

TIMARU DISTRICT
SIGNIFICANT NATURAL AREAS
SURVEY

GOULD PROPERTY



**Report prepared for Timaru District Council by Mike Harding
May 2013**

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner: Richard Gould
Valuation References: 24810/115.00
Address: Watts Road, RD8, Ashburton.
Location: On the south side of Opihi River, between Hanging Rock and Opuha River confluence.
Ecological District:..... Geraldine Ecological District.
TDC Land Type:..... 'Soft Rock Hills and Downs'
Land Environments:..... N3.1a and K3.1b.

ECOLOGICAL CONTEXT:

The property covers the northern part of a prominent limestone landform on the south side of the Opihi River near Totara Valley. The property lies in Geraldine Ecological District.

It is likely that the original vegetation of this area was predominantly podocarp-hardwood forest, dominated by matai and totara. 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.

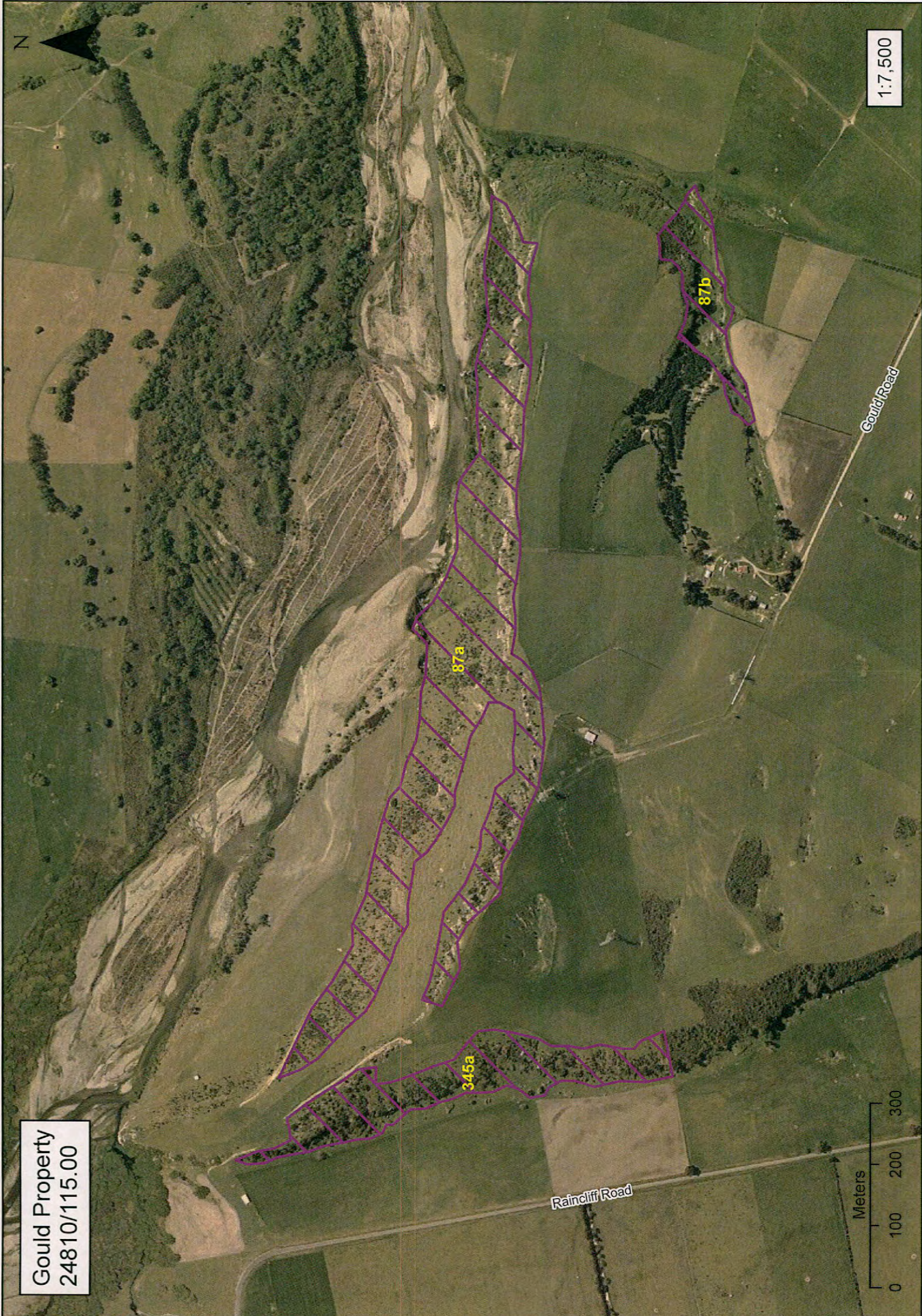
Today the original forest cover in this part of Geraldine Ecological District is largely confined to remnants in gullies or on steep slopes associated with limestone scarps. Otherwise, the indigenous vegetation of the ecological district is substantially depleted or modified. The indigenous fauna would have originally been significantly more numerous and diverse, with a greater range of birds, lizards and invertebrates than is presently found in the area.

