

Christchurch District Plan Site of Ecological Significance

Site Significance Statement

Site name: Oashore

Site number: SES/A/23

Physical address of site: Bossu Road, Little River.

Summary of Significance:

The site is significant because it contains representative grassland, silver tussock grassland, rock-outcrop and forest communities. The secondary hardwood forest has been reduced to less than 20% of its former extent in the ecological district and parts of the site are on Acutely and Chronically threatened land environments. It supports a high diversity of indigenous taxa including nationally Threatened plant species, a number of other indigenous plant and invertebrate species that are either nationally At Risk, endemic to Banks Peninsula or uncommon within the ecological district or region and four species that are at their distributional limits on Banks Peninsula. The site also provides an important buffering function to Lake Forsyth/Waiwera and is part of an ecological network.

Site Map



Additional Site Information

Ecological District: Akaroa

Area of SES (ha): 96.38

Central point (NZTM): E1580846, N5148862

Site Description

This site is on the south-eastern side of Lake Forsyth/Waiwera. It includes steep droughty north and north-west facing slopes, extensive rock bluffs and scarps with open shrubland and an area of forest in the gully east of Trig V. The altitudinal range of the site is from approximately sea level to 440 m above sea level. Fifty-three hectares of the western part of the site is protected by a Banks Peninsula Conservation Trust (BPCT) covenant. The Department of Conservation identified this site as a Recommended Area for Protection (Akaroa RAP 1 – Oruaka) (Wilson 1992).

The vegetation at the site is strongly influenced by its aspect (exposure to hot, dry winds) and proximity to the sea and lakeshore (Lake Forsyth/Wairewa). The main indigenous vegetation communities, as described by Jensen unpubl. data (2013), Wildland Consultants unpubl. data (2014a) and Wilson (1992) are:

- *Coprosma propinqua*-*C. crassifolia* shrubland on steep rocky bluffs and lowland hill slopes
- Mixed exotic and indigenous grassland on droughty lowland hill slopes
- Silver tussock grassland on droughty lowland hill slopes
- (Matai-lowland totara)/mixed secondary hardwood forest on lowland hill slopes

Extent of Site of Ecological Significance

The site includes the mixed exotic and indigenous grassland on north-facing slopes within the BPCT covenant, the shrublands on steep rocky bluffs and lowland hill slopes below Trig V, the (matai-lowland totara)/mixed secondary hardwood forest on lowland hill slopes in the gully east of Trig V and the silver tussock grassland on the upper slopes at the head of this gully.

Assessment Summary

The Oashore Site has been evaluated against the criteria for determining significant indigenous vegetation and significant habitat of indigenous biodiversity listed in Appendix 3 of the Canterbury Regional Policy Statement (Environment Canterbury, 2013) (see below) referring also to the Wildland Consultants (2013) Guidelines and advice from the relevant Specialist Ecologist Groups. Under these criteria the site is ecologically significant because it meets the representativeness (criteria 1 and 2),

rarity/distinctiveness (criteria 3, 4, 5 and 6), diversity and pattern (criterion 7) and ecological context criteria (criteria 8 and 10).

Assessment against Significance Criteria

Representativeness

- 1. Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.**

The site is significant under this criterion.

The vegetation communities within the site are representative of the natural diversity of the relevant ecological district.

The (matai-lowland totara)/mixed secondary hardwood forest is representative of the forest that would once have occurred across the site. This forest has some emergent lowland totara (*Podocarpus totara*) and matai (*Prumnopitys taxifolia*) and the canopy and understorey species are typical for this forest type. Regeneration is occurring, especially of *Coprosma* species despite stock access (Jensen unpubl. data 2013).

Grassland and shrubland communities at the site were induced by Maori burning centuries ago (Wilson 1992). With the exception of the exotic species that have established following European arrival, these communities are typical of those that are likely to have been present at a baseline of 1840.

