

(b) The bulk of the lower, western part of the remnant bordering the Oruawharo River North Coast (Q09/020) is covered in woolly nightshade-mapou shrubland. These two species are equally common and have frequent ti kouka and totara saplings associated with them. Scattered large puriri, radiata pine and maritime pine are present.

(c) Kanuka is dominant and puriri is common in the vegetation of the northern coast, which is nestled in a protected gully mouth. Here, woolly nightshade and brush wattle appear frequent, and there are occasional indigenous species including mamaku, ti kouka and kahikatea. Both species of the aforementioned wilding pine are occasionally emergent here also.

(d) In the small, southern coastal remnant, abundant kanuka is associated with frequent karaka, puriri, kowhai, totara and kahikatea. Occasional species include taraire, ti kouka, mamangi, manuka, *Coprosma rhamnoides*, *C. macrocarpa*, mapou, pohuehue, small-leaved milk tree, pohutukawa, gorse, woolly nightshade, blackberry, macrocarpa and hawthorn.

A specimen of carmine rata (regionally significant) was collected from here (referred to as 'Stephen's Bush') in 1935 (AK 211359), but its continued presence is not confirmed.

Fauna

Kingfisher.

Significance

Pest plants such as woolly nightshade, gorse and wilding pines alter the natural character of this site, which is otherwise a good example of successional coastal forest. All ecological units except (b), which is the most affected by weed invasion, are considered representative of their types. Due to its large extent, this site forms an important protective buffer to the fringes of the Oruawharo River North Coast site (Q09/020), which is otherwise relatively denuded, with only 16% indigenous coastal vegetation.

ORUAWHARO SCHOOL FOREST

Survey no.	Q09/033
Survey date	6 December 2005
Grid reference	Q09 373 469 (2 remnants)
Area	21.8 ha (9.5 ha forest, 12.3 ha shrubland)
Altitude	7-60 m asl

Ecological units

- (a) Totara-mapou shrubland on moderate hillslope (55%)
- (b) Totara-kanuka forest on moderate hillslope (35%)
- (c) Kowhai-totara-puriri-pukatea forest in gully (10%)

Landform/geology

Coastal hillside underlain by melange (undifferentiated Mangakahia & Motatau Complex lithologies).

Vegetation

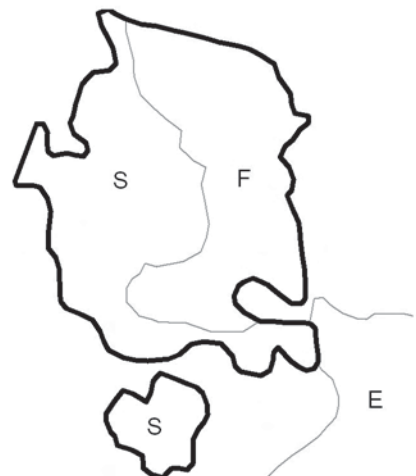
This site is on the southwest-facing slope of a gentle gully draining into saltmarsh; the upper reaches are covered in shrubland and the lower reaches in forest.



Q09/033 Oruawharo School Forest

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



(a) Totara and mapou are most common species in the diverse mixture of shrubland next to Oruawharo Road and Oruawharo School Road. Species which frequently occur in this community are mamaku, bracken, ti kouka, mahoe, manuka and kanuka. Also present are occasional kahikatea (emergent), tarata, karamu, harakeke, and several weeds, notably pampas, dally pine, giant reed grass, blackberry, gorse, radiata pine and hawthorn. Weeds appear confined to edges and some of these may be escapes from nearby gardens.

(b) The totara-kanuka forest covering the north-western corner of the site is a more mature stage of vegetation similar to type (a). Kahikatea, pukatea and kowhai are present, along with several large exotic trees (radiata pine and eucalyptus).

(c) A small area in the bottom of the gully supports forest dominated by kowhai, where puriri, totara and pukatea are also common. Rewarewa and karaka are frequent.

Fauna

Fantail, kingfisher, welcome swallow, tui.

Significance

This site contains two representative ecological units: (a) totara-mapou shrubland on moderate hillslope, which is a diverse and unique shrubland type, and (c) kowhai-totara-puriri-pukatea forest in gully, which is also unique in Otamatea ED Northland. The character of the shrubland (a) is altered by several exotic invasive plants, which have the potential to alter its natural character, though some of them are on edges and will become less important as succession proceeds (e.g. blackberry, gorse and pampas). The occurrence of giant reed grass is of particular concern, as this was not seen elsewhere in Otamatea ED Northland during the present survey, and has the potential to choke water ways.

KOAREARE CREEK FOREST REMNANTS

Survey no.	Q09/036
Survey date	6 December 2005
Grid reference	Q09 399 487 (8 remnants)
Area	90.0 ha
Altitude	0-100 m asl