SIGNIFICANT AREAS ON THE PROPERTY:

Indigenous vegetation on the property comprises hardwood forest, treeland, scrub, shrubland, sparsely vegetated rockland associated with limestone bluffs, and a small area of wetland vegetation in one valley. The property lies near to areas of indigenous forest, shrubland and rockland vegetation on adjoining properties, contributing to the network of fauna habitat in the wider area. This part of the ecological district is a stronghold for a remnant South Canterbury population of long-tailed bat; a threatened (nationally critical) species.

The property was surveyed as part of the District-wide survey of Significant Natural Areas during January 2013. Most parts of the property were surveyed. Three areas, comprising approximately 22 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
87a	Gould Limestone	J38: 515-665	15.61	Hardwood forest; shrubland; rockland.
87b	Taniwha Gully	J38: 522-661	2.20	Treeland; shrubland; rockland, sedgeland.
345a	Raincliff Road Scarp	J38: 508-664	4.94	Hardwood forest; shrubland; rockland.



Gould Property
24810/115.00

Raincliff Road

Gould Road

Meters
0 100 200 300

1:7,500

N

87b

87a

345a

The boundaries of these SNAs are illustrated on the aerial photograph and the values described 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, track construction, spraying with herbicides and 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.



The un-described cushion chickweed (Colobanthus aff. strictus) is present on the property.

OTHER AREAS INSPECTED ON THE PROPERTY:

The open grassy slope at the western end of SNA 87a, the valley downstream from SNA 87b, and the large doline (sinkhole) above (east of) SNA 345a were inspected. Although these areas do not presently support vegetation that meets the significance criteria, all three areas have ecological values which complement the adjacent SNAs. Any effort to protect or restore these areas would be worthwhile and commendable.

TIMARU DISTRICT SNA SURVEY

SNA 87a

Area Name: Gould Limestone Scarp	Property: Gould
Location (central map reference): J38: 515-665	Nearest Locality: Totara Valley
Ecological District: Geraldine	Area Size (ha): 15.61 Altitude (m): 140-240
Surveyors: Alice Shanks	Survey Time: 5 hours Survey Date: 25-01-13

General Description:

This SNA lies on a prominent limestone scarp on the south side of the Opihi River between Hanging Rock Bridge and the confluence of the Opuha River. It is a well-known feature, used by rock-climbers and providing good habitat for South Island long-tailed bat; a threatened (nationally critical) species.

Plant Communities:

Three main plant communities are present: indigenous hardwood forest; shrubland/scrub; and, lower-growing plant species on the limestone scarp and boulders (herbfield/rockland). These plant communities are described separately below, though they grade to one another. Naturalized (exotic) species are indicated with an asterisk*.

Indigenous hardwood forest:

This plant community is present as scattered patches on steeper slopes, notably amongst limestone boulders or adjacent to the limestone scarp. Canopy species commonly present are mahoe, broadleaf, kowhai, cabbage tree, pohuehue, native bindweed and leafless lawyer. Occasionally present are trees of barberry*, plum* and walnut*.

Indigenous scrub/shrubland:

This plant community ranges from scattered shrubs to denser patches of scrub. Canopy species commonly present are *Coprosma propinqua*, matagouri, porcupine shrub, native broom, leafless lawyer, lawyer, native bindweed, native jasmine, pohuehue and mistletoe, with emergent cabbage trees. Also present are Himalayan honeysuckle*, barberry*, blackberry*, gorse* and broom*.

Herbfield/rockland:

Exposed limestone scarps and boulders are sparsely vegetated, with mostly low-growing plants occupying crevices, pockets and ledges. Limestone scarps are a naturally-uncommon ecosystem and many of the plant species present are either confined to or more common on limestone substrates.

