacrydioides*, *Myoporum laetum*, *Carpodetus serratus*, *Cordyline australis*, *Ulex europaeus*, *Hoheria populnea*, *Nestegis lanceolata*, *Coprosma rhamnoides*, *Passiflora tetrandra*, *Knightsia excelsa*, *Pseudopanax arboreus*, *Beilschmiedia tawa*, *Griselinia littoralis*, *Populus* sp.

Significance: Not known.

Comments: All are probably secondary. Not fenced.

BUTE ROAD SHRUBLAND

Site no.: EW1444

Grid ref: T26 636327

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type:

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Sophora tetraptera*.

Other species: *Coprosma robusta*, *Leucopogon fasciculatus*, *Pseudopanax crassifolius*, *Coprosma rhamnoides*, *Rubus schmidelioides*, *Brachyglottis repanda*, *Hoheria populnea*, *Melicytus ramiflorus*, *Coprosma robusta* × *C. propinqua*, *Carpodetus serratus*.

Comments: Much reduced c.f. size on map in Sawyer *et al.* 1998. Shelter planted around *Kunzea ericoides*.

Notes: Ref. Ecol. Site Inventory No. 786.

CASTLEPOINT TREELAND

Site no.: EW1615

Grid ref: U26 802322

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal, coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully head

Vegetation type: Treeland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: Not known.

Significance: Not known.

WHAKARORA STREAM/BALFOUR STREAM BUSH

Site no.: EW1422

Grid ref: T26 625319

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Knightsia excelsa*, *Sophora microphylla*, *Hoheria populnea*, *Cordyline australis*, *Myoporum laetum*, *Populus* sp., *Salix* sp.

CASTLEPOINT SHRUBLAND

Site no.: EW1614
Area: 25 ha
Other landform:

Grid ref: U26 797313
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully

Vegetation type: Closed forest.

Dominant species: *Leptospermum scoparium*, *Melicytus ramiflorus*, *Myoporum laetum*.

Other species: *Cyathea dealbata*.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 799.

'THISTLE TOP'

Site no.: EW1306
Area: 4 ha
Other landform: Sideslope

Grid ref: T26 478307
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: 160 m
Land system: Rolling hill country
Principal landform: Slip face

Site description: Small pocket of tree shrubland? on steep slip faces.

Vegetation type: Tree shrubland, closed forest?, treeland.

Dominant species: *Kunzea ericoides*.

Other species: *Dacrycarpus dacrydioides*, *Cordyline australis*, *Hoberia populnea*, *Pennantia corymbosa*, *Pittosporum eugenioides*, *Melicytus ramiflorus*, *Alectryon excelsus*, *Myrsine divaricata*, *Sophora tetraptera*, *Coprosma propinqua*.

Significance: Not known.

STODDARTS ROAD

Site no.: EW1325
Area: 5 ha
Other landform:

Grid ref: T26 505305
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: 150 m
Land system:
Principal landform: Gully

Site description: Confluence of two small streams.

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Prumnopitys taxifolia*, *Pseudopanax crassifolius*.

Other species: *Raukaua anomalus*, *Pittosporum tenuifolium*, *Coprosma propinqua*, *Sophora tetraptera*, *Coprosma rhamnoides*, *Pellaea rotundifolia*, *Ranunculus reflexus*, *Parsonsia heterophylla*, *Leptospermum scoparium*, *Coprosma linearifolia*, *Asplenium flabellifolium*, *Hydrocotyle elongata*, *Coprosma rotundifolia*, *Asplenium hookerianum*, *Cordyline australis*, *Earina mucronata*, *Carpodetus serratus*, *Pyrrosia eleagnifolia*, *Australina pusilla*, *Lophomyrtus obcordata*, *Streblus heterophyllus*, *Myrsine divaricata*, *Blechnum filiforme*, *Pneumatopteris pennigera*, *Dacrycarpus dacrydioides*, *Blechnum fluviatile*, *Brachyglottis repanda*, *Adiantum cunninghamii*, *Lastreopsis glabella*, *Metrosideros diffusa*, *Melicytus ramiflorus*, *Coprosma rubra*, *Echinopogon ovatus*, *Carmichaelia australis*, *Solanum nigrum*, *Dichondra repens*, *Coprosma oreophila*, *Melicytus micranthus*, *Pennantia corymbosa*, *Nestegis montana*, *Hydrocotyle novae-zeelandiae*, *Sambucus nigra*, *Nestegis lanceolata*, *Hoberia populnea*, *Isolepis reticularis*, *Haloragis erecta*, *Clematis paniculata*, *Gnaphalium gymnocephalum*.

Significance: Not known.

NORTH ROCKY BUSH

Site no.: EW1826
Area: 12 ha
Other landform: Spur (some)

Grid ref: T26 515294
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: 180 m
Land system: Hill country
Principal landform: Gully

Site description: Tall closed forest buffered by tree-shrubland in southern gully and a narrow margin of tree-shrubland around the larger portion.

Vegetation type: Tall closed forest, tree-shrubland.

Dominant species: *Beilschmiedia tawa*, *Alectryon excelsus*, *Kunzea ericoides*.

Other species: Not known.

Significance: Not known.

MOUNT CLYDE SHRUBLAND

Site no.: EW1829

Grid ref: T26 532280

Source: Sawyer *et al.* 1998

Area: 16 ha

Bioclimatic zone: Semi-coastal, lowland

Altitude:

Other landform:

Land system: Taipo, hill country

Principal landform: Sideslope

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Podocarpus totara*.

Other species: Not known.

Significance: Not known.

SOUTH CASTLE POINT SHRUBLAND

Site no.: EW1606

Grid ref: U26 792270

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Scarp, topslope

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Lolium perenne*, *Pinus radiata*.

Other species: *Pomaderris* aff. *phyllicifolia*, *Poa colensoi*, *Juncus kraussii* var. *australiensis*, *Trifolium repens*, *Ulex europaeus*.

Significance: Not known.

MANGATOPITOPI STREAM

Site no.: EW1820

Grid ref: T26 463267

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude: 200 m

Other landform: Spur

Land system: Hill country

Principal landform: Gully

Site description: Shrubland in gullies east of Tauweru River.

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*, *Sophora* sp.

Other species: Not known.

Significance: Not yet registered with QEII – proposed OSC.

Comments: Information from QEII survey.

HAUREKA STREAM #2

Site no.: EW1818

Grid ref: T26 446263

Source: Sawyer *et al.* 1998

Area: 40 ha

Bioclimatic zone: Semi-coastal

Altitude: 200 m

Other landform: Spur, sideslope

Land system: Hill country

Principal landform: Gully

Site description: Patches of scrub on hillside up Haureka Stream.

Vegetation type: Tall closed forest.

Dominant species: *Alectryon excelsus*, *Beilschmiedia tawa*.

Other species: *Kunzea ericoides*, *Myoporum laetum*, *Hoberia populnea*, *Knightsia excelsa*, *Hedycarya arborea*, *Brachyglottis repanda*, *Carpodetus serratus*, *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Nestegis lanceolata*, *Prumnopitys taxifolia*, *Elaeocarpus dentatus*, *Sophora tetraptera*, *Dacrydium cupressinum*.

Significance: Not yet registered with QEII—proposed OSC.

Comments: Site surveyed by DOSLI & QEII species list. Small pine plantation on northern side, providing shelter.

TAUWERU RIVER TRIBUTARY

Site no.: EW1819

Grid ref: T26 465257

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude: 200 m

Other landform: Spur

Land system: Hill country

Principal landform: Gully

Site description: Scrubby gully E of Tauweru River.

Vegetation type: Shrubland, tall closed forest, emergent trees?

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Beilschmiedia tawa*, *Alectryon excelsus*, *Podocarpus totara*.

Other species: *Dacrycarpus dacrydioides*, *Cyathea medullaris*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*, *Hoberia populnea*, *Carpodetus serratus*, *Cordyline australis*, *Rubus schmidelioides*, *Pinus radiata*.

Significance: Not known.

Comments: Shrubland comprised of *Leptospermum scoparium*, *Kunzea ericoides* in upper reaches of valley, with tall closed forest in lower part of valley, possibly with emergent trees.

BLAIRLOGIE BUSH

Site no.: EW1442

Grid ref: T26 622256

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Sideslope

Dominant species: *Leptospermum scoparium*, *Sophora* sp., *Cordyline* sp.

Other species: *Podocarpus totara*.

Significance: Not known.

MANGAPAKEHA GULLY BUSH

Site no.: EW1437

Grid ref: T26 594251

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Closed forest.

Dominant species: *Sophora* sp., *Kunzea ericoides*, *Podocarpus totara*, *Nothofagus solandri*.

Other species: *Pittosporum tenuifolium*, *Cordyline australis*, *Pseudopanax crassifolius*, *Knightia excelsa*.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 769.

MANGAPOKIA STREAM

Site no.: EW1430

Grid ref: T26 643246

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Dowland

Principal landform: Sideslope

Vegetation type: Closed forest, shrubland.

Dominant species: *Meliclytus ramiflorus*, *Myoporum laetum*, *Brachyglottis repanda*.

Other species: *Beilschmiedia tawa*, *Hoberia populnea*, *Carpodetus serratus*, *Knightia excelsa*, *Cyathea medullaris*, *Hedycarya arborea*, *Pseudopanax crassifolius*, *Elaeocarpus dentatus*, *Cordyline australis*.

Significance: Not known.

BISCUIT BUSH

Site no.: EW1440

Grid ref: T26 538235

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace, riser

Land system: Terrace

Principal landform: Gully

Vegetation type: Scrub.

Dominant species: *Leptospermum scoparium*, *Podocarpus totara*, *Prumnopitys taxifolia*, *Sophora tetraptera*, *Kunzea ericoides*, *Pseudopanax crassifolius*.

Other species: *Blechnum novae-zelandiae*, *Pittosporum tenuifolium*, *Clematis vitalba*, *Knightia excelsa*, *Carpodetus serratus*, *Cortaderia toetoe*, *Hebe stricta*, *Phormium cookianum*, *Coriaria arborea*, *Coprosma propinqua*, *Coprosma robusta* × *C. propinqua*, *Carex secta*, *Myoporum laetum*, *Melicytus ramiflorus*, *Hoheria populnea*.

Significance: May now be gone.

Comments: Picked up off NZMS 260.

WAIPAWA STREAM WETLAND

Site no.: EW1828

Grid ref: T26 466218

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Floodplain

Land system: Alluvial plain, terrace

Principal landform: Oxbow

Vegetation type: Tussockland.

Dominant species: *Typha orientalis*.

Other species: *Carex secta*, *Lemna minor*, *Cordyline australis*, *Leptospermum scoparium*, *Salix fragilis*.

Significance: Site is possibly threatened by willows which grow along Waipawa Stream banks.

Comments: Oxbow of Waipawa Stream.

Notes: Ref. Ecol. Site Inventory No. 781.

WAIPAWA STREAM BUSH

Site no.: EW1813

Grid ref: T26 490220

Source: Sawyer *et al.* 1998

Area: 37 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur

Land system: Hill country

Principal landform: Dissected spur

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Podocarpus totara*, *Prumnopitys taxifolia*, *Kunzea ericoides*, *Pseudopanax arboreus*, *Hoheria populnea*, *Blechnum novae-zelandiae*, *Phormium cookianum*.

Other species: *Melicytus ramiflorus*, *Dacrycarpus dacrydioides*, *Nestegis lanceolata*, *Beilschmiedia tawa*, *Cyathea medullaris*, *Sophora tetraptera*, *Pseudopanax crassifolius*, *Astelia grandis*, *Brachyglottis repanda*, *Pittosporum tenuifolium*, *Cordyline australis*, *Coprosma areolata*, *Carmichaelia australis*, *Leptospermum scoparium*.

Significance: Good quality vegetation at T26 495219, but the rest of the area may also be of ecological value. However the presence of ecological values are only confirmed for the portion alongside Te Parae Road.

Comments: Willows along streambank.

Notes: Ref. Ecol. Site Inventory No. 780.

OMAHU BUSH

Site no.: EW1834

Grid ref: T26 422209

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Terrace tread

Dominant species: *Podocarpus totara*, *Nestegis* spp., *Lophomyrtus obcordata*, *Sophora tetraptera*.

Other species: *Melicytus micranthus*, *Coprosma crassifolia*, *Rubus schmidelioides*, *Hoberia populnea*, *Urtica ferox*, *Coprosma rotundifolia*, *Coprosma robusta* × *C. propinqua*, *Cordyline australis*, *Alectryon excelsus*, *Prumnopitys taxifolia*, *Nestegis montana*, *Podocarpus totara*, *Cytisus scoparius*, *Cupressus macrocarpa*, *Nestegis cunninghamii*, *Streblus heterophyllus*, *Plagianthus regius*, *Dacrycarpus dacrydioides*.

Significance: Key site. Presence of threatened spp. *Korthalsella lindsayi*. Links in with EW1807. High sp. richness. *Lophomyrtus obcordata* present.

KENMORE

Site no.: EW1815

Grid ref: T26 490200

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude: 200 m

Other landform: Spur

Land system: Hill country

Principal landform:

Vegetation type: Shrubland.

Dominant species: Pasture, *Kunzea ericoides*, *Pinus* sp., *Pseudopanax arboreus*, *Beilschmedia tawa*.

Other species: *Cordyline australis*, *Leptospermum scoparium*, *Salix fragilis*, *Podocarpus totara*, *Agrostis capillaris*, *Pseudopanax crassifolius*, *Eucalyptus* sp.

Significance: Not known.

Comments: May have ecological value.

MANGAOTEKAINUI STREAM BUSH

Site no.: EW1801a,b

Grid ref: T26 451181

Source: Sawyer *et al.* 1998

Area: 9 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Topslope,

spurline

Vegetation type: Tall closed forest, closed forest.

Dominant species: Broadleaved mixed forest.

Other species: *Carpodetus serratus*, *Prumnopitys taxifolia*, *Knightia excelsa*, *Podocarpus totara*, *Pseudopanax crassifolius*, *Nestegis lanceolata*, *Coprosma areolata*, *Coprosma propinqua*, *Dacrycarpus dacrydioides*, *Leptospermum scoparium*, *Melicytus ramiflorus*.

Notes: Ref. Ecol. Site Inventory No. 812.

KAUMINGI STREAM

Site no.: EW1903

Grid ref: T26 546183

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Scarp face

Land system: Hill country

Principal landform: Hill face

Vegetation type: Tall closed forest, scrub, pasture.

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*., *Nestegis* sp., *Leptospermum scoparium*, pasture

Other species: *Coprosma propinqua*, *Carpodetus serratus*, *Hoberia populnea*, *Myoporum laetum*, *Cordyline australis*, *Dacrycarpus dacrydioides*, *Coprosma rhamnoides*, *Juncus effusus*, *Melicytus ramiflorus*, *Hydrocotyle moschata*, *Pteris tremula*, *Rubus schmidelioides*, *Hypolepis ambigua*, *Polystichum richardii*, *Alectryon excelsus*, *Lophomyrtus obcordata*, *Nestegis lanceolata*, *Myrsine australis*, *Nestegis cunninghamii*, *Coprosma rotundifolia*, *Asplenium bookerianum*, *Brachyglottis repanda*, *Metrosideros perforata*, *Parsonsia heterophylla*, *Pyrrosia eleagnifolia*, *Myrsine divaricata*, *Coprosma areolata*, *Asplenium flaccidum*, *Knightia excelsa*, *Clematis foetida*, *Pseudopanax crassifolius*, *Bellis perennis*, *Pellaea rotundifolia*, *Adiantum cunninghamii*, *Podocarpus totara*, *Nestegis cunninghamii*, *Oxalis lactea*, *Uncinia uncinata*, *Geniostoma rupestre* var. *ligustrifolium*, *Holcus lanatus*, *Nestegis montana*.

Significance: Significant plants: *Nestegis montana*.

MOORES TAIPO BUSH

Site no.: EW1904a,b,c **Grid ref:** T26 565175 **Source:** Sawyer *et al.* 1998
Area: 30 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:** 280 m
Other landform: Sideslope, hillside, terrace riser country **Land system:** Terrace, taipo, hill

Principal landform: Terrace tread

Vegetation type: Treeland and closed forest.

Dominant species: *Nestegis lanceolata*, *Kunzea ericoides*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Alectryon excelsus*, *Myoporum laetum*, *Knightsia excelsa*.

Other species: *Coprosma rigida*, *Coprosma propinqua*, *Coprosma rhamnoides*, *Ozothamnus leptophyllus*, *Melicytus ramiflorus*, *Juncus edgarae*, *Rubus schmidelioides*, *Pennantia corymbosa*, *Urtica ferox*, *Hypolepis ambigua*, *Cordyline australis*, *Coprosma crassifolia*, *Coprosma rotundifolia*, *Cyathea smithii*, *Metrosideros perforata*, *Pellaea rotundifolia*, *Passiflora tetrandra*, *Nestegis lanceolata*, *Melicope simplex*, *Streblus heterophyllus*, *Hoberia populnea*, *Polystichum richardii*, *Metrosideros diffusa*, *Brachyglottis repanda*, *Cyathea dealbata*, *Pseudopanax arboreus*, *Elaeocarpus dentatus*, *Asplenium flabellifolium*, *Asplenium hookerianum*, *Pseudopanax crassifolius*, *Leucopogon fasciculatus*, *Hydrocotyle moschata*, *Beilschmiedia tawa*, *Blechnum fluviatile*, *Dicksonia squarrosa*, *Dicksonia fibrosa*, *Asplenium flaccidum*, *Myrsine australis*, *Cirsium vulgare*, *Rumex conglomeratus*, *Lolium perenne*, *Lophomyrtus obcordata*, *Phymatosorus pustalatus*, *Pittosporum eugenioides*, *Trifolium repens*, *Coprosma rubra*, *Neomyrtus pedunculata*, *Podocarpus totara*, *Parsonsia capsularis*, *Muehlenbeckia complexa*, *Fuchsia excorticata*, *Carex secta*, *Carex geminata*, *Leptospermum scoparium*, *Carpodetus serratus*, *Cordyline australis*, *Coprosma areolata*, *Pteris tremula*, *Metrosideros colensoi*, *Pyrrosia eleagnifolia*, *Ranunculus reflexus*, *Urtica incisa*, *Hedycarya arborea*, *Muehlenbeckia australis* (see Druce 1972 for plant checklist).

Significance: Significant plants : *Coprosma rigida*. Birds : grey warbler, fantail, kingfisher, thrush, harrier.

Comments: Smallest piece of forest largely cleared. This forest on flats. See Druce (1972) for plant checklist. Birds: silvereye, magpie, chaffinch, blackbird, turkey. Rabbit & possum also present.

KAUMINGI STREAM SHRUBLAND

Site no.: EW1910 **Grid ref:** T26 587174 **Source:** Sawyer *et al.* 1998
Area: 15 ha **Bioclimatic zone:** Lowland **Altitude:** 380 m
Other landform: Spur **Land system:** Taipo
Principal landform: Face

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: Not known.

Comments: Looked at from a distance on 12/5/94.

Notes: Ref. Ecol. Site Inventory No. 776.

PYRAMID BUSH

Site no.: EW1716 **Grid ref:** T26 390168 **Source:** Sawyer *et al.* 1998
Area: 5 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 180 m
Other landform: **Land system:** Rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest with emergents.

Dominant species: *Podocarpus totara*, *Alectryon excelsus*, *Myoporum laetum*.

Other species: *Cordyline australis*, *Pittosporum eugenioides*, *Prumnopitys taxifolia*, *Coprosma areolata*, *Coprosma crassifolia*, *Parsonsia capsularis*, *Macropiper excelsum*, *Melicytus ramiflorus*, *Hoberia populnea*, *Parsonsia heterophylla*, *Passiflora tetrandra*, *Hedycarya arborea*, *Myrsine australis*.

Significance: Fenced.

Comments: Cat noted in site.

WHAREAMA DUNE SYSTEM / WETLAND

Site no.: EW2013 **Grid ref:** U26 708141 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Coastal **Altitude:**
Other landform: Dune ridge **Land system:** Duneland
Principal landform: Slack

Vegetation type: Wetland.

Dominant species: *Typha orientalis*, *Plagianthus divaricatus*, *Cyperus ustulatus*, *Juncus kraussii* var. *australiensis*.

Other species: *Carex geminata*, *Cortaderia fulvida*, *Spinifex sericeus*, *Ammophila arenaria*, *Olearia solandri*, *Muehlenbeckia complexa*, *Phormium tenax*, *Carex secta*, *Ulex europaeus*.

VIEW POINT SHRUBLAND

Site no.: EW2002 **Grid ref:** T26 690128 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Coastal **Altitude:**
Other landform: Spur **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Shrubland, closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: Not known.

Comments: Secondary shrubland near the coast.

RIVERSDALE ROAD

Site no.: EW1912 **Grid ref:** T26 639123 **Source:** Sawyer *et al.* 1998
Area: 60 ha **Bioclimatic zone:** Lowland **Altitude:**
Other landform: **Land system:** Rolling hill - Downs
Principal landform: Hill slope

Vegetation type: Not known.

Dominant species: *Kunzea ericoides*, *Knightia excelsa*, *Leptospermum scoparium*, *Coprosma rhamnoides*, *Pinus* sp., *Ulex europaeus*

Other species: *Nothofagus solandri*, *Pomaderris* aff. *phylicifolia*, *Juncus effusus*, *Carex geminata*, *Cordyline australis*.

