

**TIMARU DISTRICT  
SIGNIFICANT NATURAL AREAS  
SURVEY**

**KAKAHU BUSH  
SOUTH CANTERBURY  
CONSERVATION TRUST**

**DRAFT**



**Report prepared for Timaru District Council by Mike Harding  
August 2009**

# TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

## PROPERTY REPORT

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### PROPERTY DETAILS:

**Owner:** ..... South Canterbury Conservation Trust  
**Valuation References:** .... 24670/220.00  
**Address:** ..... Hall Road, Kakahu Bush  
**Location:** ..... Dissected hill country on the lower southeast slopes of Kakahu Hill, near Kakahu Bush  
**Ecological District:**..... Geraldine Ecological District.  
**TDC Land Type:** ..... Soft Rock Hills and Downs.  
**Land Environment:** ..... N3 (eastern South Island undulating plains and hills).

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### ECOLOGICAL CONTEXT:

The property covers hill country in the Kakahu Bush area in South Canterbury. It includes the catchments of small streams that flow southeast to the Kakahu River. The property lies in the central inland part of Geraldine Ecological District.

It is likely that the original vegetation of this area was predominantly mixed podocarp-hardwood forest with smaller areas of scrub, shrubland, wetland and rock bluff flora. This is the part of the Geraldine Ecological District with the largest remaining areas of indigenous forest, much of which lies on this and the adjoining property. Otherwise, indigenous forest in this area is generally confined to small remnants in gullies and around bluffs, with some larger areas of younger regenerating forest.

The indigenous fauna would have originally been significantly more numerous and diverse, with a greater range of birds, lizards and invertebrates than is presently found in the area. The property lies within the known range of the South Canterbury population of long-tailed bat. This species is listed as nationally-endangered.

Indigenous vegetation on the property comprises areas of podocarp-hardwood forest, kanuka forest, rock bluff vegetation and wetland. The property lies close to other important indigenous forest, including remnants on limestone scarps.

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### SIGNIFICANT AREAS ON THE PROPERTY:

The property was surveyed as part of the District-wide survey of Significant Natural Areas during May and August 2009. Nearly all parts of the property were visited and assessed, albeit briefly. Four mostly inter-connected areas, totalling approximately ?? hectares, are regarded as Significant Natural Areas (SNAs) when assessed against the District Plan criteria. These SNAs are listed in the table below.

Area No.	Area Name	Central grid reference	Aprox. size (ha)	Vegetation/habitat type
8d	Kakahu Bush South	J38: 559-720		kanuka forest
9d	Kakahu Bush North	J38: 560-727		podocarp-hardwood forest
9e	Upper Hall Road Wetland	J38: 565-723		rushland and sedgeland
9f	Hall Road Forest	J38: 565-725		podocarp-hardwood forest



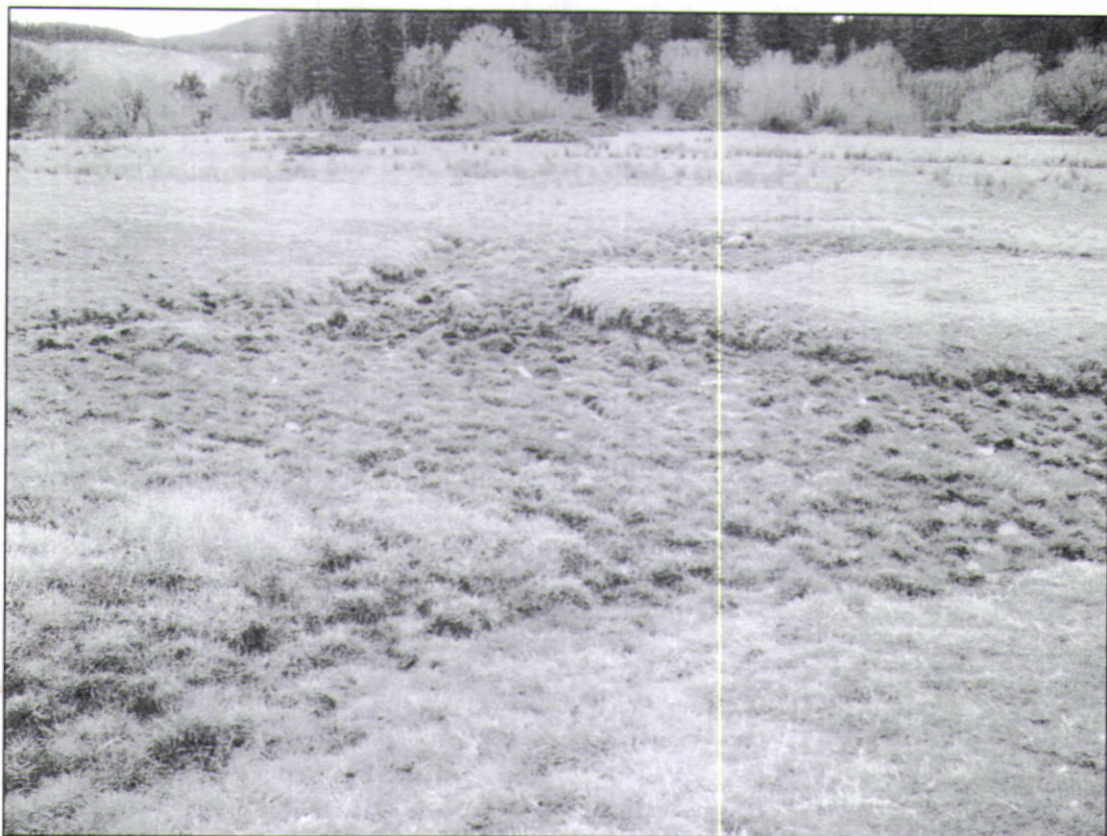
These SNAs are illustrated on the attached aerial photographs and described in greater detail on the Area Inspection Forms in this report. Note that the boundaries of the SNAs are indicative, rather than precise. These areas meet the ecological criteria in the Timaru District Plan (criteria i-vi, pages B18-B19) and most are considered to be sustainable in the long term, or sustainable with appropriate management (criterion vii, page B19). SNAs are subject to confirmation by Council after regarding the matters listed under Final Considerations (pages B19-B20).

