

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

CONE PROPERTY



**Report prepared for Timaru District Council by Mike Harding
August 2017**

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner: Alan Cone
Valuation References: 24670-24100
Address: 2219 Winchester Hanging Rock Road, Kakahu 7982
Location:..... On north side of Opihi River, between Hanging Rock and Kakahu
Ecological Districts: Geraldine
TDC Land Type:..... Soft Rock Hills and Downs
Land Environments:..... N3.1d (valleys); Q2.1c (upper slopes).

ECOLOGICAL CONTEXT:

The property lies on the north side of the Opihi River, between Hanging Rock and Kakahu. It comprises moderately steep dissected hill country with gentle valley floors. The underlying rock is predominantly mudstone, with smaller exposures of limestone (Cox and Barrell, 2007).

It is likely that the original vegetation of this area was predominantly podocarp-hardwood forest, dominated by matai, totara, kowhai, broadleaf and other hardwood trees. Shrubland, treeland and tussockland may have occupied steeper slopes and disturbed sites. Limestone bluffs supported specialised flora, and valley floors would have supported areas of wetland vegetation.

Today the original forest cover in this part of Geraldine Ecological District is largely confined to remnants in gullies or on steep slopes associated with limestone scarps. Otherwise, the indigenous vegetation of the ecological district is substantially depleted or modified. 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 is in Geraldine Ecological District, within Pareora Ecological Region (McEwen, 1987). Valley floors and lower slopes lie in Level IV Land Environment N3.1d and upper slopes are within the Q2.1c land environment (Leathwick *et al*, 2003). Indigenous vegetation within Land Environment N3.1d is 'chronically threatened' with only 10-20% of the original vegetation cover remaining (in 2012); and within Q2.1c is 'at risk' with 20-30% of the original cover remaining (Cieraad *et al*, 2015).

Seepages and flushes (wetlands) are an 'originally rare ecosystem' (Williams *et al*, 2007), which is listed as 'nationally vulnerable' by Holdaway *et al* (2012). Wetlands are a national priority for protection of biodiversity on private land (MfE & DOC, 2007).

The Kakahu-Hanging Rock area lies within the range of the South Canterbury population of long-tailed bat (*Chalinolobus tuberculatus* "South Island") (O'Donnell, 2000). Long-tailed bat have a threat ranking of 'nationally critical' (O'Donnell *et al*, 2012). Bat roost sites are present at the western boundary of the property and possibly elsewhere on the property in older trees or rock bluffs.

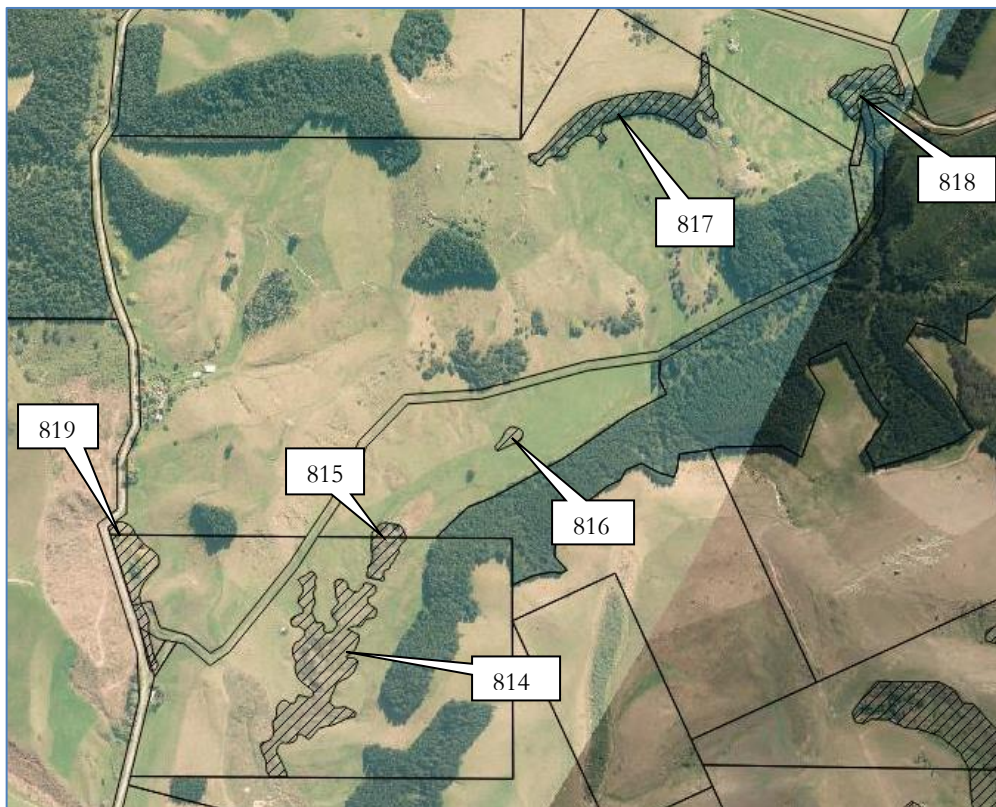
SIGNIFICANT AREAS ON THE PROPERTY:

The property was surveyed in August 2017. Indigenous vegetation is present at four main locations, comprising six separate areas totalling approximately nine hectares. These are regarded as Significant Natural Areas (SNAs) when assessed against the District Plan and Canterbury Regional Policy Statement criteria. These SNAs are listed in the table below.

Area No.	Area Name	Central map ref. (NZTM)	Aprox. size (ha)	Vegetation/habitat type
814	Cone southern wetland	1444705E-5106172N	4.04	palustrine wetland/seepage
815	Cone central wetland	1444832E-5106422N	0.64	palustrine wetland/seepage
816	Cone northern wetland	1445106E-5106661N	0.16	palustrine wetland/seepage
817	Cone scarp forest	1445336E-5107371N	2.25	hardwood (podocarp) forest
818	Cone podocarp remnant	1445866E-5107420N	0.91	podocarp-hardwood forest
819	Cone roadside wetland	1444298E-5106343N	1.24	palustrine wetland

These SNAs are illustrated on the aerial photograph and described in greater detail in this report. Note that the boundaries of the SNAs are indicative, rather than precise. These areas meet the ecological criteria in the Canterbury Regional Policy Statement and Timaru District Plan (criteria i-vi, pages B18-B19) and are considered to be 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.



TIMARU DISTRICT SNA SURVEY

SNAs 814, 815 and 816

Area Name: Cone wetlands	Property: Alan Cone	
Ecological District: Geraldine	Nearest Locality: Kakahu	
Map ref. (814): 1444705E-5106172N	Area Size (ha): 4.04	Altitude (m): 135
Map ref. (815): 1444832E-5106422N	Area Size (ha): 0.64	Altitude (m): 140
Map ref. (816): 1445106E-5106661N	Area Size (ha): 0.16	Altitude (m): 145
Assessor: Mike Harding	Survey Time: 4 hours	Survey Date: 17-08-17

General Description:

These three SNAs are located on a broad valley floor at the southeast part of the property. They are palustrine wetlands with associated seepages alongside a small un-named stream which flows to the Opihi River at Hanging Rock. The three SNAs are separated by developed pasture but are described together here as they support similar plant communities and habitats.

Plant Communities:

The main plant communities at these sites are reedland, rushland, sedgeland and cushionfield, as described below. Naturalized species are indicated with an asterisk*.

Reedland:

This plant community is present in deeper slow-moving water alongside the stream in SNAs 814 and 815 and is more extensive at the down-valley end of the area. It is dominated by raupo (*Typha orientalis*). The only other plants present within the reedland are occasional small crack willow* (*Salix fragilis*) trees.