KOURARAU GORGE BUSH

Site no.: EW1717 **Grid ref:** T26 360104 **Source:** Sawyer *et al.* 1998
Area: 16 ha **Bioclimatic zone:** Lowland **Altitude:**
Other landform: Valley, sideslope. **Land system:** Rolling hill country -
downland
Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Myoporum laetum*, *Podocarpus totara*.

Other species: *Cordyline australis*, *Laurelia novae-zelandiae*, *Carpodetus serratus*, *Alectryon excelsus*, *Cordyline australis*, *Dacrycarpus dacrydioides*, *Sophora tetraptera*, *Melicytus ramiflorus*, *Pseudopanax arboreus*, *Metrosideros colensoi*.

Significance: Not known.

UPOKONGURU STREAM BUSH

Site no.: EW2337 **Grid ref:** T27 466095 **Source:** Sawyer *et al.* 1998
Area: 8 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Riser **Land system:** Terrace, rolling hill
country
Principal landform: Gully

Vegetation type: Treeland, shrubland.

Dominant species: *Myrsine divaricata*, *Podocarpus totara*, *Coprosma propinqua*, *Leptospermum scoparium*, *Ulex europaeus*.

Other species: *Carex geminata*, *Dacrydium cupressinum*, *Salix* sp., *Prumnopitys taxifolia*, *Juncus effusus*, *Cortaderia fulvida*, *Parsonsia heterophylla*, *Coprosma rhamnoides*, *Dacrycarpus dacrydioides*, *Pittosporum tenuifolium*, *Pseudopanax crassifolius*, *Kunzea ericoides*, *Nothofagus solandri*.

TE HAROTO SHRUBLAND

Site no.: EW2440

Grid ref: T27 566093

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Topslope

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tree-shrubland

Dominant species: *Nothofagus solandri*, *Leptospermum scoparium*, *Kunzea ericoides*, *Leucopogon fasciculatus*.

Other species: *Pseudopanax arboreus*, *Pseudopanax crassifolius*.

RIVERSDALE

Site no.: EW2514

Grid ref: T27 666094

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal; coastal

Altitude:

Other landform: Gully, ridgeline, terrace riser

Land system: Terrace, rolling hill country

Principal landform: Spur

Vegetation type: Shrubland.

Dominant species: *Ulex europaeus* ?, *Leptospermum scoparium* ?

Other species: Not known.

Comments: Terrace is an old dissected marine formed terrace.

ORUI SWAMP

Site no.: EW2519

Grid ref: T27 686093

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Coastal

Altitude:

Other landform: Foredune, crest, slack

Land system:

Principal landform: Dune system.

Dominant species: *Typha orientalis*, *Phormium tenax*.

Other species: *Pinus radiata*, *Cortaderia fulvida*, *Plagianthus divaricatus*, *Cordyline australis*, *Pteridium esculentum*, *Juncus kraussii* var. *australiensis*, *Ammophila arenaria*, *Spinifex sericeus*.

Significance: Significant plant: *Plagianthus divaricatus*.

Comments: Owner : John Meredith, Orui Stn, 06 3723454

Notes: Ref. Ecol. Site Inventory No. 807.

FLAX BUSH

Site no.: EW2245

Grid ref: T27 334081

Source: Sawyer *et al.* 1998

Area: 8 (5) ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country, downland

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*.

Other species: *Knightia excelsa*, *Elaeocarpus dentatus*, *Dacrycarpus dacrydioides*, *Laurelia novae-zelandiae*, *Alectryon excelsus*, *Melicytus ramiflorus*.

Comments: Surrounded by pines & gum trees. Partially protected QEII 5/07/173 (3 ha).

Notes: Ref. Ecol. Site Inventory No. 847. The above information is based on the original study site, which comprised 8 ha; the RAP is estimated to be c.5 ha.

TE HAROTO BUSH

Site no.: EW2425

Grid ref: T27 551084

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Topslope

Land system: Rolling hill-downs

Principal landform: Sideslope

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Knightia excelsa*, *Pseudopanax arboreus*, *Melicytus ramiflorus*.

Other species: *Podocarpus totara*, *Hoberia populnea*, *Brachyglottis repanda*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*.

Significance: Significant plant: *Nothofagus solandri*.

WAINUIORU RIVER BUSH

Site no.: EW2350

Grid ref: T27 426074

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Tread

Land system: Rolling hill country, terrace

Principal landform: Sideslope

Vegetation type: Closed forest, shrubland.

Dominant species: *Podocarpus totara*

Other species: *Raukaua anomalous*, *Coprosma rhamnoides*, *Carpodetus serratus*, *Rubus schmidelioides*, *Hoberia populnea*, *Coprosma crassifolia*, *Nothofagus solandri*, *Coprosma virescens*, *Lophomyrtus obcordata*, *Prumnopitys taxifolia*, *Myrsine divaricata*, *Coprosma propinqua*, *Nestegis lanceolata*, *Dacrycarpus dacrydioides*, *Carex geminata*, *Pseudopanax crassifolius*.

Significance: Significant plant: *Coprosma virescens*.

MANGAHUIA STREAM BUSH

Site no.: EW2202

Grid ref: S27 300065

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 150 m

Other landform: Ridgeline

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*, *Alectryon excelsus*, *Dacrycarpus dacrydioides*, *Sophora tetraptera*.

Other species: *Griselinia lucida*, *Knightia excelsa*, *Nestegis lanceolata*, *Kunzea ericoides*, *Laurelia novae-zelandiae*.

Comments: SSW1 & QEII info.

Notes: Ref. Ecol. Site Inventory No. 559.

KINGSLAND BUSH

Site no.: EW2249

Grid ref: T27 332066

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Myoporum laetum*.

Other species: *Laurelia novae-zelandiae*, *Dacrycarpus dacrydioides*, *Alectryon excelsus*, *Sophora tetraptera*, *Prumnopitys taxifolia*, *Hedycarya arborea*, *Hoberia populnea*.

Significance: Birds: tui, fantail, kereru. QEII surveyed, but not yet registered.

BANNOCKBURN STREAM BUSH

Site no.: EW2201a

Grid ref: T27 320065

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 200 m

Other landform: Sideslope, ridge/spur line

Land system: Rolling hill country

Principal landform: Gully

Dominant species: *Sophora tetraptera*, *Myoporum laetum*, *Podocarpus totara*, *Kunzea ericoides*, *Carex secta*.

Other species: *Dacrycarpus dacrydioides*, *Laurelia novae-zelandiae*, *Prumnopitys taxifolia*, *Knightia excelsa*, *Cordyline australis*.

Notes: Ref. Ecol. Site Inventory No. 835.

EPARAIMA

Site no.: EW2507

Grid ref: T27 631060

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace riser

Vegetation type: Tall closed forest, closed forest, shrubland.

Dominant species: Not known.

Other species: Not known.

GLENDOWNER SHRUBLAND

Site no.: EW2106

Grid ref: S27 207043

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Shrubland

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Sophora tetraptera*.

Other species: *Olearia paniculata*, *Alectryon excelsus*, *Knightia excelsa*, *Leptospermum scoparium*.

Notes: Ref. Ecol. Site Inventory No. 905.

PUKEKAKA

Site no.: EW2509

Grid ref: T27 629051

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, terrace tread (some)

Land system:

Principal landform: Terrace riser

Vegetation type: Shrubland, tall closed forest, plantation.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Eucalyptus* sp., *Pinus* sp.

Other species: Not known.

Comments: Possibly primary.

EPARAIMA

Site no.: EW2506

Grid ref: T27 651050

Source: Sawyer *et al.* 1998

Area: 9 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully riser, wetland

Land system: Terrace

Principal landform: Gully

Vegetation type: Shrub-tussockland, wetland.

Dominant species: *Pinus* sp., *Cupressus macrocarpa*, *Juncus edgarrae*, *Ulex europaeus*.

Other species: Not known.

Comments: Probably secondary type—may be primary. Not particularly significant.

KUAMAHANGA STREAM

Site no.: EW2329

Grid ref: T27 449048

Source: Sawyer *et al.* 1998

Area:

8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest.

Dominant species: Not known.

Other species: Not known.

KARORI BUSH

Site no.: EW2438

Grid ref: T27 541049

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Treeland, tall closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Alectryon excelsus*.

Other species: *Coprosma areolata*, *Hoheria populnea*, *Prumnopitys taxifolia*, *Leptospermum scoparium*, *Elaeocarpus dentatus*, *Pseudopanax crassifolius*, *Streblus heterophyllus*, *Coprosma arborea*, *Prumnopitys taxifolia*.

Comments: Small area with some small leaved divaricating plants present. Borders Kaiwhata Marginal Strip (not protected for conservation).

Notes: Ref. Ecol. Site Inventory No. 777.

NGAUMU - HUAKAWAKAWA STREAM

Site no.: EW2430

Grid ref: T27 507043

Source: Sawyer *et al.* 1998

Area: 43 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: *Pseudopanax arboreus*, *Hebe stricta*, *Pseudopanax crassifolius*.

Recommendation: Was not able to have a good look.

Comments: Area of dense forest amongst treeland.

NGAHAPE

Site no.: EW2429

Grid ref: T27 526030

Source: Sawyer *et al.* 1998

Area: 86 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, gully

Land system: Rolling hill country

Principal landform: Hill side

Vegetation type: Closed forest, tall closed forest, linked by tree-shrubland & treeland.

Dominant species: Not known.

Other species: Not known.

Comments: Site comprises many small patches of forest.

HIKORANGI BUSH

Site no.: EW2334

Grid ref: T27 445024

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*, *Dacrydium cupressinum*.

Other species: *Olearia rani*, *Nestegis cunninghamii*, *Leucopogon fasciculatus*, *Melicytus ramiflorus*, *Cyatbodes juniperina*, *Coprosma* sp., *Podocarpus totara*, *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*.

Significance: Significant plant: *Nestegis cunninghamii*.

KAIWHATA STREAM BUSH

Site no.: EW2420

Grid ref: T27 539022

Source: Sawyer *et al.* 1998

Area: 14 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*, *Dacrydium cupressinum*, *Podocarpus totara*.

Other species: *Elaeocarpus dentatus*, *Leptospermum scoparium*, *Coprosma rotundifolia*, *Knightia excelsa*.

Notes: Ref. Ecol. Site Inventory No. 893.

POPOITI BUSH

Site no.: EW2224

Grid ref: S27 261019

Source: Sawyer *et al.* 1998

Area: 10 (6.5) ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Footslope

Land system: Hill country-downland boundary

Principal landform: Sideslope

Vegetation type: Closed forest, tall closed forest.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, broadleaved spp. Podocarps

Other species: *Myoporum laetum?*, *Prumnopitys taxifolia*, *Cordyline australis*, *Leptospermum scoparium*, *Melicytus ramiflorus*, *Nestegis lanceolata*,

Comments: Partially protected - QEII CA 5/7/67 (3.5 ha).

Notes: The above information is based on the original study site, which comprised 10 ha; the RAP is estimated to be c.6.5 ha.

HOMEWOOD ROAD

Site no.: EW2501

Grid ref: T27 608015

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Marine terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Podocarpus totara*.

Other species: *Cordyline australis*, *Myoporum laetum*, *Corynocarpus laevigatus*.

TARATANUI-POPOITI

Site no.: EW2104

Grid ref: S27 247012

Source: Sawyer *et al.* 1998

Area: 11 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Hillslope (east facing)

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Kunzea ericoides*, *Hoberia sexstylosa*, *Myoporum laetum*, *Knightia excelsa*, *Cyathea medullaris*, *Sophora* sp.

Other species: Not known.

Comments: Heavily grazed, *Kunzea ericoides* on ridge gives way to an almost continuous stand of *Sophora* sp. at gully head.

TE WHARAU ROAD BUSH

Site no.: EW2336

Grid ref: T27 445012

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spurline, gully head

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*, *Coprosma rhamnoides*.

Other species: *Coprosma robusta* × *C. propinqua*, *Hebe stricta*, *Olearia rani*, *Leptospermum scoparium*, *Nothofagus truncata?*, *Kunzea ericoides*, *Myrsine salicina*, *Melicytus ramiflorus*, *Nestegis cunninghamii*, *Pseudopanax crassifolius*, *Hebe parviflora*, *Coprosma propinqua*, *Leucopogon fasciculatus*, *Pittosporum tenuifolium*, *Cyatbodes juniperina*, *Pseudopanax crassifolius*, *Pseudopanax arboreus*, *Coprosma microcarpa*, *Coprosma robusta*.

Significance: Significant plants: *Hebe parviflora*, *Nothofagus truncata?*

Comments: Quite grazed out underneath. Quite nice forest on sideslopes above tributary of Kuamahanga Stream.

Notes: Ref. Ecol. Site Inventory No. 864.

KUAMAHANGA - BISMARCK BUSH

Site no.: EW2407

Grid ref: T27 504009

Source: Sawyer *et al.* 1998

Area: 14 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill-downs

Principal landform: Hill face

Vegetation type: Shrubland, treeland, closed forest.

Dominant species: *Nothofagus solandri*, *Pseudopanax crassifolius*, *Leucopogon fasciculatus*.

Other species: *Cordyline banksii*, *Lotus pedunculatus*, *Cyatbodes juniperina*, *Weinmannia racemosa*, *Olearia rani*, *Brachyglottis repanda*, *Pseudopanax arboreus*, *Pteridium esculentum*, *Coprosma robusta*, *Ozothamnus leptophyllus*, *Hebe stricta*, *Dacrydium cupressinum*, *Cyathea dealbata*, *Gabnia* sp.

Significance: *Weinmannia racemosa* unusual this far south in district.

WAINUIORU RIVER BUSH

Site no.: EW2307

Grid ref: T27 380004

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude: 140 m

Other landform: Gully, riser, terrace tread

Land system: Dissected terrace

Principal landform: Terrace riser

Vegetation type: Tall closed forest, shrubland

Dominant species: *Dacrycarpus dacrydiodes*, *Sophora tetraptera*, *Kunzea ericoides*.

Other species: *Cordyline australis*, *Podocarpus totara*, *Melicytus ramiflorus*, *Prumnopitys taxifolia*, *Dacrydium cupressinum*, *Nestegis lanceolata*, *Nothofagus solandri*, *Elaeocarpus dentatus*.

Notes: Ref. Ecol. Site Inventory No. 852.

KAIWHATA RIVER

Site no.: EW2419A

Grid ref: T27 540005

Source: Sawyer *et al.* 1998

Area: 15 (6.8) ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, floodplain, terrace risers

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Carpodetus serratus*, *Pseudopanax arboreus*, *Leptospermum scoparium*.

Other species: *Parsonsia heterophylla*, *Metrosideros colensoi*, *Hoberia populnea*, *Dacrydium cupressinum*, *Coprosma propinqua* × *C. robusta*, *Prumnopitys ferruginea*, *Prumnopitys taxifolia*, *Carex geminata*,

Nestegis lanceolata, *Pennantia corymbosa*, *Melicytus ramiflorus*, *Coprosma rhamnoides*, *Pittosporum eugenioides*, *Pittosporum tenuifolium*, *Elaeocarpus dentatus*, *Knightia excelsa*, *Pinus radiata*, *Coprosma propinqua*, *Dacrycarpus dacrydioides*, *Leucopogon fasciculatus*, *Ozothamnus leptophyllus*, *Coprosma robusta*, *Cyathodes juniperina*, *Pseudopanax crassifolius*.

Comments: Partially protected - CA 5/7/171 (5.7 ha), CA 5/7/233 (3.5 ha).

Notes: Ref. Ecol. Site Inventory No. 889. The above information is based on the original study site, which comprised 15 ha; the RAP is estimated to be c.6.8 ha.

ERINGA BUSH

Site no.: EW2248

Grid ref: T27 308005

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*.

Other species: *Alectryon excelsus*, *Leptospermum scoparium*, *Podocarpus totara*, *Pseudopanax crassifolius*, *Coprosma grandifolia*, *Melicytus ramiflorus*, *Nestegis lanceolata*.

Significance: Small size, but very large trees.

TE WHARAU ROAD BUSH

Site no.: EW2340

Grid ref: T27 458004

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country, terrace

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: Not known.

Comments: Surrounded by *Pinus radiata* & *Acacia* sp.

Notes: Ref. Ecol. Site Inventory No. 865.

WAINUIORU RIVER BUSH

Site no.: EW2305

Grid ref: T27 366000

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Dissected terrace

Principal landform: Terrace riser

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Dacrycarpus dacrydioides*, *Sophora tetraptera*, *Nothofagus solandri*, *Podocarpus totara*, *Kunzea ericoides*

Other species: *Olearia paniculata*, *Pseudopanax crassifolius*, *Coprosma robusta*, *Leptospermum scoparium*, *Prumnopitys taxifolia*, *Cordyline australis*, *Nothofagus fusca?*, *Pseudopanax arboreus*, *Phormium cookianum*, *Parsonsia heterophylla*, *Hebe stricta*, *Myoporum laetum*, *Nestegis lanceolata*, *Brachyglottis repanda*, *Leucopogon fasciculatus*, *Pittosporum tenuifolium*, *Alectryon excelsus*.

Comments: A few Eucalyptus trees along the roadside. Pine trees on a slip @ T27 370002.

Notes: Ref. Ecol. Site Inventory No. 853.

AWATANE BUSH

Site no.: EW2112

Grid ref: S27 204990

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest.

Dominant species: *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Sophora tetraptera*.

Other species: *Cordyline australis*, *Leptospermum scoparium*, *Lophomyrtus obcordata*, *Rubus schmidelioides*, *Coprosma rhamnoides*, *Plagianthus regius*, *Nestegis lanceolata*.

JENKINS SHRUBLAND

Site no.: EW2306

Grid ref: T27 364988

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude: 200 m

Other landform: Gully

Land system:

Principal landform: Spur

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Podocarpus totara*.

Other species: Not known.

Comments: Much reduced in size.

Notes: Ref. Ecol. Site Inventory No. 854.

KAIWHATA RIVER TREELAND

Site no.: EW2414

Grid ref: T27 537985

Source: Sawyer *et al.* 1998

Area: 426 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Site description: Treeland of *Nothofagus solandri* on a headland above the river on the true right (between the river & the road). The rest of the site is on the true left of the river.

Vegetation type: Treeland

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*, *Coprosma rhamnoides*, *Leucopogon fasciculatus*, *Leptospermum scoparium*.

Other species: *Hoheria populnea*, *Carpodetus serratus*, *Dacrycarpus dacrydioides*, *Galium triquetrum*, *Ulex europaeus*, *Ozothamnus leptophyllus*, *Coriaria arborea*, *Carmichaelia australis*, *Pseudopanax arboreus*, *Pseudopanax crassifolius*, *Pennantia corymbosa*, *Polystichum richardii*, *Alectryon excelsus*, *Cordyline australis*, *Coprosma robusta*, *Coprosma areolata*, *Coprosma crassifolia*, *Pittosporum tenuifolium*, *Clematis paniculata*, *Pyrrosia eleagnifolia*.

Recommendation: Needs a detailed site inspection.

Notes: Ref. Ecol. Site Inventory No. 888.

WAIKOUKOU

Site no.: EW2209

Grid ref: T27 301981

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 260 m

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*.

Other species: *Olearia rani*, *Hebe stricta*, *Carpodetus serratus*, *Parsonsia heterophylla*, *Coprosma robusta*, *Haloragis erecta*, *Clematis paniculata*, *Myrsine australis*, *Cordyline australis*, *Pseudopanax crassifolius*, *Coprosma robusta* × *C. propinqua*, *Carmichaelia australis*, *Coprosma areolata*, *Hoheria populnea*, *Asplenium flabellifolium*, *Melicytus ramiflorus*, *Pittosporum tenuifolium*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*, *Brachyglottis repanda*, *Coprosma propinqua*.

PAHAOA RIVER SHRUBLAND

Site no.: EW2323

Grid ref: T27 472978

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hills

Principal landform: Gully

Vegetation type: Closed forest, shrubland.

Dominant species: *Podocarpus totara*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*

Other species: *Nothofagus solandri*, *Hoheria populnea*, *Pseudopanax arboreus*, *Pseudopanax crassifolius*.

Notes: Ref. Ecol. Site Inventory No. 871.

KAIWHATA RIVER (STANSBOUROUGH) BUSH

Site no.: EW2415

Grid ref: T27 552974

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Foothlope, terrace tread

Land system: Colluvial slope onto terrace

Principal landform: Sideslope

Vegetation type: Tall closed forest, closed forest.

Dominant species: *Alectryon excelsus*, *Hoheria populnea*.

Other species: Not known.

Significance: *Passiflora tetrandra*, *Knightia excelsa*, *Metrosideros colensoi*, *Cordyline australis*, *Pennantia corymbosa*, *Dacrydium dacrydioides*, *Melicope simplex*, *Coprosma areolata*, *Coprosma rubra*, *Leptospermum scoparium*, *Parsonsia capsularis*.

Notes: Ref. Ecol. Site Inventory No. 884.

HUANGARUA

Site no.: EW2109a&b

Grid ref: S27 200963 & 224953

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Downland

Principal landform: Gully (west

facing) and scarp (east facing)

Vegetation type: Treeland.

