

TIMARU DISTRICT
SIGNIFICANT NATURAL AREAS
SURVEY

HALL PROPERTY
ROCKDALE



Report prepared for Timaru District Council by Mike Harding
May 2014

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner:Kieran and Nic Hall
Valuation References: .24810/042.00
Address:Rockdale, Sterndale Valley Road.
Location:Lower slopes of Brothers Range, Sterndale Valley.
Ecological District:Geraldine Ecological District.
TDC Land Type:.....‘Soft Rock Hills and Downs’
Land Environments:.....N3.1a

ECOLOGICAL CONTEXT:

The property lies on the lower eastern slopes of the Brothers Range, west of Totara Valley. It spans the contact between the hard-rock (greywacke) hills of the Brothers Range and the limestone landforms of the Totara Valley area. The property lies in Geraldine Ecological District, though close to the boundary of Fairlie Ecological District (McEwen, 1987). It also lies in the N3.1a Level IV Land Environment as defined by Leathwick *et al* (2003). Indigenous vegetation within the N3.1a land environment is regarded as acutely-threatened (Walker *et al*, 2005).

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.

SIGNIFICANT AREAS ON THE PROPERTY:

Indigenous vegetation on the property comprises hardwood forest (with podocarps), scrub, shrubland, sparsely vegetated rockland associated with limestone bluffs, and small areas of sedgeland (wetland) vegetation on valley floors. The property lies near to areas of indigenous forest, shrubland and rockland vegetation on other properties, contributing to the network of fauna habitat in the wider area. This part of the ecological district is within the range of 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 2014. Seven areas, comprising approximately 26 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 map reference	Aprox. size (ha)	Vegetation/habitat type
374b	northern gully	1436300-5095500	4.47	hardwood forest, with podocarps
442a	eastern scarp	1437100-5095150	3.36	shrubland; treeland; rockland
443	central scarp	1437400-5095600	11.15	hardwood forest; shrubland; rockland
444	northern scarp	1436900-5095650	1.09	treeland; rockland
447a		1436000-5095300	3.74	hardwood forest
447b	lower gullies	1436000-5095000	0.75	hardwood forest
447c	lower gullies	1436000-5095000	1.60	hardwood forest

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.

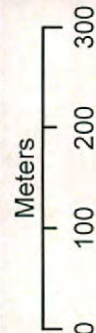
To assist with the protection and management of any SNA, landowners can apply to Council for financial assistance. Any questions regarding the protection, management and use of SNAs should be directed to the District Planner.



Gingidia ensyü and Colobanthus aff. strictus

Hall Property
Rockdale

Sterndale Valley Road



1:7,500

443

444

442a

374b

447a

447b

447c

TIMARU DISTRICT SNA SURVEY

SNA 374b

Area Name: Rockdale northern gully
Map ref. (NZTM): E1436300-N5095500
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Hall (Rockdale)
Nearest Locality: Totara Valley
Area Size (ha): 4.47 **Altitude (m):** 220-280
Survey Time: 2½ hours **Survey Date:** 01-02-14

General Description:

This SNA lies on steep slopes in a deeply incised valley on the property boundary, just northwest of the Rockdale Homestead. It adjoins indigenous vegetation upstream (SNA 374a) and lies close to other areas of indigenous vegetation in nearby gullies and on limestone bluffs.

Plant Communities:

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

The forest canopy is dominated by mahoe and kowhai. Other canopy species are lemonwood, mapou, five-finger, yellowwood, lancewood, totara, matai (one tree), cabbage tree and the climbers native jasmine, native bindweed, bush lawyer and pohuehue. Additional canopy species along the stream are fuchsia and pate.



The forest understorey is in good condition and appears unaffected by grazing animals. Species present are kowhai, mahoe, wineberry, *Coprosma crassifolia*, *Coprosma rhamnoides*, turepo and poataniwha.

Ground-cover species are hen and chickens fern, hound's tongue fern, button fern, common shield fern, prickly shield fern, hanging spleenwort, toatoa, *Dichondra repens*, *Libertia ixioides*, bush lily, pennywort, cardamine, a native grass *Microlaena polynoda*, and seedlings of matipo, mapou, broadleaf, mahoe, five-finger, kowhai, *Coprosma crassifolia* and native jasmine. Additional species near the stream are horopito, *Carex forsteri*, Himalayan honeysuckle* and male fern*.

Scrub and regenerating forest are present at the margins of the area. Species present are kanuka, gorse*, broom*, matipo, *Coprosma crassifolia*, *Helichrysum lanceolatum*, poroporo, blackberry*, foxglove*, woolly mullein* and thistles*.

