

**TIMARU DISTRICT**  
**SIGNIFICANT NATURAL AREAS**  
**SURVEY**

**GILES PROPERTY**  
**GLENELG**



Report prepared for Timaru District Council by Mike Harding  
May 2014



# TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

## PROPERTY REPORT

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### PROPERTY DETAILS:

**Owner:** .....Richard Giles  
**Valuation References:** .24810/042.04  
**Address:** .....Glenelg, Moa Pass Road  
**Location:** .....Southeast slopes of Brothers Range  
**Ecological District:** .....Geraldine  
**TDC Land Type:**.....‘Soft Rock Hills and Downs’  
**Land Environments:**.....N3.1a

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### ECOLOGICAL CONTEXT:

The property lies on the lower southeast slopes of the Brothers Range, west of Totara Valley. It 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.

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### SIGNIFICANT AREAS ON THE PROPERTY:

Indigenous vegetation on the property comprises shrubland and sparsely vegetated rockland associated with limestone bluffs. 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 March 2014. Five areas, comprising approximately nine 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 | Map reference (NZTM) | Aprox. size (ha) | Vegetation/habitat type |
|----------|-----------|----------------------|------------------|-------------------------|
| 438      |           | E1437235-N5095240    | 2.86             | shrubland; rockland     |
| 441      |           | E1437550-N5094790    | 4.00             | shrubland; rockland     |
| 442b     |           | E1437615-N5094835    | 1.67             | rockland                |
| 445a     |           | E1437865-N5096445    | 0.08             | rockland                |
| 445b     |           | E1437710-N5096635    | 0.16             | herbfield               |

The boundaries of these SNAs are illustrated on the aerial photographs 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.