Dominant species: *Dacrydium cupressinum*, *Knightia excelsa*, *Kunzea ericoides*, *Cordyline* sp., *Myoporum laetum*, *Passiflora tetrandra*, *Sophora* sp., *Dacrydium dacrydioides*.

Other species: Not known.

Significance: Significant plants: *Dacrydium cupressinum*, *Knightia excelsa*, *Passiflora tetrandra*.

Comments: Heavily browsed. Remnant has taller forest than others in the area.

TAHAROA BUSH

Site no.: EW2229

Grid ref: S27 288963

Source: Sawyer *et al.* 1998

Area: 30 (12) ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Foothslope

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Prumnopitys taxifolia*, *Alectryon excelsus*, *Melicocarpus ramiflorus*, *Podocarpus totara*, *Knightia excelsa*, *Nestegis cunninghamii*, *Pittosporum tenuifolium*, *Pseudopanax arboreus*.

Other species: *Kunzea ericoides*, *Pseudopanax crassifolius*, *Fuchsia excorticata*, *Brachyglottis repanda*, *Coprosma areolata*, *Coprosma rhamnoides*, *Hoheria populnea*, *Cordyline australis*.

Significance: QEII covenant covers 2 areas of forest (2229 & 2233). Fenced in 1984 and buffered by pine shelterbelt. Wattle in site and common along foothslope.

Comments: Partially protected - QEII SO 5/7/64 (17.3 ha; possibly including part of site 2233?).

Notes: Ref. Ecol. Site Inventory No. 558. The above information is based on the original study site, which comprised 30 ha; the RAP is estimated to be c. 12 ha.

DRISCOLLS ROAD BUSH B

Site no.: EW2322

Grid ref: T27 464963

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Nestegis lanceolata*, *Hoberia populnea*, *Carpodetus serratus*, *Nothofagus solandri*.

Other species: *Coprosma propinqua*, *Elaeocarpus bookerianus*, *Leucopogon fasciculatus*, *Cyatbodes juniperina*, *Nestegis cunninghamii*, *Pittosporum tenuifolium*, *Pseudopanax crassifolius*, *Raukaua anomalus*, *Pennantia corymbosa*.

Notes: Ref. Ecol. Site Inventory No. 868.

NGAPUHI BUSH

Site no.: EW2210

Grid ref: T27 343958

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Floodplain?, gully, spur, sideslope

Land system: Terrace, dissected hill country

Principal landform: Terrace

Vegetation type: Treeland, tall closed forest.

Dominant species: *Prumnopitys taxifolia*, *Dacrycarpus dacrydioides*, *Podocarpus totara*.

Other species: *Myrsine divaricata*, *Cordyline australis*, *Hoberia populnea*, *Sophora tetraptera*, *Leptospermum scoparium*, *Pseudopanax crassifolius*, *Coprosma rubra*, *Kunzea ericoides*, *Plagianthus regius*.

Comments: Willow throughout site but mainly concentrated along river. Part is Wainuioru Marginal Strip (not legally protected for conservation).

Notes: Ref. Ecol. Site Inventory Nos. 836, 844.

PAHAOA RIVER TRIBUTARY BUSH

Site no.: EW2318

Grid ref: T27 440955

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system: Rolling, dissected hill country

Principal landform: Gully

Vegetation type: Shrubland with emergent trees.

Dominant species: Not known.

Other species: Not known.

Significance: Significant plant : *Nothofagus* (Secondary)

Comments: Probably fire-induced scrub which has left a small pocket of trees in the gully. Similar but better than 2319 (RAP 122), according to owner, although this one is secondary, whereas 2319 is a primary remnant.

POU HILL BUSH REMNANTS

Site no.: EW2335

Grid ref: T27 370955

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Gully

Vegetation type: Closed forest, open forest, shrubland.

Dominant species: Not known.

Other species: Not known.

WAINUIORU

Site no.: EW2211 **Grid ref:** T27 334953 **Source:** Sawyer *et al.* 1998
Area: 70 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Hill country
Principal landform: Gully

Site description: Treeland gully.

Vegetation type: Treeland, shrubland.

Dominant species: *Kunzea ericoides*, *Griselinia* sp., *Dacrycarpus dacrydioides*, *Sophora* sp., *Podocarpus totara*

Other species: Not known.

Significance: Significant plants: *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Sophora microphylla*?, *Cordyline australis*.

Comments: Understorey badly affected by grazing, lacking in places. Site appears to encompass Q3, a small gully on true left which appears to contain shrubland (T27 328943).

SPRING GROVE BUSH

Site no.: EW2231 **Grid ref:** S27 263945 **Source:** Sawyer *et al.* 1998
Area: 8 (3.4) ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*.

Other species: *Elaeocarpus dentatus*, *Pseudopanax crassifolius*, *Leptospermum scoparium*, *Sophora tetraptera*.

Recommendation: Needs a better look.

Comments: Quite similar to 2230. Partially protected - QEII So 5/7/85 (4.6 ha).

Notes: The above information is based on the original study site, which comprised 8 ha; the RAP is estimated to be c.3.4 ha.

TAWHIRIWAIMANUKA STREAM

Site no.: EW2233 **Grid ref:** S27 290947 **Source:** Sawyer *et al.* 1998
Area: 40 (18) ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Terrace **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tree-shrubland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Alectryon excelsus*, *Sophora microphylla*, *Sophora tetraptera*, *Cordyline australis*

Other species: *Melicytus ramiflorus*, *Pittosporum tenuifolium*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*, *Brachyglottis repanda*, *Coprosma propinqua*, *Clematis paniculata*, *Myrsine australis*, *Pseudopanax crassifolius*, *Coprosma robusta* × *C. propinqua*, *Carmichaelia australis*, *Coprosma areolata*, *Hoberia populnea*, *Asplenium flaccidum*, *Oleraria rani*, *Hebe stricta*, *Carpodetus serratus*, *Parsonsia heterophylla*, *Coprosma robusta*, *Haloragis erecta*.

Significance: QEII Covenanted with 2229.

Comments: QEII SO 5/7/63 = 21.9 ha.

Notes: The above information is based on the original study site, which comprised 40 ha; the RAP is estimated to be c.18 ha.

WHAKARUA BUSH

Site no.: EW2212

Grid ref: T27 308944

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope hill-

Land system: Hill country, rolling downs

Principal landform: Slump scar

Vegetation type: Tall closed forest with emergents.

Dominant species: *Dacrycarpus dacrydioides*.

Other species: *Cordyline australis*, *Nestegis lanceolata*, *Knightia excelsa*.

Significance: Unusual landform—like a broad saddle, relatively flat.

WAINUIORU / CLIFTON GROVE

Site no.: EW2215

Grid ref: T27 357947

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, riser

Land system: Dissected terrace

Principal landform: Gully

Vegetation type: Tall closed forest shrubland.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*.

Other species: *Cordyline australis*, *Nestegis lanceolata*, *Leptospermum scoparium*, *Pennantia corymbosa*.

Significance: Looks interesting.

UPPER WHANGAIOTEKAPINGA STREAM TRIBUTARY

Site no.: EW2213

Grid ref: T27 317943

Source: Sawyer *et al.* 1998

Area: 40 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur (valley faces E/W)

Land system: Dissected rolling hill country

Principal landform: Gully

Vegetation type: Closed forest, treeland, shrubland.

Dominant species: *Kunzea ericoides*, *Cordyline* sp., *Sophora* sp.

Other species: Not known.

Comments: Understorey badly affected by grazing. Mudstone substrate with some limestone outcrops.

CALEDONIA SHRUBLAND

Site no.: EW2447

Grid ref: T27 587937

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully risers

Vegetation type: Tree-shrubland, pasture.

Dominant species: Not known.

Other species: *Juncus effusus*, *Discaria toumatou*, *Aciphylla squarrosa*, *Ozothamnus leptophyllus*, *Coprosma rhamnoides*, *Phormium cookianum*, *Leptospermum scoparium*, *Juncus kraussii* var. *australiensis*, *Carex geminata*.

Significance: Significant plants: *Coprosma acerosa*, *Discaria toumatou* (the latter is one of the more common plant species in this site).

Comments: Mostly pasture.

Notes: Ref. Ecol. Site Inventory No. 886.

TE UNU UNU SHRUBLAND

Site no.: EW2412

Grid ref: T27 540934

Source: Sawyer *et al.* 1998

Area: 56 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, tread

Land system: Rolling hill-downs

Principal landform: Spur

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Nothofagus solandri*.

Other species: *Corynocarpus laevigatus*, *Melicytus ramiflorus*, *Carex geminata*, *Coprosma rhamnoides*, *Ozothamnus leptophyllus*, *Carex* sp., *Pinus radiata*, *Knightia excelsa*, *Hoheria populnea*, *Carpodetus serratus*, *Laurelia novae-zelandiae*.

Comments: Large unfenced area. Mostly scrub-shrubland on tread & sideslopes with larger trees in gully floor.

Notes: Ref. Ecol. Site Inventory No. 880.

NGAKONUI SHRUBLAND

Site no.: EW2243

Grid ref: T27 355930

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, sideslope

Land system: Hill country; rolling hill country

Principal landform: Spur

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*.

Other species: *Leptospermum scoparium*.

Recommendation: Needs a better look.

AKUPE BUSH

Site no.: EW2236

Grid ref: S27 253922

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: *Dacrycarpus dacrydioides*, *Podocarpus totara*, *Prumnopitys taxifolia*.

Other species: *Sophora tetraptera*, *Hoheria populnea*, *Nestegis lanceolata*, *Melicytus ramiflorus*, *Leptospermum scoparium*, *Kunzea ericoides*, *Brachyglottis repanda*, *Coprosma grandifolia*, *Pittosporum tenuifolium*, *Salix* sp.

Significance: *Ileostylus micranthus* present (P. Hughes pers. comm.).

NGAKONUI ROAD

Site no.: EW2218

Grid ref: T27 352915

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Scarp face, gully faces (steep)

Land system: Dissected rolling hill country

Principal landform: Gully

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Nothofagus* sp.?

Other species: *Sophora microphylla*, *Knightia excelsa*, *Podocarpus totara*, *Pittosporum tenuifolium*, *Pittosporum eugenioides*, *Pseudopanax arboreus*, *Pseudopanax crassifolius*, *Hoheria populnea*, *Brachyglottis repanda*, *Cyathea medullaris*, *Lophomyrtus bullata*, *Nestegis lanceolata*, *Olearia rani?*, *Melicytus ramiflorus*, *Cordyline australis*, *Cyatbodes* sp.

Significance: Significant plants: *Sophora microphylla*, (*Nothofagus* sp.).

Recommendation: Needs further investigation to determine beech spp. present.

Comments: Shrubland in gully. 2-3 EU's present.

GLENBURN ROAD BUSH

Site no.: EW2431

Grid ref: T27 507916

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully, face, gully head

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Tall closed forest.

Dominant species: *Knightia excelsa*, *Elaeocarpus dentatus*, *Carpodetus serratus*, *Podocarpus totara*, *Prumnopitys taxifolia*.

Other species: *Corynocarpus laevigatus*, *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Coprosma rhamnoides*, *Coprosma rotundifolia*, *Cordyline australis*, *Olearia paniculata*, *Geniostoma rupestre* var. *ligustrifolium*, *Macropiper excelsum*, *Cyathea medullaris*, *Nothofagus solandri*, *Myoporum laetum*, *Myrsine salicina*, *Leptospermum scoparium*, *Dacrycarpus dacrydioides*, *Cyathea dealbata*, *Hoheria populnea*, *Ripogonum scandens*, *Brachyglottis repanda*, *Hedycarya arborea*, *Weinmannia racemosa*, *Griselinia lucida*.

Significance: Significant plants: *Corynocarpus laevigatus*, *Olearia paniculata*. Birds: whitehead, grey warbler.

Comments: Coastal-semicoastal site. Reasonable understorey with good levels of regeneration. Low canopy and weedy patches. Not fenced.

Notes: Ref. Ecol. Site Inventory No. 877.

ARAWHATA STREAM SHRUBLAND

Site no.: EW2436

Grid ref: T27 525914

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Flat-topped hill country, dissected terrace

Principal landform: Gully

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Leptospermum scoparium*.

Other species: *Erica lusitanica*, *Pinus radiata*, *Cordyline australis*, *Elaeocarpus dentatus*, *Knightia excelsa*, *Kunzea ericoides*, *Griselinia lucida*.

Comments: Marine modified hill country.

Notes: Ref. Ecol. Site Inventory No. 879.

HUATOKITOKI STREAM SHRUBLAND

Site no.: EW2434

Grid ref: T27 506905

Source: Sawyer *et al.* 1998

Area: 68 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully, sideslope

Land system: Dissected hill country or terrace

Principal landform: Spur

Vegetation type: Shrubland.

Dominant species: *Erica lusitanica*, *Leptospermum scoparium*, *Kunzea ericoides*, *Pomaderris* aff. *phyllicifolia*, *Ozothamnus leptophyllus*.

Other species: *Tbelymitra longifolia*, *Helicbrysum bellidioides*, *Microtis unifolia*, *Olearia arborescens*, *Pseudopanax arboreus*, *Coprosma rhamnoides*, *Coprosma microcarpa*, *Olearia rani*, *Olearia paniculata*, *Myoporum laetum*, *Coprosma robusta*, *Gaultheria antipoda?* *Leucopogon fasciculatus*, *Hebe stricta*, *Cyathea colensoi*, *Cyathodes fraseri*, *Corynocarpus laevigatus*, *Phormium cookianum*, *Cyathea dealbata*, *Carpodetus serratus*, *Melicytus ramiflorus*, *Hoheria populnea*, *Cyathea medullaris*, *Cordyline australis*.

Comments: Mostly secondary, semi-coastal. Marine modified hill country, flat tops.

HUANGARUA RIVER

Site no.: EW2111

Grid ref: S27 202906

Source: Sawyer *et al.* 1998

Area: 40 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Limestone bluffs

Land system: Downland

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Hoheria populnea*, *Sophora* sp.

Other species: Not known.

Recommendation: Bluffs may be *Simplicia* habitat.

Comments: Mainly all secondary, not many forests on this land surface. Scattered heavily fragmented patches of regenerating *Leptospermum scoparium*, especially on the margins. Occasional *Hoheria* sp., *Sophora* sp.

WAINUIORU RIVER

Site no.: EW2333

Grid ref: T27 387905

Source: Sawyer *et al.* 1998

Area:

75 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur crest

Land system: Hill country

Principal landform: Spur line

Vegetation type: Shrubland.

Dominant species: Not known.

Other species: Not known.

Comments: Logged. A long thin strip of vegetation down to 2920.

HUATOKITOKI STREAM SHRUBLAND

Site no.: EW2435

Grid ref: T27 517906

Source: Sawyer *et al.* 1998

Area: 22 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Flat topped hill country or terrace

Principal landform: Gully

Vegetation type: Shrubland

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Kunzea ericoides*.

Other species: *Cordyline australis*, *Carpodetus serratus*, *Corynocarpus laevigatus*, *Myoporum laetum*, *Knightia excelsa*, *Pinus radiata*, *Pomaderris* aff. *phylicifolia*, *Pteridium esculentum*, *Nothofagus solandri*, *Elaeocarpus dentatus*, *Pseudopanax arboreus*, *Pseudopanax crassifolius*, *Erica lusitanica*.

Comments: Secondary, semi-coastal, marine modified hill country.

Notes: Ref. Ecol. Site Inventory No. 878.

NGARARA STREAM SHRUBLAND

Site no.: EW2814

Grid ref: S27 227898

Source: Sawyer *et al.* 1998

Area: 11 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*.

Other species: Not known.

GLENBURN ROAD / WHATIPU STREAM

Site no.: EW3105 **Grid ref:** T27 502876 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Coastal **Altitude:**
Other landform: Colluvial fan footslope **Land system:** Terrace (marine),
colluvial fan
Principal landform: Terrace tread

Vegetation type: Treeland.

Dominant species: *Corynocarpus laevigatus*, *Myoporum laetum*, *Cordyline australis*.

Other species: Not known.

Significance: Similar to 3107, but differs in that it also has *Myoporum laetum*.

Comments: Smaller area mostly on colluvium from a nearby debris shoot. Terrace tread overlain by a colluvial fan footslope.

Notes: Ref. Ecol. Site Inventory No. 895.

HAUTOTARA BUSH

Site no.: EW2815 **Grid ref:** S27 199871 **Source:** Sawyer *et al.* 1998
Area: 8 ha **Bioclimatic zone:** Lowland **Altitude:**
Other landform: Sideslope, footslope **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest, open forest, shrubland.

Dominant species: *Knightia excelsa*, *Carpodetus serratus*, *Cordyline australis*, *Sophora tetraptera*, *Kunzea ericoides*.

Other species: *Myrsine australis*, *Melicytus ramiflorus*, *Hoberia populnea*, *Myoporum laetum*.

Comments: Site much smaller than marked on Ecological Site Inventory maps (now approx. 8 ha).

AROHANUI

Site no.: EW2907 **Grid ref:** S27 294867 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Semi-coastal **Altitude:** 100 m
Other landform: Spur **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: Not known.

Other species: Not known.

HAUTOTARA BUSH

Site no.: EW2816 **Grid ref:** S27 190864 **Source:** Sawyer *et al.* 1998
Area: 50 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: Broadleaved species, *Ulex europaeus*, *Carpodetus serratus*, *Kunzea ericoides*.

Other species: *Sophora tetraptera*, *Cordyline australis*, *Myrsine australis*, *Hoberia populnea*, *Ozothamnus leptophyllus*, *Melicytus ramiflorus*, *Leptospermum scoparium*, *Knightia excelsa*, *Coprosma rubra*, *Coprosma rhamnoides*, *Coprosma propinqua*.

WHAKAPUNI STREAM TRIBUTARY

Site no.: EW2813 **Grid ref:** S27 214866 **Source:** Sawyer *et al.* 1998
Area: 36 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Closed forest.

Dominant species: Not known.

Other species: Not known.

DRY RIVER (DYERVILLE ROAD)

Site no.: EW2707
Area: 15 ha
Other landform:

Grid ref: S27 094857
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace
Principal landform: Sideslope

Vegetation type: Closed forest.

Dominant species: *Nothofagus solandri*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Pseudopanax crassifolius*, *Podocarpus totara*, *Sophora tetraptera*.

RUAKOKOPUTUNA ROAD

Site no.: EW2802
Area: 8 ha
Other landform:

Grid ref: S28 135856
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Downs
Principal landform: Hill slope

Vegetation type: Treeland.

Dominant species: *Kunzea ericoides*, *Ulex europaeus*.

Other species: *Podocarpus totara*, *Pinus radiata*, *Melicytus ramiflorus*, *Ozothamnus leptophyllus*, *Leptospermum scoparium*, *Cordyline australis*, *Pseudopanax arboreus*.

WHAKAPUNI TRIBUTARY BUSH

Site no.: EW2811
Area: 15 ha
Other landform: Gully, sideslope

Grid ref: S27 208854
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Spur

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Sophora* sp.

Other species: *Melicytus ramiflorus*, *Hoberia populnea*, *Cordyline australis*, *Carex geminata*, *Rubus schmidelioides*.

KAIKAIKURI STREAM

Site no.: EW2922
Area: 50 ha
Other landform: Slipface, gully

Grid ref: S27 265854
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*.

Other species: Not known.

Comments: Two fragments c.11 ha and 39 ha.

MANGATOI CREEK HEADWATERS

Site no.: EW2919
Area: 15 ha
Other landform:

Grid ref: T27 379852
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Hill country (rolling)
Principal landform: Hill side

Vegetation type: Tall closed forest.

Dominant species: Not known.

Other species: Not known.

Significance: Significant plant: *Nothofagus* ?

HIWINUI SOIL CONSERVATION RESERVE

Site no.: EW2709 **Grid ref:** S27 088848 **Source:** Sawyer *et al.* 1998
Area: 16 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Pseudopanax arboreus*, *Pinus* sp.

Other species: *Nothofagus solandri*, *Brachyglottis repanda*, *Coprosma robusta*.

Comments: Soil conservation reserve.

RUAKOKOPUTUNA ROAD BUSH

Site no.: EW2803 **Grid ref:** S27 140848 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Terrace, riser, gully, sideslope **Land system:** Downland, terrace
Principal landform: Gully

Vegetation type: Tree-shrubland.

Dominant species: *Kunzea ericoides*, *Ulex europaeus*.

Other species: *Podocarpus totara*, *Pinus radiata*, *Melicytus ramiflorus*, *Cassinina leptophylla*,
Leptospermum scoparium, *Cordyline australis*, *Pseudopanax arboreus*, *Schefflera digitata*/

BIRCH HILL, MANGAPARI, RUAKOKOPUTUNA-WHITE ROCK

Site no.: EW2804 **Grid ref:** S27 157844 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Terrace riser, sideslope (steep) **Land system:** Rolling hill country
Principal landform: Hill slope

Vegetation type: Tall closed forest, treeland.

Dominant species: *Myoporum laetum*, *Kunzea ericoides*, *Sophora tetraptera*.