An area of low kanuka forest on dry slopes at the western edge of the area is dominated by kanuka, *Helichrysum lanceolatum* and *Coprosma crassifolia*. Additional species present here are necklace fern, *Wahlenbergia gracilis*, leafless lawyer, *Clematis foetida*, dwarf mistletoe and an at-risk (naturally uncommon) herb, *Einadia allanii*.

Birds/Fauna Observed:

Native birds observed during this brief survey were bellbird, grey warbler, fantail, welcome swallow and harrier.

Notable Flora, Fauna and Habitats:

Important features of this area are the presence of a representative range of canopy trees, including podocarps (totara and matai), a relatively high plant species diversity, an at-risk (naturally uncommon) plant species (*Einadia allanii*), four locally-uncommon plant species (dwarf mistletoe, *Microlaena polynoda*, turepo and *Wahlenbergia gracilis*), and that it is part of a larger area of indigenous forest.

Notable Plant and Animal Pests:

Gorse, broom and other agricultural weeds are present at the forest margin and do not pose a significant threat to the forest. Naturalized plants within the forest (including Himalayan honeysuckle and male fern) pose a low threat. Animal pests were not surveyed.

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

The area is very well buffered by its location on steep rocky slopes in a stream gorge. It adjoins a more extensive area of indigenous forest upstream and lies close to other areas of indigenous vegetation.

Condition and Management Issues:

The forest is in good condition, probably because access for grazing animals is restricted by the steep slopes and dense forest-edge scrub. Possums will be present and possibly wallabies and goats, which are present in the wider area. The main management issue is continued control of wild animals.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	A good example of indigenous forest typical of that remaining in the ecological district and supporting a representative range of plant species.
Rarity	M/H	Lies in an acutely threatened land environment. Supports an 'at risk' (naturally uncommon) plant species (<i>Einadia allanii</i>) and four locally-uncommon plant species.
Diversity and pattern	M/H	Plant species diversity is relatively high.
Distinctiveness/special features	M	The abundance of kowhai (an important seasonal food source for birds) is a special feature.
Other Criteria		
Size/shape	M	A small to moderate-sized area that is very well buffered.
Connectivity	M/H	Adjoins a more extensive area of indigenous forest and lies close to other areas of indigenous vegetation.
Long-term Sustainability	M/H	Some animal pest control may be required 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 been deliberately protected by the present and previous landowners. It is too steep for farm development and provides useful protection for a farm water supply.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of a representative range of canopy trees, including podocarps (totara and matai), a relatively high plant species diversity, an at risk (naturally uncommon) plant species (*Einadia allanii*), and four locally-uncommon plant species. It is part of a larger area of indigenous forest that protects a small stream catchment and has little potential for farm development.

TIMARU DISTRICT SNA SURVEY

SNA 442a

Area Name: Rockdale eastern scarp
Map reference (NZTM): E1437100-N5095150
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Hall (Rockdale)
Nearest Locality: Totara Valley
Area Size (ha): 3.36 **Altitude (m):** 180-290
Survey Time: 2 hours **Survey Date:** 15-02-14

General Description:

This SNA lies on a prominent northwest-facing limestone scarp at the eastern boundary of the property. It extends onto the adjoining property and lies close to SNA 443 across the valley.

Plant Communities:

Two main plant communities are present: shrubland/treeland and sparsely-vegetated rockland. These plant communities are described below. Naturalized (exotic) species are indicated with an asterisk*.

Woody plant species and climbers, mostly on or associated with the limestone bluff, are porcupine shrub, cabbage tree, broadleaf, mahoe, kowhai, mountain akeake, elderberry*, *Coprosma propinqua*, matagouri, native broom, koromiko, Himalayan honeysuckle*, native bindweed, scrub pohuehue, pohuehue, clematis and mistletoe (on *Coprosma propinqua*).

Other species on ledges or in crevices are blue tussock, *Asplenium lyallii*, maidenhair fern, toatoa, *Senecio glaucophyllus*, *Colobanthus* aff. *strictus*, *Cardamine debilis* agg., *Oreomyrrhis* sp., *Gingidia enysii*, *Libertia ixiooides*, *Scleranthus* sp., *Craspedia uniflora* agg., *Carex breviculmis*, oxalis, *Dichondra repens*, *Geranium brevicaulis*, *Geranium microphyllum*, *Galium perpusillum* and wire moss.

Common naturalized plant species on or associated with the limestone scarp are cocksfoot*, white clover*, stonecrop*, yarrow*, horehound*, nodding thistle*, dandelion*, woolly mullein*, king devil hawkweed*, mouse-ear hawkweed*, dove's foot*, pale flax*, hard grass*, Chewings fescue, narrow-leaved plantain*, dwarf mallow*, black nightshade*, hedge mustard* and hemlock*. Slopes below the limestone scarp support pasture with scattered trees and shrubs. The at risk herb, *Einadia allanii*, is present in scrub.



