NATIVE HABITATS TASMAN

ECOLOGICAL ASSESSMENT REPORT

SITE RO173

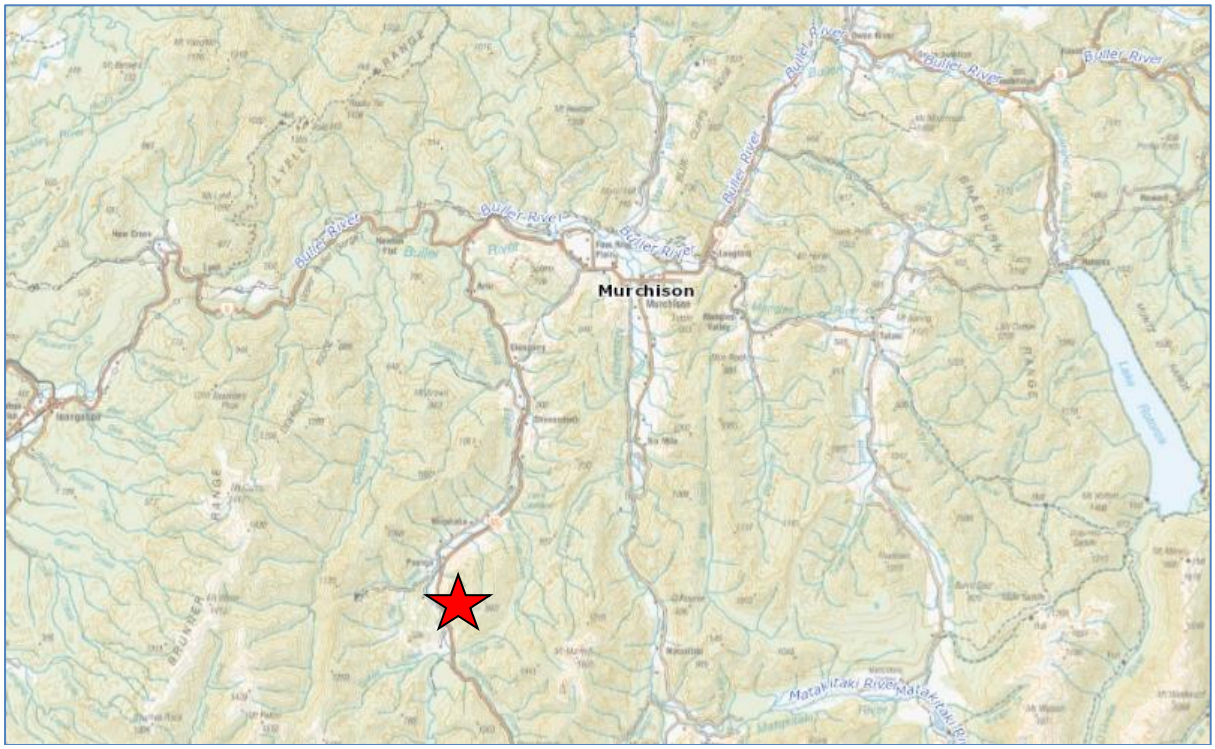
June 2022

PROPERTY INFORMATION:

Landowner: .....Lasse and Cristina Holopainen (Maruia River Retreat)
.....and LINZ (Unallocated Crown Land) along river
Valuation Assessment No.: 19150-12402
Tenure: .....Freehold
Land Use: .....Tourism/Conservation

LOCATION:

The property is located on west-facing hill slopes just downstream from the confluence of the Maruia and Shenandoah rivers, in the Maruia valley, Tasman District. It is approximately 40km south of Murchison on the Shenandoah Highway (State Highway 65). The property directly adjoins an extensive area of public conservation land (Victoria Forest Park) at its upper (eastern) boundary.



Location of Property

ECOLOGICAL CONTEXT:

Site RO173 is in Rotoroa Ecological District, within Spenser Ecological Region (McEwen, 1987). The original vegetation at this part of Rotoroa Ecological District was lowland beech forest, dominated by red beech and silver beech, grading to silver beech-mountain beech forest at higher altitudes. Podocarp forest was present on poorly-drained river terraces, and species such as kowhai and kanuka present along riverbanks. A more detailed description of the ecological district is presented in Attachment 1.