The implication of an area being listed as an SNA is that consent is required from Council for clearance of indigenous vegetation or habitat by any means (including burning and spraying with herbicides) or over-planting. To assist with the protection and management of any SNA, landowners can apply to Council for financial assistance. Any questions regarding the protection, management and use of SNAs should be directed to the District Planner. It is expected that SNAs will eventually be listed in the District Plan by way of a notified plan change.

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#### **OTHER AREAS INSPECTED ON THE PROPERTY:**

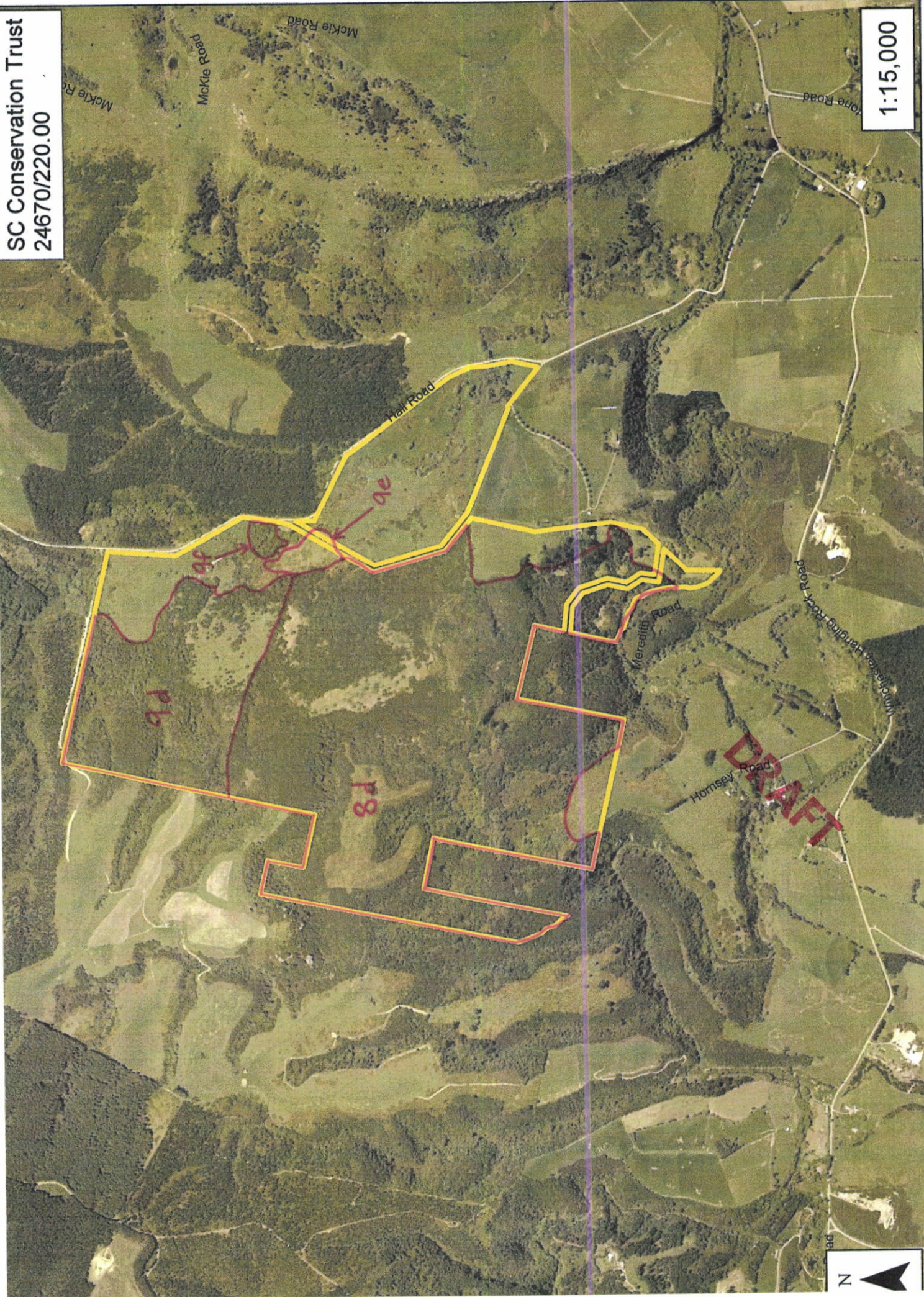
Other areas on the property were inspected but are not significant when assessed against the District Plan criteria. One area worth noting is a wetland on the river terrace south of the wetland area described in this report as SNA 9e. This wetland (illustrated below) comprises several seepages/springs which coalesce at the edge of the terrace. It includes a raised muddy/peaty area that appears to be permanently wet. The vegetation of this wetland has been heavily modified by grazing and pugging, though it appears (despite the unfavourable timing of the survey) to support some remnant indigenous species. While this wetland is too modified to presently meet the District Plan criteria, it has considerable potential for restoration.





SC Conservation Trust  
24670/220.00

1:15,000





# TIMARU DISTRICT SNA SURVEY

# AREA 8d

**Area Name:** Kakahu Bush South

**Location (central map reference):** J38: 559-720

**Ecological District:** Geraldine

**Surveyors:** Mike Harding

**Property:** Kakahu Bush (SCCT)

**Nearest Locality:** Kakahu Bush

**Area Size (ha):** ?

**Altitude (m):** 120-300

**Survey Time:** 5 hours

**Survey Date:** 01-05-09  
and 11-08-09

## General Description:

This SNA lies on dissected hill country on the southeast slopes of Kakahu Hill. It is part of a more extensive area of remnant and regenerating indigenous forest on this and the adjacent property. The other main area of forest on this property is described as SNA 9d. SNA 8d is described separately as it is mostly younger regenerating indigenous forest dominated by kanuka.