Other species: *Podocarpus totara*, *Coprosma rhamnoides*, *Myrsine australis*, *Leptospermum scoparium*,
Melicytus ramiflorus, *Coprosma rubra*, *Knightia excelsa*, *Haloragis erecta*, *Carmichaelia australis*, *Hoberia*
populnea, *Macropiper excelsum*, *Brachyglottis repanda*, *Hebe stricta*, *Cordyline australis*, *Phormium*
ookianum, *Pittosporum tenuifolium*, *Sophora microphylla*, *Craspedia* sp., *Hedycarya arborea*, *Coprosma*
crassifolia, *Ozothamnus leptophyllus*, *Coprosma propinqua*, *Carex geminata*, *Coprosma robusta* ×
C. propinqua, *Pseudopanax crassifolius*, *Pseudopanax arboreus*, *Coprosma robusta*, *Clematis foetida*,
Pittosporum eugenioides *Parsonsia heterophylla*, *Rubus schmidelioides*, *Raukaua anomalus*, *Nothofagus*
solandri.

Significance: Significant plant: *Craspedia* sp.

Comments: Small eastern block not visited.

WHAKAPUNI STREAM TRIBUTARY

Site no.: EW2809 **Grid ref:** S27 215845 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: Not known.

BIG HILL BUSH

Site no.: EW2909

Grid ref: T27 343843

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Sideslope, gully, bluffs

Land system: Hill country, taipo

Principal landform: Spur crest

Vegetation type: Closed forest.

Dominant species: *Kunzea ericoides*, *Cordyline* sp.

Other species: *Knightia excelsa*, *Pbormium cookianum*, *Brachyglottis greyi*, *Sophora tetraptera*, *Melicytus ramiflorus*

RUAKOKOPUTUNA

Site no.: EW2704

Grid ref: S27 131836

Source: Sawyer *et al.* 1998

Area: 27 (11.4) ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser, terrace tread, sideslope, terrace

Land system: Terrace

Principal landform: Gully

Vegetation type: Tree-shrubland, tall closed forest.

Dominant species: *Nothofagus solandri*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Helichrysum lanceolatum*, *Pseudopanax crassifolius*, *Podocarpus totara*, *Cordyline australis*, *Nestegis lanceolata*, *Pseudopanax arboreus*, *Pbormium cookianum*, *Pinus radiata*, *Pittosporum eugenioides*, *Cyatodes juniperina*.

Comments: Partially protected—QEII SO 5/7/183 (15.6 ha).

Notes: The above information is based on the original study site (EW2704), which comprised 27 ha; RAP 469 is estimated to be c.11.4 ha.

MANGAPARI STREAM

Site no.: EW2817

Grid ref: S27 194834

Source: Sawyer *et al.* 1998

Area: 18 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Sophora microphylla*, *Alectryon excelsus*.

Other species: *Pittosporum eugenioides*, *Brachyglottis repanda*, *Carex geminata*, *Myoporum laetum*, *Coprosma propinqua*, *Sophora tetraptera*, *Clematis foetida*, *Macropiper excelsum*, *Hoheria populnea*, *Coprosma robusta* × *C. propinqua*, *Ripogonum scandens*, *Hedycarya arborea*, *Elaeocarpus dentatus*, *Melicytus ramiflorus*, *Cyathea medullaris*, *Earina mucronata*, *Metrosideros colensoi*, *Coprosma rubra*, *Coprosma rhamnoides*, *Leptospermum scoparium*, *Rubus schmidelioides*, *Passiflora tetrandra*, *Carpodetus serratus*, *Pseudopanax crassifolius*, *Helichrysum lanceolatum*, *Pittosporum tenuifolium*, *Cyathea dealbata*.

Significance: Significant plant: *Craspedia* sp.

GLENDRYNEOCH SHRUBLAND

Site no.: EW2910

Grid ref: T27 304830

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, sideslope

Land system: Hill country

Principal landform: Gully

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Kunzea ericoides*, *Sophora* sp., *Nothofagus solandri*.

Other species: Not known.

Comments: Two fragments c.29 ha and 6 ha.

GLENBURN STATION

Site no.: EW3007 **Grid ref:** T27 474829 **Source:** Sawyer *et al.* 1998
Area: 15 ha **Bioclimatic zone:** Coastal **Altitude:**
Other landform: Face, gully **Land system:** Rolling hill country
Principal landform: Colluvial fan

Vegetation type: Treeland
Dominant species: *Corynocarpus laevigatus*, exotics around homestead
Other species: Not known.
Significance: Significant plant: *Corynocarpus laevigatus*.

PUKENUI SHRUBLAND

Site no.: EW2705 **Grid ref:** S27 134823 **Source:** Sawyer *et al.* 1998
Area: 50 ha **Bioclimatic zone:** Lowland **Altitude:** 388 m
Other landform: **Land system:** Downland
Principal landform: Rolling tops

Vegetation type: Shrubland.
Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.
Other species: *Pinus radiata*.

GLENDRYNEOCH SHRUBLAND

Site no.: EW2913 **Grid ref:** T27 314820 **Source:** Sawyer *et al.* 1998
Area: 10 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope, bluff **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Closed forest, shrubland.
Dominant species: *Sophora tetraptera*, *Kunzea ericoides*, *Cordyline* sp., *Leptospermum scoparium*.
Other species: *Hebe stricta*, *Phormium cookianum*, *Cordyline australis*, *Melicytus ramiflorus*, *Coprosma rhamnoides*, *Linum monogynum*, *Aciphylla squarrosa*.

KAIKURI GULLY BUSH

Site no.: EW2914 **Grid ref:** T27 327827 **Source:** Sawyer *et al.* 1998
Area: 25 ha **Bioclimatic zone:** Semi-coastal; lowland **Altitude:** 100 m
Other landform: **Land system:** Hill country
Principal landform: Gully

Vegetation type: Shrubland.
Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Nothofagus solandri*.
Other species: *Sophora tetraptera*, *Coprosma crassifolia*, *Ozothamnus leptophyllus*.

PUKENUI #2 MAKARA STREAM - RUAKOKOPUTUNA

Site no.: EW2805 **Grid ref:** S27 147814 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Lowland **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Rolling tops

Vegetation type: Shrubland.
Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Sophora* sp.
Other species: *Lophomyrtus obcordata*, *Coprosma rubra*, *Raukawa anomalus*, *Nothofagus solandri*, *Pseudopanax crassifolius*, *Melicytus ramiflorus*, *Podocarpus totara*, *Pittosporum eugenioides*.

HONEYCOMB ROCKS BUSH

Site no.: EW3011

Grid ref: T27 460808

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Coastal

Altitude:

Other landform: Hill face

Land system: Marine terrace,
dissected rolling hill country

Principal landform: Terrace tread

Vegetation type: Treeland.

Dominant species: *Corynocarpus laevigatus*.

Other species: *Cordyline australis*, *Urtica ferox*.

Comments: Two small patches of treeland (c.2 + 1 ha) by E105.

NIKORIMA

Site no.: EW3403

Grid ref: S28 164802

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Hill face, gully riser

Land system: Rolling hill country

Principal landform: Hillslope

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: Not known.

Comments: Very similar to 3404 (RAP 482)

Notes: Ref. Ecol. Site Inventory No. 574.

TAUMANUKA

Site no.: EW3417

Grid ref: S28 195802

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest, scrub.

Dominant species: *Kunzea ericoides*, *Sophora* sp., *Leptospermum scoparium*.

Other species: *Coprosma rhamnoides*, *Cyathea medullaris*, *Hoberia populnea*, *Carex geminata*, *Melicytus ramiflorus*, *Pinus radiata*, *Knightia excelsa*, *Nestegis lanceolata*, *Cordyline australis*, *Pittosporum tenuifolium*, *Cyathea smithii*.

Significance: Birds: grey warbler.

Comments: Birds: magpie.

TAUMANUKA

Site no.: EW3418

Grid ref: S28 187796

Source: Sawyer *et al.* 1998

Area: 13 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland (tall).

Dominant species: *Leptospermum scoparium*, *Nothofagus truncata?*, *Kunzea ericoides* (emergents).

Other species: *Cordyline australis*, *Pseudopanax crassifolius*, *Hoberia populnea*, *Carpodetus serratus*, *Knightia excelsa*, *Pseudopanax arboreus*, *Nothofagus solandri*, *Brachyglottis repanda*, *Ozothamnus leptophyllus*, *Leucopogon fasciculatus*

RUAKOKOPUTUNA SHRUBLAND

Site no.: EW3310
Area: 3 ha
Other landform:

Grid ref: S28 098796
Bioclimatic zone: Lowland

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform: Large limestone face or bluff

Vegetation type: Tussockland, fernland.

Dominant species: *Phormium cookianum*, *Blechnum novae-zelandiae*.

Other species: *Rhopalostylis sapida*, *Cordyline australis*, *Kunzea ericoides*, *Nestegis lanceolata*, *Pseudopanax arboreus*, *Hebe stricta*, *Coprosma robusta*, *Sophora tetraptera*, *Myoporum laetum*, *Hoheria populnea*, *Asplenium oblongifolium*.

Significance: Significant plants: *Asplenium oblongifolium*, *Rhopalostylis sapida*. Contains suitable habitat for *Chionochoa beddei* and *Pseudopanax ferox*. Interesting and unusual landform.

NIKORIMA

Site no.: EW3404
Area: 20 ha
Other landform: Gully

Grid ref: S28 167795
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Rolling tops

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: *Juncus edgarrae*, *Kunzea ericoides*, *Meliccytus ramiflorus*, *Cordyline australis*.

Comments: Bird: magpie.

Notes: Ref. Ecol. Site Inventory No. 573.

LINKWOOD STREAM BUSH

Site no.: EW3421
Area: 25 ha
Other landform: Spur and gully system

Grid ref: S28 185765
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest, closed forest.

Dominant species: *Kunzea ericoides*, *Sophora* sp.

Other species: *Cordyline australis*, *Podocarpus totara*.

AWANUI BUSH

Site no.: EW3431
Area: 6 ha
Other landform: Footslope, tread, floodplain

Grid ref: S28 197767
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Shrubland, tall closed forest, closed forest.

Dominant species: *Leptospermum scoparium*, *Hoheria populnea*, *Sophora tetraptera*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Nestegis lanceolata*.

Other species: *Pseudopanax crassifolius*, *Podocarpus totara*, *Coprosma propinqua*, *Pittosporum tenuifolium*, *Kunzea ericoides*, *Pseudopanax arboreus*, *Cordyline australis*, *Myrsine australis*, *Melicope simplex*, *Raukawa anomalus*.

LINKWOOD BUSH

Site no.: EW3429

Grid ref: S28 193759

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur line (tread at base of site)

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Sophora microphylla*, *Pseudopanax crassifolius*.

Other species: *Cordyline australis*, *Nestegis lanceolata*, *Hoheria populnea*, *Melicytus ramiflorus*, *Brachyglottis repanda*, *Coprosma rubra*.

Significance: Appears to be fenced.

Notes: Ref. Ecol. Site Inventory No. 634.

HAITAI STREAM

Site no.: EW3406

Grid ref: S28 146753

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Rolling hill country

Principal landform: Gully

Site description: Three small patches of bush; with a strip (4th patch) on the other side of the stream.

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*, *Leptospermum scoparium*, *Ozothamnus leptophyllus* ?

Other species: *Leucopogon fasciculatus*, *Coprosma rhamnoides*.

Significance: Significant plants: *Nothofagus solandri*, *Helichrysum lanceolatum*. Disjunct forest remnants found in gully bottoms by the Haitai Stream.

Notes: Ref. Ecol. Site Inventory No. 527.

TUTURUMURI (NEAR)

Site no.: EW3407

Grid ref: S28 163752

Source: Sawyer *et al.* 1998

Area: 120 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Face, scree, slip face

Land system: Rolling dissected hill country

Principal landform: Spur line (steep)

Vegetation type: Scrub

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: Not known.

Comments: Surrounded and interplanted with pines.

STONEY CREEK

Site no.: EW3424

Grid ref: S28 170723

Source: Sawyer *et al.* 1998

Area: 130 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, sideslope, terrace tread

Land system: Rolling hill country, some terrace

Principal landform: Spur

Vegetation type: Shrubland, closed forest.

Dominant species: *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*, *Knightia excelsa*, *Melicytus ramiflorus*, *Pseudopanax arboreus*, *Cyathea dealbata*.

Other species: Not known.

Significance: Not known.

Comments: Unfenced. Canopy about 5 m high.

Notes: Ref. Ecol. Site Inventory No. 529.

OKOROPUNGA TOPS (#3)

Site no.: EW3508

Grid ref: T28 313717

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Coastal

Altitude: 223 m

Other landform: Terrace tread

Land system: Marine terrace

Principal landform: Marine beach

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Pomaderris* aff. *phylicifolia*.

Significance: Unusual landform.

Comments: Marine beach is prehistoric.

OKOROPUNGA COASTAL #1

Site no.: EW3510

Grid ref: T28 315710

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Coastal

Altitude: 10 m

Other landform: Terrace treads (old beach)

Land system: Marine terrace

Principal landform: Dune system

Site description: Series of wetlands and arid (?) sites in thin strips parallel to coast.

Vegetation type: Tussockland, sedgeland, shrubland.

Dominant species: *Cyperus ustulatus*, *Juncus kraussii* var. *australiensis*, *Bolboschoenus fluviatilis*, *Plagianthus divaricatus*. *Plantago coronopus*, *Melicytus crassifolius*, *Muehlenbeckia complexa* and pasture grasses as dominant on rock outcrops.

Other species: *Isolepis cernua*, *Lolium perenne*, *Ozothamnus leptophyllus*, *Trifolium repens*, *Cirsium vulgare*.

Significance: Birds: pipit, little pied shag.

Comments: *Plantago coronopus*, *Muehlenbeckia complexa*, and pasture grasses are dominant on rock outcrops.

OTEREI RIVER

Site no.: EW3514

Grid ref: S27 256708

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Slipface

Land system: Rolling hill country

Principal landform: Riser

Vegetation type: Scrub, tall closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Pittosporum tenuifolium*, *Sophora tetraptera*.

Other species: *Carex geminata* (small), *Pyrrosia eleagnifolia*, *Juncus kraussii* var. *australiensis*, *Carpodetus serratus*, *Leucopogon fasciculatus*, *Pneumatopteris pennigera*, *Hypolepis ambigua*, *Blechnum novae-zelandiae*, *Coprosma robusta* × *C. propinqua*, *Agrostis capillaris*, *Melicytus ramiflorus*, *Pseudopanax crassifolius*, *Pseudopanax arboreus*, *Cyathea medullaris*, *Cordyline australis*, *Phormium cookianum*, *Coprosma rhamnoides*, *Hebe stricta*, *Pomaderris* aff. *phylicifolia*, *Ozothamnus leptophyllus*.

Significance: Birds: thush, grey warbler, fantail, whitehead, paradise duck.

MANAHAU BUSH

Site no.: EW3430

Grid ref: S28 153704

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, gully

Land system:

Principal landform: Sideslope

Vegetation type: Treeland, open forest.

Dominant species: *Notbofagus solandri*, *Leucopogon fasciculatus*, *Leptospermum scoparium*.

Other species: *Clematis foetida*, *Coprosma grandifolia*, *Elaeocarpus dentatus*, *Coprosma rubra*, *Carex* sp.,

Pseudopanax crassifolius, *Coprosma rhamnoides*, *Helichrysum lanceolatum*, *Nestegis lanceolata*, *Cyathea dealbata*, *Cordyline banksii*, *Hypolepis ambigua*, *Melicytus ramiflorus*, *Earina autumnalis*, *Coriaria arborea*, *Nestegis montana*, *Hebe stricta*, *Ozothamnus leptophyllus*, *Pittosporum tenuifolium*, *Kunzea ericoides*, *Pittosporum eugenioides*, *Cordyline australis*, *Brachyglottis repanda*, *Coprosma robusta*, *Olearia rani*, *Pseudopanax arboreus*, *Carpodetus serratus*, *Ulex europaeus*, *Blechnum novae-zelandiae*.

Significance: Birds: bellbird, kingfisher, fantail (site visited 28/4/94).

Notes: Ref. Ecol. Site Inventory No. 633.

HAPUKURA BUSH REMNANT

Site no.: EW3520

Grid ref: S28 284698

Source: Sawyer *et al.* 1998

Area: 70 ha

Bioclimatic zone: Semi-coastal; coastal

Altitude:

Other landform: Gully, ridge crest, sideslope, topslope

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Scrub.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Isolepis nodosa*.

Other species: Not known.

OPOUAWE STREAM

Site no.: EW3302

Grid ref: S28 124640

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Knightia excelsa* (very local), *Nothofagus solandri*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*.

Other species: *Melicytus ramiflorus*, *Cordyline australis*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*, *Pseudopanax arboreus*, *Coprosma robusta*, *Ulex europaeus*.

Significance: Birds: Aust. harrier.

Comments: *Kunzea ericoides* forest also further down road @ S28 122633. *Leptospermum scoparium* scrub with *Ozothamnus leptophyllus* on sideslopes. Birds: blackbird, goldfinch, chaffinch, greenfinch, magpie.

TORA ROAD DUNELAND

Site no.: EW3427b

Grid ref: S28 197635

Source: On-site survey

Area: 1 ha

Bioclimatic zone:

Altitude: <20 m

Other landform:

Land system: Coastal platform

Principal landform: Low dunes

Vegetation type: (Lupin)/marram-*(Isolepis nodosa)* grassland (occasional harestail, shore bindweed, *Alyssum* sp.)(Dock)/buck-horned plantain-grasses grassland (including cocksfoot, shivery grass, Indian doab; occasional *Carex testacea* and *C. forsteri*; local penny royal).

Significance: Coastal duneland and ephemeral wetland.

Comments: Small and degraded by invasive adventive species. Heavily grazed by livestock.

EWE RIDGE

Site no.: EW3409

Grid ref: S28 142610

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country

Principal landform: Ridge face

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Sophora tetraptera*, *Cordyline australis*, *Ozothamnus leptophyllus*.

PAHAOA

Site no.: EW2916

Grid ref: T27 350825

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone: Semi-coastal

Altitude: 150 m

Other landform: Spur

Land system: Taipo

Principal landform: Gully

Vegetation type: Tall closed forest, tall closed forest with emergents, shrubland.

Dominant species: *Nothofagus solandri*, *Pseudopanax arboreus*, *Knightia excelsa*, *Leptospermum scoparium*, *Carpodetus serratus*, *Ozobamnus leptophyllus*, *Sophora tetraptera*, *Pseudopanax crassifolius*

Other species: *Macropiper excelsum*, *Cyathea medullaris*, *Cyathea dealbata*, *Aciphylla squarrosa*, *Brachyglottis lagopus*, *Astelia solandri*, *Coprosma robusta*, *Phormium cookianum*, *Coprosma rhamnoides*, *Olearia paniculata*, *Myoporum laetum*, *Griselinia littoralis*, *Brachyglottis repanda*, *Elaeocarpus dentatus*, *Nestegis lanceolata*, *Hoheria populnea*, *Pittosporum tenuifolium*, *Rhopalostylis sapida*, *Pinus radiata*, *Leucopogon fasciculatus*.

Significance: Significant plants: *Brachyglottis greyi*, *Rhopalostylis sapida*, *Brachyglottis lagopus*. Birds: tui, whitehead, grey warbler.

WAIMANGU BUSH

Site no.: EW2327

Grid ref: T27 463034

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Gully

Vegetation type: Tall closed forest with emergents.

Dominant species: *Nothofagus solandri*, *Cyathodes juniperina*, *Leucopogon fasciculatus*.

Other species: *Cyathodes fraseri*, *Pseudopanax arboreus*, *Dacrydium cupressinum*, *Dacrycarpus dacrydioides*, *Pomaderris aff. phyllicifolia*, *Pittosporum divaricatum*, *Helichrysum lanceolatum*, *Pseudopanax crassifolius*, *Coprosma robusta*, *Coprosma microcarpa*, *Coprosma linarifolia*, *Coprosma rubra*.

Significance: Significant plant: *Pittosporum divaricatum*. Gully of indigenous forest left amongst pines - Ngaumu Riparian Covenant.

Notes: Ref. Ecol. Site Inventory No. 256.

Appendix 8

UNPROTECTED NATURAL AREAS NOT CLASSED AS RAPS

PUKETOI - TARAORA JUNCTION

Site no.: EW0101

Area: 12 ha

Other landform: Sideslope

Grid ref: U24 743704

Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998

Altitude:

Land system: Rolling hill country

Principal landform: Gully

Site description: Dark shrubland, closed forest in a gully just south of Puketoi township.

Vegetation type: Closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Podocarpus totara*, *Pinus radiata*, *Hoheria populnea*, *Pseudopanax crassifolius*.

Significance: Not known.

Comments: Quite scrappy, not significant.

SAUNDERS ROAD SHRUBLAND

Site no.: EW0301

Area: 4 ha

Other landform: Sideslope, gully

Grid ref: T25 627601

Bioclimatic zone: Lowland

Source: Sawyer *et al.* 1998

Altitude:

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Ulex europaeus*.

Other species: *Hoheria populnea*, *Pinus radiata*.

Significance: Not known.

TIRAUMEA STREAM BUSH

Site no.: EW0302

Area: 5 ha

Other landform: Face

Grid ref: T25 634590

Bioclimatic zone:

Source: Sawyer *et al.* 1998

Altitude:

Land system: Rolling hill, dissected

Principal landform: Hillside

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*.

Other species: *Knightia excelsa*, *Dacrycarpus dacrydioides*, *Dacrydium cupressinum*, *Beilschmiedia tawa*, *Podocarpus totara*.

Significance: Not known.

