

which is only known from two sites (the other is Ngamotu Farm Pond (Q09/031)). Four threatened bird species are known to use the lake (see above). The lake is a moulting site for paradise shelduck (Peter Anderson, pers. comm.). The most abundant bird species on the wetland at the time of the site visit were, however, black swans (introduced and naturalised), and there were occasional domestic geese, Australian magpies and peafowl. The entire extent of the lake is within the Takahoa Government Purpose Wildlife Management Reserve, which is administered by the Department of Conservation.

RANGIORA ROAD FOREST REMNANTS

Survey no.	Q08/166
Survey date	7 December 2005
Grid reference	Q08 320 531 (3 remnants)
Area	11.7 ha (5.2 ha forest, 6.5 ha shrubland)
Altitude	2–40 m asl

Ecological units

- (a) Manuka-kanuka shrubland on gentle coastal margin (55%)
- (b) Totara-kanuka forest on gentle coastal margin (45%)

Landform/geology

Coastal hillslopes and gullies underlain by Cretaceous–Paleocene thinly bedded calcareous mudstone (Whangai Fm, Mangakahia Complex).

Vegetation

This site comprises three remnants of indigenous shrubland and forest on the southern coastal margin of the lower Otamatea River (Q08/062).

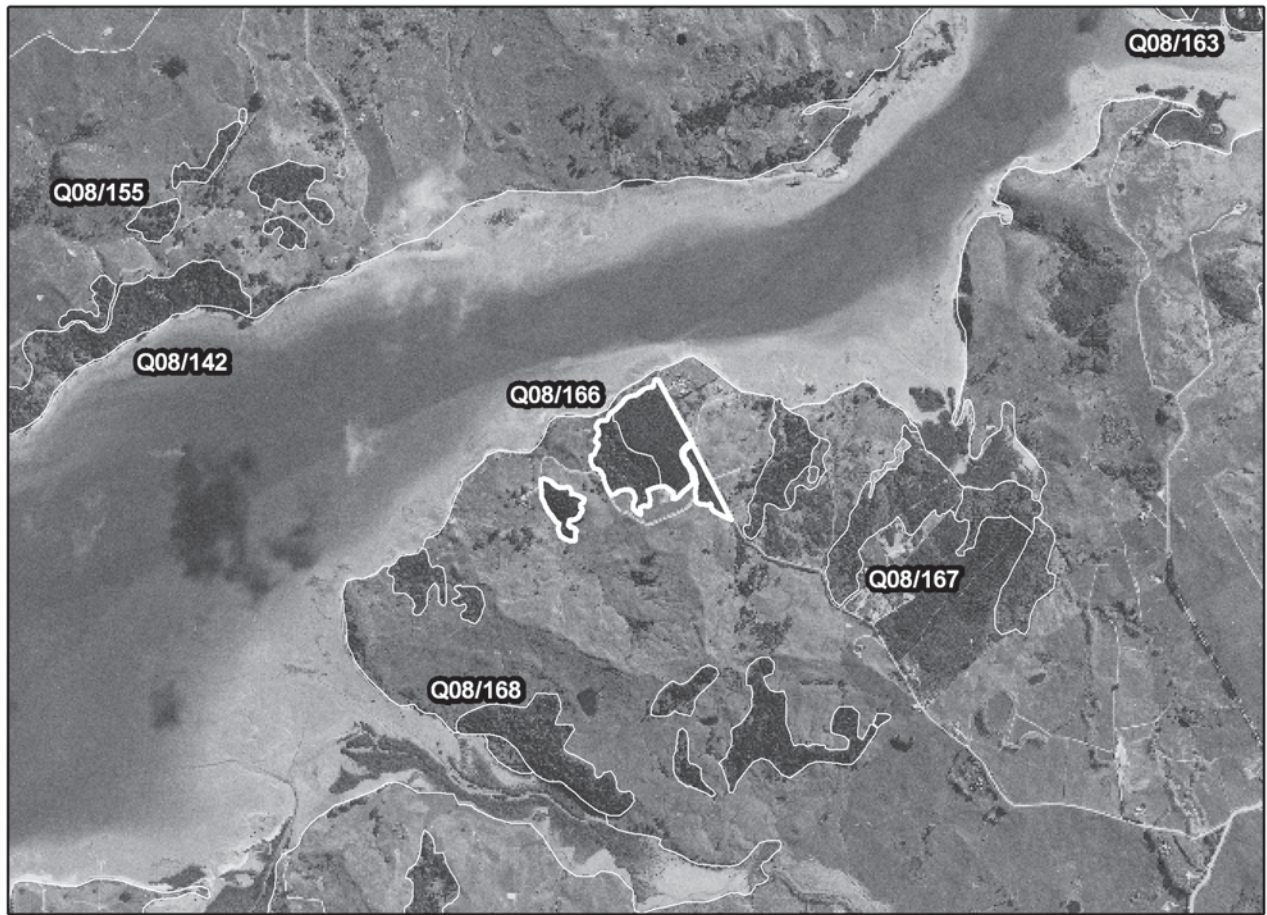
- (a). Manuka is currently dominant in the canopy of this manuka-kanuka shrubland but kanuka is likely to become dominant in the short term. Young totara are frequent and occasional examples of mapou, mingimingi, ti kouka, mamangi and pampas are present. The shrubland areas lie adjacent to Rangiora Road next to the largest infestation of dally pine recorded in this survey.
- (b) The dominant species in the forest canopy, to the west, are totara and kanuka, accompanied by frequent puriri and kowhai, and occasional pukatea.