Ecological units

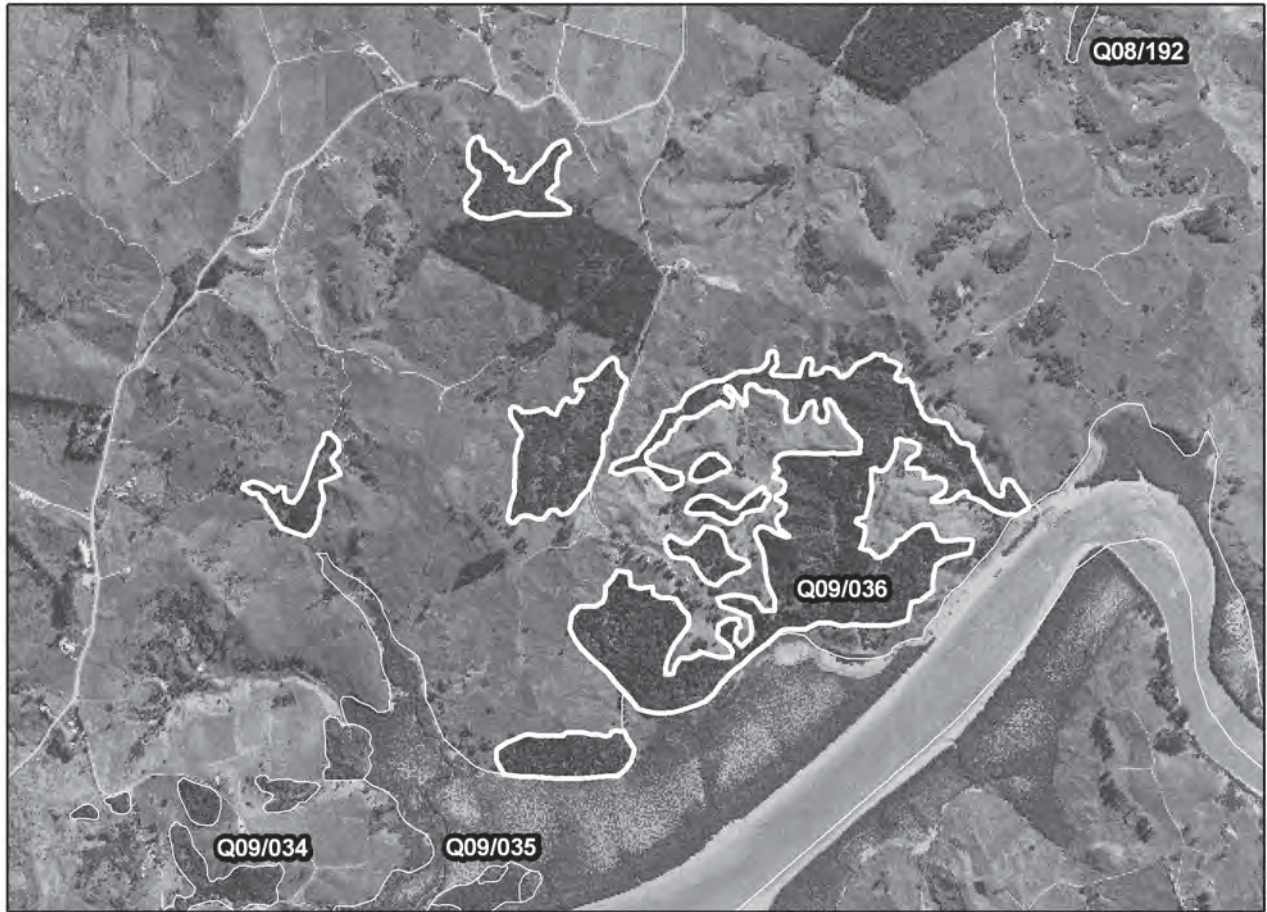
- (a) Kowhai-puriri forest on steep coastal margin (20%)
- (b) Kanuka forest on moderate hillslope (20%)
- (c) Kahikatea-kowhai forest on gentle coastal margin (15%)
- (d) Taraire-puriri forest on moderate to steep hillslope (15%)
- (e) Kanuka forest on gentle coastal margin (10%)
- (f) Totara-kowhai-puriri forest on gentle coastal margin (10%)
- (g) Totara-puriri-kahikatea forest on gentle coastal margin (5%)
- (h) Totara forest on ridge top (3%)
- (i) Kanuka-kowhai forest on steep coastal margin (2%)

Landform/geology

Coastal hills of melange (undifferentiated Mangakahia & Motatau Complex lithologies), Eocene glauconitic sandstone (Pahi Greensand, Te Kuiti Group), and Oligocene micritic limestone (Mahuarangi Limestone, Motatau Complex).

Vegetation

This site covers a complex mosaic of forest types divided into many separate areas spread across the upper catchment of the Koareare Creek and its



Q09/036 Koareare Creek Forest Remnants

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



associated coastal margin. Many of the semi-coastal forest remnants in the upper catchment comprise only one type, while the coastal forest remnants are highly variable and there may be up to three distinct types in a short stretch of coast. The surrounding and intervening land use is principally pastoral, though one small area of pine forestry links two of the indigenous forest remnants in the upper catchment.

(a) The largest and most dense area of coastal forest contains abundant kowhai (>50%) and with expansive, healthy crowns of puriri covering greater than 30% of the canopy. Kahikatea, totara and rewarewa are frequent.

- (b) Kanuka forest is the most common type in the upper catchment. Associated with this type are frequent ti kouka and totara, and occasional kahikatea, manuka and mamaku. The understorey at the margin of the kanuka remnants tends to be sparsely vegetated; a sign of the effects of heavy grazing.
- (c) Kahikatea and kowhai dominate the forest canopy on the coastal slope directly opposite the unnamed island in the Oruawharo River (Q09/035). Puriri, totara and kanuka are frequent members of this community.
- (d) Taraire-puriri forest covers a steep slope in the head of the catchment, which is also in close proximity to the coast. Kahikatea and kanuka are frequent here, with occasional kohekohe, karaka, rewarewa and emergent rimu.
- (e) Heavily degraded kanuka forest occurs on the northern coastal margin of the site. Frequent examples of kowhai, puriri and totara are dotted through the kanuka, with occasional ti kouka and radiata pine.
- (f) Totara-kowhai-puriri forest occurs in the middle of the coastal margin of this site. Kahikatea is frequent, with occasional titoki and kohekohe.
- (g) A small area on the coast is dominated by totara, in association with puriri and kahikatea.
- (h) A prominent high point above type (a) on the coast is covered with a stand comprising mainly totara.
- (i) The canopy of small stretches of the coastal forest is dominated by kanuka and kowhai. Here there are rich textures of frequent puriri and karaka with occasional titoki, kohekohe and ti kouka.