The grassland on lowland droughty hill slopes consists of mixed native and exotic grasses with patchy native shrub cover. The most common native grass species are bristle grass (*Rytidosperma clavatum*), meadow rice grass (*Microlaena stipoides*), and silver tussock (*Poa cita*). This vegetation is a good example of these dry droughty grasslands in the context of the ecological district despite the presence of exotic grasses such as danthonia (*Rytidosperma racemosum*), ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), and cocksfoot (*Dactylis glomerata*). Prostrate kowhai (*Sophora prostrata*) is the most common native shrub with this grassland, followed by *Coprosma crassifolia* and *C. propinqua*. The native vine scrub pōhuehue (*Muehlenbeckia complexa*) is abundant throughout the site, while leafless clematis (*Clematis afoliata*) is abundant amongst shrubs (Wildland Consultants unpubl. data 2014a).

The *Coprosma propinqua*-*C. crassifolia* shrubland has a representative structure and composition. The main shrubland species is *Coprosma propinqua* but *C. crassifolia*, *C. virescens* and kanuka (*Kunzea robusta*) are common. The grassland within it has a high component of native grasses with scattered silver tussocks. The native *Rytidosperma clavatum* is common and meadow rice grass is common around rock outcrops and boulders. Although grazed by sheep, cattle and goats there is some regeneration of shrubby species with different age classes of kanuka and shrubs present (Jensen unpubl. data 2013).

Rock outcrops support typical dry rock species such as New Zealand linen flax (*Linum monogynum*), Banks Peninsula button daisy (*Leptinella minor*), stonecrop (*Crassula colligata* and *C. sieberiana*), New Zealand iceplant (*Disphyma australe*) and native ferns such as round-leaved fern (*Pellaea rotundifolia*), necklace fern (*Asplenium flabellifolium*), rock fern (*Cheilanthes sieberi*), woolly cloak fern (*C. distans*) and blanket fern (*Pleurosorus rutifolius*) (Jensen unpubl. data 2013, Wildland Consultants unpubl. data 2014a).

The area of secondary kanuka forest on the lower less steep slopes near Lake Forsyth/Wairewa is more modified and is not representative. The understorey is used as a stock camp and is bare with few species in the understorey (Jensen unpubl. data 2013).

The habitats within the BPCT covenant (grassland, shrubland and rock outcrops) that were surveyed also contain a representative assemblage of indigenous invertebrates. Of the 104 species recorded only four are exotic (Wildland Consultants unpubl. data 2014b).

2. Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district.

The site is significant under this criterion.

It contains large examples of *Coprosma propinqua*-*C. crassifolia* shrubland on lowland hill slopes and mixed exotic and indigenous grassland on droughty lowland hill slopes.

Rarity/Distinctiveness

3. Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the Region, or relevant land environment, ecological district, or freshwater environment.

Parts of the site are significant under this criterion.

The higher altitude parts of the site (on the northern side of Bossu Road) are on Acutely and Chronically Threatened land environments (F3.1a (Acutely Threatened) and F3.1b and F3.3b (Chronically Threatened)). Parts of the lower slopes above Lake Forsyth/Wairewa are also on the Acutely Threatened land environment (F3.1a). There is <10% indigenous vegetation left on Acutely Threatened land environments nationally and <20% on Chronically Threatened land environments (Walker et al. 2007).

The (matai-lowland totara)/mixed secondary hardwood forest on the steep slopes in the gully east of Trig V is also significant under this criterion because it has been reduced to less than 20% of its former extent in the ecological district. Banks Peninsula, including the Akaroa Ecological District, was almost entirely forested prior to the arrival of humans (Harding 2009, Wilson 2013). The present extent of all indigenous forest in the ED (excluding manuka and kanuka) is estimated to be 10% (New Zealand Landcover Database (Version 4)).

4. Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district.

The site is significant under this criterion.

It supports the only population of the nationally Threatened plant species shrubby tororaro (*Muehlenbeckia astonii*) in the Banks Ecological Region as well as a number of other indigenous plant and invertebrate species that are either nationally At Risk, endemic to Banks Peninsula or uncommon within the ecological district or region.