Important species recorded are: *Colobanthus* aff. *strictus* (an un-described cushion chickweed confined to South Canterbury limestone); *Gingidia enysii* (an un-described native aniseed present on Canterbury limestone) and *Einadia allanii* (at risk; naturally uncommon). Other important species recorded in an earlier (1984) survey by the Department of Conservation, but not recorded during this assessment, are *Craspedia* aff. *unifolia* and the shrub *Teucrium parvifolium* (at risk; declining).

Taller plant species associated with limestone are flax, koromiko and toatoa. Shrubland, scrub and forest patches are present on gentler slopes at the base of the steeper bluffs.

A full list of plant species recorded is attached to this report.

Birds/Fauna Observed:

Native birds observed during this survey were silvereye, grey warbler, bellbird and harrier. No lizards were observed, possibly due to hot weather during the survey, though the area is likely to provide suitable habitat for lizards. This limestone scarp and nearby habitat are a stronghold for the South Canterbury population of long-tailed bat, a threatened (nationally critical) species.

Notable Flora, Fauna and Habitats:

Important features of this area are: the presence and extent of exposed limestone scarp and the habitat it provides for specialized limestone plants; the presence of at-risk and un-described plant species; the habitat the area provides for long-tailed bat (a nationally critical species); and, the size (extent) of the area.



Looking west along the lower slopes of SNA 87a

Notable Plant and Animal Pests:

A substantial number of naturalized plant species are present at the site. Of these, the species that pose the greatest threat are barberry, burdock, Chewings fescue, plum, old man's beard, gorse and broom. Barberry and plum are not yet dominant but their fleshy fruits are readily dispersed by birds. Gorse and broom are present at grassland sites on the main slopes. If uncontrolled these two weed species could become dominant, altering and perhaps slowing regeneration of native woody species. Chewings fescue forms a dominant cover on steeper slopes and in pockets and on ledges of the limestone scarp, where it overtops and excludes native limestone plants. A few shoots of old man's beard were observed at the western end of the area. The native climber, pohuehue (*Muehlenbeckia australis*) is dominant in places, smothering trees in the forest canopy.

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

The boundaries selected for this SNA follow the approximate extent of the limestone scarp and boulders, and the associated indigenous vegetation. The moderately-steep central slope between the upper and lower limestone bluffs at the western end of the area has been excluded from the SNA, as it is dominated by naturalized grasses. However, it is part of the limestone landform and regeneration and/or restoration of this enclave would add considerable ecological value to the SNA. This SNA lies close to other areas of indigenous vegetation and habitat on this limestone landform: (SNA 345a to the west and SNA 87b to the east).



The “jungle land” part of SNA 87a

Condition and Management Issues:

The SNA is in moderate condition. Distribution and composition of indigenous plant communities at accessible sites have presumably been influenced over the years by grazing. Grazing pressure now appears low and the biggest threat to plant communities is naturalized plants, notably woody weeds and grasses such as Chewings fescue. The most important management issue is weed control, including some containment or selective control of pohuehue.

Mr Gould has recently commenced construction of a vehicle track across the slopes beneath the limestone bluff at the eastern end of the area. While areas of denser indigenous vegetation have largely been avoided, this track and any extension of the track may compromise the ecological integrity of the SNA. An assessment of the effects of this track on significant indigenous vegetation has been provided separately.

Property Owner Comment:

Mr Gould is sympathetic to protection of this area. He also wishes to improve access through the area, hence the recent construction of a vehicle track.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Plant communities on the exposed limestone are moderately to highly representative of the original vegetation of this part of the ecological district. Plant communities at other parts are moderately representative and typical of those remaining in this area.
Rarity	H	Provides important habitat for a threatened (nationally critical) species (long-tailed bat) and provides good habitat for an at risk plant species (<i>Einadia allanii</i>) and an un-described limestone plant species (<i>Colobanthus</i> aff. <i>strictus</i>). Lies within a chronically threatened Level IV land environment (K3.1b).
Diversity and pattern	M/H	The SNA provides a range of limestone habitats, including exposed rock, inaccessible ledges and crevices, limestone boulders, overhangs and caves, and moderately-steep soil-covered slopes.
Distinctiveness/special features	M/H	The main bluff is one of the largest, highest and most visually prominent limestone scarps in the area.
Other Criteria		
Size/shape	H	A large area for this part of Geraldine Ecological District, with a reasonably good shape and mostly well buffered.
Connectivity	M/H	Lies close to and provides an effective link between other areas of indigenous vegetation on limestone.
Long-term Sustainability	M	Plant pest control and possibly animal 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):

Mr Gould has provided informal protection for this area for many years. He has expressed an interest in providing formal protection by way of a QEII covenant. This SNA comprises steep rocky slopes that are largely unsuitable for further farm development.