Fauna

Australasian harrier.

Significance

This is one of the most diverse natural areas on the northern coastal margins of the Oruawharo River, though it comprises many separate areas which detracts markedly from its robustness. Lack of fencing around the remnants allows stock access and consequently suppresses regeneration, further threatening the long-term survival and health of these remnants. Some of the forest in the upper catchment is becoming very degraded and is bordering on becoming treeland due to the effects of grazing. Ecological units (a) kowhai-puriri forest on steep coastal margin, and (c) kahikatea-kowhai forest on gentle coastal margin, are considered to be the best representative examples of their type in Otamatea ED Northland. The site provides a protective vegetation buffer to the land margin of the Oruawharo River North Coast (Q09/020), which currently has only 16% indigenous vegetation, the lowest percentage of the five estuarine natural areas in Otamatea ED Northland.

TOPUNI RIVER FOREST REMNANT 1

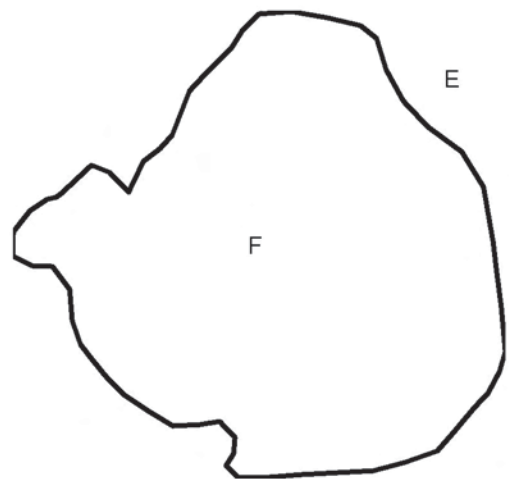
Survey no.	Q09/037
Survey date	6 December 2005
Grid reference	Q09 427 500
Area	6.0 ha
Altitude	0-40 m asl



Q09/037 Topuni River Forest Remnant 1

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



Ecological unit

(a) Kauri-kanuka forest on steep coastal margin (100%)

Landform/geology

Not surveyed.

Vegetation

This site includes some fine stands of kauri rickers and kanuka in a compact remnant on the coastal margin of the upper Oruawhoro River North Coast

(Q09/020). Tanekaha and totara are frequent members of the canopy, with scattered rimu, rewarewa, kowhai and karaka. The remnant appears to be fenced and the understorey looks relatively intact. A small maimai is nestled in the northern edge of the forest next to mangroves.

Fauna

Pied shag (Sparse).

Significance

This site is significant as a habitat for a threatened bird species (pied shag) as well as being one of the best representative examples of coastal kauri-kanuka forest. The site provides a protective vegetation buffer to the Oruawharo River North Coast (Q09/020). Only 16% of the land margin of this estuarine natural area is covered in indigenous vegetation, the lowest percentage of the five estuarine natural areas in this survey.

TOPUNI RIVER CONFLUENCE FOREST

Survey no.	Q09/038
Survey date	6 December 2005
Grid reference	Q09 420 481
Area	6.1 ha
Altitude	0-60 m asl

Ecological unit

(a) Kanuka forest on steep coastal margin (100%)

Landform/geology

Not surveyed.

Vegetation

This site comprises a coastal indigenous forest remnant on the inside of a bend in the Topuni River, where it reaches a confluence with the Oruawharo River. The forest is surrounded by exotic grassland and it is not clear whether it is fenced; it may or may be used to shelter. Kanuka is the most abundant canopy species, however there is local occurrence of kauri rickers and patches of coastal broadleaved trees spread throughout. Frequent species include tanekaha, kauri, rewarewa, kowhai, puriri, karaka, kohekohe and kahikatea, with occasional totara and pukatea. There is a large radiata pine on the eastern tip which is seeding and establishing wild progeny on the coastal fringe.

Fauna

Not surveyed.

Significance

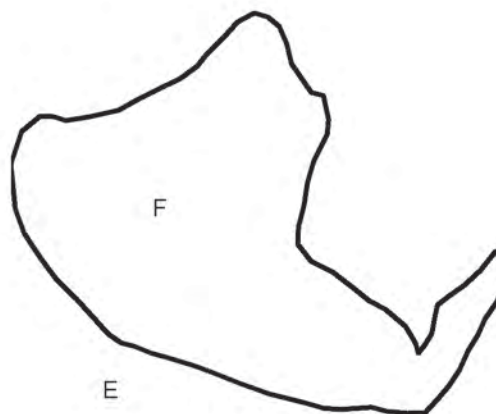
This site is considered to be one of the best representative examples of coastal kanuka forest in Otamatea ED Northland. It provides a valuable protective buffer to the estuarine habitats of the Oruawharo River North Coast (Q09/020), which has only 16% indigenous vegetation remaining on its adjacent land margin.



Q09/038 Topuni River Confluence Forest

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



WAINONORORO CONSTRUCTED LAKE

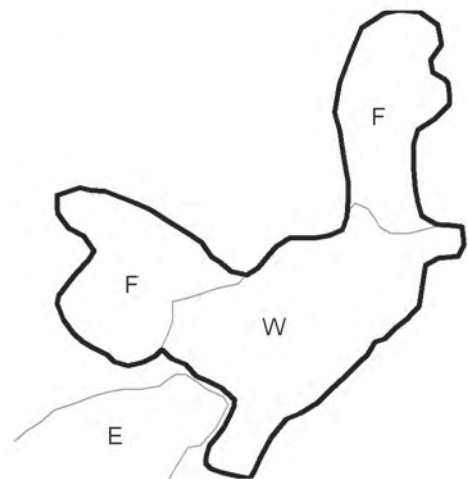
Survey no.	Q09/039
Survey date	13 December 2005
Grid reference	Q09 319 489
Area	22.7 ha (11.2 ha forest, 11.5 ha wetland)
Altitude	2-41 m asl



Q09/039 Wainonororo Constructed Lake

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



Ecological units

- (a) Open water (constructed lake) (51%)
- (b) Kanuka treeland on moderate to steep hillslope (49%)

Landform/geology

Coastal hillslopes underlain by Oligocene micritic limestone (Mahurangi Lmst, Motatau Complex) and melange (undifferentiated Mangakahia & Motatau Complex lithologies); man-made lake in former estuary.