Fauna

Not surveyed.

Significance

This site supports quite a large area of regenerating shrubland comparative to other remaining examples in Otamatea ED Northland (13th largest), and it is also considered to be a representative example of manuka-kanuka shrubland. The natural character and function of the remnants is threatened by grazing and weeds, though dally pine is unlikely to be able to establish unless the shrubland cover is disturbed.



Q08/166 Rangiora Road Forest Remnants

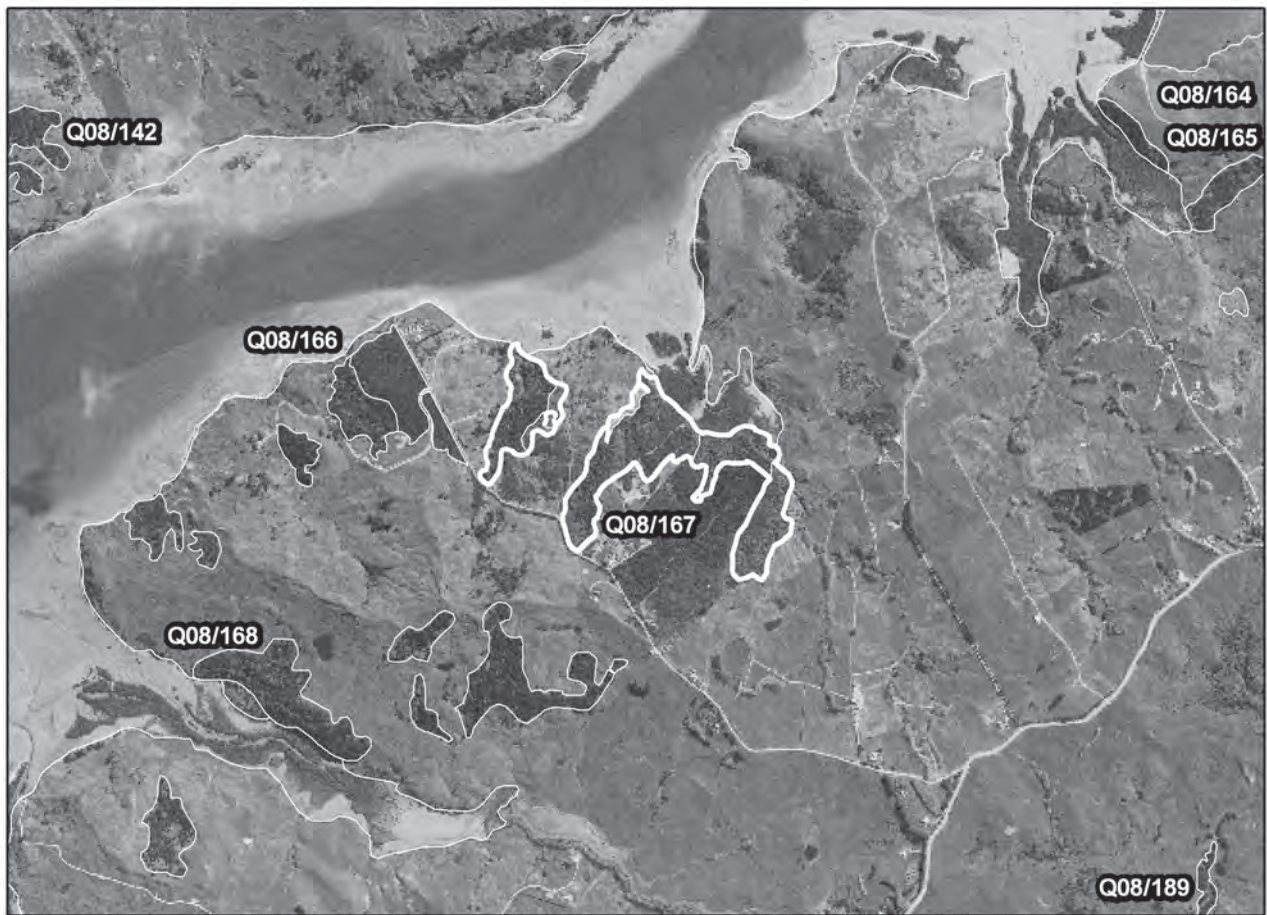
S = Shrubland
 F = Forest
 W = Wetland
 E = Estuarine