## Plant Communities:

The main plant community present is kanuka forest. This community varies throughout the SNA, depending largely on the age of the forest community. Smaller areas of podocarp-hardwood forest and rockland are also present. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk\*.

### Kanuka forest:

This forest is dominated by kanuka. Trunk diameters (at breast height) of the larger trees are typically between 20 and 30 cm. Other canopy species present are five-finger, lemonwood, wineberry, mahoe, lancewood, broadleaf, fuchsia, pohuehue and native jasmine. Occasionally present are narrow-leaved lacebark and kaikomako. A few taller podocarp trees are present in the main gullies.

The forest understorey is, in most places, dominated by one or more the following species: mahoe, matipo, lemonwood, *Coprosma rhamnoides*, *Coprosma rotundifolia* and/or blackberry\*. Other understorey species are *Coprosma crassifolia*, mapou, shrubby mahoe, *Helichrysum lanceolatum*, mingimingi, marbleleaf, lancewood, broadleaf, wineberry, pate, cabbage tree, totara, kowhai, weeping mapou, poataniwha, poroporo, pomaderris\*, pohuehue, lawyer, bush lawyer, *Calystegia tuguriorum*, *Clematis paniculata* and *Clematis marata*. Occasionally present in the understorey are silver fern, yellowwood and rohtutu.

Ground-cover species present are necklace fern, *Asplenium hookerianum*, hen and chickens fern, common shield fern, prickly shield fern, *Blechnum fluviatile*, *Blechnum procerum*, *Blechnum penna-marina*, mountain kiokio, hound's tongue fern, *Pellaea rotundifolia*, *Australina pusilla*, *Libertia ixioides*, *Carex forsteri*, hookgrass, bidibid, pennywort, hairy pennywort, *Lagenifera cuneata*, *Leptinella* sp. and seedlings of mahoe, wineberry, native jasmine, *Coprosma* species and occasionally totara and matai.

Species commonly present at the forest margins or in forest openings are *Coprosma propinqua*, matipo, thousand-leaved fern, *Hypolepis ambigua*, water fern, male fern\*, Himalayan honeysuckle\*, broom\*, gorse\*, *Carex solandri*, *Carex forsteri*, pohuehue and (rarely) *Coprosma tayloriae*, *Coprosma rigida*, scrub pohuehue, toatoa and hard fern. Species occasionally present, mostly near the Sanatorium site, are hawthorn\*, flowering currant\*, Khasia berry\*, sycamore\* and gooseberry\*.

Additional species recorded only at damp sites are kiokio and crown fern.

### Rockland:

Rockland communities were not surveyed. Additional species previously recorded on jaspillite outcrops are *Cheilanthes sieberi*, *Asplenium trichomanes*, *Lycopodium varium*, *Dianella nigra* and mountain flax.

## Birds/Fauna Observed:

Native birds observed during this survey were bellbird, rifleman, fantail, kereru, harrier, brown creeper, silvereve and grey warbler. A falcon was observed flying overhead. Black shags roost in tall pine trees at the southwest corner of the area.

**Notable Flora, Fauna and Habitats:**

Important features of this area are the presence of old podocarp trees and podocarp regeneration, the diversity of plant species present (68 species), the presence of six locally-uncommon plant species (*Australina pusilla*, crown fern, kiokio, silver fern, toatoa and kaikomako), the presence of a nationally vulnerable bird species (falcon) and two at-risk bird species (rifleman and black shag), the likely habitat the area provides for long-tailed bat, the size of the area and its contribution to forest bird habitat in the wider area. The area also contains unusual rock types and historic sites.

**Notable Plant and Animal Pests:**

Most plant pest species here are generally confined to the Sanatorium area. Of the more widespread species, blackberry and pomaderris are the most prevalent. However, neither of these species appears to be restricting continued regeneration of indigenous species. Animal pests were not surveyed, though a large group of feral goats was observed on the adjoining property near The Pinnacles.

**Boundaries (buffering, fencing, adjoining plant communities and habitats):**

This area is fenced from stock and is well buffered by the topography and by other areas of indigenous vegetation. It is part of a larger area of contiguous protected indigenous vegetation described elsewhere as SNA 8 and SNA 9.

**Condition and Management Issues:**

Most parts of this area are in good condition. A significant proportion of the indigenous forest is relatively young, but is rapidly regenerating. The main management issues are plant and animal pest control.

**Property Owner Comment:****ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:**

Primary Criteria	Rank	Notes
Representativeness	M/H	A very good example of regenerating indigenous forest typical of the ecological district and containing many species representative of the vegetation originally present.
Rarity	M/H	Provides habitat for a nationally vulnerable bird species (falcon), two at risk bird species (black shag and rifleman) and several locally uncommon plant species. Provides likely habitat for long-tailed bat.
Diversity and pattern	M/H	A very high diversity of plant species is present (more than 68 species).
Distinctiveness/special features	M/H	The jaspillite rock formations are a special feature.
Other Criteria		
Size/shape	H	A large area with a good shape and well buffered.
Connectivity	H	An integral part of a larger area of protected indigenous vegetation.
Long-term Sustainability	M/H	Some plant and animal pest control will be necessary to maintain ecological values in the long term.

**Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):**

This area is protected by a QEII Open Space covenant and is actively managed for conservation by the South Canterbury Conservation Trust.

**Discussion:**

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of old podocarp trees and podocarp regeneration, the diversity of plant species present (68 species), the presence of six locally-uncommon plant species, the presence of a nationally vulnerable bird species (falcon) and two at-risk bird species (rifleman and black shag), the likely habitat the area provides for long-tailed bat, the size of the area and its contribution to forest bird habitat in the wider area. The area also contains unusual rock types and historic sites.

