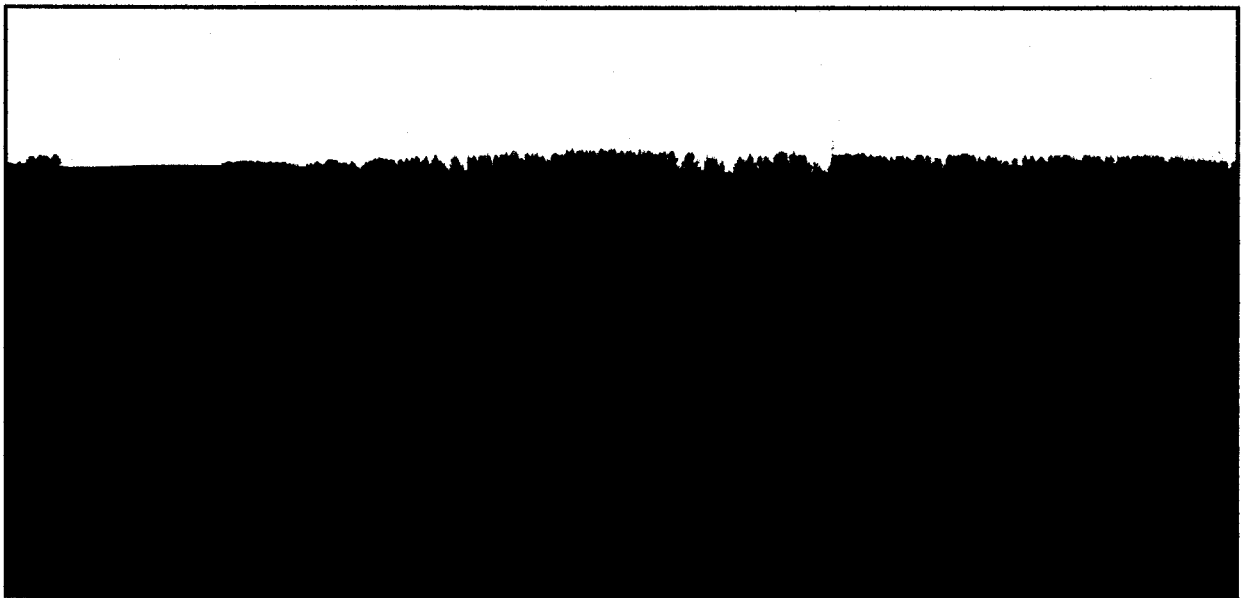


TIMARU DISTRICT

SIGNIFICANT NATURAL AREAS
SURVEY

NATHAN HOLE & TONI MORRISON
KAKAHU



Report prepared for Timaru District Council by Mike Harding
December 2009

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner: Nathan Hole and Toni Morrison
Valuation References: 24670/226.00
Address: Winchester Hanging Rock Road, Kakahu Bush
Location: In a small southern tributary of the Kakahu River, south of
Winchester Hanging Rock Road
Ecological District: Geraldine Ecological District.
TDC Land Type: Soft Rock Hills and Downs.
Land Environment: N3 (eastern South Island undulating plains and hills).

ECOLOGICAL CONTEXT:

The property covers gentle hill country on the loess-covered downlands of South Canterbury. 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. Nevertheless, indigenous forest is still 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 kanuka forest, a large wetland and small areas of regenerating hardwood forest. The property lies close to an extensive area of indigenous forest on the slopes of Kakahu Hill and close to other important indigenous forest remnants on limestone scarps.

SIGNIFICANT AREAS ON THE PROPERTY:

The property was surveyed as part of the District-wide survey of Significant Natural Areas during September 2009. Most parts of the property were visited and assessed. Two areas, totalling approximately 13.5 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
334a	Hole-Morrison Kanuka Forest	J38: 567-701	9.86	Kanuka Forest
334b	Hole-Morrison Wetland	J38: 567-703	3.61	Reedland, sedgeland, shrubland

These SNAs are illustrated on the attached aerial photograph and described in greater detail on the SNA 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 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 in the District Plan (pages B19-B20). It is expected that SNAs will eventually be listed in the District Plan by way of a notified plan change.

