



TIMARU DISTRICT

SIGNIFICANT NATURAL AREAS
SURVEY

PALM HILLS FARM
JAMES AND SARAH HART



Report prepared for Timaru District Council by Mike Harding
October 2008

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner: James and Sarah Hart
Valuation Reference: 24670/214.00
..... 24670/214.01
..... 24670/242.00
Address: Matthew Road, Upper Waitohi
Location: Rolling hill country between Kakahu Bush and Hanging Rock,
west of Upper Waitohi
Ecological District:..... Geraldine Ecological District.
TDC Land Type:..... Soft Rock Hills and Downs.
Land Environment: N3 (eastern South Island undulating plains and hills).

ECOLOGICAL CONTEXT:

The property covers rolling hill country in the Kakahu Bush-Hanging Rock-Upper Waitohi area in South Canterbury, comprising loess-covered limestone hills. It includes the headwater catchments of small streams that flow south and east to the Opihi River. The property lies in the central inland part of Geraldine Ecological District.

It is likely that the original vegetation of this area was predominantly mixed podocarp-hardwood forest with smaller areas of scrub, shrubland, wetland and limestone bluff flora. This is the part of the Geraldine Ecological District with the largest remaining areas of indigenous forest. Nevertheless, indigenous forest is still generally confined to small remnants in gullies and around limestone bluffs, with some larger areas of younger regenerating forest.

The indigenous fauna would have originally been significantly more numerous and diverse, with a greater range of birds, lizards and invertebrates than is presently found in the area. The property lies within the known range of the South Canterbury population of long-tailed bat and adjacent to the stronghold of the bat population at Hanging Rock. This species is regarded as nationally-endangered.

Indigenous vegetation on the property comprises areas of mixed hardwood forest, cabbage tree treeland, kanuka forest, shrubland, limestone bluff vegetation and relatively large pasture-dominated wetlands. The property lies reasonably close to an area of protected indigenous forest at Waitohi Scenic Reserve and to other important indigenous forest remnants on limestone scarps.

SIGNIFICANT AREAS ON THE PROPERTY:

The property was surveyed as part of the District-wide survey of Significant Natural Areas during September 2008. Nearly all parts of the property were visited and assessed. Twelve discrete areas, totalling approximately 57 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
191a	Saddle Road Limestone Forest	J38: 571-681	19.29	Podocarp-hardwood forest
191b	Coles Road remnant	J38: 574-679	0.85	Podocarp-hardwood forest
192		J38: 568-681	9.49	Hardwood forest and treeland
269a	Homestead Gully	J38: 565-678	2.9	Hardwood forest and treeland
269b	Matthew Road Treeland	J38: 564-673	5.46	Hardwood forest and treeland
269c		J38: 562-679	1.49	Hardwood forest and treeland
274		J38: 556-662	4.37	Hardwood forest
275		J38: 557-666	0.34	Treeland and wetland
276		J38: 558-663	0.38	Treeland
279a		J38: 562-674	7.97	Hardwood forest and treeland
279b		J38: 560-674	2.58	Treeland
341a	Tri Q Forest and Scarp	J38: 551-661	1.14	Podocarp-hardwood forest

These SNAs are illustrated on the attached aerial photograph and described in greater detail on the Area Inspection Forms and Wetland Record 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 most are considered to be sustainable in the long term (criterion vii, page B19). SNAs are subject to confirmation by Council after regarding the matters listed under Final Considerations (pages B19-B20).

The implication of an area being listed as an SNA is that consent is required from Council for clearance of indigenous vegetation or habitat by any means (including burning and spraying with herbicides) or 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. It is expected that SNAs will eventually be listed in the District Plan by way of a notified plan change.

OTHER AREAS INSPECTED ON THE PROPERTY:

Other areas of indigenous vegetation and habitat on the property were inspected but are not regarded as significant when assessed against the criteria on pages B18-B20 of the Timaru District Plan. Failure of an area to meet the significance criteria does not necessarily mean that it is not important for nature conservation or the protection of indigenous biodiversity; it simply means that the area (as assessed at this time) does not meet the criteria in the Timaru District Plan.

Other areas of indigenous vegetation on the property include small areas of cabbage tree treeland and small patches of kanuka forest and other indigenous trees. These areas are too small and/or modified to meet the District Plan criteria. However, these areas have considerable potential value and, if protected or managed, may eventually become significant.



Hart (Palm Hills)
24670/214.00
24670/214.01



1:15,000

TIMARU DISTRICT SNA SURVEY

AREA 191a

Area Name: Saddle Road Limestone Forest
Location (central map reference): J38: 571-681
Ecological District: Geraldine
Surveyors: Mike Harding

Property: Palm Hill Farm (Hart)
Nearest Locality: Upper Waitohi
Area Size (ha): 19.29 **Altitude (m):** 180-280
Survey Time: 3 hours **Survey Date:** 01-09-08

General Description:

This SNA comprises a relatively extensive area of indigenous forest and shrubland on and adjacent to a substantial limestone scarp at the northeast corner of the property, below Saddle Road and Coles Road.

Plant Communities:

Four main plant communities are present: forest, shrubland, wetland and limestone flora. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.

Forest:

The scattered patches of forest within this SNA are generally associated with the limestone scarp and steeper slopes adjacent to the scarp. The forest is mostly dominated by mahoe, broadleaf and cabbage tree. Other canopy species present are kanuka, five-finger, kowhai, matipo, pohuehue, native jasmine, elderberry*, fuchsia and mapou. A small patch of young totara trees is present near the northern end of the scarp. Trunk diameters (cm at breast height) of the larger trees are: cabbage tree, 50-85; broadleaf, 115; and kanuka, 35-55.

Understorey and ground-cover species present are poroporo, gooseberry*, black nightshade*, horehound*, pennywort, nodding thistle* and Californian thistle*.

Shrubland:

Shrubland and scattered scrub are present throughout the SNA, in association with the patches of forest and on the steeper limestone slopes. The shrubland is dominated by *Coprosma propinqua*. Other important species present are matagouri, native broom, silver tussock, flax, pohuehue, scrub pohuehue and mistletoe (on *Coprosma propinqua*).

Occasionally present are *Coprosma crassifolia*, leafless lawyer, *Clematis foetida*, blackberry* and one plant of the rare speargrass *Aciphylla subflabellata*.

Limestone Flora:

Plant species present and generally confined to the limestone rock are mountain akeake, toatoa, koromiko, maidenhair fern, *Asplenium lyallii*, *Leptinella* sp., *Hydrocotyle heteromeria*, *Cardamine debilis* and *Epilobium nummulariifolium*.

Wetland:

The valley floor at the base of the limestone scarp supports some relatively extensive areas of wetland. These are mostly modified and dominated by pasture grasses. However, there are some areas of denser rushland and sedgeland dominated by *Carex secta* and *Juncus gregiflorus*, with occasional *Coprosma propinqua* and flax.

Birds/Fauna Observed:

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

Notable Flora, Fauna and Habitats:

Notable features of this area are the diversity of plant communities present, the presence of canopy species representative of the original forest (especially totara), the presence of the threatened speargrass (*Aciphylla subflabellata*), the presence of locally uncommon species (leafless lawyer, scrub pohuehue, toatoa and flax), the habitat the area provides for long-tailed bat, the extent of the area and the contribution the area makes to the network of fauna habitat in the wider area.

Notable Plant and Animal Pests:

Elderberry and gooseberry are probably the most important plant pests present, though neither poses a significant threat to the area. Animal pests were not surveyed.

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

The area is unfenced, though its size and location on the steep limestone slopes offer it some protection. The SNA lies close to SNA 192, and is effectively linked to that SNA by scattered shrubs and cabbage trees. It is one of the larger areas of indigenous vegetation remaining in this area.

Condition and Management Issues:

The forest and shrubland canopies are in good condition. However, the forest understorey is relatively sparse and open, except on the very steep slopes which are inaccessible to farm animals. Strategic fencing, to protect the denser areas of forest and scrub from grazing, would benefit the vegetation. Regular wild animal (possum) control is probably necessary to maintain the values of the area.

An impressive Maori rock drawing is present under a large overhang at the southern end of the area. It is securely fenced to prevent access by people and stock.

Property Owner Comment:

Considering fencing part of wetlands from stock.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	A good example of indigenous vegetation typical of the ecological district and containing species representative of the original vegetation.
Rarity	M/H	Provides good habitat for long-tailed bat. Supports a threatened ('sparse') plant species (<i>Aciphylla subflabellata</i>) and several locally uncommon species.
Diversity and pattern	M	A diverse range of plant communities is present, but species diversity is substantially reduced from that originally present.
Distinctiveness/special features	M/H	The large Maori rock drawing is notable. The abundance of flax (a locally uncommon species) is a special feature.
Other Criteria		
Size/shape	H	A relatively large area for the ecological district.
Connectivity	M/H	Lies close to SNA 192 and makes an important contribution to the network of fauna habitat in the area.
Long-term Sustainability	M	Some management will be necessary to maintain the ecological values of the area 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 the landowners. It occupies steeper slopes that are generally unsuitable for farm development.