Comments: Partially cleared to make way for pylons.

TIRAUMEA - BIRLING

Site no.: EW0305

Area:

Other landform:

Grid ref: T25 637554

Bioclimatic zone:

Source: Sawyer *et al.* 1998

Altitude:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Closed forest, shrubland.

Dominant species: Pine.

Other species: Not known.

Significance: Not known.

Comments: Pine trees now.

TE HOE SCRUB

Site no.: EW0317B

Grid ref: T25 576547

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone:

Altitude: 300 m

Other landform: Minor gullies

Land system: Rolling hill country

Principal landform: Sideslope

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Podocarpus totara*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Dacrydium cupressinum*.

Other species: *Podocarpus totara*, *Dacrydium cupressinum*, *Prumnopitys taxifolia*, *Kunzea ericoides*, *Leptospermum scoparium*, *Carpodetus serratus*, *Griselinia lucida*.

SAUNDERS ROAD BUSH

Site no.: EW0326

Grid ref: T25 609596

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Tread

Dominant species: *Podocarps*, *Beilschmiedia tawa*, *Dacrycarpus dacrydioides*.

Other species: *Carpodetus serratus*, *Earina mucronata*, *Podocarpus totara*, *Metrosideros colensoi*, *Coprosma rhamnoides*, *Pseudopanax crassifolius*, *Nestegis lanceolata*, *Pennantia corymbosa*, *Alectryon excelsus*, *Hoheria populnea*, *Melicytus ramiflorus*, *Leptospermum scoparium*, *Lophomyrtus obcordata*, *Knightia excelsa*, *Prumnopitys taxifolia*, *Coprosma areolata*.

Significance: Not known.

UNNAMED (1)

Site no.: EW0404

Grid ref: T25 695635

Source: Sawyer *et al.* 1998

Area: 90 ha

Bioclimatic zone:

Altitude:

Other landform: Hillslope

Land system: Rolling hill country

Principal landform: Face

Vegetation type: Shrubland, treeland.

Dominant species: Not known.

Other species: Not known.

Significance: Not known.

Comments: Gone.

WAITAWHITI

Site no.: EW0407

Grid ref: U25 714525

Source: Sawyer *et al.* 1998

Area: 70 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Ridge crest

Land system: Hill country

Principal landform: Sideslope

Vegetation type: Shrubland, plantation

Dominant species: *Ulex europaeus*, *Leptospermum scoparium*, *Melicytus ramiflorus*, *Pseudopanax arboreus*, Pine plantation.

Other species: *Phormium cookianum*, *Hebe stricta*, *Coriaria arborea*, *Leptospermum scoparium*, *Kunzea ericoides*.

Significance: Not known.

Comments: Secondary vegetation—exotic species common.

MAKOURA STREAM

Site no.: EW0410

Grid ref: U25 750535

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude: 280 m

Other landform: Sideslope, riser

Land system: Hill country

Principal landform: Toeslope

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Knightia excelsa*.

Other species: *Alectryon excelsus*, *Leptospermum scoparium*, *Cordyline australis*, *Coprosma rhamnoides*, *Coprosma areolata*.

Significance: Not known.

UNNAMED (2)

Site no.: EW0412

Grid ref: U25 720551

Source: Sawyer *et al.* 1998

Area: 15 ha

Bioclimatic zone:

Altitude:

Other landform: Sideslope, toeslope

Land system: Hill country

Principal landform: Gully

Vegetation type: Shrubland, tall closed.

Dominant species: Forest.

Other species: Not known.

Significance: Not known.

Comments: Nothing evident here. Pine plantation nearby.

WAIHOKE GULLY

Site no.: EW0418

Grid ref: U25 732586

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Hillslope

Land system: Hill country

Principal landform: Gully

Vegetation type: Open forest.

Dominant species: *Beilschmiedia tawa*, *Knightia excelsa*, *Hoheria populnea*, *Carpodetus serratus*, *Melicytus ramiflorus*, *Parsonsia heterophylla*, *Coprosma rhamnoides*, ferns.

Other species: *Hedycarya arborea*, *Leptospermum scoparium*, *Olearia rani*, *Pseudopanax arboreus*, *Raukaua anomalus*, *Ripogonum scandens*, *Metrosideros* sp., *Olearia virgata*, *Cyathea dealbata*, *Rubus schmidelioides*, *Metrosideros fulgens*, *Coprosma rotundifolia*, *Asplenium flaccidum*, *Phymatosorus pustalatus*, *Schefflera digitata*, *Dicksonia squarrosa*, *Hypolepis ambigua*, *Rubus cissoides*.

Significance: Birds: kingfisher, paradise sheld, magpie, blackbird.

Comments: Highly degraded forest remnant, grazed, windthrow. Few canopy trees left.

KOROMIKO BUSH

Site no.: EW0419

Grid ref: U25 717597

Source: Sawyer *et al.* 1998

Area: 130 ha

Bioclimatic zone:

Altitude:

Other landform: Gully, sideslope, topslope, ridgeline

Land system: Hill country

Principal landform: Spur

Vegetation type: Closed forest, shrubland

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Ulex europaeus*.

Other species: *Melicytus ramiflorus*, *Pseudopanax crassifolius*, *Cordyline australis*, *Ozothamnus leptophyllus*.

Comments: Appears to be a shrubland with broadleaved species becoming dominant. May be cleared for forestry.

TARAORA JUNCTION SHRUBLAND

Site no.: EW0421 **Grid ref:** U25 725683 **Source:** Sawyer *et al.* 1998
Area: 15 ha **Bioclimatic zone:** Lowland, semi-coastal **Altitude:**
Other landform: Sideslope, gullyhead **Land system:** Hill country
Principal landform: Gully

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Leptospermum scoparium*.

Other species: *Hoberia populnea*, *Leucopogon fasciculatus*, *Pinus radiata*.

Significance: Not known.

TARAORA

Site no.: EW0423 **Grid ref:** U25 768698 **Source:** Sawyer *et al.* 1998
Area: 90 ha **Bioclimatic zone:** **Altitude:**
Other landform: Gully, sideslope, ridgeline, crest, bluff. **Land system:**
Principal landform: Spur

Vegetation type: Tall closed forest, closed forest, shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Podocarpus totara*, *Hoberia populnea*.

Other species: Not known.

Significance: Not known.

UNNAMED (3)

Site no.: EW0425 **Grid ref:** U25 762665 **Source:** Sawyer *et al.* 1998
Area: ha **Bioclimatic zone:** **Altitude:**
Other landform: **Land system:**
Principal landform:

Dominant species: Pine.

Other species: Not known.

Significance: Not known.

Comments: Exotic.

WAIHOKI VALLEY

Site no.: EW0429 **Grid ref:** U25 775588 **Source:** Sawyer *et al.* 1998
Area: 9 ha **Bioclimatic zone:** **Altitude:**
Other landform: Footslope **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest, plantation.

Dominant species: Pine, eucalyptus.

Other species: Not known.

Significance: Not known.

SAIOAKURA STREAM SHRUBLAND

Site no.: EW0507 **Grid ref:** U25 816596 **Source:** Sawyer *et al.* 1998
Area: 5 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Spur, gully, slip scar, sideslope, terrace tread? **Land system:** Hill country
Principal landform: Oxbow

Vegetation type: Shrubland, wetland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Sophora tetraptera*.

Other species: *Podocarpus totara*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Brachyglottis repanda*, *Phormium cookianum*, *Hebe stricta*, *Dicksonia fibrosa*, *Pseudopanax arboreus*, *Prumnopitys taxifolia*, *Cordyline australis*, *Melicytus ramiflorus*, *Dacrycarpus dacrydioides*, *Coprosma rhamoides*, *Coprosma propinqua*, *Ozothamnus leptophyllus*, *Coprosma rigida*.

Significance: Not known.

Comments: Degraded wetland and remnant oxbow in pasture. Most of mapped area has been cleared. Some low secondary manuka shrubland remains.

MARAINANGA ROAD SHRUBLAND

Site no.: EW0518

Grid ref: U25 846575

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Riser

Land system: Hill country

Principal landform: Gully

Vegetation type: Closed forest, shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, grass.

Other species: Not known.

Significance: Not known.

Comments: No understorey—grazed (cattle & sheep). *Kunzea ericoides* 3-4m.

MARAINANGA ROAD SHRUBLAND

Site no.: EW0519

Grid ref: U25 875570

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone:

Altitude:

Other landform: Gully, spur

Land system: Low taipo

Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: Not known.

Other species: Not known.

Significance: Not known.

Comments: Gone - scrub cleared 1994. (IG.5/12/94)

GLENCOE

Site no.: EW0522

Grid ref: U25 873608

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone:

Altitude:

Other landform: Bluff

Land system: Terrace

Principal landform: Terrace riser

Vegetation type: Tall closed forest, closed forest.

Dominant species: *Kunzea ericoides*, pasture.

Other species: Not known.

Significance: Not known.

Comments: Gone - a few tall *Kunzea ericoides* over pasture.

OWAHANGA RIVER BUSH A

Site no.: EW0529

Grid ref: U25 902594

Source: Sawyer *et al.* 1998

Area: 25 ha

Bioclimatic zone:

Altitude:

Other landform: Sideslope, slump, scar

Land system: Terrace

Principal landform: Terrace riser

Vegetation type: Closed forest, tall closed forest.

Dominant species: *Populus* sp., *Acacia* sp., *Salix* sp., *Pinus* sp.

Other species: Not known.

Significance: Not known.

Comments: Exotic.

Other species: *Cordyline australis*, *Leptospermum scoparium*, *Hoheria populnea*, *Sophora tetraptera*, *Pyrrosia eleagnifolia*.

Significance: Not known.

Comments: Understorey is non-existent—heavily browsed. Canopy is still intact.

WAIOTAIKI STREAM SHRUBLAND

Site no.: EW0602

Grid ref: U2 940670

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone:

Altitude:

Other landform: Scree, sideslope

Land system: Hill country

Principal landform: Outcrops

Vegetation type: Closed forest, shrubland.

Dominant species: *Ozothamnus leptophyllus*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Cordyline australis*, *Cortaderia toetoe*, *Olearia solandri*, *Ulex europaeus*, *Melicytus ramiflorus*, *Corynocarpus laevigatus*.

Significance: Not known.

Comments: Small area of closed forest.

WAIOTAIKI STREAM

Site no.: EW0603

Grid ref: U25 952587

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Populus* sp., *Eucalyptus*, *Salix* sp., *Quercus* sp.

Other species: Not known.

Significance: Not known.

Comments: Exotic.

WAIRERE

Site no.: EW0815

Grid ref: T25 511440

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Hillside

Site description: 2 patches of bush on left of Daggs Road/Wairere Road, just after junction.

Vegetation type: Tall closed forest with emergents, treeland.

Dominant species: *Podocarpus totara*, *Beilschmiedia tawa*, *Nestegis lanceolata*, *Pittosporum eugenioides*.

Other species: *Prumnopitys taxifolia*, *Melicytus ramiflorus*, *Pseudopanax crassifolius*, *Leptospermum scoparium*, *Pennantia corymbosa*, *Aristotelia serrata*.

Significance: Not known.

Comments: Possibly protected in QEII MS 5/07 071?

NGAPIRI TREELAND

Site no.: EW0819

Grid ref: T25 507495

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Treeland.

Dominant species: *Sophora microphylla*, *Hoheria populnea*, pasture.

Other species: Not known.

Significance: Not known.

Comments: Looks similar to Ngapapa (RAP 121).

MT BAKER

Site no.: EW0831

Grid ref: T25 468551

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Closed forest.

Dominant species: *Pinus* sp., *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*.

Other species: Not known.

Significance: Not known.

Comments: Marked on the map as pines but appears to be indigenous surrounded by a pine shelterbelt. Probably secondary.

WAIRIRI ROAD SHRUBLAND

Site no.: EW0835

Grid ref: T25 510430

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Footslope

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Pseudopanax arboreus*, *Coprosma robusta*, *Hebe stricta*.

Other species: Not known.

Significance: Not known.

Comments: May be indigenous vegetation on the other side of the ridge (not inspected).

INVERNELL SHRUBLAND

Site no.: EW1002

Grid ref: T25 688492

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone:

Altitude:

Other landform: Headland, spur

Land system: Terrace? Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Cyathea medullaris*, *Carpodetus serratus*, *Hoberia populnea*, *Leptospermum scoparium*.

Other species: Not known.

Significance: This site is *Pinus radiata* now.

AXEHANDLE STREAM, WHAREAMA RIVER

Site no.: EW1003

Grid ref: T25 675485

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Rolling hill country, dissected

Principal landform: Slip face

Vegetation type: Treeland.

Dominant species: Pines.

Other species: Not known.

Significance: Not known.

Comments: Probably pine (J. Hansen, pers. comm.).

ABERFOYLE

Site no.: EW1005

Grid ref: U25 723403

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully head, sideslope

Land system: Hill country

Principal landform: Gully

Vegetation type: Scrub.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Ozothamnus leptophyllus*.

Other species: *Coprosma rhamnoides*, *Cordyline australis*, *Brachyglottis repanda*, *Pomaderris* aff. *phyllicifolia*, *Pteridium esculentum*, *Carex geminata*.

Significance: Not known.

RAHUI, TANAWA ROAD

Site no.: EW1006

Grid ref: U25 727417

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, sideslope

Land system:

Principal landform: Gully

Vegetation type: Closed forest amongst pine trees, scrub, plantation.

Dominant species: *Eucalyptus* sp., *Pinus radiata*, *Knightia excelsa*, *Kunzea ericoides*, *Chamaecyparis lawsoniana*, *Leptospermum scoparium*.

Other species: *Coprosma robusta*, *Myoporum laetum*, *Hoberia populnea*, *Macropiper excelsum*, *Phormium cookianum*, *Carpodetus serratus*, *Pseudopanax crassifolius*, *Brachyglottis repanda*.

Significance: Not known.

Comments: Mostly exotic plantation. A small area of *Knightia excelsa* and *Kunzea ericoides* forest is present on the spur. *Leptospermum scoparium* and *Kunzea ericoides* scrub dominate the steep country on the sides of the valley, however, these are also very small.

ANNENDALE ROAD

Site no.: EW1008

Grid ref: U25 710452

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform: Gully

Vegetation type: Shrubland, scrub, pasture.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Sophora* sp., pasture.

Other species: *Leucopogon fasciculatus*, *Hoberia populnea*, *Pittosporum tenuifolium*, *Hebe stricta*, *Coprosma robusta*, *Cordyline australis*, *Phormium cookianum*, *Coriaria arborea*, *Melicytus ramiflorus*, *Carex geminata*.

Significance: Not known.

TANAWA BUSH

Site no.: EW1010

Grid ref: U25 747473

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur line

Land system: Rolling hill country

Principal landform: Sideslope

Dominant species: *Kunzea ericoides*.

Other species: *Cordyline australis*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Sophora tetraptera*.

TANAWA

Site no.: EW1013
Area: 18 ha
Other landform:

Grid ref: U25 755460
Bioclimatic zone: Lowland

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully

Vegetation type: Scrub, plantation.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Beilschmiedia tawa*, *Pinus radiata*, *Ulex europaeus*, *Eucalyptus* sp.

Other species: *Laurelia novae-zelandiae*, *Melicytus ramiflorus*, *Hoberia populnea*, *Coprosma areolata*, *Carpodetus serratus*, *Cyathea medullaris*, *Elaeocarpus dentatus*, *Knightia excelsa*, *Cyathea dealbata*, *Pittosporum eugenioides*.

Significance: Not known.

Comments: Part of site is exotic plantation.

ANNENDALE BUSH

Site no.: EW1014
Area: 10 ha
Other landform: Footslope

Grid ref: T25 681451
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest, shrubland.

Dominant species: Introduced trees—garden.

Other species: Not known.

Significance: Not known.

Comments: Possibly exotic/garden as this appears to be a homestead.

TE MAI ROAD BUSH

Site no.: EW1018
Area: 80 ha
Other landform:

Grid ref: U25 782414
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform:

Vegetation type: Pasture.

Dominant species: *Kunzea ericoides*, pasture.

Other species: Not known.

Significance: Not known.

Comments: A small portion of *Kunzea ericoides* forest remains on the western portion. 6/6/96 not found in aerial photo search - may have been cleared.

TE MAI BUSH

Site no.: EW1102
Area: ha
Other landform:

Grid ref: U25 790450
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Beilschmiedia tawa*, *Melicytus ramiflorus*, mixed broadleaved sp.

Other species: *Cyathea cunninghamii*, *Metrosideros fulgens*, *Beilschmiedia tawa*, *Melicytus ramiflorus*, *Knightia excelsa*, *Elaeocarpus dentatus*, *Pittosporum eugenioides*, *Griselinia lucida*, *Hoberia populnea*, *Myrsine australis*, *Sophora microphylla*, *Cyathea medullaris*, *Leptospermum scoparium*, *Coprosma areolata*.

Significance: Appears to have more affinities to lowland bioclimatics than coastal zones. *Cyathea cunninghamii* present.

Notes: Ref. Ecol. Site Inventory No. 794.

MATAIKONA RIVER

Site no.: EW1110

Grid ref: U25 855477

Source: Sawyer *et al.* 1998

Area: 100 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, gully

Land system: Terrace, hill country

Principal landform: Terrace riser

Vegetation type: Scrub.

Dominant species: *Pinus radiata*, *Leptospermum scoparium*, *Ulex europaeus*, *Kunzea ericoides*, *Sophora* sp. (locally common).

Other species: *Phormium cookianum*, *Alectryon excelsus*, *Nothofagus solandri*, *Sophora tetraptera*, *Corynocarpus laevigatus*, *Melicytus ramiflorus*, *Cordyline australis*, *Brachyglottis repanda*, *Knightsia excelsa*.

Significance: Not known.

WAIHI

Site no.: EW1303

Grid ref: T26 450374

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude: 240 m

Other landform:

Land system:

Principal landform: Spur side

Site description: 3 small patches of scrubby forest on hillside. Photo #D40-41.

Vegetation type: Tree shrubland.

Dominant species: *Kunzea ericoides*, *Sophora* sp., *Beilschmiedia tawa*.

Other species: *Dacrycarpus dacrydioides*, *Elaeocarpus dentatus*, *Pseudopanax arboreus*, *Podocarpus totara*, *Cordyline australis*, *Alectryon excelsus*.

Significance: Not known.

Comments: *Beilschmiedia tawa* forest in gully.

MANGAREIA ROAD #1

Site no.: EW1315

Grid ref: T26 494378

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude: 300 m

Other landform:

Land system: Hill country

Principal landform: Gully

Dominant species: Pine.

Other species: Not known.

Significance: Not known.

UNNAMED (4)

Site no.: EW1320

Grid ref: T26 515385

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully

Land system: Hill country

Principal landform: Spur

Site description: 2 patches of *Leptospermum scoparium* scrub on south facing hillside and gully.

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Pinus* sp.

Other species: Not known.

Significance: Not known.

BIDEFORD

Site no.: EW1322

Grid ref: T26 514335

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude: 120 m

Other landform: Terrace riser, slip face

Land system: Hill country

Principal landform: Gully

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Prumnopitys taxifolia*, *Sophora microphylla*.

Other species: Not known.

Significance: Not known.

Comments: Adequate information in the Forest Heritage Application. A small number of kahikatea in a paddock (A. Townsend pers. comm.).

UNNAMED (5)

Site no.: EW1330

Grid ref: T26 446357

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Treeland.

Dominant species: *Kunzea ericoides*.

Other species: Not known.

Significance: Not known.

MANUAREIA ROAD SHRUBLAND

Site no.: EW1339

Grid ref: T26 486395

Source: Sawyer *et al.* 1998

Area: 35 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system:

Principal landform:

Dominant species: *Beilschmiedia tawa*, *Carpodetus serratus*.

Other species: *Knightsia excelsa*, *Coprosma propinqua*, *Hoberia populnea*, *Leptospermum scoparium*, *Coprosma areolata*, *Pittosporum eugenioides*, *Rubus schmidelioides*, *Dacrycarpus dacrydioides*, *Pennantia corymbosa*.

Significance:

Comments: Large portion gone. Small southern part is *Beilschmiedia tawa*-*Carpodetus serratus* forest. Quite scruffy. Cleared in 1970.

MT CLYDE ROAD BUSH

Site no.: EW1341

Grid ref: T26 531330

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Cordyline australis*, *Sophora microphylla*, *Hoberia populnea*, *Coprosma rhamnoides*.

Significance: Not known.

MARINGI ROAD BUSH

Site no.: EW1401 **Grid ref:** T26 560395 **Source:** Sawyer *et al.* 1998
Area: 300 ha **Bioclimatic zone:** **Altitude:** 360 m
Other landform: Spur, sideslope **Land system:** Hill country
Principal landform: Gully

Site description: Large area of scrub east of Maringi Road.

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*.

Other species: Not known.

Significance: Not known.

Comments: Could have ecological value. May now be planted in pines. Much smaller than the photographs.

COOPERS ROAD BUSH

Site no.: EW1403 **Grid ref:** T26 576380 **Source:** Sawyer *et al.* 1998
Area: 5 ha **Bioclimatic zone:** Semi-coastal, lowland **Altitude:**
Other landform: Sideslope **Land system:**
Principal landform: Gully

Vegetation type: Tall closed forest?

Dominant species: *Alectryon excelsus*, *Podocarpus totara*.

