

Table 2 continued from the previous page

SITE NAME	SURVEY NO.	GRID REF.
Mareretu Bush Remnants	Q08/027	1717494e 6009839n (AY30)
Golf Course Road Remnants	Q08/029	1719961E 6008252N (AY30)
Smoky Hill Scenic Reserve and Surrounds	Q08/030	1701123E 6006480N (AY29)
Lower Arcadia Road Remnants	Q08/031	1712150E 6007838N (AY30)
Franklin Road Bush	Q08/032	1710454E 6005802N (AY30)
Waipikopiko Stream Remnants	Q08/033	1718813E 6007241N (AY30)
Wairere Valley Bush Remnant	Q08/034	1715748E 6006013N (AY30)
Lower Bull Road Bush	Q08/035	1711084E 6012599N (AY30)
Wearmouth Road Bush	Q08/039	1708517E 6005481N (AY30)
Arcadia Kauri Bush	Q08/040	1712042E 6011407N (AY30)
Kauri Bushmans Memorial Reserve and Surrounds	Q08/041	1708555E 6003655N (AY30)
Pasley Road Remnants	Q08/042	1707105E 6004113N (AY29)
Tana Road Shrubland	Q08/043	1701114E 6002308N (AY29)
Porter Road Hillslope Remnants	Q08/044	1708616E 6008322N (AY30)
Golden Stairs Road Bush	Q08/051	1720010E 6009491N (AY30)

MANGANUI RIVER COMPLEX

The Manganui River is the most significant and most dominant ecological feature of the Tokatoka Ecological District. The Manganui River's associated floodplain is estimated to cover 8700 ha⁸ with less than 10% of the entire floodplain supporting significant natural areas identified by Northland Conservancy through PNAP survey. Outside of this site, six sites within the Tokatoka Ecological District (totalling 331.9 ha) have been identified as being part of the Manganui River Complex—P07/091, P07/093, P08/043, Q07/103, Q08/002, and Q08/004. P07/086 clearly contains the most important natural areas within the Manganui River floodplain. In the following site report for P07/086, a separate description of ecological units and representative ecological units is divided into Part A and Part B to help rationalise vegetation descriptions over such a large contiguous area. Some of the following ecological unit descriptions have been labelled (i.e. (A-1), (A-2) etc) with the site map accordingly labelled to show where the ecological unit description occurs. Significant flora and fauna is discussed for the whole site with notes (p. 58), followed by an assessment of significance for the whole site (p. 59).

⁸ LENZ (Land Environments of New Zealand) analysis) by DOC Northland Conservancy 2008

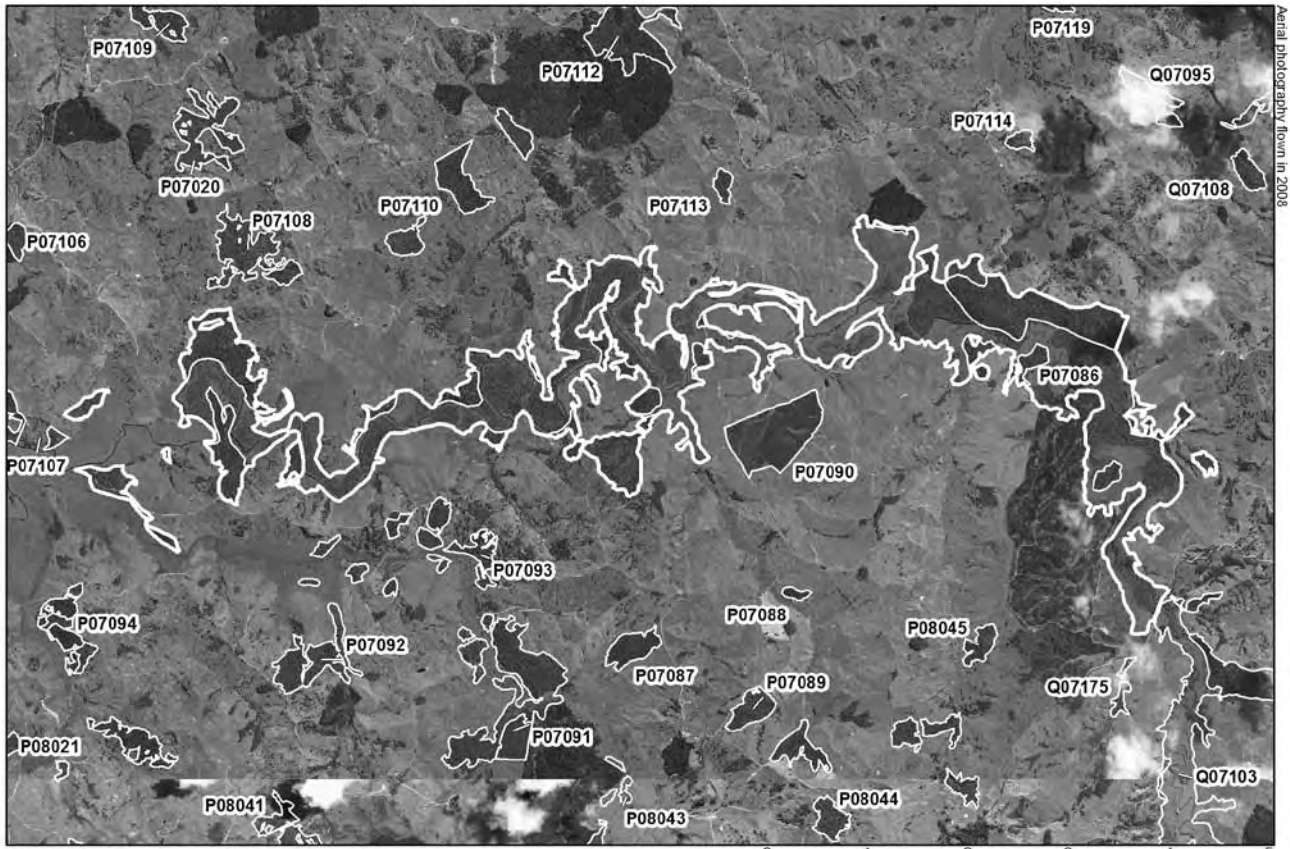
MANGANUI RIVER COMPLEX

Survey no.	P07/086
Survey date	September 1999, 10 June 1999, 3 April 1998, 29 June 1998, 17 December 1998, 13 November 1998, 16 May 1996, 12 March 1996
Grid reference	1695804E 6022034N (AX29)
Area	875.6 ha, 9 remnants (623.5-ha wetland (includes riverine flood forest), 252.1 ha forest)
Altitude	< 20–80 m a.s.l.

PART A

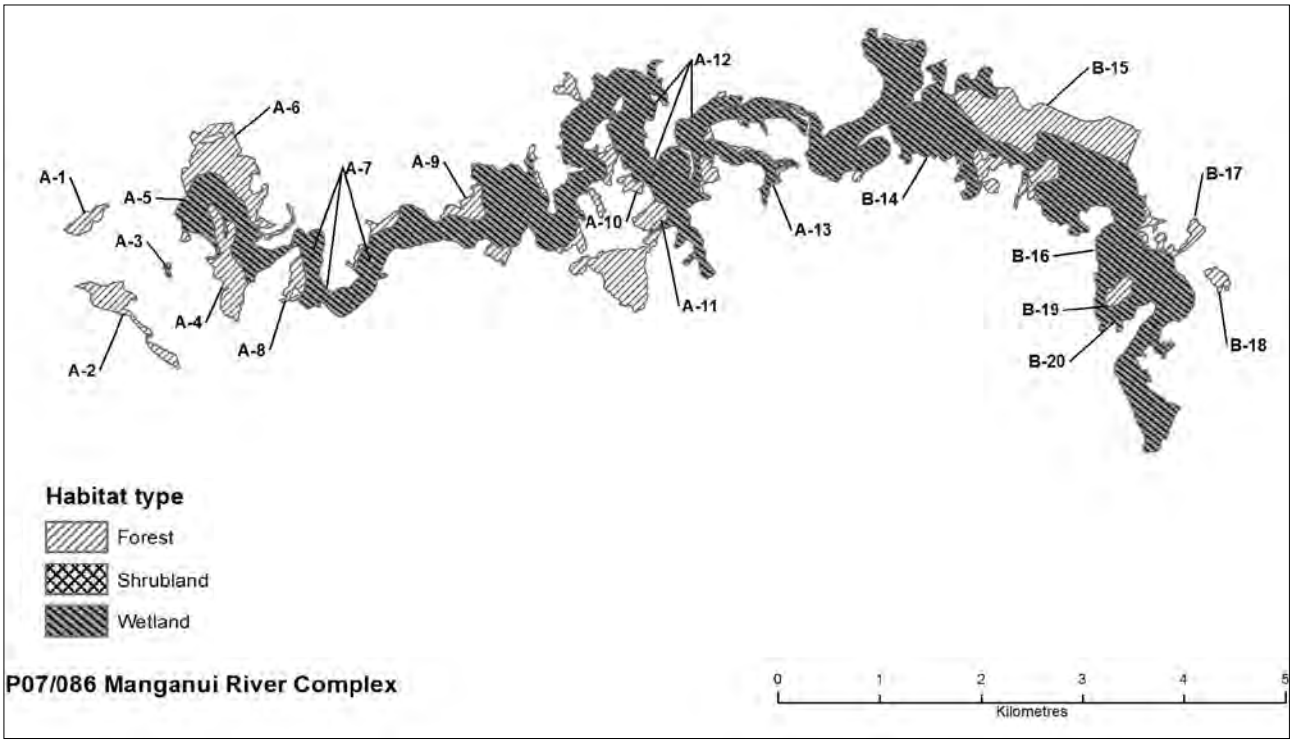
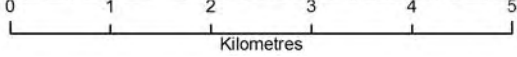
Ecological unit

- (a) Taraire forest on gentle and moderate hillslope
- (b) Kahikatea-ti kōuka forest on alluvium
- (c) Surface water-*Cyperus* sp.-raupō tussock reedland on alluvium
- (d) Kānuka-tōtara forest on moderate hillslope
- (e) Ti kōuka-mānuka forest on alluvium
- (f) Mānuka-mānatu forest on alluvium
- (g) Mānatu forest on alluvium
- (h) Tōtara forest on gentle and moderate hillslope
- (i) Taraire-tōtara forest in gully
- (j) Mānuka-mānatu-tōtara forest on alluvium
- (k) Tōtara forest on alluvium
- (l) Ti kōuka-kahikatea forest on alluvium
- (m) Kahikatea-mānatu-tōtara forest on alluvium
- (n) Mānatu-pūriri forest on alluvium
- (o) Ti kōuka-mānatu forest on alluvium
- (p) Kahikatea forest on alluvium
- (q) Kōwhai-tōtara forest on alluvium
- (r) Mānuka forest on alluvium
- (s) Kōwhai-ti kōuka-mānatu forest on alluvium
- (t) Kōwhai forest on alluvium
- (u) Tōtara-kānuka/mānuka forest on hillslope
- (v) Kānuka/mānuka forest on hillslope
- (w) Rimu forest on hillslope
- (x) Kānuka/mānuka-tōtara forest on hillslope
- (y) Kānuka-mānuka-rimu-tōtara forest on hillslope
- (z) Kahikatea-ti kōuka-kōwhai-mānatu forest on alluvium
- (aa) Ti kōuka-kahikatea-mānuka forest on alluvium
- (ab) *Baumea* sp.-*Cyperus* sp. reed tussockland on alluvium



Aerial photography flown in 2008

P07/086 Manganui River Complex



P07/086 Manganui River Complex



Landform/geology

Floodplain of Holocene alluvium and swamp deposits and adjoining hillslopes of Mangakahia Complex sandstone and mudstone.