Vegetation

The upper tidal mudflats of Wainonororo Creek on the Whakaki River has been blocked off from the sea to create an artificial lake stretching 550 m inland. The lake has no visible aquatic marginal vegetation and appears to have high levels of suspended solids. Most of the catchment is in pasture, however several small pine plantations do occur in the upper catchment. Two separate stands of indigenous treeland occur on the western and northern sides of the lake, which are composed principally of kanuka. Occasional examples of karaka, kowhai, ti kouka and macrocarpa are scattered throughout, with the western stand tending to be more species rich, though the trees in this area are further apart.

Fauna

Not surveyed.

Significance

The treeland areas are very badly affected by stock grazing and trampling, however the lake is valuable as the third largest freshwater wetland habitat in Otamatea ED Northland. Although it is a constructed lake, it has the capacity to support good populations of indigenous waterbirds, as do the two larger constructed lakes further north, for which field surveys of bird populations have been undertaken (Takahoa Government Purpose Wildlife Management Reserve (Q08/164) and Kaitara Constructed Lake (Q08/159)).

THE FUNNEL POHUTUKAWA FRINGE

Survey no.	Q09/043
Survey date	9 December 2005
Grid reference	Q09 267 493 (7 remnants)
Area	12.1 ha
Altitude	0-60 m asl

Ecological unit

(a) Pohutukawa treeland on steep coastal margin and coastal cliff (100%)

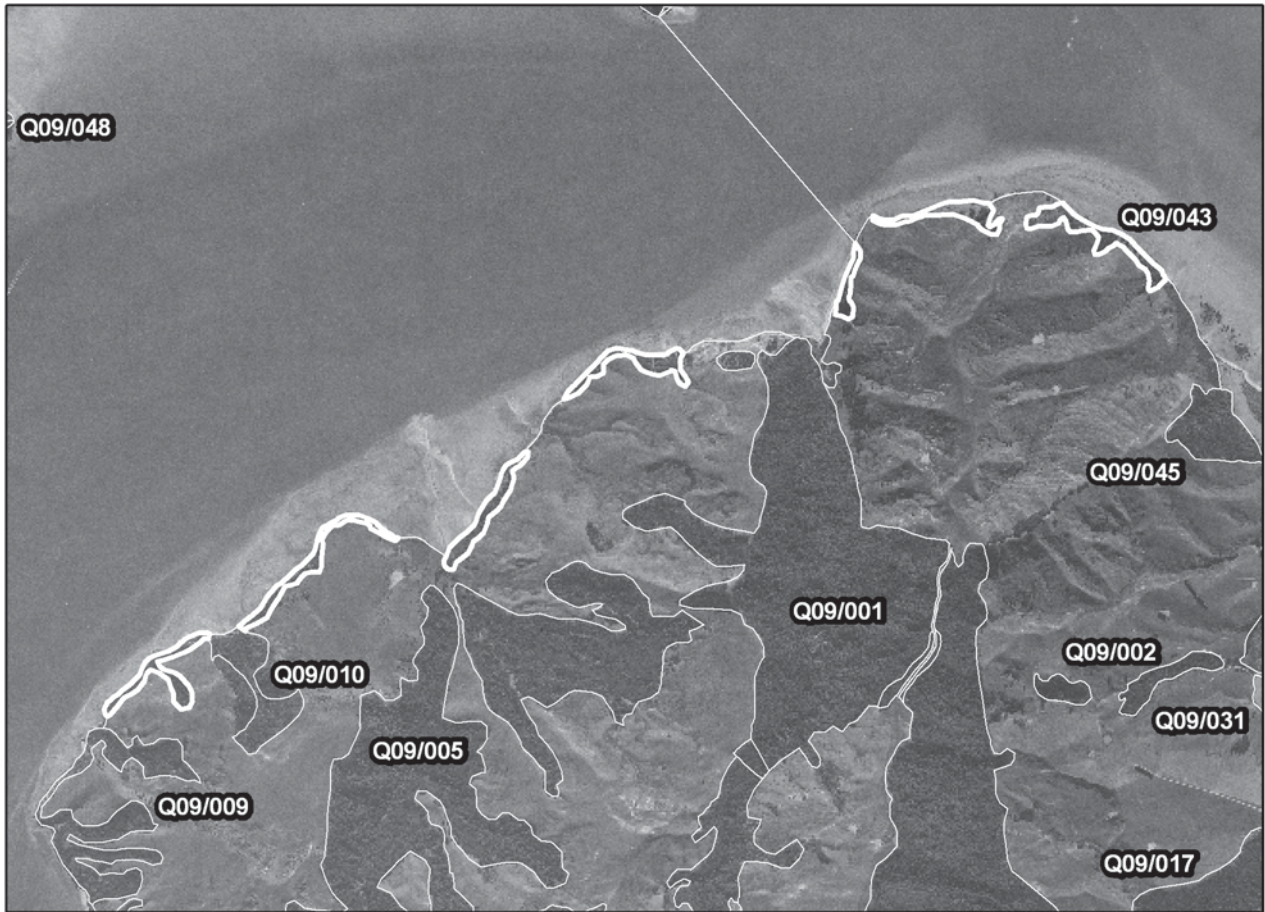
Landform/geology

Coastal cliffs and banks of Miocene thinly interbedded sandstone and mudstone, and polymict igneous conglomerate (Waitemata Group), and Miocene volcanoclastic gravelly sandstone (Waitakere Group).