Plants

Nationally At Risk plant species (de Lange et al. 2013) recorded from the site (Jensen unpubl. data 2013, Wildland Consultants unpubl. data 2014a) are:

- shrubby tororaro (*Muehlenbeckia astonii*) (Threatened - Nationally Endangered) approximately 15 plants towards the western end of the site
- *Coprosma virescens* (At Risk - Declining)
- *Chenopodium allanii* (At Risk - Naturally Uncommon)
- Banks Peninsula button daisy (*Leptinella minor*) (At Risk - Naturally Uncommon, endemic to Banks Peninsula)
- Blanket fern (*Pleurosorus rufifolius*) (At Risk - Naturally Uncommon)
- Fierce lancewood (*Pseudopanax ferox*) (At Risk - Naturally Uncommon)

Plant species recorded from the site (Jensen unpubl. data 2013, Wildland Consultants unpubl. data 2014a) that are “uncommon to rare or very local” on Banks Peninsula (Wilson 2013) are:

- *Carex secta*
- woolly cloak fern (*Cheilanthes distans*)
- climbing shore spinach (*Tetragonia implexicoma*)

Invertebrates

Invertebrates were surveyed within the Oashore BPCT covenant in March 2014 (Wildland Consultants unpubl. data 2014b).

Nationally At Risk invertebrate species recorded from the site during this survey (Wildland Consultants unpubl. data 2014b) are:

- praying mantis (*Orthodera novaezealandiae*) (At Risk - Declining)
- *Cosmiotes helonoma* (At Risk Relict)
- broom looper (*Samana acutata*) (At Risk Relict)
- *Bityla sericea* (Naturally Uncommon)

Invertebrates recorded from the site (Wildland Consultants unpubl. data 2014b) that are endemic to Banks Peninsula are:

- rock face moth (*Dichromodes cynica*)

Invertebrates recorded from the site (Wildland Consultants unpubl. data 2014b) that are uncommon in the Akaroa Ecological District are:

- rock cicada (*Amphipsalta strepitans*)
- *Nola parvitis*

5. The site contains indigenous vegetation or an indigenous species at its distribution limit within Canterbury Region or nationally.

The site is significant under this criterion.

There are four species that are at their southern national or regional distributional limits on Banks Peninsula (Wilson 2013). These species are (Jensen unpubl. data 2013, Wildland Consultants unpubl. data 2014a):

- Akeake (*Dodonaea viscosa*) (southern national limit)
- Pigeonwood (*Hedycarya arborea*) (southern regional limit)
- Kawakawa (*Piper excelsum*) (southern national limit)
- Woolly cloak fern (*Cheilanthes distans*) (southern national limit)

6. Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.

The site is significant under this criterion.

There is indigenous vegetation (forest, shrubland and grassland communities) growing on basic igneous bluffs, scarps and rock outcrops throughout the site. At a national scale, basic cliffs, scarps and tors are an originally rare ecosystem (Williams et al. 2007).

Diversity and Pattern

7. Indigenous vegetation or habitat of indigenous fauna that contains a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has changes in species composition reflecting the existence of diverse natural features or ecological gradients.

The site is significant under this criterion.

The site contains a mosaic of vegetation communities, and a high diversity of indigenous plant taxa. One-hundred and three indigenous plant species have been recorded from the site during recent botanical surveys (Jensen unpubl. data 2013, Wildland Consultants unpubl. data 2014a). This diversity reflects the range of vegetation communities and micro-habitats and the altitudinal gradient from Lake Forsyth/Wairewa at sea level to approximately 440 m above sea level.

The habitats within the BPCT covenant (grassland, shrubland and rock outcrops) that were surveyed contain a high diversity of indigenous invertebrates. One hundred indigenous invertebrate taxa were recorded during the survey. This included 84 Lepidoptera. This high diversity reflects the sites sunny north-facing

aspect, high diversity of indigenous plant taxa and the large size of the site (Wildland Consultants unpubl. data 2014b).

Ecological Context

8. *Vegetation or habitat of indigenous fauna that provides or contributes to an important ecological linkage or network, or provides an important buffering function.*

The site is significant under this criterion.