Discussion:

This area easily meets the District Plan criteria for a Significant Natural Area. Important features of the area are the diversity of plant communities present, the presence of canopy species representative of the original forest (especially totara), the presence of the threatened spargrass (*Aciphylla subflabellata*), the presence of locally uncommon species (leafless lawyer, scrub pohuehue, toatoa and flax), the habitat the area provides for long-tailed bat, the extent of the area, the contribution the area makes to the network of fauna habitat in the wider area and the presence of a large Maori rock drawing.

TIMARU DISTRICT SNA SURVEY

Wetland Record Form

Wetland 191

Wetland name: Hart-Saddle Road	Date: 01 September 2008
Property: Palm Hills (James and Sarah Hart)	GPS/Grid Ref: J38: 571-681
Altitude: 180 to 200 m	No. of plots sampled:
Location: Saddle Road, Upper Waitohi	Approximate size (ha): 1-2 ha

Classification: I System	IA Subsystem	II Wetland Class	IIA Wetland Form
Palustrine	Permanent	Marsh	Blanket Mire

Surveyors:

Indicator	Indicator components	Specify and Comment	Score 0-5 ¹	Mean score
Change in hydrological integrity	Impact of manmade structures	Excavated pond	3	2.7
	Water table depth	Altered at pond	3	
	Dryland plant invasion	Pasture grasses dominant	2	
Change in physico-chemical parameters	Fire damage	No evidence of damage	5	3.3
	Degree of sedimentation/erosion	Parts affected by excavation	3	
	Nutrient levels	Pasture grasses dominant	2	
	von Post index	n/a		
Change in ecosystem intactness	Loss in area of original wetland	Excavated pond	3	3.5
	Connectivity barriers	Connections largely intact	4	
Change in browsing, predation and harvesting regimes	Damage by domestic or feral animals	Grazed by domestic stock	1	2.3
	Introduced predator impacts on wildlife	Intermittent control?	2	
	Harvesting levels	Presumably minor	4	
Change in dominance of native plants	Introduced plant canopy cover	Pasture grasses dominant	2	2
	Introduced plant understorey cover	n/a		
Total wetland condition index /25				13.8

Main vegetation types: Pasture, *Carex secta* sedge/land, *Juncus greigiflorus* rushland, *Coprosma propinqua*, flax.

Native fauna: grey warbler, bellbird, welcome swallow and fantail in adjacent areas

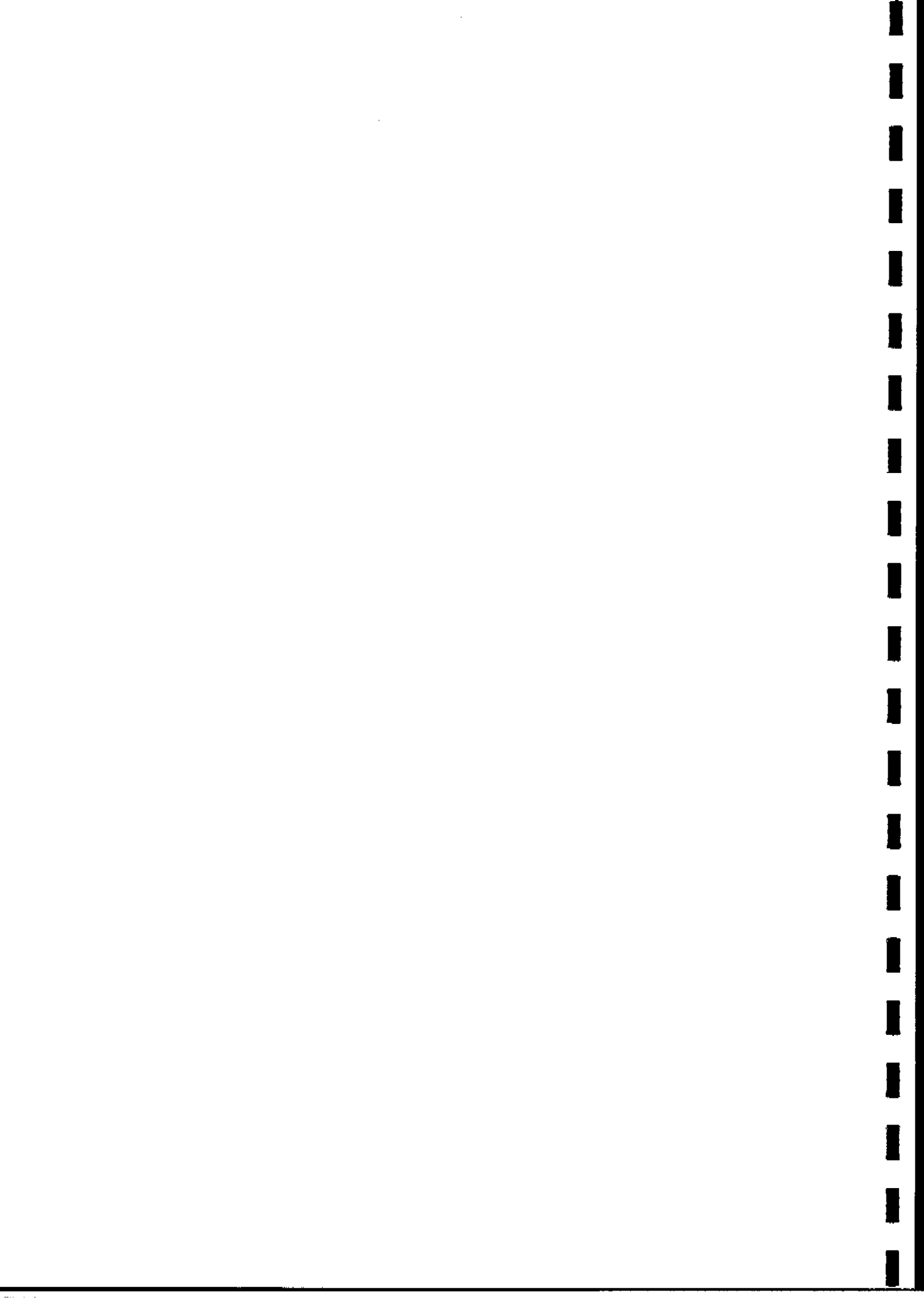
Other comments: Adjacent to indigenous forest, treeland and shrubland on limestone at head of catchment.

Pressure	Rating ²	Specify and Comment
Modifications to catchment hydrology	1	Excavated pond
Water quality within the catchment	2	Near head of spring-fed catchment
Animal access	4	Unfenced, semi-intensive grazing
Key undesirable species	3	Introduced animals present, crack willow
% catchment in introduced vegetation	3	
Other pressures	1	Fertiliser?
Total wetland pressure index /30	14	

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

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

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



TIMARU DISTRICT SNA SURVEY

AREA 191b

Area Name: Coles Road Remnant

Location (central map reference): J38: 574-679

Ecological District: Geraldine

Surveyors: Mike Harding

Property: Palm Hill Farm (Hart)

Nearest Locality: Upper Waitohi

Area Size (ha): 0.85

Altitude (m): 180-200

Survey Time: ½ hour

Survey Date: 01-09-08

General Description:

This SNA lies at the head of a small broad gully on south-facing slopes at the northeast corner of the property, below Coles Road.

Plant Communities:

This SNA comprises scrub and shrubland with scattered patches of trees and a small area of wetland vegetation. These plant communities are described below. Naturalized (exotic) species are indicated with an asterisk*.

Areas of scrub and shrubland are dominated by *Coprosma propinqua*, scrub pohuehue and leafless lawyer. Emergent from the shrubland are scattered trees of mahoe, kanuka and cabbage tree. Also present are two moderate sized totara trees, one mapou tree and one kowhai tree.

Other species present are fuchsia, pohuehue, native jasmine, *Calystegia tuguriorum*, silver tussock, foxglove*, pasture grasses*, *Hydrocotyle heteromeria* and, on the margin, scattered gorse* bushes.

At the base of the area, a small wetland supports clumps of rushes (*Juncus gregiflorus*) and scattered (and somewhat battered) plants of *Carex secta*.

Birds/Fauna Observed:

Native birds observed during this brief inspection were bellbird and grey warbler.

Notable Flora, Fauna and Habitats:

Notable features of the area are the presence of podocarps (totara), the relative abundance of the locally-uncommon leafless lawyer (*Rubus squarrosus*) and scrub pohuehue (*Muehlenbeckia complexa*) and the presence of a small wetland.

Notable Plant and Animal Pests:

Gorse is the only significant plant pest present, though this is unlikely to have a major impact on the native vegetation. Animal pests were not surveyed.

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

The area is buffered to some extent by its location at the head of a small valley. The property owner has recently fenced the area from stock. It lies very close to much larger areas of indigenous vegetation on nearby limestone scarps.

Condition and Management Issues:

This SNA is in moderate condition. Grazing animals have maintained a relatively open understorey and cattle have damaged the large *Carex secta* clumps. Now that it is fenced, the area has good potential for recovery.