The cliffs and neighbouring shore platforms (in Otamatea River Confluence site (Q09/021)) have an almost complete exposure from Timber Bay distal flysch through Matapoura Conglomerate, large slump horizon, and into Pakaurangi Formation. Erionite occurs in a 90 cm tuff bed of the Timber Bay Formation with lesser amounts of chabazite, clinoptilolite and andesine (Kenny & Hayward 1996).

Vegetation

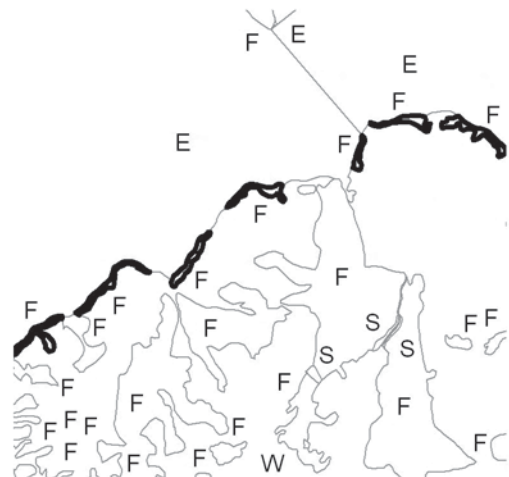
This site encompasses a set of narrow treeland remnants which are dispersed along the northwest coast of the Puketotara Peninsula, also known as 'The Funnel'. The site is defined by the presence of large pohutukawa, with frequent totara, puriri and kanuka, often overhanging the coast of a large estuarine



Q09/043 The Funnel Pohutukawa Fringe

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



natural area, the Otamatea River Confluence (Q09/021). A recognisable 5–20 m wide fringe of this ecological unit occurs in broken stretches along approximately 4 km of coastline. Bare cliffs, pasture or gorse scrub occur in most of the intervening stretches. The remnants in this site sometimes connect the vegetation in other sites along their coastal margins, e.g. Timber Bay Forest (Q09/001) to Puketotara Forest Remnant 2 (Q09/005).

Fauna

Not surveyed.

Significance

Although these pohutukawa remnants are very narrow and are missing several palatable canopy species missing (e.g. houpara and tawapou), they occur on coastal cliffs of national geological importance, and are therefore representative. These cliffs have the most complete sequence through Waitematea Group and lower Waitakere Group formation in the Kaipara region (Kenny & Hayward 1996). Puketotara erionite in the north of the site is the most silica-poor erionite variety reported in the world, and is therefore of international geological significance (Kenny & Hayward 1996). In terms of ecological function, this site provides a protective vegetation buffer to the coastal fringe and is possibly a roosting site for sea birds.

MOHINUI FOREST REMNANTS 4

Survey no.	Q09/044
Survey date	13 December 2005
Grid reference	Q09 350 500 (3 remnants)
Area	13.4 ha
Altitude	42-80 m asl

Ecological units

- (a) Totara forest on moderate hillslope (50%)
- (b) Taraire-kahikatea-puriri forest on moderate hillslope (50%)

Landform/geology

Hillslopes and gullies underlain by melange (undifferentiated Mangakahia & Motatau Complex lithologies).

Vegetation

The site comprises three forest remnants amongst pasture on south-facing slopes in the upper catchment of the Kaireia Stream, Oneriri Peninsula. Mohinui Peak lies to the northwest and Mohinui Forest Remnant 3 (Q08/190) lies nearby to the north. Large numbers of sheep were observed sheltering from midday sun underneath the forest and none of the remnants appear to be fully fenced.