Birds/Fauna Observed:

Native birds observed during this brief survey were grey warbler, welcome swallow, bellbird and harrier.

Notable Flora, Fauna and Habitats:

Important features of this area are the extent of the limestone habitat present (a naturally uncommon ecosystem), the diversity of limestone plants, good populations of four at-risk plant species (*Einadia allanii*, *Geranium microphyllum*, *Gingidia enysii* and *Senecio glaucophyllus*) and one data-deficient species

(*Craspedia uniflora* agg.), and the habitat the scarp may provide for long-tailed bat (a nationally endangered species).

Notable Plant and Animal Pests:

There are a large number of naturalized herbaceous plants on or adjacent to the limestone scarp. The most invasive of these are Chewings fescue, stonecrop, cocksfoot, narrow-leaved plantain and hawkweed species. Woody weeds present are elderberry and Himalayan honeysuckle though neither is dominant. Animal pests were not surveyed, though feral pigeons are present.

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

A small part of the scarp crest is fenced from grazing. The long narrow northern part of the site follows a boundary fence which provides some protection from grazing. Steeper parts of the scarp are inaccessible and well protected. The site lies close to another large limestone scarp across the valley (SNA 443).

Condition and Management Issues:

Plant communities on less accessible parts of the limestone scarp are in good condition. Plant communities below the scarp and on broader ledges are dominated by naturalized herbaceous species. Important management issues are continued control of invasive woody plants and protection of limestone scarp communities from intensive grazing.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	The limestone scarp plant community is representative of the original vegetation; adjacent plant communities are only partly representative.
Rarity	H	Lies within an acutely-threatened land environment (N3.1a); is a naturally uncommon ecosystem (limestone bluff); supports four at-risk and one data-deficient plant species; may provide habitat for a nationally critical species (long-tailed bat).
Diversity and pattern	M	Species diversity is moderate, though reduced from that originally present.
Distinctiveness/special features	M	The presence of vegetation in a small inaccessible gully and a good population of porcupine shrub are notable features.
Other Criteria		
Size/shape	M	A relatively small area that is mostly well buffered.
Connectivity	M	Lies close to other areas of indigenous vegetation, including other limestone scarps.
Long-term Sustainability	M/H	Plant pest control would help maintain indigenous plant communities.

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

Most parts of this area are steep and unsuitable for farm development. Grazing pressure appears relatively low at present. The landowner is sympathetic to protection of the limestone bluff.

Discussion:

This area easily meets the District Plan criteria for a Significant Natural Area. Important features are the extent of the limestone habitat present (a naturally uncommon ecosystem), the diversity of limestone plants, and good populations of four at-risk plant species and one data-deficient species. The area may provide habitat for long-tailed bat (a nationally endangered species).

Area Name: Rockdale central limestone scarp
Map reference (NZTM): E1437400-N5095600
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Hall (Rockdale)
Nearest Locality: Totara Valley
Area Size (ha): 11.15 **Altitude (m):** 170-270
Survey Time: 4 hours **Survey Date:** 15-02-14

General Description:

This SNA lies on a prominent southeast-facing limestone scarp. It lies close to SNA 443 across the valley and SNA 444 on the other side of the limestone landform.

Plant Communities:

Three main plant communities are present: forest patches, shrubland and sparsely-vegetated rockland. These plant communities are described below. Naturalized (exotic) species are indicated with an asterisk*.

Small patches of forest are present on steep slopes and in small gullies along the limestone scarp. Dominant canopy species are broadleaf and mahoe. Other species present are five-finger, cabbage tree, mapou, matipo, kowhai, koromiko, mountain akeake, flax, poroporo, native broom, *Coprosma propinqua*, elderberry* and the climbers pohuehue, native bindweed and leafless lawyer.

Indigenous plants present on or adjacent to the limestone bluff are maidenhair fern, *Asplenium lyallii*, necklace fern, *Asplenium hookerianum*, hound's tongue fern, *Blechnum chambersii*, toatoa, cardamine, pennywort, *Epilobium nummularifolium*, *Geranium microphyllum*, *Geranium brevicaule*, *Dichondra repens*, *Gingidia enysii*, *Anisotome aromatica*, *Craspedia uniflora* agg., *Senecio glaucophyllus*, oxalis, *Wahlenbergia gracilis*, *Carex breviculmis*, silver tussock, blue tussock and danthonia (*Rytidosperma* sp.). Also present is a small population of the threatened (nationally critical) gentian, *Gentianella calcis* subsp. *taiko*. This species is endemic to South Canterbury.



