

# Christchurch District Plan Site of Ecological Significance

## Site Significance Statement

**Site name:** Hay Reserve

**Site number:** SES/H/3

**Physical address of site:** 874 Pigeon Bay Road, Pigeon Bay

### Summary of Significance:

This site is significant because it contains one of the best, if not the best example of lowland podocarp forest on an alluvial landform on Banks Peninsula. This forest type is very rare in the ecological district and region and occurs on Acutely and Chronically Threatened land environments at this site. It supports a high diversity of indigenous plant and freshwater fish taxa including species that are nationally At Risk. Several plant species are also uncommon within the ecological region or ecological district and five are at their southern national or regional distributional limits.

### Site Map



## **Additional Site Information**

**Ecological District:** Herbert

**Central point (NZTM):**

**Area of SES (ha):** 7.21ha

## **Site Description**

This site is situated on the lowland alluvial valley floor of Pigeon Bay. It is approximately 25 metres above sea level and 1.5 km inland. Pigeon Bay Stream flows through the site. Most of the site is within the 6 ha Hay Scenic Reserve administered by the Department of Conservation.

Hugh Wilson (unpubl. data n.d.) described Hay Reserve as “a magnificent remnant of lowland forest”. The site is an outstanding example of a mature lowland valley-floor forest remnant on an alluvial surface. It has many large adult kahikatea, matai, lowland totara and one adult female miro. Other canopy species include titoki, pokaka, mahoe, lemonwood, kowhai, fuchsia, kanuka and red mapou. There is a good diversity of shrubs and forest floor species including podocarp seedlings (Willems 1999). There are many plant species of note within the reserve including titoki, pokaka, native passion vine, three species of tree fern, kawakawa, pigeonwood, *Metrosideros diffusa*, and *Raukaua anomalus* (Wilson 1992). There is an area of planted indigenous species in the south-western corner of the reserve and secondary kanuka-lowland totara forest adjoins the mature forest on private land on the eastern side of the reserve on the toe of the valley side (Wilson 1992, Willems 1999).

Indigenous birds recorded at the site are bellbird, South Island fantail, silvereye, grey warbler, brown creeper and kereru (Cochrane and Schmechel 2011, Cochrane 2012).

## **Extent of Site of Ecological Significance**

The site includes Hay Scenic Reserve and the connected planted and regenerating indigenous forest and scrub around its immediate boundaries. The secondary growth kanuka - lowland totara forest on the adjoining McKellar property is included within the site because it plays an important role in buffering the high value remnant lowland podocarp forest within Hay Scenic Reserve and supports a nationally At Risk – Declining species.

## **Assessment Summary**

Hay Reserve 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) 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 and 5). The area of planted indigenous species in the south-western corner of Hay Reserve and the secondary growth kanuka-lowland totara forest on private land on the eastern side of the reserve meet the ecological context criteria (criterion 8).

## **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.

It is one of the best, if not the best example of lowland podocarp forest on Banks Peninsula (Wilson 1992). The canopy has many large emergent kahikatea, matai and lowland totara and one adult Miro. It has a representative canopy of hardwood species and a relatively intact understorey including podocarp seedlings (Willems 1999).

- 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.

Hay Reserve is a large example of its type within the Herbert ED (and on Banks Peninsula). At 6 ha it is the second largest lowland podocarp forest remnant on alluvial surface on Banks Peninsula (only the 7 ha Prices Valley remnant is larger (Willems 1999)).

### **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.***

The site is significant under this criterion.

Lowland podocarp/hardwood forest on alluvial landforms has been reduced to a tiny area of its original extent within the ecological district and region. There are now only five very small remnant lowland podocarp/hardwood forest remnants left on valley floor alluvium on Banks Peninsula (Wilson 1992). Old-growth lowland podocarp forest is identified by (Wilson 1992) as being the highest priority for protection in the Herbert ED. The original extent of podocarp/hardwood forest in the ED (as a % of the ED) is estimated to have been between 51 - 75% (Harding 2009).