0 250 500 1,000 Metres



MANGAITI CREEK FOREST REMNANTS

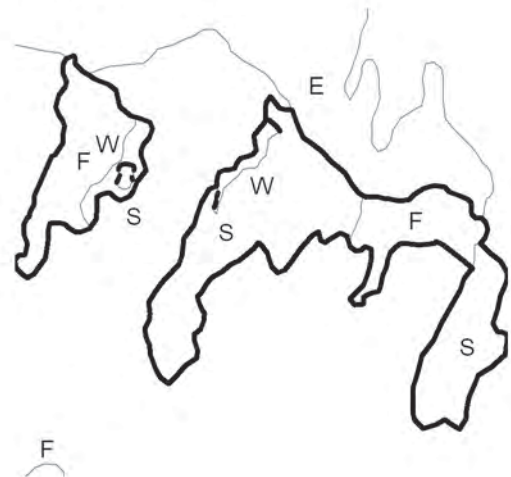
Survey no.	Q08/167
Survey date	7 December 2005
Grid reference	Q08 329 530 (2 remnants)
Area	22.7 ha (7.8 ha forest, 14.2 ha shrubland, 0.7 ha wetland)
Altitude	0-53 m asl



Q08/167 Mangaiti Creek Forest Remnants

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

0 250 500 1,000 Metres



Ecological units

- (a) Manuka-mapou shrubland on gentle hillslope (25%)
- (b) Manuka shrubland on gentle hillslope (25%)
- (c) Taraire-puriri forest in gully (15%)
- (d) Manuka-ti kouka-mapou shrubland on gentle hillslope (13%)
- (e) Totara-kahikatea-kowhai forest on moderate hillslope (10%)

(f) Kahikatea forest in gully (9%)

(g) Raupo reedland in small depression (3%)

Landform/geology

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

Vegetation

This site comprises indigenous forest, shrubland and freshwater wetland on the southwestern bank of the Mangaiti Creek, a small tidal inlet on the Otamatea River (Q08/062). It is a mosaic of habitat types interspersed with various land use activities such as pastoral farming, plantation forestry and residential dwelling. Many of the indigenous vegetation edges are fragmented and sparse. Some areas of indigenous shrublands have been interplanted with eucalyptus; these areas have been excluded from the site.

(a) In the upper catchment, next to Rangiora Road, the main vegetation cover is a shrubland of manuka and mapou, with frequent ti kouka and tarata, and occasional bracken, bush lawyer, putaputaweta, mamangi, akepiro, karamu, kahikatea and totara.

(b) In the lower catchment only manuka is dominant in the shrublands. Ti kouka are frequent. Tracks and clearings are present, and it seems that some active clearance is still going on.

(c) The westernmost gully comprises taraire-puriri forest with frequent karaka and kowhai, and occasional mapou. Stands of black wattles on the edges are excluded from the site.

(d) On the extreme eastern side, shrubland dominated by manuka, ti kouka and mapou occurs with frequent tarata and mamaku. The yellow hues of ti kouka and tarata make this area stand out quite starkly from the darker, pure manuka shrubland. This shrubland may be associated with a small waterway, though this was difficult to ascertain from the roadside.

(e) On the coastal margin at the upper end of the Mangaiti Creek, a small area of forest is composed of totara, kahikatea and kowhai with frequent tarata.

(f) A dense kahikatea stand is present next to Rangiora Road in a creek bed. Pukatea, karaka and kowhai are frequent, and mamangi and ti kouka are occasional.