The site is directly linked to the Lake Forsyth/Wairewa (SES/H/6), a lake of very high ecological value, and particularly as a habitat for indigenous fauna. It is also in close proximity to the forested gullies below and north of Te Oka Peak (also on the south-eastern side of Lake Forsyth/Wairewa) (SES/A/11).

The indigenous vegetation within the site provides an important buffering function to Lake Forsyth/Waiwera. This lake is in a highly eutrophic state and reducing nutrient and sediment inputs is a high priority (Gray 2013). Maintaining vegetation cover on these slopes reduces these local inputs, but management within the wider catchment is also essential to address water quality issues.

9. *A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a river or coastal system.*

The site is not significant under this criterion. There are no wetlands within the site that meet this criterion.

10. *Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently.*

The site is significant under this criterion.

It provides an important habitat for a diverse number of indigenous invertebrate taxa including species that are nationally At Risk, endemic to Banks Peninsula or uncommon within the ecological district.

Site Management

Existing Protection Status

Fifty-three hectares of the western part of the site is protected by a Banks Peninsula Conservation Trust (BPCT) covenant.

Threats and risks	Management recommendations	Support package options
Stock. Part of the site (north-east of the BPCT covenant) is grazed cattle and sheep (Jensen unpubl. data 2013).	Consider implications of stock grazing in relation to management of indigenous vegetation communities. Consider grazing sheep instead of cattle or removing grazing stock.	Discussion with landowner about options for stock management.
Goats are present within part of the site (north-east of the BPCT covenant) (Jensen unpubl. data 2013).	Consider removing goats from the site. Goats are a serious threat to the ecological values of the site. They also have the potential to spread onto neighbouring properties and into other areas with high ecological values. Not removing goats poses a significant threat to the success of the multi-agency Banks Peninsula Feral Goat Eradication Programme.	Assistance with removal of goats
Several pigs ear (<i>Cotyledon orbiculata</i>) plants occur on rock outcrops within the BPCT covenant (Wildland Consultants unpubl. data 2014a). This species poses a threat to native rock outcrop plants.	Consider removing pigs ear from the locations within the covenant where it is present and undertaking ongoing surveillance for it and other biodiversity pest plants such as spur valerian and boxthorn.	Advice and guidance to landowner about monitoring and control of pest plants, with assistance as appropriate in collaboration with other agencies and groups with landowner agreement.
Hares and rabbits occur within the site. Rabbit sign indicates densities may be high (Wildland Consultants unpubl. data 2014a).	Consider monitoring rabbit numbers and controlling them if required.	Discussion with landowner about the benefits of, and options for rabbit control.

References

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Assessment completed by: Scott Hooson
Date: 19 January 2015

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Date: 19 January 2015

Statement updated by: XXX
Date: XXX

PLEASE NOTE THIS STATEMENT IS BASED ON INFORMATION AVAILABLE AT THE TIME OF WRITING. DUE TO THE DYNAMIC NATURE OF ECOSYSTEMS, FUTURE REASSESSMENT OF THE SITE MAY BE NECESSARY TO REFLECT ANY CHANGES IN KNOWLEDGE OF ITS ECOLOGICAL SIGNIFICANCE.

Appendix 1: List of Plant Species Recorded within the BPCT Covenant

Sourced from Wildland Consultants unpubl. data (2014a).