Rushland:

The rushland plant community occupies the central parts of SNAs 814 and 815, forming a dense tall canopy dominated by jointed wire rush (*Apodasmia similis*). Isolated mingimingi (*Coprosma propinqua*) shrubs and small crack willow* trees are emergent from the reedland. Other species present at open sites within the reedland are pukio (*Carex secta*), soft rush* (*Juncus effusus*), cocksfoot* (*Dactylis glomerata*), yarrow* (*Achillea millefolium*) and Californian thistle* (*Cirsium arvense*).



jointed wire rush

Sedgeland:

Tall sedgeland dominated by pukio forms large patches at the two lower SNAs (814 and 815) and is the main plant community at the upper SNA (816). Other species commonly present are rautahi (*Carex coriacea*), Yorkshire fog* (*Holcus lanatus*), lotus* (*Lotus pedunculatus*), creeping buttercup* (*Ranunculus repens*), jointed rush* (*Juncus articulatus*), dock* (*Rumex conglomeratus*), stitchwort* (*Stellaria graminea*) and soft rush*. Occasionally present are mingimingi shrubs and, at the upper wetland (SNA 816) a single manuka (*Leptospermum scoparium*) shrub. Also present at the upper wetland (SNA 816) are swamp kiokio (*Blechnum minus*) and *Blechnum penna-marina*.

This tall sedgeland community grades at its margins to a low sedgeland community dominated by rautahi and bog rush (*Schoenus pauciflorus*). Other species commonly present are jointed rush*, Yorkshire fog*, Chewings fescue* (*Festuca rubra*), creeping buttercup*, dock*, *Hypnum cupressiforme* and another moss species. Additional species present at wet sites are monkey musk* (*Mimulus*

guttatus), selfheal* (*Prunella vulgaris*) and floating sweet grass (*Glyceria fluitans*). Occasional gorse* (*Ulex europaeus*) plants are present, though mostly dead (sprayed).

Additional species adjacent to the middle wetland (SNA 815) are a patch of tall crack willow* trees and planted cabbage tree (*Cordyline australis*), flax (*Phormium tenax*) and toetoe (*Cortaderia richardii*).

Cushionfield:

This plant community occupies seepage slopes on the main wetland margins, frequently in shallow swales which drain to the wetland. At some sites it comprises a peaty bog which is elevated above the surrounding pasture and is soft and spongy as if floating on water. Dominant species are rautahi, jointed rush*, an unidentified low-growing sedge (*Carex* sp.) and a fleshy rush (*Juncus* sp.).



Other species commonly present are bog rush, lotus*, white clover* (*Trifolium repens*), hawkbit* (*Leontodon taraxacoides*), daisy* (*Bellis perennis*), sphagnum moss (*Sphagnum cristatum*), wire moss (*Polytrichum juniperinum*), *Hypnum cupressiforme*, and an unidentified moss. Turfy and muddy sites support a number of notable species, including remuremu (*Selliera radicans*), *Gonocarpus micranthus*, willowherb (*Epilobium* sp.), *Leptinella squalida* subsp. *mediana* and a small buttercup (*Ranunculus* sp.).



sedgeland (foreground), rushland (centre) and reedland (rear) at SNA 814

Fauna:

Native birds observed during this survey were paradise shelduck (*Tadorna variegata*), pukeko (*Porphyrio porphyrio*), harrier (*Circus approximans*), white-faced heron (*Ardea novaehollandiae*), spur-winged plover (*Vanellus miles*), grey warbler (*Gerygone igata*), fantail (*Rhipidura fuliginosa*) and

kingfisher (*Halcyon sancta*). A low booming call, presumably of a bittern (*Botaurus poiciloptilus*), was heard from the dense reedland at the lower wetland (SNA 814). Comprehensive survey of other indigenous fauna was not possible.

Notable Flora, Fauna and Habitats:

Notable features of these SNAs are the presence of indigenous vegetation within a ‘chronically threatened’ land environment and within an ecological district where lowland indigenous vegetation is substantially depleted. Wetlands are a national priority for protection of biodiversity on private land (MfE and DOC, 2007) and seepages are a ‘nationally vulnerable’ ecosystem (Holdaway *et al*, 2012). The likely presence of bittern is notable, as this species is listed as ‘nationally endangered’ (Robertson *et al*, 2017).

A notable feature of SNA 814 is the presence and population size of two plant species that are more typically found at saline coastal sites: jointed wire rush (*Apodasmia similis*) and remuremu (*Selliera radicans*). This is the only inland location at which these two species have been observed in Timaru District during the SNA survey. The sites also support a one of the largest areas of wetland vegetation in this part of Timaru District.



