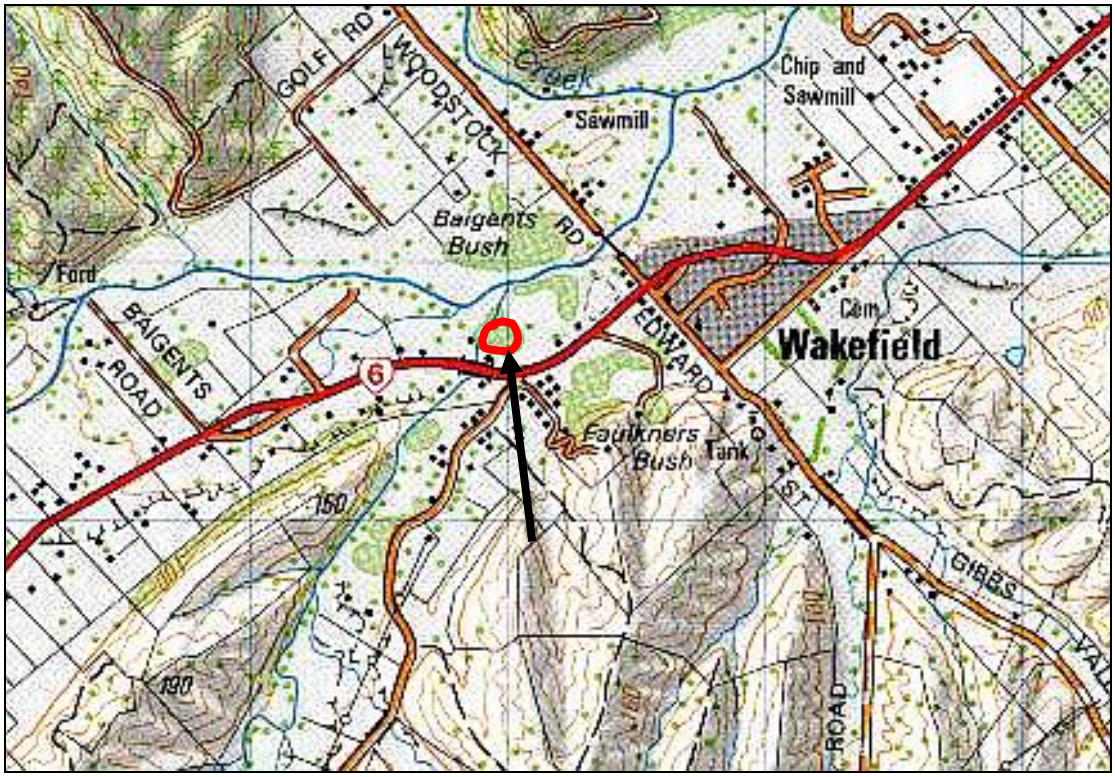
Tasman District Council
Significant Natural Area (SNA) Survey Programme
Site Assessment Report

Site No MO 32
Property Name Edward Baigent Memorial Reserve
Landowners/Occupiers Tasman District Council
Ecological District Motueka
Surveyed By Michael North
Date 8 October 2008
Time on site 1.5hrs



The Setting - Motueka Ecological District (ED)

(Information copied from the TDC report 'Tasman District Biodiversity Overview' 2004)

Location and physical description

This small ecological district is in two parts, the western one where the Motueka River flows into Tasman Bay and the eastern where the Wairoa and Wai-iti Rivers come together to form the Waimea River before entering the bay. It comprises lowland and coastal alluvial plains and remnants of the Moutere Gravels. It has a coast of fertile deltas, large estuaries, sand islands and bluffs. Soils from the Moutere Gravels are clayey and not very fertile, those on stony terraces and sand are shallow and prone to drought, and alluvial soils are generally well drained and fertile. The climate is sunny and sheltered, with very warm summers and mild winters. The land is mostly in private ownership and is used for pastoral farming, forestry, horticulture and residential and commercial settlement. Tasman District Council has considerable land holdings 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 plains and terraces supported towering podocarp forests of totara, matai and kahikatea. On the low hills was mixed forest of black beech, hard beech, rimu, totara, kamahi, titoki and tawa. Along the coastal bluffs and fringing the estuaries, ngaio, cabbage tree, kowhai and totara would have been common. The estuaries were alive with wetland birds, fish and invertebrates. They had vegetation sequences grading from eelgrass and saline turf into rushes, sedges, harakeke (lowland flax) and shrubs (mainly saltmarsh ribbonwood, mingimingi and manuka), and finally into forest. Freshwater wetlands would have included fertile lowland swamps with kahikatea, harakeke, cabbage tree, tussock sedge (*Carex secta*) and raupo. Rivers and streams, including riparian ecosystems (trees, shrubs, flaxes, toetoe, etc.) and some braided river beds, would have made up a significant portion of the district. The tabulation gives estimates of the extent of these original ecosystems.