(g) Two small areas of raupo reedland are present below the forest and shrubland in close proximity to the coast.

Fauna

Australasian harrier.

Significance

This site has a high diversity of habitat types for its size, although this is partially a result of a variety of recent disturbances. The site is representative for (a) manuka-mapou shrubland on gentle hillslope, and (d) manuka-ti kouka-mapou shrubland on gentle hillslope. The latter was not recorded elsewhere in Otamatea ED Northland.

MOHINUI FOREST REMNANT 1

Survey no. Q08/169
Survey date 13 December 2005
Grid reference Q08 333 504
Area 4.0 ha
Altitude 72-100 m asl

Ecological units

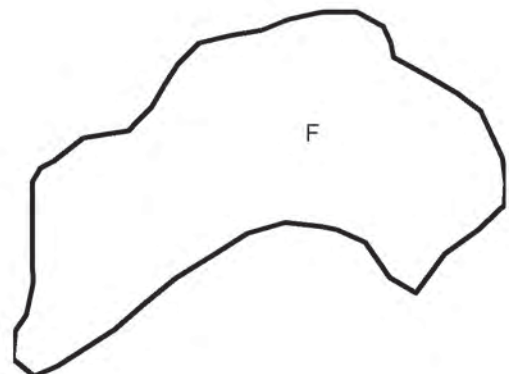
- (a) Totara-puriri forest on moderate to steep hillslope (50%)
- (b) Kahikatea-puriri forest on gentle hillslope (50%)



Q08/169 Mohinui Forest Remnant 1

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

0 250 500 1,000 Metres



Landform/geology

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

Vegetation

This site comprises a compact, oblong indigenous forest remnant on a south-east facing slope at the extreme western side of the Kaira Creek catchment. The surrounding land use is pastoral farming, and the forest does not appear to be fenced off from grazing livestock.

(a) Roughly half the area (in the east) is steep and covered in a forest of totara and puriri with frequent kahikatea, taraire, kanuka and kohekohe, and occasional matai, pukatea and tarata.

(b) The other half has more gentle terrain, and supports a forest with abundant, tall kahikatea (some of which are mature trees, much older than most of the surrounding forest) and puriri. Frequent species include matai, kanuka and pukatea. Occasional species include totara, titoki, ti kouka, ponga and rewarewa.

Fauna

Australasian harrier.

Significance

Some of the puriri appear stressed by exposure or stock damage to roots, and may be an indicator of the condition of the rest of the forest. Without fencing this remnant is unlikely to have much understorey. Despite problems with current condition, the presence of mature kahikatea is significant for Otamatea ED Northland, therefore ecological unit (b), kahikatea-puriri forest on gentle hillslope, is a representative type.

PAHI RIVER HEADWATERS

Survey no.	Q08/170
Survey date	16 December 2005
Grid reference	Q08 315 666 (10 remnants)
Area	31.0 ha (30.7 ha forest, 0.3 ha wetland)
Altitude	40–120 m asl

Ecological units

- (a) Kahikatea forest in gully (45%)
- (b) Totara-kanuka treeland in gully (20%)
- (c) Totara treeland on moderate to steep hillslope (15%)
- (d) Totara-kahikatea forest on gentle hillslope (10%)
- (e) Taraire forest on moderate to steep hillslope (9%)
- (f) Open water (constructed freshwater farm pond) (1%)

Landform/geology

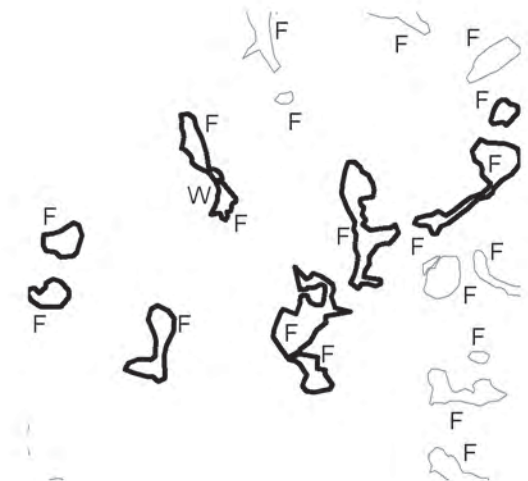
Hillslopes and gullies underlain by Cretaceous sandstone and mudstone (Mangakahia Complex); Oligocene micritic limestone (Mahurangi Limestone, Motatau Complex); melange (undifferentiated Mangakahia & Motatau Complex lithologies).