Selliera radicans

Notable Plant and Animal Pests:

The most prominent plant pest at these SNAs is crack willow, though it has only a scattered presence and could easily be controlled. Gorse is also present, though is uncommon and has been controlled. Numerous other ubiquitous plant species typical of wetlands are present, including jointed rush, Yorkshire fog, Chewings fescue, cocksfoot, creeping buttercup, floating sweet grass, monkey musk and white clover. However, these low-growing species do not pose a significant threat. Animal pests were not surveyed.

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

The boundaries of these three SNAs have been drawn to include the main areas of wetland vegetation. This may not be the most practical boundary for fencing. The wetland plant communities are surrounded by developed pasture, except at the southwest corner of SNA 814 where they adjoin young plantation forest. Smaller isolated areas of wetland vegetation are present elsewhere in this broad valley floor and downstream.



sphagnum moss and wire moss (top left)

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	H	Indigenous vegetation that is representative of the wetland vegetation originally present in the ecological district, and mostly typical of that remaining in the ecological district.
Rarity	H	Indigenous vegetation within a 'chronically threatened' land environment. Supports wetland vegetation which provides likely habitat for a nationally endangered bird species: bittern. Supports good populations of two locally-uncommon plant species at their inland distributional limit: jointed wire rush and remuremu.
Diversity and pattern	M/H	Plant species diversity is moderate, though relatively high for a wetland.
Distinctiveness/special features	M	The presence of two typically coastal species (jointed wire rush and remuremu) is a special feature.
Other Criteria		
Size/shape	H	A relatively large area of indigenous wetland vegetation for the Geraldine Ecological District.
Connectivity	M/H	Is part of a series of wetlands which are hydrologically connected along a small stream.
Long-term Sustainability	M	Control of crack willow and gorse, and maintenance of the natural water table will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

Criteria	Yes/No	Comments
Representativeness	Yes	Indigenous vegetation that is representative and is typical/characteristic of the natural diversity of the ecological district. A relatively large example of its type within the ecological district.
Rarity/Distinctiveness	Yes	Indigenous vegetation that has been reduced to less than 20% of its former extent in the ecological district; and provides likely habitat for a nationally endangered bird species and two locally uncommon plant species.
Diversity and Pattern	Yes	Supports several wetland plant communities and a moderate diversity of plant species.
Ecological Context	Yes	A series of wetland plant communities connected hydrologically along a small stream, and buffers part of that stream.

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

The main areas of wetland vegetation in this valley have been voluntarily set aside and informally protected by the landowner (Alan Cone). The low-lying and poorly-drained nature of the area limits its potential for development. There are a large number of low-growing exotic species at the site, though it is largely free from invasive woody species, except for scattered plants of crack willow and gorse. Mr Cone is interested to provide formal protection for the site and fence the wetland vegetation from grazing.

Discussion:

This site easily meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a significant natural area. Important values are that it is a relatively large area of wetland vegetation at low altitude, provides likely habitat for bittern, and supports good populations of locally uncommon plant species.

TIMARU DISTRICT SNA SURVEY

SNA 817

Area Name: Cone scarp forest	Property: Alan Cone
Ecological District: Geraldine	Nearest Locality: Kakahu
Map ref. (NZTM): 1445336E-5107371N	Area Size (ha): 2.25 Altitude (m): 240-260
Assessor: Mike Harding	Survey Time: 1 hour Survey Date: 17-08-17

General Description:

This SNA is located on a steep south-facing scarp at the central part of the property. A vehicle track traverses the lower boundary of the forest and a fence is present along the upper (northern) boundary.

Plant Communities:

The main plant community at the site is indigenous hardwood forest with young podocarp trees, as described below. Naturalized species are indicated with an asterisk*.