This site also meets this criterion at the Level IV land environment scale. It is entirely on Acutely and Chronically Threatened land environments (F3.1a and J2.1d) where <20% indigenous vegetation is left on these land environments nationally (Walker et al. 2007).

**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 indigenous plant and fish species that are nationally At Risk, and several plant species that are uncommon within the ecological region or ecological district.

### **Plants**

Nationally At Risk plant species (de Lange et al. 2013) recorded from the site (including the eastern edge on private land) (Wildland Consultants unpubl. data 2013) are:

- *Brachyglottis sciadophila* (At Risk – Declining)
- *Coprosma virescens* (At Risk – Declining)

Plant species recorded from the site that are “uncommon to rare or very local” on Banks Peninsula (Wilson 2013) are:

- *Carex solandri* (Wilson unpubl. data n.d.)
- Miro (*Prumnopitys ferruginea*) (This species is very rare within the ED and on Banks Peninsula where it grows in only a few locations inland of Port Levy and Pigeon Bay (Wilson 2013)) (Wilson unpubl. data n.d.)
- Pokaka (*Elaeocarpus hookerianus*) (Wilson unpubl. data n.d., Rosenblad unpubl. data 2011)
- *Microlaena avenacea* (Wilson unpubl. data n.d., Rosenblad unpubl. data 2011)
- *Carex secta* (Wildland Consultants 2013)

### **Fish**

Nationally At Risk fish species (Goodman et al. 2013) recorded during fish surveys within Hay Reserve (EOS unpubl. data 2014) are:

- Bluegill bully (At Risk – Declining)
- Longfin eel (At Risk – Declining)
- Redfin bully (At Risk – Declining)
- Torrentfish (At Risk – Declining)

### **Aquatic invertebrates**

*Neocurupira chiltoni*, an aquatic invertebrate species that is endemic to Banks Peninsula, has been recorded as present within the site (in Pigeon Bay Stream) (Fraser 2006).

**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 five species (Rosenblad unpubl. data 2011, Wilson unpubl. data n.d.) that are at their southern national or regional distributional limits on Banks Peninsula (Wilson 2013). They are:

- Titoki (southern national limit)
- Kawakawa (southern national limit)
- Shining spleenwort (southern national limit)
- Native passion vine (southern national limit)
- Pigeonwood (southern regional 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 not significant under this criterion. It does not support 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.

## **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 high diversity of indigenous plant taxa. Also, Pigeon Bay Stream, which flows through the site supports a very high diversity of indigenous freshwater fish species. Surveys at two sample sites in Pigeon Bay Stream (including one within Hay Reserve) recorded seven species (blue gilled, redfin, upland and common bullies, short and longfin eel and torrentfish).

## **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.***

Part of the site is significant under this criterion.

Due to its small size and geographic isolation the remnant mature podocarp forest is vulnerable to edge effects. The area of planted indigenous species in the south-western corner of Hay Reserve and the secondary growth kanuka-lowland totara forest on private land on the eastern side of the reserve provide an

important role in buffering the mature forest from these effects and are significant under this criterion.

**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. It does not include any wetland ecosystems.

***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 not significant under this criterion. It provides habitat for a small number of common indigenous forest bird species (Cochrane and Schmechel 2011, Cochrane 2012) but does not support large numbers of any of these species.

## Site Management

### Existing Protection Status

The majority of site is within Hay Scenic Reserve which is administered by the Department of Conservation. Secondary kanuka-lowland totara forest on the eastern side of the reserve is on private land and is unprotected.