Other species: *Pennantia corymbosa*, *Pseudopanax crassifolius*, *Sophora tetraptera*, *Leptospermum scoparium*, *Hoberia populnea*, *Nestegis lanceolata*, *Melicytus ramiflorus*, *Knightia excelsa*, *Beilschmiedia tawa*, *Cordyline australis*, *Kunzea ericoides*, *Prumnopitys taxifolia*.

Comments: Bird: goldfinch.

UNNAMED (6)

Site no.: EW1408 **Grid ref:** T26 535345 **Source:** Sawyer *et al.* 1998
Area: 30 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 260 m
Other landform: Face **Land system:** Hill country
Principal landform: Hillside

Site description: 3 small patches of kanuka shrubland on SE facing hillside.

Vegetation type: Scrub.

Dominant species: *Ulex europaeus*, *Leptospermum scoparium*, *Pinus radiata*.

Other species: *Hoberia populnea*, *Kunzea ericoides*, *Dacrycarpus dacrydioides*.

Significance: Not known.

Comments: Not significant.

UNNAMED (7)

Site no.: EW1409 **Grid ref:** T26 543339 **Source:** Sawyer *et al.* 1998
Area: ?ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully **Land system:**
Principal landform: Spur

Vegetation type: Scrub (scattered).

Dominant species: *Leptospermum scoparium*.

Other species: *Hoberia populnea*, *Sophora tetraptera*, *Ulex europaeus*, *Cordyline australis*.

Significance: Not known.

Comments: Very similar to 1408, but more patchy. Not likely to be significant.

UNNAMED (8)

Site no.: EW1413
Area: 6ha
Other landform:

Grid ref: T26 548297
Bioclimatic zone: Lowland

Source: Sawyer *et al.* 1998
Altitude: 360m
Land system: Hill country
Principal landform: Hillside

Vegetation type: Shrubland.

Dominant species: *Kunzea ericoides*.

Other species: Not known.

Significance: Owner did not allow a visit. Most probably *Kunzea ericoides* shrubland or scrub with *Coprosma crassifolia* present.

MAUNGAPAKEHA STREAM/END HILL

Site no.: EW1420
Area: 6.5 ha
Other landform: Gully, riser

Grid ref: T26 587280
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude: c.260m
Land system: Hill country
Principal landform: Gully head

Site description: 4 small patches of vegetation that may be pines or beech.

Vegetation type: Tall closed forest, closed forest, treeland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: Not known.

Significance: Not known.

FLAG CREEK

Site no.: EW1424
Area: 13 ha
Other landform:

Grid ref: T26 653348
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully

Vegetation type: Scrub.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Carex geminata*, *Sophora tetraptera*.

Significance: Not known.

LANGDALE-MAUNGAPAKEHA

Site No: EW1426
Area: 10 ha
Other landform: Face

Grid ref: T26 652277
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully

Vegetation type: Closed forest.

Dominant species: *Kunzea ericoides*.

Other species: *Cordyline australis*, *Leptospermum scoparium*, *Carex geminata*.

Significance: Not known.

Notes: Ref. Ecol. Site Inventory No. 785.

SEVEN OAKS BUSH

Site no.: EW1432
Area: 1 ha
Other landform:

Grid ref: T26 623240
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully head

Vegetation type: Tall closed forest, closed forest.

Dominant species: *Knightsia excelsa*, *Elaeocarpus dentatus*, *Kunzea ericoides*.

Other species: *Podocarpus totara*, *Myoporum laetum*, *Macropiper excelsum*, *Nestegis cunninghamii*, *Cordyline australis*, *Melicytus ramiflorus*, *Hoheria sexstylosa*, *Hedycarya arborea*, *Leucopogon fasciculatus*, *Coprosma rhamnoides*, *Carpodetus serratus*.

Significance: Now very reduced (24/5/94). If *Rhopalostylis sapida* correct, then significant.

BLAIRLOGIE ROAD

Site no.: EW1434

Grid ref: T26 610220

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone:

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Site description: Bush filled gully south of road about 1 km past Blairlogie Station.

Vegetation type: Plantation, scrub.

Dominant species: Pine.

Other species: *Coprosma robusta*, *Brachyglottis repanda*, *Leptospermum scoparium*, *Cordyline australis*, *Pteridium esculentum*.

Significance: Not known.

Comments: Pine plantation and scrub with young pines planted throughout.

BLAIRLOGIE STREAM

Site no.: EW1435

Grid ref: T26 597215

Source: Sawyer *et al.* 1998

Area:

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Hill country (rolling)

Principal landform: Gully

Site description: Long narrow band of bush in gully.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Sophora tetraptera*.

Other species: *Cyathea medullaris*, *Myoporum laetum*, *Cordyline australis*.

Significance: Not known.

BLAIRLOGIE

Site no.: EW1436

Grid ref: T26 609235

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone:

Altitude: 170 m

Other landform: Gully

Land system: Rolling hill country

Principal landform: Spur side

Vegetation type: Plantation.

Dominant species: Pine, Lombardy poplars.

Other species: Not known.

Significance: Not known.

Comments: Pines are different ages.

WHAERAMA BUSH

Site no.: EW1438

Grid ref: T27 660229

Source: Sawyer *et al.* 1998

Area: 6 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Terrace

Principal landform: Tread

Vegetation type: Treeland, tall closed forest.

Dominant species: *Salix* sp., *Populus* sp.

Other species: Not known.

Significance:

Comments: Appearing to be mostly comprised of willow, with a stand of tall closed forest (*Dacrycarpus dacrydioides*?). By the bridge on the true left of the tributary at confluence with Whareama river.

UNNAMED (9)

Site no.: EW1441
Area: ha
Other landform:

Grid ref: T26 625228
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform:

Vegetation type: Plantation.
Dominant species: Pine.
Other species: Not known.
Significance: Not known.

AWATEA SHRUBLAND

Site no.: EW1445
Area: 17 ha
Other landform: Spur, gully

Grid ref: T26 654306
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Treeland, shrubland.
Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.
Other species: *Cordyline australis*, *Podocarpus totara*.
Significance: Not known.
Notes: Ref. Ecol. Site Inventory No. 787.

SPRINGHILL/MARINGI

Site no.: EW1446
Area: 17 ha
Other landform:

Grid ref: T26 619395
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Hillside

Vegetation type: Scrub.
Dominant species: *Leptospermum scoparium*.
Other species: *Hoheria populnea*, *Kunzea ericoides*, *Ozothamnus leptophyllus*, *Juncus edgarae*.
Significance: Site may be gone as not visible on aerial photo search.
Comments: Site picked up off NZMS 260.

UNNAMED (10)

Site no.: EW1447
Area: 40 ha
Other landform:

Grid ref: T26 601339
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform:

Vegetation type: Shrubland, scrub, plantation.
Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, pasture, *Pinus radiata*.
Other species: *Agrostis capillaris*, *Kunzea ericoides*, *Eucalyptus* sp., *Meliccytus ramiflorus*, *Cordyline australis*.
Significance: Not known.
Comments: Cattle throughout, site not particularly significant.

UNNAMED (11)

Site no.: EW1448
Area: 100 ha
Other landform:

Grid ref: T26 600365
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform:

Vegetation type: Shrubland.

Dominant species: Not known.
Other species: Not known.
Significance: May now be cleared as not visible on aerial photo.
Comments: Site identified from NZMS 260 topographic map.

UNNAMED (12)

Site no.: EW1449 **Grid ref:** T26 598380 **Source:** Sawyer *et al.* 1998
Area: 80 ha **Bioclimatic zone:** **Altitude:**
Other landform: **Land system:**
Principal landform:

Vegetation type: Shrubland.
Dominant species: Not known.
Other species: Not known.
Significance: May now be cleared.
Comments:

WHAKARORA SHRUBLAND

Site no.: EW1454 **Grid ref:** T26 653316 **Source:** Sawyer *et al.* 1998
Area: 4 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Steep bluff, tread **Land system:**
Principal landform: Steep riser

Vegetation type: Shrubland, tussockland.
Dominant species: *Sophora tetraptera*, *Leptospermum scoparium*, *Kunzea ericoides*, *Carex geminata*.
Other species: *Hebe stricta*, *Cordyline australis*, *Melicytus ramiflorus*, *Phormium cookianum*, *Cotoneaster glaucophyllus*, *Parsonsia capsularis*, *Passiflora tetrandra*, *Brachyglottis repanda*.
Significance: Not known.
Comments: Garden rubbish tipped from road into site.

TINUI-CASTLEPOINT ROAD

Site no.: EW1501 **Grid ref:** T26 690308 **Source:** Sawyer *et al.* 1998
Area: 10 ha **Bioclimatic zone:** **Altitude:**
Other landform: Spur **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Tall closed forest.
Dominant species: *Kunzea ericoides*, *Eucalyptus* sp., *Pinus radiata*.
Other species: *Salix fragilis*, *Leptospermum scoparium*.
Significance: Not known.
Comments: Site half planted in pine trees—possible that some of the site may remain.

TINUI (ALFREDTON ROAD)

Site no.: EW1503 **Grid ref:** T26 691351 **Source:** Sawyer *et al.* 1998
Area: 14 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Face **Land system:** Rolling hill country
Principal landform: Gully

Vegetation type: Scrub.
Dominant species: Pasture, *Pinus radiata*, *Ulex europaeus*, *Kunzea ericoides*, *Leptospermum scoparium*.
Other species: *Cordyline australis*.
Significance: Not known.
Comments: Two patches (c.10 ha and 4 ha) on map in Sawyer *et al.* 1998).

TINUI VALLEY

Site no.: EW1512 **Grid ref:** U26 767367 **Source:** Sawyer *et al.* 1998
Area: 40 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Gully head

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Pinus* sp., *Kunzea ericoides*, *Myoporum laetum*, *Eucalyptus* sp.

Other species: *Cordyline australis*, *Nestegis lanceolata*, *Melicytus ramiflorus*, *Pomaderris* aff. *phylicifolia*, *Leptospermum scoparium*, *Hoberia populnea*, *Pteridium esculentum*, *Cyathea medullaris*, *Cyathea smithii*, *Sophora tetraptera*.

Significance: Birds: fantail, chaffinch, grey warbler.

Comments: Eucalyptus planted in site & pines planted around (outside) site.

WHAKATAKI FOREST

Site no.: EW1513 **Grid ref:** U26 763350 **Source:** Sawyer *et al.* 1998
Area: 200 ha **Bioclimatic zone:** Semi-coastal, lowland **Altitude:**
Other landform: Gully, sideslope, ridgeline, ridgecrest **Land system:** Hill country
Principal landform: Spur

Site description: Large areas of shrubland with patches of tall closed forest throughout.

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Knightia excelsa*, *Leptospermum scoparium*, *Brachyglottis repanda*, *Phormium cookianum*, *Nothofagus solandri*.

Other species: *Melicytus ramiflorus*, *Asplenium oblongifolium*, *Cordyline australis*, *Hoberia populnea*, *Coprosma grandifolia*, *Ulex europaeus*, *Hebe stricta*, *Leucopogon fasciculatus*, *Coprosma robusta*, *Salix fragilis*.

Significance: Now mostly pine trees - riparian strips and small area along the road remains.

Comments: Was 500 ha; most now pine trees, maybe 200-250 ha left.

TINUI VALLEY SHRUBLAND

Site no.: EW1518 **Grid ref:** U26 715335 **Source:** Sawyer *et al.* 1998
Area: **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Sideslope

Vegetation type: Shrubland.

Dominant species: *Pinus radiata*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: *Podocarpus totara*, *Sophora tetraptera*, *Pittosporum tenuifolium*, *Crataegus monogyna*, *Cupressus macrocarpa*, *Cordyline australis*, *Pseudopanax crassifolius*, *Ulex europaeus*, *Juncus edgarrae*, *Carex geminata*, *Cyathea medullaris*.

Significance: Not known.

TINUI VALLEY BUSH

Site no.: EW1519 **Grid ref:** U26 705330 **Source:** Sawyer *et al.* 1998
Area: 10 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Tread **Land system:** Rolling hill country, terrace
Principal landform: Sideslope

Vegetation type: Tall closed forest, scrub.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Cordyline australis*, *Hoberia populnea*, *Pseudopanax crassifolius*, *Pinus radiata*, *Populus* sp., *Ulex europaeus*.

Significance: Not known.

Comments: Piece behind cemetery is *Acacia mearnsii*: planted as a firewood source.

THE TAIPOS

Site no.: EW1602

Grid ref: U26 771376

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Kunzea ericoides*, *Myoporum laetum*, *Nothofagus solandri*.

Other species: *Cyathea medullaris*, *Cyathea smithii*, *Beilschmiedia tawa*, *Hoheria populnea*, *Sophora tetraptera*, *Leptospermum scoparium*, *Knightia excelsa*, *Pseudopanax crassifolius*, *Meliclytus ramiflorus*.

Significance: Not known.

Comments: Eucalyptus has been planted into site and pines surround site.

CASTLEPOINT STREAM SHRUBLAND

Site no.: EW1603

Grid ref: U26 776310

Source: Sawyer *et al.* 1998

Area: 300 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur, ridge, sideslope

Land system: Hill country

Principal landform: Valley

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Knightia excelsa*, *Ulex europaeus*.

Other species: *Pseudopanax arboreus*, *Pittosporum tenuifolium*, *Cyathea medullaris*, *Pinus radiata*.

Significance: Part of large area with some natural vegetation.

Comments: 0.42 ha of modified primary forest = U26001 Erindale Stewardship.

Notes: Ref. Ecol. Site Inventory No. 815.

MAHITI

Site no.: EW1604

Grid ref: U26 788327

Source: Sawyer *et al.* 1998

Area: 200 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, sideslope

Land system: Hill country, terrace

Principal landform: Spurline

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Phormium cookianum*, *Brachyglottis repanda*, *Hebe stricta*, *Nothofagus solandri*.

Significance: Keysite, see 1610–1611d. Shrubland links this site with others.

WAIPORIS MARK

Site no.: EW1608

Grid ref: U26 826331

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone:

Altitude:

Other landform: Face

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Shrubland (coastal), dune slope (sandhill).

Dominant species: *Phormium cookianum*, *Coriaria arborea*, *Pinus radiata*, *Ammophila arenaria*.

Other species: *Hebe stricta* var. *macroura* (roadsides), *Ulex europaeus*, Pasture grasses, *Festuca* sp.

Significance: Not known.

Comments: Large face of scarp now in pine plantation.

TAHAARANGI TRIG SHRUBLAND

Site no.: EW1610 **Grid ref:** U26 790340 **Source:** Sawyer *et al.* 1998
Area: 70(12) ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully, sideslope, ridgeline **Land system:** Hill country
Principal landform: Spur

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Ulex europaeus*, *Coprosma robusta*, *Leptospermum scoparium*, *Kunzea ericoides*, *Sophora* sp.

Other species: *Ozothamnus leptophyllus*, *Urtica ferox*, *Phormium tenax*, *Hoberia populnea*, *Macropiper excelsum*, *Coprosma rotundifolia*, *Cyathea medullaris*, *Nothofagus solandri*, *Sophora tetraptera*, *Hedycarya arborea*, *Knightia excelsa*, *Brachyglottis repanda*, *Pseudopanax crassifolius*, *Corynocarpus laevigatus*, *Pittosporum tenuifolium*, *Melicytus ramiflorus*, *Alectryon excelsus*, *Prumnopitys taxifolia*, *Myoporum laetum*, *Cordyline australis*, *Rhopalostylis sapida*.

Significance: Keysite, see previous. *Rhopalostylis sapida* present. Both units form a scattered mosaic over the area. Partially protected QEII.

Comments: Stock have had access to area.

Notes: The above information is based on the original study site, which comprised 70 ha; this site is now estimated to be c.12 ha. Ref. Ecol. Site Inventory No. 757.

MAKAHAKAHA GULLIES

Site no.: EW1706 **Grid ref:** T26 304103 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 140 m
Other landform: **Land system:** Hill country
Principal landform: Gullies (steep)

Site description: Photo #A10-11.

Dominant species: *Kunzea ericoides*, *Sophora* sp.

Other species: *Cordyline australis*, *Lupinus arboreus*, *Alectryon excelsus*, *Podocarpus totara*.

Significance: Not known.

HUAREKA STREAM

Site no.: EW1714 **Grid ref:** T26 427254 **Source:** Sawyer *et al.* 1998
Area: 4 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Downland?
Principal landform: Gully

Dominant species: *Beilschmiedia tawa*, *Alectryon excelsus*, *Urtica ferox*, *Sambucus nigra*.

Other species: *Pennantia corymbosa*, *Melicytus ramiflorus*, *Lophomyrtus obcordata*, *Sambucus nigra*, *Rubus schmidelioides*, *Streblus heterophyllus*, *Hydrocotyle novae-zeelandiae*, *Pseudopanax crassifolius*, *Juncus edgarae*, *Dacrycarpus dacrydioides*, *Podocarpus totara*.

Significance: Birds; starling, chaffinch, grey warbler.

Comments: Woodlands Station just inside ED (near boundary with Wairarapa Plains).

HUAREKA STREAM

Site no.: EW1715 **Grid ref:** T26 437260 **Source:** Sawyer *et al.* 1998
Area: 20 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 150 m
Other landform: Spurs **Land system:** Hill country
Principal landform: Gullies

Site description: Photo #C37-38.

Dominant species: *Kunzea ericoides*.

Other species: *Podocarpus totara*, *Sophora tetraptera*, *Pseudopanax crassifolius*, *Alectryon excelsus*, *Myoporum laetum*.

Significance: Not known.

Comments: Large gaps evident in photograph.

WAIPAPA TREELAND

Site no.: EW1803

Grid ref: T26 455179

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude: 210 m

Other landform: Wetland

Land system: Hill country

Principal landform: Gully (brown

open flat-bottomed)

Site description: Scattered forest – treeland in a broad open gully.

Vegetation type: Wetland, shrubland, treeland.

Dominant species: *Lophomyrtus obcordata*, *Dacrycarpus dacrydioides*, *Myrsine divaricata*.

Other species: *Phormium tenax*, *Carex secta*, *Juncus edgarrae*, *Trifolium repens*, *Juncus effusus*, *Nestegis lanceolata*, *Myrsine australis*, *Podocarpus totara*, *Senecio jacobaea*, *Berberis glaucocarpa*, *Rubus schmidelioides*, *Coprosma rubra*, *Melicytus micranthus*, *Elaeocarpus bookerianus*, *Coprosma rigida*, *Streblus heterophyllus*, *Parsonsia capsularis*, *Coprosma propinqua*, *Cordyline australis*, *Raukaua anomalus*, *Melicope simplex*, *Nestegis montana*, *Prumnopitys taxifolia*, *Knightsia excelsa*, *Alectryon excelsus*, *Kunzea ericoides*.

Significance: Significant plant: *Nestegis montana*. Birds: mallard, paradise duck, pukeko, tui, silvereye, spur-winged plover. May be swampy.

TE PARAE

Site no.: EW1804

Grid ref: T26 470176

Source: Sawyer *et al.* 1998

Area: 2 ha

Bioclimatic zone:

Altitude: 210 m

Other landform:

Land system:

Principal landform: Terrace tread

Site description: Forest on flats around homestead - may be introduced trees.

Vegetation type: Tall introduced trees.

Dominant species: Poplars, Eucalyptus.

Other species: Not known.

Significance: Not known.

Comments: Site has a lake which may be natural, but it most probably landscaped. SSW1 information.

BRANCEPETH BUSH REMNANT

Site no.: EW1806

Grid ref: T26 475144

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone:

Altitude:

Other landform: Terrace, terrace riser, cliff face

Land system: Terrace, hill country

Principal landform: Floodplain

Vegetation type: Treeland, scattered treeland, closed forest with scattered emergents, closed forest.

Dominant species: *Pinus* sp., *Salix* sp., *Populus* sp., *Nothofagus solandri*, *Podocarpus totara*, *Sophora microphylla*, barberry, *Dacrycarpus dacrydioides*, *Hoheria populnea*, Lime tree.

Other species: Not known.

Significance: Not known.

Comments: Small patch of bush on terrace tread & riser, looks as though site was nursery with exotic trees in rows.

MANGAOTEKAINUI TRIBUTARY

Site no.: EW1808

Grid ref: T26 476203

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone:

Altitude: 240 m

Other landform: Ridge crest

Land system: Hill country

Principal landform: Gully

Site description: Gully running up to a ridge crest on E side.

Vegetation type: Plantation.

Dominant species: Eucalyptus, *Kunzea ericoides*.
Other species: Not known.
Significance: Not known.
Comments: A few *Kunzea ericoides* trees on sideslopes.

WHANGAEHU STATION

Site no.: EW1821 **Grid ref:** T26 454279 **Source:** Sawyer *et al.* 1998
Area: 80 ha **Bioclimatic zone:** **Altitude:** 200 m
Other landform: Spur **Land system:**
Principal landform: Gully

Site description: Two patches of vegetation in gullies east of Whangaehu Station Homestead.

Vegetation type: Closed forest.

Dominant species: Exotic.

Other species: Not known.

Significance: Not known.

Comments: Exotic forests behind homestead.

UNNAMED (13)

Site no.: EW1832 **Grid ref:** T26 513186 **Source:** Sawyer *et al.* 1998
Area: 10 ha **Bioclimatic zone:** Lowland **Altitude:**
Other landform: **Land system:**
Principal landform:

Vegetation type: Treeland.