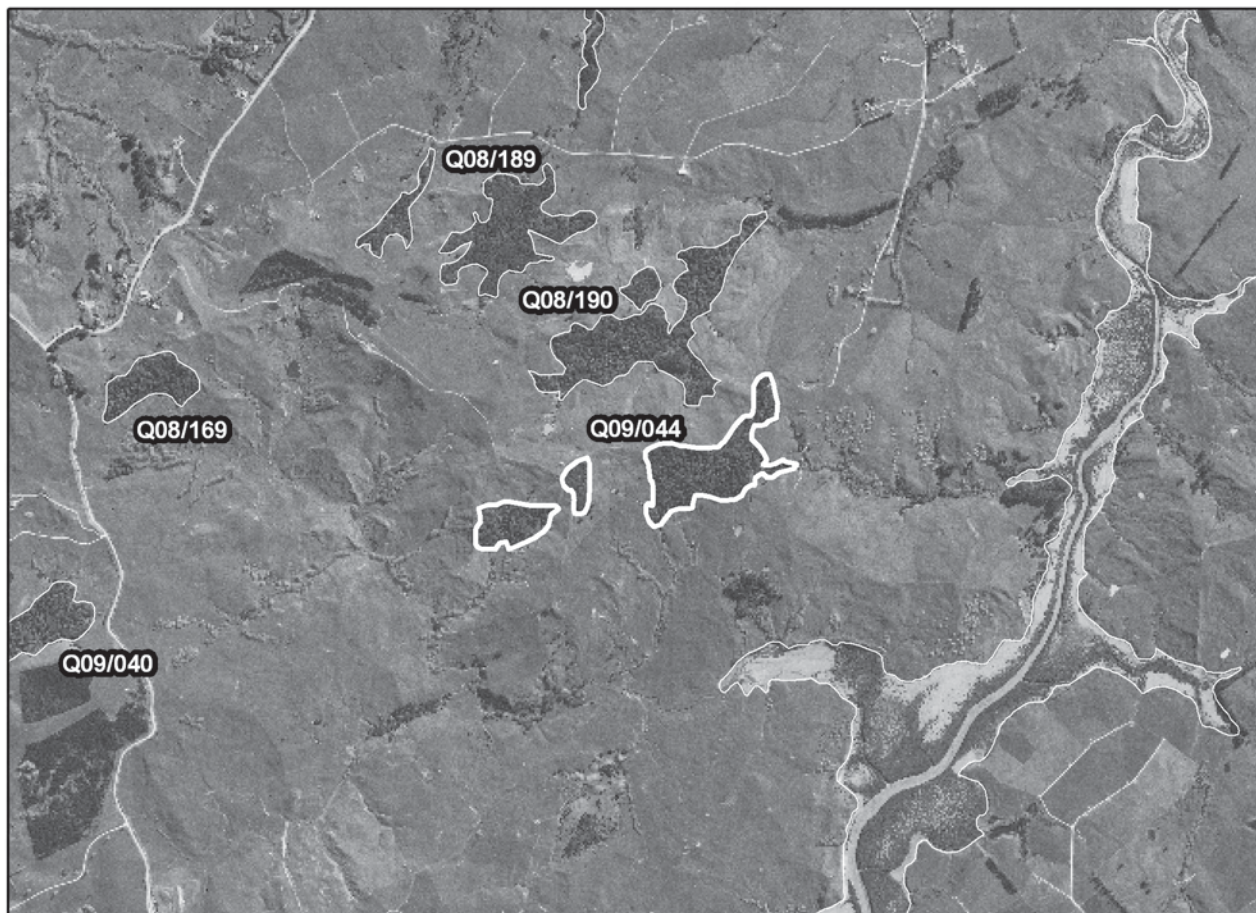
- (a) Dense totara covers about half the site, mainly in the smaller remnants or the on edges of the large remnant. Totara is associated with frequent karaka, kanuka and kahikatea, and occasional manuka and ti kouka.
- (b) A diverse mixture of taraire, kahikatea and puriri with frequent pukatea and rewarewa, and occasional nikau covers the other half of the site, often in the centre of the forest remnants, surrounded by totara forest.

Fauna

Grey warbler.

Significance

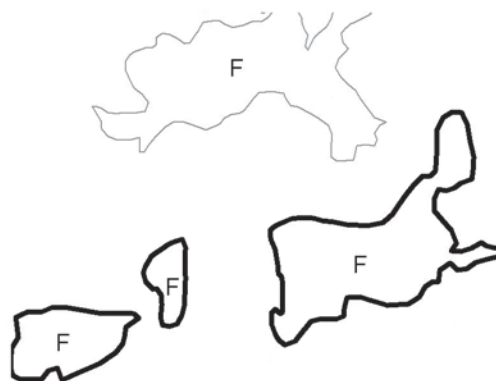
Ecological unit (b) taraire-kahikatea-puriri forest on moderate hillslope, is a unique, representative and relatively diverse forest type, and raises the significance of this site to Level 1, despite its obvious lack of condition due to grazing and trampling effects.



Q09/044 Mohinui Forest Remnant 4

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



PUKETOTARA FOREST REMNANT 15

Survey no.	Q09/045
Survey date	13 December 2005
Grid reference	Q09 286 493
Area	5.0 ha
Altitude	0-60 m asl

Ecological unit

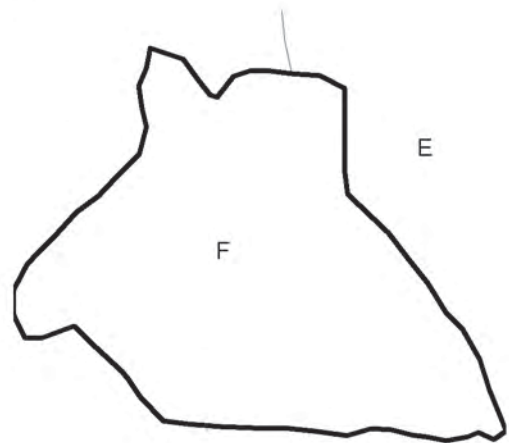
(a) Karaka-kanuka-kahikatea forest on steep coastal margin (100%)



Q09/045 Puketotara Forest Remnant 15

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



Landform/geology

Coastal hillside underlain by Miocene thinly interbedded sandstone and mudstone (Waitemata Group).

Vegetation

This site comprises a compact and diverse stand of coastal broadleaved-podocarp forest on the steeply sloping northeastern coast of Puketotara Peninsula, facing the mouth of the Whakaki River. The surrounding landscape is grazed pasture, and it is likely that stock have access to this forest. The forest

comprises abundant karaka in association with puriri and kanuka. Kowhai and kahikatea are frequent, and kauri and ti kouka occur in local patches.

Fauna

Not surveyed.

Significance

This ecological unit is unique and representative in Otamatea ED Northland. Its most striking feature is the high abundance of karaka, which is quite unusual in Otamatea ED Northland. The health of the remnant is under threat from grazing animals, which reduce regeneration and trample tree roots and soil.

BUSHY POINT FOREST REMNANT

Survey no.	Q09/046
Survey date	12 January 2006
Grid reference	Q09 198 485
Area	4.7 ha
Altitude	0-56 m asl

Ecological units

- (a) Houpara-kowhai-tawapou forest on steep coastal margin (50%)
- (b) Pohutukawa forest on steep coastal margin (25%)
- (c) Kanuka forest on steep coastal margin (25%)

Landform/geology

Coastal hillsides underlain by Miocene andesitic tuff breccia and pumiceous pyroclastic flow deposits (Waitakere Group). Clinoptilolite occurs as fossil replacement in sandstone (Kenny & Hayward 1996).