The forest canopy is dominated by mahoe (*Melicotus ramiflorus*), broadleaf (*Griselinia littoralis*), mapou (*Myrsine australis*), five-finger (*Pseudopanax arboreus*), lemonwood (*Pittosporum eugenoides*), matipo (*Pittosporum tenuifolium*), fuchsia (*Fuchsia excorticata*), pohuehue (*Muehlenbeckia australis*) and, at the east end, kanuka (*Kunzea ericoides*). Other canopy species present are cabbage tree (*Cordyline australis*), wineberry (*Aristotelia serrata*), lancewood (*Pseudopanax crassifolius*), marbleleaf (*Carpodetus serratus*), bush lawyer (*Rubus cissoides*), native jasmine (*Parsonsia heterophylla*) and three young totara (*Podocarpus totara*) trees. A large old kahikatea (*Dacrycarpus dacrydioides*) tree is present in pasture adjacent to the south side of the forest.

The forest understorey is relatively open at most parts of the SNA, due in part to stock grazing. Understorey species commonly present are *Coprosma rhamnoides*, *Coprosma crassifolia*, mahoe and mapou. Other understorey species are five-finger, bush lawyer, poataniwha (*Melicope simplex*), *Coprosma rotundifolia*, *Coprosma areolata*, lancewood, pate (*Schefflera digitata*), poroporo (*Solanum laciniatum*), velvety nightshade* (*Solanum chenopodioides*) and nightshade* (*Solanum nigrum*).



SNA 817

Common ground-cover species are hen and chicken's fern (*Asplenium bulbiferum*), necklace fern (*Asplenium flabellifolium*), wall lettuce* (*Mycelis muralis*), pennywort (*Hydrocotyle* sp.) and, at the east end, large patches of *Lagenifera petiolata* and *Leptinella squalida*. Less commonly present are *Asplenium richardii*, *Asplenium bookerianum*, hanging spleenwort (*Asplenium flaccidum*), button fern (*Pellaea rotundifolia*), common shield fern (*Polystichum neozelandicum*), *Blechnum fluviatile*, male fern*



(*Dryopteris filix-mas*), bidibid (*Acaena* sp.) and occasionally seedlings of mahoe, mapou, *Coprosma crassifolia* and five-finger.

Additional species present at the forest margin or at forest openings are mingimingi (*Coprosma propinqua*), matagouri (*Discaria toumatou*), native broom (*Carmichaelia australis*), Himalayan honeysuckle* (*Leycesteria formosa*), gorse* (mostly sprayed), bracken (*Pteridium esculentum*), foxglove* (*Digitalis purpurea*) and mistletoe (*Ileostylus micranthus*).

open forest understory

Fauna:

Native birds observed during this brief survey were grey warbler (*Gerygone igata*), fantail (*Rhipidura fuliginosa*), bellbird (*Anthornis melanura*), rifleman (*Acanthisitta chloris*) and, adjacent to the site, paradise shelduck (*Tadorna variegata*), spur-winged plover (*Vanellus miles*) and harrier (*Circus approximans*). The forest lies within the range of the South Canterbury population of long-tailed bat (*Chalinolobus tuberculatus* “South Island”). Comprehensive survey of other indigenous fauna was not practical.

Notable Flora, Fauna and Habitats:

Notable features of this SNA are the presence of indigenous vegetation within an ‘at risk’ land environment and within an ecological district where lowland indigenous vegetation is substantially depleted. The presence of podocarps (young totara trees and the large remnant kahikatea tree) and likely habitat for long-tailed bat is also notable.



Notable Plant and Animal Pests:

The forest is relatively free of invasive plant pests, except for gorse and Himalayan honeysuckle at forest openings, though neither are common. These weeds and other exotic species, such as male fern and the nightshades, do not pose a significant threat to the forest community. Animal pests were not surveyed, though possums are most likely present.

Lagenifera petiolata and button fern under open kunuka canopy

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

The boundaries of this SNA have been drawn to include the main area of forest and to include the open kanuka forest at the east part of the site and the tall lone kahikatea tree at the south side of the forest. The forest is fenced along its upper (northern) boundary and buffered by its location on a steep slope. It lies near to other small patches of indigenous forest.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Indigenous vegetation that is moderately representative of the forest originally present in the ecological district, and typical of that remaining in the ecological district.
Rarity	M/H	Indigenous vegetation within an 'at risk' land environment. Provides suitable roosting habitat for a 'threatened' species: long-tailed bat.
Diversity and pattern	M	Plant species diversity is moderate and typical.
Distinctiveness/special features	M	The tall remnant kahikatea tree is a special feature.
Other Criteria		
Size/shape	M/H	A moderate sized area of indigenous vegetation that is well buffered.
Connectivity	M	Isolated from other areas of indigenous forest but part of a network of fauna habitat.
Long-term Sustainability	M/H	Continued control of possums and protection of the forest understorey from grazing will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