# TIMARU DISTRICT SNA SURVEY

# AREA 9d

**Area Name:** Kakahu Bush North  
**Location (central map reference):** J38: 560-727  
**Ecological District:** Geraldine  
**Surveyors:** Mike Harding

**Property:** Kakahu Bush (SCCT)  
**Nearest Locality:** Kakahu Bush  
**Area Size (ha):** ?      **Altitude (m):** 150-280  
**Survey Time:** 5 hours      **Survey Date:** 04-05-09  
and 07-08-09

## General Description:

This SNA lies on the lower gentle to moderately-steep east-facing slopes of Kakahu Hill, adjacent to Hall Road. It is part of a more extensive area of remnant and regenerating indigenous forest on this and the adjacent property. It is described separately from the remainder of the hill country indigenous forest on the property (SNA 8d), as it supports, for the most part, a greater density of podocarp trees. It is, however, part of a larger contiguous area of indigenous forest.

## Plant Communities:

Two main plant communities are present: podocarp-hardwood forest and kanuka forest. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk\*.

### Podocarp-hardwood forest on gentle lower slopes:

The forest on lower slopes is dominated by tall trees of narrow-leaved lacebark, totara, matai, kahikatea, pokaka, lemonwood and, in places, kanuka. Other canopy or sub-canopy species present are pohuehue, native jasmine, cabbage tree, rohutu, fuchsia, lancewood, kaikomako and turepo. Trunk diameters (cm at breast height) of the larger trees are: narrow-leaved lacebark, 70-80; totara, 35-65; matai, 30-50, kahikatea, 30-40; kaikomako, 40; and pokaka, 57.

The forest understorey is dominated in most places by rohutu, shrubby mahoe and *Coprosma rotundifolia*. Other understorey species present are mahoe, *Coprosma areolata*, lemonwood, five-finger, narrow-leaved lacebark, marbleleaf, broadleaf, kowhai, poataniwha, mapou, turepo, *Calystegia tuguriorum*, white climbing rata, bush lawyer, *Clematis marata*, *Clematis* sp. and saplings of totara and kahikatea. Occasionally present are *Neomyrtus pedunculata*, *Coprosma crassifolia*, *Coprosma rhamnoides*, *Coprosma rigida*, kaikomako, horopito, bittersweet\*, spindle tree\*, blackberry\* and one clump of mistletoe (on a bush lawyer vine).

Ground-cover species present are common shield fern, prickly shield fern, hen and chickens fern, necklace fern, hanging spleenwort, *Asplenium hookerianum*, *Hypolepis ambigua*, *Pellaea rotundifolia*, *Blechnum penna-marina*, *Blechnum fluviatile*, *Blechnum chambersii* (rare, in gully), white-climbing rata, hairy pennywort, pennywort, *Australina pusilla*, *Cardamine* sp., *Carex solandri*, nettle, foxglove\*, wall lettuce\*, moss and seedlings of native jasmine, wineberry, mahoe, turepo, narrow-leaved lacebark, lemonwood, cabbage tree, shrubby mahoe, rohutu, mapou, lancewood, totara, matai, kowhai, pate, bush lawyer and *Coprosma* species.

Species present in forest openings and/or the forest margin are pohuehue, pate, lemonwood, matipo, fuchsia, wineberry, *Coprosma rotundifolia*, *Coprosma propinqua*, *Coprosma tayloriae*, horopito, *Calystegia tuguriorum*, lawyer, native jasmine, *Clematis marata*, *Hypolepis ambigua*, water fern, bracken, bittersweet\*, black nightshade\*, bidibid, Himalayan honeysuckle\*, Californian thistle\*, blackberry\* and foxglove\*. One small patch of the threatened (at-risk: declining) shrub, *Teucrium parvifolium* was observed at map reference 2356173E-5672960N. Sweet brier\* was recorded at one location on the forest margin.

### Kanuka forest on gentle spurs and upper slopes:

The forest here is dominated by tall trees of kanuka, with trunk diameters (at breast height) of the larger trees between 25 and 35 cm. Other canopy or sub-canopy species are totara, matai and mapou.

The forest understorey is dominated by mahoe and, in places near the upper boundary, by pomaderris\*. Other understorey species present are totara, rohutu, mapou, lemonwood, matipo, poataniwha, lancewood,

five-finger, shrubby mahoe, mahoe X shrubby mahoe hybrids, *Coprosma areolata*, *Coprosma rotundifolia*, *Coprosma rhamnoides*, *Coprosma crassifolia* and *Clematis* sp.

Ground-cover species present are common shield fern, *Asplenium hookerianum*, hen and chickens fern, necklace fern, *Pellaea rotundifolia*, hookgrass, and seedlings of totara, mapou, lancewood and mahoe.

An attempt to investigate vegetation in the small gullies was thwarted by insufficient time and by dense blackberry. Plant lists for the property, and discussions with Ian Morrison, indicate that two species of tree fern are present in the gullies: wheki-ponga and, less commonly, silver fern.

#### **Birds/Fauna Observed:**

Native birds observed during this survey were bellbird, fantail, grey warbler, rifleman, kereru and brown creeper.

#### **Notable Flora, Fauna and Habitats:**

Important features of this area are the presence and extent of podocarp-dominated forest, healthy podocarp and other canopy species regeneration, the diversity of plant species present (66 species), the presence of an at-risk (declining) plant species (*Teucrium parvifolium*), the presence of three locally-uncommon plant species (*Australina pusilla*, kaikomako and horopito), the habitat the area provides for an at-risk bird species (rifleman) and forest birds generally, the presence of favourable roost sites and feeding resources for long-tailed bat, the size of the area and the contribution the area makes to fauna habitat in the wider area.

#### **Notable Plant and Animal Pests:**

There are no significant plant pests present. Most introduced species are confined to the forest margin and forest openings. Exceptions are herbaceous species (which pose little threat), blackberry and pomaderris. Blackberry is relatively sparse in this taller forest and does not pose a threat to continued forest regeneration or species diversity. Pomaderris is confined to patches near the upper forest margin (in kanuka-dominated forest) and does not appear to be having a significant adverse effect on regeneration of indigenous species. Animal pests were not surveyed. No large animal sign was observed, though feral goats were observed on the adjoining property. Some possum sign was observed.