*Abundant mistletoe at SNA 441*



Giles Property (Glennelg)  
24810/042.04

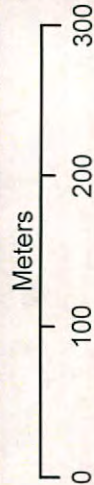


1:5,000

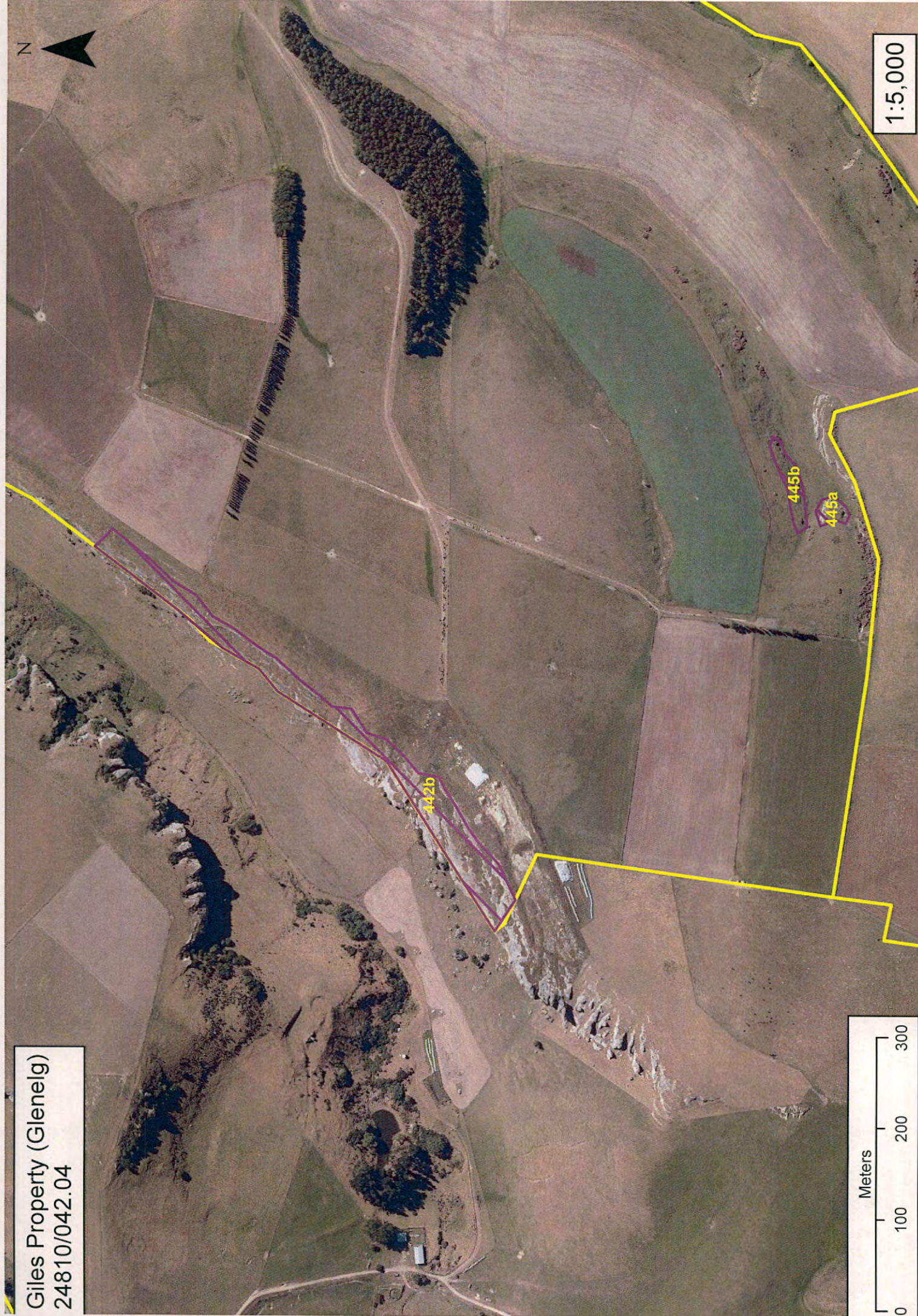




Giles Property (Glenelg)  
24810/042.04



1:5,000





**Area Name:****Map ref. (NZTM):** E1437710-N5096635**Ecological District:** Geraldine**Surveyors:** Mike Harding**Property:** Glenelg (Giles)**Nearest Locality:** Totara Valley**Area Size (ha):** 2.86**Altitude (m):** 160-200**Survey Time:** 1½ hour**Survey Date:** 13-03-14**General Description:**

This SNA lies on northwest-facing slopes along Sterndale Valley Road at the western boundary of the property. It is an extension of a limestone outcrop on an adjacent property (SNA 444) and lies across the valley from a large limestone outcrop (SNA 439).

**Plant Communities:**

The main plant communities present are shrubland and sparsely-vegetated rockland, described separately below. Naturalized (exotic) species are indicated with an asterisk\*.

Shrubs and trees present on or adjacent to the limestone scarp are mingimingi, matagouri, native broom, mahoe, broadleaf, mapou, cabbage tree, elderberry\*, gorse\* (mostly dead), pohuehue, scrub pohuehue, native bindweed, leafless lawyer and mistletoe (on mingimingi).

Other plant species present on or adjacent to the rock are *Epilobium nummulariifolium*, *Asplenium lyallii*, maidenhair fern, oxalis, cardamine, *Dichondra repens*, *Einadia allanii*, *Geranium microphyllum*, *Galium perpusillum*, *Carex breviculmis*, *Hypnum cupressiforme*, toatoa, silver tussock, cocksfoot\*, black nightshade\*, Californian thistle\*, mouse-ear hawkweed\*, stonecrop\*, woolly mullein\*, dandelion\*, dwarf mallow\*, horehound\*, white clover\*, yarrow\*, narrow-leaved plantain\*, dove's foot\*, mouse-ear chickweed\*, purging flax\*, barley grass\*, danthonia\*, shepherd's purse\*, hawkbit\*, black meddick\*, nodding thistle\*, Scotch thistle\*, cleavers\* and nettle\*.



*SNA 438 viewed from across the valley*

**Birds/Fauna Observed:**

Native birds observed during this brief survey were grey warbler, bellbird, spur-winged plover and paradise shelduck (nearby).



**Notable Flora, Fauna and Habitats:**

Important features of this area are: the presence of limestone habitat, a naturally uncommon ecosystem listed as 'vulnerable' by Holdaway *et al* (2012); populations of two plant species (*Einadia allanii* and *Geranium microphyllum*) listed as 'at risk' (naturally uncommon) by de Lange *et al* (2012); and, that the site is very close to larger area of outcropping limestone.