Discussion:

This area very easily meets the District Plan criteria for a Significant Natural Area. Important features of the area are: the presence and extent of exposed limestone scarp and the habitat it provides for specialized limestone plants; the presence of at-risk and un-described plant species; the habitat the area provides for long-tailed bat (a nationally critical species); and, the size (extent) of the area. The area is a popular destination for rock climbing and is an impressive and prominent landform.

TIMARU DISTRICT SNA SURVEY

SNA 87b

Area Name: Taniwha Gully

Location (central map reference): J38: 522-661

Ecological District: Geraldine

Surveyors: Alice Shanks

Property: Gould

Nearest Locality: Totara Valley

Area Size (ha): 2.2

Altitude (m): 140-180

Survey Time: 2 hours

Survey Date: 25-01-13

General Description:

This SNA lies in a small incised limestone valley at the eastern edge of the property. It is linked by the lower valley to the eastern end of SNA 87a. The SNA includes the site of the important and well-known taniwha Maori cave drawing.

Plant Communities:

Three main plant communities are present: indigenous treeland/shrubland; sedgeland (wetland); and lower-growing plant species on the limestone scarp (herbfield/rockland). These plant communities are described separately below, though they grade to one another. Naturalized (exotic) species are indicated with an asterisk*.

Indigenous treeland/shrubland:

This plant community contains scattered tall trees of mahoe, broadleaf, cabbage tree and kowhai, with climbers: pohuehue, native bindweed and lawyer. Koromiko and mountain akeake are present at the limestone bluffs. Gentler valley sides support pasture with scattered bushes of *Coprosma propinqua* (with mistletoe) and native broom. These slopes grade down-valley to denser patches of *Coprosma propinqua* and patches of gorse* and broom*. Also present are trees of radiata pine*, macrocarpa*, ash*, plum* and elderberry*.

Sedgeland (wetland):

A damp area at a gentler part of the valley floor is dominated by naturalized grasses. Indigenous species present are cabbage tree, flax and the sedges *Carex virgata* and *Carex sinclairii*.

Herbfield/rockland:

Exposed limestone scarps and boulders are sparsely vegetated, with mostly low-growing plants occupying crevices, pockets and ledges. Indigenous species present include *Einadia allanii*, *Colobanthus* aff. *strictus*, *Lagenifera petiolata*, cardamine, *Asplenium lyallii*, *Blechnum chambersii* and maidenhair fern.

A full list of plant species recorded is attached to this report.

Birds/Fauna Observed:

Native birds observed during this brief survey were fantail, welcome swallow and harrier. The wider area is a stronghold for the South Canterbury population of long-tailed bat, a threatened (nationally critical) species.

Notable Flora, Fauna and Habitats:

Important features of this area are: the presence of an exposed limestone scarp and the habitat it provides for specialized limestone plants; the presence of at-risk (*Einadia allanii*) and un-described (*Colobanthus* aff. *strictus*) plant species; the habitat the area provides for long-tailed bat (a nationally critical species); and, the presence of a small albeit modified wetland.



The down-valley end of SNA 87b

Notable Plant and Animal Pests:

A number of naturalized plant species are present at the site, notably naturalized grasses and, at the down-valley end, gorse and broom. Other species that pose a threat are plum, hawthorn, ash and elderberry. The native climber, pohuehue (*Muehlenbeckia australis*), is dominant in places, covering native shrubs.

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

The boundaries of this area enclose the scattered native trees and areas of exposed limestone. At the down-valley end, the site adjoins areas of gorse and broom. The limestone scarp and indigenous trees outside the SNA in the lower valley are on the adjacent property. At the up-valley end the site adjoins grassed areas and the main access track.

Condition and Management Issues:

Vegetation at this SNA is quite modified, except for scattered trees and shrubs and small sparsely vegetated areas of exposed limestone. The site appears to get considerable use, as it contains the protected (fenced) overhang with the taniwha rock drawing. A mown foot access track traverses the upper (southwest) part of the valley. A newly constructed vehicle access track now bisects the site. The most important management issue is continued control of invasive weeds. The site has good potential for restoration, especially as a well-used site with historic importance.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	Vegetation over most of this SNA is modified. However, the exposed limestone provides small areas of more intact and representative indigenous vegetation and habitat.
Rarity	H	Provides habitat for a threatened (nationally critical) species (long-tailed bat) and supports an at risk plant species (<i>Einadia allanii</i>) and an un-described limestone plant species (<i>Colobanthus</i> aff. <i>strictus</i>). Lies within an acutely threatened Level IV land environment (N3.1a).
Diversity and pattern	M	The SNA provides limestone habitat (including exposed rock, crevices, boulders and overhangs) wetland habitat and areas of moderately-steep soil-covered slopes.
Distinctiveness/special features	M	The small wetland and large limestone overhangs are distinctive features.
Other Criteria		
Size/shape	M	A moderate sized SNA for this part of the ecological district, though not well buffered.
Connectivity	M	Lies close to a large area of indigenous vegetation on limestone (SNA 87a).
Long-term Sustainability	M	Plant pest control and possibly careful management of visitor use 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):