Naturalized plant species commonly present on or near the limestone bluff are stonecrop*, Chewings fescue*, narrow-leaved plantain* and other pasture grasses. Other naturalized species are hard grass*, dwarf mallow*, hemlock*, dove's foot*, pale flax*, black meddick*, mouse-ear chickweed*, purging flax*, burdock* and barley grass*.

Slopes beneath the limestone scarp support pasture with scattered trees and shrubs. Dominant indigenous species are *Coprosma propinqua*, matagouri, native broom and scrub pohuehue. Other species

present are gorse*, Californian thistle*, Scotch thistle*, nodding thistle*, nettle*, *Lamium purpureum**, silver tussock and mistletoe (on *Coprosma propinqua*).

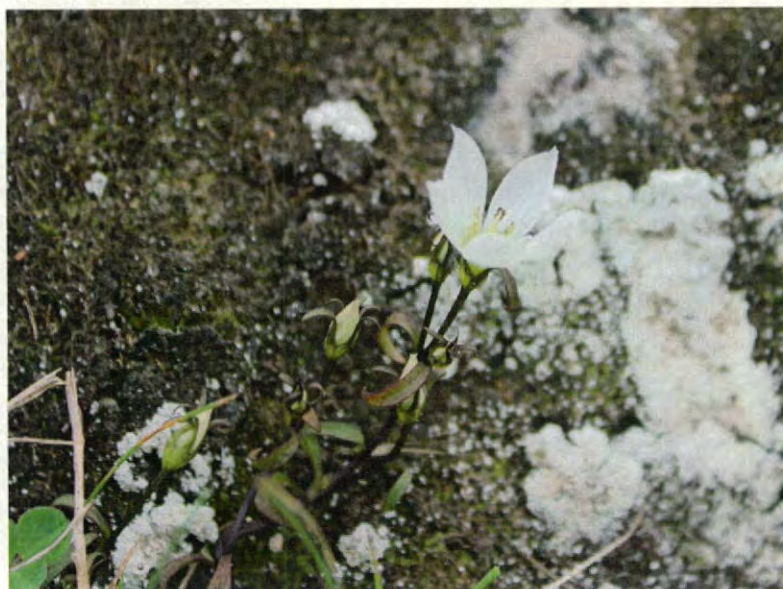
Small areas of sedgeland are present on the valley floor. Dominant species are *Carex geminata* and *Juncus edgariae*. Other species present are soft rush*, *Carex secta* and trees of crack willow*.

Birds/Fauna Observed:

Native birds observed during this survey were welcome swallow, fantail, grey warbler and bellbird.

Notable Flora, Fauna and Habitats:

Important features of this area are the extent of the limestone habitat present (a naturally uncommon ecosystem), the diversity of limestone plants, a small population of the threatened (nationally critical) South Canterbury limestone gentian (*Gentianella calcis* subsp. *taiko*), good populations of three at-risk plant species (*Geranium microphyllum*, *Gingidia enysii* and *Senecio glaucophyllus*) and one data-deficient species (*Craspedia uniflora* agg.), and the habitat the scarp may provide for long-tailed bat (a nationally endangered species).



Limestone gentian

Notable Plant and Animal Pests:

There are a large number of naturalized herbaceous plants on or adjacent to the limestone scarp. The most invasive of these are Chewings fescue, stonecrop, cocksfoot, hard grass, narrow-leaved plantain and hawkweed species. Woody weeds present are elderberry and gorse, of which gorse is the most common though largely confined to the edges of the site. Thistles are common on slopes below the scarp. Animal pests were not surveyed, though goats and feral pigeons are present.



Senecio glaucophyllus

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

The limestone scarp that forms the core of this area lies within a larger paddock. Fences are present on gentle slopes above the scarp and along the valley floor below the scarp. Steeper parts of the scarp are well protected. The area lies close to other areas of indigenous vegetation on limestone, notably SNAs 442a and 444.

Condition and Management Issues:

Plant communities on less accessible parts of the limestone scarp and along the scarp crest are in relatively good condition. The presence of two small populations of the threatened limestone gentian and healthy populations of two other notable species (*Gingidia enysii* and *Craspedia uniflora* agg.), indicate low grazing pressure. Forested areas are more depleted, with little understorey vegetation. Important management issues are continued control of invasive woody plants and protection of limestone scarp communities from intensive grazing.