Criteria	Yes/No	Comments
Representativeness	Yes	Indigenous vegetation that is representative and is typical/characteristic of the natural diversity of the ecological district.
Rarity/Distinctiveness	Yes	Indigenous vegetation that has been reduced to less than 20% of its former extent in the ecological district; and provides suitable roosting habitat for a threatened species (long-tailed bat).
Diversity and Pattern	No	Plant species and habitat diversity is moderate and typical.
Ecological Context	Likely	Contributes to a network of forest bird and bat habitat.

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

This area has been informally protected by the landowner. The steepness of the site means it has limited potential for further development. The landowner is interested in excluding grazing animals by fencing the lower forest boundary.

Discussion:

This site meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a significant natural area. Important values are that it supports regenerating podocarp-hardwood forest, provides suitable habitat for long-tailed bat, and contributes to an important network of habitat for forest birds.

TIMARU DISTRICT SNA SURVEY

SNA 818

Area Name: Cone podocarp remnant
Ecological District: Geraldine
Map ref. (NZTM): 1445866E-5107420N
Assessor: Mike Harding

Property: Alan Cone
Nearest Locality: Kakahu
Area Size (ha): 0.91 **Altitude (m):** 220-240
Survey Time: ½ hour **Survey Date:** 17-08-17

General Description:

This SNA is located on a moderately-steep south-facing slope and adjacent terrace at the east corner of the property. It adjoins exotic plantation forest and low scrub/vineland in the valley-head to the south.

Plant Communities:

The main plant community at the site is indigenous hardwood forest with large remnant podocarp trees, as described below. Naturalized species are indicated with an asterisk*.

The hardwood forest canopy comprises totara (*Podocarpus totara*), kanuka (*Kunzea ericoides*), cabbage tree (*Cordyline australis*), mahoe (*Melicytus ramiflorus*), lemonwood (*Pittosporum eugenoides*), narrow-leaved lacebark (*Hoheria angustifolia*), broadleaf (*Griselinia littoralis*), marbleleaf (*Carpodetus serratus*), mapou (*Myrsine australis*), lancewood (*Pseudopanax crassifolius*), wineberry (*Aristotelia serrata*), fuchsia (*Fuchsia excorticata*), native jasmine (*Parsonsia heterophylla*), bush lawyer (*Rubus cissoides*) and pohuehue (*Muehlenbeckia australis*).

Understorey and forest margin species are pate (*Schefflera digitata*), turepo (*Streblus heterophyllus*), *Coprosma rotundifolia*, mingimingi (*Coprosma propinqua*), gorse* (*Ulex europaeus*), blackberry* (*Rubus fruticosus*) and bracken (*Pteridium esculentum*).

Several tall old kahikatea (*Dacrycarpus dacrydioides*) trees are present, mostly at the lower (south) margin of the forest patch.



SNA 818

Fauna:

Native birds observed during this brief survey were grey warbler (*Gerygone igata*) and rifleman (*Acanthisitta chloris*). The forest lies within the range of the South Canterbury population of long-

tailed bat (*Chalinolobus tuberculatus* “South Island”). Comprehensive survey of other indigenous fauna was not practical.

Notable Flora, Fauna and Habitats:

Notable features of this SNA are the presence of indigenous vegetation within an ‘at risk’ land environment and within an ecological district where lowland indigenous vegetation is substantially depleted. The presence of large remnant kahikatea trees and likely habitat for long-tailed bat is also notable.

Notable Plant and Animal Pests:

The forest is relatively free of invasive plant pests, except for gorse and blackberry at the forest margins. These weeds do not pose a significant threat to the forest community. The presence of the native climber, pohuehue, may pose a smothering threat to trees at the forest margin. Animal pests were not surveyed, though possums are most likely present.