**Notable Plant and Animal Pests:**

Gorse and elderberry are the only woody plant pests present. However, the site is threatened by a number of invasive naturalized herbs and grasses, as are most limestone sites in this part of the ecological district. Animal pests were not surveyed.

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

Plant communities are buffered to some extent by the steepness of the area, though the area is long and narrow. The area is fenced along its upper boundary, so some parts of the bluff crest have very low grazing pressure. A large and ecologically-important limestone bluff is present across the valley (SNA 439).

**Condition and Management Issues:**

The steeper areas of exposed limestone are in relatively good condition. Adjacent areas are affected by invasive pasture grasses and weeds. Shrubland at the upper part of the area, where it is protected from grazing, is in relatively good condition. The main management issue is control of invasive weeds.

**ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:**

| Primary Criteria                 | Rank | Notes                                                                                                                                                                                   |
|----------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Representativeness               | M/H  | The limestone scarp community is moderately representative of the original vegetation and typical of that remaining in the ecological district.                                         |
| Rarity                           | H    | The SNA lies within an acutely-threatened land environment (N3.1a); is a naturally uncommon ecosystem (limestone bluff); and supports two 'at risk' (naturally uncommon) plant species. |
| Diversity and pattern            | M    | Plant species diversity is moderate (24 species).                                                                                                                                       |
| Distinctiveness/special features | L    | Clearly visible from a public road.                                                                                                                                                     |
| <b>Other Criteria</b>            |      |                                                                                                                                                                                         |
| Size/shape                       | L/M  | A small to moderate-sized area with a long narrow shape.                                                                                                                                |
| Connectivity                     | M    | Lies close to larger areas of outcropping limestone.                                                                                                                                    |
| Long-term Sustainability         | M    | Control of woody weeds and containment of herbaceous weeds will probably be necessary to maintain ecological values.                                                                    |

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

The parts of this area that support indigenous plant communities are too steep and rocky for farm development, except for the bluff crest which is fenced. This area is long and narrow and quite modified in places.

**Discussion:**

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of limestone habitat, populations of two 'at risk' plant species and its proximity to a much larger area of limestone habitat.



|                                                |                                                           |
|------------------------------------------------|-----------------------------------------------------------|
| <b>Area Name:</b>                              | <b>Property:</b> Glenelg (Giles)                          |
| <b>Map reference (NZTM):</b> E1437865-N5096445 | <b>Nearest Locality:</b> Totara Valley                    |
| <b>Ecological District:</b> Geraldine          | <b>Area Size (ha):</b> 4 <b>Altitude (m):</b> 160-200     |
| <b>Surveyors:</b> Mike Harding                 | <b>Survey Time:</b> 1½ hours <b>Survey Date:</b> 13-03-14 |

**General Description:**

This SNA lies on a moderately-steep southeast-facing slope, down-valley from a large limestone scarp on the adjacent property (SNA 443).

**Plant Communities:**

The main plant community present is shrubland, with small areas of sparsely-vegetated rockland. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk\*.

The shrubland community is dominated by mingimingi and matagouri. Other taller species present are cabbage tree, native broom, tree daisy, elderberry\* and gorse\* (mostly dead). Present in the shrubland canopy are pohuehue, native jasmine, native bindweed, *Clematis marata* and mistletoe (on mingimingi, matagouri and tree daisy).

Pasture grasses form the dominant ground cover within the shrubland. Other species present are *Epilobium nummulariifolium*, *Carex breviculmis*, *Lagenifera* sp., pennywort, *Dichondra repens*, *Hypnum cupressiforme* and a range of naturalized pasture grasses, thistles and herbs. Occasionally present at denser areas of shrubland are necklace fern and seedlings of mingimingi and native broom.

Plant species present on or associated with areas of exposed limestone are native broom, mingimingi, mountain akeake, maidenhair fern, *Asplenium byallii*, *Epilobium nummulariifolium*, *Geranium brevicaule*, *Craspedia uniflora* agg., buttercup, silver tussock, purging flax\*, pale flax\*, mouse-ear hawkweed\*, narrow-leaved plantain\*, white clover\*, red clover\*, yarrow\*, cocksfoot\*, Chewings fescue\*, dandelion\*, mouse-ear chickweed\*, woolly mullein\*, *Lamium* sp.\*, stonecrop\*, dove's foot\* and horehound\*.