SITE INFORMATION: SITE No. RO173

Location:.....Maruia valley
Central Map Reference (NZTM):.....1533565E-5354880N
Size (ha.):.....3.49
Altitude (m):.....200
Landforms:.....river terrace and river bank
Ecosystems:.....beech forest and riparian (rheophytic)
Ecological District:.....Rotoroa
Field Survey and Report:.....Mike Harding
Survey Date:.....4th June 2022

Site RO173 (left-hand white-hatched area)

SURVEY METHOD AND COVERAGE:

The field survey upon which this report is based was undertaken over approximately two hours on 4th June 2022. The focus of the field survey was to determine the presence and extent of significant indigenous vegetation and significant habitats of indigenous fauna. Survey of indigenous fauna was limited to birds, so it is likely that this assessment underestimates the value of the site for indigenous fauna. Furthermore, cool wet winter conditions were not particularly suitable for fauna survey.

This small site was surveyed by following the foot track through the forest, and traversing other parts of the forest between the highway and track, and between the track and river. Areas of contiguous forest outside the property boundary are included in the site.

Names of indigenous plant species cited in this report are as listed on the Ngā Tipu o Aotearoa-New Zealand Plants database (Manaaki Whenua-Landcare Research). Plant community names follow the method proposed by Atkinson (1985). The threat status of indigenous species is as listed in publications of the Department of Conservation, referenced in this report.

LANDFORM, GEOLOGY, HYDROLOGY:

Site RO173 lies on the true-right (east) bank of the Maruia River at the confluence of McWha Creek. It comprises a narrow river terrace and the adjacent river bank, including the flood (rheophytic) zone of the river. Underlying geology is muscovite-biotite granite of the Karamea Suite (Nathan *et al*, 2002).

VEGETATION:

The main plant community present at the site is lowland beech forest. This plant community is described below. Naturalised (exotic) species are indicated with an asterisk*. A list of all species recorded at the site is appended to this report.

Plant Communities

Lowland Beech Forest:

This beech forest community is dominated by red beech (*Fuscospora fusca*) and silver beech (*Lophozonia menziesii*), with occasional emergent kahikatea (*Dacrycarpus dacrydioides*). Other canopy or sub-canopy species present are kamahi (*Weinmannia racemosa*), marbleleaf (*Carpodetus serratus*) and lancewood (*Pseudopanax crassifolius*).

The forest understorey is relatively open. Common or locally common species are shining karamu (*Coprosma lucida*), *Coprosma rhamnoides*, *Raukaua simplex*, *Raukaua anomalus* and saplings of red beech and silver beech. Other understorey species are stinkwood (*Coprosma foetidissima*), lancewood, horopito (*Pseudowintera colorata*), kohuhu (*Pittosporum tenuifolium*), broadleaf (*Griselinia littoralis*), pate (*Schefflera digitata*), *Neomyrtus pedunculata*, *Leucopogon fasciculatus*, *Coprosma robusta* X *propinqua*, fuchsia (*Fuchsia excorticata*), bush lawyer (*Rubus cissoides*), pohuehue (*Muehlenbeckia australis*) and saplings of matai (*Prumnopitys taxifolia*) and pokaka (*Elaeocarpus hookerianus*). Epiphytic or perching species are hanging spleenwort (*Asplenium flaccidum*), strap fern (*Grammitis billardierei*), hound's tongue fern (*Microsorum pustulatum*), filmy ferns (*Hymenophyllum demissum*, *H. multifidum*, *H. bivalve* and *H. rarum*) and hanging moss (*Weymouthia* sp.).

Ground-cover species are crown fern (*Blechnum discolor*), water fern (*Histiopteris incisa*), mountain tree fern (*Cyathea colensoi*), *Leptopteris hymenophylloides*, *Leptopteris superba*, prickly shield fern (*Polystichum vestitum*), *Blechnum procerum*, mountain kiokio (*Blechnum montanum*), *Blechnum fluviatile*, *Blechnum vulcanicum*, gully fern (*Pneumatopteris pennigera*), *Nertera dichondrifolia*, bush lily (*Astelia fragrans*), bush rice grass (*Microlaena avenacea*) and hookgrass (*Uncinia* sp.).

The flood-zone (rheophytic) community comprises sparsely vegetated rock which is periodically inundated by flood water. Species present in or adjacent to this zone are tree tutu (*Coriaria arborea*), kanuka (*Kunzea ericoides* agg.), shining karamu, mountain akeake (*Olearia avicenniifolia*), Himalayan honeysuckle* (*Leycesteria formosa*), *Coprosma robusta* X *propinqua*, *Coprosma propinqua*, *Coprosma dumosa*, scrub pohuehue (*Muehlenbeckia complexa*), *Juncus edgariae*, track rush* (*Juncus tenuis*), *Veronica decora*, yarrow* (*Achillea millefolium*), creeping buttercup* (*Ranunculus repens*), lotus* (*Lotus pedunculatus*), catsear* (*Hypochaeris radicata*), woodrush (*Luzula* sp.), sedge (*Carex* sp.), narrow-leaved plantain* (*Plantago lanceolata*), ragwort* (*Senecio jacobaea*), *Euchiton* sp. and hawkbit* (*Leontodon taraxacoides*).