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

The boundaries of this SNA have been drawn to include the main area of forest and to include the tall remnant kahikatea trees at the lower edge of the forest. The forest is partly buffered by its location. It lies near to other small patches of indigenous forest.



tall kahikatea trees (centre) at SNA 818

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Indigenous vegetation that is moderately representative of the forest originally present in the ecological district, and typical of that remaining in the ecological district.
Rarity	M/H	Indigenous vegetation within an 'at risk' land environment. Provides suitable roosting habitat for a 'threatened' species: long-tailed bat.
Diversity and pattern	M	Plant species diversity is moderate and typical.
Distinctiveness/special features	M	The presence of tall remnant kahikatea trees is a special feature.
Other Criteria		
Size/shape	M	A small area of indigenous vegetation that is partly buffered.
Connectivity	M	Isolated from other areas of indigenous forest but part of a network of fauna habitat.
Long-term Sustainability	M	Continued control of possums and protection of the forest understorey from grazing will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

Criteria	Yes/No	Comments
Representativeness	Yes	Indigenous vegetation that is representative and is typical/characteristic of the natural diversity of the ecological district.
Rarity/Distinctiveness	Yes	Indigenous vegetation that has been reduced to less than 20% of its former extent in the ecological district; and provides suitable roosting habitat for a threatened species (long-tailed bat).
Diversity and Pattern	No	Plant species and habitat diversity is moderate and typical.
Ecological Context	Likely	Contributes to a network of forest bird and bat habitat.

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

This area has been informally protected by the landowner. The location of the site means it has limited potential for further development.

Discussion:

This site meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a significant natural area. Important values are that it supports hardwood forest with large remnant podocarp trees, provides suitable habitat for long-tailed bat, and contributes to an important network of habitat for forest birds.

TIMARU DISTRICT SNA SURVEY

SNA 819

Area Name: Cone roadside wetland
Ecological District: Geraldine
Map ref. (814): 1444298E-5106343N
Assessor: Mike Harding

Property: Alan Cone
Nearest Locality: Kakahu
Area Size (ha): 1.24 **Altitude (m):** 120
Survey Time: ½ hour **Survey Date:** 17-08-17

General Description:

This SNA is located on the valley floor at the west boundary of the property, adjacent to Winchester Hanging Rock Road. It is a palustrine wetland alongside a small un-named stream which flows to the Opihi River at Hanging Rock. The wetland and adjoining areas of pasture have been fenced from grazing and planted.

Plant Communities:

The site was only surveyed briefly, as it is fenced and being restored through a planting programme. The main plant communities present are sedgeland, rushland and rank pasture, as described below. Naturalized species are indicated with an asterisk*.

Tall sedgeland dominated by pukio is present at patches in the central part of the area, and alongside the stream. A patch of tall dead crack willow* (*Salix fragilis*) trees is present at the centre of the site. Vegetation surrounding the sedgeland is dominated by patches of bog rush (*Schoenus pauciflorus*) and rautahi (*Carex coriacea*) within areas of tall pasture grasses. Parts of the grassland have been planted with a range of species including toetoe (*Cortaderia richardii*), cabbage tree (*Cordyline australis*), harakeke/flax (*Phormium tenax*), mingimingi (*Coprosma propinqua*), kohuhu (*Pittosporum tenuifolium*), kahikatea (*Dacrycarpus dacrydioides*), totara (*Podocarpus totara*) and beech (*Fuscopora cliffortioides*).



SNA 819 alongside Winchester Hanging Rock Road

Notable Flora, Fauna and Habitats:

Notable features of this SNA is the presence of indigenous vegetation within a 'chronically threatened' land environment and within an ecological district where lowland indigenous vegetation is substantially depleted. Wetlands are a national priority for protection of biodiversity on private land (MfE and DOC, 2007).

Notable Plant and Animal Pests:

The most prominent plant pest is crack willow, though the existing trees appear dead. Exotic grasses and other pasture weeds are dominant at areas away from the taller pukio or bog rush patches. However, this rank pasture buffers the wetland plant communities and provides space to restore native vegetation. Animal pests were not surveyed.