SNA 441

**Birds/Fauna Observed:**

Native birds observed during this brief survey were bellbird, grey warbler, spur-winged plover, welcome swallow and paradise shelduck (nearby).

**Notable Flora, Fauna and Habitats:**

Important features of this area are: the presence of limestone habitat, a naturally uncommon ecosystem listed as 'vulnerable' by Holdaway *et al* (2012); the presence of a plant species listed as data-deficient by de Lange *et al* (2012), *Craspedia uniflora* agg.; a locally-uncommon species, tree daisy (*Olearia bullata*); the habitat the area provides for birds; and that the area adjoins a larger area of outcropping limestone.



**Notable Plant and Animal Pests:**

Naturalized pasture grasses, herbs and thistles are the most important plant pests present. Gorse and elderberry are present, though most of the gorse has been sprayed and the elderberry is not dominant. Animal pests were not surveyed.

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

This SNA supports a relatively large area of shrubland for this part of the ecological district. It is buffered to some extent by its location on a moderately steep and erosion-prone slope. The area is just down-valley from a large limestone bluff (SNA 443 on the adjacent property) and close to other areas of limestone habitat.

**Condition and Management Issues:**

The shrubland plant community is in good condition. The smaller areas of herbfield on exposed limestone are modified by the presence of invasive naturalized species. The main management issues are continued control of woody weeds (gorse and elderberry), preferably by ground-based methods, and containment of invasive pasture species at areas of exposed limestone.

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**ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:**

| Primary Criteria                 | Rank       | Notes                                                                                                                                                                           |
|----------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Representativeness               | <b>M</b>   | A good example of indigenous shrubland, with smaller areas of limestone habitat, typical of this part of the ecological district.                                               |
| Rarity                           | <b>M/H</b> | Lies within an acutely-threatened land environment (N3.1a); has small areas of a naturally uncommon ecosystem (limestone bluff); and supports one data-deficient plant species. |
| Diversity and pattern            | <b>M</b>   | Moderate plant species diversity (23 indigenous species).                                                                                                                       |
| Distinctiveness/special features | <b>L</b>   | One of the largest areas of indigenous shrubland in this part of the ecological district.                                                                                       |
| <b>Other Criteria</b>            |            |                                                                                                                                                                                 |
| Size/shape                       | <b>M</b>   | A moderate-sized area that is buffered to some extent by its size and location on moderately steep erosion-prone slopes.                                                        |
| Connectivity                     | <b>M</b>   | Is an extension of a larger area of outcropping limestone.                                                                                                                      |
| Long-term Sustainability         | <b>M</b>   | Long term protection will require care with herbicide application and appropriate grazing management.                                                                           |

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

This area has been set aside from farm development, presumably because of the steepness and instability of the terrain. It has only limited potential for grazing, though may have potential for tree planting.

**Discussion:**

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are that it is one of the largest areas of indigenous shrubland in this part of the ecological district, includes limestone habitats and supports a population of a data-deficient plant species. It also provides useful habitat for birds.



# TIMARU DISTRICT SNA SURVEY

SNA 442b

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|                                                |                                                          |
|------------------------------------------------|----------------------------------------------------------|
| <b>Area Name:</b>                              | <b>Property:</b> Glenelg (Giles)                         |
| <b>Map reference (NZTM):</b> E1437235-N5095240 | <b>Nearest Locality:</b> Totara Valley                   |
| <b>Ecological District:</b> Geraldine          | <b>Area Size (ha):</b> 1.67 <b>Altitude (m):</b> 200-280 |
| <b>Surveyors:</b> Mike Harding                 | <b>Survey Time:</b> 1 hour <b>Survey Date:</b> 07-03-14  |

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## General Description:

This SNA lies on a prominent northwest-facing limestone scarp at the western boundary of the property. It comprises an area of rock pavement with a steeper scarp at the property boundary. It extends onto the adjacent property (SNA 442a) and lies close to SNA 443 across the valley.

