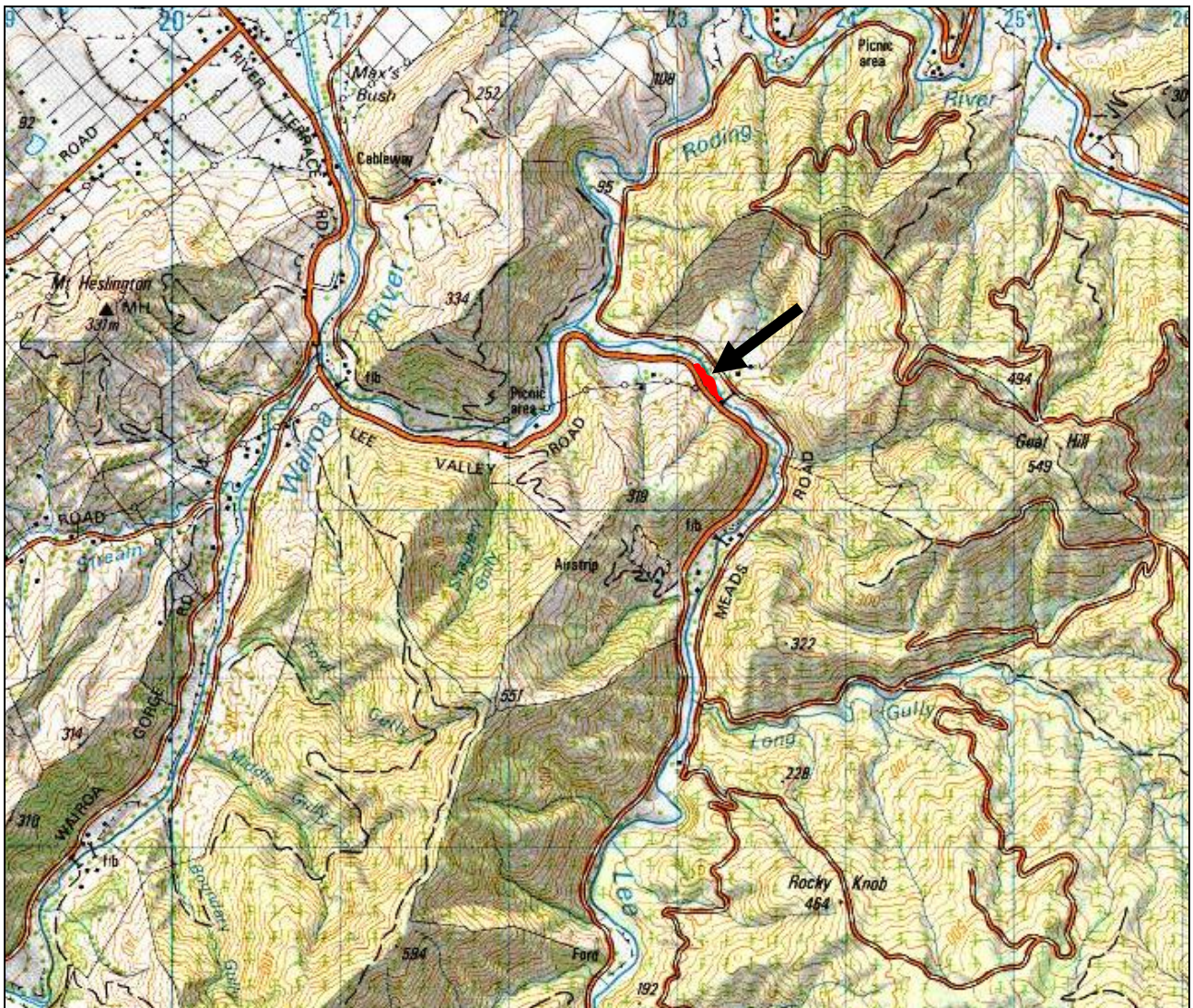


Native Habitats Tasman Ecological Assessment Report

Site:	B 88
Landowners/Occupiers:	TDC (Meads Bridge Reserve/ O'Neil Bush)

Ecological District:	Bryant
Grid Ref:	E2523202 N5977727
Surveyed By:	Michael North
Date:	14 August 2012
Survey Time:	1 ½ hrs