At present, consent is required from Council for clearance of areas of indigenous vegetation or habitat which meet the Interim Definitions in the District Plan. Clearance includes burning, spraying with herbicides and over-planting. SNAs encompass most, but not necessarily all, areas of vegetation and habitat which meet the Interim Definitions.

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.

OTHER AREAS INSPECTED ON THE PROPERTY:

Other areas on the property were inspected but are not significant when assessed against the District Plan criteria. Areas worth noting are the small patches of regenerating hardwood forest, dominated by matipo and surrounded by gorse scrub, on the steeper slopes above the Kakahu River. These areas are too small and/or too modified to presently meet the District Plan SNA criteria, though may meet the Interim Definitions. This does not mean that they are not important for nature conservation or biodiversity protection. With appropriate management and/or restoration, these areas may become more valuable.



Forest interior on upper slopes of SNA 334a, illustrating the dense mats of necklucce fern

Hole/Morrison
24670/226.00



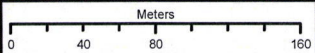
Winchester Hanging Rock Road

334b1

334b2

334a2

334a1



1:4,000

TIMARU DISTRICT SNA SURVEY

AREA 334a

Area Name: Hole-Morrison Kanuka Forest
Location (central map reference): J38: 567-701
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Nathan Hole & Toni Morrison
Nearest Locality: Kakahu Bush
Area Size (ha): 9.86 **Altitude (m):** 150-200
Survey Time: 1½ hours **Survey Date:** 10-09-09

General Description:

This SNA lies on the slopes of a small valley near the head of a small southern tributary of the Kakahu River. It is located just south of Winchester-Hanging Rock Road, near Kakahu Bush. It adjoins and buffers the up-valley end of a relatively extensive wetland on the valley floor, described elsewhere as SNA 334b. The SNA comprises one large block of kanuka forest and several smaller patches of kanuka forest connected by gorse scrub.

Plant Communities:

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

The forest canopy throughout this SNA is dominated by kanuka. Trunk diameters (at breast height) of the larger trees are between 15 and 25 cm. Also occasionally present in the forest canopy are cabbage tree, matipo, kowhai and pohuehue.

The forest understorey on the upper slopes is quite open. The dominant understorey species here is matipo. Other understorey species are mahoe, poroporo, cabbage tree, black nightshade*, blackberry*, Himalayan honeysuckle*, elderberry*, native jasmine, *Calystegia tuguriorum* and pohuehue.

The forest understorey on the lower slopes is denser. Additional species present here are lemonwood, five-finger, *Coprosma propinqua*, *Coprosma crassifolia*, *Coprosma rigida*, *Coprosma propinqua* X *robusta*, clematis, scrub pohuehue and occasional hawthorn*.

The ground-cover on all but the lowest slopes is quite sparse. At open (high light) sites introduced grasses are dominant. At shaded sites dense mats of necklace fern are dominant. Other ground-cover species present are foxglove*, blackberry*, pennywort, hairy pennywort, native chickweed (*Stellaria parviflora*), cleavers* (*Galium aparine*), *Galium propinquum*, *Dichondra repens*, hen and chickens fern and seedlings of matipo, cabbage tree and *Coprosma* species. Rarely present are common shield fern and hanging spleenwort.

The forest margins are dominated by dense gorse* scrub. Also present are pohuehue, blackberry*, poroporo, *Hypolepis ambigua*, bracken and occasionally prickly shield fern and sweet brier*. A single deciduous sycamore* (?) tree is present near the lower forest boundary.