## Plant Communities:

The main indigenous plant community present is sparsely-vegetated rockland, described below. Naturalized (exotic) species are indicated with an asterisk\*.

Plant species on or associated with the exposed rock are mahoe, broadleaf, cabbage tree, elderberry\*, pohuehue, mingimingi, toatoa, *Galium perpusillum*, *Carex breviculmis*, blue tussock, silver tussock, maidenhair fern, *Asplenium lyallii*, *Gingidia enysii*, *Dichondra repens*, stonecrop\*, mouse-ear hawkweed\*, king devil hawkweed\*, narrow-leaved plantain\*, suckling clover\* and black nightshade\*.

Other important species adjacent to exposed rock at the site are cocksfoot\*, Chewings fescue\*, yarrow\*, white clover\*, red clover\*, horehound\*, woolly mullein\*, cleavers\*, pale flax\* and pasture grasses.

## Limestone pavement at SNA 442b

## Birds/Fauna Observed:

Native birds observed during this brief survey at or adjacent to the site were bellbird, grey warbler, welcome swallow and paradise shelduck.

## Notable Flora, Fauna and Habitats:

Important features of this area are: the presence of limestone habitat, a naturally uncommon ecosystem listed as 'vulnerable' by Holdaway *et al* (2012); a healthy population of a plant species (*Gingidia enysii*) listed as 'at risk' (naturally uncommon) by de Lange *et al* (2012); and, that the site is part of a larger area of outcropping limestone.



## Notable Plant and Animal Pests:

Invasive pasture grasses and herbs, notably Chewings fescue, mouse-ear hawkweed, stonecrop and narrow-leaved plantain are the most important weeds present. Animal pests were not surveyed.

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

This SNA is part of a larger limestone outcrop which extends onto the adjacent property (SNA 442a). It is buffered at its lower (northwest) edge on the property boundary by a steep scarp. It has been fenced along much of its upper boundary, to prevent stock straying from the property.



**Condition and Management Issues:**

The steeper areas of exposed limestone are in relatively good condition. The gentler limestone pavement is affected by invasive pasture grasses and weeds. Most parts of the site are protected from grazing and are in relatively good condition. The main management issue is control of invasive weeds.

**Property Owner Comment:**

Mr Giles advises that he is extending the fence along the crest of the scarp to prevent stock venturing over the bluff at the property boundary (waratahs have been placed; wires yet to be run).

**ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:**

| Primary Criteria                 | Rank | Notes                                                                                                                                                      |
|----------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Representativeness               | M/H  | The limestone scarp community is moderately representative of the original vegetation and typical of that remaining in the ecological district.            |
| Rarity                           | M/H  | Lies within an acutely-threatened land environment (N3.1a); is a naturally uncommon ecosystem (limestone bluff); and supports one 'at risk' plant species. |
| Diversity and pattern            | L/M  | Plant species diversity is relatively low (14 species).                                                                                                    |
| Distinctiveness/special features | L/M  | The presence of limestone pavement is a special feature.                                                                                                   |
| <b>Other Criteria</b>            |      |                                                                                                                                                            |
| Size/shape                       | L/M  | A small to moderate-sized area with a long narrow shape.                                                                                                   |
| Connectivity                     | M    | Is part of a larger area of exposed limestone.                                                                                                             |
| Long-term Sustainability         | M/H  | Long term protection of the limestone pavement may require control of invasive grasses and herbs.                                                          |

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

This area has been deliberately set aside from grazing by the landowner. It lies on the property boundary and has very 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 presence of exposed limestone with a healthy population of an 'at risk' plant species. It is part of a larger limestone outcrop extending onto the adjacent property.

*Gingidia enysii* and maidenhair fern  
(background) at SNA 442b





|                                                   |                                                          |
|---------------------------------------------------|----------------------------------------------------------|
| <b>Area Name:</b>                                 | <b>Property:</b> Glenelg (Giles)                         |
| <b>Ecological District:</b> Geraldine             | <b>Nearest Locality:</b> Totara Valley                   |
| <b>SNA 445a: Map ref. (NZTM):</b> 1437550-5094790 | <b>Area Size (ha):</b> 0.08 <b>Altitude (m):</b> 210-220 |
| <b>SNA 445b: Map ref. (NZTM):</b> 1437615-5094835 | <b>Area Size (ha):</b> 0.16 <b>Altitude (m):</b> 210-220 |
| <b>Surveyor:</b> Mike Harding                     | <b>Survey Time:</b> 1 hour <b>Survey Date:</b> 07-04-14  |

**General Description:**

These two SNAs are on small areas of outcropping limestone near the southern boundary of the property. They lie within a larger paddock and are separated by pasture.