THE SETTING – BRYANT ECOLOGICAL DISTRICT (ED)

Location and Physical Description

The Bryant Ecological District is made up of steep hill country, rising to over 1600m and draining to the north-west. It has complex geology, including Permian sandstone and argillite, nationally important areas of ultramafic rocks, volcanic rocks, greywacke and fossil-bearing marine and non-marine sedimentary rocks spanning a considerable age range. Soils vary greatly in structure and fertility accordingly. The climate is generally sunny and sheltered, with very warm summers, mild winters and moderate rainfall, although it is cooler and wetter in the south. Lower slopes are typically farmed or in exotic forestry. The northern part of the Ecological District has a coastal portion featuring Nelson City, the Nelson Boulder Bank, its associated estuary and hilly hinterland, but this part is not within Tasman District. Tasman District Council has some landholdings in this District.

Ecosystem Types Originally Present

Formerly, the Ecological District below the bushline (about 1200-1300m) would have been almost entirely covered in forest, apart from the waterways. The alluvial valley flats and terraces supported towering podocarp forests of totara, matai, rimu, miro and kahikatea. On the hills was mixed beech-podocarp forest, in which black beech was dominant in drier sites and hard beech in wetter lowland places, whilst red beech and silver beech occupied most cooler and mid-altitude slopes. Mountain beech was dominant on upland slopes, along with southern rata, Hall's totara and pahautea (mountain cedar). In sheltered coastal gullies were pockets of lush broadleaved forest containing tawa, titoki, pukatea, nikau, hinau and tree ferns, accompanied by large podocarps. On the ultramafic areas were distinctive forest and shrubland, stunted by the unusual soil conditions and containing species found nowhere else. Above the bushline were tussock grassland, subalpine shrubland, herbfield and fellfield. Freshwater wetlands occurred in the 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), 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 lowland forests and wetlands have been lost. What remains are fragments of beech forest, tiny remnants of lowland broadleaved forest and podocarp forest, and a few small freshwater wetlands. There are considerable tracts of mid-altitude forest still, accompanied by regenerating native vegetation where the former forest has been cleared or burnt. The upland forests and ecosystems at higher altitude are still present, although much diminished in ecological quality by exotic animal impact. The table below gives estimates of the proportions of the original ecosystems that remain.

Degree of Protection

Mt Richmond Forest Park protects much of the indigenous ecosystems that remain. A little of the rest is protected within reserves and covenants. There are still considerable opportunities for further protection. The table below gives estimates of how much of the original and remaining ecosystems have formal protection.

Indigenous Ecosystems – Bryant 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	—	—	—	—
Fertile lowland swamp and pond	<1	<5	<2	<20
Infertile peat bog	—	—	—	—
Upland tarn	<1	100	100	100
Lake	—	—	—	—
River, stream and riparian	1	40	?	?
Lowland podocarp forest	5	1	<1	70
Lowland broadleaved forest	2	<5	<1	20
Lowland mixed forest	20	5	2	40
Lowland beech forest	25	15	8	50
Upland beech forest	35	30	25	80
Subalpine forest	2	70	70	100
Lowland shrubland	1	<10	<5	50
Upland/subalpine shrubland	2	70	70	100
Frost flat communities	—	—	—	—
Tussock grassland	3	100	100	100
Alpine herbfield and fellfield	2	100	100	100

[From Simpson & Walls (2004): Tasman District Biodiversity Overview]

SITE DESCRIPTION

Location, Geology, Hydrology

This 0.7 ha site lies at 60m asl on the true left bank of the Lee River. It occupies a river terrace, steep riparian slopes to the river's edge and minor slopes above the terrace.

The geology is alluvial – of Hope Gravel – constituting 'poorly-sorted tight clay-bound gravel underlying terraces above the floodplain'.

Vegetation

COMMUNITIES

1 Lowland totara- kahikatea- (matai) forest on river terrace, riparian slopes and terrace riser

The forest is variable in canopy, reflective of hydrological conditions along the terrace. Impeded drainage favours kahikatea, with lowland totara and matai in better-drained areas. Occasional canopy black beech and kanuka are present, with rimu (1), white maire (2) and pokaka (2) also noted. Subcanopy or lower canopy lemonwood are occasional. Canopy shade tends to be denser toward the rear of the terrace, and lighter toward the terrace edge. Mahoe is moderately common in the subcanopy with some porokaiwhiri/pigeonwood, and mapou.