Property Owner Comment:

The landowner has recently fenced the area from stock.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	A modified example of indigenous vegetation typical of the ecological district, though enhanced by the presence of original canopy species (including totara).
Rarity	M	The locally-uncommon leafless lawyer and scrub pohuehue are abundant. May provide some habitat for long-tailed bat.
Diversity and pattern	M	Diversity is substantially depleted from that originally present. The presence of the wetland adds diversity.
Distinctiveness/special features	L	
Other Criteria		
Size/shape	M	A relatively small area, but with a good shape and recently fenced.
Connectivity	M	Lies close to other areas of indigenous vegetation and is part of a network of fauna habitat in the wider area.
Long-term Sustainability	M	Some management, such as weed control, will probably be required to protect its ecological values in the long term.

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

The area has been protected informally by the landowners and has recently been fenced.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of podocarps (totara), the relative abundance of the locally-uncommon leafless lawyer (*Rubus squarrosus*) and scrub pohuehue (*Muehlenbeckia complexa*) and the presence of a small wetland.



ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	A modified example of indigenous vegetation typical of the ecological district, though enhanced by the presence of original canopy species (including totara).
Rarity	M	The locally-uncommon leafless lawyer and scrub pohuehue are abundant. May provide some habitat for long-tailed bat.
Diversity and pattern	M	Diversity is substantially depleted from that originally present. The presence of the wetland adds diversity.
Distinctiveness/special features	L	
Other Criteria		
Size/shape	M	A relatively small area, but with a good shape and recently fenced.
Connectivity	M	Lies close to other areas of indigenous vegetation and is part of a network of fauna habitat in the wider area.
Long-term Sustainability	M	Some management, such as weed control, will probably be required to protect its ecological values in the long term.

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

The area has been protected informally by the landowners and has recently been fenced.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of podocarps (totara), the relative abundance of the locally-uncommon leafless lawyer (*Rubus squarrosus*) and scrub pohuehue (*Muehlenbeckia complexa*) and the presence of a small wetland.



Area Name:	Property: Palm Hill Farm (Hart)
Location (central map reference): J38: 568-681	Nearest Locality: Upper Waitohi
Ecological District: Geraldine	Area Size (ha): 9.49 Altitude (m): 200-260
Surveyors: Mike Harding	Survey Time: 1½ hours Survey Date: 01-09-08

General Description:

This SNA lies on a moderately steep south-west facing slope and the adjoining ridge crest at the head of a small valley in the northern part of the property.

Plant Communities:

Two main plant communities are present, one on the steeper southwest-facing slopes and the other on the drier ridge crest. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.

Southwest-facing slopes:

Vegetation of this part of the SNA comprises cabbage treeland with scattered shrubs and smaller denser patches of indigenous trees. Dominant species are cabbage tree, mahoe and *Coprosma propinqua*.

Other species present are broadleaf, native broom, matagouri, pohuehue, scrub pohuehue, *Clematis foetida*, silver tussock and flax.

Plant species present on limestone rock are mountain akcaka, *Asplenium lyallii*, maidenhair fern, *Blechnum penna-marina* and *Epilobium nummulariifolium*.

Plant species present at wet sites on the valley floor are *Carex secta* and *Juncus gregiflorus*.

Ridge crest:

This area comprises scattered vegetation amongst large limestone boulders on a gently sloping ridge and on the adjacent northeast-facing slopes. Important plant species here are cabbage tree, mahoe, broadleaf, *Coprosma propinqua* and matagouri.

Other plant species present are native broom, pohuehue, native jasmine, *Asplenium lyallii*, poroporo, nodding thistle*, Californian thistle* and horehound*.

Birds/Fauna Observed:

Native birds observed during this brief survey were harrier, grey warbler, black-backed gull and fantail.

Notable Flora, Fauna and Habitats:

Important features of this area are the diversity of plant communities present, the habitat the area provides for long-tailed bat, the extent of the area and the contribution the area makes to fauna habitat in the wider area. Artificial bat-roost boxes are present on some cabbage tree trunks.

Notable Plant and Animal Pests:

No significant plant pests were observed. Animal pests were not surveyed.

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

The area is unfenced and is grazed except for small areas on steeper parts of the limestone scarp. It lies close to SNA 191 and is an important part of the network of fauna habitat in the area. It is buffered to some extent by its location on steeper rocky slopes.

Condition and Management Issues:

The vegetation in the area is in moderate condition. Protection of ecological values in the long term will depend on the extent to which indigenous species regeneration occurs.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	An example of indigenous vegetation typical of this part of the ecological district.
Rarity	M/H	Provides useful habitat for long-tailed bat (a nationally-endangered species).
Diversity and pattern	L/M	Species diversity is substantially reduced from that originally present.
Distinctiveness/special features	M	The large limestone boulders are a distinctive feature.
Other Criteria		
Size/shape	M/H	A moderate-sized area for the ecological district, with a good shape though not well buffered.
Connectivity	M	Lies close to SNA 191 and is an important part of the network of fauna habitat in the area.
Long-term Sustainability	L/M	Active management, such as protection from the effects of grazing, will probably be required to protect ecological values in the long term.

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

This SNA lies on steeper rocky slopes that would be difficult to develop further for farming. The vegetation in the area has been informally protected by the landowner.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the diversity of plant communities present, the habitat the area provides for long-tailed bat, the extent of the area and the contribution the area makes to fauna habitat in the wider area.

TIMARU DISTRICT SNA SURVEY

AREA 269a

Area Name: Homestead gully

Location (central map reference): J38:565-678

Ecological District: Geraldine

Surveyors: Mike Harding

Property: Palm Hill Farm (Hart)

Nearest Locality: Upper Waitohi

Area Size (ha): 2.9

Altitude (m): 200-260

Survey Time: 1 hour

Survey Date: 01-09-08

General Description:

This SNA lies on moderately steep southwest-facing slopes at the head of a small valley north of the homestead. It includes an exposed limestone scarp.

Plant Communities:

Two main plant communities are present: cabbage treeland/shrubland and patches of mahoe forest. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.

Treeland/shrubland:

This open plant community is dominated by shrubs of *Coprosma propinqua* and matagouri, with scattered emergent cabbage trees over pasture and silver tussock.

Other plant species commonly present are native broom, mistletoe (on *Coprosma propinqua*) and flax.

Plants present on areas of exposed limestone are mahoe, broadleaf, flax, koromiko, mountain akeake, elderberry*, maidenhair fern, *Asplenium lyallii*, *Epilobium nummulariifolium*, *Geranium* aff. *sessiliflorum*, *Colobanthus* aff. *strictus*, stonecrop* and blue tussock.

Forest patches:

Larger and denser patches of trees are present below the limestone scarp at the down-valley end of the SNA.

This vegetation is dominated by mahoe and patches of flax. Other species present are cabbage tree, five-finger, broadleaf, *Coprosma propinqua*, pohuehue and *Calystegia tuguriorum*.

Plants present on areas of exposed limestone are koromiko, maidenhair fern, *Asplenium lyallii*, *Blechnum penna-marina*, hound's tongue fern, toatoa, *Epilobium nummulariifolium*, stonecrop*, gooseberry* and hairy nightshade (*Solanum physalifolium*)*.

A row of planted exotic trees is present along the crest of the scarp.

Birds/Fauna Observed:

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

Notable Flora, Fauna and Habitats:

Important features of this area are the diversity of limestone species present, the habitat the area provides for long-tailed bat and the contribution the area makes to the network of fauna habitat in the wider area.

Notable Plant and Animal Pests:

The most important plant pests present are elderberry, the native climber pohuehue and the herbs and grasses on the exposed limestone (notably stonecrop and hairy nightshade). However, none of these plants pose a serious threat at present. Animal pests were not surveyed.

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

This area is unfenced and is grazed except for areas on the steeper parts of the limestone scarp. It lies close to and between SNA 192 and SNA 269b and is an important part of the network of fauna habitat in the area. It is buffered to some extent by its location on steep slopes.