Existing ecosystems

Most of the natural terrestrial ecosystems have been lost. What remains is mostly in small fragments of forest and freshwater wetland. The estuaries are still surprisingly intact, although their fringing vegetation sequences have largely gone. The tabulation 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 important tall forest remnants at Motueka, Brightwater and Wakefield, kanuka forest on alluvial flats at Brightwater, estuarine shores and sand islands. It also includes some small freshwater wetlands and hillslope forest patches. The tabulation gives estimates of how much of the original and remaining ecosystems have formal protection.

INDIGENOUS ECOSYSTEMS - MOTUEKA ECOLOGICAL DISTRICT				
Ecosystem type	Original extent (% of ED)	Proportion of original extent remaining (%)	**Protected** proportion of: 1 original extent 2 remaining area (%)	
			Original	Remain
Coastal sand dune and flat	10	<5	<5	100
Estuarine wetland	10	30	?12	?40
Fertile lowland swamp and pond	3	<1	<1	?40
Infertile peat bog	-	-	-	-
Upland tarn	-	-	-	-
Lake	-	-	-	-
River, stream and riparian	3	50	?5	?10
Lowland podocarp forest	50	<1	<1	90
Lowland broadleaved forest	5	<1	<1	90
Lowland mixed forest	12	<1	<1	90
Lowland beech forest	5	<1	<1	90
Upland beech forest	-	-	-	-
Subalpine forest	-	-	-	-
Lowland shrubland	2	<1	<1	50
Upland/subalpine shrubland	-	-	-	-
Frost flat communities	-	-	-	-
Tussock grassland	-	-	-	-
Alpine herbfield and fellfield	-	-	-	-

Site description

The c1ha site lies on recent (Holocene) alluvium forming the modern floodplain of the Eighty Eight Valley Stream/ Wai-iti River. It lies at 80m asl beside the former stream, less than 200m from its confluence with Wai-iti.

Vegetation

Very mature kahikatea-lowland totara-matai forest comprises the entire site, with the high canopy trees standing over a recent low understorey that has regenerated since grazing ceased at the site some years ago.

Towering kahikatea up to nearly 2m dbh rise amongst young adult to mature adult lowland totara up to 1.5m dbh and matai up to c80cm dbh. One canopy silver beech is present. Pole or young adult matai and particularly lowland totara occur locally, but young podocarp regeneration is absent save the rare lowland totara sapling. A dense 3-4m tall understorey of young mahoe occurs throughout, with other regenerating broadleaved associates including scattered titoki and occasional wineberry, fivefinger, mapou, putaputaweta and karamu, and rare large-leaved coprosma. Of the shrubs, swamp mahoe is moderately common whilst rare are small-leaved milkwood, *Melicope simplex*, *Coprosma areolata* and *Lophomyrtus obcordata*. Where a taller understorey is absent, young low mahoe regeneration is generally abundant.

Ground cover is sparse to moderate, with local patches of the hookgrasses *Uncinia* sp., and *Uncinia uncinata* and the spleenwort *Asplenium hookerianum*, with more scattered ferns such as *Pellaea rotundifolia*, *Polystichum neo-zelandicum*, necklace fern and hen&chickens fern.

The perching orchid *Earina mucronata* and leatherleaf fern are scattered on the forest floor where podocarp limbs have fallen from the canopy taking the epiphytes with them.
Restoration planting of a number of species, particularly around the margins but also locally within the forest has included lemonwood, kohuhu, lowland ribbonwood, narrow-leaved lacebark, kanuka, cabbage tree, narrow-leaved maire and SI kowhai. The more landscaped margins also include harakeke, sedges and *Astelia fragrans*.

Botanical Values

Communities

Alluvial podocarp forest, regardless of its condition is extremely rare in Motueka ED, with <1% of its original cover remaining. It once covered around half of the ED (over 12000ha), whereas today there is <100ha remaining. These figures highlight the extreme significance of such communities. This is one of the few remnants that is not grazed and is therefore of the highest ecological value.

Species

43 indigenous species were recorded during the visit. No species are nationally rare or threatened, but a number of them are likely to be rare in the Motueka ED. Until a fuller survey of the district has been made however any assessment of rarity should be left until then. Certainly the presence of cabbage tree is very notable.