Dominant species: *Kunzea ericoides*.

Other species: *Cordyline australis*, *Carpodetus serratus*, *Acacia mearnsii*, *Eucalyptus* sp., *Leptospermum scoparium*, *Knightsia excelsa*, *Meliclytus ramiflorus*, *Cyathea medullaris*.

Significance: Not known.

Comments: Pines planted throughout.

“ROCKY” HILL SHRUBLAND

Site no.: EW1905 **Grid ref:** T26 559165 **Source:** Sawyer *et al.* 1998
Area: 100 ha **Bioclimatic zone:** Semi-coastal **Altitude:** 300 m
Other landform: **Land system:** Taipo
Principal landform: Gully

Vegetation type: Scrub

Dominant species: *Leptospermum scoparium*.

Other species: Not known.

Comments: Site mostly cleared.

BEAMARIS

Site no.: EW1913 **Grid ref:** T26 645160 **Source:** Sawyer *et al.* 1998
Area: 30 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Hillslope **Land system:** Hill country
Principal landform: Hill side

Vegetation type: Scrub.

Dominant species: *Kunzea ericoides*, *Ulex europaeus*, *Pinus* sp., *Leptospermum scoparium*.

Other species: *Leucopogon fasciculatus*, *Juncus edgarrae*, *Hoberia populnea*, *Carex geminata*.

Comments: Areas where gorse dominates, interplanted with pine trees, *Leptospermum scoparium* scattered throughout.

WAITOKO SHRUBLAND

Site no.: EW2003 **Grid ref:** U26 720250 **Source:** Sawyer *et al.* 1998
Area: 1620 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully, ridgeline **Land system:** Rolling hill country
Principal landform: Spur

Vegetation type: Not known.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Broadleaved species.*, *Pinus* sp.

Other species: Not known.

Significance:

Comments: Looked at U26 725226 patches of shrubland on 10/5/94. Could not see 2003 proper. T26 710216 1/6/94. Perhaps 250 ha remaining of poor scrub, rest now pines - J. Hansen pers. comm.

Notes: Ref. Ecol. Site Inventory Nos. 819, 820, 821.

PEAK 431M

Site no.: EW2003a **Grid ref:** U26 755285 **Source:** Sawyer *et al.* 1998
Area: 400 ha **Bioclimatic zone:** Lowland **Altitude:** 431 m
Other landform: Gully, spur crest, ridgeline, ridgecrest **Land system:** Hill country
Principal landform: Spur

Vegetation type: Not known.

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*, *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Gabnia pauciflora*, *Coprosma lucida*, *Phormium cookianum*.

Other species: *Pomaderris* aff. *phylicifolia*, *Nothofagus solandri*, *Pteridium esculentum*, *Cordyline australis*, *Olearia paniculata*, *Cordyline banksii*, *Pteridium esculentum*, *Coprosma robusta*, *Agrostis capillaris*, *Weinmannia racemosa*, *Hedycarya arborea*, *Myoporum laetum*, *Knightia excelsa*, *Schefflera digitata*, *Melicytus ramiflorus*, *Fuchsia excorticata*, *Carpodetus serratus*, *Cyathea dealbata*, *Brachyglottis repanda*, *Leucopogon fasciculatus*, *Cyathea medullaris*, *Ulex europaeus*, *Coriaria arborea*, *Geniostoma rupestre* var. *ligustrifolium*, *Aristolelia serrata*, *Lycopodium volubile*, *Urtica ferox*, *Griselinia lucida*, *Lotus pedunculatus*, *Prumnopitys taxifolia*, *Ranunculus reflexus*, *Asplenium bulbiferum*, *Urtica incisa*, *Phymatosorus pustalatus*, *Helichrysum lanceolatum*, *Olearia solandri*, *Olearia rani*, *Nothofagus fusca*, *Collospermum microspermum*, *Myrsine australis*, *Cyathodes juniperina*, *Nestegis lanceolata*, *Rubus cissoides*, *Asplenium oblongifolium*, *Asplenium flaccidum*, *Tbelymitra longifolia*, *Parsonsia capsularis*, *Dianella nigra*, *Coprosma rubra*, *Pyrrhosia eleagnifolia*, *Asplenium polyodon*, *Clematis paniculata*, *Raukaua anomalus*, *Coprosma microcarpa*, *Coprosma linarifolia*, *Coprosma rhamnoides*, *Holcus lanatus*, *Uncinia uncinata*, *Dicksonia squarrosa*, *Dacrycarpus dacrydioides*, *Beilschmiedia tawa*.

Significance: c.270 ha in DOC/Timberlands Covenant: diverse habitat & species rich. Significant plants:

Tbelymitra sp., *Nothofagus fusca* occurs in low numbers. Birds: fantail, grey warbler, kingfisher, silvereye, tui.

Recommendation: Site requires survey to determine which beech species are present.

Comments: Forest in gullies with shrubland on ridges.

Notes: Ref. Ecol. Site Inventory Nos. 754,818.

BUSH HILL STREAM

Site no.: EW2003B **Grid ref:** U26 727285 **Source:** Sawyer *et al.* 1998
Area: 80 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully, ridgeline **Land system:** Rolling hill country
Principal landform: Spur

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Knightia excelsa*, *Kunzea ericoides*

Other species: *Melicytus ramiflorus*, *Brachyglottis repanda*, *Leucopogon fasciculatus*, *Helichrysum aggregatum*, *Coprosma rhamnoides*.

Significance: c.40 ha of area part of DOC/Timberlands Covenant: beech forest in gullies; pines on the rest of the area.

Recommendation: Site requires survey to determine which beech species are present, *Nothofagus fusca?*, *Nothofagus truncata?*.

Notes: Ref. Ecol. Site Inventory No. 818.

NGAKAUUAU

Site no.: EW2003C

Grid ref: U26 770280

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spur line, spur crest, ridge crest

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland, tall closed forest.

Dominant species: *Kunzea ericoides*, *Nothofagus solandri*.

Other species: Not known.

ICA ROAD BUSH

Site no.: EW2009

Grid ref: T26 669252

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Treeland, tall closed forest.

Dominant species: *Betula pendula*, *Populus* sp., *Acacia mearnsii*.

Other species: Not known.

Comments: Exotics around Ica Homestead.

TINUI DOWNS BUSH

Site no.: EW2010

Grid ref: T26 698299

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone:

Altitude:

Other landform: Riser

Land system: Terrace

Principal landform: Tread

Vegetation type: Tall closed forest

Dominant species: *Salix* sp., pasture.

Other species: Not known.

REATA SHRUBLAND A

Site no.: EW2011

Grid ref: T26 672278

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Footslope

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Not known.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Cordyline australis*.

Notes: Ref. Ecol. Site Inventory No. 788.

REATA SHRUBLAND B

Site no.: EW2012

Grid ref: T26 663280

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Not known.

Dominant species: *Kunzea ericoides*, Pasture

Other species: Not known.

CLAIRMONT PLANTATION

Site no.: EW2012

Grid ref: S27 224928

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone:

Altitude:

Other landform: Spur line, terrace tread

Land system: Terrace, downlands

Principal landform: Spur end

Vegetation type: Tall closed forest.

Dominant species: *Acacia melanoxylon*.

Other species: Not known.

CANNOCK ROAD GULLY BUSH

Site no.: EW2103

Grid ref: S27 236927

Source: Sawyer *et al.* 1998

Area: 13 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country or downlands

Principal landform: Gully

Vegetation type: Shrubland, closed forest.

Dominant species: *Kunzea ericoides*, *Podocarpus totara*, *Pseudopanax arboreus*

Other species: *Hoheria populnea*, *Coriaria arborea*, *Hebe stricta*, *Coprosma robusta*, *Cordyline australis*, *Leptospermum scoparium*.

HUANGARUA ROAD

Site no.: EW2110

Grid ref: S27 199952

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Downland

Principal landform: Footslope

Vegetation type: Treeland (open).

Dominant species: *Eucalyptus* sp.

Other species: Not known.

Comments: Has the look of being a plantation (tall, open).

MOERAKI ROAD BUSH

Site no.: EW2219

Grid ref: T27 349908

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone:

Altitude: 20 m

Other landform: Floodplain

Land system: Terrace

Principal landform: Terrace tread

Vegetation type: Tall closed forest with emergents.

Dominant species: Not known.

Other species: Not known.

Comments: Appears to be non-existent now, willows along the river.

MAUNGAHUIA

Site no.: EW2222

Grid ref: S27 293086

Source: Sawyer *et al.* 1998

Area: 16 (9) ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Downland

Principal landform: Rolling downs

Vegetation type: Closed forest

Dominant species: *Kunzea ericoides*, *Podocarpus totara*.

Other species: Not known.

Comments: Two sites separated by c. 0.5 km according to map. Partially protected - QEII MS 5/7/177 (6.7 ha).

Notes: The above information is based on the original study site, which comprised 16ha; the RAP is estimated to be c.9ha.

TAUMARU - TEMAHA

Site no.: EW2225 **Grid ref:** S27 264008 **Source:** Sawyer *et al.* 1998
Area: 6 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:**
Principal landform:

Vegetation type: Closed forest, tall closed forest, treeland, open forest, plantations.

Dominant species: *Pinus* sp., *Eucalpytus*.

Other species: Not known.

Comments: One is pines, another eucalyptus - probably all small plantations.

PUKERA BUSH

Site no.: EW2227 **Grid ref:** S27 270970 **Source:** Sawyer *et al.* 1998
Area: 6 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Sideslope **Land system:** Rolling hill country
Principal landform: Hill

Vegetation type: Treeland, tall closed forest.

Dominant species: *Alectryon excelsus*, *Myoporum laetum*.

Other species: *Kunzea ericoides*, *Sophora tetraptera*, *Leptospermum scoparium*.

Comments: Gum trees throughout the site.

WHAKARUA STREAM SCRUB

Site no.: EW2228 **Grid ref:** S27 272961 **Source:** Sawyer *et al.* 1998
Area: 1 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Alluvial plain, terrace
Principal landform: Floodplain

Vegetation type: Tall closed forest.

Dominant species: *Salix* sp., *Kunzea ericoides*

Other species: *Podocarpus totara*.

WHAKARUA ROAD

Site no.: EW2230 **Grid ref:** S27 266950 **Source:** Sawyer *et al.* 1998
Area: 8 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: **Land system:** Rolling hill country
Principal landform: Sideslope

Vegetation type: Closed forest, tall closed forest.

Dominant species: *Kunzea ericoides*, *Leptospermum scoparium*, *Myoporum laetum*, *Sophora tetraptera*.

Other species: *Coprosma crassifolia*, *Pittosporum tenuifolium*, *Clematis paniculata*, *Cordyline australis*, *Carmichaelia australis*, *Brachyglottis repanda*, *Myoporum laetum*, *Carpodetus serratus*, *Carex secta*, *Pseudopanax crassifolius*, *Pseudopanax arboreus*, *Coprosma robusta* × *C. propinqua*, *Hebe stricta*, *Haloragis erecta*, *Myrsine divaricata*, *Coprosma propinqua*, *Leucopogon fasciculatus*, *Melicytus ramiflorus*, *Coprosma rhamnoides*.

TAWHIRIWAIMANUKA STREAM BUSH

Site no.: EW2234 **Grid ref:** S27 291927 **Source:** Sawyer *et al.* 1998
Area: 6 ha **Bioclimatic zone:** Semi-coastal **Altitude:**
Other landform: Gully **Land system:** Rolling hill country
Principal landform: Sideslope

Vegetation type: Shrubland

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: Not known.

WHAKARUA ROAD

Site no.: EW2235

Grid ref: S27 282934

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Topslope

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest.

Dominant species: *Alectryon excelsus*, *Kunzea ericoides*.

Other species: *Dacrycarpus dacrydioides*, *Cordyline australis*, *Podocarpus totara*, *Leptospermum scoparium*.

KAKAPO SHRUBLAND

Site no.: EW2238

Grid ref: S27 296915

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system:

Principal landform: Gully

Vegetation type: Tall closed forest, closed forest, shrubland.

Dominant species: *Kunzea ericoides*, *Pseudopanax crassifolius*.

Other species: *Leptospermum scoparium*, *Carpodetus serratus*, *Cordyline australis*, *Hoberia populnea*, *Coprosma rhamnoides*.

TAWHIRIWAIMANUKA STREAM

Site no.: EW2239

Grid ref: T27 301915

Source: Sawyer *et al.* 1998

Area: 13 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland

Dominant species: *Kunzea ericoides*

Other species: *Hoberia populnea*, *Myoporum laetum*, *Cordyline australis*, *Leptospermum scoparium*.

TE KOWHAI BUSH

Site no.: EW2244

Grid ref: T27 351999

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Closed forest.

Dominant species: *Alectryon excelsus*, *Podocarpus totara*.

Other species: *Metrosideros colensoi*, *Nestegis lanceolata*, *Coprosma rotundifolia*, *Lophomyrtus obcordata*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Cordyline australis*, *Kunzea ericoides*, *Coprosma rubra*, *Melicope simplex*, *Hoberia populnea*, *Sophora tetraptera*, *Streblus heterophyllus*.

Comments: Browsed out by stock.

Notes: Ref. Ecol. Site Inventory No. 842.

GLADSTONE BUSH

Site no.: EW2246

Grid ref: T27 349086

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system: Rolling hill country,
downland

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Podocarpus totara*, *Kunzea ericoides*, *Sophora* sp.

Other species: *Alectryon excelsus*.

Notes: Ref. Ecol. Site Inventory No. 846.

HIKAWERA SHRUBLAND

Site no.: EW2247

Grid ref: S27 287901

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope

Land system:

Principal landform: Gully

Vegetation type: Shrubland

Dominant species: *Sophora tetraptera.*, *Kunzea ericoides*, *Pseudopanax crassifolius*.

Other species: *Cordyline australis*, *Pseudopanax arboreus*, *Leptospermum scoparium*.

Comments: Eucalyptus, willow, pines planted around margins.

SUMMER HILL ROAD BUSH

Site no.: EW2302

Grid ref: T27 372933

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Hillside

Land system: Dissected rolling hill country

Principal landform: Face

Vegetation type: Tree-shrubland.

Dominant species: *Leptospermum scoparium*, *Sophora tetraptera*.

Other species: *Pseudopanax arboreus*, *Phormium cookianum*, *Leucopogon fasciculatus*, *Hebe stricta*.

Comments: Three sites which may have some primary component.

Notes: Ref. Ecol. Site Inventory No. 856.

SUMMER HILL ROAD / WAINUIORU RIVER

Site no.: EW2303

Grid ref: T27 379934

Source: Sawyer *et al.* 1998

Area: 20 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Shrubland, closed forest.

Dominant species: Not known.

Other species: Not known.

Comments: Probably gone (A. Townsend pers. comm.).

WAINUIORU RIVER SHRUBLAND

Site no.: EW2304

Grid ref: T27 383941

Source: Sawyer *et al.* 1998

Area: 2 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Terrace tread, colluvial fan

Land system: Rolling hill-downs

Principal landform: Terrace riser

Vegetation type: Tall closed forest with scattered emergents.

Dominant species: Not known.

Other species: Not known.

KAIWHATA SHRUBLAND

Site no.: EW2311

Grid ref: T27 425038

Source: Sawyer *et al.* 1998

Area: 50 ha

Bioclimatic zone:

Altitude:

Other landform: Hillside (south facing)

Land system: Hill country

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Erica lusitanica*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: Not known.

Comments: Pines recently planted into and around site.

Notes: Ref. Ecol. Site Inventory No. 860.

DRISCOLLS ROAD BUSH A

Site no.: EW2321

Grid ref: T27 456965

Source: Sawyer *et al.* 1998

Area:

4 ha

Bioclimatic zone: Lowland

Altitude:

Other landform: Gully, footslope, sideslope, topslope

Land system: Rolling hills-downs

Principal landform: Spur

Vegetation type: Tall closed forest.

Dominant species: *Pseudopanax arboreus*, *Carpodetus serratus*, *Nothofagus solandri*.

Other species: *Elaeocarpus dentatus*, *Coprosma robusta*, *Nestegis montana*, *Nestegis lanceolata*, *Cordyline australis*, *Knightia excelsa*, *Hoberia populnea*, *Pseudopanax crassifolius*.

Notes: Ref. Ecol. Site Inventory No. 867.

ANDERSONS STREAM BUSH

Site no.: EW2324

Grid ref: T27 477987

Source: Sawyer *et al.* 1998

Area: 2 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Face

Land system: Rolling hills

Principal landform: Gully

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*

Other species: *Erica lusitanica*, *Hebe stricta*, *Pseudopanax arboreus*, *Pseudopanax crassifolius*, *Leptospermum scoparium*, *Leucopogon fasciculatus*, *Pinus radiata*, *Ulex europaeus*, *Carex geminata*, *Carex secta*.

Notes: Ref. Ecol. Site Inventory No. 872.

PUKUNUI STATION PLANTATION

Site no.: EW2332

Grid ref: T27 445909

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Terrace/lake bed?

Principal landform: Terrace

Vegetation type: Tall closed forest.

Dominant species: Pine trees.

Other species: Not known.

DRISCOLLS ROAD BUSH

Site no.: EW2344

Grid ref: T27 455972

Source: Sawyer *et al.* 1998

Area: 3 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Sideslope

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Nestegis lanceolata*, *Pseudopanax arboreus*.

Other species: Not known.

Notes: Ref. Ecol. Site Inventory No. 866.

NGAUMU BUSH B

Site no.: EW2404

Grid ref: T27 490054

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling downs or terrace

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Nothofagus solandri*.

Other species: *Coprosma robusta*, *Leptospermum scoparium*, *Coprosma propinqua* × *C. robusta*, *Melicytus ramiflorus*, *Pomaderris* aff. *phylicifolia*, *Cytisus scoparius*, *Pinus radiata*, *Coprosma grandifolia*.

Comments: Swampy? Long narrow low quality site.

NGAUMU - WAIMANGU NORTH

Site no.: EW2405

Grid ref: T27 501034

Source: Sawyer *et al.* 1998

Area: ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Hill face

Vegetation type: Tall closed forest.

Dominant species: *Pinus* sp.

Other species: Not known.

Comments: Not able to be found when attempted 17/6/94. Amongst pine trees.

LANDS END PLANTATION

Site no.: EW2411

Grid ref: T27 494940

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform:

Vegetation type: Tree-shrubland.

Dominant species: *Nothofagus solandri*, *Pinus* sp., pasture.

Other species: Not known.

Comments: Canopy open, probably not fenced. Some of the area pine trees.

Notes: Ref. Ecol. Site Inventory No. 875.

WIDOWS SHRUBLAND

Site no.: EW2428

Grid ref: T27 565964

Source: Sawyer *et al.* 1998

Area: 80 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully, sideslope

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Shrubland

Dominant species: *Ulex europaeus*, *Erica lusitanica*, *Leptospermum scoparium*.

Other species: *Cordyline australis*, *Pinus radiata*, *Hoberia populnea*, *Ozotamnus leptophyllus*, *Nothofagus solandri*, *Pomaderris* aff. *phylicifolia*.

Notes: Ref. Ecol. Site Inventory No. 885.

BUSH STREAM BUSH

Site no.: EW2446

Grid ref: T27 485005

Source: Sawyer *et al.* 1998

Area: 86 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Risers, footslope, sideslope

Land system: Terrace, rolling hill country

Principal landform: Terrace tread

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Nothofagus solandri*, *Kunzea ericoides*, *Leptospermum scoparium*.

Other species: *Dacrydium cupressinum*, *Dacrycarpus dacrydioides*, *Prumnopitys taxifolia*, *Pseudopanax crassifolius*.

Comments: Part protected, rest now pines.

KAIWHATA RIVER MOUTH CLIFFS

Site no.: EW2503
Area:
Other landform:

Grid ref: T27 616990
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace
Principal landform: Scarp

Dominant species: Not known.

Other species: Not known.

Significance: Not known.

Comments: No indigenous vegetation (A. Townsend pers. comm.).

KAIWHATA RIVER BLUFFS

Site no.: EW 2504
Area:
Other landform:

Grid ref: T27 610976
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform:

Dominant species: Not known.

Other species: Not known.

Comments: No vegetation on cliffs - visited 2/6/94. Appears to already be covered by PNA 2441 (RAP 250).

RIVERSDALE BUSH

Site no.: EW2518
Area: 5 ha
Other landform:

Grid ref: T27 653100
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Sideslope

Vegetation type: Closed forest.

Dominant species: *Myoporum laetum*, *Melicytus ramiflorus*.

Other species: *Salix alba*, *Eucalyptus* sp., *Acacia longifolia*, *Chamaecyparis lawsoniana*, *Leptospermum scoparium*, *Cordyline australis*, *Pseudopanax crassifolius*, *Coprosma areolata*, *Ulex europaeus*, *Kunzea ericoides*, *Coprosma robusta*, *Myrsine australis*, *Cyathea dealbata*, *Brachyglottis repanda*, *Cyathea medullaris*.

UNNAMED (14)

Site no.: EW2520
Area: 3 ha
Other landform:

Grid ref: T27 633036
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform:

Dominant species: Not known.

Other species: Not known.

Comments: Wetland area marked on map; probably gone (A. Townsend pers. comm.).