Condition and Management Issues:

The indigenous vegetation of this area is in reasonable condition, though is much reduced from its former extent and density. Protection of ecological values in the long term will depend on the extent to which indigenous species regeneration occurs.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

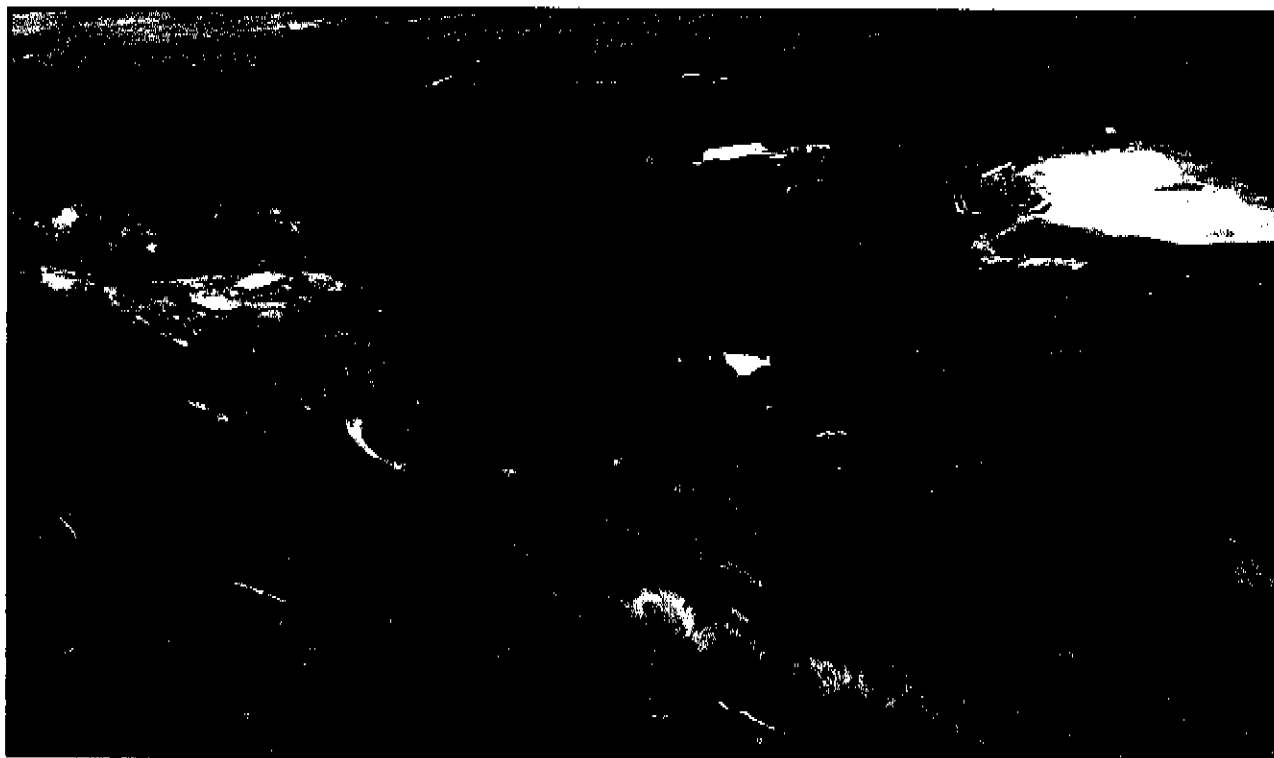
Primary Criteria	Rank	Notes
Representativeness	M/H	A typical example of the indigenous vegetation of this part of the ecological district, including limestone flora representative of the original vegetation.
Rarity	M/H	Provides useful habitat (roost sites and feeding areas) for long-tailed bat (a nationally endangered species).
Diversity and pattern	L/M	Species diversity is substantially reduced from that originally present.
Distinctiveness/special features	L/M	No special features other than the limestone scarp are present.
Other Criteria		
Size/shape	M	A moderate-sized area which is partly buffered.
Connectivity	M	Lies close to other SNAs and is part of a network of fauna habitat.
Long-term Sustainability	L/M	Active management, such as assisted regeneration of indigenous species, will probably be required to maintain the ecological values of the area in the long term.

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

The vegetation in this area has been informally protected by the landowners. Most parts of the SNA lie on steep rocky slopes that would be difficult to further develop for farming.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the diversity of limestone species present, the habitat the area provides for long-tailed bat and the contribution the area makes to the network of fauna habitat in the wider area.



ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	A typical example of the indigenous vegetation of this part of the ecological district, including limestone flora representative of the original vegetation.
Rarity	M/H	Provides useful habitat (roost sites and feeding areas) for long-tailed bat (a nationally endangered species).
Diversity and pattern	L/M	Species diversity is substantially reduced from that originally present.
Distinctiveness/special features	L/M	No special features other than the limestone scarp are present.
Other Criteria		
Size/shape	M	A moderate-sized area which is partly buffered.
Connectivity	M	Lies close to other SNAs and is part of a network of fauna habitat.
Long-term Sustainability	L/M	Active management, such as assisted regeneration of indigenous species, will probably be required to maintain the ecological values of the area in the long term.

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

The vegetation in this area has been informally protected by the landowners. Most parts of the SNA lie on steep rocky slopes that would be difficult to further develop for farming.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the diversity of limestone species present, the habitat the area provides for long-tailed bat and the contribution the area makes to the network of fauna habitat in the wider area.



TIMARU DISTRICT SNA SURVEY

AREA 269b and 269c

Area Name: Matthew Road treeland	Property: Palm Hill Farm (Hart)
Ecological District: Geraldine	Nearest Locality: Upper Waitohi
AREA 269b: Location (central map ref.): J38: 564-673	Area Size (ha): 5.46 Altitude (m): 160-200
AREA 269c: Location (central map ref.): J38: 562-679	Area Size (ha): 1.49 Altitude (m): 220-250
Surveyors: Mike Harding and Megan Geng	Survey Time: 2 hours Survey Date: 02-09-08

General Description:

This SNA lies on moderately steep slopes of a small valley west of the homestead. It includes areas of exposed limestone scarp. A limestone quarry is present on the ridge crest at the eastern side of the SNA.

Plant Communities:

Three main plant communities are present: cabbage treeland/shrubland, patches of forest and wetland vegetation. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.

Treeland/shrubland:

This plant community is the main vegetation type in both parts of the SNA. It is dominated by *Coprosma propinqua* shrubland, cabbage tree treeland and pasture. Trunk diameters (at breast height) of the larger cabbage trees range from 45 to 90 cm. Other important species present are mahoe, kowhai, matagouri, pohuehue, and, in the lower valley, clumps of tall kanuka.

Also present are native broom, mistletoe (on *Coprosma propinqua*), elderberry*, gooseberry*, scrub pohuehue, native jasmine and foxglove*.

Additional species present on exposed limestone are broadleaf, mountain akcace, koromiko, *Asplenium lyallii*, maidenhair fern, *Epilobium nummulariifolium*, *Colobanthus* aff. *strictus*, *Geranium* aff. *sessiliflorum*, blue tussock, toatoa, stonecrop*, black nightshade*, hemlock* and nettle*.

Forest patches:

These are mostly confined to the lower valley below the steeper sections of the limestone scarp. They are dominated by mahoe, broadleaf and five-finger. Species present on limestone in this area are similar to those described above.

Wetland:

The valley floor supports a relatively extensive wetland. This wetland is dominated by exotic herbs and grasses, but also supports scattered patches of *Carex secta*.

Birds/Fauna Observed:

Native birds observed during this brief survey were fantail, grey warbler, paradise shelduck, welcome swallow and, at the quarry, two South Island pied oystercatchers. Artificial bat roost boxes are present on cabbage trees.

Notable Flora, Fauna and Habitats:

Important features of this area are the diversity of limestone plant species, the presence of a large number of older cabbage trees with favourable roost sites for bats, the size of the area and the contribution the area makes to the network of fauna habitat in the wider area.

Notable Plant and Animal Pests:

No significant plant pests are present, though a number of herbaceous species are relatively dominant on areas of exposed limestone. Animal pests were not surveyed.

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

The area is unfenced and grazed, except for steeper areas on the limestone scarp. It is relatively well buffered by its location on steep west-facing slopes. It lies close to other SNAs (269a and 279a).

Condition and Management Issues:

The indigenous vegetation of this area is in reasonable condition, though is much reduced from its former extent and density. Protection of ecological values in the long term will depend on the extent to which indigenous species regeneration occurs.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA: SNA 269b

Primary Criteria	Rank	Notes
Representativeness	M/H	Supports indigenous vegetation typical of the ecological district, including limestone flora representative of the original vegetation.
Rarity	M/H	Provides good habitat (especially roost sites) for long-tailed bat (a nationally endangered species).
Diversity and pattern	M	Three main plant communities are present, though species diversity is substantially reduced from that originally present.
Distinctiveness/special features	M	The limestone scarp at the down-valley end of the SNA is an impressive landform.
Other Criteria		
Size/shape	M/H	A moderate-sized area with a good shape and relatively well buffered.
Connectivity	M	Lies close to other SNAs and is an important part of a network of fauna habitat.
Long-term Sustainability	M	Some active management will probably be required to maintain the ecological values of the area in the long term.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA: SNA 269c

Primary Criteria	Rank	Notes
Representativeness	M	Supports indigenous vegetation typical of the ecological district.
Rarity	M	Provides some potential habitat (notably roost sites) for long-tailed bat (a nationally endangered species).
Diversity and pattern	L/M	Species diversity is substantially reduced from that originally present.
Distinctiveness/special features	L/M	No special or distinctive features, apart from small areas of exposed limestone, are present.
Other Criteria		
Size/shape	M	A small- to moderate-sized area that is connected to SNA 269b by scattered indigenous vegetation.
Connectivity	M	Lies close to other SNAs and is part of a network of fauna habitat.
Long-term Sustainability	L/M	Active management will probably be required to maintain the ecological values of the area in the long term.