Birds/Fauna Observed:

Native birds observed during this brief survey were Australasian harrier, rifleman, brown creeper, bellbird, grey warbler, fantail and silvereye. The area is almost certainly used by kereru, as kereru are common in the area.

Notable Flora, Fauna and Habitats:

Important features of this area are its size, its location adjacent to (and buffering) a large wetland (SNA 334b), the habitat it provides for forest birds, including the contribution it makes to the network of forest bird habitat in the wider area.

Notable Plant and Animal Pests:

The most important plant pest present is hawthorn. Other naturalized plants present, such as elderberry and Himalayan honeysuckle do not pose a significant threat to the forest. Animal pests were not surveyed, though possum sign was observed.

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

The area is securely fenced on the southeast property boundary. Dense gorse scrub is present on all other boundaries, including the lower boundary adjacent to the valley-floor wetland. The area adjoins and buffers the wetland (SNA 334b) and is linked, by gorse scrub, to an extensive area of kanuka forest (SNA 195a) on the adjoining property to the southwest.

Condition and Management Issues:

The forest canopy is in good condition, though not very diverse. The aggressive native climber, pohuehue, is not dominant. The forest understorey and ground-cover, especially on the upper slopes, is open and somewhat depleted. It is unclear whether this results from earlier management, such as grazing, or whether it is due to other factors. The forest is very well buffered by its size and by the dense gorse scrub on its margins. The most important management issues are control of invasive weeds, such as hawthorn, and continued animal pest (especially possum) control.

Property Owner Comment:

The area is protected by a QEII Open Space Covenant and the owners are keen to encourage continued regeneration of indigenous forest at the site.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	A good example of regenerating indigenous forest typical of the ecological district.
Rarity	M	Provides good habitat for an at-risk bird species (rifleman). May provide, along with the adjacent wetland, habitat for a nationally-endangered species (long-tailed bat).
Diversity and pattern	L/M	Species diversity is relatively low for un-grazed kanuka forest in this area and almost certainly reduced from that originally present.
Distinctiveness/special features	M	The contribution the area makes towards buffering of the adjacent wetland is a special feature.
Other Criteria		
Size/shape	H	A moderate-sized area with a good shape and well buffered.
Connectivity	M	Adjoins and lies close to other areas of indigenous vegetation. Makes a useful contribution to the network of fauna habitat in the area.
Long-term Sustainability	M	Some plant and animal pest control will probably be necessary to protect the ecological values of the site in the long term.

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

While most parts of this area have potential for farm development, the property owners have voluntarily protected the area by covenant and are managing the area for conservation. Under this management, the ecological values of the area will improve over time. Eventually the area is likely to support forest that is more representative of the original podocarp-hardwood forest that almost certainly once occupied the site.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are its size, its location adjacent to (buffering) a large wetland (SNA 334b), the habitat it provides for forest birds, including the contribution it makes to the network of forest bird habitat in the wider area.

TIMARU DISTRICT SNA SURVEY

AREA 334b

Area Name: Hole-Morrison Wetland
Location (central map reference): J38: 567-703
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Nathan Hole and Toni Morrison
Nearest Locality: Kakahu Bush
Area Size (ha): 3.61 **Altitude (m):** 130-150
Survey Time: 1½ hours **Survey Date:** 10-09-09

General Description:

This SNA lies on the valley floor of a small southern tributary of the Kakahu River, near Kakahu Bush. It lies just south of Winchester Hanging Rock Road. It adjoins, and is buffered at its upper end by, areas of kanuka forest (SNA 334a) and gorse scrub.

Plant Communities:

Three main plant communities are present: reedland, sedgeland and shrubland. These plant communities are described below. This description should not be regarded as comprehensive, as the timing of the survey (early spring) was not ideal for identification of some wetland plants. Naturalized (exotic) species are indicated with an asterisk*.