Q08/170 Pahi River Headwaters

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

0 250 500 1,000 Metres



Vegetation

This site comprises ten separate indigenous forest remnants in the upper catchment of the Pahi River, in hills behind the town of Maungaturoto. The remnants are scattered up to 500 m apart, mostly along small watercourses, and are interspersed with pastoral land divided by farm tracks. Along the main stream there are reaches with a lot of crack willow, hawthorn and tree privet which have been excluded from the site.

(a) The main forest type comprises a dense kahikatea canopy with frequent nikau, rewarewa, rimu, kanuka, taraire and totara and occasional matai and ti

kouka are present. Hawthorn is often present on forest edges. Most of this type falls within the boundaries of a QEII Open Space Covenant.

(b) Narrow examples of totara-kanuka treeland occur along stream banks with frequent ti kouka, kowhai, kahikatea and hawthorn, and occasional matai, mapou, tarata, bush lawyer, poplar and radiata pine.

(c) Totara treeland is present on a drier hillslope in the upper catchment next to a farm pond.

(d) Totara-kahikatea forest often occurs at the edges of kahikatea gully forest.

(e) The two westernmost remnants on steep hill topography are dominated by taraire with frequent species pukatea and rewarewa, and occasional kanuka, kohekohe, kahikatea, nikau and rimu.

(f) A small farm pond is nestled between two totara treeland remnants of type (c).

Fauna

Grey warbler, kingfisher, spur-winged plover.

Significance

This site contains one of the best representative examples of (a) kahikatea forest in gully in Otamatea ED Northland. The forest remnants in this site provide valuable protection and stability to the upper catchment of the Pahi River. The largest continuous forest area on the stream banks (type (a)) is within a QEII Open Space Covenant (4 ha in extent).

WAIPIKOPIKO STREAM HEADWATERS

Survey no.	Q08/171
Survey date	16 December 2005
Grid reference	Q08 316 679 (7 remnants)
Area	24.5 ha
Altitude	60–100 m asl

Ecological units

(a) Totara-kahikatea forest on alluvium (75%)

(b) Taraire-kahikatea-nikau forest on moderate to steep hillslope (10%)

(c) Totara-karaka-kowhai forest on moderate to steep hillslope (7%)

(d) Nikau-kahikatea forest in gully (5%)

(e) Nikau forest on moderate hillslope (3%)