Mr Gould has provided informal protection for this area for many years and has willingly allowed public access. He has expressed an interest in providing formal protection by way of a QEII covenant. This SNA comprises a small incised valley that has little potential for further farm development.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are: the presence of an exposed limestone scarp and the habitat it provides for specialized limestone plants; the presence of at-risk (*Einadia allanii*) and un-described (*Colobanthus* aff. *strictus*) plant species; the habitat the area provides for long-tailed bat (a nationally critical species); and, the presence of a small albeit modified wetland.

TIMARU DISTRICT SNA SURVEY

SNA 345a

Area Name: Raincliff Road scarp	Property: Gould
Location (central map reference): J38: 508-664	Nearest Locality: Totara Valley
Ecological District: Geraldine	Area Size (ha): 4.94 Altitude (m): 120-160
Surveyors: Alice Shanks	Survey Time: 2 hours Survey Date: 25-01-13

General Description:

This SNA lies on a west-facing limestone scarp alongside Raincliff Road. At its northern end it adjoins the west end of the large limestone scarp (SNA 87a) on the property. At its southern end, indigenous vegetation extends along the scarp onto an adjoining property (SNA 345b).

Plant Communities:

Two main plant communities are present: indigenous hardwood forest and scrub; and, lower-growing plant species on the limestone scarp and boulders (herbfield/rockland). These plant communities are described separately below, though they grade with one another. Naturalized (exotic) species are indicated with an asterisk*.

Indigenous hardwood forest and scrub:

This plant community is present as semi-continuous patches on steeper slopes, notably at the lower edge of the limestone scarp or among limestone boulders below the scarp. Broadleaf and pohuehue are the dominant canopy species. Other canopy species are cabbage tree, mahoe, five-finger and lawyer. Also present are koromiko, mountain akeake, *Coprosma propinqua*, matagouri, tree nettle and elderberry*.

Herbfield/rockland:

Exposed limestone scarps and boulders are sparsely vegetated, with mostly low-growing plants occupying pockets and ledges. Indigenous species present include: *Colobanthus* aff. *strictus* (an un-described cushion chickweed confined to South Canterbury limestone), *Craspedia* aff. *unifolia*, *Einadia allanii* (at risk; naturally uncommon), blue tussock, *Parietaria debilis* and *Asplenium lyallii*.

A full list of plant species recorded is attached to this report.

Birds/Fauna Observed:

Native birds observed during this brief survey were pied stilt and paradise shelduck, both at the shallow resurgence pools below the scarp. This limestone scarp and nearby habitat are a stronghold for the South Canterbury population of long-tailed bat, a threatened (nationally critical) species.

Notable Flora, Fauna and Habitats:

Important features of this area are: the presence of an exposed limestone scarp and the habitat it provides for specialized limestone plants; the presence of at-risk (*Einadia allanii*) and un-described (*Colobanthus* aff. *strictus* and *Craspedia* aff. *unifolia*) plant species; and, the habitat the area provides for long-tailed bat (a nationally critical species).

Notable Plant and Animal Pests:

Barberry, plum, burdock and Chewings fescue are the most important plant pests present. The area lies close to populations of other invasive plant pests. Animal pests were not surveyed.



Scattered forest and shrubland at SNA 345a

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

The steeper slopes and limestone scarp, including the areas of indigenous vegetation within this SNA are fenced at the top and bottom of the slopes. The area adjoins a similar area of indigenous vegetation at its southern boundary (SNA 345b) and lies near to indigenous vegetation on the large north-facing scarp (SNA 87a) at its northern end.