Scientific Name	Common Name(s)
Indigenous species	
<i>Asplenium flabellifolium</i>	necklace fern
<i>Alternanthera nahui</i>	nahui
<i>Calystegia tuguriorum</i>	NZ bindweed
<i>Carmichaelia australis</i>	native broom, common broom
<i>Carex comans</i>	
<i>Chenopodium allanii</i>	
<i>Cheilanthes sieberi</i>	rock fern
<i>Chenopodium triandrum</i>	pigweed
<i>Clematis afoliata</i>	leafless clematis
<i>Convolvulus waitaha</i>	grass convolvulus
<i>Coprosma crassifolia</i>	thick-leaved coprosma, mikimiki
<i>Coprosma propinqua</i>	mingimingi, mikimiki
<i>Coprosma virescens</i>	mikimiki
<i>Cordyline australis</i>	cabbage tree, ti kouka
<i>Crassula colligata</i>	stonecrop
<i>Crassula sieberiana</i>	stonecrop
<i>Dichelachne crinita</i>	plume grass
<i>Dichondra repens</i>	Mercury Bay weed, dichondra
<i>Disphyma australe</i>	NZ iceplant
<i>Discaria toumatou</i>	matagouri, wild irishman
<i>Festuca novae-zelandiae</i>	fescue tussock, hard tussock
<i>Ficinia nodosa</i>	club rush, wiwi
<i>Haloragis erecta</i>	toatoa
<i>Helichrysum lanceolatum</i>	niniaio
<i>Hierochloa redolens</i>	holy grass, karetu
<i>Leptinella dioica</i>	button daisy
<i>Leptinella minor</i>	Banks Peninsula button daisy
<i>Lilaeopsis novae-zelandiae</i>	
<i>Linum monogynum</i>	NZ linen flax
<i>Luzula banksiana</i> var. <i>orina</i>	woodrush
<i>Melicytus alpinus</i>	porcupine shrub
<i>Microlaena stipoides</i>	meadow rice grass, patiti
<i>Muehlenbeckia astonii</i>	shrubby tororaro, wiggywig
<i>Muehlenbeckia australis</i>	large-leaved pohuehue
<i>Muehlenbeckia complexa</i>	scrub pohuehue, wire vine
<i>Myoporum laetum</i>	ngaio
<i>Oxalis exilis</i>	native oxalis
<i>Pellaea rotundifolia</i>	round-leaved fern, tarawera
<i>Phormium tenax</i>	flax, harakeke
<i>Plagianthus divaricatus</i>	saltmarsh ribbonwood
<i>Pleurosorus rutifolius</i>	blanket fern
<i>Poa cita</i>	silver tussock
<i>Polystichum oculatum</i>	shield fern
<i>Pteridium esculentum</i>	bracken

<i>Rytidosperma clavatum</i>	danthonia, bristle grass
<i>Selliera radicans</i>	selliera
<i>Senecio quadridentatus</i>	cotton fireweed, pekapeka
<i>Sophora prostrata</i>	dwarf kowhai, prostrate kowhai
<i>Tetragonia implexicoma</i>	climbing shore spinach
<i>Wahlenbergia gracilis</i>	NZ harebell
Exotic species	
<i>Acaena agnipila</i>	Australian sheeps bur
<i>Anthoxanthum odoratum</i>	sweet vernal
<i>Austrostipa nodosa</i>	needle grass
<i>Bromus diandrus</i>	ripgut brome
<i>Bromus hordeaceus</i>	soft brome
<i>Carduus tenuiflorus</i>	winged thistle
<i>Coronopus didymus</i>	twin cress
<i>Cotyledon orbiculata</i>	pig's ear, elephant's ear
<i>Cynosurus echinatus</i>	rough dogstail
<i>Dactylis glomerata</i>	cocksfoot
<i>Echium vulgare</i>	vipers bugloss
<i>Festuca arundinacea</i>	tall fescue
<i>Galium aparine</i>	cleavers
<i>Geranium dissectum</i>	cut-leaved cranesbill
<i>Holcus lanatus</i>	Yorkshire fog
<i>Hypochoeris radicata</i>	catsear
<i>Lagurus ovatus</i>	hairstail
<i>Lepidium africanum</i>	peppercress
<i>Lolium perenne</i>	ryegrass
<i>Petroselinum crispum</i>	wild parsley
<i>Plantago coronopus</i>	bucks horn plantain
<i>Rumex acetosella</i>	sheeps sorrel
<i>Rytidosperma racemosum</i>	danthonia
<i>Silene gallica</i>	catchfly
<i>Silybum marianum</i>	variegated thistle
<i>Solanum nigrum</i>	black nightshade
<i>Sonchus oleraceus</i>	puha, smooth sow thistle
<i>Spergula arvensis</i>	spurrey
<i>Ulex europaeus</i>	gorse
<i>Verbascum thapsus</i>	woolly mullein
<i>Verbascum virgatum</i>	moth mullein
<i>Vicia sativa</i>	vetch
<i>Vittadinia gracilis</i>	purple fuzzweed

Appendix 2: List of Plant Species Recorded North-east of the BPCT Covenant

Sourced from Jensen unpubl. data (2013).