Vegetation

A diversity of vegetation types and habitats occur along this stretch of the Manganui River Complex and it is very likely that there are more vegetation types not picked up by this survey. Some ecological unit descriptions have been labelled and referenced to the map for easier interpretation.

(A-1) Western hillslope remnant: Grid ref. 5938426N 1673052E (AX29)

(a) Taraire is common on the northern hillslope in the far western end of the site. Tōtara and nikau are frequent and pūriri, tawa, rimu, kahikatea, rewarewa and mamaku are occasional.

(A-2) Separate remnant directly south of (A-1): Grid ref. 5938625N 1672352E (AX29)

(b) Kahikatea is abundant with common tī kōuka. Rimu and raupō are occasional species. Divaricating shrubs are prevalent in the understorey.

(A-3) Small wetland remnant west of (A-2): Grid ref. 5939325N 1672650E (AX29)

(c) At the time of the survey (12 March 1996), surface water dominated the wetland. *Cyperus* sp. and raupō are common and kahikatea, mānuka, and tī kōuka are occasional.

(A-4) Hillslope east of (A-3) that is contiguous with riverine habitat: Grid ref. 5939924N 1672549E (AX29)

(d) Kānuka and tōtara occur with frequent pūriri. Pukatea, rimu and kahikatea are occasional.

A small area of taraire is abundant here, type (a), with frequent nikau. Puka, pukatea, kahikatea, rewarewa and nikau are occasional.

(A-5) Riverine flood forest north of (A-4): Grid ref. 5940025N 1672948E (AX29)

Tī kōuka and mānuka are associated with frequent kōwhai and mānatu. *Hoberia angustifolia*, kahikatea, pukatea, kaikōmako, matai, small-leaved milktree, tōtara and nikau are occasional.

(A-6) Hillslope and riverine flood forest adjacent to (A-5): Grid ref. 5939827N 1673748E (AX29)

(f) Alongside the river, a canopy of mānuka with mānatu occurs. Kōwhai and *Hoberia angustifolia* are also present.

(g) Mānatu is common on the hillslope above (f). Kānuka/mānuka is frequent with a range of species occurring occasionally including karaka, kōwhai, kahikatea, *Hoberia angustifolia*, pigeonwood, tī kōuka, nikau and putaputawētā.

(h) North of this, abundant tōtara occurs with occasional kahikatea, kaikōmako and kānuka/mānuka.

(i) In a gully, taraire and tōtara are common. Some pukatea and kaikōmako are also present.

West of this, type (h) tōtara forest is found with frequent pūriri, and a range of species in small amounts including kahikatea, tōwai, taraire, pukatea, rewarewa, nikau and puka.

Following the river around, moving east, taraire forest, type (a) occurs with frequent nikau. Northern rātā, kauri, rimu, rewarewa, kahikatea, matai, puka, pigeonwood, kaikōmako and ponga are occasional.

Just south of this, mānuka, mānatu and tōtara dominate the canopy with some pūriri and ti kōuka.

(A-7) Riverine flood forest: Grid ref.—between 5940025N 1672948E and 5942124N 1673044E (AX29)

Alongside the river, tōtara riverine flood forest occurs, (Grid ref. 5940425N 1672848E), with frequent kākūka/mānuka and mānatu. Kahikatea, kōwhai and ti kōuka are occasional.

Moving east along this ribbon of forest, an open canopy of ti kōuka and kahikatea occurs with occasional kōwhai and mānuka. *Coprosma propinqua* is dominant in the understorey.

Beside this, kahikatea, mānatu and tōtara are associated in an open canopy with frequent mānuka. *Hoberia angustifolia*, pūriri, small-leaved milktree and ti kōuka are occasional.

Mānatu and pūriri form an open canopy on the river bank while kōwhai and kākūka/mānuka are frequent. Kahikatea, titoki, tōtara, nikau and ti kōuka are occasional. The understorey is open. (Grid ref: 5940625N 1672847E (AX29))

(o) Ti kōuka and mānatu are common in the canopy by this with frequent kōwhai. Kahikatea, pigeonwood, nikau and kākūka/mānuka are occasional. *Coprosma propinqua* is dominant in the understorey with occasional *Muehlenbeckia australis*.

Type (g) mānatu forest occurs just south of this with an open understorey of *Coprosma propinqua*.

Kahikatea is common in a very open canopy (Grid ref. 5940825N 1672947E (AX29)). Ti kōuka is uncommon and mānatu and *Hoberia angustifolia* are occasional. The understorey is abundant *Coprosma propinqua* with common *Muehlenbeckia australis*. *Coprosma rigida*, NZ jasmine and *Convolvulus* sp. are occasional. *Cyperus* sp., willow weed species and alligator weed are the main groundcover species. A small rush species is frequent and *Carex virgata*, soft rush, swamp millet, buttercup and plantain are occasional.

Along the river east of this, an open canopy of type (g) mānatu occurs with occasional *Hoberia angustifolia*, kahikatea and kōwhai.

The subcanopy contains abundant *Coprosma propinqua*, and frequent *Coprosma rigida*. Round-leaved coprosma, *Coprosma tenuicaulis*, *Melicope simplex* and *Melicytus micranthus* are occasional.

Groundcover species are as the vegetation description for type (p).

(q) Kōwhai and tōtara are co-dominant in an open canopy on the edge of the river, around Grid ref. 5941123N 1672346E (AX29). Mānatu is frequent with occasional kahikatea, titoki and ti kōuka.

Coprosma propinqua, weeping māpou and *Muehlenbeckia australis* are common in the subcanopy. *Melicytus micranthus* is frequent and bush lawyer is occasional.

Tradescantia is an abundant ground cover; however, introduced grasses, carrot weed and *Cyperus* sp. are common where *Tradescantia* does not form a thick sward. *Carex virgata* and dock are occasional.

(f) East of this (around Grid ref. 5941223N 1672446E (AX29)), tall mānuka is abundant in an open canopy. Mānuku occurs frequently. Titoki, kōwhai, *Hoberia angustifolia*, tōtara, and tī kōuka are occasional.

Melicytus micranthus, *Coprosma propinqua*, and weeping māpou occur as common species in the understory. *Coprosma tenuicaulis*, *Hoberia angustifolia* and NZ jasmine are present occasionally.

The groundcover is a maze of introduced grasses, buttercup and carrot weed. *Carex virgata* is frequent and soft rush, willow weed and dock are occasional.

Type (o) tī kōuka and mānuku occurs east of here in an open grazed canopy. Emergent kahikatea and kōwhai are frequent. Mānuka and *Muehlenbeckia australis* are occasional. The subcanopy is predominantly *Coprosma propinqua*.

(s) Abundant kōwhai with tī kōuka and mānuku as common species occurs east of this. Kahikatea and mānuka are present.

(t) At approximately Grid ref. 5942124N 1673044E (AX29), kōwhai is abundant. *Muehlenbeckia australis* is frequent. Karaka, titoki, kahikatea, mānuku, tī kōuka and nikau are occasional.

(A-8) Hillslope forest habitat on the southern side of the river: Grid ref. 5940524N 1672548E (AX29)

Abundant tōtara in association with kānuka/mānuka occurs in the northern area of the hillslope. Kahikatea, taraire, titoki and mamaku are occasional.

Taraire forest, type (a), occurs south of this with frequent kahikatea. Rimu, rewarewa, tōtara, pūriri and kōhūhū are present in small amounts.

(A-9) Forested hillslope on the northern side of the river: Grid ref. 5942325N 1673343E (AX29)

(v) Kānuka/mānuka is abundant on the hillslope adjacent to the river. Kōwhai is uncommon within this canopy and kahikatea, titoki, taraire, rewarewa, rimu and tī kōuka are occasional.

The understory is made up of a variety of species including kaikōmako, putaputawētā, kōhūhū, *Hoberia angustifolia* and tī kōuka.

Type (a) abundant taraire occurs adjacent to this, along with some kōwhai, tōtara and nikau. Kaikōmako, putaputawētā and ponga are present in the understory.

Towards the north, type (h) tōtara forest occurs with frequent emergent rimu. Other species present include matai, rewarewa, kahikatea, tānekaha, tawa, taraire and hīnau, and kānuka/mānuka are occasional.

(w) Abundant rimu occurs in the north with tōtara and kānuka/mānuka on the edges.

(A-10) Gentle hillslope, south of the river: Grid ref. 5943822N 1672541E (AX29)

(x) Kānuka/mānuka and tōtara are co-dominant with rare kahikatea and mamaku.

(A-11) Hillslope south of this: Grid ref. 5944124N 1673240E (AX29)

Type (u) tōtara is abundant with commonly occurring kānuka/mānuka. Mamaku is present.

Adjacent to this, kānuka/mānuka, rimu and tōtara are associated in the canopy, with kahikatea occurring frequently. Pukatea, titoki, rewarewa, kōwhai, nikau and mamaku are occasional.

(A-12) Riverine flood forest: Grid ref. 5944124N 1673240E (AX29)

(z) Around grid reference 5943925N 1674040E (AX29), kahikatea is abundant with mānata, ti kōuka and kōwhai commonly occurring.

(aa) Ti kōuka, kahikatea and mānuka occur (Grid ref. 5944325N 1673734E (AX29)) with occasional tōtara and kōwhai.

Type (t) abundant kōwhai occurs alongside this with frequent ti kōuka. Tōtara and mānuka are also present.

Type (p) kahikatea is abundant with mānata, kōwhai and tōtara frequent in the canopy. Ti kōuka is occasional. (Grid ref. 5944525N 1673939E (AX29)).

(A-13) Wetland habitat: Grid ref. 5945024N 1673828E (AX29)

(ab) *Baumea* sp. and *Cyperus* sp. species are common amongst open water which covers 5-20% of this area.

Representative ecological units

Representative site for type (a), (b), (c), (d), (e), (f), (g), (h), (j), (k), (l), (m), (n), (o), (p), (q), (r), (s), (t), (v), (x), (z), (aa) and (ab). This survey recorded 13 vegetation types unrecorded elsewhere in the Ecological District, type (b), (c), (d), (e), (f), (g), (j), (m), (n), (o), (r), (s), (z) and (ab).

PART B

Ecological unit

- (a) Kōwhai forest on alluvium
- (b) Taraire-tōtara on moderate hillslope
- (c) Taraire forest on moderate hillslope
- (d) Kauri forest on gentle hillslope
- (e) Matai forest on alluvium
- (f) Rimu forest on hillslope
- (g) Tōtara forest on hillslope
- (h) *Carex gaudichaudiana* sedgeland on alluvium
- (i) Alligator weed-parrot's feather-primrose willow-*Persicaria strigosa*-*Persicaria decipiens* herbfield on alluvium
- (j) Kahikatea-tōtara forest on alluvium
- (k) Kahikatea forest on alluvium
- (l) Kahikatea-mānuka forest on alluvium
- (m) Kānuka/mānuka-tōtara forest on alluvium

Landform/geology

Holocene alluvium and swamp deposits within Manganui River valley and adjoining hills of Mangakahia Complex mudstone/sandstone.

Vegetation

A diversity of vegetation types and habitats occur along this stretch of the Manganui River Complex and undoubtedly there are more vegetation types not picked up by this survey.

P07/086 Part A and Part B are contiguous and have been split into parts to help present vegetation types.

Following on from Part A some of the following ecological descriptions have been labelled (i.e. (B-14), (B-15) etc.) with the site map accordingly labelled to show where the ecological unit description occurs.

(B-14) Riverine flood forest

Kōwhai forest, type (a), occurs on the toeslopes adjacent to the Tauraroa River, along with frequent kahikatea and mānatu and occasional tōtara and matai.

(B-15) Hillslope forest

(b) West of this on the north facing hillslope alongside the Tauraroa River, taraire and tōtara are co-dominant with frequent kahikatea. Rimu, rewarewa, pūriri, kohekohe, nikau and kānuka/mānuka are occasional.

(c) Abundant taraire forest occurs on the south-facing hillslope adjoining riverine flood forest (Grid ref. 5948735N 1773904E (AX29)). Rewarewa is frequent and kahikatea, rimu, pukatea and tōtara (edges) are occasional.

(d) A small area of abundant emergent kauri occurs here with occasional rimu, kahikatea, kānuka/mānuka and tōtara (edges).

(B-16) Riverine flood forest

In the riverine flood forest area south of this kōwhai, type (a), is common with occasional kahikatea, matai, ti kōuka and mānuka.

(e) There are a couple of small areas of matai riverine flood forest in this area with kōwhai, tōtara and titoki also present.

(B-17) Lowland forest

(f) East of this contiguous with the river (Grid ref. 5949833N 1773001E (AX29)), pole rimu is abundant with frequent tōtara and occasional kahikatea, kauri, and kānuka/mānuka (edges).

(B-18) Hillslope forest

(g) Further south of this in a separate hillslope remnant, tōtara forest is abundant with occasional kahikatea, rimu and kānuka/mānuka.

(B-19) Forested island

(The island of forest adjoining the marsh comprises common taraire and tōtara, type (b), with occasional rimu, rewarewa and ti kōuka. Kahikatea, kōwhai, tōtara and mānuka occur on the lower slopes next to the wetland.

(B-20) Marsh wetland

(h) In shallower margins (10-30-cm-deep surface water in October 2008), the indigenous sedge *Carex gaudichaudiana* is dominant (Champion & Townsend 2008).

(i) In an old river channel a mosaic of predominantly naturalised species of alligator weed, parrot's feather, primrose willow, and the willow weed *Persicaria strigosa* occur along with the native willow weed *Persicaria decipiens*. Within this zone there are patches of kuta and *Eleocharis* sp. (Champion & Townsend 2008).

This association has very dense vegetation and acts like a sponge.

Just south of B-20, these associations occur in small areas:

Type (a) kōwhai is common, along with frequent tōtara and kahikatea.

(j) Kahikatea and tōtara with frequent kōwhai and mānuka. Mānatu, emergent pukatea and matai are occasional.

(k) Abundant kahikatea forest with frequent mānuka and occasional tī kōuka.

(l) At approximately Grid ref: 5949231N 1772103E (AX29), emergent kahikatea and mānuka are common. Kōwhai is frequent and tōtara (edges), tī kōuka, pukatea and mānatu are occasional.

(m) This ecological unit was surveyed from within the site.

On the riverbank south of this, around Grid ref: 6020350N 1699957E (AX29), kānuka/mānuka and tōtara are common along with occasional matai, taraire, titoki and rimu. It was evident on the day of the survey that cows had recently grazed the area.

The subcanopy consists of occasional māpou, white maire, rewarewa, pigeonwood and māhoe.

Small-leaved māhoe is common in the understorey along with frequent ponga and *Coprosma rhamnoides*. A variety of species occur occasionally including round-leaved coprosma, *Myrsine simplex*, thin-leaved coprosma, tōtara, titoki, putaputawētā, kōwhai, nikau, hangehange, *Coprosma propinqua*, tī kōuka, and small-leaved milktree. Groundcover is dominated by tradescantia, with ponga and native grass, and occasional rosy maidenhair, rasp fern, *Lastreopsis glabella*, *Deparia petersenii* and *Pellaea rotundifolia*.

Type (a). This ecological unit was surveyed from within the site. Kōwhai forest dominates an open canopy approximately 0.5 km north of the Mititai Road bridge. Mānatu, tī kōuka and titoki frequently occur. Species present occasionally include kahikatea, tōtara, small-leaved milktree, mānuka, ramarama, *Muehlenbeckia australis* and *Coprosma propinqua*.

The understorey comprises *Myrsine simplex*, small-leaved māhoe, round-leaved coprosma, *Coprosma propinqua*, small-leaved milktree and supplejack. Occasional species include thin-leaved coprosma, NZ jasmine and *Rubus schmidelioides* var. *schmidelioides*.

The forest floor is dominated by tradescantia associated with willow weed. Other species present are *Carex* sp., introduced grasses and pennyroyal.

Representative ecological units

Representative site for type (a), (b), (c), (d), (e), (h), (j), (k), (l) and type (m).
Sole record of type (e), (g), (h) and (k) within this Ecological District.

Significant flora of the Manganui River Complex P07/086

Records from Champion & Townsend 2008

Crassula ruamabanga (Naturally Uncommon)

Regionally significant species

Black maire, *Carex gaudichaudiana*, *Coprosma rigida*, *C. rotundifolia*, *Hoberia angustifolia*, kaikōmako, kohia, mānatu, *Rubus schmidelioides* var. *schmidelioides*, weeping māpou.

Additional records from this survey and SSBI P07/H049 and SSBI P07/H053 recorded in 1998 and 1995

Doodia mollis (Naturally Uncommon), *Asplenium gracillimum*, *Nertera scapanoides*, northern rātā, rōhutu and *Viola filicaulis* (all regionally significant species).

Other records

Carex maorica (1994, AK 294668) (regionally significant species).

Fauna of the Manganui River Complex P07/086

Records from SSBI P07/H049

Historical 1988 survey: records of black shag (Naturally Uncommon), kūkupa (regionally significant species), NZ kingfisher, grey warbler, NI fantail, silvereye, tūi, welcome swallow, Australasian harrier, shining cuckoo, and pūkeko.

Kauri snail (Gradual Decline).

1993–94: un-referenced record of freshwater crab (Sparse).

Historical 1977, 1978 and 1979 NZ Wildlife Service survey: records of grey duck (Nationally Critical), Australasian bittern (Nationally Endangered), NI brown kiwi (Nationally Vulnerable), banded rail (Naturally Uncommon), pied stilt (Declining), black shag (Naturally Uncommon), little shag (Naturally Uncommon), spotless crake (Relict), Australasian shoveler and grey teal (both regionally significant species), white-faced heron, pūkeko, mallard duck, paradise shelduck, black swan, NZ kingfisher, welcome swallow, Australasian harrier, NI fantail, grey warbler, silvereye and tūi.

The NZ Wildlife Service commented on high numbers of grey duck, mallard, grey teal, paradise shelduck and some shoveler observed. Also black swan, pied stilt, pukeko, black and little shags present in high numbers.

Freshwater mussel (likely to be *Hyridella menziesii*) (Gradual Decline) recorded in 1977.

Ornate skink (Declining) recorded in 1977.

Records from SSBI P07/H053

1998 survey: records of grey duck (Nationally Critical), pied shag (Nationally Vulnerable), black swan, paradise shelduck, Australasian harrier, pūkeko, NZ kingfisher, welcome swallow, grey warbler, NI fantail, silvereye and tūi.

Historical 1977–78 NZ Wildlife Service survey: grey duck (Nationally Critical)—high numbers were recorded, NI brown kiwi (Nationally Vulnerable), black shag (Naturally Uncommon)—a rookery with over 50 birds was recorded, kūkupa (regionally significant species), kākārīki

species (regionally significant species), NI fantail, silvereye, shining cuckoo, NZ kingfisher, grey warbler, tūi, pūkeko.

In recent years, flocks (100+) of grey teal (regionally significant species) have been recorded within the Manganui River Government Purpose Wildlife Management Reserve (part of P07/086—Part B) (observed by Nigel Miller in SSBI P07/H053).

Other: black mudfish (Relictual) (NIWA 2008).

Significance

The Manganui River Complex is the most outstanding ecological feature of the Tokatoka Ecological District and is of regional and national importance. The river complex contains the best remaining example of riverine flood forest in Northland and probably the North Island and is one of the best examples in New Zealand. It is the only large river system in Northland which contains substantial areas of original floodplain still functioning as a natural wetland. The Complex supports several Threatened, At Risk and many Regionally significant species and support high numbers of waterfowl.

The Manganui River Government Purpose Wildlife Management Reserve is a soil site of regional importance containing good examples of Whakapara soils which are uncommon (Arand et al.1993).

There is a total of 229.2 ha of public conservation land administered by DOC within this site—194.5 ha within the Manganui River Government Purpose Wildlife Management Reserve and 34.7 ha of marginal strip.

This is one of only two relatively large protected areas in the Tokatoka Ecological District. The other area is Pukekohe Scenic Reserve and Surrounds at 99.9 ha in site Q08/022. The rest of the reserves within the District are under 50 ha in size.

Approximately 4.3 ha of this site is within an ‘Acutely Threatened’ land environment (A5.1b); 623.5 ha is within a ‘Chronically Threatened’ land environment (A5.2a, G3.1b); 98 ha within an ‘At Risk’ land environment (A6.1b) and 148.3 ha within a ‘Critically Underprotected’ land environment (A6.1a, A6.1c) (Walker et al. 2007).

KAURI AIRSTRIP REMNANT

Survey no. P07/088
Survey date 10 June 1999
Grid reference 1696798E 6019843N (AX29)
Area 2.4 ha
Altitude 20-60 m a.s.l.

Ecological unit

- (a) Kauri forest on gentle hillslope
- (b) Kānuka/mānuka forest on gentle hillslope

Landform/geology

Hillslope of Mangakahia Complex mudstone.

Vegetation

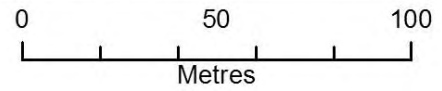
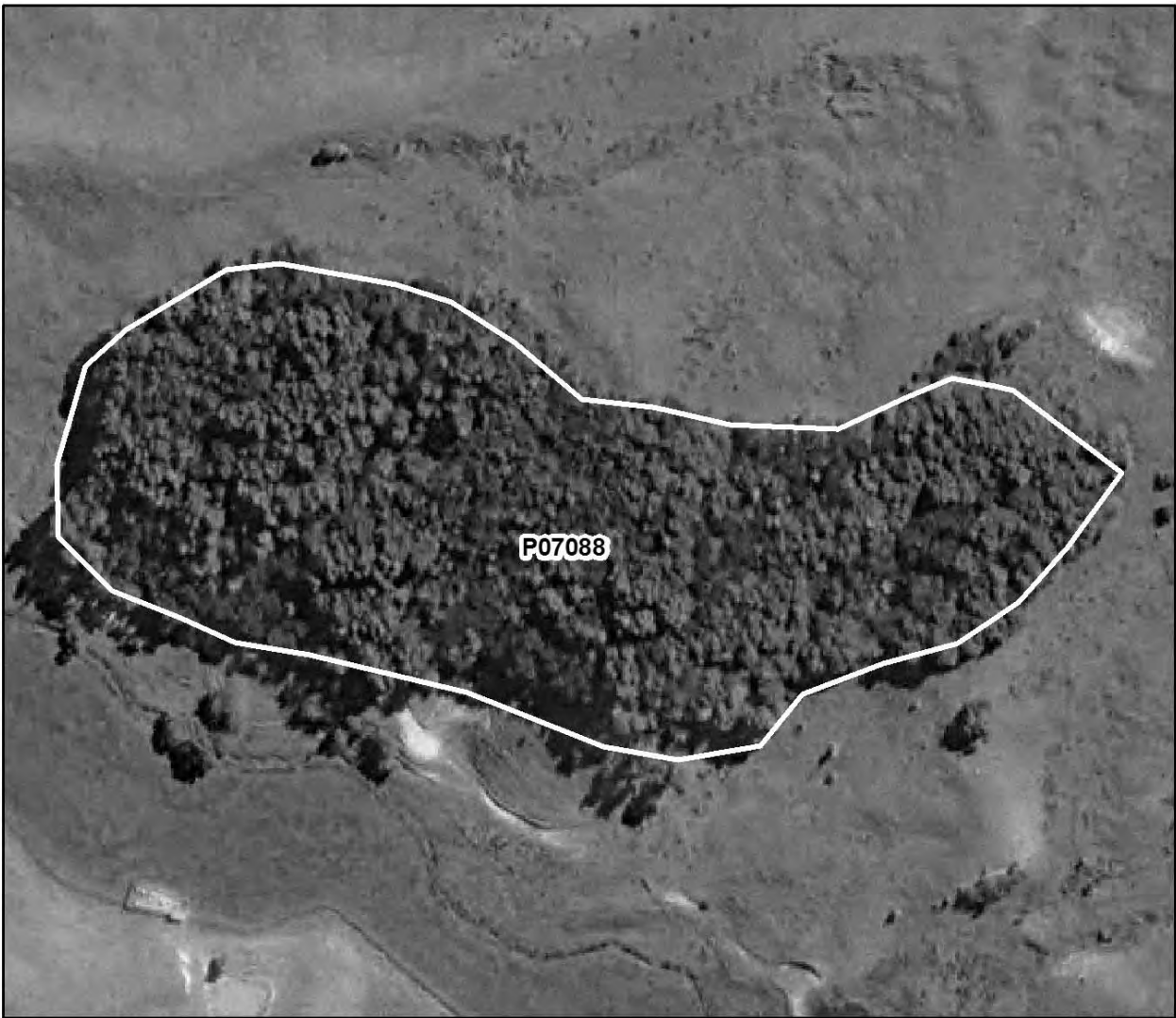
- (a) A very small remnant dominated by emergent kauri with frequent rimu and kānuka/mānuka. Tōtara is also present.
- (b) Kānuka/mānuka occurs with several frequently occurring species including emergent rimu, emergent kauri, tānekaha and tōtara.

Fauna

None noted.

Significance

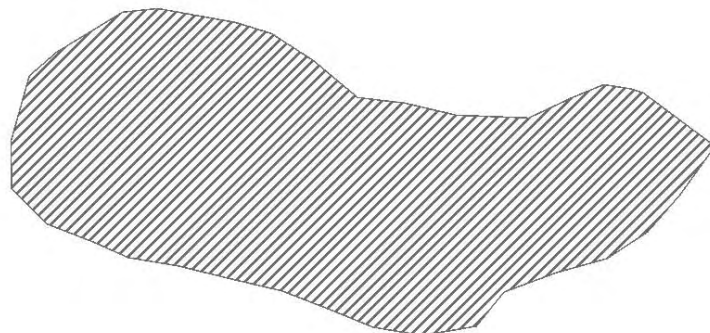
A small lowland kauri-dominant regenerating forest remnant within a very modified Ecological District. This remnant is very small, but is significant because lowland kauri forest is under-represented in the Tokatoka Ecological District. Approximately 0.1 ha is within a Chronically Threatened land environment (G3.1b) and 2.1 ha within an 'At Risk' land environment (A6.1b) (Walker et al. 2007).



P07/088 Kauri Airstrip Remnant

Habitat type

-  Forest
-  Shrubland
-  Wetland



CURNOW ROAD GEMSTONE CONSERVATION AREA

Survey no.	P07/090
Survey date	10 June 1999
Grid reference	1696603E 6021440N (AX29)
Area	47.5 ha
Altitude	20-40 m a.s.l.

Ecological unit

- (a) Mānuka shrubland on alluvium (95%)
- (b) Kahikatea-mānuka-ti kōuka forest on alluvium (< 5%) (not mapped)

Landform/geology

Hillslope of Mangakahia Complex mudstone.

Vegetation

- (a) This site is dominated by mānuka (1-6-m tall) gumland with frequently occurring mingimingi and occasional tōtara.
- (b) A 1999 SSBI survey recorded a regenerating floodplain of mānuka with ti kōuka and kahikatea in the valleys.

Significant flora

Records from a 1999 SSBI survey and a 2010 DOC plant survey (SSBI P07/H078):

Dianella haemata (Declining), *Lagenifera lanata* (Relict), *Kortbalsella salicornioides* (Naturally Uncommon) growing on mānuka (AK 300261), *Anzybas rotundifolius* (Naturally Uncommon), *Pimelea orthia* (Data Deficient).

Regionally significant species

Coprosma rigida, *Cordyline pumilio*, *Dracophyllum lessonianum*, *Pterostylis agathicola*, *Thelymitra aemula*, *Thelymitra tholiformis*, *Viola filicaulis* and *Lobelia angulata*.

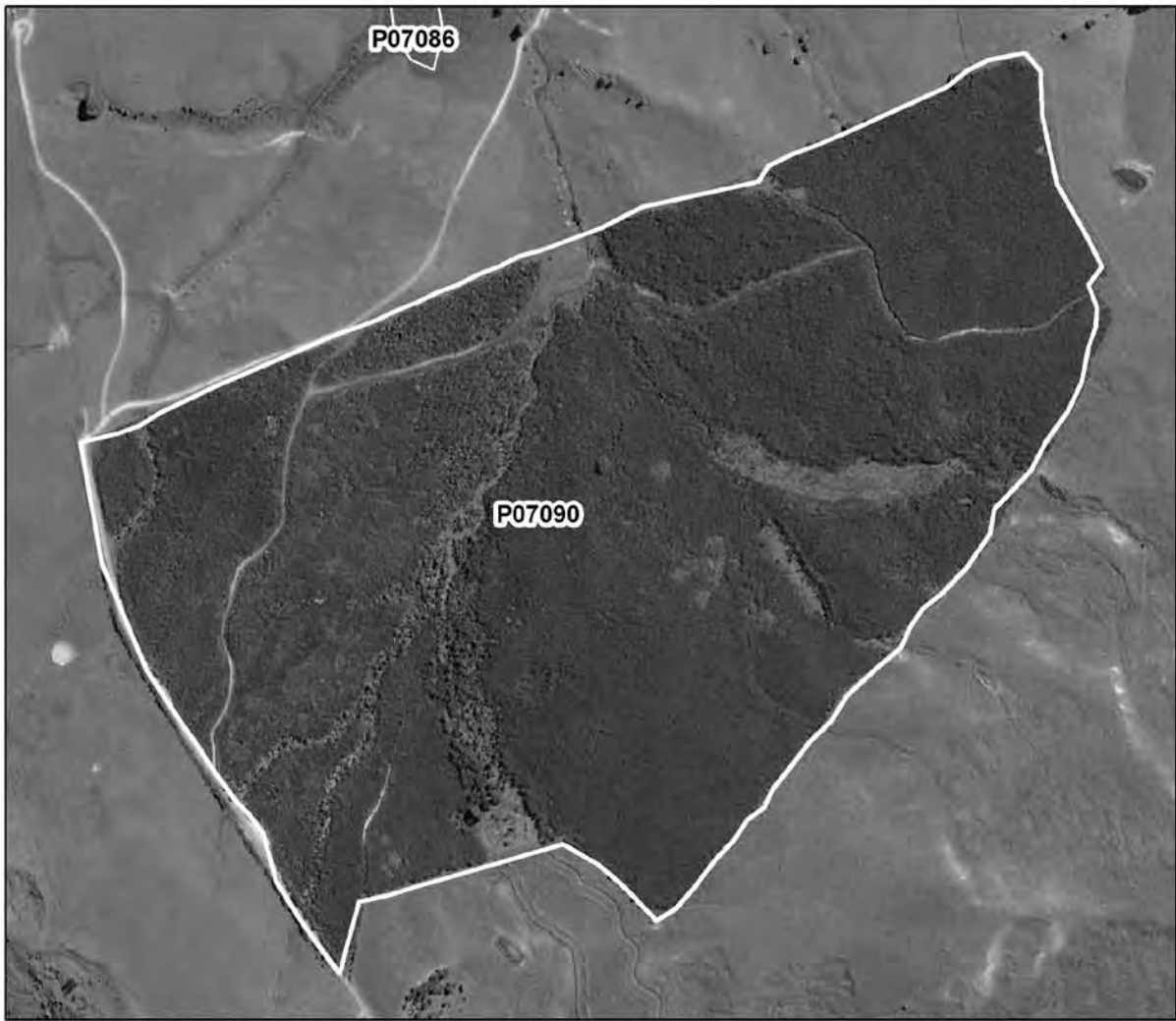
Additional records from 2010 DOC plant survey not recorded in 1999: *Coprosma rotundifolia*, *Corybas cheesemanii*, *Drosera peltata*, *Epacris pauciflora*, *Gleichenia microphylla*, *Nertera depressa*, Smiths tree fern and weeping māpou.

Orchids that have been recorded that are not regarded as regionally significant

Acianthus sinclairii, *Caladenia fuscata*, *Caladenia* sp., *Diplodinium trullifolium*, *Microtis* sp., *M. unifolia*, *Orthoceras novae-zelandiae*, *Petalochilus chlorostylus*, *Pterostylis banksii*, *P. graminea*, *Singularybas oblongus*, *Simpliglottis cornuta*, *Thelymitra* aff. *longifolia*, *T. carnea*, *T. colensoi*, *T. longifolia*, *T. pauciflora* and *T. pulchella*.

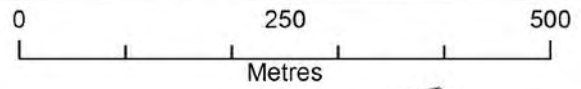
Fauna

1998 and 1999 SSBI survey (P07/H078): pied shag (Nationally Vulnerable), NI fernbird (Declining), paradise shelduck, Australasian harrier, NZ kingfisher, pūkeko, spur-winged plover, shining cuckoo, morepork, welcome swallow, grey warbler and NI fantail.






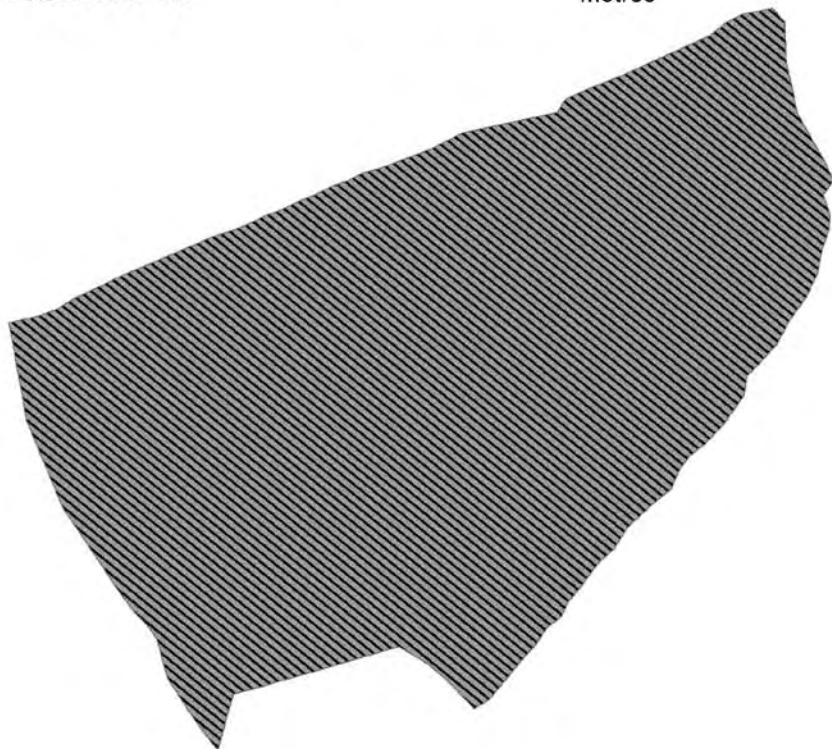
Aerial photography flown in 2008

**P07/090 Curnow Road
Gemstone Conservation Area**



Habitat type

-  Forest
-  Shrubland
-  Wetland



Significance

A relatively large representative gumland community which supports Threatened, At Risk and Regionally significant flora and fauna. Gumlands are a threatened wetland type in Northland and this is the only gumland habitat recorded in the Tokatoka Ecological District. Gumlands can provide important habitat for a range of rare and uncommon species including lizards and orchids. To date, 24 orchid species have been recorded. A survey for lizards is recommended. The site is representative for type (a) mānuka shrubland.

Most of this site, 46.8 ha, is public conservation land (Curnow Road Gemstone Conservation Area) and is administered by DOC.

The whole area of this site occurs within an 'At Risk' land environment (A6.1b) (Walker et al. 2007).

OKAHU STREAM FOREST AND SURROUNDS - WAINUI ROAD (PART OF THE MANGANUI RIVER COMPLEX)

Survey no.	P07/091
Survey date	10 June 1999 and 26 January 2011
Grid reference	1693952E 6018911N (AX29)
Area	77 ha, 4 remnants (53 ha forest, 13 ha wetland, 11 ha shrubland)
Altitude	20-60 m a.s.l.

Ecological unit

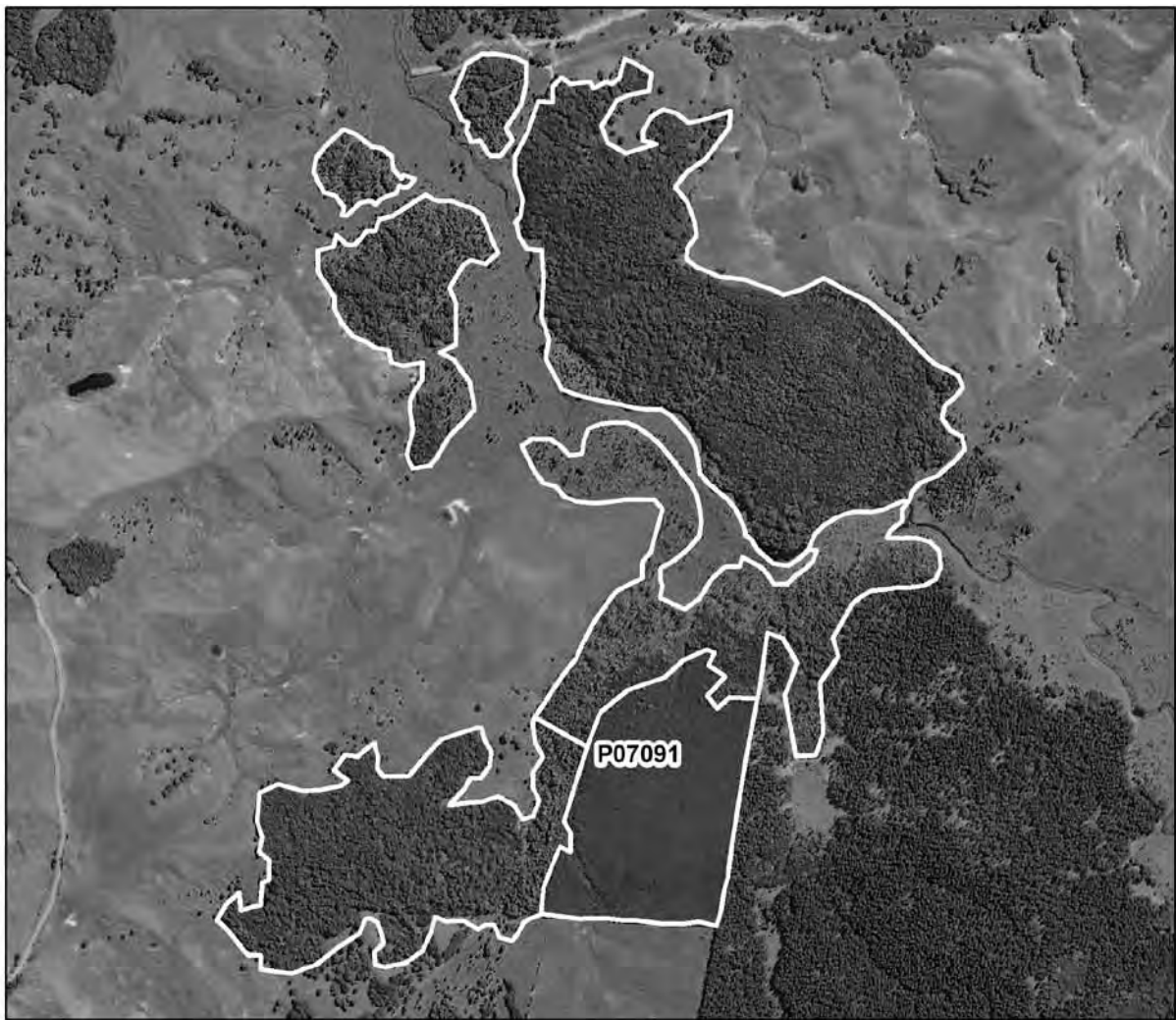
- (a) Kānuka/mānuka-tōtara forest on gentle hillslope
- (b) Tōtara forest on gentle hillslope
- (c) Kānuka/mānuka-tānekaha-tōtara forest on gentle hillslope
- (d) Kānuka/mānuka-rimu forest on gentle hillslope
- (e) Tī kōuka-kahikatea forest on alluvium
- (f) Kōwhai forest on alluvium
- (g) Kahikatea forest on alluvium
- (h) Mānuka shrubland on gentle hillslope
- (i) *Baumea rubiginosa* reedland on alluvium
- (j) Harakeke-kahikatea-tī kōuka forest on alluvium

Landform/geology

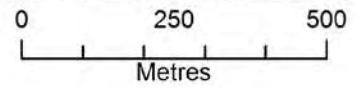
Floodplain of Holocene alluvium, and adjoining hillslopes of Mangakahia Complex sandstone and mudstone.

Vegetation




- (a) In the hillslope forest in the north of the main remnant, kānuka/mānuka and tōtara occur, along with occasional pūriri and kahikatea (based on a long-distance view).



**P07/091 Okahu Stream and Surrounds -
Wainui Road (Part of Manganui River Complex)**



Habitat type

-  Forest
-  Shrubland
-  Wetland



(b) Tōtara is also dominant here. Kānuka/mānuka is frequent with the odd rimu, tānekaha, taraire, pūriri, kahikatea and kauri.

(c) In the southeastern area of this hillslope, an association of kānuka/mānuka, tānekaha and tōtara occurs. Rewarewa, lancewood and ti kōuka are occasional.

(d) Near this, a small area of emergent rimu with kānuka/mānuka occurs. Tānekaha and tōtara are present.

The separate remnant to the west of this hillslope was unable to be surveyed.

(e) On the flat adjoining the southern part of the hillslope commonly occurring ti kōuka and kahikatea form an open canopy along with frequent kōwhai and occasional mānatu.

(f) An area of commonly occurring kōwhai with occasional kahikatea, mānatu, ti kōuka and tōtara is also present here, along with an area of:

(g) abundant kahikatea with occasional matai, mānuka, tōtara, kauri and ti kōuka.

(h) In the shrubland area mānuka is dominant. Its understorey is represented by some elements of gumland vegetation such as some small areas of umbrella fern and *Schoenus* sp. There are also areas of dominant *Lycopodium deuterodensum* which is an uncommon feature. These features, however, aren't dominant as they would be in true gumland habitat and other characteristic gumland vegetation such as *Dracophyllum lessonianum* does not feature.

(i) A small *Baumea rubiginosa* wetland occurs just northwest of the mānuka shrubland area of (h).

(j) A small ti kōuka-harakeke-kahikatea wetland occurs near the northeast corner of the mānuka shrubland area of (h) within pine forest. Ti kōuka is dominant and harakeke and kahikatea are common.

In the adjacent forest area to the southwest of the shrubland area of (h), type (a) and type (b) occur.

Type (a) kānuka/mānuka and tōtara are common with frequent pūriri and some kahikatea.

Type (b) tōtara is abundant with occasional rewarewa, pūriri, rimu, titoki and kānuka/mānuka.

Significant flora

Regionally significant species: Black maire, *Carex maorica*, *Coprosma rigida*, *Coprosma rotundifolia*, *Cordyline pumilio*, *Hoberia angustifolia*, kaikōmako, kohia, *Lobelia angulata*, mānatu, *Myrsine divaricata*, *Rubus schmidelioides* var. *schmidelioides* and *Viola lyallii* all recorded in 2011 as part of this survey.

Fauna

No specific survey has been conducted within this site; however, it is part of the Manganui River Complex which supports many Threatened, At Risk and Regionally significant species (see P07/086).

Significance

This site is part of the nationally and regionally significant Manganui River Complex with habitat occurring alongside the Okahu Stream. Forest on alluvium is a rare and under-represented habitat type throughout Northland. Thirteen regionally significant species have been recorded as part of a habitat survey to specifically look at the mānuka shrubland area in the south part of the site. The aim of the survey was to find out whether this area was gumland. Whilst there are some elements of gumland vegetation, they did not dominate and therefore this area was not considered to be true gumland. Representative for type (h) mānuka shrubland, whose groundcover features dominant areas of *Lycopodium deuterodensum*, a habitat type unrecorded elsewhere in the Tokatoka Ecological District.

A Queen Elizabeth II National Trust Open Space covenant (totalling 27 ha) is contained within this site. Approximately 31.5 ha of this site is within a 'Chronically Threatened' land environment (A5.2a, G3.1b); 16 ha within an 'At Risk' land environment (A6.1b) and 30 ha within a 'Critically Underprotected' land environment (A6.1c) (Walker et al. 2007).

WALLACE ROAD BUSH

Survey no.	P07/092
Survey date	10 June 1999
Grid reference	1691992E 6019156N (AX29)
Area	26.9 ha
Altitude	< 20–80 m a.s.l.

Ecological unit

- (a) Kahikatea forest on alluvium
- (b) Taraire forest on moderate hillslope
- (c) Kānuka/mānuka-tōtara forest on moderate hillslope
- (d) Tōtara-kānuka/mānuka forest on moderate hillslope
- (e) Kānuka/mānuka-kauri-rimu forest on moderate hillslope

Landform/geology

Floodplain of Holocene alluvium, and adjoining hillslopes of Mangakahia Complex sandstone and mudstone.

Vegetation

(a) The narrow alluvial band running parallel with Wainui Road at the eastern end of the site has kahikatea-dominant vegetation with frequent tī kōuka. Tōtara, mānuka and rimu also occur in the canopy.

The rest of the remnant is made up of the following vegetation types:

(b) Taraire forest occurs on the east-facing hillslope with frequent pūriri. Rimu, kahikatea, tōtara, kauri, rewarewa, puka and nikau are occasional.

(c) An area of kānuka/mānuka and tōtara with some emergent kauri, rimu, pūriri and kahikatea.

(d) Tōtara associated with kānuka/mānuka occurs in the southeast with frequent tānekaha and occasional rimu, mamaku, and tī kōuka.

(e) An area of kānuka/mānuka, emergent kauri, and emergent rimu occurs here with frequent tānekaha. Rewarewa is also present.

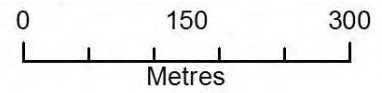
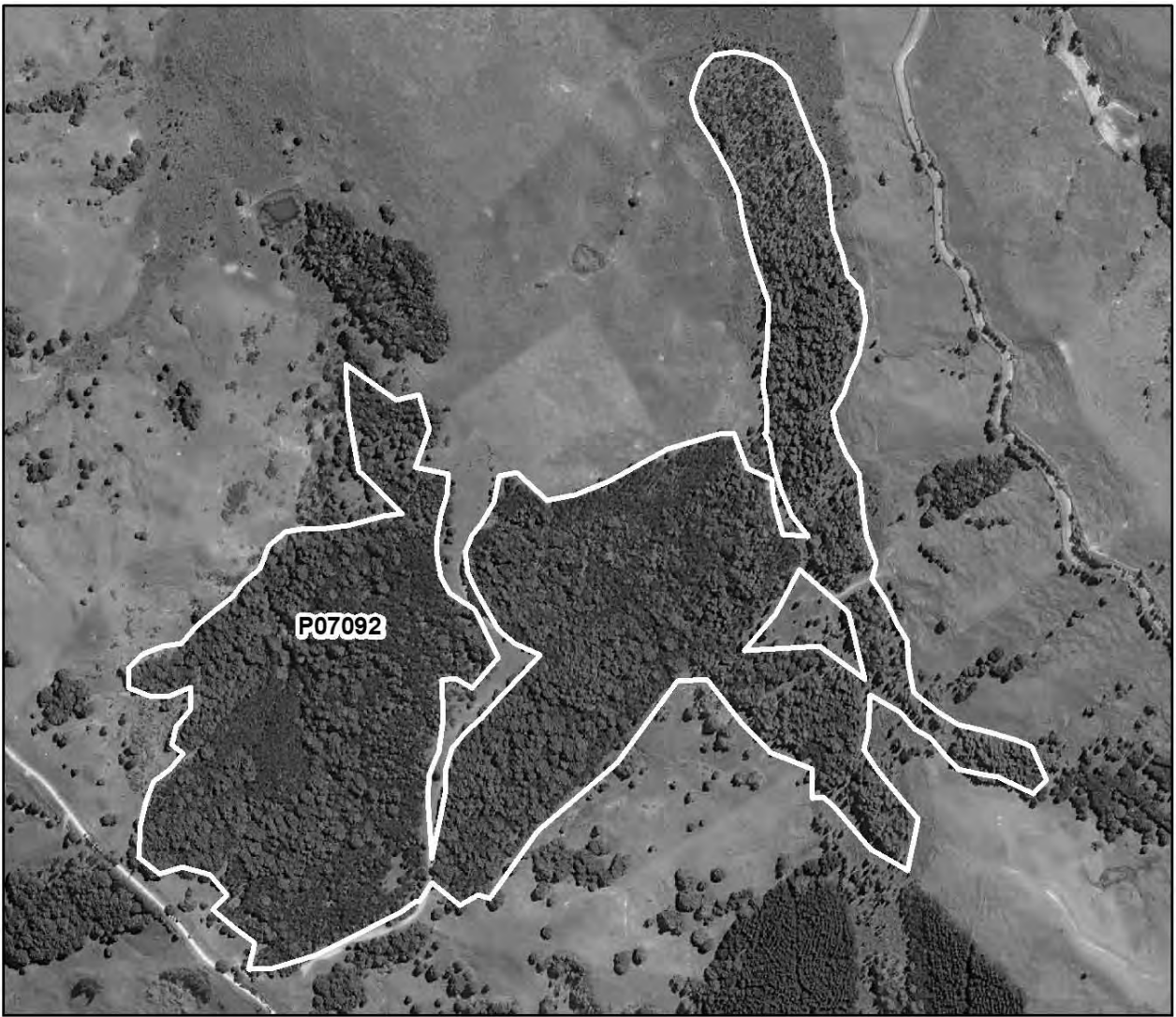
Type (c) kānuka/mānuka is dominant with common tōtara and occasional emergent kauri, rimu, kahikatea and tī kōuka in the northwest of the site.

Fauna

1994/1995 sighting of NI brown kiwi (Nationally Vulnerable) by the landowner reported during this survey.

Significance

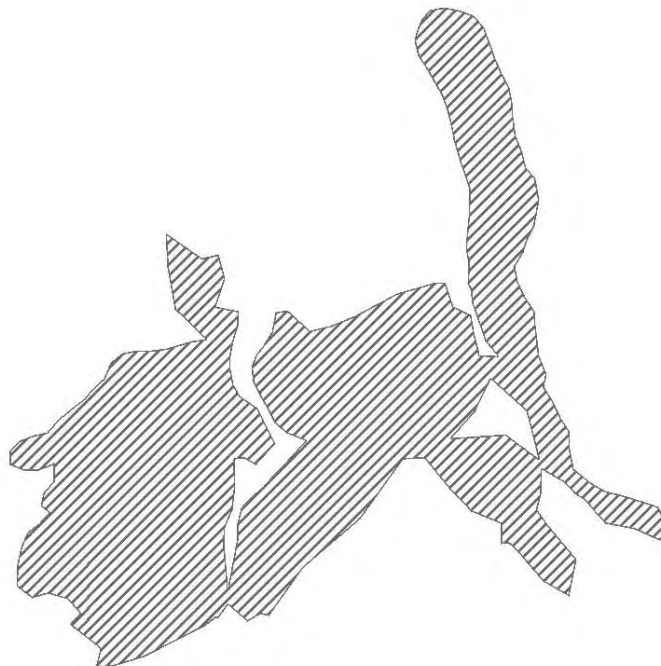
A reasonably sized hillslope remnant providing a degree of riparian buffering within a very modified Ecological District. Presence of an under-represented forest type—kahikatea forest on alluvium—and previous sightings (1994/95) of the threatened NI brown kiwi. Only example of type (e) vegetation in the Tokatoka Ecological District. Approximately 1.6 ha of this site is within a 'Chronically Threatened' land environment (A5.2b); 5.9 ha within an 'At Risk' land environment (A6.1b) and 19.1 ha within a 'Critically Underprotected' land environment (A6.1c) (Walker et al. 2007).



P07/092 Wallace Road Bush

Habitat type

-  Forest
-  Shrubland
-  Wetland



OKAHU STREAM FOREST AND ALLUVIAL
REMNANTS
(PART OF THE MANGANUI RIVER COMPLEX)

Survey no. P07/093
Survey date 6 October 1999
Grid reference 1693221E 6020307N (AX29)
Area 33.1 ha, 8 remnants
Altitude < 20-40 m a.s.l.

Ecological unit

- (a) Taraire forest on hillslope
- (b) Kānuka/mānuka-tōtara forest on hillslope
- (c) Tī kōuka-kahikatea-mānuka forest on alluvium
- (d) Kahikatea forest on alluvium
- (e) Tī kōuka forest on alluvium
- (f) Kānuka/mānuka-rimu forest on gentle hillslope
- (g) Tī kōuka-kahikatea forest on alluvium

Landform/geology

Floodplain of Holocene alluvium and swamp deposits, and adjoining hillslopes of Mangakahia Complex sandstone and mudstone.

Vegetation

The following ecological descriptions have been labelled (1), (2), (3) etc. with the site map accordingly labelled to show where the areas described occur.

(1)

(a) Taraire is common on a hillslope remnant in the northwest of the site. Rewarewa, kahikatea, pūriri and tōtara are frequent. Karaka, mānatu, kōwhai, titoki, rimu, matai, kānuka/mānuka, tī kōuka and nīkau are occasional.

(b) Some kānuka/mānuka and tōtara occurs also occurs here. Kahikatea is present.

(2)

(c) An open canopy of tī kōuka, emergent kahikatea and mānuka occurs in association in the small remnant south of this. Divaricating shrubs are present.

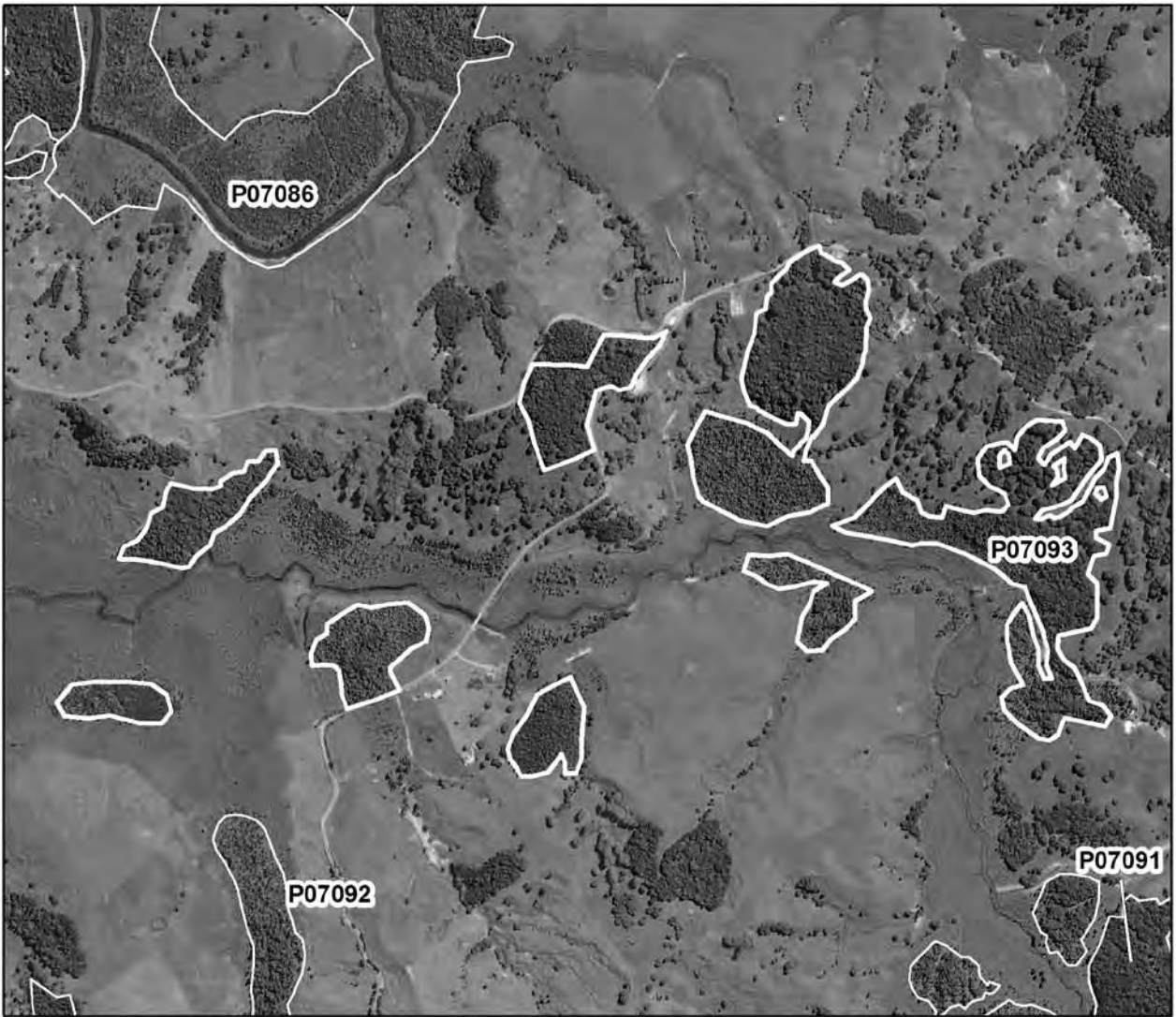
(3)

(d) In a small remnant alongside Wainui Road, abundant kahikatea occurs with occasional matai, tī kōuka, mānuka and divaricating shrubs.

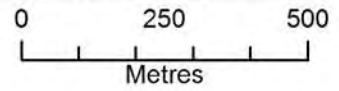
(e) Abundant tī kōuka also occurs within this remnant with frequent mānatu and kahikatea. Mānuka and divaricating shrubs are present.

(4)




(f) In the separate remnant east of this, kānuka/mānuka and emergent rimu are co-dominant. Emergent kauri is frequent and tānekaha and tōtara are occasional.

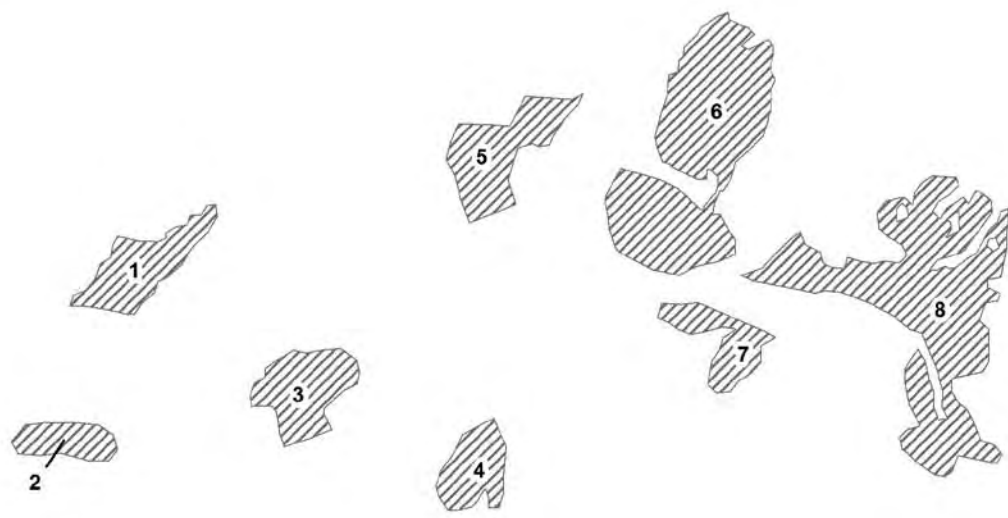


**P07/093 Okahu Stream Forest and Alluvial Remnants
(Part of Manganui River Complex)**



Habitat type

-  Forest
-  Shrubland
-  Wetland



Remnant (5) was not surveyed.

(6)

In another remnant alongside Wainui Road, type (d) kahikatea-dominant forest occurs with frequent mānatu and tī kōuka. Mānuka, tōtara and divaricating shrubs are present.

(7)

In a small remnant just to the south, kahikatea, type (d), is also dominant, with frequent tī kōuka and occasional mānatu.

(8)

(g) Within the far eastern remnant, tī kōuka and emergent kahikatea are co-dominant. Type (d) abundant kahikatea also occurs here, with frequent tī kōuka and occasional kōwhai.

Significant flora

Mānatu (regionally significant species) was recorded during this survey.

Fauna

No specific survey has been conducted within this site; however, it is part of the Manganui River Complex which supports many Threatened, At Risk and regionally significant species (see P07/086).

Significance

Riverine and hillslope habitat contributing to the outstanding Manganui River Complex. Presence of a regionally significant species. Representative site for vegetation types (d), (e) and (g).

Remnant (6) is protected by a Queen Elizabeth II National Trust Open Space covenant (7.7 ha). Approximately 16 ha of this site is within a 'Chronically Threatened' land environment (A5.2a, G3.1a); 12.6 ha within an 'At Risk' land environment (A6.1b) and 5.1 ha with a 'Critically Underprotected' land environment (A6.1c) (Walker et al. 2007).

MAUNGATAWHIRI FOREST REMNANT

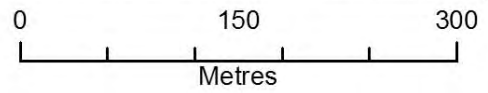
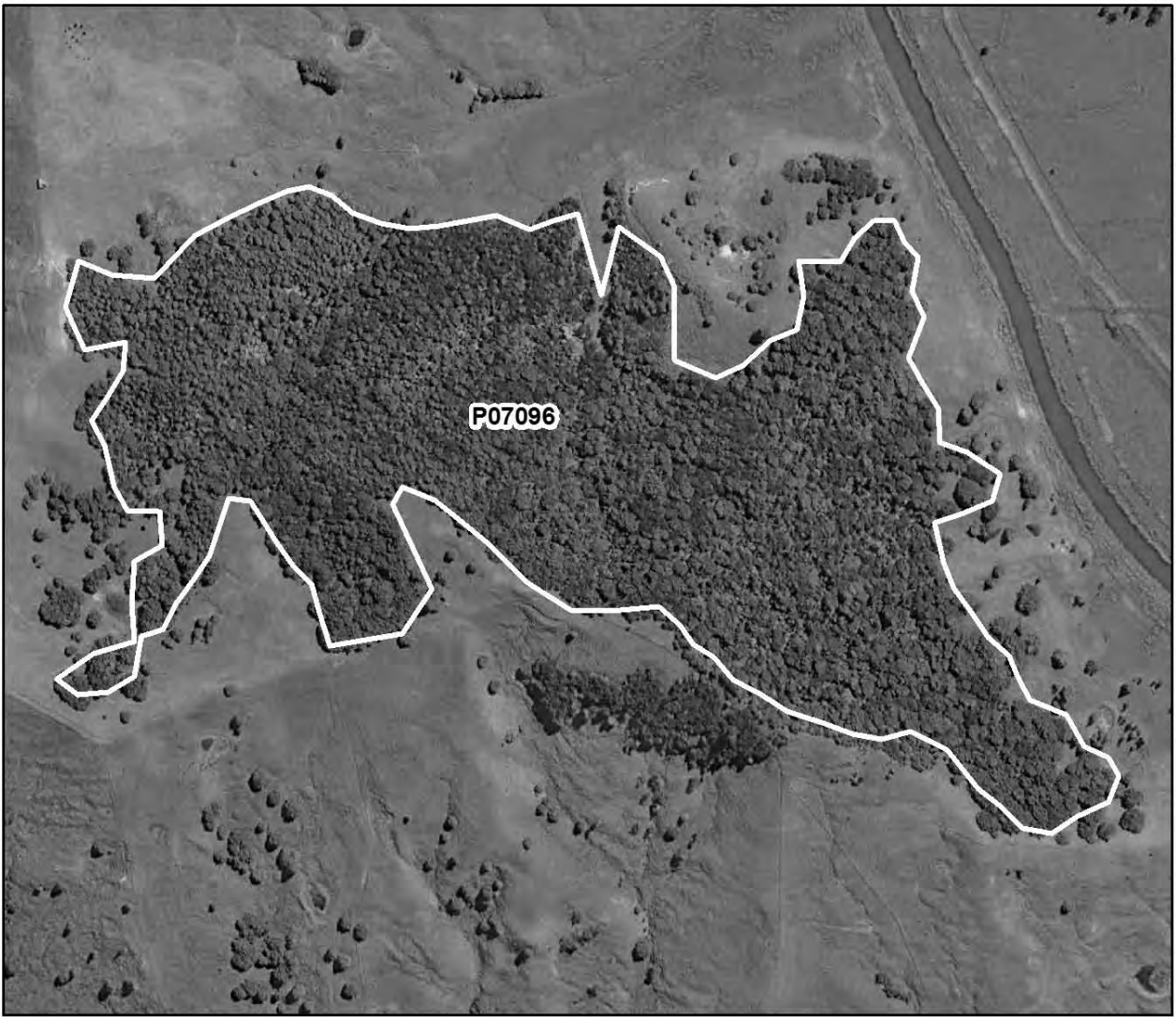
Survey no.	P07/096
Survey date	6 October 1999
Grid reference	1685502E 6021356N (AX29)
Area	17.8 ha
Altitude	20-100 m a.s.l.

Ecological unit

- (a) Taraire forest on moderate hillslope
- (b) Kānuka/mānuka-tōtara forest on moderate hillslope
- (c) Tōtara forest on moderate hillslope

Landform/geology

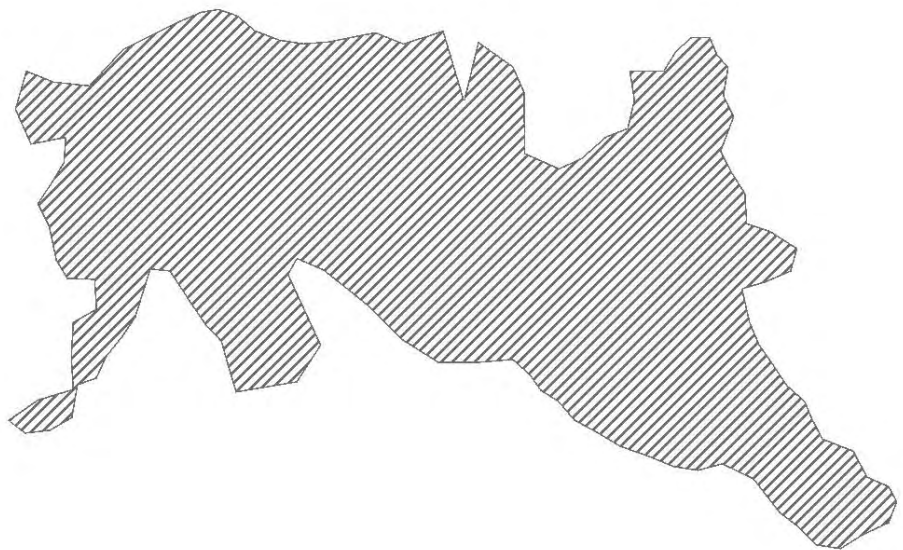
Hillslopes of Mangakahia Complex sandstone and mudstone.



P07/096 Maungatawhiri Forest Remnant

Habitat type

-  Forest
-  Shrubland
-  Wetland



Vegetation

(a) On the eastern side of the remnant, taraire is abundant with frequent rewarewa. A range of species are occasional including pūriri, kahikatea, kohekohe, pukatea, rimu, kauri, tōwai, tītoki, kōwhai, puka, and mamaku. Tōtara occurs on the edges.

(b) On the northern side of the remnant, kānuka/mānuka and tōtara occurs with frequent māpou. Pūriri, kauri, rewarewa, kohekohe, tōwai, ti kōuka and mamaku are occasional.

(c) West of this, tōtara occurs with frequent tānekaha. Pūriri, rewarewa, ti kōuka, mamaku and kānuka/mānuka are occasional. The view into this part of the remnant was limited.

Fauna

NI brown kiwi (Nationally Vulnerable) reported in 1992/1993 DOC Northland kiwi survey (DOC internal files).

Significance

A forested remnant within a very modified Ecological District providing stepping stone habitat. NI brown kiwi have been reported here in the past. Approximately 0.2 ha of this site is within a 'Chronically Threatened' land environment (G3.1b); 8.6 ha with an 'At Risk' land environment (A6.1b) and 9 ha within a 'Critically Underprotected' land environment (A6.1c) (Walker et al. 2007).

TURIWIRI SCENIC RESERVE

Survey no.	P07/097
Survey date	13 October 1999
Grid reference	1681240E 6021299N (AX29)
Area	3.8 ha
Altitude	< 20-30 m a.s.l.

Ecological unit

(a) Kauri forest on flat and gentle hillslope

Landform/geology

Gentle hillslope of Mangakahia Complex mudstone.

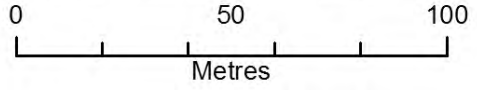
Vegetation

A small kauri-dominant remnant with some large mature emergent trees forming an open canopy. Kahikatea, tōtara and kānuka/mānuka are frequent. Pūriri, rimu, kōhūhū, ti kōuka, nīkau and *Muehlenbeckia australis* are occasional.

Nīkau is common in the understorey.

Fauna

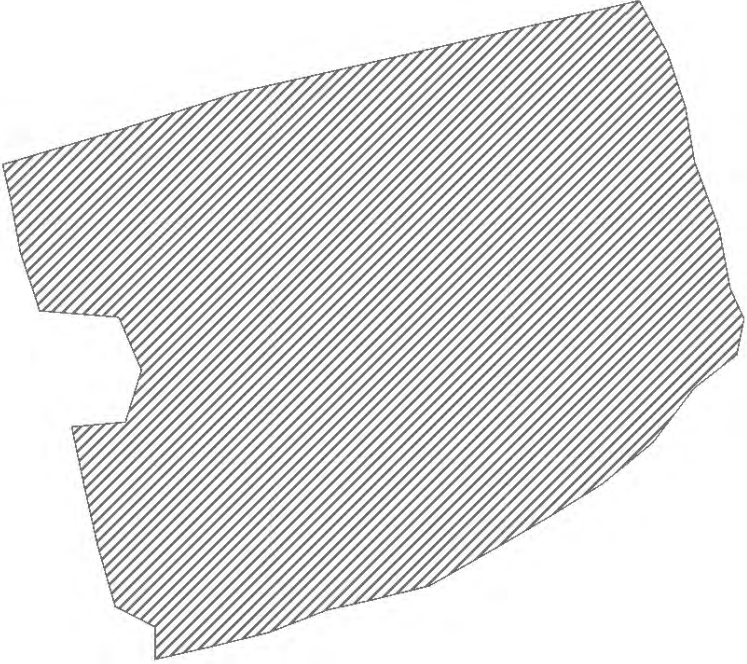
None noted.



P07/097 Turiwiri Scenic Reserve

Habitat type

-  Forest
-  Shrubland
-  Wetland



Significance

Representative kauri lowland remnant with significant mature kauri, an under-representative habitat type within the Tokatoka Ecological District and throughout Northland generally.

The Turiwiri Scenic Reserve (3.91 ha) is administered by the Kaipara District Council. The total area of this site is within a 'Chronically Threatened' land environment (A6.1d) (Walker et al. 2007).

ROWLANDS ROAD REMNANT

Survey no.	P07/098
Survey date	13 October 1999
Grid reference	1681723E 6021775N (AX28)
Area	5.6 ha (4.4 ha forest, 1.2 ha shrubland)
Altitude	20-60 m a.s.l.

Ecological unit

- (a) Kahikatea-tōtara forest on moderate hillslope (80%)
- (b) Kānuka/mānuka shrubland on moderate hillslope (20%)

Landform/geology

Hillslope of Mangakahia Complex mudstone.

Vegetation

This site was mapped as 6.8 ha in 1999 and was adjusted to fit 2008 aerial photography. The main difference was a reduction in the shrubland area in the north of the site

- (a) Kahikatea and tōtara are co-dominant over most of the site. Nikau and kānuka/mānuka are frequent. Pūriri, kohekohe, rimu, matai, pukatea, karaka, ti kōuka, and māpou are occasional.
- (b) A small area of fragmented kānuka/mānuka shrubland occurs adjacent to this with some tōtara and ti kōuka and open areas of pasture.

Fauna

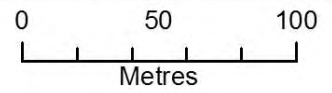
None noted.

Significance

Forested habitat within a very modified surrounding area and Ecological District as a whole.

Representative site for type (a) kahikatea-tōtara forest.

The total area of this site is within an 'At Risk' land environment (5.7 ha) (Walker et al. 2007).



P07/098 Rowlands Road Remnant

Habitat type

-  Forest
-  Shrubland
-  Wetland



HILL ROAD REMNANTS

Survey no.	P07/100
Survey date	13 October 1999
Grid reference	1684022E 6023619N (AX29)
Area	24.8 ha, 2 remnants
Altitude	20-80 m a.s.l.

Ecological unit

- (a) Taraire forest on moderate hillslope
- (b) Rimu-tānekaha forest on moderate hillslope
- (c) Kānuka/mānuka forest on moderate hillslope
- (d) Kānuka/mānuka-rimu forest on moderate hillslope

Landform/geology

Hillslopes of Mangakahia Complex mudstone.

Vegetation

The northern remnant was not surveyed.

(a) The southern remnant is predominantly taraire forest.

(i) In the northwest, taraire occurs with frequent pūriri. Kahikatea, kauri, pukatea, rewarewa, kohekohe, tōtara, puka, nīkau and kānuka/mānuka are occasional in the canopy.

(ii) In the south and southeast, taraire is dominant with frequent pūriri and occasional northern rātā, tānekaha, kahikatea, pukatea, rimu, rewarewa, puka and nīkau.

(b) In the southeast is an area of rimu and tānekaha with frequent emergent kauri and kānuka/mānuka. Tōtara is also present.

(c) An area of kānuka/mānuka also occurs here with frequent emergent tānekaha. Emergent rimu and kauri occur with some tōtara.

(d) In the southern end of the remnant, kānuka/mānuka and rimu occur. Tānekaha is frequent and kauri and tōtara are occasional.

Some large emergent kauri occur on high points.

Significant flora

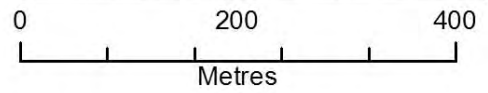
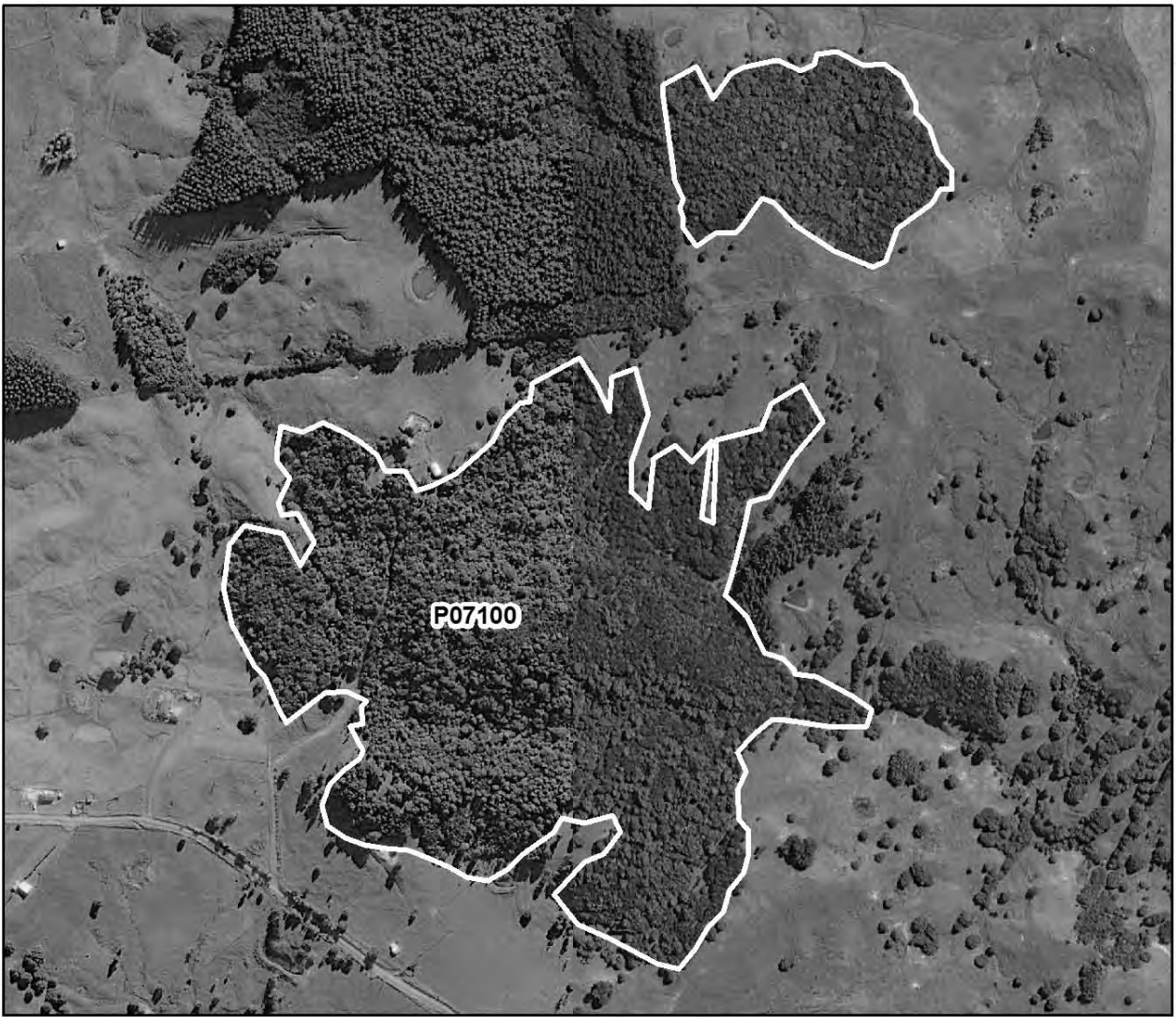
Northern rātā (regionally significant species) recorded during this survey.

Fauna

Historical records of by the New Zealand Wildlife Service in 1978 (SSBI P07/H052): NI brown kiwi (Nationally Vulnerable) grey warbler, silvereye, tūi, NI fantail and kauri snail (Gradual Decline).

Significance

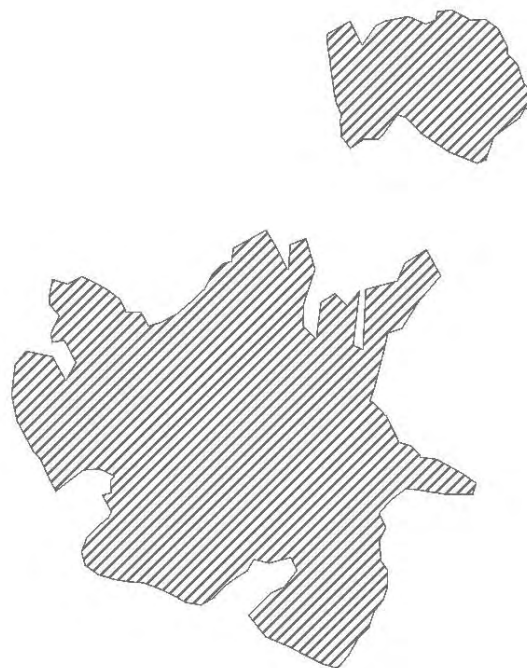
Lowland forest is an under-represented forest type within the Tokatoka Ecological District and throughout Northland generally. The southern remnant also includes some large emergent kauri which is an uncommon feature in this District. Historical records of two threatened species; NI brown kiwi and kauri snail and presence of a regionally significant tree, northern rātā.



P07/100 Hill Road Remnants

Habitat type

-  Forest
-  Shrubland
-  Wetland



Queen Elizabeth II National Trust Open Space covenants, totalling 14 ha occur within the southern remnant. Approximately 0.9 ha of this site occurs within an 'At Risk' land environment (A6.1b) and 25.2 ha within a 'Critically Underprotected' land environment (Walker et al. 2007).

HOANGA ROAD SHRUBLAND AND FOREST

Survey no.	P07/101
Survey date	13 October 1999
Grid reference	1684787E 6025092N (AX29)
Area	291.5 ha, 4 remnants (12.1 ha forest, 279.4 ha shrubland)
Altitude	< 20-100 m a.s.l.

Ecological unit

- (a) Tī kōuka forest on alluvium
- (b) Kahikatea forest on alluvium
- (c) Kānuka/mānuka shrubland on gentle to steep hillslope
- (d) Kānuka/mānuka-tōtara shrubland on moderate hillslope
- (e) Kānuka/mānuka-tōtara-tree fern shrubland on moderate hillslope
- (f) Kauri-rimu-tānekaha forest on steep hillslope
- (g) Taraire forest on moderate hillslope
- (h) Tōtara shrubland on moderate hillslope
- (i) Tōtara-kānuka/mānuka shrubland on gentle to moderate hillslope

Landform/geology

Floodplain of Holocene alluvium, and hillslopes of Mangakahia Complex sandstone and mudstone.

Vegetation

(a) Tī kōuka occurs on the alluvial flat on the northern edge of the large remnant beside the Wairoa River (Manchurian rice grass occurs alongside the river).

(b) Just behind this, kahikatea occurs, along with frequent tī kōuka.

(c) The rest of this large remnant and the southeastern remnant is dominated by kānuka/mānuka. Kānuka/mānuka areas occur in varying heights, presumably as blocks have been cleared and allowed to regenerate. Tōtara is prevalent in many areas and there are a few emerging forest trees such as kauri and kahikatea.

There are small patches of broadleaf/podocarp forest which weren't described. Flowering puawhananga was noted in the canopy at the time of the survey.

(d) Kānuka/mānuka with tōtara occurs in several areas. Occasional species include tī kōuka, tree fern and, in places, kauri.