Condition and Management Issues:

The forest canopy and limestone scarp vegetation is in relatively good condition. Cattle have damaged the vegetation margin and understorey along the base of the scarp. Populations of rare plants on the limestone boulders may be threatened by rock climbers. The most important management issues are control of plant pests, protection of the vegetation margins from cattle and preventing damage by rock climbers.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Woody plant communities are moderately representative of the original vegetation. Vegetation on exposed limestone is more representative.
Rarity	H	Provides habitat for a threatened (nationally critical) species (long-tailed bat) and supports an at risk plant species (<i>Einadia allanii</i>) and un-described plant species (<i>Colobanthus</i> aff. <i>strictus</i> and <i>Craspedia</i> aff. <i>unifolia</i>). Lies within an acutely threatened Level IV land environment (N3.1a).
Diversity and pattern	M	The SNA provides limestone habitat (including exposed rock and boulders) and patches of indigenous forest and shrubland.
Distinctiveness/special features	M	The area is part of a larger limestone scarp that is clearly visible from Raincliff Road.
Other Criteria		
Size/shape	M/H	A relatively large area for this part of Geraldine Ecological District, though with a long narrow shape and not well buffered.
Connectivity	M/H	Adjoins and links other areas of indigenous vegetation and limestone habitat.
Long-term Sustainability	M	Some plant and animal pest control is probably required to protect ecological values in the long term.

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

This area has been informally protected by Mr Gould. The steepness of the slope and presence of large boulders limit its suitability for further farm development.

Discussion:

This area easily meets the District Plan criteria for a Significant Natural Area. Important features of the area are: the presence of an exposed limestone scarp and the habitat it provides for specialized limestone plants; the presence of at-risk (*Einadia allanii*) and un-described (*Colobanthus* aff. *strictus* and *Craspedia* aff. *unifolia*) plant species; and, the habitat the area provides for long-tailed bat (a nationally critical species).

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)	
ash*	<i>Fraxinus excelsior</i>
barberry*	<i>Berberis glaucocarpa</i>
blackberry*	<i>Rubus fruticosus</i>
blue tussock	<i>Poa colensoi</i>
broadleaf	<i>Griselinia littoralis</i>
broom*	<i>Cytisus scoparius</i>
burdock*	<i>Arctium minus</i>
cabbage tree/ti rakau	<i>Cordyline australis</i>
cardamine	<i>Cardamine debilis</i>
Chewings fescue*	<i>Festuca rubra</i> ssp. <i>commutata</i>
elderberry*	<i>Sambucus nigra</i>
five-finger	<i>Pseudopanax arboreus</i>
gorse*	<i>Ulex europaeus</i>
hawthorn*	<i>Crataegus monogyna</i>
Himalayan honeysuckle*	<i>Leycesteria formosa</i>
koromiko	<i>Hebe salicifolia</i>
kowhai	<i>Sophora microphylla</i>
lawyer	<i>Rubus schmidelioides</i>
leafless lawyer	<i>Rubus squarrosus</i>
macrocarpa*	<i>Cupressus macrocarpa</i>
mahoe/whiteywood	<i>Melicytus ramiflorus</i>
maidenhair fern	<i>Adiantum cunninghamii</i>
matagouri	<i>Discaria toumatou</i>
mistletoe	<i>Ileostylis micranthus</i>
mountain akeake	<i>Olearia avicenniifolia</i>
native broom	<i>Carmichaelia</i> aff. <i>australis</i>
native bindweed	<i>Calystegia tuguriorum</i>
native jasmine	<i>Parsonsia</i> sp.
old man's beard*	<i>Clematis vitalba</i>
plum*	<i>Prunus</i> sp.
pohuehue	<i>Muehlenbeckia australis</i>
porcupine shrub	<i>Melicytus alpinus</i>
radiata pine*	<i>Pinus radiata</i>
toatoa	<i>Haloragis erecta</i>
tree nettle	<i>Urtica ferox</i>
walnut*	<i>Juglans regia</i>

Plants recorded on the Gould Property, Hanging Rock

25 and 31 January 2013

Alice Shanks

Key: D: Dominant, A: Abundant, F: Frequent, O: Occasional, R: Rare, +: present; * = Exotic; ns = not seen.