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

The vegetation in this area has been informally protected by the landowners. Most parts of the SNA (especially SNA 269b) lie on steep rocky slopes that would be difficult to further develop for farming.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the diversity of limestone plant species, the presence of a large number of older cabbage trees with favourable roost sites for bats, the size of the area and the contribution the area makes to the network of fauna habitat in the wider area.

Area Name:	Property: Palm Hill Farm (Hart)
Location (central map reference): J38: 556-662	Nearest Locality: Upper Waitohi
Ecological District: Geraldine	Area Size (ha): 4.37 Altitude (m): 140-180
Surveyors: Mike Harding and Megan Geng	Survey Time: 1 hour Survey Date: 02-09-08

General Description:

This SNA lies in a small narrow valley on gentle hill country on the true left (north) side of the Opihi River just downstream from Hanging Rock Bridge. It comprises a narrow strip of forest and associated vegetation mostly on the northern (south-facing) side of the valley along an exposed limestone scarp.

Plant Communities:

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

Canopy and sub-canopy species present are kanuka, cabbage tree, five-finger, mahoe, broadleaf, matipo and elderberry*.

Understorey and forest margin/shrubland species present are *Coprosma propinqua*, native broom, matagouri, flax, gorse*, silver tussock, leafless lawyer, mistletoe (on *Coprosma propinqua*), foxglove*, bracken, broom* and, at the western end, Himalayan honeysuckle*.

Species generally confined to areas of exposed limestone are mountain akeake, koromiko, porecupine shrub, maidenhair fern, *Asplenium lyallii*, *Epilobium nummulariifolium*, pennywort, burdock* and horehound*.

Species commonly present alongside the stream are crack willow*, wineberry, fuchsia, flax, *Carex secta* and *Juncus gregiflorus*.

Birds/Fauna Observed:

Native birds observed during this brief survey were grey warbler.

Notable Flora, Fauna and Habitats:

Important features of this area are the presence of limestone plants, the presence of larger trees with favourable roost sites for bats, the size of the area and the contribution it makes to the network of fauna habitat in the wider area. The area includes a prominent limestone scarp, with a large overhang.

Notable Plant and Animal Pests:

Crack willow, elderberry and Himalayan honeysuckle are the most important ecological weeds present. Other weeds, including gorse, broom and burdock, could pose a threat, though are more problematic for farming activities than for ecological values. Animal pests were not surveyed.

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

The area is mostly unfenced, though parts of the upper boundary adjoin a fenced paddock. It is well buffered by its location on steeper slopes in a narrow valley. The area lies close to other areas of indigenous vegetation and habitat, notably SNAs 275 and 276 to the east and SNA 341 to the west.

Condition and Management Issues:

Forest on and adjacent to the limestone scarp is in relatively good condition. Protection from grazing animals and control of important plant and animal pests are the most important management issues.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	Supports indigenous vegetation typical of the ecological district.
Rarity	M/H	Provides good habitat (especially roost sites) for long-tailed bat (a nationally-endangered species). Supports a locally uncommon plant species, leafless lawyer (<i>Rubus squarrosus</i>).
Diversity and pattern	M	The limestone scarp, slope and stream provide a diversity of habitats, though species diversity is substantially reduced from that originally present.
Distinctiveness/special features	M	The limestone scarp and prominent overhang are special features.
Other Criteria		
Size/shape	M/H	A moderate-sized area that is well buffered.
Connectivity	M	Lies close to other SNAs and is part of a network of fauna habitat.
Long-term Sustainability	M	Some management 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):

This area is well protected by its location on steeper slopes in a small valley. It has been informally protected by the landowners and most parts of the area are unsuitable for farm development. A farm track traverses up the valley along the lower boundary of the area.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the presence of limestone plants, the presence of larger trees with favourable roost sites for bats, the size of the area, the contribution it makes to the network of fauna habitat in the wider area and the presence of a prominent limestone scarp with a large overhang.



Area Name:	Property: Palm Hill Farm (Hart)		
Location (central map reference): J38: 557-666	Nearest Locality: Upper Waitohi		
Ecological District: Geraldine	Area Size (ha): 0.34	Altitude (m): 140-160	
Surveyors: Mike Harding	Survey Time: hours	Survey Date: 25-09-08	

General Description:

This SNA lies on steep southwest-facing slopes of a small valley alongside Main Waitohi Road, on gentle hill country on the north side of the Opihi River down-valley from Hanging Rock Bridge.

Plant Communities:

Scattered treeland/shrubland on and below a prominent limestone scarp and a valley-floor wetland are the indigenous plant communities present. These are described below. Naturalized (exotic) species are indicated with an asterisk*.

Treeland/shrubland in pasture on the slopes below the limestone scarp is dominated by elderberry*, pohuehue, cabbage tree and *Coprosma propinqua*. Trunk diameters (at breast height) of the larger cabbage trees are between 28 and 36 cm. Other species present are porcupine shrub, native broom, matagouri, leafless lawyer, blackberry*, gorse*, woolly mullein*, mint*, hemlock* and Khasia berry*.

Species mostly confined to limestone rock or banks are mountain akeake, mahoe, broadleaf, five-finger, matipo, koromiko, scrub pohuehue, *Calystegia tuguriorum*, maidenhair fern, *Blechnum chambersii*, *Asplenium lyallii* and stonecrop*.

Young pine trees are present on top of the scarp. Other species there are matipo, gorse*, broom* and cotoneaster*.

The wetland on the valley floor is dominated by *Carex coriacea* and pasture grasses. Other species present are dock*, buttercup* and the rush *Juncus gregiflorus*.

There are rock drawings in an overhang at the southern end of the limestone scarp.

Birds/Fauna Observed:

Native birds observed during this brief survey were grey warbler, welcome swallow, fantail, black-backed gull and harrier.

Notable Flora, Fauna and Habitats:

Important features of this area are the presence of cabbage trees with suitable roost sites for long-tailed bats (a 'nationally endangered' species), the wetland, the limestone scarp and the contribution the area makes to the network of fauna habitat in the wider area.

Notable Plant and Animal Pests:

Elderberry, Khasia berry and the native climbing pohuehue (*Muehlenbeckia australis*) are the most important plant pests present. Animal pests were not surveyed.

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

This area is buffered by its location on and below a limestone scarp. It is fenced along its southern boundary and along the roadside, though is grazed as part of a larger paddock. It lies close to another similar area (SNA 276) across Main Waitohi Road and is not far from several other SNAs. It is part of a network of fauna habitat in the wider area which is notable for the presence of long-tailed bat.

Condition and Management Issues:

The SNA is quite modified. Control of invasive plants, notably elderberry and pohuehue, and encouragement of natural regeneration of trees and shrubs are probably necessary to maintain its ecological values.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	An example of indigenous vegetation typical of the ecological district.
Rarity	M	May provide roost sites for long-tailed bat (a 'nationally endangered' species). It supports a locally-uncommon species: leafless lawyer.
Diversity and pattern	L/M	Species diversity is substantially reduced from that originally present. The wetland adds diversity.
Distinctiveness/special features	M	The limestone scarp and the presence of rock drawings are interesting features.
Other Criteria		
Size/shape	M	A small area, but with a good shape and well buffered.
Connectivity	M	Is a useful part of the network of fauna habitat in the area.
Long-term Sustainability	L	Active management will be required to maintain the ecological values in the long term.

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

This area is protected by its location on steeper slopes below a limestone scarp. It has been informally protected by the landowners though is grazed. 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 presence of cabbage trees with suitable roost sites for long-tailed bats (a 'nationally endangered' species), the wetland, the limestone scarp and the contribution the area makes to the network of fauna habitat in the wider area. The presence of rock drawings adds interest.

TIMARU DISTRICT SNA SURVEY

Wetland 275

Wetland Record Form

Wetland name: Hart-Main Waitohi Road	Date: 25 September 2008
Property: Palm Hills (James and Sarah Hart)	GPS/Grid Ref: J38: 557-666
Altitude: 140 to 150 m	No. of plots sampled:
Location: Main Waitohi Road, Upper Waitohi	Approximate size (ha): <1 ha

Classification: I System	IA Subsystem	II Wetland Class	IIA Wetland Form
Palustrine	Permanent	Seepage	Blanket Misc

Surveyors:

Indicator	Indicator components	Specify and Comment	Score 0-5 ¹	Mean score
Change in hydrological integrity	Impact of manmade structures	None evident	5	4.7
	Water table depth	Appears intact	5	
	Dryland plant invasion	Pasture grasses present	4	
Change in physico-chemical parameters	Fire damage	No evidence of damage	5	4.3
	Degree of sedimentation/erosion	Some likely	4	
	Nutrient levels	Localised impacts	4	
	von Post index	n/a		
Change in ecosystem intactness	Loss in area of original wetland	Some loss likely	4	4.5
	Connectivity barriers	Connections appear intact	5	
Change in browsing, predation and harvesting regimes	Damage by domestic or feral animals	Grazed by domestic stock	1	2.3
	Introduced predator impacts on wildlife	Intermittent control?	2	
	Harvesting levels	Presumably minor	4	
Change in dominance of native plants	Introduced plant canopy cover	Pasture grasses present	4	4
	Introduced plant understorey cover	n/a		
Total wetland condition index /25				19.8

Main vegetation types: *Carex coriacea* sedgeland, *Juncus gregiflorus* rushland, pasture grasses.