This long narrow wetland is variously dominated by pukio (*Carex secta*), rautahi (*Carex coriacea*), bog rush (*Schoenus pauciflorus*), grasses (notably cocksfoot* and Yorkshire fog*) and raupo (*Typha orientalis*). Other species commonly present in the wetland are gorse*, *Juncus gregiflorus*, creeping buttercup*, flax, Californian thistle*, lotus*, jointed rush*, soft rush*, broad-leaved dock* (*Rumex obtusifolius*), monkey musk*, water cress*, *Blechnum penna marina* and swamp kiokio.

The wetland margin is dominated by scattered to dense gorse* shrubland/scrub. Other species present at the margins and in drier parts of the wetland are blackberry*, kanuka, manuka, *Coprosma propinqua*, *Coprosma tayloriae*, matipo, bracken, *Hypolepis ambigua* and thousand-leaved fern. Sphagnum moss is present in one area, along with *Gunnera momoica*, *Gonocarpus aggregatus* and *Viola cunninghamii*.

Additional species at the down-valley end of the wetland are trees of crack willow* (some dead/poisoned), broom* and one patch of toetoe.

Birds/Fauna Observed:

Native birds observed during this brief survey were Australasian harrier, grey warbler, fantail and pukeko.

Notable Flora, Fauna and Habitats:

Important features of this area are the extent of the wetland plant communities, the diversity of wetland species present, its location adjacent to (and buffered by) areas of kanuka forest and dense gorse scrub, and the apparent intactness of the wetland hydrology. Lowland wetlands are a nationally-rare ecosystem.

Notable Plant and Animal Pests:

Gorse and willow are the most important woody plant pests present. Other notable plant pests are pasture grasses (notably cocksfoot and Yorkshire fog), jointed rush, Californian thistle and blackberry. Animal pests were not surveyed.

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

Although the wetland is long and narrow (as many valley-floor wetlands are), it is well buffered by dense gorse scrub along all boundaries except the down-valley end, where it is securely fenced. A significant part of the catchment of the wetland supports kanuka forest. The wetland adjoins kanuka forest (SNA 334a) at its up-valley end and is linked by gorse scrub and scattered kanuka to other areas of kanuka forest (SNA 195a) on the adjoining property.

Condition and Management Issues:

The wetland is in very good condition for a lowland wetland. It has clearly escaped intensive grazing for some time and supports a relatively diverse range of wetland species. The integrity of the wetland is compromised to some extent by the presence of gorse, blackberry, pasture grasses and, in the lower reaches, crack willow. While gorse is serving a very useful role on the adjacent hill slopes, its presence in the wetland

is more problematic. It is unclear, from a single visit, whether gorse poses a significant threat. Important management issues are the control (removal) of crack willow, monitoring (or removal) of gorse and maintenance of the wetland hydrology.

Property Owner Comment:

The area is protected by a QEII Open Space Covenant. The owners have commenced removal of crack willow and are planting the lower wetland margins.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