#### **Boundaries (buffering, fencing, adjoining plant communities and habitats):**

This area of forest is fenced from grazing. It is large and well buffered. It adjoins other areas of protected indigenous forest on this property (SNA 8d) and on the adjoining property (SNAs 9a, 9b and 9c).

#### **Condition and Management Issues:**

This area of forest is in very good condition. Continued animal pest control and targeted plant pest control are the main management issues.

#### **Property Owner Comment:**

### **ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:**

<b>Primary Criteria</b>	<b>Rank</b>	<b>Notes</b>
Representativeness	<b>H</b>	A very good example of indigenous forest typical of this part of the ecological district and highly representative of the vegetation originally present.
Rarity	<b>M/H</b>	Supports populations of two at-risk species: rifleman and <i>Teucrium parvifolium</i> . Also provides habitat for three locally-uncommon plant species. Provides extensive habitat suitable for long-tailed bats.
Diversity and pattern	<b>M/H</b>	A high diversity of plant species (66 species) is present.
Distinctiveness/special features	<b>M/H</b>	The extent of the podocarp forest, including podocarp regeneration, is a special feature.
<b>Other Criteria</b>		
Size/shape	<b>H</b>	A large area with a good shape and well buffered.
Connectivity	<b>H</b>	An integral part of the forest ecosystems at Kakahu. Connects and adjoins other areas of forest.



Long-term Sustainability    M/H    Some animal pest control will probably be required to maintain ecological values in the long term.

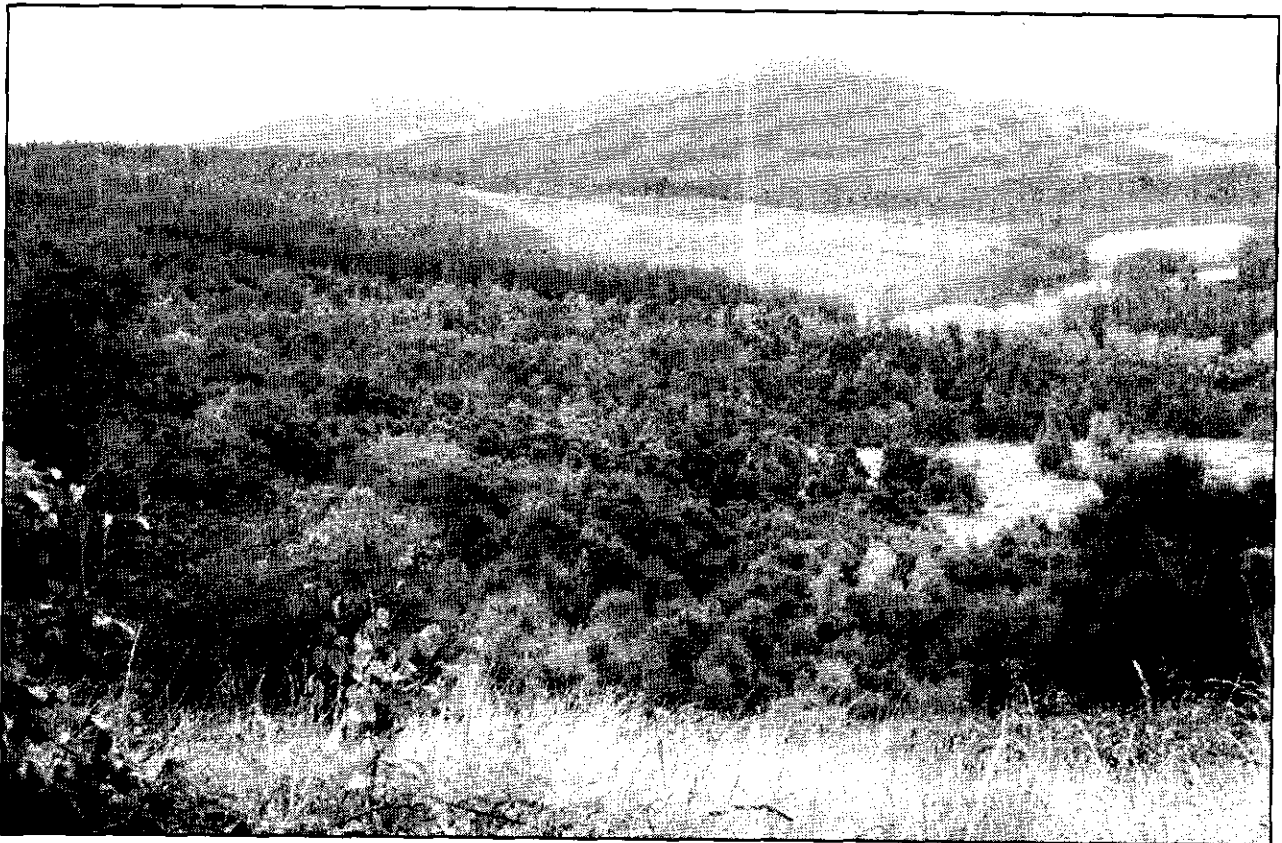
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**Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):**

This area is protected by a QEII Open Space covenant and is actively managed for conservation by the South Canterbury Conservation Trust.

**Discussion:**

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence and extent of podocarp-dominated forest, healthy podocarp and other canopy species regeneration, the diversity of plant species present (66 species), the presence of an at-risk (declining) plant species (*Teucrium parvifolium*), the presence of three locally-uncommon plant species, the habitat the area provides for an at-risk bird species (rifleman) and forest birds generally, the presence of favourable roost sites and feeding resources for long-tailed bat, the size of the area and the contribution the area makes to fauna habitat in the wider area.