BLUE ROCK

Site no.: EW2801
Area: 50 ha
Other landform:

Grid ref: S27 141879
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Rolling hill country
Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Ulex europaeus*.

Other species: Not known.

Comments: Binocular scanned 28/4/94.

TE AHITAITAI BUSH / SHRUBLAND

Site no.: EW2807

Grid ref: S27 170823

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Sideslope, limestone bluffs at top of site.

Land system: Rolling hill country

Principal landform: Gully

Site description: Small pockets of forest and shrubland along a tributary of Makara River.

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Leptospermum scoparium*, mixed broadleaved hardwoods.

Other species: *Cordyline australis*, *Ozotamnus leptophyllus*, *Lophomyrtus obcordata*, *Hoheria populnea*, *Sophora microphylla*, *Kunzea ericoides*, *Pbormium cookianum*.

Significance: Large *Kunzea ericoides* in gully. Bluffs may have interesting plant species present.

Comments: Site not fenced. Visual check on site 28/4/94.

WHAKAPUNI STREAM

Site no.: EW2810

Grid ref: S27 228845

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully

Vegetation type: Closed forest, open forest, treeland.

Dominant species: Not known.

Other species: Not known.

WHAKAPUNI STREAM / WINDY PEAK

Site no.: EW2812

Grid ref: S27 208869

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Lowland

Altitude:

Other landform:

Land system: Rolling hill country

Principal landform: Gully head

Vegetation type: Scrub-shrubland.

Dominant species: *Leptospermum scoparium*.

Other species: Not known.

HINAKURA ROAD SHRUBLAND

Site no.: EW2904

Grid ref: T27 300888

Source: Sawyer *et al.* 1998

Area: 30 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Scarp faces, sideslope

Land system: Rolling hill country
(dissected)

Principal landform: Gully

Vegetation type: Shrubland, closed forest.

Dominant species: *Kunzea ericoides*, *Sophora tetraptera*, *Pinus* sp., *Eucalyptus* sp., *Salix* sp.

Other species: *Cordyline australis*, *Hoheria populnea*.

HINAKURA PLANTATION

Site no.: EW2905

Grid ref: T27 326871

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system: Terrace tread

Principal landform: Terrace tread

Vegetation type: Tall closed forest.

Dominant species: *Salix* sp., *Acacia* sp., *Pinus* sp., *Eucalyptus* sp.

Other species: Not known.

WAITETUNA STREAM

Site no.: EW2906
Area: 25 ha
Other landform:

Grid ref: T27 346870
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude: 90 m
Land system: Terrace (dissected)
Principal landform: Terrace tread

(dissected)

Vegetation type: Tall closed forest with emergents.

Dominant species: *Salix* sp., *Acacia* sp., *Pinus* sp., *Eucalyptus* sp.

Other species: Not known.

KUREMOA PLANTATION

Site no.: EW2908
Area: 4 ha
Other landform: Floodplain

Grid ref: T27 327858
Bioclimatic zone:

Source: Sawyer *et al.* 1998
Altitude:
Land system: Terrace
Principal landform: Terrace tread

Vegetation type: Treeland, plantation.

Dominant species: *Acacia* sp., *Eucalyptus* sp., Podocarps?

Other species: Not known.

Comments: Two fragments c.3 and 1 ha.

PAHAOA RIVER BUSH

Site no.: EW2911
Area: 15 ha
Other landform:

Grid ref: T27 333840
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform: Gully

Vegetation type: Closed forest.

Dominant species: *Kunzea ericoides*.

Other species: *Sophora tetraptera*, *Cordyline australis*, *Meliccytus ramiflorus*.

UNNAMED (15)

Site no.: EW
Area:
Other landform: Gully

Grid ref: S27
Bioclimatic zone: Semi-coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system: Dissected rolling hill country
Principal landform: Spur

Vegetation type: Closed forest, shrubland.

Dominant species: Not known.

Other species: Not known.

GLENBURN DUNELAND

Site no.: EW3101
Area: 0.25 ha
Other landform:

Grid ref: T27 496837
Bioclimatic zone: Coastal

Source: Sawyer *et al.* 1998
Altitude:
Land system:
Principal landform:

Vegetation type: Tussockland.

Dominant species: *Ammophila arenaria*.

Other species: Not known.

Significance: Unusual landform - strange natural (?) 'mud wall' along the coast, appears to be 1 metre high.

Notes: Ref. Ecol. Site Inventory No. 899.

GLENBURN WETLAND

Site no.: EW3102

Grid ref: T27 500850

Source: Sawyer *et al.* 1998

Area: 13 ha

Bioclimatic zone:

Altitude:

Other landform: Wetland

Land system: Marine terrace modified by colluvial fan

Principal landform: Terrace tread

Dominant species: Not known.

Other species: Not known.

Comments: Gone—has been cleared.

LINKWOOD STREAM

Site no.: EW3420

Grid ref: S28 170775

Source: Sawyer *et al.* 1998

Area: 90 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Gully, slipface

Land system: Rolling hill country

Principal landform: Spur

Vegetation type: Shrubland, open forest, closed forest.

Dominant species: *Leptospermum scoparium*, *Ozothamnus leptophyllus*, *Pinus* sp., *Eucalyptus* sp.

Other species: Not known.

Comments: Not a significant site.

TUTURUMURI SHRUBLAND

Site no.: EW3423

Grid ref: S28 170739

Source: Sawyer *et al.* 1998

Area: 10 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully head, sideslope

Land system:

Principal landform: Gully

Vegetation type: Tall closed forest.

Dominant species: *Ozothamnus leptophyllus*, *Leptospermum scoparium*, *Eucalyptus* sp., *Pinus radiata*.

Other species: Not known.

Comments: Viewed through binoculars 28/4/94.

“ROUND TOP” SHRUBLAND

Site no.: EW3503

Grid ref: T28 327788

Source: Sawyer *et al.* 1998

Area: 8 ha

Bioclimatic zone: Semi-coastal; lowland

Altitude:

Other landform: Spur

Land system: Hill country, taipo

Principal landform: Gully

Vegetation type: Shrubland, closed forest.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Ozothamnus leptophyllus*.

Other species: Not known.

Comments: Not significant

OKOROPUNGA COASTAL #2

Site no.: EW3509

Grid ref: T28 325723

Source: Sawyer *et al.* 1998

Area: 7 ha

Bioclimatic zone: Coastal

Altitude: 10 m

Other landform: Terrace treads (old beach)

Land system: Terrace, dunelands?, marine terrace

Principal landform: Dune system

Site description: Lagoon, swamp and alternating arid (?) series of landform/vegetation types parallel to coast.

Vegetation type: Wetland/coastal?, tussockland, herbfield.

Dominant species: *Juncus edgarrae*, *Plantago coronopus*, *Trifolium repens*.

Other species: *Juncus kraussii* var. *australiensis*, *Melicytus crassifolius*, *Cirsium vulgare*.

Comments: Not particularly special - in its present form.

PAHAOA SHRUBLAND

Site no.: EW3512

Grid ref: T28 366777

Source: Sawyer *et al.* 1998

Area: 12 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform:

Land system:

Principal landform: Gully

Vegetation type: Shrubland.

Dominant species: *Leptospermum scoparium*, *Kunzea ericoides*, *Sophora tetraptera*.

Other species: *Cordyline australis*.

Significance: Significant plants: *Kunzea ericoides*, *Nothofagus* ?

GLENDHU WETLAND

Site no.: EW3606

Grid ref: T28 392758

Source: Sawyer *et al.* 1998

Area: 4 ha

Bioclimatic zone:

Altitude:

Other landform:

Land system:

Principal landform: Colluvium covered marine terrace

Vegetation type: Tussockland.

Dominant species: Pasture, *Juncus kraussii* var. *australiensis*.

Other species: Not known.

Comments: Site now developed.

HUIA ROAD BUSH

Site no.: EW0434

Grid ref: U25 767617

Source: Sawyer *et al.* 1998

Area: 1 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Gully floor

Land system: Rolling hill country

Principal landform: Sideslope

Dominant species: *Alectryon excelsus*, *Podocarpus totara*, *Beilschmiedia tawa*, *Dacrycarpus dacrydioides*.

Other species: *Coprosma areolata*, *Rubus schmidelioides*, *Pittosporum eugenioides*, *Pseudopanax crassifolius*, *Sophora tetraptera*, *Hoberia populnea*, *Carpodetus serratus*, *Coprosma robusta*.

TINUI VALLEY BUSH

Site no.: EW1514a,b

Grid ref: U26 732345

Source: Sawyer *et al.* 1998

Area: 5 ha

Bioclimatic zone: Semi-coastal

Altitude:

Other landform: Spurline

Land system:

Principal landform: Sideslope

Vegetation type: Tall closed forest, shrubland.

Dominant species: *Podocarpus totara*, *Pseudopanax crassifolius*, *Leptospermum scoparium*, *Kunzea ericoides*.

Other species: Not known.

Comments: Unfenced. Willow in gully alongside site. Visited on 25/5/94 (looked at site from road).

Notes: Ref. Ecol. Site Inventory No. 792.

KUAMAHANGA - KUMMER

Site no.: EW2410

Grid ref: T27 513995

Source:

Area: 150 ha

Bioclimatic zone:

Altitude: 260-465 m

Other landform: Valley, wetland

Land system: Moderately steep hills, steep hills

Principal landform: Hill face

Vegetation types: 1. Radiata pine forest.

2. Radiata pine/manuka-whauwhaupaku-putaputaweta scrub.

Recommendation: Not significant.

Notes: Most of area is exotic pine plantation. Manuka scrub on upper slope, heavily infested with wilding pines.

Appendix 9

COMMON PLANT NAMES USED IN THE TEXT

akakiore	<i>Parsonsia capsularis</i>
akeake	<i>Dodonea viscosa</i>
arrow grass	<i>Triglochin striata</i>
Australian ngaio	<i>Myoporum insulare</i>
bachelor's button	<i>Cotula coronopifolia</i>
barberry	<i>Berberis glaucocarpa</i>
beech	<i>Nothofagus</i> species
beggar's tick	<i>Bidens frondosa</i>
black beech	<i>Nothofagus solandri</i> var. <i>solandri</i>
black maire	<i>Nestegis cunninghamii</i>
blackberry	<i>Rubus</i> sp. (<i>R. fruticosus</i> agg.)
boneseed	<i>Chrysanthemoides monilifera</i>
buck's-horn plantain	<i>Plantago coronopus</i>
buddleia	<i>Buddleja davidii</i>
bush rice grass	<i>Microlaena stipoides</i>
Cape ivy	<i>Senecio angulatus</i>
cathedral bells	<i>Cobaea scandens</i>
catsear	<i>Hypochoeris radicata</i>
celery leaved buttercup	<i>Ranunculus scleratus</i>
centella	<i>Centella uniflora</i>
corkscrew willow	<i>Salix matsudana</i>
cotoneaster	<i>Cotoneaster glaucophyllus</i> f. <i>serotinus</i>
crack willow	<i>Salix fragilis</i>
creeping buttercup	<i>Ranunculus repens</i>
curled dock	<i>Rumex crispus</i>
English ivy	<i>Hedera helix</i>
eucalyptus	<i>Eucalyptus botryoides</i>
flax	<i>Phormium</i> sp.
giant umbrella sedge	<i>Cyperus ustulatus</i>
gorse	<i>Ulex europaeus</i>
Hall's totara	<i>Podocarpus hallii</i>
hangehange	<i>Geniostoma rupestre</i> var. <i>ligustrifolium</i>
harakeke, flax	<i>Phormium tenax</i>
hard beech	<i>Nothofagus truncata</i>
harestail	<i>Lagurus ovatus</i>
hawthorn	<i>Crataegus monogyna</i>
heketara	<i>Olearia rani</i>
Himalaya honeysuckle	<i>Leycesteria formosa</i>
hinarepe, sand tussock	<i>Austrofestuca littoralis</i>
hinau	<i>Elaeocarpus dentata</i>
hook sedge	<i>Uncinia uncinata</i>
horned poppy	<i>Glaucium flavum</i>
horoeka, lancewood	<i>Pseudopanax crassifolius</i>
houhere	<i>Hoheria populnea</i>

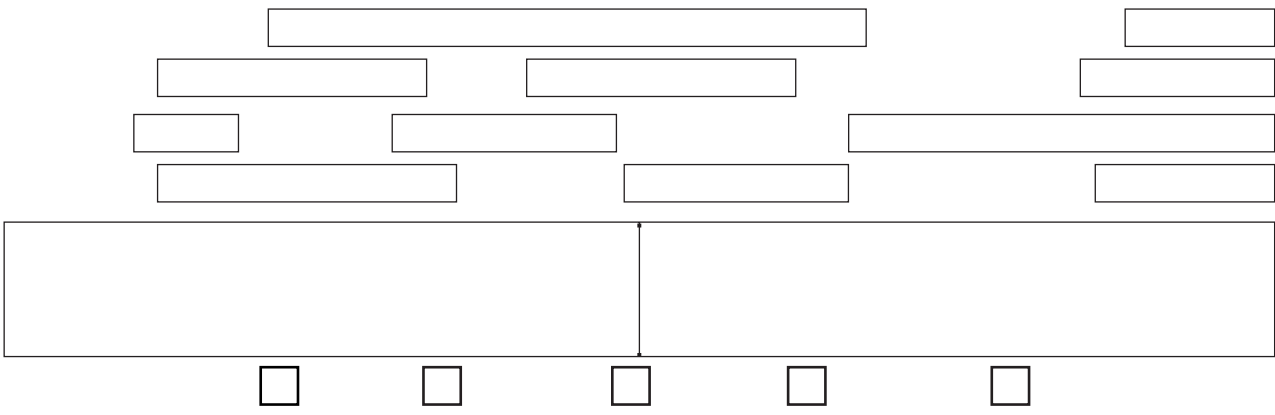
hupiro	<i>Coprosma foetidissima</i>
hukihuki	<i>Coprosma tenuicaulis</i>
huruhuru whenua	<i>Asplenium oblongifolium</i>
ice plant	<i>Disphyma australe</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Jersey fern	<i>Annogamma leptophylla</i>
jointed rush	<i>Juncus articulatus</i>
kahikatea	<i>Dacrycarpus dacrydioides</i>
kaikomako	<i>Pennantia corymbosa</i>
kamahe	<i>Weinmannia racemosa</i>
kamu	<i>Uncinia uncinata</i>
kanono	<i>Coprosma grandifolia</i>
kanuka	<i>Kunzea ericoides</i> var. <i>ericoides</i>
karaka	<i>Corynocarpus laevigatus</i>
karamu	<i>Coprosma robusta</i>
kareao	<i>Ripogonum scandens</i> , supplejack
kawakawa	<i>Macropiper excelsum</i> var. <i>excelsum</i>
kiekie	<i>Freycinetia baueriana</i> subsp. <i>banksii</i>
kiwikiwi	<i>Blechnum fluviatile</i>
kohekohe	<i>Dysoxylum spectabile</i>
kohia	<i>Passiflora tetrandra</i>
kohuhu	<i>Pittosporum tenuifolium</i> subsp. <i>tenuifolium</i>
kopakopa	<i>Plantago raoulii</i>
koromiko	<i>Hebe stricta</i> var. <i>stricta</i> and <i>Hebe salicifolia</i>
kotukutuku	<i>Fuchsia excorticata</i>
kowaowao	<i>Phymatosorus pustulatus</i>
kowhai	<i>Sophora tetraptera</i>
leafless lawyer	<i>Rubus squarrosus</i>
leafless rush	<i>Juncus edgarrae</i> , <i>J. sarophorus</i>
lotus	<i>Lotus pedunculatus</i>
lupin	<i>Lupinus arboreus</i>
mahoe	<i>Melicytus ramiflorus</i> subsp. <i>ramiflorus</i>
maire	<i>Nestegis</i> species
maire tawake, swamp maire	<i>Syzygium maire</i>
mamaku	<i>Cyathea medullaris</i>
manuka	<i>Leptospermum scoparium</i>
mapou	<i>Myrsine australis</i>
maritime pine	<i>Pinus pinaster</i>
marram	<i>Ammophila arenaria</i>
marsh bedstraw	<i>Galium palustre</i>
marsh ribbonwood	<i>Plagianthus divaricatus</i>
matai	<i>Prumnopitys taxifolia</i>
Mercer grass	<i>Paspalum distichum</i>
Mexican daisy	<i>Erigeron karvinskianus</i>
mingimingi	<i>Leucopogon fasciculatus</i>
miro	<i>Prumnopitys ferruginea</i>
mountain beech	<i>Nothofagus solandri</i> var. <i>solandri</i>
mountain rohtutu	<i>Neomyrtus pedunculata</i>
narrow-leaved maire	<i>Nestegis montana</i>
New Zealand jasmine	<i>Parsonsia capsularis</i> ; <i>Parsonsia heterophylla</i>

ngaio	<i>Myoporum laetum</i>
nikau	<i>Rhopalostylis sapida</i>
niniaio	<i>Helicbrysum lanceolatum</i>
northern rata	<i>Metrosideros robusta</i>
oioi	<i>Apodasmia similis</i>
ongaonga	<i>Urtica ferox</i>
pampas	<i>Cortaderia selloana</i>
pate	<i>Schefflera digitata</i>
patotara	<i>Cyathodes fraseri</i>
pennyroyal	<i>Mentha pulegium</i>
petipeti	<i>Blechnum discolor</i>
pingao	<i>Desmoschoenus spiralis</i>
poataniwha	<i>Melicope simplex</i>
pohuehue	<i>Muehlenbeckia australis</i>
ponga	<i>Cyathea dealbata</i>
poplar	<i>Populus</i> species
porokaiwhiri, pigeonwood	<i>Hedycarya arborea</i>
poroporo	<i>Solanum laciniatum</i>
prickly mingimingi	<i>Cyathodes juniperina</i>
puka, broadleaf	<i>Griselinia</i> sp.
pukatea	<i>Laurelia novae-zelandiae</i>
pukio	<i>Carex secta</i>
purei	<i>Carex virgata</i>
putaputaweta	<i>Carpodetus serrata</i>
radiata pine	<i>Pinus radiata</i>
rangiora	<i>Brachyglottis repanda</i>
rarahu, bracken	<i>Pteridium esculentum</i>
raukawa	<i>Raukawa edgerleyii</i>
raupo	<i>Typha orientalis</i>
red beech	<i>Nothofagus fusca</i>
rereti	<i>Blechnum chambersii</i>
rewarewa	<i>Knightsia excelsa</i>
ribbonwood	<i>Plagianthus regius</i>
rimu	<i>Dacrydium cupressinum</i>
rohutu	<i>Lophomyrtus obcordata</i>
sand pimelea	<i>Pimelea</i> aff. <i>arenaria</i>
sand sedge	<i>Carex pumila</i>
Scotch thistle	<i>Cirsium vulgare</i>
searocket	<i>Cakile</i> sp.
sea rush	<i>Juncus kraussii</i> var. <i>australiensis</i>
shining karamu	<i>Coprosma lucida</i>
shining spleenwort	<i>Asplenium oblongifolium</i>
shore lobelia	<i>Lobelia anceps</i>
small-leaved pohuehue	<i>Muehlenbeckia complexa</i>
soft rush	<i>Juncus effusus</i>
Spanish heath	<i>Erica lusitanica</i>
sphagnum	<i>Sphagnum cristatum</i> and <i>S. falcatulum</i>
spike sedge	<i>Eleocharis acuta</i>
spinifex	<i>Spinifex sericeus</i>
swamp kiokio	<i>Blechnum novae-zelandiae</i> (swamp form)

swamp millet	<i>Isachne globosa</i>
sweet brier	<i>Rosa rubiginosa</i>
tall fescue	<i>Festuca arundinacea</i>
tarata, lemonwood	<i>Pittosporum eugenioides</i>
tauhinu	<i>Ozothamnus leptophyllus</i>
taupata	<i>Coprosma repens</i>
tawa	<i>Beilschmiedia tawa</i>
tawiniwini	<i>Gaultheria antipoda</i>
ti kouka	<i>Cordyline australis</i>
titoki	<i>Alectryon excelsus</i>
toetoe	<i>Cortaderia fulvida</i> and/or <i>C. toetoe</i>
totara	<i>Podocarpus totara</i>
tradescantia	<i>Tradescantia fluminensis</i>
turepo	<i>Streblus heterophylla</i>
turutu	<i>Dianella nigra</i>
tutu	<i>Coriaria arborea</i>
waewaekoukou	<i>Lycopodium volubile</i>
watercress	<i>Rorippa nasturtium-aquaticum</i>
water pepper	<i>Polygonum hydropiper</i>
weeping mapou	<i>Myrsine divaricata</i>
wharariki	<i>Phormium cookianum</i>
whauwhaupak, fivefinger	<i>Pseudopanax arboreus</i>
wheki	<i>Dicksonia squarrosa</i>
wheki ponga	<i>Dicksonia fibrosa</i>
white maire	<i>Nestegis lanceolata</i>

Appendix 10

EASTERN WAIRARAPA ECOLOGICAL DISTRICT PNAP FIELD
SURVEY FORM



					A large empty rectangular box.

Appendix 11

PNAP DATA PHASE 1 INFORMATION SHEET

Site Name:	
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Site:		Altitude	m.	Cross Ref.
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Grid Ref:		Area	ha.
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Description:

Landform:

Land Systems:

Veg Type:

Significant plants:

Comment:
