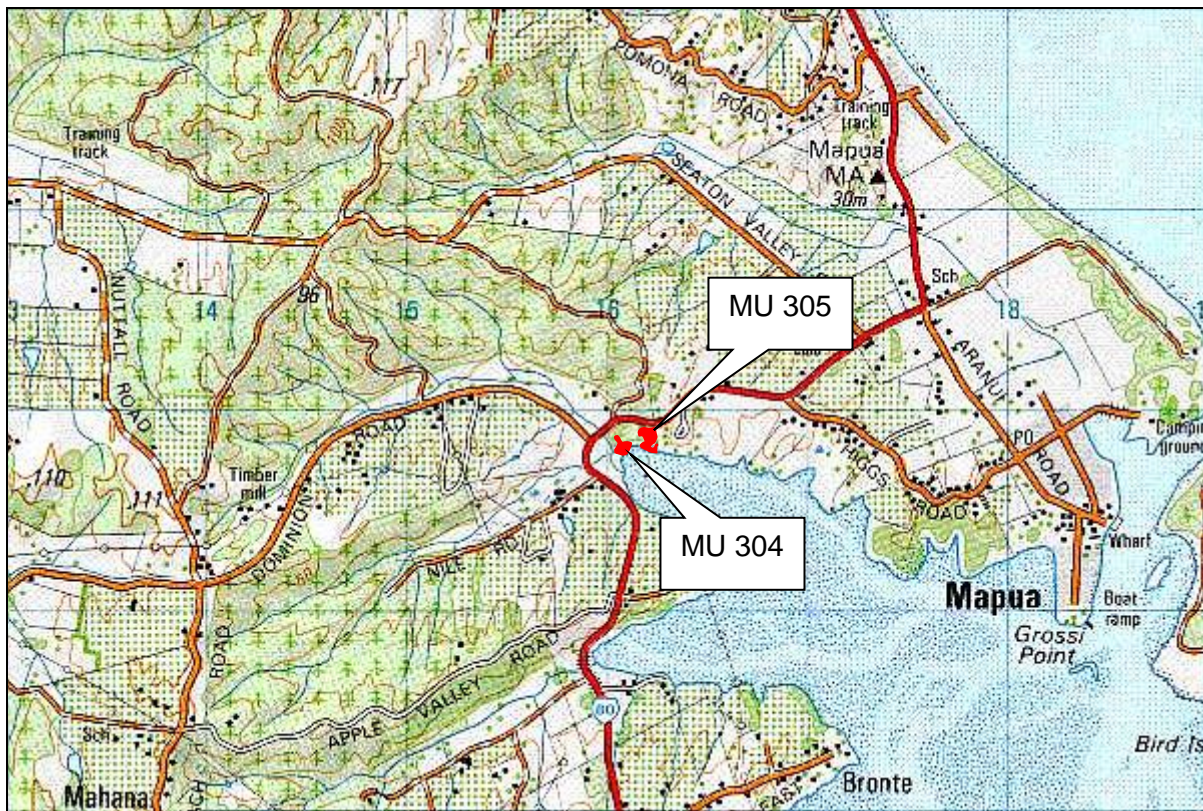


Native Habitats Tasman

Draft Ecological Assessment Report

Site:	MU 304 & 305
Landowners/Occupiers:	TDC (Higgs Reserve)
Ecological District:	Moutere
Grid Ref:	E2516075 N5994892
Surveyed By:	Michael North
Date:	10 March 2010
Survey Time:	2 hrs



THE SETTING – MOUTERE ECOLOGICAL DISTRICT (ED)

Location and Physical Description

The Moutere Ecological District occupies most of the Moutere Depression. It is rolling hill country founded on deeply weathered fluvio-glacial outwash gravels (Moutere Gravels), with a little limestone and granite in the west. The hills are drained by numerous valleys with flat alluvial floors. There is a small amount of coast containing an estuarine shore and a series of bluffs. The climate is sunny and sheltered, with very warm summers and mild winters. Most of the land is in private ownership and is used for pastoral farming, forestry, horticulture and small-scale settlement. Tasman District Council has considerable landholdings in this District.



Ecosystem Types Originally Present

Formerly, the Ecological District, apart from the waterways, would have been almost entirely covered in forest. The alluvial valley floors supported towering podocarp forests of totara, matai, rimu, miro and kahikatea. On the hills, black beech was dominant at the seaward end of the District, with hard beech prominent further inland, giving way further inland still to red beech with silver beech. In sheltered coastal gullies were pockets of lush broadleaved forest containing tawa, titoki, pukatea, nikau and tree ferns. Along the coastal bluffs was forest of ngaio, titoki, nikau and other broadleaved trees, with totara and black beech. Fringing the estuary would have been a vegetation sequence like that in the neighbouring Motueka Ecological District. Freshwater

wetlands occurred in the coastal valleys and would have included fertile lowland swamps with kahikatea, harakeke, cabbage tree and tussock sedge (*Carex secta*). Rivers and streams, including riparian ecosystems (trees, shrubs, flaxes, toetoe, etc) and some braided river beds, would have made up an appreciable although not large portion of the District. The table below gives estimates of the extent of these original ecosystems.

Existing Ecosystems

Most of the natural terrestrial ecosystems have been lost. What remains is largely a scattering of fragments of beech forest, with some larger areas in the south. There are tiny remnants of coastal bluff forest, lowland broadleaved forest and podocarp forest only, and a few wee freshwater wetlands. The estuary margin is still surprisingly intact, although its fringing vegetation sequence has largely gone. The table below gives estimates of the proportions of the original ecosystems that remain.

Degree of Protection

There is little protected land within the Ecological District. However, there are significant remnants protected in reserves and covenants. These include a coastal bluff forest remnant at Ruby Bay, tawa forest at Eves Valley, podocarp forest remnants near Upper Moutere, several key remnants of beech forest and larger tracts of beech forest in the south. A few tiny wetlands are also protected. The table below gives estimates of how much of the original and remaining ecosystems have formal protection.

Indigenous Ecosystems – Moutere Ecological District				
Ecosystem type	Original extent (% of ED)	Proportion of original extent remaining (%)	Proportion of original extent / remaining area protected (%)	
			Original	Remaining
Coastal sand dune and flat	—	—	—	—
Estuarine wetland	<1	30	?	?
Fertile lowland swamp and pond	1	<5	<2	<20
Infertile peat bog	—	—	—	—
Upland tarn	—	—	—	—
Lake	—	—	—	—
River, stream and riparian	1	40	?	?
Lowland podocarp forest	20	1	<1	50
Lowland broadleaved forest	1	<5	<5	100
Lowland mixed forest	5	<5	<5	50
Lowland beech forest	65	5	2	40
Upland beech forest	5	50	40	80
Subalpine forest	—	—	—	—
Lowland shrubland	<1	<5	<1	<10
Upland/subalpine shrubland	—	—	—	—
Frost flat communities	—	—	—	—
Tussock grassland	—	—	—	—
Alpine herbfield and fellfield	—	—	—	—

NOTE This is not a report on all of Higgs Reserve, rather, of the two parts of the reserve that warranted investigation under this survey programme due to their apparent ecological values. A map at the end of the Appendix indicates the areas that are included.

MU 304 SITE DESCRIPTION

Location, Geology, Hydrology

This 0.4 ha site occupies the flat estuary margins left of the mouth of Dominion Stream where it enters Waimea Estuary. It lies on fine estuarine deposits and organic soils derived from the presence of a freshwater wetland that grades into estuarine vegetation.

Vegetation

GENERAL

The site is generally of low vegetation associated with freshwater merging into saline along the estuary margins. Part of the rear of the site also includes some willow wetland.

COMMUNITIES

1 Raupo reedland

A pure raupo stand runs out from the edge of willow forest into oioi beds, with a wide band of co-dominance with oioi into which it merges. A tongue of raupo continues across the title boundary out into crown seabed.

2 Oioi sedgeland

Oioi forms pure stands along the estuary margins of the site, continuous with crown seabed. It merges into either raupo or saltmarsh ribbonwood, dependant on location. Sea rush and sea primrose are occasional.

3 Saltmarsh ribbonwood scrub

Low saltmarsh ribbonwood scrub forms the largest community in this site, with seaward margins merging into oioi, and inland margins into tall fescue, flax, scrambling pohuehue and gorse. Occasional senescent manuka is also present.

4 Mixed wetland associations

A small area of tall manuka shrubland (just a few bushes) runs into regenerating manuka saplings, the sedge *Carex geminata*, open raupo, occasional toetoe and out into oioi where the saline influence increases.

5 Willow forest over sedgeland

Mature crack willow stand over dense beds of the sedge *Carex geminata*. Inland the sedge beds open out, with kiokio fern, and open *Carex virgata*, rare *Carex secta*, common hypolepis fern and blackberry.

6 Scrambling pohuehue-tall fescue-harakeke flax-gorse associations

Two areas along the inland margins of the saltmarsh ribbonwood stand are dominated either by tall fescue and scrambling pohuehue, or harakeke flax and gorse, with each area also including the other species mentioned.

Botanical Values

COMMUNITIES

Estuarine wetlands with intact vegetation sequences from freshwater to saline are extremely rare within the Moutere Ecological District (ED), only occurring at a few other similarly tiny sites in the ED. They have been almost totally destroyed elsewhere in the ED, (although they were already naturally quite restricted), and the few remaining examples, as here, are of the very highest ecological value in the context of the Moutere Ecological District. Nationally, such habitats are severely diminished.

Freshwater wetlands have been reduced by over 90% nationally, and ca 93% within the Moutere Ecological District. This catastrophic level of loss has resulted in a joint declaration by the Department of Conservation and the Ministry for the Environment that states that retaining all remaining freshwater wetlands is a national priority. All freshwater wetlands within the ED are considered very important, particularly since their total area is now very small (ca 60 ha). The main area of loss was along the Moutere River floodplain. Most of the remaining areas lie in a band between the Inland and Coastal Highways, of which there are only about 20 or so, the largest being ca 30ha.

SPECIES

13 native plant species were noted. Toetoe is very rare in the Moutere ED, being recorded at only three other sites to date by this survey. This species is surprisingly absent from most Moutere wetlands.

Fauna

No native birds were noted. Banded rail (at least one bird) were recorded in the early 1980s by Graeme Elliott during his seminal study of this species, and they are likely to still be present.

Weed and Animal Pests

Tall crack willow stand over part of the freshwater wetland tongue, fed by seepage water that runs out of the slopes behind the site. Tall fescue and gorse are locally prominent. No pest sign was noted.

Other Threats

Parts of the adjoining estuary margin on public conservation land and crown seabed has recently been obliterated by the Ruby Bay Bypass. This has seriously impacted on the extent of suitable habitat in this Waimea Estuary inlet for banded rail. The development has also impacted on sections of Dominion Stream outside the reserve. This stream runs through Higgs Reserve at its lowermost end. It has (or had prior to the development) high freshwater fish values.

General Condition

The site is in reasonably good condition with weed impacts quite localised.

Landscape/Historic Values

The site lies beside State Highway 60 and forms a very attractive part of this section of the road.

ASSESSMENT OF ECOLOGICAL SIGNIFICANCE

The following criteria are assessed:

Representativeness: *How representative is the site of the original vegetation?*

Rarity: *Are there rare species or communities?*

Diversity and pattern: *Is there a notable range of species and habitats?*

Distinctiveness/special features: Are there any features that make the site stand out locally, regionally or nationally for reasons not addressed by the above criteria?

Size/shape: How large and compact is the site?

Ecological context: How well connected is the site to other natural areas, to what extent does the site buffer and is buffered by adjoining areas, and what hydrological services to the catchment and critical resources to mobile species does it provide?

Sustainability: How well is the site able to sustain itself without intervention?

Site Significance

The technical assessment of significance is tabled in the Appendix.

This site is significant for the following reasons:

The site is of considerable significance as a fine and rare example in the context of the ecological district of estuarine wetland vegetation sequences.

PHOTO GALLERY



Panorama view of the site the lower image continuous with the left hand end of the upper image





One small section includes a mosaic of manuka, raupo and oioi with toetoe occasional along the freshwater>saltwater gradient



Dense raupo forms a small stand that runs out into LINZ seabed across the title boundary and is probably spring fed by waters issuing around its roots



Raupo and oioi grade extensively into each other



Harakeke flax is scattered through, here beside beds of scrambling pohuehue



Saltmarsh ribbonwood scrub in the foreground with manuka and harakeke behind



A large (presumed) longfinned eel within the reserve in Dominion Stream; prior to bypass construction, fish species recorded in this stream included giant kokopu; both these species are nationally listed as 'at risk'

MU 305 SITE DESCRIPTION (FOREST SECTION)

Location, Geology, Hydrology

This 0.6 ha site occupies coastal slopes of generally SE aspect, between 0-40m asl. A small incised gully runs down along the eastern margin of the site. The slope includes hollows that are damp.

The geology is Pliocene Moutere Gravel composed of clay-bound gravels. This material is glacial outwash from the Southern Alps.

Vegetation

COMMUNITIES

1 Mahoe-kohuhu-(fivefinger) forest on side-slopes

The site is occupied by fairly young secondary forest, dominated by mahoe and kohuhu with a variable fivefinger presence. Occasional trees are up to 30-40cm dbh. Rare pole kahikatea and rimu reach the canopy. Robinia trees up to 40cm occur nearer the margins and one large pussy willow was noted. Manuka is occasional in places and one large lemonwood was noted. Three adult hard beech occur together in a clump beside the shore. The understorey is variable. In some areas the canopy shading is so heavy that understories are near-absent, but there are others where there is good broadleaved regeneration of canopy broadleaved species, shining coprosma and mapou, with occasional pole or sapling matai, kahikatea and lowland totara, and rare rimu. Ponga is moderately common. Mingimingi is occasional. Beds of hookgrasses, sedges and ferns occur in places, whilst other tracts support very little ground cover. Hookgrasses include *Uncinia banksii* and *?Uncinia distans*, beds of the sedge *Carex solandri* are present, and quite extensive areas of crown fern are present. Other ferns include scattered hen and chickens fern, and beech hard fern. Along the coastal margin slopes, beds of the sedge *Gahnia pauciflora* occur and *Astelia fragrans* is present.

Botanical Values

COMMUNITIES

Native forest, secondary or otherwise is very rare in the northern end (north of the inland highway) of the Moutere Ecological District (ED) with just a scattering of tiny remnants. Forest on the coastal margin itself is now vanishingly rare, and this gives this site its particular importance. It includes several adult hard beech trees, some of the very last of any beech trees in this part of the ED. The original cover would probably have been of mixed beech-broadleaved-podocarp forest including much titoki which is now absent.

SPECIES

40 native plant species were noted. The presence of several adult hard beech and four species of regenerating podocarps is notable. The sedge *Carex solandri* is rare in the Moutere Ecological District and this is the largest population noted to date by this survey (c130 sites).

Fauna

Of the native forest birds noted only tui was noted. Other species likely to occur, at least seasonally, are korimako/bellbird, ruru/morepork, riroriro/grey warbler, piwakawaka/fantail, kotare/kingfisher, kereru/pigeon and waxeye.

Weed and Animal Pests

Robinia is scattered through the site towards its western margins (and abundant outside the natural area). One large pussy willow was noted. One climbing spindleberry was seen and pulled out. This is a 'total control' pest.

General Condition

The site is in very good condition due to a long history without browsing ungulates present. The understories are therefore in very good condition.

Landscape/Historic Values

The site is briefly visible from State Highway 60, forming a rare natural margin to the Waimea Estuary.

ASSESSMENT OF ECOLOGICAL SIGNIFICANCE

The following criteria are assessed:

Representativeness: *How representative is the site of the original vegetation?*

Rarity: *Are there rare species or communities?*

Diversity and pattern: *Is there a notable range of species and habitats?*

Distinctiveness/special features: *Are there any features that make the site stand out locally, regionally or nationally for reasons not addressed by the above criteria?*

Size/shape: *How large and compact is the site?*

Ecological context: *How well connected is the site to other natural areas, to what extent does the site buffer and is buffered by adjoining areas, and what hydrological services to the catchment and critical resources to mobile species does it provide?*

Sustainability: *How well is the site able to sustain itself without intervention?*

Site Significance

The technical assessment of significance is tabled in the Appendix.

This site is significant for the following reasons:

Coastal margin forest, secondary or otherwise is notably rare in the Moutere ED and this example is in very good condition. For its rarity and representativeness values the site is very significant in the ED context.

PHOTO GALLERY



Several hard beech stand along the margins of the estuary – this is an exceptionally rare example of coastal margin native forest in the Moutere Ecological District



The highest tides run up into this estuarine forested gully



Crown fern dominates small sections of the forest



In some areas the young broadleaved canopy casts such a deep shade that understories are meagre



Podocarps are scattered through the site, with pole canopy trees and younger regeneration of rimu (as here), kahikatea, matai and lowland totara



Dense beds of the sedge Gahnia pauciflora are a feature of the steep slopes on the margins of the shoreline



Carex solandri is very rare in the Moutere Ecological District and this is the largest population noted to date by this survey



Robinia (furrowed bark) is locally abundant in parts of this reserve and invading the native forest area, largely through suckering



Climbing spindleberry (a 'total control' pest) was noted here climbing into the canopy – the one plant was pulled out



A large tract of invasive Robinia lies between the two identified natural areas within Higgs Reserve; it will continue to spread into the native regeneration unless controlled

Management Issues and Suggestions – Higgs Reserve

This reserve was gifted to TDC by its former owners, some years ago. To date very little management has been undertaken by the council, presumably for lack of funds and other perceived priorities. This is unfortunate as the ecological values of this site are high in the context of the ecological district, where coastal margin forest is almost non-existent, and where estuarine freshwater to saline vegetation sequences are extremely rare. The reserve is assailed by the highly invasive *Robinia*, and crack willow, with mature eucalypt and pine trees along the highway margins. Any restoration efforts should be centered around the two identified areas of importance, but there is the wider context of the reserve itself to consider. At the very least, weed threats should be removed from the two identified areas. This leaves the ongoing issue of *Robinia* invasion, particularly as it suckers from roots that extend 10-15m out from the trunks. It is worth noting here that robinia is the most ground durable fast-growing timber in NZ, and there is a potential market at least for 'eco-posts' that have not been treated with toxic preservatives. The stand here is substantial and could be of considerable value in this regard.

The only obvious management issues in the wetland are weeds. Tall fescue and crack willow dominate small areas of the site. The fescue could be sprayed out and replanted with scrambling pohuehue. The crack willow could be felled and poisoned where it grows in and around the wetland tongue that runs up into dryer willow forest.

The native forest area is subject to *Robinia* invasion. These are most easily removed within the native forest, with least damage to it, by drilling/poisoning.

APPENDIX

Technical Assessment of Site Significance

Each site is ranked according to the highest ranking vegetation community or habitat that occurs within it. However, a site will be divided into more than one area for assessment purposes if they vary markedly in character, size or condition. Some examples are:

- (a) a core area of vegetation (say, a podocarp gully remnant) is surrounded by/adjoins a much larger area of markedly different vegetation (say, kanuka scrub);
- (b) a core area of vegetation has *markedly* different ecological values to the surrounding/adjacent vegetation;
- (c) where artificially abrupt ecological boundaries occur between an area of primary vegetation and a surrounding/adjacent area of secondary vegetation.

Where such division of a site into two or more separately assessed areas occurs, such adjoining areas will also be considered in their buffering/connectivity roles to one another.

Each site was assessed as one unit as the above considerations did not indicate the need to assess communities separately.

Significance Evaluation MU 304 (Estuarine Wetland)		
	Score	Example/Explanation
Primary Criteria		
Representativeness		
The site contains one of the best examples of the characteristic ecosystem types in the ecological district	H	
Rarity and Distinctiveness		
The site includes a community that is naturally rare in the ecological district	H	Brackish wetlands in Moutere ED
The site includes a community that is nationally threatened under DoC/MfE National Priority 2 (dunes and wetlands) and retains functional indigenous components	H	
Diversity and Pattern		
Indigenous plant communities species or habitats are present with typical diversity for such sites in the Ecological District	ML	
Secondary Criteria		
Ecological Context (highest score)		
Connectivity		
The site adjoins indigenous vegetation and is well connected to, and therefore well buffers such vegetation	MH	>1/3 of the site boundary is connected to indigenous vegetation on adjoining title(s) or adjoining but separately assessed parts of the same title
Buffering to		

Significance Evaluation MU 304 (Estuarine Wetland)

	Score	Example/Explanation
The site is moderately buffered by vegetation	M	Vegetation buffers the site effectively around at least ½ of its boundary
Provision of critical resources to mobile fauna		
The site provides seasonally important resources for indigenous mobile animal species and these species are present in the locality even though they may not have been observed at the site.	L	Unusually important stands of podocarp, tawa or kowhai trees that provide seasonally important benefits for forest birds.
Hydrological services to the catchment		
The site provides hydrological services to the catchment.	L	
Size and Shape		
The site is of moderate size for its vegetation community and Ecological District and is at least reasonably compact in shape	M	Survey of the ED is incomplete; the site may in fact be large for its type in the ED
Other Criterion		
Sustainability (average score)	ML	
Physical and proximal characteristics		
Size, shape, buffering and connectivity provide for a moderately low overall degree of ecological resilience.	ML	Size L Shape M Buffering M Connectivity MH
Inherent fragility/robustness		
Indigenous communities are inherently fragile.	L	All wetlands are inherently fragile
Threats (low score = high threat; lowest score taken)		
Ecological impacts of grazing, surrounding land management, weeds and pests*	M	Grazing H Surroundings H Weeds M Pests H

* observed pest impacts only


NB where scores are averaged, the score must reach or exceed a particular score for it to apply

Summary of Scores	Criterion	Ecological District Ranking
Primary Criteria	Representativeness	H
	Rarity	H
	Diversity and Pattern	ML
Secondary Criteria	Ecological Context	MH
	Size/Shape	M
Additional Criteria	Sustainability	ML

H = High MH = Medium-High M = Medium ML = Medium-Low L = Low

Summation of Scores to Determine Significance

If a site scores at least as highly as the combinations of primary and secondary scores set out below, it is deemed significant for the purposes of this assessment.

Primary Criteria		Secondary Criteria	
Any of the three primary criteria with a score at least as high as listed		Any of the two secondary criteria with a score at least as high as listed	
		Plus	
	H		—
	MH x 2		—
	MH + M		—
	MH	+	MH
	M x 2	+	H
	M x 2	+	MH x 2
	M	+	H + MH

H = High MH = Medium-High M = Medium

Is this site significant under the TDC assessment criteria? **YES**

Significance Evaluation MU 305 (Forest)

	Score	Example/Explanation
Primary Criteria		
Representativeness		
The site contains one of the best examples of the characteristic ecosystem types in the ecological district	H	The site contains one of the best examples of the characteristic ecosystem types in the ecological district
The site includes mature secondary vegetation that strongly or moderately strongly resembles pre-human natural regeneration	MH	eg Mature secondary kanuka or mixed broadleaved forest in good condition with presence of beech or podocarps even as seedlings, or with occasional relic primary emergent trees, and moderately low herbivore impacts
Rarity and Distinctiveness		
The site supports a locally endemic species or a species rare in the Ecological District (ED)	M	<i>Carex solandri</i> in Moutere ED
The site includes a secondary community that is very rare in the ecological district	MH	Coastal margin mixed broadleaved forest
Diversity and Pattern		
Indigenous plant communities species or habitats are present with greater diversity than is typical for such sites in the Ecological District	M	Plant species diversity notable
Secondary Criteria		
Ecological Context (highest score)		
Connectivity		
The site adjoins indigenous vegetation and is partially connected to, and therefore partially buffers such vegetation	M	<1/3 of the site boundary is connected to indigenous vegetation on adjoining title(s) or adjoining but separately assessed parts of the same title
Buffering to		
The site is moderately well buffered by vegetation	MH	Vegetation buffers the site effectively around at least ¾ of its boundary
Provision of critical resources to mobile fauna		
The site provides seasonally important resources for indigenous mobile animal species and these species are present in the locality even though they may not have been observed at the site.	L	Unusually important stands of podocarp, tawa or kowhai trees that provide seasonally important benefits for forest birds.
Hydrological services to the catchment		
The site provides hydrological services to the catchment.	L	
Size and Shape		
The site is large for its vegetation community and Ecological District	H	Other coastal margin forest remnants are all smaller in Moutere ED
Other Criterion		
Sustainability (average score)	M	

Significance Evaluation MU 305 (Forest)

	Score	Example/Explanation
Physical and proximal characteristics		
Size, shape, buffering and connectivity provide for a moderately low overall degree of ecological resilience.	ML	Size L Shape M Buffering MH Connectivity M
Inherent fragility/robustness		
Indigenous communities are inherently resilient.	H	
Threats (low score = high threat; lowest score taken)		
Ecological impacts of grazing, surrounding land management, weeds and pests*	M	Grazing H Surroundings H Weeds M Pests H

* observed pest impacts only


\NB where scores are averaged, the score must reach or exceed a particular score for it to apply

Summary of Scores	Criterion	Ecological District Ranking
Primary Criteria	Representativeness Rarity Diversity and Pattern	H MH M
Secondary Criteria	Ecological Context Size/Shape	MH H
Additional Criteria	Sustainability	M

H = High MH = Medium-High M = Medium ML = Medium-Low L = Low

Summation of Scores to Determine Significance

If a site scores at least as highly as the combinations of primary and secondary scores set out below, it is deemed significant for the purposes of this assessment.

Primary Criteria	Secondary Criteria	
Any of the three primary criteria with a score at least as high as listed	Any of the two secondary criteria with a score at least as high as listed	
	Plus	
 H		—
MH x 2		—
MH + M		—
MH	+	MH
M x 2	+	H
M x 2	+	MH x 2
M	+	H + MH

H = High MH = Medium-High M = Medium

Is this site significant under the TDC assessment criteria? **YES**

Species List MU 304

r = Rare o = Occasional m = Moderate Numbers ml = Moderate Numbers Locally c = Common
 lc = Locally Common f = Frequent lf = Locally Frequent x = Present But Abundance Not Noted
 P = Planted R = Reported

Species Name	Common Name	Status
Trees Shrubs		x
<i>Leptospermum scoparium</i>	manuka	o
<i>Muehlenbeckia complexa</i>	pohuehue	ml
<i>Plagianthus divaricatus</i>	saltmarsh ribbonwood	lc
Lianes		x
Dicot Herbs		x
<i>Samolus repens</i>	sea primrose	o
Monocot Herbs		x
<i>Phormium tenax</i>	harakeke, swamp flax	o
Grasses Sedges Rushes		x
<i>Apodasmia similis</i>	oioi	lc
<i>Carex geminata</i>		lc
<i>Carex secta</i>	purei	r
<i>Carex virgata</i>	pukio	o
<i>Juncus kraussii</i>	sea rush	o
<i>Typha australis</i>	raupo	lc
Ferns		x
Weeds		x
<i>Salix fragilis</i>	crack willow	ml
<i>Schedonorus phoenix</i>	tall fescue	ml
<i>Ulex europaeus</i>	gorse	ml
Birds		x
banded rail		R

Species List MU 305

r = Rare o = Occasional m = Moderate Numbers ml = Moderate Numbers Locally c = Common
 lc = Locally Common f = Frequent lf = Locally Frequent x = Present But Abundance Not Noted
 P = Planted R = Reported

Species Name	Common Name	Status
Trees Shrubs		x
<i>Carpodetus serratus</i>	putaputaweta; marbleleaf	r
<i>Coprosma grandifolia</i>	large leaved coprosma; kanano	r
<i>Coprosma lucida</i>	shining coprosma	m
<i>Coprosma robusta</i>	karamu	o
<i>Cordyline australis</i>	ti kouka; cabbage tree	r
<i>Cordyline banksii</i>	forest cabbage tree	r
<i>Dacrycarpus dacrydioides</i>	kahikatea	r
<i>Dacrydium cupressinum</i>	rimu	r
<i>Leptospermum scoparium</i>	manuka	o
<i>Leucopogon fasciculatus</i>	mingimingi	o
<i>Melicytus ramiflorus</i>	mahoe, whiteywood	c
<i>Myrsine australis</i>	mapou, red matipo	m
<i>Nothofagus truncata</i>	hututawhai; hard beech	r
<i>Nothofagus t x s</i>		r
<i>Pittosporum eugenioides</i>	tarata; lemonwood	r
<i>Pittosporum tenuifolium</i>	kohuhu	c
<i>Podocarpus totara</i>	lowland totara	r
<i>Prumnopitys taxifolia</i>	matai	r
<i>Pseudopanax arboreus</i>	whauwhaupaku; fivefinger	m
Lianes		x
Dicot Herbs		x
Monocot Herbs		x
<i>Astelia fragrans</i>	ground lily	r
<i>Dianella nigra</i>	inkberry	m
Grasses Sedges Rushes		x
<i>Baumea tenax</i>		r
<i>Carex solandri</i>		lc
<i>Carex virgata</i>	pukio	o
<i>Gahnia pauciflora</i>	a cutty grass	lc
<i>Uncinia banksii</i>	a hook grass	m
<i>Uncinia distans</i>		?ml
<i>Uncinia uncinata</i>	a hook grass	r
Ferns		x
<i>Asplenium bulbiferum</i>	hen & chickens fern	ml
<i>Asplenium flaccidum</i>	hanging spleenwort	o
<i>Asplenium oblongifolium</i>	shining spleenwort	o
<i>Blechnum discolor</i>	crown fern	lc
<i>Blechnum procerum</i>	beech hard fern	ml
<i>Blechnum vulcanicum</i>		r

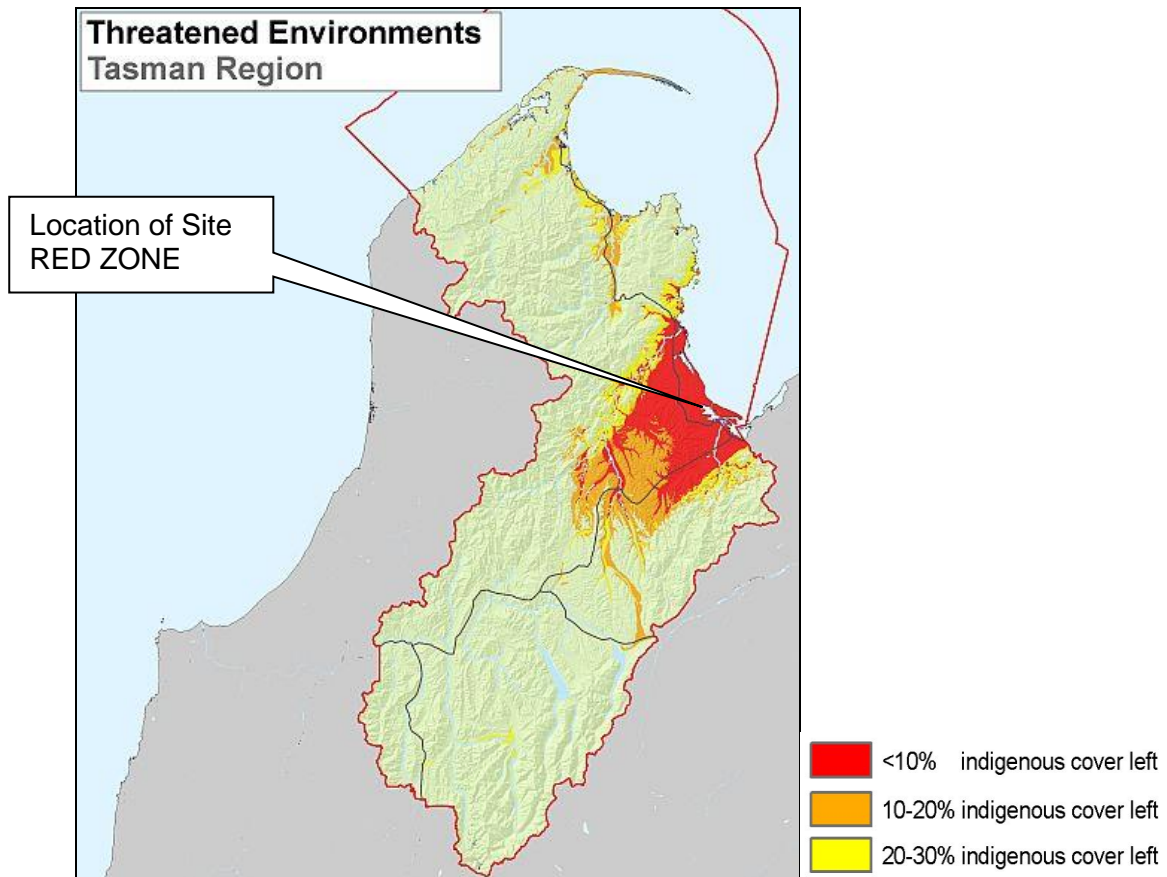
<i>Cyathea dealbata</i>	ponga, silver fern	m
<i>Histiopteris incisa</i>	water fern	o
<i>Hypolepis ambigua</i>	common hypolepis	o
<i>Microsorium scandens</i>		r
<i>Pteridium esculentum</i>	bracken	ml
<i>Pyrrhosia eleagnifolia</i>	leather leaf fern	r
Weeds		x
<i>Robinia pseudoacacia</i>	robinia	ml
<i>Rubus fruticosus agg</i>	blackberry	o
<i>Salix cinerea</i>	pussy willow	r
<i>Ulex europaeus</i>	gorse	o
	climbing spindleberry	r
Birds		x
tui	tui	x

Land Environments of New Zealand (LENZ)

LENZ is a national classification system based on combinations of soil characteristics, climate and landform. These three factors combined are correlated to the distribution of native ecosystems and species.

When LENZ is coupled with vegetation cover information it is possible to identify those parts of the country (and those Land Environments) which have lost most of their indigenous cover. These tend to be fertile, flatter areas in coastal and lowland zones as shown in the map below for Tasman District.

Further information on the LENZ framework can be found at www.landcareresearch.co.nz/databases/lenz



National Priorities for Protecting Biodiversity on Private Land

Four national priorities for biodiversity protection were set in 2007 by the Ministry for the Environment and Department of Conservation.

National Priorities	Does this Site Qualify?
1 Indigenous vegetation associated with land environments (ie LENZ) that have 20 percent or less remaining in indigenous cover. This includes those areas colored in red and orange on the map above.	Yes
2 Indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity	Yes (MU 304)
3 Indigenous vegetation associated with 'naturally rare' terrestrial ecosystem types not already covered by priorities 1 and 2 (eg limestone scree, coastal rock stacks)	No
4 Habitats of threatened indigenous species	No

Further information can be found at -

www.biodiversity.govt.nz/pdfs/protecting-our-places-brochure.pdf

Significance of LENZ and National Priorities

What does it mean if your site falls within the highly depleted LENZ environments, or falls within one or more of the four National Priorities?

These frameworks have been included in this report to put deeper ecological context to the site. They are simply another means of gauging ecological value. This information is useful in assessing the relative value of sites within Tasman District when prioritising funding assistance. They otherwise have no immediate consequence for the landowner unless the area of indigenous vegetation is intended to be cleared, in which case this information would be part of the bigger picture of value that the consenting authority would have to take into account if a consent was required.



Higgs Reserve
 MU 304
 MU 305

MU 304

- 1 *Ramapo reedland*
- 2 *Oioi sedgeland*
- 3 *Saltmarsh ribbonwood scrub*
- 4 *Mixed wetland associations*
- 5 *Willow forest over sedgeland*
- 6 *Pohuehue-tall fescue-harakeke flax-goise associations*

MU 305

- 1 *Mahoe-kohuhu - (five finger) forest on side-slope*