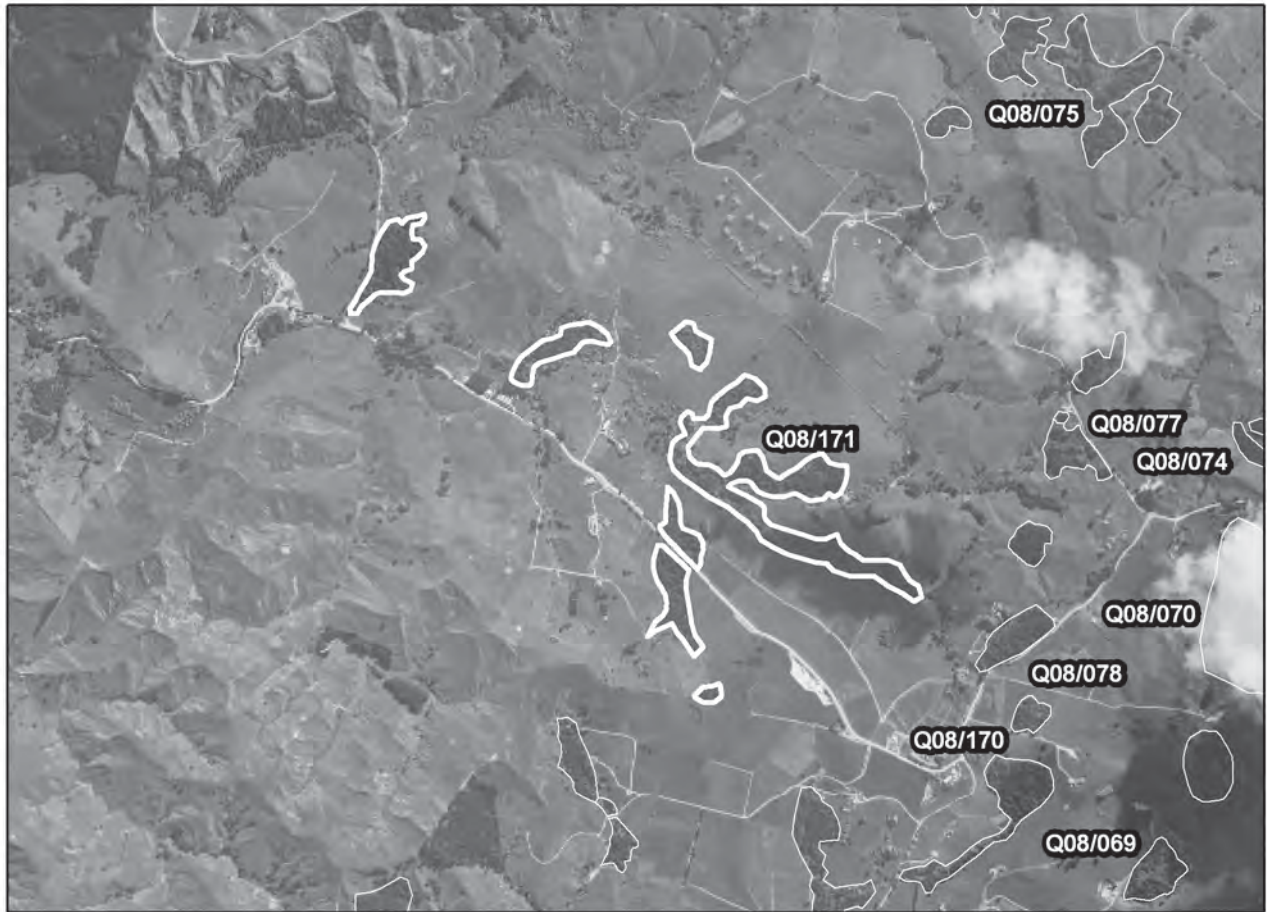
Landform/geology

Hillslopes underlain by Oligocene micritic limestone (Mahurangi Limestone, Motatau Complex) and melange (undifferentiated Mangakahia & Motatau Complex lithologies), and valley flats on Pleistocene and Holocene alluvium.

Vegetation

This site encompasses indigenous forest remnants on the banks of the upper Waipikopiko Stream. Pastoral land surrounds the forest remnants, and hawthorn is widely naturalised in and around the stream banks.

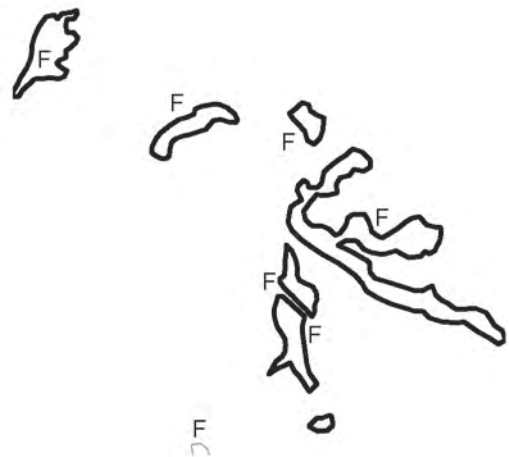
(a) The most common forest type is totara-kahikatea forest, the latter usually emergent above the former, with frequent kanuka and ti kouka (especially on



Q08/171 Waipikopiko Stream Headwaters

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

0 250 500 1,000 Metres



pasture edges) and occasional titoki, kowhai, matai, puriri, rimu, rewarewa, tanekaha, kauri and hawthorn.

(b) The forest cover on a small south-facing hillslope comprises abundant taraire in association with kahikatea and nikau. Karaka and totara are frequent, with occasional kohekohe.

(c) Contiguous with forest of type (b) on similar topography there is a small example of totara-dominant forest with common karaka and kowhai. Here,

nikau and kahikatea are frequent with occasional matai, titoki, puriri, rimu, rewarewa, tarata and ti kouka.

(d) One small, protected gully-head supports a forest with a nikau-dominant canopy shaded by numerous mature emergent kahikatea. Also present are frequent kowhai, frequent emergent pukatea and occasional matai, taraire and kauri.

(e) One small stand comprising abundant nikau in the canopy grows on an exposed hill paddock just north of the Waipikopiko Stream. The nikau are associated with frequent totara and hawthorn, and occasional pukatea, matai, ti kouka and taraire.

Fauna

Australasian harrier.