Threats and risks	Management recommendations	Support package options
<ul style="list-style-type: none"><li>Biodiversity pest plants. A large number of weed species are present including old mans beard, ash, hawthorn, sycamore, cherry plum, blackberry, male fern, crack willow, elder, wandering Jew and montbretia (DOC 2002, Wildlands unpubl. data, Wilson unpubl. data)</li></ul>	<ul style="list-style-type: none"><li>The Department of Conservation undertake weed control within Hay Reserve. Consider extending this work to the kanuka forest on private land and continuing ongoing control and monitoring of biodiversity pest plants.</li></ul>	<ul style="list-style-type: none"><li>N/A</li></ul>
<ul style="list-style-type: none"><li>Stock. The secondary kanuka-lowland forest on private land is unfenced and grazed by stock.</li></ul>	<ul style="list-style-type: none"><li>Consider fencing the secondary kanuka-lowland forest and continue ongoing maintenance of the boundary fence around Hay Reserve.</li></ul>	<ul style="list-style-type: none"><li>Discussion with landowner about the benefits to biodiversity of stock control and about options available.</li><li>Assistance available as appropriate.</li></ul>

## References

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- Willems, N. (1999). *Forest Structure and Regeneration Dynamics of Podocarp / Hardwood Forest Fragments, Banks Peninsula, New Zealand*. Master of Applied Science, Lincoln University.

**Assessment completed by:** Scott Hooson  
**Date:** 25 July 2014

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**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: Plant Species List, Private Land Eastern Edge Hay Reserve

Sourced from Wildland Consultants unpubl. data (2013).

Scientific Name	Common Name(s)
<b>Indigenous species</b>	
<i>Alectryon excelsus</i>	titoki
<i>Aristotelia serrata</i>	wineberry, makomako
<i>Asplenium flabellifolium</i>	necklace fern
<i>Asplenium gracillimum</i>	
<i>Asplenium hookerianum</i>	Hooker's spleenwort
<i>Blechnum chambersii</i>	lance fern
<i>Brachyglottis sciadophila</i>	climbing groundsel
<i>Calystegia tuguriorum</i>	NZ bindweed
<i>Carex forsteri</i>	cutty grass
<i>Carex secta</i>	niggerhead, pukio
<i>Clematis foetida</i>	yellow clematis
<i>Coprosma crassifolia</i>	thick-leaved coprosma, mikimiki
<i>Coprosma lucida</i>	karamu
<i>Coprosma rhamnoides</i>	mingimingi, mikimiki
<i>Coprosma robusta</i>	karamu
<i>Coprosma rotundifolia</i>	round-leaved coprosma, mikimiki
<i>Coprosma virescens</i>	mikimiki
<i>Cyathea dealbata</i>	silver fern, ponga
<i>Dacrycarpus dacrydioides</i>	kahikatea, white pine
<i>Fuchsia excorticata</i>	tree fuchsia, kotukutuku
<i>Hoheria angustifolia</i>	narrow-leaved lacebark, houhere
<i>Hydrocotyle heteromeria</i>	pennywort
<i>Hypolepis ambigua</i>	pig fern
<i>Juncus edgariae</i>	leafless rush, wi
<i>Kunzea ericoides</i>	kanuka
<i>Lophomyrtus obcordata</i>	rohutu, NZ myrtle
<i>Piper excelsum</i>	kawakawa
<i>Melicytus ramiflorus</i>	mahoe, whiteywood
<i>Muehlenbeckia australis</i>	large-leaved muehlenbeckia, pohuehue
<i>Myrsine australis</i>	red mapou, red matipo
<i>Parsonsia heterophylla</i>	native jasmine, akakaikiore
<i>Pellaea rotundifolia</i>	round-leaved fern, tarawera
<i>Pittosporum tenuifolium</i>	kohukohu, black matipo
<i>Pneumatopteris pennigera</i>	gully fern, pakau
<i>Podocarpus totara</i>	lowland totara
<i>Polystichum neozelandicum subsp. zerophyllum</i>	shield fern
<i>Prumnopitys taxifolia</i>	matai, black pine
<i>Pseudopanax crassifolius</i>	lancewood, horoeka
<i>Ripogonum scandens</i>	supplejack, kareao
<i>Rubus cissoides</i>	bush lawyer, tataramoa
<i>Rubus schmidelioides</i>	bush lawyer, tataramoa
<i>Rubus squarrosus</i>	leafless bush lawyer, tataramoa
<i>Sophora microphylla</i>	kowhai, small-leaved kowhai
<i>Urtica ferox</i>	ongaonga, tree nettle