Damper areas tend to have a sparse woody understorey, and where canopy foliage is dense, little ground cover is present. Species include occasional swamp mahoe. Where better lit, dense beds of *Carex lambertiana* are common.

Toward the better-lit terrace margins, low vegetation is very diverse with many kowhai seedlings/young saplings, thick-leaved coprosma, poataniwha, rohutu, and young mahoe and mapou, and ferns such as houndstongue fern and shining spleenwort. One area is dominated by a dense sward of bamboo rice grass.

Shady well-drained areas under lowland totara and matai support a moderately open understorey of regenerating broadleaved species, over houndstongue fern, shining spleenwort, lowland shield fern, *Lastreopsis glabella* and occasional *Astelia fragrans*.

2 Tutu shrubland on riparian margin

This flood-prone zone is dominated by this resilient species, with *Hebe stenophylla* and karamu moderately common. Foliage tends to be open, particularly toward the waters edge of normal flow where woody vegetation is reduced to battered seedlings of lowland totara, kowhai, barberry and rohutu. The ground is dominated by dense mosses in which native and exotic herbs and grasses are embedded. These include common maidenhair fern, *Ctenopteris heterophylla*, common daisy and selfheal. With increasing diversity up-bank, further species include native broom, *Libertia ixioides*, houndstongue fern, and bush rice grass among others.

Botanical Values

COMMUNITIES

Lowland beech and beech-podocarp forest once covered nearly all of the Bryant Ecological District (ED) below the treeline and away from the mineral belt. Forest below 600m asl is defined as 'lowland' in the above table, which suggests that a little over 20% of the original lowland forest cover remains. Most of this is above 300m. The figure is far less for forest below 300m which is of the order of 5% or less remaining. In this context this forest remnant is of significant ecological value.

Alluvial podocarp forest is massively depleted in Bryant Ecological District (ED) with <1% remaining of its original area. Kahikatea-rich forest (as here) is almost extinct as a community in the ED, yet it would have once been a characteristic feature of areas of impeded drainage. The forest lacks large diameter trees, probably reflecting past logging. It has probably always supported

forest. The site is best described as mature secondary forest of the original primary canopy species.

SPECIES

55 native plant species were noted. Rare in the ecological district are poataniwha, swamp mahoe, white maire, bamboo rice grass and the sedge *Carex lambertiana*. These are typically associated with river terraces in the ecological district and have become rare due to habitat loss.

White maire is very rare in the Nelson Region, where it reaches its south-western limits in the greater Wairoa catchment (it is also known from the Moutere River catchment). It is largely a North Island species that otherwise only occurs in isolated small stands or trees in the Marlborough Sounds. Two adult trees were noted but no progeny, presumably as a result of same sex trees. It is known to be scattered farther up the Lee River.

Fauna

Native forest birds noted were tui, korimako/bellbird, piwakawaka/fantail and waxeye. Ruru/morepork kotare/kingfisher, kereru/pigeon, pipipi/brown creeper, karearea/native falcon, weka and riroriro/grey warbler are also known to be present in the locality.

Weed and Animal Pests

Remarkably no old man's beard was noted at this site. Barberry is the most widespread weed, occurring most commonly along the lip of the terrace above the river. A small patch of periwinkle is present. One long-leaved lacebark is present, presumably planted. Himalayan honeysuckle, gorse and blackberry are all occasional to rare.

Other Threats

None were noted.

General Condition & Other Comments

This forest site is in excellent condition with only minor weed issues, no visible pest impacts, and a long history without grazing or browse – at least on the evidence of diverse and lush understories.

Landscape/Historic Values

The site is an attractive part of this section of the Lee Valley where native forest is scarce.