Significance

All of the ecological units in this site are considered representative. Type (a) totara-kahikatea forest on alluvium is considered to be one of the best examples of its type recorded in Otamatea ED Northland. There are four other unique representative ecological units in this site: (b) taraire-kahikatea-nikau forest on moderate to steep hillslope, (c) totara-karaka-kowhai forest on moderate to steep hillslope, (d) nikau-kahikatea forest in gully, and (e) nikau forest on moderate hillslope.

WAIRAU RIVER RIPARIAN FOREST REMNANTS

Survey no.	Q08/173
Survey date	14 December 2005
Grid reference	Q08 368 662 (10 remnants)
Area	21.3 ha
Altitude	20-40 m asl

Ecological units

(a) Totara-kahikatea forest on alluvium (95%)

(b) Kahikatea forest on alluvium (5%)

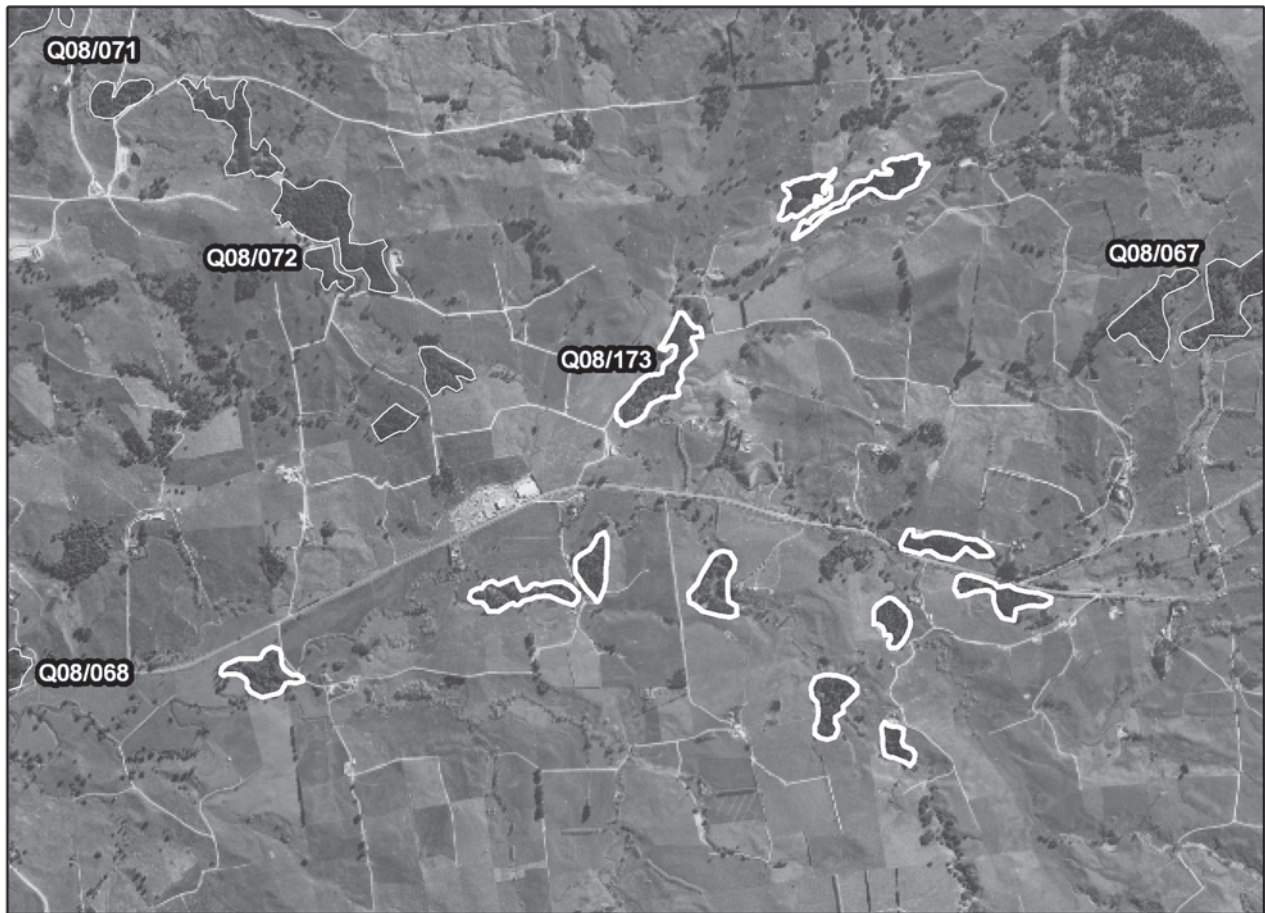
Landform/geology

Valley flats on Holocene alluvium, and valley sides underlain by melange (undifferentiated Mangakahia & Motatau Complex lithologies).