<b>Exotic species</b>	
<i>Acer pseudoplatanus</i>	sycamore
<i>Agrostis capillaris</i>	brown top
<i>Anthoxanthum odoratum</i>	sweet vernal
<i>Cirsium arvense</i>	Californian thistle
<i>Cirsium vulgare</i>	Scotch thistle
<i>Clematis vitalba</i>	old man's beard
<i>Crataegus monogyna</i>	hawthorn
<i>Cynosurus cristatus</i>	crested dogstail
<i>Dactylis glomerata</i>	cocksfoot
<i>Digitalis purpurea</i>	foxglove
<i>Dryopteris filix-mas</i>	male fern
<i>Eucalyptus globulus</i>	eucalypt, blue gum
<i>Fraxinus excelsior</i>	ash
<i>Galium aparine</i>	cleavers
<i>Holcus lanatus</i>	Yorkshire fog
<i>Hypochoeris radicata</i>	catsear
<i>Juncus effusus</i>	soft rush
<i>Phleum pratense</i>	timothy
<i>Plantago lanceolata</i>	narrow-leaved plantain
<i>Plantago major</i>	broad-leaved plantain
<i>Prunus cerasifera</i>	cherry plum
<i>Prunella vulgaris</i>	selfheal
<i>Ranunculus repens</i>	creeping buttercup
<i>Rubus fruticosus</i>	blackberry
<i>Rumex acetosella</i>	sheeps sorrel
<i>Rumex obtusifolius</i>	broad-leaved dock
<i>Sambucus nigra</i>	elderberry
<i>Trifolium repens</i>	white clover

## Appendix 2: Plant Species List for Hay Reserve

Sourced from Rosenblad (2011).

Scientific Name	Common Name(s)
<b>Indigenous species</b>	
<i>Alectryon excelsus</i>	titoki
<i>Aristotelia serrata</i>	wineberry, makomako
<i>Asplenium bulbiferum</i>	hen & chicken's fern
<i>Asplenium flabellifolium</i>	necklace fern
<i>Asplenium oblongifolium</i>	shining spleenwort, huruhuruwhenua
<i>Astelia fragrans</i>	kakaha, bush lily
<i>Blechnum chambersii</i>	lance fern
<i>Blechnum fluviatile</i>	kiwakiwa
<i>Calystegia tuguriorum</i>	NZ bindweed, pōwhiwhi
<i>Carex forsteri</i>	cutty grass
<i>Carpodetus serratus</i>	marbleleaf, putaputāwētā
<i>Clematis foetida</i>	yellow clematis
<i>Clematis</i> sp.	
<i>Coprosma areolata</i>	mingimingi, mikimiki
<i>Coprosma lucida</i>	karamū
<i>Coprosma rhamnoides</i>	mingimingi, mikimiki
<i>Coprosma robusta</i>	karamū
<i>Coprosma rotundifolia</i>	round-leaved coprosma, mikimiki
<i>Cordyline australis</i>	cabbage tree, tī kōuka
<i>Cyathea dealbata</i>	silver fern, ponga
<i>Dacrycarpus dacrydioides</i>	kahikatea, white pine
<i>Dicksonia squarrosa</i>	whekī, rough tree fern
<i>Elaeocarpus hookerianus</i>	pōkākā
<i>Fuchsia excorticata</i>	tree fuchsia, kōtukutuku
<i>Hebe salicifolia</i>	koromiko
<i>Hedycarya arborea</i>	pigeonwood, porokaiwhiri
<i>Hoheria angustifolia</i>	narrow-leaved lacebark, houhere
<i>Hydrocotyle heteromeria</i>	pennywort
<i>Hydrocotyle moschata</i>	pennywort
<i>Lophomyrtus obcordata</i>	rōhutu, NZ myrtle
<i>Melicope simplex</i>	poataniwha
<i>Melicytus ramiflorus</i>	māhoe, whiteywood
<i>Metrosideros diffusa</i>	white climbing rātā
<i>Microlaena avenacea</i>	bush rice grass
<i>Microsorium pustulatum</i>	hounds tongue, kōwaowao
<i>Muehlenbeckia australis</i>	large-leaved pōhuehue
<i>Myoporum laetum</i>	ngaio
<i>Myrsine australis</i>	red māpou, red matipo
<i>Parsonsia heterophylla</i>	native jasmine, akakaikiore
<i>Parsonsia</i> sp.	native jasmine, akakaikiore
<i>Passiflora tetrandra</i>	native passion vine