**Plant Communities:**

The main plant communities present are herbfield and sparsely vegetated rockland. These plant communities are described for each SNA below. Naturalized (exotic) species are indicated with an asterisk\*.

SNA 445a:

This SNA comprises a small limestone outcrop with a steep scarp on its eastern side. Plant species present on the exposed limestone are mingimingi, horehound\*, mouse-ear hawkweed\*, suckling clover\*, dandelion\*, *Galium perpusillum*, mouse-ear chickweed\*, *Asplenium hyalii*, *Senecio glaucophyllus*, purging flax\*, *Colobanthus* aff. *strictus*, hard grass\*, cocksfoot\* and wheat grass\*. Other species associated with the limestone are hedge mustard\*, dwarf mallow\*, dove's foot\*, black nightshade\*, nettle\*, *Parietaria debilis*, pennywort and a single cabbage tree.



SNA 445a

SNA 445b:

This SNA comprises a small area of gently-sloping limestone turf on a south-facing slope. It is surrounded by pasture but supports a number of indigenous species on and adjacent to areas of exposed limestone. These species are *Colobanthus* aff. *strictus*, *Craspedia uniflora* agg., *Poa* sp., *Carex breviculmis*, *Gingidia enysii*, *Lagenifera* sp., *Epilobium nummulariifolium* and a few scattered plants of matagouri and cabbage tree.

**Birds/Fauna Observed:**

No native birds were observed at the site during this brief survey.



### Notable Flora, Fauna and Habitats:

Important features of this area are: the presence of limestone habitat, a naturally uncommon ecosystem listed as 'vulnerable' by Holdaway *et al* (2012); good populations of plant species listed as 'at risk' (naturally uncommon) by de Lange *et al* (2012), *Senecio glaucophyllus* (at SNA 445a; *photo at right*) and *Gingidia enysii* (at SNA 445b); data-deficient species (*Craspedia uniflora* agg. and *Colobanthus* aff. *strictus*); and that the site is part of a larger area of outcropping limestone.



### Notable Plant and Animal Pests:

Gentler parts of both sites are affected by invasive naturalized grasses and herbs, as is typical at lowland limestone sites. However, steeper south-facing parts of the sites appear less vulnerable to weed invasion.

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

Both of these sites are very small, lie within a larger paddock and are poorly buffered. However, small populations of indigenous plant species have persisted under the existing grazing regime.

### Condition and Management Issues:

The main management issues are control or containment of invasive naturalized plants. Light grazing by sheep (with exclusion of cattle and deer) is probably the best way to protect ecological values at these two sites.

### ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

| Primary Criteria                 | Rank | Notes                                                                                                                                                                                     |
|----------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Representativeness               | M    | Modified indigenous plant communities, typical of smaller depleted limestone habitats in the ecological district.                                                                         |
| Rarity                           | H    | The SNAs lie within an acutely-threatened land environment (N3.1a); are a naturally uncommon ecosystem (limestone bluff); and support two 'at risk' and two data-deficient plant species. |
| Diversity and pattern            | L    | Plant species diversity is low: 10 indigenous species at SNA 445a; 9 indigenous plant species at SNA 445b.                                                                                |
| Distinctiveness/special features | L    |                                                                                                                                                                                           |
| Other Criteria                   |      |                                                                                                                                                                                           |
| Size/shape                       | L    | Both SNAs are small and not well buffered.                                                                                                                                                |
| Connectivity                     | L/M  | These SNAs lie close to other areas of limestone habitat on the property and on adjacent properties.                                                                                      |
| Long-term Sustainability         | L/M  | These SNAs are vulnerable to invasive naturalized plants and grazing.                                                                                                                     |

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

These two SNAs lie on steeper slopes that are unsuitable for farm development. However, they are vulnerable to inappropriate grazing (such as cattle or deer) and to tree planting.