ASSESSMENT OF ECOLOGICAL SIGNIFICANCE

The following criteria are assessed:

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

Rarity and Distinctiveness: *Are there rare species or communities? Are there any features that make the site stand out locally, regionally or nationally for reasons not otherwise addressed?*

Diversity and Pattern: *Is there a notable range of species and habitats? To what degree is there complexity in this ie patterns and gradients?*

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 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:

With high rarity and moderately high representativeness values the site is significant.

Management Issues and Suggestions

It is important to acknowledge and celebrate here, that this forest remnant has been retained through the care and foresight of the landowners, present and past who have been custodians of this land. Without a certain regard for native bush, this site would have long been lost.

This forest remnant (O'Neil Bush) forms a large part of the Meads Bridge Reserve. It has clearly been very well managed with a notable absence of old man's beard, evidence of barberry control and revegetation plantings around the inland margin beside the road.

The drying of the forest interior as a result of surrounding land clearance is a perennial concern for small remnants but one which is difficult to address. Small islands of forest such as this one are a human artefact. Prior to clearance, continuous swathes of forest would have ensured fairly moist conditions prevailed in forest interiors most of the time. Today, air moves through the remnant heated and dried by the surrounding open environment, markedly changing the interior conditions, making regeneration problematic for some species and eliminating others such as some ferns. There is no effective way to address such changes other than ensuring that dense vegetation is maintained or created around the margins, and by reintroducing species that are failing to regenerate through restoration plantings.

No sign of any white maire regeneration was noted, for despite there being two adult trees, they are probably of the same sex (on the lack of any evident recruitment). This species would benefit from the introduction of young saplings around its margins or in canopy gaps.

The lone long-leaved lacebark/*Hoheria sextylosa* should be removed as it is a North Island species only, and is capable of bush invasion.



Meads Bridge Reserve/ O'Neils Bush lies along the Lee River and is unique along this lower stretch for extending onto river terrace away from the banks; canopies of lowland totara, kahikatea and matai can be seen with one rimu



Kahikatea are a major component of the canopy with pole and young adult trees



Where the ground is wet or moist there is a remarkable abundance of Carex lambertiana



A typical view of the forest interior on free-draining substrate where lowland totara and matai are common



Two white maire trees were noted but no seedlings were in evidence



Riparian forest margins are typically diverse



A band of tutu scrub is common along the river/forest interface



Riparian mossy turfs hug the bedrock and trap silts, enabling a suite of small herbs, ferns and tree seedlings to establish



Bush rice grass and ferns cloak sections of the forest floor



Bamboo rice grass forms a dense carpet in one section



Two close-growing pokaka stands on the road margins of the forest



One Hoheria sextylosa/long-leaved lacebark is growing within the forest, probably planted, and worthy of removal as it is an invasive North Island plant

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 - that is more than just a change in canopy composition.

The above does not apply if such adjoining vegetation forms only a small part of the total site, or if such vegetation forms a critical buffer to the core area.

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.

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

Significance Evaluation		
	Score	Example/Explanation
Primary Criteria		
Representativeness		
Mature secondary vegetation that strongly or moderately strongly resembles pre-human natural regeneration	MH	eg Secondary beech or podocarp forest in good condition
Rarity and Distinctiveness		
A primary community that is depleted to less than 5% of its original (pre-human) extent in the ecological district, unless in poor condition	H	e.g. alluvial mixed podocarp forest in all ecological districts. The site is better described as mature secondary forest of primary canopy species, with species components that of primary forest
Diversity and Pattern		
Presence of a typical diversity of indigenous species, communities or habitat types for the ecological district	ML	
Secondary Criteria		
Ecological Context (highest score)		
Connectivity		
The site is separated from other areas of indigenous vegetation but is an important part of a network of fauna habitat	M	
Buffering to		
The site is poorly buffered	L	
Provision of critical resources to mobile fauna		

Significance Evaluation		
	Score	Example/Explanation
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.	ML	Eg Unusually important stands of podocarp, tawa or kowhai trees that provide seasonally important benefits for forest birds.
Size and Shape		
A small area for this type of vegetation or habitat for the ecological district, but without a compact shape	L	
Other Criterion		
Sustainability (average score)	ML	
Physical and proximal characteristics		
Size, shape, buffering and connectivity provide for a low overall degree of ecological resilience.	L	Size L Shape L Buffering L Connectivity M
Inherent fragility/robustness		
Indigenous communities are neither inherently resilient nor fragile.	M	Kahikatea component susceptible to drought and drainage
Threats (low score = high threat; lowest score taken)		
Ecological impacts of grazing, surrounding land management, weeds and pests*	MH	Grazing H Surroundings H Weeds MH 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 and Distinctiveness Diversity and Pattern	MH H ML
Secondary Criteria	Ecological Context Size and Shape	M L
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**