Fauna

Few indigenous birds were noted, but included kotare/kingfisher, tui and diving kereru (indicating breeding territory). Seasonally this forest remnant is undoubtedly an important source of fruit for mobile forest birds in the locality.

Weed and animal pests

Old man's beard is scattered through the site as seedlings and occasional vines, with one of 2cm thickness and seeding freely (pulled out).
Chinese privet is scattered through the site as seedlings with one shrub to 3m noted (in which the large old man's beard was found growing).
Jerusalem cherry is scattered occasionally through the site but no mature/fruiting plants were noted and it is likely that these have been recently brought in by birds.
One stinking iris was seen and pulled.

Other threats

There is some minor damage from people taking routes through the forest off the designated track. The perimeter fence is useful in directing most people however to the desired route.

General condition

The site is a primary forest relic that was clearly grazed until recent times, since when there has been a lush regeneration of understorey species. No kahikatea nor matai regeneration was noted and lowland totara regeneration is rare in recent times. This may be attributable to the impacts of rodents and

of summer droughts. They also tend to be out-competed when mahoe has a flush of regeneration as at this site when grazing ceases. Recent drought induced dieback of mahoe was very evident and this is likely to be attributable to the 'edge effects' of such a small site, whereby warm drying air, created by the surrounding open conditions in summer moves through the site. If 2-3m mahoe are struggling, it is likely that very young podocarps are also unable to establish.

Landscape/Historic values
The site is visible from State Highway 6 and forms part of the very attractive indigenous forest mosaic of podocarp forest remnants that dot the landscape around Wakefield.

Assessment of ecological value
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?*

These are tabulated below.

SITE EVALUATION UNDER THE SIGNIFICANCE CRITERIA		
	Score	**Example/explanation**
PRIMARY CRITERIA		
Representativeness		
The site includes primary vegetation that poorly or moderately poorly resembles its original condition.	M	Vegetation characterised by original canopy species or climax plant species, but which has been heavily impacted by herbivores or direct human intervention eg. beech forest with high apparent herbivore impacts or with past high impact logging on vegetation structure and diversity
Rarity		
The site includes a primary community depleted 5% or less of original pre-human cover in the Ecological District, unless in poor condition	H	Eg. Alluvial mixed podocarp forest in all Ecological Districts
Diversity and Pattern		
Indigenous plant communities species or habitats are present with typical diversity for such sites in the Ecological District	ML	
SECONDARY CRITERIA		
Size		
The site is of moderate size for its vegetation community and Ecological District and is at least reasonably compact in shape	M	
Ecological Context (highest score)	H	
Connectivity/Buffered by		
Within the Ecological District context the site forms an important ecologically viable link between two other areas of indigenous vegetation or habitat, either as a corridor of vegetation, or as 'stepping stones' of suitable habitat	H	The site provides a crucial stepping stone between Baigents Bush 200m to the NW and Faulkner's Bush 300m to the E
Buffering		
The site is poorly buffered	L	
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	H	This is an unusually important stand of podocarps that provide a seasonally important benefits for forest birds
Hydrological services to the catchment		
The site provides hydrological services to the catchment	L	The site has minimal impact on the catchment
OTHER CRITERION		
Sustainability (average score)	**MH**	
Physical and proximal characteristics		
Size shape buffering and connectivity provide for a moderately low overall degree of ecological resilience	M	Size L Shape H Buffering L

		Connectivity H
Inherent fragility/robustness		
Indigenous communities are inherently fairly resilient	MH	Problematic survival of a sensitive key species (kahikatea)
Threats *(lowest score taken; low score = high threats)*		
Ecological impacts of grazing, surrounding land management, weeds or pests*	MH	Grazing H Surroundings H Weeds MH Pests H

*observed pest impacts only

SUMMARY OF SCORES	**Criterion**	**Ecological District Ranking**
Primary Criteria	Representativeness Rarity Diversity and pattern	M H ML
Secondary Criteria	Size/shape Ecological context	M H
Additional Criterion	Sustainability	MH

H=high MH=medium-high M=medium ML=medium-low L=low

If a site scores 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 Any of the 3 primary criteria with a score at least as high as listed		**Secondary Criteria** Any of the 2 secondary criteria with a score at least as high as listed
1	H		-
2	2x MH		-
3	MH + M		-
4	MH	&	MH
5	2x M	&	H
6	2x M	&	2x MH
7	M	&	H + MH

Is the site 'significant' under the TDC SNA criteria? YES

Management issues and suggestions

The site is currently well managed, with narrow buffering plantings around part of its margins. The scope for restoration plantings is limited due to the recreational use of the surrounding reserve land. There is a programme of felling of huge dead standing kahikatea, as and when necessary for safety reasons and to avoid healthy trees being damaged by natural fall. The site has been fenced to protect the vegetation from general trampling, with people funelled onto the designated track.