Property Owner Comment:

Mr Hall advises that the previous landowner grazed deer in this paddock, whereas he grazes sheep only.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	Plant communities are moderately representative of the original vegetation, and are good examples of that remaining in the ecological district.
Rarity	H	Lies within an acutely-threatened land environment (N3.1a); is a naturally uncommon ecosystem (limestone bluff); supports one threatened, three at-risk and one data-deficient plant species; may provide habitat for a nationally critical species (long-tailed bat).
Diversity and pattern	M	Plant species diversity is moderate, though likely to be depleted from that originally present.
Distinctiveness/special features		The extent of taller vegetation in small gullies and the presence of Maori rock drawings are notable features.
Other Criteria		
Size/shape	M/H	A relatively large area, most of which is well buffered.
Connectivity	M	Lies close to other areas of indigenous vegetation on limestone.
Long-term Sustainability	M	Continued control of plant and animal pests and careful management of grazing will be required to protect ecological values in the long term.

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

The steepness of the slopes and scarp in this area limit its potential for further farm development. The present grazing regime, with sheep rather than deer or cattle, appears to be enabling survival of the vulnerable limestone plant communities.

Discussion:

This area very easily meets the District Plan criteria for a Significant Natural Area. Important features of the area are the extent of the limestone habitat present (a naturally uncommon ecosystem), the diversity of limestone plants, a small population of the threatened (nationally critical) South Canterbury limestone gentian (*Gentianella calcei* subsp. *taiko*), good populations of three at-risk plant species and one data-deficient species, and the habitat the scarp may provide for long-tailed bat (a nationally endangered species).

Area Name: Rockdale northern scarp
Map reference (NZTM): E1436900-N5095650
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Hall (Rockdale)
Nearest Locality: Totara Valley
Area Size (ha): 1.09 **Altitude (m):** 240-270
Survey Time: ½ hour **Survey Date:** 15-02-14

General Description:

This SNA lies on moderately steep northwest-facing slopes above Sterndale Valley Road at the northwest part of the property. It comprises a relatively small and quite modified limestone scarp with scattered indigenous vegetation. It lies close to other areas of indigenous vegetation on limestone.

Plant Communities:

The main plant community present is sparsely vegetated rockland with associated scattered trees and shrubs, as described below. Naturalized (exotic) species are indicated with an asterisk*.

Indigenous species present on the limestone scarp are broadleaf, mahoe, mountain akeake, scrub pohuehue, leafless lawyer, toatoa, *Colobanthus* aff. *strictus*, *Dichondra repens*, *Stellaria gracilentia* and maidenhair fern. Other indigenous species present are kowhai, cabbage tree, *Coprosma propinqua*, native broom, pohuehue and silver tussock.

**Birds/Fauna Observed:**

The only native bird observed during this brief survey was welcome swallow. However, other native bird species are present nearby and are likely to occasionally be present.

Notable Flora, Fauna and Habitats:

Important features of this area are the presence of indigenous plants on limestone. Limestone scarps are a naturally uncommon ecosystem and the area lies within an acutely-threatened land environment (N3.1a).

Notable Plant and Animal Pests:

Pasture grasses, notably cocksfoot and Chewings fescue, and herbaceous plants such as mouse-ear hawkweed are the most important plant pests at this site. Animal pests were not surveyed, though the site provides little cover for feral animals.

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

The boundaries of this area include the steeper part of the exposed limestone and the slopes just below this scarp. The area lies within a larger grazed paddock. It lies close to other areas of indigenous vegetation on limestone, including important sites with populations of threatened and at-risk plant species.

Condition and Management Issues:

The area is quite modified and in relatively poor condition. However, it still supports remnant indigenous vegetation and has some potential for recovery. The main management issues are control of plant pests and careful management of grazing.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	A modified example of indigenous vegetation on limestone, typical of depleted sites in the ecological district.
Rarity	M/H	The site lies within an acutely-threatened land environment and includes a naturally uncommon ecosystem. However, no threatened or at risk plant species are present.
Diversity and pattern	L	Plant species diversity is low.
Distinctiveness/special features	L/M	An old kowhai tree is present.
Other Criteria		
Size/shape	L/M	A small area that is partly buffered by steepness of the slope/scarp.
Connectivity	M	Lies close to other areas of indigenous vegetation on limestone.
Long-term Sustainability	M	Plants on the limestone scarp are well protected, but plants at other locations are vulnerable to invasive naturalized species and grazing.

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

The core part of this area, on the limestone scarp, has little potential for further farm development.

Discussion:

This small modified area only just meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of indigenous plants on limestone and that limestone scarps are a naturally uncommon ecosystem. The area lies within an acutely-threatened land environment.