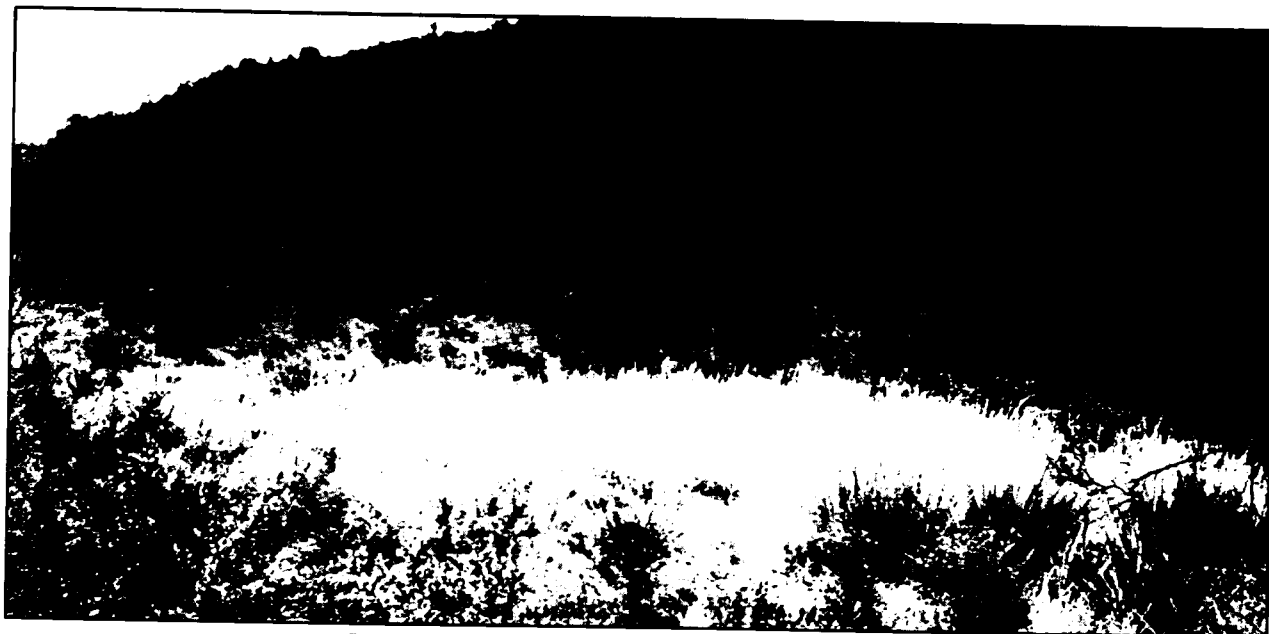
Primary Criteria	Rank	Notes
Representativeness	M/H	A very good example of a typical lowland wetland. It is likely that a substantial part of the wetland originally supported indigenous woody vegetation, such as kahikatea.
Rarity	M	Lowland wetlands are a nationally rare ecosystem.
Diversity and pattern	M/H	A diverse range of species and communities are present for a wetland in this area, though diversity is probably reduced (or different) from that originally present.
Distinctiveness/special features	M/H	The wetland hydrology appears intact, an unusual feature for lowland wetlands in this area.
Other Criteria		
Size/shape	H	Large for a wetland and very well buffered.
Connectivity	M/H	Adjoins kanuka forest on some boundaries and is linked by gorse scrub to kanuka forest on the adjacent property.
Long-term Sustainability	M	It is very likely that 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 has potential for farm development. However, the property owners have protected the wetland by covenant and are managing the wetland for conservation. The values of the wetland will continue to improve under this enlightened management.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the extent of the wetland plant communities, the diversity of wetland species present, its location adjacent to (and buffered by) areas of kanuka forest and dense gorse scrub, and the apparent intactness of the wetland hydrology. Lowland wetlands are a nationally-rare ecosystem.



Rauipo in the upper part of the wetland (SNA 334b)

TIMARU DISTRICT SNA SURVEY

Wetland Record Form

Wetland 334b

Wetland name: Hole-Morrison Wetland	Date: 10 September 2009
Property: Nathan Hole and Toni Morrison	GPS/Grid Ref: J38: 567-703
Altitude: 130 to 150 m	No. of plots sampled:
Location: Kakahu Bush	Approximate size (ha): 3.6

Classification: I System	IA Subsystem	II Wetland Class	IIA Wetland Form
Palustrine	Permanent	Swamp	Basin