<i>Pellaea rotundifolia</i>	round-leaved fern, tarawera
<i>Pennantia corymbosa</i>	kaikōmako, ducks foot
<i>Piper excelsum</i>	kawakawa
<i>Pittosporum eugenioides</i>	lemonwood, tarātā
<i>Pittosporum tenuifolium</i>	kōhūhū, black matipo
<i>Plagianthus regius</i>	lowland ribbonwood, mānatu
<i>Pneumatopteris pennigera</i>	gully fern, pākau
<i>Podocarpus totara</i>	lowland tōtara
<i>Polystichum richardii</i>	shield fern
<i>Polystichum vestitum</i>	prickly shield fern, pūniu
<i>Prumnopitys taxifolia</i>	mataī, black pine
<i>Pseudopanax arboreus</i>	five-finger, whauwhaupaku
<i>Pseudopanax crassifolius</i>	lancewood, horoeka
<i>Pseudowintera colorata</i>	horopito, peppertree
<i>Ripogonum scandens</i>	supplejack, kareao
<i>Rubus cissoides</i>	bush lawyer, tātarāmoa
<i>Rubus schmidelioides</i>	bush lawyer, tātarāmoa
<i>Schefflera digitata</i>	patē, seven-finger
<i>Senecio minimus</i>	native fireweed
<i>Solanum aviculare or laciniatum</i>	poroporo
<i>Sophora microphylla</i>	small-leaved kōwhai
<i>Stellaria parviflora</i>	New Zealand chickweed
<i>Streblus heterophyllus</i>	small-leaved milk tree, tūrepo
<i>Uncinia uncinata</i>	hook grass
<i>Urtica ferox</i>	ongaonga, tree nettle
<b>Exotic species</b>	
<i>Acer pseudoplatanus</i>	sycamore
<i>Bellis perennis</i>	daisy
<i>Calystegia silvatica</i>	great bindweed
<i>Cedronella canariensis</i>	balm of gilead
<i>Cirsium arvense</i>	Californian thistle
<i>Cirsium vulgare</i>	Scotch thistle
<i>Clematis vitalba</i>	old man's beard
<i>Crataegus monogyna</i>	hawthorn
<i>Crocsmia x crocosmiiflora</i>	montbretia
<i>Dactylis glomerata</i>	cocksfoot
<i>Daphne laureola</i>	
<i>Digitalis purpurea</i>	foxglove
<i>Fraxinus excelsior</i>	ash
<i>Galium aparine</i>	cleavers
<i>Hoheria populnea</i>	lacebark
<i>Holcus lanatus</i>	Yorkshire fog
<i>Hypochaeris radicata</i>	catsear
<i>Lunaria annua</i>	honesty
<i>Mycelis muralis</i>	wall lettuce
<i>Myosotis sylvatica</i>	garden forget-me-not
<i>Oxalis articulata</i>	sourgrass
<i>Plantago lanceolata</i>	narrow-leaved plantain
<i>Plantago major</i>	broad-leaved plantain
<i>Populus nigra</i>	lombardy poplar
<i>Prunus avium</i>	sweet cherry

<i>Prunus cerasifera</i>	cherry plum
<i>Quercus robur</i>	English oak
<i>Ranunculus repens</i>	creeping buttercup
<i>Sambucus nigra</i>	elderberry
<i>Solanum dulcamara</i>	bittersweet
<i>Sonchus oleraceus</i>	pūhā, smooth sow thistle
<i>Taraxacum officinale</i>	dandelion
<i>Trifolium repens</i>	white clover
<i>Trifolium sp.</i>	
<i>Vicia sativa</i>	vetch