TIMARU DISTRICT SNA SURVEY

SNA 447a

Area Name:

Map ref. (NZTM): E1436000-N5095300

Ecological District: Geraldine

Surveyors: Mike Harding

Property: Hall (Rockdale)

Nearest Locality: Totara Valley

Area Size (ha): 3.74

Altitude (m): 280-350

Survey Time: 1½ hours

Survey Date: 01-02-14

General Description:

This SNA lies on moderately-steep south-facing slopes of a small incised valley on the property boundary, west of Rockdale Homestead. It adjoins other indigenous forest up-valley on the adjacent property (SNA 460a) and lies close to other areas of indigenous vegetation in gullies and on limestone scarps.

Plant Communities:

Two main plant communities are present: regenerating hardwood forest on the south-facing slopes; and shrubland-treeland on a small area of north-facing slope at the western end of the site. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.



The forest canopy is dominated by mahoe and five-finger. Other canopy species are broadleaf, matipo, wineberry, fuchsia, marbleleaf, lancewood, mapou, cabbage tree, bush lawyer, native bindweed, native jasmine and pohuehue.

The forest understorey is relatively open. Species present are mapou, wineberry, *Coprosma crassifolia*, *Coprosma propinqua* and elderberry*.

Ground-cover species are common shield fern, hound's tongue fern, button fern, *Asplenium richardii*, *Asplenium hookerianum*, necklace fern, hen and chickens fern, male fern*, *Libertia ixioides*, bush lily, cardamine, and seedlings of mahoe, mapou, matipo, lancewood, broadleaf, wineberry, five-finger, marbleleaf, *Coprosma crassifolia* and pohuehue.

Species present at damp sites are *Blechnum fluviale*, *Blechnum chambersii*, *Hypolepis ambigua*, thousand-leaved fern, water fern, prickly shield fern, star lily, buttercup, creeping buttercup*, pennywort, black nightshade*, *Carex geminata*, *Carex secta*, soft rush* and Himalayan honeysuckle*. Additional species present on the forest margin are gorse*, poroporo and foxglove*.

A small part of the site, at the western end, lies on north-facing slopes. It supports shrubland with scattered trees of kowhai and lancewood. Other indigenous species present are matagouri, *Coprosma propinqua*, *Coprosma dumosa*, *Dichondra repens*, *Wahlenbergia gracilis*, scrub pohuehue, lawyer, necklace fern, rock fern, *Carex breviculmis* and patotara.

Birds/Fauna Observed:

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

Notable Flora, Fauna and Habitats:

Important features of this area are the diversity of plant species present, the presence of three locally-uncommon plant species (star lily, rock fern and *Wahlenbergia gracilis*), and that it is part of a larger area of forest.

Notable Plant and Animal Pests:

Elderberry, Himalayan honeysuckle and gorse are the main plant pests present. These species do not pose a significant threat to the forest, though gorse poses a threat to the open shrubland community. Animal pests were not surveyed, though wallaby and possum sign was observed.

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

This area is well buffered by its location on a moderately-steep south-facing slope. It is fenced at the upper margin and (at present) buffered by gorse scrub along most of its lower margin. It adjoins indigenous forest up-valley on the adjacent property and lies close to other areas of indigenous vegetation in gullies and on limestone scarps.

Condition and Management Issues:

The forest canopy is in relatively good condition. The forest understorey is affected by grazing/browsing. The most important management issues are continued control of wild animals (notably possums and wallabies) and protection from intensive grazing.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	A good example of regenerating indigenous forest, typical of that remaining in this part of the ecological district.
Rarity	M/H	Lies in an acutely-threatened land environment. Supports three locally-uncommon plant species.
Diversity and pattern	M	Plant species diversity is moderate.
Distinctiveness/special features	M	The presence of dry-slope flora and rockland plants is a special feature.
Other Criteria		
Size/shape	M	A small to moderate-sized site that is reasonably well buffered.
Connectivity	M/H	Adjoins other indigenous forest up-valley and lies close to other areas of indigenous vegetation.
Long-term Sustainability	M	Animal pest control and perhaps protection from grazing will be required 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 been deliberately protected by the landowner. It has limited potential for farm development.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the diversity of plant species present, the presence of three locally-uncommon plant species (star lily, rock fern and *Wahlenbergia gracilis*), and that it is part of a larger area of forest.

TIMARU DISTRICT SNA SURVEY

SNA 447b and 447c

Area Name: Rockdale lower gullies
Map reference (NZTM): E1436000-N5095000
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Hall (Rockdale)
Nearest Locality: Totara Valley
Area Size (ha): 2.35 **Altitude (m):** 240-340
Survey Time: 2 hours **Survey Date:** 01-02-14

General Description:

These two small SNAs lie on moderately steep shaded slopes of a small valley at the western edge of the property. Vegetation in the valley is an extension of that present on the adjacent property.

Plant Communities:

The main plant community present is hardwood forest, with shrubland and scrub at the forest margins. This plant community is described below. Naturalized (exotic) species are indicated with an asterisk*.