With the general failure of the podocarp canopy to regenerate in recent decades (other than occasional lowland totara), and with the opening up of the canopy by kahikatea dieback and death, it is important that these species are replanted so that the podocarp forest community is retained. The forest will otherwise trend to a mixed broadleaved forest of much lesser value, dominated by mahoe. Such plantings could include silver beech, rimu and black beech as these also characterise alluvial podocarp forest in the vicinity. Mahoe regeneration will have to be managed if it is not to shade out such restoration efforts.

More than half the site is visible in this image; scattered podocarps trail off into the adjoining pasture to the left on a separate title

A typical interior view of the forest with towering podocarps rising above a lush young understorey of mahoe regeneration

The size of some of the kahikatea is probably unique in the Motueka ED; however these giants are slowly dying with recently dead trees felled and many canopies showing moderate to heavy dieback

Marginal buffering plantings are as much ornamental as providing a true vegetation buffer to the forest margin

The largest lowland totara is around 1.5m dbh – remarkable for this species in an alluvial forest setting

The largest living kahikatea has a girth of about 2m dbh and may well be the largest of this species in the Motueka ED

The emerging understorey will in time form a dense subcanopy of broadleaved trees, filling the existing tier gap between high canopy and low understorey

Mahoe regeneration shows recent severe drought induced dieback; such periodic stress may partly be responsible for the lack of podocarp regeneration in recent decades that is greatly exacerbated by 'edge effects' of so small a site

Severe dieback of kahikatea canopies is evident through the site; without restoration podocarp plantings the forest will eventually change to broadleaved forest as the podocarps are generally failing to regenerate

APPENDIX

1 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

Species Name	Common Name	Status
Trees Shrubs		**x**
Alectryon excelsus	titoki	ml
Aristotelia serrata	wineberry	o
Carpodetus serratus	putaputaweta, marbleleaf	o
Coprosma areolata		r
Coprosma grandifolia	large leaved coprosma	r
Coprosma linariifolia	yellow wood	r
Coprosma pxr		r
Coprosma robusta	karamu	o
Cordyline australis	ti kouka, cabbage tree	r
Hedycarya arborea	pigeonwood	r
Hoheria angustifolia	small-leaved lacebark	P
Kunzea ericoides	kanuka	P
Lophomyrtus obcordata	rohutu	r
Melicope simplex		r
Melicytus micranthus	swamp mahoe	m
Melicytus ramiflorus	mahoe, whiteywood	f
Myrsine australis	mapou, red matipo	o
Nestegis montana	narrow leaved maire	P
Nothofagus menziesii	silver beech	r
Pittosporum eugenioides	lemonwood	P
Pittosporum tenuifolium	kohuhu	P
Plagianthus regius	lowland ribbonwood	P
Pseudopanax arboreus	fivefinger	o
Sophora microphylla	kowhai	P
Streblus heterophyllus	small leaved milkwood/turepo	r
Lianes		**x**
Muehlenbeckia aus x com		o
Parsonsia heterophylla	native jasmine	c
Dicot Herbs		**x**
Cardamine debilis agg		m
Hydrocotyle elongata		o
Monocot Herbs		**x**
Earina mucronata	a perching orchid	m
Grasses Sedges Rushes		**x**
Carex forsteri		r

Uncinia sp		o
Uncinia uncinata	a hook grass	o
Ferns		**x**
Asplenium bulbiferum	hen & chickens fern	o
Asplenium flabellifolium	necklace fern	o
Asplenium hookerianum		ml
Asplenium oblongifolium	shining spleenwort	r
Hypolepis ambigua		o
Pellaea rotundifolia		o
Pneumatopteris pennigera		r
Polystichum neozelandicum	a shield fern	o
Pteris tremula		r
Pyrrosia eleagnifolia		m
Weeds		**x**
Frageria vesca	wild strawberry	m
Galium aparine	cleavers	o
Geranium robertianum	herb robert	ml
Iris foetidissima	stinking iris	r
Ligustrum sinense	Chinese privet	r
Melissa officianalis	lemon balm	o
Mycelus muralis	wall lettuce	c
Prunus sp	wild plum	r
Solanum diflorum	Jerusalem cherry	o
Birds		**x**
	tui	x
	pigeon/kereru	x
	shining cuckoo	x
	kingfisher/kotare	x
	blackbird	x
	chaffinch	x