Native fauna: grey warbler, welcome swallow and fantail in adjacent areas

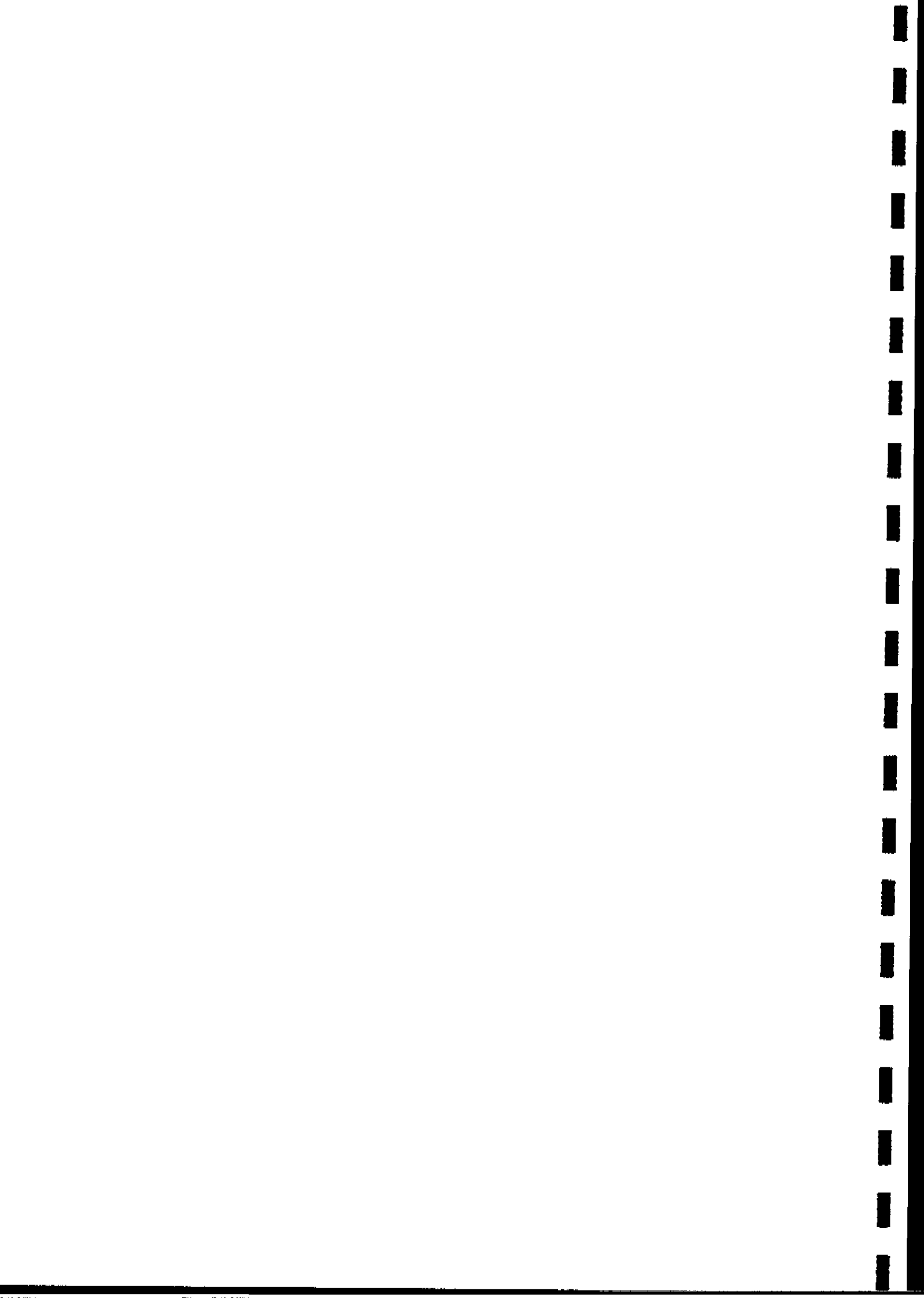
Other comments: Adjacent to indigenous treeland and shrubland on limestone.

Pressure	Rating ²	Specify and Comment
Modifications to catchment hydrology	0	None evident
Water quality within the catchment	2	Near head of catchment
Animal access	4	Unfenced, semi-intensive grazing
Key undesirable species	3	Introduced animals present, crack willow
% catchment in introduced vegetation	4	
Other pressures	1	Fertiliser?
Total wetland pressure index /30	14	

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

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

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



TIMARU DISTRICT SNA SURVEY

AREA 276

Area Name:	Property: Palm Hills Farm (Hart)
Location (central map reference): J38: 558-663	Nearest Locality: Upper Waitohi
Ecological District: Geraldine	Area Size (ha): 0.38 Altitude (m): 140-160
Surveyors: Mike Harding	Survey Time: hours Survey Date: 25-09-08

General Description:

This SNA lies on steep northeast-facing slopes of a small valley alongside Main Waitohi Road, on gentle hill country on the north side of the Opihi River just downstream from Hanging Rock Bridge.

Plant Communities:

Scattered treeland/shrubland on and below a prominent limestone scarp is the indigenous plant community present. This is described below. Naturalized (exotic) species are indicated with an asterisk*.

The slopes below the limestone scarp support pasture with scattered to clumped trees and shrubs. Dominant species are cabbage tree, *Coprosma propinqua*, elderberry*, pohuehue and porcupine shrub. Other species present on these slopes are mahoe, matipo, kowhai, flax, native broom, poroporo, blackberry*, hemlock*, woolly mullein* and gorse*. The cabbage trees are mostly small, with trunk diameters (at breast height) between 25 and 35 cm, though with cavities and marked bat roost sites.

Species present on or associated with the limestone scarp are mahoe, pohuehue, broadleaf, mountain akeake, *Coprosma propinqua*, porcupine shrub, *Asplenium lyallii*, maidenhair fern, *Blechnum chambersii*, toatoa, horehound* and *Oxalis* sp.

A clump of trees on the roadside just south of the SNA is dominated by matipo, with five-finger, crack willow*, Khasia berry* and pohuehue.

Birds/Fauna Observed:

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

Notable Flora, Fauna and Habitats:

Important features of this area are the presence of cabbage trees with suitable roost sites for long-tailed bats (a 'nationally endangered' species), the relative abundance of porcupine shrub (including some large shrubs), the limestone scarp and the contribution the area makes to the network of fauna habitat in the wider area.

Notable Plant and Animal Pests:

Elderberry and the native climbing pohuehue (*Muehlenbeckia australis*) are the most important plant pests present. Animal pests were not surveyed.

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

This small area is buffered by its location on and below a limestone scarp, the steep slopes and east aspect. It is fenced along its northern boundary and along the roadside, though is grazed as part of a larger paddock. It lies close to another similar area (SNA 275) across Main Waitohi Road and is not far from several other SNAs. It is part of a network of fauna habitat in the wider area which is notable for the presence of long-tailed bat.

Condition and Management Issues:

The SNA is quite modified. Control of invasive plants, notably elderberry and pohuehue, and encouragement of natural regeneration of trees and shrubs are probably necessary to maintain its ecological values.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M	An example of indigenous vegetation typical of the ecological district.
Rarity	M/H	Provides roost sites for long-tailed bat (a 'nationally endangered' species).
Diversity and pattern	L/M	Species diversity is substantially reduced from that originally present.
Distinctiveness/special features	M	The limestone scarp and the dominance of porcupine shrub are interesting features.
Other Criteria		
Size/shape	M	A very small area, but with a good shape and well buffered.
Connectivity	M	A useful part of a network of fauna habitat in the area.
Long-term Sustainability	L	Active management will be required to maintain the ecological values in the long term.

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

This area is protected by its location on steeper slopes below a limestone scarp. It has been informally protected by the landowners though is grazed. 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 presence of cabbage trees with suitable roost sites for long-tailed bats (a 'nationally endangered' species), the relative abundance of porcupine shrub (including some very large specimens), the limestone scarp and the contribution the area makes to the network of fauna habitat in the wider area (which is notable for the presence of long-tailed bat).

TIMARU DISTRICT SNA SURVEY

AREA 279a and 279b

Area Name:	Property: Palm Hill Farm (Hart)
Ecological District: Geraldine	Nearest Locality: Upper Waitohi
AREA 279a: Location (central map ref.): J38: 562-674	Area Size (ha): 7.97 Altitude (m): 160-240
AREA 279b: Location (central map ref.): J38: 560-674	Area Size (ha): 2.58 Altitude (m): 200-240
Surveyors: Mike Harding and Megan Geng	Survey Time: 2 hours Survey Date: 02-09-08

General Description:

This SNA lies on moderately steep slopes in a small valley west of the homestead. SNA 279a is on west- and southwest-facing slopes; SNA 279b is on gentler drier northeast-facing slopes.