The forest canopy is dominated by five-finger and mahoe. Other canopy species are kowhai, lancewood, broadleaf, wineberry, cabbage tree, matipo, mapou, bush lawyer, native bindweed, native jasmine and pohuehue. Additional species present along the stream are fuchsia, crack willow* and *Carex forsteri*. A single totara tree is present in the lower part of the area (SNA 447c).

The forest understorey is relatively open. Species present are mahoe, *Coprosma propinqua*, *Coprosma crassifolia*, elderberry*, Himalayan honeysuckle* and bush lawyer.



SNA 447b

Ground-cover species are bush lily (uncommon), *Blechnum fluviale*, *Blechnum penna-marina*, *Blechnum vulcanicum*, *Blechnum procerum*, mountain kiokio, prickly shield fern, common shield fern, necklace fern, *Asplenium hookerianum*, *Asplenium richardii*, hound's tongue fern, button fern, *Hypolepis ambigua*, male fern*, pennywort, black nightshade*, *Geranium microphyllum* and seedlings of mahoe, five-finger, mapou, matipo, kowhai, wineberry, elderberry* and pohuehue.

Species present on the forest margin are gorse*, *Coprosma propinqua*, *Coprosma dumosa*, native broom, matagouri, bush snowberry, scrambling fuchsia, native bindweed, lawyer, scrub pohuehue, foxglove*, male fern*, bracken, thousand-leaved fern, prickly shield fern and mistletoe (on *Coprosma* species).

Birds/Fauna Observed:

Native birds observed were bellbird, fantail, grey warbler, harrier and welcome swallow.

Notable Flora, Fauna and Habitats:

Important features of these areas are their location in an acutely threatened land environment, the presence of an at-risk (naturally uncommon) plant species (*Geranium microphyllum*), the diversity of fern species, the presence of totara, and the habitat the area provides for forest birds.

Notable Plant and Animal Pests:

Gorse is present and in places dominant at the forest margin. Other plant pests present are Himalayan honeysuckle, elderberry, crack willow and male fern. None of these species poses a significant threat to the forest. Gorse scrub buffers the forest and provides a favourable habitat for regeneration of

indigenous species. Animal pests were not surveyed, though sign of possums and wallabies was observed.

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

These two areas are long and narrow, though buffered to some extent by their location on steep shady slopes and dense gorse scrub. They lie close to other areas of indigenous vegetation, including indigenous forest upstream on the adjacent property.

Condition and Management Issues:

The forest within these areas is in relatively good condition. The main management issue is continued control of animal pests, notably possums and wallabies.



SNA 447c, totara at centre

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	Good examples of indigenous forest typical of that remaining in this part of the ecological district.
Rarity	M/H	The areas lie within an acutely-threatened land environment. An at-risk species (<i>Geranium microphyllum</i>) is present in SNA 447b.
Diversity and pattern	M	Plant species diversity is moderate; fern species diversity is relatively high.
Distinctiveness/special features	L/M	The presence of a totara tree is notable.
Other Criteria		
Size/shape	L/M	Small areas with a poor shape (long and narrow), though reasonably well buffered.
Connectivity	M	The areas lie close to other areas of indigenous vegetation.
Long-term Sustainability	M	Continued animal pest control will probably be necessary to maintain ecological values in the long term.

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

These two relatively small areas are compromised by their narrow shape and therefore vulnerability to disturbance. Gorse scrub at their margins is helping to buffer the areas.

Discussion:

These areas meet the District Plan criteria for a Significant Natural Area. Important features of the areas are their location in an acutely threatened land environment, the presence of an at-risk (naturally uncommon) plant species (*Geranium microphyllum*), the diversity of fern species, the presence of totara and the habitat the areas provide for forest birds,