Vegetation

Bushy Point is a prominent headland on the southwest coast of Hukitere peninsula. It faces the prevailing winds coming from the southwest through the Kaipara Harbour mouth; hence the vegetation is very exposed to weather. This site also includes cliffs and steep slopes extending eastwards from the point. The landward side of the site is bordered by an extensive radiata pine plantation.

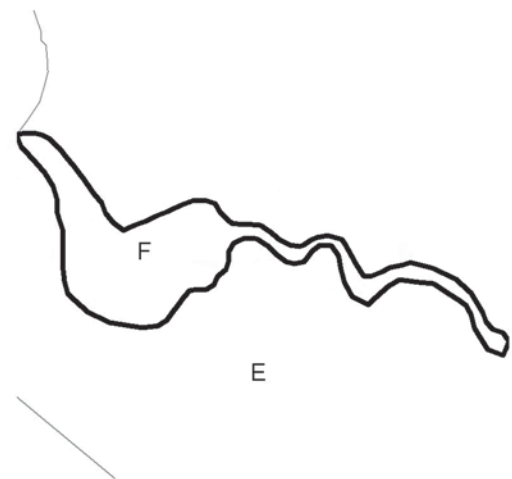
- (a) The western side of the main headland is covered by a low stature, lush mixture of houpara, kowhai and tawapou with frequent puriri (some showing dieback), pohutukawa and kohekohe. Titoki, ti kouka, karaka and rewarewa are dotted occasionally throughout the forest, while harakeke and kowharawhara occur sporadically along the forest edges by the water.
- (b) On the eastern steep slopes there is pohutukawa forest with frequent emergent mature radiata pine, which have probably seeded in from the pine plantations directly behind. Emergent, mature maritime pine also occur sporadically. A large diversity of species is present under the sparse pohutukawa canopy in including harakeke, turutu, kowharawhara, kiokio, toetoe, tangle fern, houpara, hangehange, mapou and one patch of willow-leaved hakea.



Q09/046 Bushy Point Forest Remnants

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



(c) On the eastern side of the point there is kanuka forest with frequent mamangi, mapou and houpara, and occasional ti kouka, rewarewa and emergent radiata pine.

Significant flora

Tawapou (regionally significant).

Fauna

Little shag, white-faced heron.

Significance

This site supports two forest types containing tawapou (regionally significant) and is considered representative for houpara-kowhai-tawapou forest on steep coastal margin which is a unique forest type in Otamatea ED Northland, and is a very rare forest type in the Northland Region (Wendy Holland, pers. comm.). The forest and headland provide roosting habitat for seabirds and is an important protective buffer to the Kaipara Harbour. The presence of clinoptilolite replacing fossil shells in the sandstone renders this site regionally important as a geological site (Kenny & Hayward 1996).

KUMETE BLUFF FOREST REMNANT

Survey no.	Q09/047
Survey date	12 January 2006
Grid reference	Q09 220 481
Area	10.9 ha
Altitude	0–80 m asl

Ecological units

- (a) Kanuka forest on steep coastal margin (60%)
- (b) Pohutukawa-houpara-kowhai treeland on coastal cliff (40%)

Landform/geology

Coastal cliffs of Miocene volcanoclastic gravelly sandstone and pumiceous pyroclastic flow deposits (Waitakere Group).

Vegetation

Kumete Bluff is a 1 km long near-vertical coastal cliff of approximately 80 m height, located on the southernmost point of the Hukaterere peninsula. Strong marine currents stream past the site at high and low tide, as water surges in and out of the Arapaoa and Otamatea Rivers. The site is very exposed to prevailing southwesterly winds coming through the Kaipara Harbour mouth. Above the bluff there are grazed paddocks, which are apparently fenced off from the forest on the bluff. This site also includes a small forested gully on the western side of the bluff.

(a) The top of the bluff and the western gully are covered in kanuka forest with frequent *Coprosma macrocarpa*, houpara, mapou and radiata pine (wilding pines from neighbouring pine plantations). Also found here are occasional pohutukawa, heketara and maritime pine.

(b) The vegetation cascading down the cliffs is a distinctive mixture of pohutukawa, kowhai and houpara with frequent examples of *Coprosma macrocarpa*, karamu and kanuka. 30% of the pohutukawa appear dead, perhaps as a result of possum browse. A variety of species occur in scattered populations in the various microhabitats of the cliffs. Slip faces are mostly covered in pampas, while toetoe grows on small ledges and shelves, as do *Austrostipa stipoides*, harakeke, rengarenga and kowharawhara. New Zealand spinach sprawls and dangles over steep edges, while rangiora, akepiro, karaka, mahoe and ti kouka are present on flatter areas with more soil.

Fauna

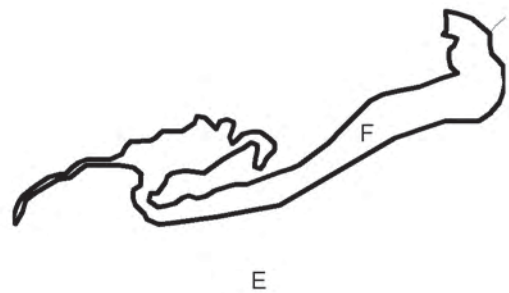
Fantail, kingfisher, little shag.