Plant Communities:

Three main plant communities are present: treeland/shrubland, forest patches and wetland. These plant communities are described separately below. Naturalized (exotic) species are indicated with an asterisk*.

Treeland/shrubland:

This plant community covers most parts of both SNAs. It is dominated by *Coprosma propinqua*-matagouri shrubland, emergent cabbage trees and pasture. Other important species present are mountain akake, native broom and pohuehue. Species less commonly present are elderberry* and flax.

The vegetation in SNA 279b is dominated by kowhai, cabbage tree and pohuehue. Other species present in this scattered plant vegetation are *Coprosma propinqua*, mahoe, broadleaf, five-finger, mapou, flax, poroporo, koromiko, matagouri and nettle*. Additional species on limestone substrates are *Asplenium lyallii*, stonecrop* and blue tussock.

Forest patches:

Denser patches of trees are dominated by broadleaf, mahoe and five-finger.

Wetland:

A relatively large area of wetland vegetation is present at the upper end of the area. Dominant species are *Carex secta*, *Juncus tenuis*, *Juncus procerus*, soft rush*, *Carex coriacea*, exotic herbs and pasture grasses.

Birds/Fauna Observed:

Native birds observed during this brief survey were fantail, grey warbler and flocks of bellbird in the flowering kowhai trees.

Notable Flora, Fauna and Habitats:

Important features of this area are the diversity of plant communities present, the extent of the treeland/shrubland, the number of larger cabbage trees with favourable roost sites for bats, the size of the area, the contribution the area makes to the network of fauna habitat in the wider area and the presence of large limestone outcrops/boulders.

Notable Plant and Animal Pests:

No significant plant pests other than elderberry are present, though a number of herbaceous species are relatively dominant on areas of exposed limestone. Animal pests were not surveyed.

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

The area is unfenced and grazed, except for steeper areas on the limestone scarp. It is relatively well buffered by its location on steep west-facing slopes. It lies close to other SNAs (269c and 269b).

Condition and Management Issues:

The indigenous vegetation of this area is in reasonable condition, though is much reduced from its former extent and density. Protection of ecological values in the long term will depend on the extent to which indigenous species regeneration occurs.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA: SNA 279a

Primary Criteria	Rank	Notes
Representativeness	M/H	Supports indigenous vegetation typical of the ecological district, including limestone flora representative of the original vegetation.
Rarity	M/H	Provides good habitat (especially roost sites) for long-tailed bat (a nationally endangered species).
Diversity and pattern	M	Three main plant communities are present, though species diversity is substantially reduced from that originally present.
Distinctiveness/special features	L/M	A limestone scarp is present.
Other Criteria		
Size/shape	M/H	A moderate-sized area with a good shape and relatively well buffered.
Connectivity	M	Lies close to other SNAs and is an important part of a network of fauna habitat.
Long-term Sustainability	M	Some active management will probably be required to maintain the ecological values of the area in the long term.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA: SNA 279b

Primary Criteria	Rank	Notes
Representativeness	M	Supports indigenous vegetation typical of the ecological district.
Rarity	M	Provides some potential habitat (notably roost sites) for long-tailed bat (a nationally endangered species).
Diversity and pattern	L/M	Species diversity is substantially reduced from that originally present.
Distinctiveness/special features	M	The limestone outcrops are an impressive feature. The area supports several large kowhai trees.
Other Criteria		
Size/shape	M	A small to moderate-sized area that is connected to SNA 279a by scattered indigenous vegetation.
Connectivity	M	Lies close to other SNAs and is part of a network of fauna habitat.
Long-term Sustainability	L/M	Active management will probably be required to maintain the ecological values of the area in the long term.

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

The vegetation in this area has been informally protected by the landowners. Most parts of the SNA (especially SNA 269b) lie on steep rocky slopes that would be difficult to further develop for farming.

Discussion:

This area meets the District Plan criteria for a Significant Natural Area. Important features of the area are the diversity of plant communities present, the extent of the treeland/shrubland, the number of larger cabbage trees with favourable roost sites for bats, the size of the area, the contribution the area makes to the network of fauna habitat in the wider area and the presence of large limestone outcrops/boulders.

TIMARU DISTRICT SNA SURVEY

Wetland Record Form

Wetland 279

Wetland name: Hart-Matthew Road	Date: 02 September 2008
Property: Palm Hills (James and Sarah Hart)	GPS/Grid Ref: J38: 562-674
Altitude: 160 to 220 m	No. of plots sampled:
Location: Matthew Road, Upper Waitohi	Approximate size (ha): 1-2 ha

Classification: I System	IA Subsystem	II Wetland Class	IIA Wetland Form
Palustrine	Permanent	Seepage	Blanket Mire

Surveyors:

Indicator	Indicator components	Specify and Comment	Score 0-5 ¹	Mean score
Change in hydrological integrity	Impact of manmade structures	Some excavation	4	3.7
	Water table depth	Largely intact	4	
	Dryland plant invasion	Pasture grasses present	3	
Change in physico-chemical parameters	Fire damage	No evidence of damage	5	3.7
	Degree of sedimentation/erosion	Small parts affected by excavation	4	
	Nutrient levels	Pasture grasses present	2	
	von Post index	n/a		
Change in ecosystem intactness	Loss in area of original wetland	Excavation and encroachment	3	3.5
	Connectivity barriers	Connections largely intact	4	
Change in browsing, predation and harvesting regimes	Damage by domestic or feral animals	Grazed by domestic stock	1	2.3
	Introduced predator impacts on wildlife	Intermittent control?	2	
	Harvesting levels	Presumably minor	4	
Change in dominance of native plants	Introduced plant canopy cover	Pasture grasses present	3	3
	Introduced plant understorey cover	n/a		
Total wetland condition index /25				16.2

Main vegetation types: Pasture, *Carex secta-Carex coriacea* sedge/land, *Juncus tenuis-Juncus procerus Juncus effusus* rushland.

Native fauna: grey warbler, bellbird and fantail in adjacent areas

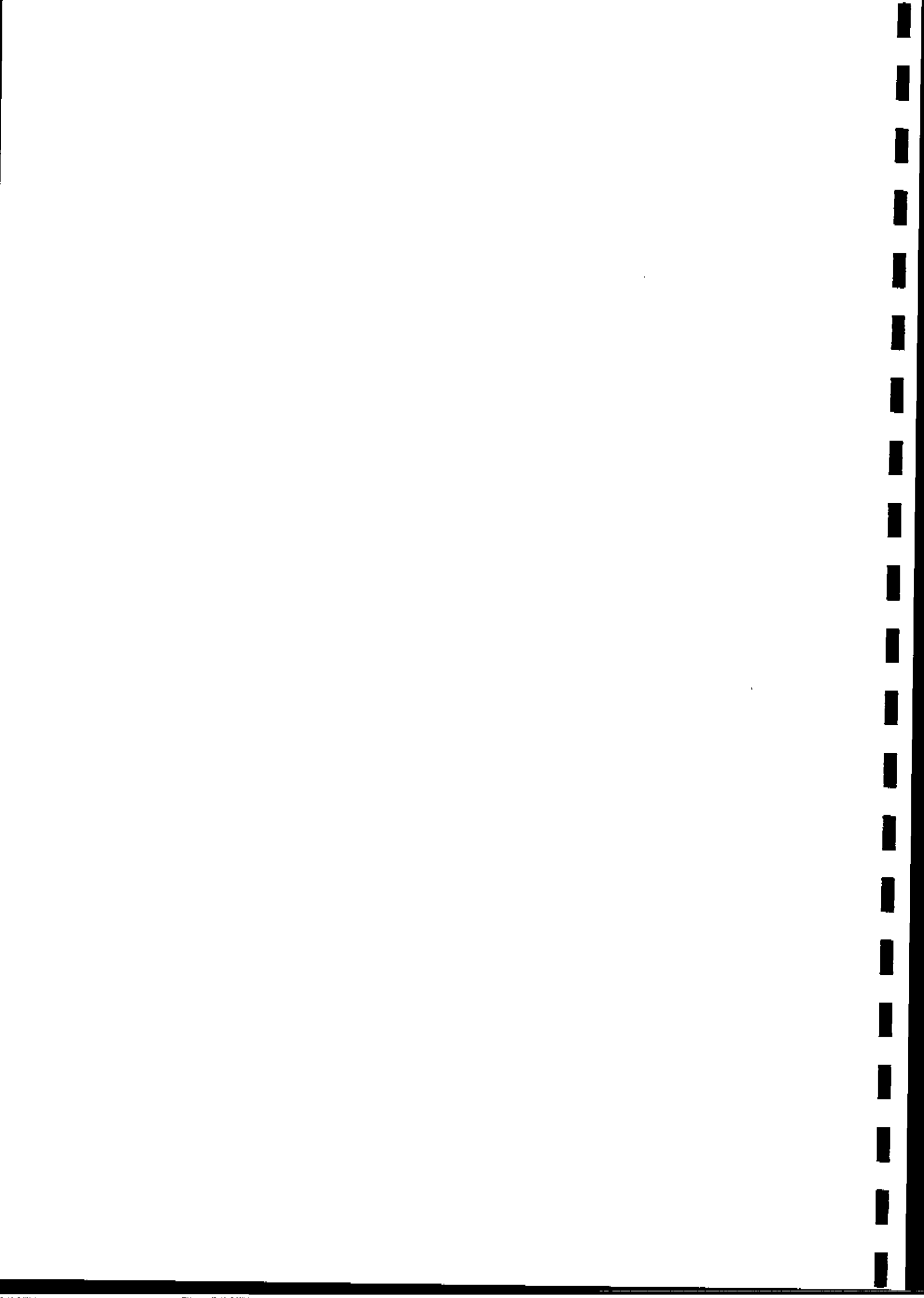
Other comments: Adjacent to indigenous forest, treeland and shrubland on limestone near head of catchment.