Flora

Fifty-nine (59) indigenous vascular plant species were recorded at Site RO173 during this survey.

HABITATS OF INDIGENOUS FAUNA:

The habitat present at this site is forest, including riparian (riverside) forest and sparsely-vegetated rockland. Native bird species observed at the site during this survey were bellbird (*Anthornis melanura*), fantail (*Rhipidura fuliginosa*), paradise shelduck (*Tadorna variegata*), South Island robin (*Petroica australis*), silvereye (*Zosterops lateralis*) and tomtit (*Petroica macrocephala*). Other species likely to utilise the habitat at the site are black shag (*Phalacrocorax carbo*), brown creeper (*Mohoua novae-zelandiae*), grey warbler (*Gerygone igata*), harrier (*Circus approximans*), kereru (*Hemiphaga novaeseelandiae*), morepork (*Ninox novaeseelandiae*), rifleman (*Acanthisitta chloris*), shining cuckoo (*Chrysococcyx lucidus*), tui (*Prosthemadera novaeselandiae* welcome swallow (*Hirundo tahitica*) and weka (*Gallirallus australis*). A kaka (*Nestor meridionalis*) was recorded on the adjacent hill-slope (Site RO152).

ECOLOGICAL VALUES:

Vegetation/Habitats

The site supports mature beech forest with occasional emergent kahikatea, and a flood-zone (rheophytic) plant community. Larger trees have most likely been logged from the forest some time ago. It is a relatively small and narrow area of forest, though is close to (separated by the highway from) extensive areas of hill-slope beech forest.

Flora/Fauna

The site supports two plant species listed as 'threatened' by de Lange *et al* (2018):

- *Kunzea ericoides* agg. (kanuka) ..... nationally vulnerable
- *Neomyrtus pedunculata*..... nationally critical

However, these listings result from the threat posed by myrtle rust, and have the qualifiers DP (data poor) and/or De (taxon that does not fit within the criteria; designated to most appropriate listing).

Forest at the site provides habitat for a bird species listed 'at risk' by Robertson *et al* (2017).

- *Petroica australis* (South Island robin)..... at risk (declining)

ASSESSMENT OF SITE SIGNIFICANCE:

The significance of sites is determined by assessing indigenous vegetation and habitats of indigenous fauna against the Native Habitats Tasman criteria. Site attributes are assessed against three primary and two secondary criteria. A combination of attribute rankings determines whether a site is significant. This assessment is presented below. The full criteria and explanatory notes are available from Council.

Primary Criteria	**Rank**	**Comments**
Representativeness	**MH**	4a: Primary vegetation/habitat (beech forest) that moderately resembles its natural state.
Rarity/Distinctiveness	**H**	5f: A primary community (mixed beech-podocarp forest) that has been depleted to less than 20% of its former extent in the ecological district.
Diversity/Pattern	**M**	3a: Presence of a greater diversity of indigenous species than is typical for such sites in the ecological district.
Secondary Criteria	**Rank**	**Comments**
Ecological Context	**MH**	
Connectivity	MH	4a: The site is well connected to nearby vegetation and habitat.
Buffering	M	3a: The site is moderately buffered by its location and surrounding vegetation.
Critical Resources	MH	4: The site is likely to provide important lowland and riparian habitat for native birds.
Size/Shape	**M**	3a: A moderate-sized area for this ecosystem type, but without a compact shape.
Other Criteria	**Rank**	**Comments**
Physical Characteristics	MH	Moderately protected by its location and buffering.
Inherent Resilience	MH	Mature forest that has relatively good ecological resilience.
Threats	MH	Feral animals, notably deer.

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**

This site is significant because it is a moderate-sized area of a plant community (lowland beech-podocarp forest) that is depleted to less than 20% of its former extent in the ecological district. It is a relatively diverse forest community that provides good habitat for forest birds, including an 'at risk' species (South Island robin). It includes an area of flood-zone (rheophytic) vegetation.

Selecting boundaries for significant sites can be problematic, as vegetation boundaries are not precise (plant communities frequently grade from one type to another) and habitats of indigenous fauna are not easily determined through brief site surveys. In this assessment the boundaries of the site are the Shenandoah Highway and the Maruia River. The site excludes indigenous forest directly adjacent to the Maruia River Retreat lodge and associated facilities, and includes adjacent river corridor (Crown) land.