*SNA 9d viewed from SNA 8d*

# TIMARU DISTRICT SNA SURVEY

AREA 9e

**Area Name:** Upper Hall Road Wetland  
**Location (central map reference):** J38: 565-723  
**Ecological District:** Geraldine  
**Surveyors:** Mike Harding

**Property:** SCCT Kakahu Bush  
**Nearest Locality:** Kakahu Bush  
**Area Size (ha):** ?      **Altitude (m):** 120  
**Survey Time:** ½ hour      **Survey Date:** 11-08-09

## General Description:

This SNA lies on a low terrace alongside the stream (beside Hall Road) that drains the northwest part of the property. It is a poorly-drained and gently-sloping terrace that receives water from small streams and seepages on the adjacent hill slope (SNA 9d). It adjoins an area of terrace podocarp-hardwood forest (SNA 9f) across the stream.

## Plant Communities:

Two main plant communities are present: rushland and sedgeland. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk\*. This forms a very brief and incomplete description of the site, as the season (winter) and conditions (cold and frosty) were not ideal for surveying wetland plants.

### Rushland:

This plant community occupies most of the site. It is dominated by rank pasture grasses, mostly cocksfoot\*, and scattered plants and clumps of rushes, mostly *Juncus gregiflorus* and *Juncus effusus*\*. Other species present are creeping buttercup\* (*Ranunculus repens*), yarrow\*, Yorkshire fog\*, lotus\* and, in places, rautahi (*Carex coriacea*), pukio (*Carex secta*) and small bushes of kanuka.

### Sedgeland:

This plant community occupies a wetter area alongside a small stream at the southern end of the wetland. It is dominated by pukio and gorse\*. Other species present are cocksfoot\*, Yorkshire fog\*, creeping buttercup\*, blackberry\*, small trees of crack willow\*, swamp kiokio, *Juncus gregiflorus* and *Juncus effusus*. The small wetland fern, *Azolla filiculoides*, is present in standing water.

The margins of the area are dominated by blackberry\*, gorse\* and bracken. Broom\* is also present. Crack willow\* trees are dominant along the main stream at the eastern margin.

## Birds/Fauna Observed:

Pukeko were observed nearby.

## Notable Flora, Fauna and Habitats:

Important features of this area are the extent of the wetland vegetation, the presence of a good population of pukio (*Carex secta*) and the location of the area adjacent to extensive areas of protected indigenous forest. Lowland wetlands are a nationally-rare ecosystem.

## Notable Plant and Animal Pests:

Gorse and pasture grasses are probably the most important plant pests present. Lotus, creeping buttercup and crack willow are also significant. Animal pests were not surveyed.

## Boundaries (buffering, fencing, adjoining plant communities and habitats):

The area is fenced from grazing. It is relatively large for a wetland, has a good shape and is very well buffered. The hydrology of the wetland appears intact, although it has apparently been inundated by silt from flooding of the main stream in recent times (Ian Morrison, *pers. comm.*).

## Condition and Management Issues:

The wetland processes at the site appear intact. However, most parts of the wetland are dominated by aggressive introduced pasture grasses, as is typical of un-grazed wetlands in the area. The most important management issues are control of woody weeds (notably gorse and crack willow) and encouragement of the re-establishment of taller indigenous wetland species such as pukio (*Carex secta*).



**Property Owner Comment:**

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**ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:**

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<b>Primary Criteria</b>	<b>Rank</b>	<b>Notes</b>
Representativeness	<b>M</b>	A somewhat modified example of the wetland communities originally present in the ecological district.
Rarity	<b>M</b>	Lowland wetlands are a nationally-rare ecosystem.
Diversity and pattern	<b>M</b>	A typical range of wetland plant species is present.
Distinctiveness/special features	<b>M</b>	The intact hydrology of the wetland is a notable feature.
<b>Other Criteria</b>		
Size/shape	<b>M/H</b>	The area is large for a lowland wetland.
Connectivity	<b>H</b>	The area adjoins and links other areas of protected indigenous vegetation.
Long-term Sustainability	<b>M</b>	Plant pest control will almost certainly be required to maintain the ecological values in the long term.

**Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):**

The area is protected by a QEII Open Space covenant and is managed for conservation by the South Canterbury Conservation Trust.

**Discussion:**

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the extent of the wetland vegetation, the presence of a good population of pukio and the location of the area adjacent to extensive areas of protected indigenous forest. Lowland wetlands are a nationally-rare ecosystem.

# TIMARU DISTRICT SNA SURVEY

## Wetland Record Form

### Wetland 9e

<b>Wetland name:</b> Upper Hall Road Wetland	<b>Date:</b> 11 August 2009
<b>Property:</b> Kakahu Bush (SCCT)	<b>GPS/Grid Ref:</b> J38: 565-723
<b>Altitude:</b> 120 m	<b>No. of plots sampled:</b>
<b>Location:</b> Adjacent to Hall Road	<b>Approximate size (ha):</b>

<b>Classification: I System</b>	<b>IA Subsystem</b>	<b>II Wetland Class</b>	<b>IIA Wetland Form</b>
Palustrine	Permanent	Seepage	Mire

**Surveyors:** Mike Harding

Indicator	Indicator components	Specify and Comment	Score 0-5 <sup>1</sup>	Mean score
Change in hydrological integrity	Impact of manmade structures	None present	5	4.33
	Water table depth	No detectable changes	5	
	Dryland plant invasion	Substantial	3	
Change in physico-chemical parameters	Fire damage	No evidence of recent fire	5	5
	Degree of sedimentation/erosion	None evident	5	
	Nutrient levels	No evidence of increase	5	
	von Post index			
Change in ecosystem intactness	Loss in area of original wetland	Some loss at margins	4	4.5
	Connectivity barriers	All connections intact	5	
Change in browsing, predation and harvesting regimes	Damage by domestic or feral animals	Possibly some feral animal damage	4	4.33
	Introduced predator impacts on wildlife	Unclear/unknown	4	
	Harvesting levels	None evident	5	
Change in dominance of native plants	Introduced plant canopy cover	Up to 50% in places	3	3
	Introduced plant understorey cover	Up to 50% in places	3	
<b>Total wetland condition index /25</b>				<b>21.2</b>

**Main vegetation types:** *Juncus* rushland; *Carex secta* sedgeland; cocksfoot/Yorkshire fog grassland

**Native fauna:**

**Other comments:** Protected as part of QEII Open Space covenant.

Pressure	Rating <sup>2</sup>	Specify and Comment
Modifications to catchment hydrology	0	No recent changes apparent.
Water quality within the catchment	1	Good.
Animal access	1	Fenced from stock; some feral animal use?
Key undesirable species	1	Gorse and crack willow.
% catchment in introduced vegetation	1	Less than 25%.
Other pressures	0	None apparent.
<b>Total wetland pressure index /30</b>	<b>4</b>	

Source: Clarkson *et al*, Handbook for monitoring wetland condition, Ministry for the Environment, August 2002.