Botanical name		Common name	Location and Comments
Trees			
* <i>Alnus species</i>	+	alder	
<i>Cordyline australis</i>	F	cabbage tree/ti	common on north slope
* <i>Cupressus macrocarpa</i>	O	macrocarpa	
* <i>Eucalyptus species</i>	+	gum tree	
* <i>Eunonymus europaeus</i>	R	spindle tree	
* <i>Fraxinus excelsior</i>	O	common ash	
<i>Griselinia littoralis</i>	F	broadleaf/papauma	around boulders, on scarp edges
* <i>Juglans regia</i>	+	walnut	
<i>Melicytus ramiflorus</i>	O	mahoe, whiteywood	
* <i>Pinus radiata</i>	O	radiata pine	plantation and scattered trees
* <i>Prunus cerosifera</i>	F	plum	
<i>Pseudapanax arboreus</i>	O	five-finger	
* <i>Salix fragilis</i>	F	crack willow	
* <i>Sambucus nigra</i>	A	elderberry	
<i>Saphora microphylla</i>	O	kowhai	
Shrubs			
* <i>Berberis glaucocarpa</i>	O	common barberry	
<i>Carmichaelia australis</i>	O	native broom	
<i>Coprosma cunninghamii</i>	R	hybrid mikimiki	
<i>Coprosma propinqua</i>	A	mikimiki	
* <i>Cytisus scoparius</i>	O	broom	
<i>Discoria toumatou</i>	F	matagouri	
<i>Hebe salicifolia</i>	F	koromiko	
* <i>Leycesteria formosa</i>	R	Himalayan honeysuckle	
<i>Melicytus alpinus</i>	O	porcupine shrub	
<i>Olearia avicenniifolia</i>	R	mountain akeake	
* <i>Rosa rubiginosa</i>	O	sweet brier	
<i>Teucrium parvifolium</i>	ns	native verbena	recorded by DOC 2004
* <i>Ulex europaeus</i>	A	gorse	
Mistletoe			
<i>Ileostylis micranthus</i>	+	mistletoe	on <i>Coprosma propinqua</i>
Indigenous Herbs			
<i>Anisotome potula</i> / <i>Gingidia ensyii</i>	+	a native aniseed	At Risk - Declining, 2 patches only
<i>Cardamine sp.</i>	R	a bitter cress	
<i>Colobanthus aff. strictus</i>	R		Data deficient
<i>Craspedia sp.</i>	+	a woolly head	on the southern boulders

<i>Dichondra repens</i>	R	Mercury Bay weed	
<i>Einadia allanii</i>	O	a native spinach	Naturally Uncommon
<i>Epilobium gracilipes</i>	R	a willowherb	
<i>Epilobium nummularifolium</i>	R	a creeping willowherb	overhangs
<i>Euchiton species</i>	R	a cudweed	loess banks
<i>Geranium aff. microphyllum</i>	R	a native cranesbill	overhangs
<i>Geranium brevis</i>	R	a native cranesbill	
<i>Haloragis erecto</i>	R	shrubby haloragis	main cliff
<i>Hydracotyle moschata</i>	R	a hydrocotyle	on the sink hole limestone
<i>Lagenifera pumila</i>	R	a grassland daisy	
<i>Linum monogynum</i>	R	NZ linen flax	main cliff
<i>Oxalis exilis</i>	R	creeping oxalis	loess banks
<i>Parietaria debilis</i>	+	a native nettle	under overhangs
<i>Wahlenbergia albomarginata</i>	R	harebell	limestone boulders

Exotic herbs

* <i>Achillea millefolium</i>	F	yarrow	
* <i>Arctium minus</i>	O	burdock	
* <i>Arenaria serpyllifolia</i>	O	sand spurrey	
* <i>Capsella bursa-pastoris</i>	O	shepherds purse	
* <i>Carduus nutans</i>	O	nodding thistle	
* <i>Carduus tenuiflorus</i>	O	winged thistle	
* <i>Cerastium fontanum</i>	O	mouse-ear chickweed	
* <i>Cirsium arvense</i>	A	Californian thistle	
* <i>Conium maculatum</i>	A	hemlock	
* <i>Crepis capillaris</i>	F	hawksbeard	
* <i>Crepis vesicaria</i>	O	beaked hawkbit	
* <i>Dianthus armeria</i>	R	Deptford pink	
* <i>Digitalis purpurea</i>	F	foxglove	
* <i>Echium vulgare</i>	F	viper's bugloss	
* <i>Erodium cicutarium</i>	O	storksbill	
* <i>Fragaria vesca</i>	+	alpine strawberry	
* <i>Galium aparine</i>	F	cleavers	
* <i>Geranium molle</i>	O	dove's foot cranebill	
* <i>Hypericum perforatum</i>	O	St John's wort	
* <i>Hypochoeris radicata</i>	F	catsear	
* <i>Pilosella officinarum</i>	O	mouse-ear hawkweed	
* <i>Pilosella praealta</i>	R	kingdevil hawkweed	
* <i>Lapsana communis</i>	F	nipplewort	
* <i>Leucanthemum vulgare</i>	O	oxeye daisy	
* <i>Leontodon taraxacoides</i>	O	hawkbit	
* <i>Linum catharticum</i>	O	purging flax	
* <i>Lotus pedunculatus</i>	O	lotus	
* <i>Molva neglecta</i>	O	mallow	
* <i>Marrubium vulgare</i>	O	horehound	
* <i>Medicago lupulina</i>	F	black medick	
* <i>Mimulus guttatus</i>	O	monkey musk	= <i>Erythranthe guttata</i>