Species List

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
 v = Very. For example: vlc = very locally common, mvl = moderate numbers very locally

Species Name	Common Name	Status
		55
Trees Shrubs		x
<i>Alectryon excelsus</i>	titoki	o
<i>Brachyglottis repanda</i>	rangiora	o
<i>Carmichaelia australis</i>	common broom	o
<i>Coprosma crassifolia</i>	thick leaved coprosma	o
<i>Coprosma grandifolia</i>	large leaved coprosma; kanono	o
<i>Coprosma rhamnoides</i>	scrub coprosma	o
<i>Coprosma rigida</i>		r
<i>Coprosma robusta</i>	karamu	ml
<i>Coriaria arborea</i>	tutu	ml
<i>Dacrycarpus dacrydioides</i>	kahikatea	c
<i>Dacrydium cupressinum</i>	rimu	r
<i>Elaeocarpus hookerianus</i>	pokaka	r
<i>Hedycarya arborea</i>	porokaiwhiri; pigeonwood	mvl
<i>Kunzea ericoides</i>	kanuka	ml
<i>Lophomyrtus obcordata</i>	rohutu; NZ myrtle	c
<i>Melicope simplex</i>	poataniwha	o
<i>Melicytus micranthus</i>	swamp mahoe	o
<i>Melicytus ramiflorus</i>	mahoe, whiteywood	c
<i>Myrsine australis</i>	mapou, red matipo	m
<i>Nestegis lanceolata</i>	white maire	r
<i>Nothofagus solandri</i>	tawhairauriki; black beech	o
<i>Pennantia corymbosa</i>	kaikomako	o
<i>Pittosporum eugenioides</i>	tarata; lemonwood	m
<i>Podocarpus totara</i>	lowland totara	c
<i>Prumnopitys taxifolia</i>	matai	m
<i>Pseudopanax arboreus</i>	whauwhaupaku; fivefinger	r
<i>Pseudopanax crassifolius</i>	horoeka; lancewood	r
<i>Sophora microphylla</i>	kowhai	lc
<i>Streblus heterophyllus</i>	turepo; small leaved milkwood	r
Lianes		x
<i>Metrosideros diffusa</i>	white rata vine	o
<i>Parsonsia heterophylla</i>	native jasmine	c
<i>Ripogonum scandens</i>	supplejack	r
Dicot Herbs		x
Monocot Herbs		x
<i>Astelia fragrans</i>	ground lily	o