N.B. exotic species were not recorded during this survey.

Scientific Name	Common Name(s)
Indigenous species	
<i>Acaena juvenca</i>	bidibidi, piripiri
<i>Anthosachne solandri</i>	native wheatgrass, blue wheatgrass
<i>Arthropodium candidum</i>	grass lily, repehinapapa
<i>Asplenium appendiculatum</i>	ground spleenwort
<i>Asplenium flabellifolium</i>	necklace fern
<i>Austroderia richardii</i>	toetoe
<i>Blechnum fluviatile</i>	kiwakiwa
<i>Blechnum penna-marina</i>	little hard fern
<i>Calystegia tuguriorum</i>	NZ bindweed, pōwhiwhi
<i>Carex breviculmis</i>	grassland sedge
<i>Carex secta</i>	niggerhead, pūkio
<i>Carmichaelia australis</i>	native broom, common broom
<i>Carpodetus serratus</i>	marbleleaf, putaputāwētā
<i>Cheilanthes distans</i>	woolly cloak fern, woolly rock fern
<i>Cheilanthes sieberi</i>	rock fern
<i>Chenopodium allanii</i>	
<i>Clematis afoliata</i>	leafless clematis
<i>Clematis foetida</i>	yellow clematis
<i>Convolvulus waitaha</i>	grass convolvulus
<i>Coprosma crassifolia</i>	thick-leaved coprosma, mikimiki
<i>Coprosma propinqua</i>	mingimingi, mikimiki
<i>Coprosma rhamnoides</i>	mingimingi, mikimiki
<i>Coprosma rotundifolia</i>	round-leaved coprosma, mikimiki
<i>Coprosma virescens</i>	mikimiki
<i>Cordyline australis</i>	cabbage tree, tī kōuka
<i>Corokia cotoneaster</i>	korokio
<i>Cyathea dealbata</i>	silver fern, ponga
<i>Dichelachne crinita</i>	plume grass
<i>Dichondra repens</i>	dichondra
<i>Discaria toumatou</i>	matagouri, wild irishman, tūmatakuru
<i>Dodonaea viscosa</i>	akeake
<i>Echinopogon ovatus</i>	hedgehog grass
<i>Einadia triandra</i>	pigweed
<i>Euchiton audax</i>	native cudweed
<i>Ficinia nodosa</i>	club rush, wiwi
<i>Fuchsia excorticata</i>	tree fuchsia, kōtukutuku
<i>Geranium microphyllum</i>	
<i>Griselinia littoralis</i>	broadleaf, kāpuka
<i>Hedycarya arborea</i>	pigeonwood, porokaiwhiri