* <i>Nasturtium microphyllum</i>	O	watercress
* <i>Orobanche minor</i>	R	broom rape
* <i>Plantago lanceolata</i>	F	narrow-leaved plantain
* <i>Plantago major</i>	F	plantain
* <i>Polygonum aviculare</i>	O	wireweed
* <i>Ranunculus repens</i>	O	buttercup
* <i>Sagina procumbens</i>	O	pearlwort
* <i>Sedum acre</i>	O	stonecrop
* <i>Sherardia arvensis</i>	O	field madder
* <i>Solanum dulcamara</i>	F	bittersweet
* <i>Sonchus oleraceus</i>	R	sow thistle
* <i>Sisymbrium officinale</i>	O	hedge mustard
* <i>Stellaria media</i>	O	chickweed
* <i>Taraxacum officinale</i>	O	dandelion
* <i>Tarilis nodosa</i>	R	hedge parsley
* <i>Trifolium dubium</i>	F	suckling clover
* <i>Trifolium pratense</i>	O	red clover
* <i>Trifolium repens</i>	F	white clover
* <i>Verbascum thapsus</i>	F	woolly mullein
* <i>Vicia sativa</i>	O	vetch
* <i>Urtica urens</i>	O	nettle

Grasses

* <i>Agrostis capillaris</i>	F	browntop
* <i>Anthoxanthum odoratum</i>	A	sweet vernal
* <i>Arrhenatherum elatius subsp. elatius</i>	F	tall oat grass
* <i>Bromus diandrus</i>	F	riggut brome
* <i>Bromus hordeaceus</i>	F	soft brome
* <i>Bromus sterilis</i>	O	barren brome
* <i>Critesian murinum</i>	O	barley grass
* <i>Cynosurus cristatus</i>	F	crested dog's-tail
* <i>Doctylis glomerata</i>	A	cocksfoot
<i>Dichelachne crinita</i>	R	plume grass
<i>Echinopogon ovatus</i>	+	hedgehog grass
<i>Elymus solandri</i>	R	blue wheat grass
* <i>Festuca rubra</i>	A	red fescue
* <i>Holcus lanatus</i>	AA	Yorkshire fog
* <i>Lolium perenne</i>	A	perennial rye grass
* <i>Phleum pratense</i>	O	timothy
<i>Poa cita</i>	O	silver tussock
<i>Poa colensoi</i>	R	blue tussock
* <i>Poa pratensis</i>	O	Kentucky blue grass
<i>Rytidosperma clavatum</i>	O	a danthonia
* <i>Rytidosperma racemosum</i>	F	Australian danthonia

Climbers and Trailing Plants

* <i>Calystegia sepium</i>	F	greater bindweed
----------------------------	---	------------------

<i>Calystegia tuguriorum</i>	F	native bindweed
<i>Muehlenbeckia australis</i>	A	pohuehue
<i>Muehlenbeckia complexa</i>	O	creeping pohuehue
<i>Parsonsia capsularis</i>	O	NZ jasmine
* <i>Rubus fruticosus</i> agg.	F	blackberry
<i>Rubus schmidelioides</i> var <i>schmidelioides</i>	F	lawyer
<i>Rubus squarrosus</i>	O	leafless lawyer

Sedges, Rushes, Lillies and Orchids

<i>Carex breviculmus</i>	R	grassland sedge
<i>Carex coriacea</i>	O	
<i>Carex sinclairii</i>	O	
<i>Carex virgota</i>	O	
<i>Phormium tenax</i>	R	harakeke
<i>Prasophyllum colensoi</i>	O	leek orchid

Ferns

<i>Adiantum cunninghamii</i>	O	maidenhair fern
<i>Asplenium lyallii</i>	O	Lyall's spleenwort
<i>Blechnum chambersii</i>	O	Chambers fern
* <i>Dryopteris filix-mas</i>	+	male fern
<i>Microsorium pustulatum</i>	R	hound's tongue fern