<sup>1</sup> Assign degree of modification thus: 5=v. low/ none, 4=low, 3=medium, 2=high, 1=v. high, 0=extreme

<sup>2</sup> Assign pressure scores as follows: 5=very high, 4=high, 3=medium, 2=low, 1=very low, 0=none



# TIMARU DISTRICT SNA SURVEY

# AREA 9f

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<b>Area Name:</b> Hall Road Forest	<b>Property:</b> SCCT Kakahu Bush	
<b>Location (central map reference):</b> J38: 565-725	<b>Nearest Locality:</b> Kakahu Bush	
<b>Ecological District:</b> Geraldine	<b>Area Size (ha):</b> ?	<b>Altitude (m):</b> 120
<b>Surveyors:</b> Mike Harding	<b>Survey Time:</b> 1 hour	<b>Survey Date:</b> 11-08-09

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## General Description:

This SNA lies on a recent terrace of the stream that drains the northeast part of the property, adjacent to Hall Road. It adjoins a wetland (SNA 9e) across the stream at its southwest edge and lies close to the extensive area of indigenous forest on the hill slopes to the west (SNA 9d).

## Plant Communities:

The main plant community present is podocarp-hardwood forest, described below. Naturalized (exotic) species are indicated with an asterisk\*.

The forest canopy is dominated by tall trees of totara, narrow-leaved lacebark and lowland ribbonwood. Other canopy species present are lancewood, matai, kahikatea, kowhai, cabbage tree, kanuka, pohuehue and native jasmine. Trunk diameters (cm at breast height) of the larger canopy trees are: narrow-leaved lacebark, 35-45; lowland ribbonwood, 35-55; matai, 30-40; kowhai, 50-60; and totara, 45-65. Large crack willow\* trees are present along the stream at the western edge of the forest.

The forest is broken and clumped. Common understorey or subcanopy species present in the denser patches of trees are weeping mapou and *Coprosma rotundifolia*. Other understorey species are *Coprosma propinqua*, *Coprosma crassifolia*, poataniwha, matipo, bush lawyer, lawyer, and young trees of totara, matai, kahikatea and wineberry.

The forest ground-cover is, in most areas, dominated by the invasive herb, ground ivy\* (*Glechoma hederacea*). This plant forms dense patches. Other ground-cover species present are prickly shield fern and seedlings of weeping mapou, kowhai, narrow-leaved lacebark and *Coprosma rotundifolia*. Additional species present in a small swale at the southeast corner of the forest are *Blechnum fluviatile*, hen and chickens fern, the herb *Australina pusilla* and seedlings of totara

Forest margins and the large openings within the forest are dominated by blackberry\*. Other species present are *Hypolepis ambigua*, hemlock\*, Himalayan honeysuckle\*, *Clematis* sp. and *Calystegia tuguriorum*.

## Birds/Fauna Observed:

Native birds observed during this brief survey were kereru, rifleman, grey warbler, bellbird, brown creeper, fantail and pukeko.

## Notable Flora, Fauna and Habitats:

Important features of this area are the presence of tall and sapling podocarps (totara, matai and kahikatea), the relative dominance of lowland ribbonwood, the presence of a locally-uncommon herb (*Australina pusilla*), the presence of at 'at risk' bird species (rifleman), the habitat the area provides for forest birds and possibly long-tailed bat (a nationally endangered species) and the contribution the area makes to the network of fauna habitat in the wider area.

## Notable Plant and Animal Pests:

Ground ivy and blackberry are the most invasive plant pests present. Ground ivy is dominant at shaded forest-floor sites and blackberry is dominant in forest openings and on the forest margin. Crack willow is dominant along the stream, though probably does not pose a significant threat to the forest. Animal pests were not surveyed.

## Boundaries (buffering, fencing, adjoining plant communities and habitats):

The area is fenced from grazing. It adjoins other protected areas across the stream and is an integral part of the network of fauna habitat in the area.

**Condition and Management Issues:**

The forest canopy is in relatively good condition, though the forest is broken into patches. Forest openings are dominated by blackberry and the forest floor is dominated, in most places, by ground ivy. Control of these two plant pests is probably the most important management issue.

**Property Owner Comment:****ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:**

<b>Primary Criteria</b>	<b>Rank</b>	<b>Notes</b>
Representativeness	M/H	A good, though somewhat depleted, example of the indigenous forest originally present on recent alluvial sites in the ecological district.
Rarity	M/H	Supports large trees that provide suitable roost sites for long-tailed bat (nationally endangered). Provides habitat for rifleman (at risk) and <i>Australina pusilla</i> (locally uncommon). Lowland alluvial forest is a rare community type.
Diversity and pattern	M	Species diversity is substantially reduced, though the forest canopy supports a good range of species.
Distinctiveness/special features	M	The dominance of podocarps and lowland ribbonwood is a special feature.
<b>Other Criteria</b>		
Size/shape	M	Small but with a good shape and relatively well buffered.
Connectivity	M/H	Adjoins a wetland (SNA 9e) and lies close to a large area of protected indigenous forest (SNA 9d).
Long-term Sustainability	M	Maintenance of ecological values in the long term will require plant and animal pest control.

**Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):**

The area is protected by a QEII Open Space covenant and is actively managed for conservation by the South Canterbury Conservation Trust.