Vegetation

This site comprises ten indigenous forest remnants on floodplain alluvium of the Wairau River. Most indigenous forest on these soils has been cleared for beef and dairy farming (a dairy factory lies just east in the town of Maungaturoto), as these are some of the most fertile lands in the local area. What remains is scattered, narrow, elongated remnants with minimal indigenous understorey layers. However, there are some large, mature matai and kahikatea present.

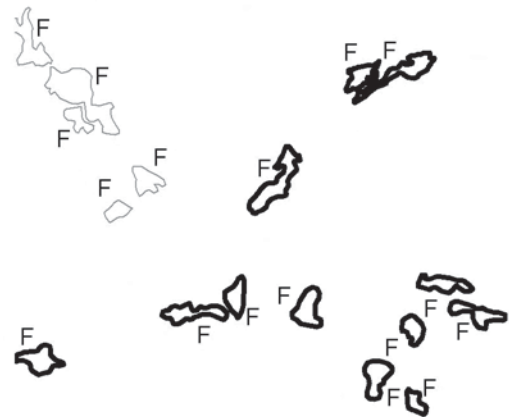
(a) The majority of the remnants comprise totara-kahikatea forest with frequent karaka, kanuka, kowhai, matai and titoki, and occasional mapou, ti kouka, putaputaweta, rimu, rewarewa, tree privet, crack willow and poplar. Large areas of mainly exotic trees are not included in the site.



Q08/173 Wairau River Riparian Forest Remnants

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

0 250 500 1,000 Metres



(b) At grid reference Q08 364 660 (towards the middle of the site) there is a dense stand of almost pure kahikatea with occasional matai, ti kouka and totara.

Fauna

Not surveyed.

Significance

Floodplain forest on alluvial soil is rare not only in Otamatea ED Northland, but throughout New Zealand, and is one of the rarest and most under-represented forest types in Northland (Wendy Holland, pers. comm.). Despite their obvious

degradation, both ecological units are representative types, as they are the last vestiges of forest on fertile alluvial soil in the study area.

KAIWHITU ISLAND

Survey no.	Q08/175
Survey date	12 January 2006
Grid reference	Q08 174 506
Area	2.6 ha (1.6 ha forest, 0.6 ha 'other', 0.3 ha shrubland)
Altitude	0–40 m asl

Ecological units

- (a) Pohutukawa-kowhai forest on steep coastal margin (40%)
- (b) Exotic grassland (26%)
- (c) Karaka-tawapou-harakeke forest on steep coastal margin (22%)
- (d) Mapou-manuka-harakeke shrubland on steep coastal margin (12%)

Landform/geology

Steep-sided islet formed of Miocene volcanoclastic gravelly sandstone (Waitakere Group)

Vegetation

Kaiwhitu Island lies in the inner Kaipara Harbour, approximately 350 m south of the nearest point on the Hukatere peninsula. It is a small, rounded, very steep island with a north-south saddle in the middle, covered in indigenous forest and shrubland. Shallow waters with a sandy bottom surround the island, which is a popular spot for flounder fishing.

- (a) On the eastern, land-facing, side of the island there is a forest of pohutukawa and kowhai with frequent karaka and occasional mamangi.
- (b) About quarter of the island is covered in exotic grassland in which the dominant species could not be identified from a distance.
- (c) The western side of the island supports a forest of karaka, tawapou and harakeke with frequent ti kouka.
- (d) On the southern side of the island the shrubland comprises equally dominant harakeke, mapou and manuka, and frequent pohutukawa, karaka, toetoe and kowharawhara.

A 1993 survey recorded the island as possum-free and probably rat-free as well, as tawapou seed did not appear to be chewed (SSBI Q08/H056). Some interesting plant species were recorded which are not often noted in Otamatea ED Northland because they appear to be specific to exposed coastal environments, e.g. rengarenga lily, *Peperomia urvilleana* and native iceplant. There is also an unconfirmed record *Libertia ixioides* from this site (SSBI Q08/H056).

Significant flora

Tawapou (regionally significant).

Fauna

Fauna species were not surveyed during the present study, but a list of indigenous fauna recorded in 1993 includes the following bird species: little