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

The boundary of this SNA has been drawn to include the main fenced area, which includes the wetland vegetation and the peripheral areas where the restoration planting has occurred. Scattered patches of wetland vegetation are present at the stream margins upstream and downstream from the site. A series of larger wetlands (SNAs 814, 815 and 816) is present in a nearby valley.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Indigenous vegetation that is moderately representative of the wetland vegetation originally present in the ecological district, and typical of that remaining in the ecological district.
Rarity	M/H	Indigenous vegetation within a 'chronically threatened' land environment.
Diversity and pattern	M	Plant species diversity is moderate.
Distinctiveness/special features	L	No special features were observed (though the site was only superficially surveyed).
Other Criteria		
Size/shape	M	A relatively small area of indigenous wetland vegetation, though is well buffered and protected.
Connectivity	M	Lies close to other areas of wetland vegetation along the stream.
Long-term Sustainability	M/H	Continued control of crack willow, and possibly suppression of pasture grasses (or continued restoration planting) will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

Criteria	Yes/No	Comments
Representativeness	Yes	Indigenous vegetation that is representative and is typical/characteristic of the natural diversity of the ecological district.
Rarity/Distinctiveness	Yes	Indigenous vegetation that has been reduced to less than 20% of its former extent in the ecological district.
Diversity and Pattern	No	Does not appear (from a superficial survey) to be particularly diverse, though may become so with restoration planting.
Ecological Context	Yes	Buffers and protects parts of the stream.

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

This area of wetland vegetation and adjacent pasture have been voluntarily set aside, fenced and informally protected by the landowner. The low-lying and poorly-drained nature of the area limits its potential for development. Low-growing exotic species are dominant at parts of the site, though it is largely free from invasive woody species, except for a patch of now-dead crack willow.

Discussion:

This site meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a significant natural area. Important values are that it is an area of wetland vegetation at low altitude, is well buffered and provides habitat for wetland bird species.

REFERENCES CITED:

Cieraad, E.; Walker, S.; Price, R.; Barringer, J. 2015. An updated assessment of indigenous cover remaining and legal protection in New Zealand's land environments. *NZ Journal of Ecology* 39: 309-315.

Cox, S.C; Barrell, D.J.A (compilers). 2007. Geology of the Aoraki area. *Institute of Geological and Nuclear Sciences 1:250,000 geological map 15*. Institute of Geological and Nuclear Sciences Limited, Lower Hutt.

Holdaway, R.J.; Wiser, S.K.; Williams, P.A. 2012. Status assessment of New Zealand's naturally uncommon ecosystems. *Conservation Biology* 26: 619-629.

Leathwick, J.; Wilson, G.; Rutledge, D.; Wardle, P.; Morgan, F.; Johnston, K.; McLeod, M.; Kirkpatrick, R. 2003. *Land Environments of New Zealand*. David Bateman, Auckland. 184p.

McEwen, W.M. (editor) 1987. Ecological regions and districts of New Zealand, third revised edition (Sheet 4). *New Zealand Biological Resources Centre Publication No.5*. Department of Conservation, Wellington, 1987.

MfE and DOC, 2007. Protecting Our Places. Ministry for the Environment and Department of Conservation, Wellington.

O'Donnell, C.F.J. 2000. Distribution, status and conservation of long-tailed bat (*Chalinolobus tuberculatus*) communities in Canterbury, New Zealand. *Unpublished Report U00/38*. Environment Canterbury, Christchurch.

O'Donnell, C.F.J.; Christie, J.E.; Lloyd, B.; Parsons, S.; Hitchmough, R.A. 2012. Conservation status of New Zealand bats 2012. *New Zealand Threat Classification Series 6*. Department of Conservation, Wellington.

Robertson, H.A.; Baird, K.; Dowding, J.E.; Elliot, G.P.; Hitchmough, R.A.; Miskelly, C.M.; McArthur, N.; O'Donnell, C.F.J; Sagar, P.M.; Scofield, R.P.; Taylor, G.A. 2017. Conservation status of New Zealand birds, 2016. *New Zealand Threat Classification Series 19*. Department of Conservation, Wellington.

Williams, P.A.; Wiser, S.; Clarkson, B.; Stanley, M.C. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *NZ Journal of Ecology* 31: 119-128.