<i>Helichrysum lanceolatum</i>	niniao
<i>Hierochloe redolens</i>	holy grass, kāretu
<i>Hoheria angustifolia</i>	narrow-leaved lacebark, houhere
<i>Juncus distegus</i>	wiwi
<i>Juncus edgariae</i>	leafless rush, wi
<i>Kunzea robusta</i>	kānuka
<i>Leptinella minor</i>	Banks Peninsula button daisy
<i>Linum monogynum</i>	NZ linen flax
<i>Lophomyrtus obcordata</i>	rōhutu, NZ myrtle
<i>Luzula banksiana</i> var. <i>orina</i>	woodrush
<i>Melicope simplex</i>	poataniwha
<i>Melicytus alpinus</i>	porcupine shrub
<i>Melicytus ramiflorus</i>	māhoe, whiteywood
<i>Microlaena stipoides</i>	meadow rice grass, pātiti
<i>Muehlenbeckia australis</i>	large-leaved pōhuehue
<i>Muehlenbeckia complexa</i>	scrub pōhuehue, wire vine
<i>Myoporum laetum</i>	ngaio
<i>Myrsine australis</i>	red māpou, red matipo
<i>Myrsine divaricata</i>	weeping matipo, weeping māpou
<i>Olearia paniculata</i>	akiraho
<i>Oxalis exilis</i>	yellow oxalis
<i>Parsonsia capsularis</i>	native jasmine, akakaikiore
<i>Pellaea rotundifolia</i>	round-leaved fern, tarawera
<i>Pennantia corymbosa</i>	kaikōmako, ducks foot
<i>Phormium tenax</i>	flax, harakeke
<i>Piper excelsum</i>	kawakawa
<i>Pittosporum eugenoides</i>	lemonwood, tarātā
<i>Pittosporum tenuifolium</i>	kōhūhū, black matipo
<i>Plagianthus divaricatus</i>	saltmarsh ribbonwood
<i>Plagianthus regius</i>	lowland ribbonwood, mānatu
<i>Poa cita</i>	silver tussock, wī
<i>Podocarpus totara</i>	lowland tōtara
<i>Polystichum vestitum</i>	prickly shield fern, pūniu
<i>Prumnopitys taxifolia</i>	mataī, black pine
<i>Pseudopanax crassifolius</i>	lancewood, horoeka
<i>Pseudopanax ferox</i>	fierce lancewood
<i>Pteridium esculentum</i>	bracken, rārahu, rauaruhe
<i>Ripogonum scandens</i>	supplejack, kareao
<i>Rubus cissoides</i>	bush lawyer, tātarāmoa
<i>Rubus squarrosus</i>	leafless bush lawyer, tātarāmoa
<i>Rytidosperma clavatum</i>	danthonia, bristle grass
<i>Scandia geniculata</i>	climbing aniseed
<i>Senecio quadridentatus</i>	cotton fireweed, pekapeka
<i>Sophora microphylla</i>	small-leaved kōwhai
<i>Sophora prostrata</i>	dwarf kōwhai, prostrate kōwhai
<i>Streblus heterophyllus</i>	small-leaved milk tree, tūrepo
<i>Uncinia uncinata</i>	hook grass
<i>Urtica ferox</i>	ongaonga, tree nettle
<i>Vittadinia australis</i>	white fuzzweed
<i>Wahlenbergia gracilis</i>	

Appendix 3: Invertebrate Species List

Sourced from Wildland Consultants (2014)

HEMIPTERA	
Tibicinidae	cicada
<i>Amphipsalta zelandica</i>	clapping cicada
<i>Amphipsalta strepitans</i>	rock cicada
ORTHOPTERA	
Tettigoniidae	katydid
<i>Conocephalus bilineatus</i>	
Gryllidae	cricket
<i>Pteronemobius bigelowi</i>	
Acrididae	grasshoppers
<i>Phaulacridium marginale</i>	
Anastostomatidae	ground weta
<i>Hemiandrus new species</i>	
COLEOPTERA	
Carabidae	ground beetles
<i>Megadromus antarcticus</i>	
<i>Neocicindella latecincta</i>	tiger beetle
Scarabaeidae	chafers
<i>Costelytra zelandica</i>	
<i>Odontria striata</i>	striped chafer
<i>Odontria new species</i>	
HYMENOPTERA	
Formicidae	ant
<i>Monomorium antarcticum</i>	
Ichneumonidae	
<i>Netelia producta</i>	
Pompilidae	spider wasp
<i>Priocnemis carbonarius</i>	
<i>Epipompilus insularis</i>	
LEPIDOPTERA	
Glyphipterigidae	
<i>Glyphipterix cionophora</i>	
Elachistidae	
<i>Cosmiotes helonoma</i>	
<i>Cosmiotes ombrodoca</i>	
Momphidae	
<i>Zapyastra calliphana</i>	
Lyonetiidae	
<i>Bedellia psammitis</i>	
Oecophoridae	
<i>Gymnobathra sarcoxantha</i>	
<i>Hierodoris s-fractum</i>	
<i>Leptocroca species</i>	
<i>Stathmopoda horticola</i>	
<i>Tingena macarella</i>	
<i>Tingena melinella</i>	
Pterophoridae	plumemoth