Q09/047 Kumete Bluff Forest Remnant

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



Significance

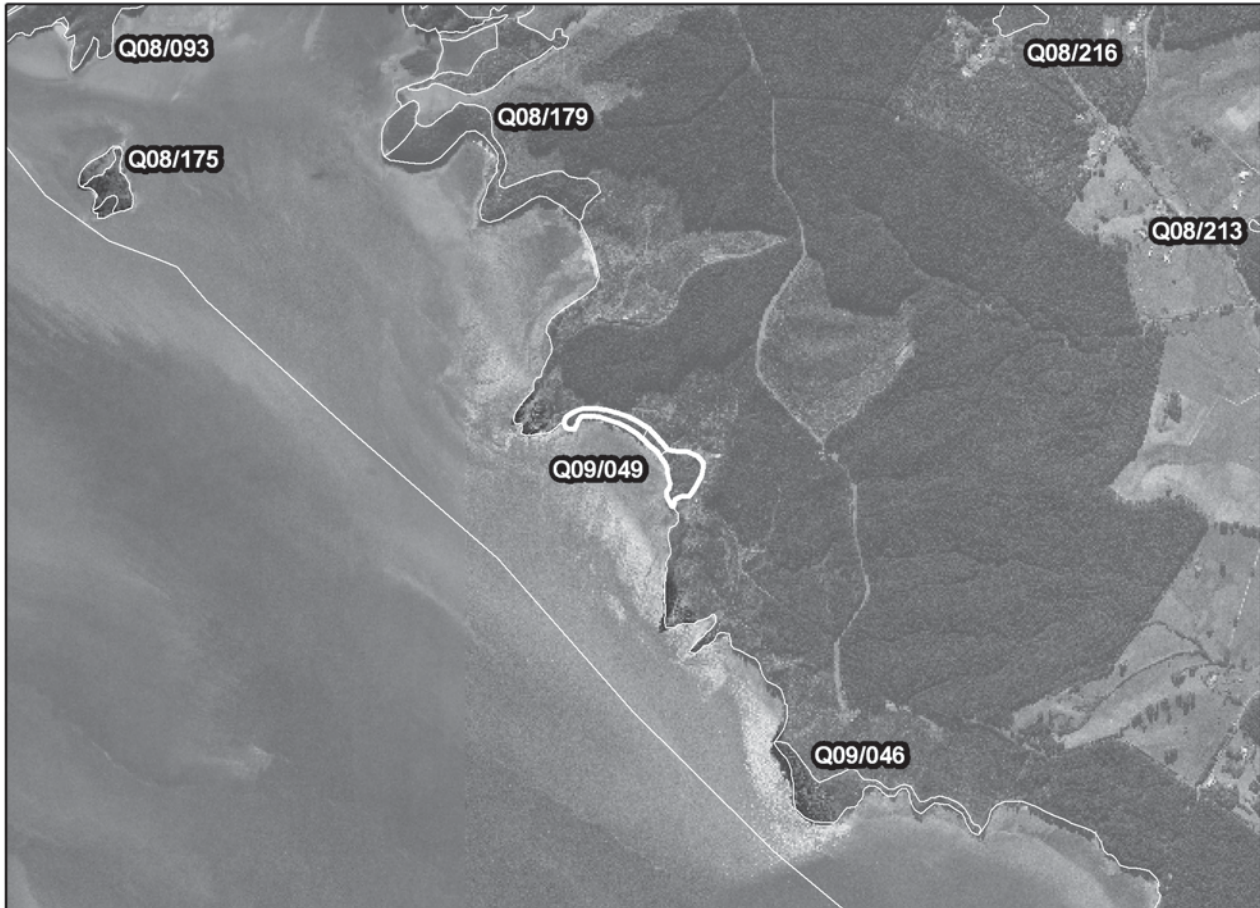
Pohutukawa-houpara-kowhai treeland on coastal cliff (b) is a representative type, despite exhibiting poor condition, as this is the only site where pohutukawa, houpara and kowhai occur on coastal cliffs in the Northland part of the ED. It is also the only site where New Zealand spinach was noted. The site provides roosting sites for sea birds. The vegetation is valuable as a slope stabiliser and buffer between pasture and coast.

OTAIWHATA BAY FOREST AND SHRUBLAND

Survey no. Q09/049
 Survey date 12 January 2006
 Grid reference Q09 192 497
 Area 2.9 ha (2.6 ha forest, 0.3 ha shrubland)
 Altitude 0-35 m asl

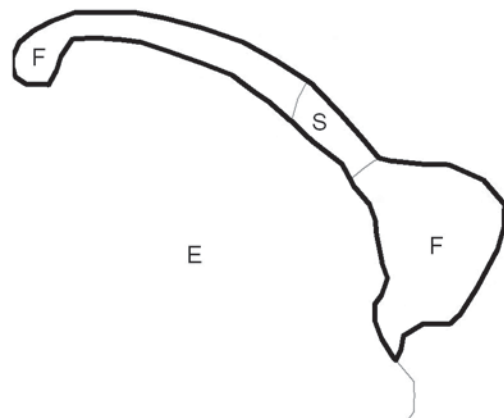
Ecological units

- (a) Pohutukawa-houpara forest on gentle coastal margin (90%)
- (b) Harakeke-manuka-pampas shrubland on gentle coastal margin (10%)



Q09/049 Otaiwhata Bay Forest and Shrubland

S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine



Landform/geology

Coastal hillsides underlain by Miocene volcanoclastic gravelly sandstone (Waitakere Group).

Vegetation

This site comprises a continuous indigenous forest and shrubland remnant behind Otaiwhata Bay on the west coast of the Hukatere peninsula. Forest covers most of the site, with a small patch of shrubland in the middle of the bay where there appears to be a private camping ground. The site backs onto extensive radiata pine plantations.

(a) Pohutukawa is abundant in the forest canopy in association with common houpara, frequent harakeke and radiata pine (emergent), and occasional examples of manuka, pampas, kowharawhara, mapou, toetoe, kowhai and *Coprosma macrocarpa*.

(b) Harakeke is the most abundant plant in the shrubland, followed by manuka and pampas which are common. Gorse occurs frequently throughout the shrubland and there are occasional pohutukawa, houpara and ti kouka.

Fauna

Not surveyed.

Significance

This is a representative site for ecological unit (a), which is the only example of pohutukawa-houpara forest in Otamatea ED Northland.