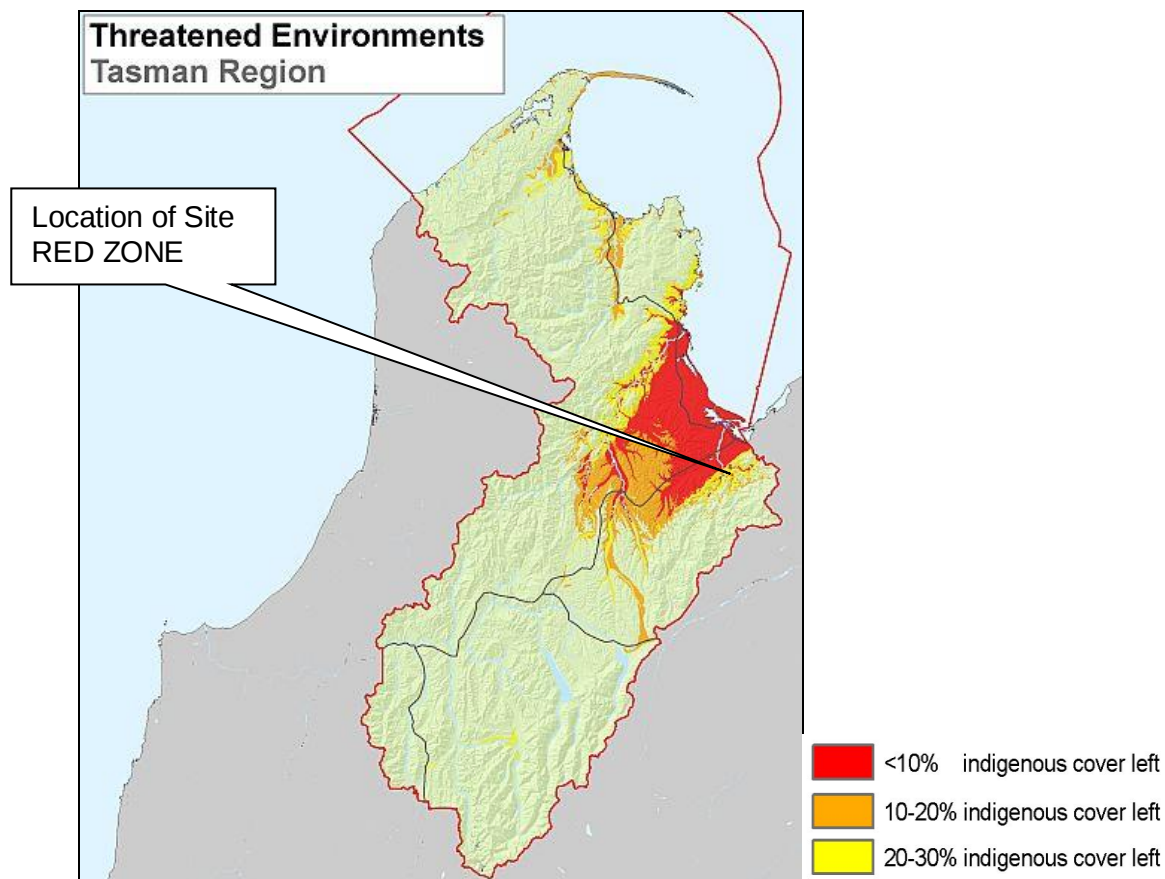
<i>Libertia ixioides</i>		mvl
<i>Pterostylis alobula</i>	a greenhood orchid	r
Grasses Sedges Rushes		x
<i>Carex forsteri</i>		o
<i>Carex lambertiana</i>		f
<i>Carex virgata</i>	pukio	r
<i>Microlaena avenacea</i>	bush rice grass	ml
<i>Microlaena polynoda</i>	bamboo rice grass	vlc
<i>Uncinia scabra</i>	a hook grass	r
<i>Uncinia uncinata</i>	a hook grass	r
Ferns		x
<i>Adiantum cunninghamii</i>	common maidenhair fern	vlc
<i>Asplenium bulbiferum</i>	hen & chickens fern	o
<i>Asplenium flaccidum</i>	hanging spleenwort	o
<i>Asplenium oblongifolium</i>	shining spleenwort	m
<i>Blechnum novae-zelandiae</i>	kiokio	mvl
<i>Ctenopteris heterophylla</i>		o
<i>Hymenophyllum demissum</i>	a filmy fern	r
<i>Lastreopsis glabella</i>		mvl
<i>Microsorium pustulatum</i>	houndstongue fern	c
<i>Pellaea rotundifolia</i>		o
<i>Pneumatopteris pennigera</i>	gully fern	o
<i>Polystichum neozelandicum</i>	lowland shield fern	ml
<i>Pyrrosia eleagnifolia</i>	leather leaf fern	ml
Algae		x
Weeds		x
<i>Berberis vulgaris</i>	barberry	ml
<i>Hoheria sextylosa</i>	long-leaved lacebark	P
<i>Leycesteria formosa</i>	Himalayan honeysuckle	r
<i>Rubus fruticosus agg</i>	blackberry	o
<i>Ulex europaeus</i>	gorse	r
<i>Vinca major</i>	periwinkle	r
Birds		x
tui	tui	x
bellbird/korimako	bellbird/korimako	x
fantail/piwakawaka	fantail/piwakawaka	x
waxeye	waxeye	x
dunnock	dunnock	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	No
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 nationally 'threatened' or 'at risk, declining' 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.