Pressure	Rating ²	Specify and Comment
Modifications to catchment hydrology	1	Some excavation
Water quality within the catchment	2	Near head of spring-fed catchment
Animal access	4	Unfenced, semi-intensive grazing
Key undesirable species	2	Introduced animals present
% catchment in introduced vegetation	4	
Other pressures	1	Fertiliser?
Total wetland pressure index /30	14	

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

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

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



TIMARU DISTRICT SNA SURVEY

AREA 341a

Area Name: Trig Q Forest and Scarp

Location (central map reference): J38: 551-661

Ecological District: Geraldine

Surveyors: Mike Harding and Megan Geng

Property: Palm Hill Farm (Hart)

Nearest Locality: Upper Waitohi

Area Size (ha): 1.14 **Altitude (m):** 100-180

Survey Time: 1½ hours **Survey Date:** 02-09-08

General Description:

This SNA lies mostly on steep broken country on and adjacent to a prominent limestone scarp (Trig Q) on the true left (north) side of the Opihi River approximately 1½ kilometres downstream from Hanging Rock Bridge. The remainder of this area (SNA 341b) lies on an adjoining property.

Plant Communities:

Two main plant communities are present: limestone flora on the steep exposed scarp and regenerating podocarp-hardwood forest on the rubble slope below. These plant communities are described below. Naturalized (exotic) species are indicated with an asterisk*.

The forest canopy is dominated by broadleaf, mahoe, matipo, cabbage tree and pohuehue.

Other canopy species present are wineberry, five-finger, lowland ribbonwood, totara, yellowwood, kowhai, mapou, sycamore*, ivy* and *Calystegia tuguriorum*.

Understorey species present are *Coprosma crassifolia*, *Coprosma propinqua*, *Clematis marata* and Khasia berry*.

Plant species present on the forest margins and in open areas are leafless lawyer, ivy*, mountain akeake, blackberry*, broom*, *Coprosma propinqua*, koromiko, bracken, hemlock*, *Clematis foetida*, burdock*, gooseberry* and bittersweet*.

Plant species present on or adjacent to the limestone scarp are flax, *Asplenium lyallii*, hound's tongue fern, *Blechnum chambersii* and *Polystichum richardii*.

Birds/Fauna Observed:

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

Notable Flora, Fauna and Habitats:

Important features of this area are the presence of a diverse range of indigenous species at a very low altitude on a limestone substrate, the presence of canopy species representative of the original vegetation (especially totara, lowland ribbonwood and kowhai), the presence of locally uncommon plant species (leafless lawyer, *Clematis marata* and lowland ribbonwood), the dominance of leafless lawyer on the forest margin, the habitat the area provides for fauna (especially roost sites for long-tailed bat), and the contribution the area makes to the network of fauna habitat in the wider area. The limestone scarp, especially the bluff beneath Trig Q, is a prominent local feature.

Notable Plant and Animal Pests:

This area of forest is seriously affected by plant pests. Ivy is dominant at the forest margin and in parts of the forest canopy. Blackberry and burdock are prominent in the forest openings and understorey. Hemlock, gorse and broom are common in forest openings, and sycamore is present in the forest canopy. Khasia berry and gooseberry are also present. Animal pests were not surveyed.

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

The area is fenced along its upper boundary and well protected there by the precipitous limestone bluff. The lower boundaries are protected by steep slopes to the riverbed and dense thickets of blackberry. The forest is less well protected on its northwest boundary, where a derelict fence does not prevent stock access. The large boulders within the area and the dense understorey vegetation prevent further stock access. The area lies close to other SNAs (274, 275 and 276) to the east, adjoins a large area of exotic trees on the riverbed and is relatively close to other areas of exposed limestone and indigenous vegetation (not yet surveyed) along the Opihi River. The area is well buffered by its location on steep rubbly slopes.

Condition and Management Issues:

Parts of this SNA are substantially modified by the presence of invasive plant pests, notably ivy and sycamore. Despite this, the forest supports a diverse range of indigenous species. Eliminating weeds from this area of forest would be a major undertaking. It would be relatively easy to prevent stock access by repairing a short length of fence along the northwest boundary.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	M/H	A good example of indigenous vegetation typical of the ecological district and containing species representative of the original vegetation (notably totara, lowland ribbonwood and kowhai).
Rarity	H	Provides very good habitat for long-tailed bat (a nationally endangered species), including good roost sites, and is located within the stronghold for this species in South Canterbury.
Diversity and pattern	M	A relatively diverse range of species present, though diversity is probably reduced from that originally present.
Distinctiveness/special features	M/H	The high limestone scarp-bluff and boulder slope below are distinctive features.
Other Criteria		
Size/shape	M	A relatively small area (on this property) but a good shape and very well buffered.
Connectivity	M/H	Adjoins a larger area of similar vegetation along the limestone scarp and makes a very important contribution to the network of fauna habitat in the wider area.
Long-term Sustainability	L/M	Although the area is well buffered, it is seriously affected by invasive plant pests.

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

This area is well protected by its location on steep broken country. It has been informally protected by the landowners. The steepness of the site limits its 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 a diverse range of indigenous species at a very low altitude on a limestone substrate, the presence of canopy species representative of the original vegetation, the presence of locally uncommon plant species, the dominance of leafless lawyer on the forest margin, the habitat the area provides for fauna (especially roost sites for long-tailed bat), the contribution the area makes to the network of fauna habitat in the wider area, and the prominence of the limestone scarp, especially the bluff beneath Trig Q.

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)	
bittersweet*	<i>Solanum dulcamara</i>
blackberry*	<i>Rubus fruticosus</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>
cabbage tree/li rakau	<i>Cordyline australis</i>
Californian thistle*	<i>Cirsium arvense</i>
crack willow*	<i>Salix fragilis</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>
gooseberry*	<i>Ribes uva-crispa</i>
gorse*	<i>Ulex europaeus</i>
hemlock*	<i>Conium maculatum</i>
Himalayan honeysuckle*	<i>Leycesteria formosa</i>
horehound*	<i>Marrubium vulgare</i>
hound's tongue fern	<i>Microsorium pustulatum</i>
ivy*	<i>Hedera helix</i>
kanuka	<i>Kunzea ericoides</i>
Khasia berry*	<i>Cotoneaster simonsii</i>
koromiko	<i>Hebe salicifolia</i>
kowhai	<i>Sophora microphylla</i>
leafless lawyer	<i>Rubus squarrosus</i>
lowland ribbonwood	<i>Plagianthus regius</i>
mahoe/whiteywood	<i>Meliccytus ramiflorus</i>
maidenhair fern	<i>Adiantum cunninghamii</i>
mapou	<i>Myrsine australis</i>
matagouri	<i>Discaria toumatou</i>
matipo/kohuhu	<i>Pittosporum tenuifolium</i>
mint*	<i>Mentha</i> sp.
mistletoe	<i>Ileostylis micranthus</i>
mountain akeake	<i>Olearia avicenniifolia</i>
native broom	<i>Carmichaelia</i> aff. <i>australis</i>
native jasmine	<i>Parsonsia</i> sp.
nettle*	<i>Urtica</i> sp.
nodding thistle*	<i>Carduus nutans</i>
pennywort	<i>Hydrocotyle novae-zeelandiae</i>
pohuehue	<i>Muehlenbeckia australis</i>
porcupine shrub	<i>Meliccytus</i> aff. <i>alpinus</i>
poroporo	<i>Solanum laciniatum</i>
scrub pohuehue	<i>Muehlenbeckia complexa</i>
silver tussock	<i>Poa cita</i>
soft rush*	<i>Juncus effusus</i>
stonecrop*	<i>Sedum acre</i>
sycamore*	<i>Acer pseudoplatanus</i>
toatoa	<i>Haloragis erecta</i>
totara	<i>Podocarpus totara</i>
wineberry	<i>Aristotelia serrata</i>
woolly mullein*	<i>Verbascum thapsus</i>
yellowwood	<i>Coprosma linariifolia</i>