PLANT AND ANIMAL PESTS:

Several naturalised plant species are present at the site, most of which are confined to the flood zone of the river or the highway margin. None of these species pose a significant threat to the forest. Animal pests were not surveyed and little animal sign was observed, although red deer and feral pigs are present in the adjacent hill-slope forest. Brushtail possum and ubiquitous mammalian predators (mice, rats, stoats and cats) are likely to be present throughout the site.

OTHER THREATS:

The site is potentially threatened by river erosion and highway maintenance or widening. No other threats were apparent at the time of survey.

CONDITION AND MANAGEMENT:

This site supports mature beech forest with podocarp (kahikatea) trees. The forest canopy and understorey are in good condition. The forest-bird habitat is compromised by the presence of mammalian predators and especially fluctuations in predator populations prompted by periodic beech flowering (mast events). The landowners are undertaking pest control work. The main management priorities for protection of indigenous biodiversity are protection from highway maintenance/widening, control of feral animals (especially deer and pigs) and continued control of mammalian predators.

REFERENCES CITED:

Atkinson, I.E.A. 1985. Derivation of mapping units for an ecological survey of Tongariro National Park, North Island, New Zealand. *NZ Journal of Botany 23*: 361-378.

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McEwen, W.M. (editor) 1987. Ecological regions and districts of New Zealand, third revised edition (Sheet 3). *New Zealand Biological Resources Centre Publication No.5*. Department of Conservation, Wellington, 1987.

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Walls, G; Simpson, P. 2004. Tasman District Biodiversity Overview. Tasman District Council Technical Report.

Forest interior, with healthy understorey vegetation at Site RO173.

Flood-zone (rheophytic) vegetation at Site RO173.

The river margin of Site RO173 (at left); lower-slope forest of Site RO152 (distance).

Site RO173 Species List:

r=rare; o=occasional; m=moderate numbers; lm= locally moderate; c=common; lc=locally common; f=frequent; lf=locally frequent; e=present only at edge/margin; x=present but abundance not noted; p=planted; a=adjacent/nearby (birds)
(Species scientific names are as listed in the Manaaki Whenua/Landcare Research Nga Tipu o Aotearoa New Zealand Plants database).

Species Name	Common Name	
Trees and Shrubs		
Carpodetus serratus	putaputaweta/marbleleaf	m
Coprosma dumosa		e
Coprosma foetidissima	stinkwood	m
Coprosma lucida	shining karamu	c
Coprosma propinqua		e
Coprosma rhamnoides		c
Coprosma robusta X propinqua		e
Coriaria arborea	tree tutu	e
Dacrycarpus dacrydioides	kahikatea/white pine	o
Elaeocarpus hookerianus	pokaka	r
Fuchsia excorticata	tree fern/kotukutuku	o
Fuscospora fusca	red beech	f
Griselinia littoralis	broadleaf/papaumu	o
Kunzea ericoides agg.	kanuka	e
Leucopogon fasciculatus	mingimingi	r
Lophozonia menziesii	silver beech	c
Neomyrtus pedunculata		lc
Olearia avicenniifolia	mountain akeake	e
Pittosporum tenuifolium	kohuhu	o
Prumnopitys taxifolia	matai	o
Pseudopanax colensoi	three-finger	o
Pseudopanax crassifolius	lancewood/horoeka	m
Raukaua anomalus		o
Raukaua simplex		m
Schefflera digitata	pate	o
Veronica decora		e
Weinmannia racemosa	kamahi	m
Lianes		
Muehlenbeckia australis	pohuehue	e
Muehlenbeckia complexa	scrub pohuehue	e
Rubus cissoides	bush lawyer/tataramoa	o
Herbs		
Euchiton sp.		e
Nertera dichondrifolia		o
Rushes, Sedges and Grasses		
Astelia fragrans	bush lily	o
Carex sp.		e
Juncus edgariae		e
Luzula sp	woodrush	e
Microlaena avenacea	bush rice grass	o
Uncinia uncinata	hookgrass	m