Surveyors: Mike Harding

Indicator	Indicator components	Specify and Comment	Score 0-5 ¹	Mean score
Change in hydrological integrity	Impact of manmade structures	None/very low	5	4.7
	Water table depth	No detectable changes	5	
	Dryland plant invasion	Pasture grasses, gorse	4	
Change in physico-chemical parameters	Fire damage	No evidence of recent fire	5	5
	Degree of sedimentation/erosion	None visible	5	
	Nutrient levels	No evidence of increase	5	
	von Post index			
Change in ecosystem intactness	Loss in area of original wetland	Appears essentially intact	5	4.5
	Connectivity barriers	Downstream connection interrupted	4	
Change in browsing, predation and harvesting regimes	Damage by domestic or feral animals	Feral animals (possums) present	4	4.3
	Introduced predator impacts on wildlife	Unclear, but likely	4	
	Harvesting levels	None evident; protected site	5	
Change in dominance of native plants	Introduced plant canopy cover	Approximately 20%	4	4.5
	Introduced plant understorey cover	Very low	5	
Total wetland condition index /25				23

Main vegetation types: *Carex secta* sedgeland; raupo reedland; *Coprosma*/kanuka/manuka/gorse shrubland.

Native fauna: Harrier, grey warbler, fantail and pukeko.

Other comments: Adjoins and is well buffered by gorse scrub and kanuka forest.

Pressure	Rating ²	Specify and Comment
Modifications to catchment hydrology	0	None apparent
Water quality within the catchment	1	Appears very good
Animal access	1	High impediment to animal access; un-grazed
Key undesirable species	1	Crack willow, gorse.
% catchment in introduced vegetation	1	Pasture in parts of upper valley
Other pressures		
Total wetland pressure index /30	4	

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

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

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

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)	
blackberry*	<i>Rubus fruticosus</i>
black nightshade*	<i>Solanum nigrum</i>
bog rush	<i>Schoenus pauciflorus</i>
bracken	<i>Pteridium esculentum</i>
broom*	<i>Cytisus scoparius</i>
cabbage tree/ti rakau	<i>Cordyline australis</i>
Californian thistle*	<i>Cirsium arvense</i>
clematis	<i>Clematis</i> sp.
cocksfoot*	<i>Dactylis glomerata</i>
common shield fern	<i>Polystichum richardii</i>
crack willow*	<i>Salix fragilis</i>
creeping buttercup*	<i>Ranunculus repens</i>
elderberry*	<i>Sambucus nigra</i>
five-finger	<i>Pseudopanax arboreus</i>
flax	<i>Phormium tenax</i>
foxglove*	<i>Digitalis purpurea</i>
gorse*	<i>Ulex europaeus</i>
hairy pennywort	<i>Hydrocotyle moschata</i>
hanging spleenwort	<i>Asplenium flaccidum</i>
hawthorn*	<i>Crataegus monogyna</i>
hen and chickens fern	<i>Asplenium bulbiferum</i>
Himalayan honeysuckle*	<i>Leycesteria formosa</i>
jointed rush*	<i>Juncus articulatus</i>
kahikatea/white pine	<i>Dacrycarpus dacrydioides</i>
kanuka	<i>Kunzea ericoides</i>
kowhai	<i>Sophora microphylla</i>
lemonwood	<i>Pittosporum eugenioides</i>
lotus*	<i>Lotus pedunculatus</i>
mahoe/whiteywood	<i>Melicytus ramiflorus</i>
manuka	<i>Leptospermum scoparium</i>
matipo/kohuhu	<i>Pittosporum tenuifolium</i>
monkey musk*	<i>Mimulus guttatus</i>
native jasmine	<i>Parsonsia</i> sp.
necklace fern	<i>Asplenium flabellifolium</i>
pennywort	<i>Hydrocotyle</i> sp.
pohuehue	<i>Muehlenbeckia australis</i>
poroporo	<i>Solanum laciniatum</i>
prickly shield fern	<i>Polystichum vestitum</i>
pukio	<i>Carex secta</i>
raupo	<i>Typha orientalis</i>
rautahi	<i>Carex coriacea</i>
scrub pohuehue	<i>Muehlenbeckia complexa</i>
soft rush*	<i>Juncus effusus</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>
toetoe	<i>Cortaderia richardii</i>
water cress*	<i>Rorippa</i> sp.
Yorkshire fog*	<i>Holcus lanatus</i>