**Discussion:**

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of tall and sapling podocarps (totara, matai and kahikatea), the relative dominance of lowland ribbonwood, the presence of a locally-uncommon herb (*Australina pusilla*), the presence of at 'at risk' bird species (rifleman), the habitat the area provides for forest birds and possibly long-tailed bat (a nationally endangered species) and the contribution the area makes to the network of fauna habitat in the wider area.



## Scientific names of species cited by common name in this report

(Note: this is not a complete species list; it is a list only of species cited by common name in this report)

Common Name .....	Scientific name
(* = naturalised species)	
bidibid .....	<i>Acaena</i> sp.
bittersweet* .....	<i>Solanum dulcamara</i>
blackberry* .....	<i>Rubus fruticosus</i>
black nightshade* .....	<i>Solanum nigrum</i>
bracken .....	<i>Pteridium esculentum</i>
broadleaf .....	<i>Griselinia littoralis</i>
broom* .....	<i>Cytisus scoparius</i>
bush lawyer .....	<i>Rubus cissoides</i>
cabbage tree/ti rakau .....	<i>Cordyline australis</i>
Californian thistle* .....	<i>Cirsium arvense</i>
cocksfoot* .....	<i>Dactylis glomerata</i>
common shield fern .....	<i>Polystichum richardii</i>
crack willow* .....	<i>Salix fragilis</i>
creeping buttercup* .....	<i>Ranunculus repens</i>
crown fern .....	<i>Blechnum discolor</i>
five-finger .....	<i>Pseudopanax arboreus</i>
flowering currant* .....	<i>Ribes sanguineum</i>
foxglove* .....	<i>Digitalis purpurea</i>
fuchsia .....	<i>Fuchsia excorticata</i>
gooseberry* .....	<i>Ribes uva-crispa</i>
gorse* .....	<i>Ulex europaeus</i>
ground ivy* .....	<i>Glechoma hederacea</i>
hairy pennywort .....	<i>Hydrocotyle moschata</i>
hanging spleenwort .....	<i>Asplenium flaccidum</i>
hard fern .....	<i>Paesia scaberula</i>
hawthorn* .....	<i>Crataegus monogyna</i>
hemlock* .....	<i>Conium maculatum</i>
hen and chickens fern .....	<i>Asplenium bulbiferum</i>
Himalayan honeysuckle* .....	<i>Leycesteria formosa</i>
hookgrass .....	<i>Uncinia</i> sp.
horopito/pepperwood .....	<i>Pseudowintera colorata</i>
hound's tongue fern .....	<i>Microsorium pustulatum</i>
kahikatea/white pine .....	<i>Dacrycarpus dacrydioides</i>
kaikomako .....	<i>Pennantia corymbosa</i>
kanuka .....	<i>Kunzea ericoides</i>
Khasia berry* .....	<i>Cotoneaster simonsii</i>
kiokio .....	<i>Blechnum novae-zelandiae</i>
kowhai .....	<i>Sophora microphylla</i>
lancewood .....	<i>Pseudopanax crassifolius</i>
lawyer .....	<i>Rubus schmidelioides</i>
lemonwood .....	<i>Pittosporum eugenioides</i>
lotus* .....	<i>Lotus pedunculatus</i>
lowland ribbonwood .....	<i>Plagianthus regius</i>
mahoe/whiteywood .....	<i>Melicytus ramiflorus</i>
male fern* .....	<i>Dryopteris filix-mas</i>
mapou .....	<i>Myrsine australis</i>
marbleleaf/putaputaweta .....	<i>Carpodetus serratus</i>
matai/black pine .....	<i>Prumnopitys taxifolia</i>
matipo/kohuhu .....	<i>Pittosporum tenuifolium</i>
mingimingi .....	<i>Cyathodes juniperina</i>
mistletoe .....	<i>Ileostylis micranthus</i>
mountain flax .....	<i>Phormium cookianum</i>
mountain kiokio .....	<i>Blechnum montanum</i>

narrow-leaved lacebark .....	<i>Hoheria angustifolia</i>
native jasmine .....	<i>Parsonsia</i> sp.
necklace fern .....	<i>Asplenium flabellifolium</i>
nettle* .....	<i>Urtica</i> sp.
pate .....	<i>Schefflera digitata</i>
pennywort .....	<i>Hydrocotyle</i> sp.
poataniwha .....	<i>Melicope simplex</i>
pohuehue .....	<i>Muehlenbeckia australis</i>
pokaka .....	<i>Elaeocarpus hookerianus</i>
pomaderris* .....	<i>Pomaderris apetala</i>
poroporo .....	<i>Solanum laciniatum</i>
prickly shield fern .....	<i>Polystichum vestitum</i>
pukio .....	<i>Carex secta</i>
rautahi .....	<i>Carex coriacea</i>
rohutu .....	<i>Lophomyrtus obcordata</i>
scrub pohuehue .....	<i>Muehlenbeckia complexa</i>
shrubby mahoe .....	<i>Melicytus micranthus</i>
silver fern/ponga .....	<i>Cyathea dealbata</i>
soft rush* .....	<i>Juncus effusus</i>
spindle tree* .....	<i>Euonymus europaeus</i>
swamp kiokio .....	<i>Blechnum minus</i>
sweet brier* .....	<i>Rosa rubiginosa</i>
sycamore* .....	<i>Acer pseudoplatanus</i>
thousand-leaved fern .....	<i>Hypolepis millefolium</i>
toatoa .....	<i>Haloragis erecta</i>
totara .....	<i>Podocarpus totara</i>
turepo .....	<i>Streblus heterophyllus</i>
wall lettuce* .....	<i>Mycelis muralis</i>
water fern .....	<i>Hystiopteris incisa</i>
weeping mapou .....	<i>Myrsine divaricata</i>
wheki-ponga .....	<i>Dicksonia fibrosa</i>
white climbing rata .....	<i>Metrosideros diffusa</i>
wineberry .....	<i>Aristolelia serrata</i>
yarrow* .....	<i>Achillea millefolium</i>
yellowwood .....	<i>Coprosma linariifolia</i>
Yorkshire fog* .....	<i>Holcus lanatus</i>