### Discussion:

These areas meet the District Plan criteria for Significant Natural Areas. They are small and modified but, somewhat surprisingly, support good populations of two 'at risk' and two data-deficient plant 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)   |                                                     |
| barley grass*               | <i>Critesion</i> sp.                                |
| black meddick*              | <i>Medicago lupulina</i>                            |
| black nightshade*           | <i>Solanum nigrum</i>                               |
| blue tussock.....           | <i>Poa colensoi</i>                                 |
| broadleaf .....             | <i>Griselinia littoralis</i>                        |
| buttercup .....             | <i>Ranunculus</i> sp.                               |
| cabbage tree/ti rakau ..... | <i>Cordyline australis</i>                          |
| Californian thistle*        | <i>Cirsium arvense</i>                              |
| cardamine .....             | <i>Cardamine debilis</i>                            |
| Chewings fescue*            | <i>Festuca rubra</i> ssp. <i>commutata</i>          |
| cleavers*                   | <i>Galium aparine</i>                               |
| cocksfoot*                  | <i>Dactylis glomerata</i>                           |
| dandelion*                  | <i>Taraxacum officinale</i>                         |
| danthonia*                  | <i>Rytidosperma</i> sp.                             |
| dove's foot*                | <i>Geranium molle</i>                               |
| dwarf mallow*               | <i>Malva neglecta</i>                               |
| elderberry*                 | <i>Sambucus nigra</i>                               |
| gorse*                      | <i>Ulex europaeus</i>                               |
| hard grass*                 | <i>Catapodium rigidum</i>                           |
| hawkbit*                    | <i>Leontodon taraxacoides</i>                       |
| hedge mustard*              | <i>Sisymbrium officinale</i>                        |
| horehound*                  | <i>Marrubium vulgare</i>                            |
| king devil hawkweed*        | <i>Pilosella piloselloides</i> ssp. <i>praealta</i> |
| kowhai .....                | <i>Sophora microphylla</i>                          |
| leafless lawyer.....        | <i>Rubus squarrosus</i>                             |
| mahoe/whiteywood .....      | <i>Melicytus ramiflorus</i>                         |
| maidenhair fern .....       | <i>Adiantum cunninghamii</i>                        |
| mapou.....                  | <i>Myrsine australis</i>                            |
| matagouri .....             | <i>Discaria toumatou</i>                            |
| matai.....                  | <i>Prumnopitys taxifolia</i>                        |
| mingimingi.....             | <i>Coprosma propinqua</i>                           |
| mistletoe.....              | <i>Ileostylis micranthus</i>                        |
| mountain akeake .....       | <i>Olearia avicenniifolia</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</i> aff. <i>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>                                |
| oxeye daisy*                | <i>Leucanthemum vulgare</i>                         |
| pale flax*                  | <i>Linum bienne</i>                                 |
| pennywort .....             | <i>Hydrocotyle</i> sp.                              |
| pohuehue .....              | <i>Muehlenbeckia australis</i>                      |
| purgings flax*              | <i>Linum catharticum</i>                            |
| red clover*                 | <i>Trifolium pratense</i>                           |
| Scotch thistle*             | <i>Cirsium vulgare</i>                              |
| scrub pohuehue .....        | <i>Muehlenbeckia complexa</i>                       |
| shepherd's purse*           | <i>Capsella bursa-pastoris</i>                      |



|                        |                             |
|------------------------|-----------------------------|
| silver tussock.....    | <i>Poa cita</i>             |
| stonecrop* .....       | <i>Sedum acre</i>           |
| suckling clover* ..... | <i>Trifolium dubium</i>     |
| toatoa.....            | <i>Haloragis erecta</i>     |
| totara .....           | <i>Podocarpus totara</i>    |
| tree daisy .....       | <i>Olearia bullata</i>      |
| wheat grass* .....     | <i>Elymus</i> sp.           |
| white clover* .....    | <i>Trifolium repens</i>     |
| woolly mullein* .....  | <i>Verbascum thapsus</i>    |
| yarrow* .....          | <i>Achillea millefolium</i> |

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