<i>Pterophorus innotatalis</i>	
Tortricidae	leaf rollers
<i>Capua semiferana</i>	
* <i>Cydia succedana</i>	
<i>Harmologa amplexana</i>	
<i>Harmologa oblongana</i>	
<i>Harmologa new species</i>	
<i>Merophyas leucaniana</i>	
Crambidae	
* <i>Achyra affinitalis</i>	
<i>Eudonia leptalea</i>	
<i>Eudonia sabulosella</i>	
<i>Eudonia submarginalis</i>	
<i>Eudonia manganeutis</i>	
<i>Gadira acerella</i>	
<i>Hygraula nitens</i>	
<i>Orocrambus flexuosellus</i>	
<i>Orocrambus ordishi</i>	
<i>Orocrambus ramosellus</i>	
<i>Orocrambus vittellus</i>	
<i>Orocrambus vulgaris</i>	
<i>Scoparia chalicodes</i>	
<i>Scoparia exilis</i>	
<i>Udea flavidalis</i>	
<i>Uresiphita maorialis</i>	Kowhai moth
GEOMETRIDAE	
<i>Asaphodes abrogata</i>	
<i>Austrocidaria gobiata</i>	
<i>Austrocidaria similata</i>	
* <i>Chloroclystis filata</i>	
<i>Chloroclystis inductata</i>	
<i>Chloroclystis sphragitis</i>	
<i>Declana junctilinea</i>	
<i>Dichromodes cynica</i>	
<i>Epicyme rubropunctata</i>	
<i>Epyaxa lucidata</i>	
<i>Epyaxa rosearia</i>	
<i>Epyaxa venipunctata</i>	
<i>Gellonia pannularia</i>	
<i>Homodotis megaspilata</i>	
<i>Helastia cinerearia</i>	
<i>Helastia corcularia</i>	
<i>Helastia triphragma</i>	
<i>Hydriomena deltoidata</i>	
<i>Hydriomena rixata</i>	
<i>Pasiphila muscosata</i>	
<i>Pasiphila sandycias</i>	
<i>Poecilasthena schistaria</i>	
<i>Pseudocoremia indistincta</i>	
<i>Samana acutata</i>	
<i>Scopula rubraria</i>	
Noctuidae	
<i>Aletia moderata</i>	

<i>Agrotis ipsilon</i>	
<i>Bityla defigurata</i>	
<i>Bityla sericea</i>	
<i>Cosmodes elegans</i>	
<i>Graphania insignis</i>	
<i>Graphania lignana</i>	
<i>Graphania morosa</i>	
<i>Graphania mutans</i>	
<i>Graphania omoplaca</i>	
<i>Graphania phricias</i>	
<i>Graphania plena</i>	
<i>Graphania rubescens</i>	
<i>Graphania ustistriga</i>	
<i>Meterana decorata</i>	
<i>Meterana ochthistis</i>	
<i>Persectania aversa</i>	
<i>Proteuxoa comma</i>	
<i>Tmetolophota atristriga</i>	
<i>Tmetolophota propria</i>	
<i>Tmetolophota unica</i>	
Erebidae	
<i>Celama parvitis</i>	
<i>Nyctemera annulata</i>	magpie moth
Lycaenidae	coppers/ blues
<i>Lycaena "comon copper" complex</i>	
<i>Lycaena feredayi</i>	
<i>Zizina oxleyi</i>	
Nymphalidae	admirals
<i>Vanessa gonerilla</i>	red admiral
<i>Vanessa itea</i>	yellow admiral
Pieridae	white butterfly
<i>*Pieris rapae</i>	
MANTODEA	praying mantis
<i>Orthodera novaezelandiae</i>	