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)	
barley grass*	<i>Critesion</i> sp.
blackberry*	<i>Rubus fruticosus</i>
black meddick*	<i>Medicago lupulina</i>
black nightshade*	<i>Solanum nigrum</i>
blue tussock	<i>Poa colensoi</i>
bracken	<i>Pteridium esculentum</i>
broadleaf	<i>Griselinia littoralis</i>
broom*	<i>Cytisus scoparius</i>
burdock*	<i>Arctium minus</i>
bush lawyer	<i>Rubus cissoides</i>
bush lily	<i>Astelia fragrans</i>
bush snowberry	<i>Gaultheria antipoda</i>
buttercup	<i>Ranunculus hirtus</i>
button fern	<i>Pellaea rotundifolia</i>
cabbage tree/ti rakau	<i>Cordyline australis</i>
Californian thistle*	<i>Cirsium arvense</i>
cardamine	<i>Cardamine debilis</i> agg.
Chewings fescue*	<i>Festuca rubra</i> ssp. <i>commutata</i>
clematis	<i>Clematis foetida</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>
dandelion*	<i>Taraxacum officinale</i>
danthonia	<i>Rytidosperma clavatum</i>
dove's foot	<i>Geranium molle</i>
dwarf mallow*	<i>Malva neglecta</i>
dwarf mistletoe	<i>Korthalsella lindsayi</i>
elderberry*	<i>Sambucus nigra</i>
five-finger	<i>Pseudopanax arboreus</i>
flax	<i>Phormium tenax</i>
foxglove*	<i>Digitalis purpurea</i>
fuchsia	<i>Fuchsia excorticata</i>
gorse*	<i>Ulex europaeus</i>
hanging spleenwort	<i>Asplenium flaccidum</i>
hard grass*	<i>Catapodium rigidum</i>
hedge mustard*	<i>Sisymbrium officinale</i>
hemlock*	<i>Conium maculatum</i>
hen and chickens fern	<i>Asplenium gracillimum</i>
Himalayan honeysuckle*	<i>Leycesteria formosa</i>
horehound*	<i>Marrubium vulgare</i>
horopito/pepperwood	<i>Pseudowintera colorata</i>
hound's tongue fern	<i>Microsorium pustulatum</i>
kanuka	<i>Kunzea ericoides</i>
king devil hawkweed*	<i>Pilosella piloselloides</i> ssp. <i>praealta</i>
koromiko	<i>Hebe salicifolia</i>
kowhai	<i>Sophora microphylla</i>
lancewood	<i>Pseudopanax crassifolius</i>
lawyer	<i>Rubus schmidelioides</i>
leafless lawyer	<i>Rubus squarrosus</i>
lemonwood	<i>Pittosporum eugenioides</i>
mahoe/whiteywood	<i>Melicytus ramiflorus</i>
maidenhair fern	<i>Adiantum cunninghamii</i>

male fern*	<i>Dryopteris filix-mas</i>
mapou	<i>Myrsine australis</i>
marbleleaf/putaputaweta	<i>Carpodetus serratus</i>
matagouri	<i>Discaria toumatou</i>
matai/black pine	<i>Prumnopitys taxifolia</i>
matipo/kohuhu	<i>Pittosporum tenuifolium</i>
mistletoe	<i>Ileostylis micranthus</i>
mountain akeake	<i>Olearia avicenniifolia</i>
mountain kiokio	<i>Blechnum montanum</i>
mouse-ear chickweed*	<i>Cerastium fontanum</i>
mouse-ear hawkweed*	<i>Pilosella officinarum</i>
narrow-leaved plantain*	<i>Plantago lanceolata</i>
native bindweed	<i>Calystegia tuguriorum</i>
native broom	<i>Carmichaelia aff. australis</i>
native jasmine	<i>Parsonsia</i> sp.
necklace fern	<i>Asplenium flabellifolium</i>
nettle*	<i>Urtica urens</i>
nodding thistle*	<i>Carduus nutans</i>
oxalis	<i>Oxalis exilis</i>
pale flax*	<i>Linum bienne</i>
pate	<i>Schefflera digitata</i>
patotara	<i>Leucopogon fraseri</i>
pennywort	<i>Hydrocotyle</i> sp.
poataniwha	<i>Melicope simplex</i>
pohuehue	<i>Muehlenbeckia australis</i>
porcupine shrub	<i>Melicytus alpinus</i>
poroporo	<i>Solanum laciniatum</i>
prickly shield fern	<i>Polystichum vestitum</i>
purging flax*	<i>Linum catharticum</i>
rock fern	<i>Cheilanthes humilis</i>
Scotch thistle*	<i>Cirsium vulgare</i>
scrambling fuchsia	<i>Fuchsia perscandens</i>
scrub pohuehue	<i>Muehlenbeckia complexa</i>
silver tussock	<i>Poa cita</i>
soft rush*	<i>Juncus effusus</i>
star lily	<i>Arthropodium candidum</i>
stonecrop*	<i>Sedum acre</i>
thousand-leaved fern	<i>Hypolepis millefolium</i>
toatoa	<i>Haloragis erecta</i>
totara	<i>Podocarpus totara</i>
turepo	<i>Streblus heterophyllus</i>
water fern	<i>Histiopteris incisa</i>
white clover*	<i>Trifolium repens</i>
wineberry	<i>Aristotelia serrata</i>
wire moss	<i>Polytrichum juniperinum</i>
woolly mullein*	<i>Verbascum thapsus</i>
yarrow*	<i>Achillea millefolium</i>
yellowwood	<i>Coprosma linariifolia</i>

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