Species Name	Common Name	
Ferns		
Asplenium flaccidum	hanging spleenwort	m
Blechnum colensoi		o
Blechnum discolor	crown fern/piupiu	c
Blechnum fluviatile	kiwakiwa	o
Blechnum montanum	mountain kiokio	o
Blechnum novae-zelandiae	kiokio	lc
Blechnum procerum	small kiokio	o
Blechnum vulcanicum		o
Cyathea colensoi	mountain tree fern	o
Cyathea dealbata	ponga/silver fern	r
Grammitis billardierei	a strap fern	o
Histiopteris incisa	water fern/mata	lm
Hymenophyllum bivalve	a filmy fern	o
Hymenophyllum demissum	a filmy fern	o
Hymenophyllum multifidum		lm
Hymenophyllum rarum	a filmy fern	r
Leptopteris hymenophylloides	heruheru	o
Leptopteris superba	crape fern/Prince of Wales feather	r
Microsorum pustulatum	hound's tongue/kowaowao	r
Pneumatopteris pennigera	gully fern/pakauroharoha	r
Polystichum vestitum	prickly shield fern/puniu	r
Mosses and Lichens		
Weymouthia sp.		c
Naturalised (exotic) species		
Achillea millefolium	yarrow	e
Hypochaeris radicata	catsear	e
Juncus tenuis	track rush	e
Leontodon taraxacoides	hawkbit	e
Leycestera formosa	Himalayan honeysuckle	e
Lotus pedunculatus	lotus	e
Plantago lanceolata	narrow-leaved plantain	e
Ranunculus repens	creeping buttercup	e
Senecio jacobaea	ragwort	e
Native Birds		
Anthornis melanura	bellbird/korimako	c
Rhipidura fuliginosa	fantail/piwakawaka	o
Tadorna variegata	paradise shelduck	a
Petroica australis	South Island robin	o
Zosterops lateralis	silvereye	o
Petroica macrocephala	tomtit/miromiro	o

ATTACHMENT 1:

ROTOROA ECOLOGICAL DISTRICT:

Location and physical description

Rotoroa ED comprises a large area of inland hill country, rising to an altitude of 1605m. It lies north-west of the Alpine Fault and includes the glacially-derived Lake Rotoroa and Lake Rotoiti. and substantial reaches of the Buller, Matakitaki and Maruia rivers. The geology is complex, including Palaeozoic greywacke and argillite, diorite and granite, Tertiary sedimentary rocks, weathered conglomerate, limestone, glacial outwash terrace sequences, valley alluvium and a small area of ultramafic rocks (at the head of Station Creek). Soils are mostly leached or podzolised due to the fairly high rainfall. The climate is generally moist and is characterised by summer drought and cold winters. The southern part of the ecological district is outside Tasman District. Of the total area of about 160,000ha, 70% is protected as public conservation land administered by DOC (including Nelson Lakes National Park).

Ecosystem types originally present

Prior to human settlement the ecological district would have been almost entirely covered in forest up to the bush-line (about 1200m). There were tall podocarp forests in the lowland valleys, and pockets of podocarps at sheltered warm hill sites. Otherwise, beech forests were ubiquitous, with hard beech dominant at some lowland sites, red beech dominant on mid slopes, and silver beech and mountain beech dominant on upper slopes. Above the bush-line were fringes of subalpine shrubland, above which were tussock grassland, alpine herbfield and fellfield rich with mountain herbs. Frost flats, present in some of the valleys, would have contained infertile peat bogs and low-stature shrublands. Wetland ecosystems would have included fertile lowland swamps with kahikatea, harakeke (lowland flax), cabbage tree, pukio (*Carex secta*) and raupo. Rivers and streams, including riparian ecosystems 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.

INDIGENOUS ECOSYSTEMS – ROTOROA ECOLOGICAL DISTRICT				
Ecosystem type	Original extent (% of ED)	Proportion of original extent remaining (%)	Proportion of original extent/remaining area protected (%)	
Fertile lowland swamp and pond	<1	20	<322	25
Infertile peat bog	<1	20	<322	25
Upland tarn	<1	100	<1613	100
Lake	4	100	6452	100
River, stream, riparian ecosystems	3	70	3387	40
Lowland podocarp forest	10	<5	<806	50
Lowland mixed forest	10	50	8065	50
Lowland beech forest	25	60	24195	50
Upland beech forest	40	90	58068	90
Subalpine forest	-	-	-	-
Lowland shrubland	<1	10	<161	50
Upland/subalpine shrubland	1	100	161	100
Frost flat communities	<1	20	<323	25
Tussock grassland	3	100	4839	100
Alpine herbfield and fellfield	2	100	3226	100

Existing ecosystems

Most naturally-occurring ecosystems are still present above an altitude of approximately 600m. The condition of these ecosystems is depleted both in fauna and flora due to the effects of ubiquitous introduced mammals. In the lowlands (below 600m) about half of the original forest has been removed, with valley floor podocarp forests reduced to tiny remnants. Some of the original forest cover on the hill country has been replaced by regenerating woody vegetation which is in most places dominated by indigenous species. Most of the valley-floor wetlands have been lost, but some fertile swamps, peat bogs and frost flat communities remain. The large glacial lakes and substantial stretches of braided river beds remain largely intact.

Adapted from: Walls and Simpson (2004)