

# **Crown Pastoral Land Tenure Review**

**Lease name : Mt St BATHANS**

**Lease number : PO 116**

## **Conservation Resources Report - Part 3**

As part of the process of Tenure Review, advice on significant inherent values within the pastoral lease is provided by Department of Conservation officials in the form of a Conservation Resources Report. This report is the result of outdoor survey and inspection. It is a key piece of information for the development of a preliminary consultation document.

Note: Plans which form part of the Conservation Resources Report are published separately.

These documents are all released under the Official information Act 1982.

**September 06**



Figure 13 Looking east toward the St Bathans Range up Rocks Creek.



Figure 14 Looking West up Rocks Creek.





Figure 15 Old ski hut in upper Rocks Creek.

#### **4.4 Appendices**

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**APPENDIX ONE****Land Environments of New Zealand Unit Descriptions**

From: Leathwick J, Morgan F, Wilson G, Rutledge D, McLeod M, Johnston K. (2002) Land Environments of New Zealand : Technical Guide. Ministry for the Environment

<b>Environment</b>	<b>Level III Descriptions</b>	<b>Level IV variations (if any)</b>
E4.1b	Elevation 700 m Located in the central South Island, east of the southern alps on gently undulating foothills. Cool temperatures, high solar radiation, high vapour pressure deficits, very low monthly water balance ratios, moderate annual water deficits. Soils are well drained of high fertility derived from greywacke alluvium with some loess, colluvium and till	
K3.1a K3.1b	Elevation 605 m Located in South Canterbury and Central Otago on undulating floodplains. Cool temperatures, moderate solar radiation, low annual water deficits. Soils are recent, well-drained, high fertility from greywacke gravels with some loess.	a. Higher annual water deficits b. Lower annual water deficits
K3.2a	Elevation 765 m Located in Central Otago on undulating floodplains. Cool temperatures, moderate solar radiation, low annual water deficits. Soils are recent, imperfectly drained, moderate fertility from fine schist alluvium.	
K5.1b	Elevation 625 m Located in Southern Canterbury and Central Otago on gently undulating floodplains. Cool temperatures, moderate solar radiation, moderate vapour pressure deficits, slight annual water deficits. Soils are recent, poorly-drained, moderate fertility from a combination of greywacke or schist alluvium.	b. fine schist alluvium with loess, Central Otago
N3.1d	Elevation 300 m Located in Otago, Timaru, Oamaru on undulating plains. Cool temperatures, moderate solar radiation, moderate vapour pressure deficits, moderate annual water deficits. Imperfectly drained soils of moderate fertility from greywacke alluvium with some loess.	
N3.2a	Elevation 535 m Located in inland Otago on undulating plains. Cool temperatures, moderate solar radiation, moderate vapour pressure deficits, moderate annual water deficits. Imperfectly drained soils of moderate fertility from Tertiary mudstones and sandstones with gravels.	
N4.1b N4.1c	Elevation of 495m in Central Otago, Alexandra and Lake Waitaki on rolling lower hillslopes and basin floors. Cool temperatures, moderate solar radiation, moderate vapour pressure deficits, very low monthly water balance ratios, moderate annual water deficits. Well drained soils drained of moderate fertility from schist and greywacke.	b. much cooler temperatures, undulating plains c- lower annual water deficits, steep hills
N5.1a	Elevation 425m around Ranfurly and Wanaka. On very gently undulating plains. Cool temperatures, moderate solar radiation, high vapour pressure deficits, very high annual water deficits. Imperfectly drained soils of moderate fertility from a mixture of colluvium and loess from greywacke and schist.	
N6.2a	Elevation 445m around Omarama, Nevis Crossing and throughout Central Otago on gently undulating plains. Cool temperatures, moderate levels of solar radiation, high vapour pressure deficits, high annual water deficits. Recent imperfectly drained soils of high fertility from fine schist and greywacke alluvium.	

<b>Environment</b>	<b>Level III Descriptions</b>	<b>Level IV variations (if any)</b>
Q1.1a Q1.1b Q1.1c	Elevation 1095 m Located in Hawkdun Range, Grampian Mountains and Hunter Hills, Eyre and Harris Mountains South Canterbury, ranges of inland Otago. Steep mountains. Cold temperatures, moderate solar radiation, low vapour pressure deficits, low monthly water balance ratios, slight annual water deficits. Soils are well drained and of moderate, fertility from greywacke, schist.	a. much cooler temperatures, lower vapour pressure deficits, strongly rolling mountainous terrain. b. As for Q1.1 c. very steep mountainous terrain.
Q1.2a	Elevation 1305 m Located in the Eyre and Harris Mountains , ranges of inland Otago, Takitimu Mountains. Very Steep mountains. Very cold temperatures, moderate solar radiation, low vapour pressure deficits, intermediate monthly water balance ratios, no annual water deficits. Soils are well drained and of moderate, fertility from greywacke, rock, colluvium and basalt.	
Q2.1b	Elevation 640 m Located in the Eyre and Harris Mountains , ranges of inland Otago. Steep mountains. Cool temperatures, moderate solar radiation, moderate vapour pressure deficits, very low monthly water balance ratios, low annual water deficits. Soils are well drained and of moderate fertility from greywacke	b. much cooler temperatures, higher annual water deficits.
Q2.2a Q2.2b	Elevation 730 m Located in the Hawkdun Range, Grampian Mountains and Hunter Hills in South Canterbury, Takitimu mountains, southern end of the Two Thumb Range. Steep mountains. Cool temperatures, moderate solar radiation, moderate vapour pressure deficits, low monthly water balance ratios, low annual water deficits. Soils are imperfectly drained and of moderate fertility from schist	b. much warmer temperatures. Strongly rolling mountainous terrain, moderately indurated.
Q3.3a Q3.3b Q3.3c	Elevation 990 m Located in the Garvie Mountains and the North Rough, Knobby, Lammerlaw and Rock and Pillar Ranges. Undulating mountains. Cold temperatures, moderate solar radiation, moderate vapour pressure deficits, low monthly water balance ratios, low annual water deficits. Soils are imperfectly drained and of moderate fertility from schist	a. much cooler annual temperatures, lower vapour pressure deficits, higher monthly water balance ratios, much lower annual water deficits. b. warmer annual temperatures, cooler winter temperatures, higher vapour pressure deficits, lower monthly water balance ratios, much higher annual water deficits. c. much lower annual water deficits.

## APPENDIX TWO

Mount St Bathans Lease Invertebrate Species List  
January 1998

## Mount St Bathans Range

Order	Family	Taxon	Elevation	
Orthoptera	Acridadae	<i>Brachopsis nivalis</i>	1500 m	
		<i>Sigauss obelesici</i>	1500 m	
		<i>Sigauss australis complex</i>	1500 m, 860 m	
	Stenopelmatidae	<i>Hemideina maori</i>	1500 m	
Coleoptera	Carabidae	<i>Megadromus fultoni</i>	1500 m	
		<i>Diglyrrma obtusum</i>	800 m	
		<i>Scopodes</i> sp.	800 m	
	Coccinellidae	ladybird sp from <i>Aciphylla</i>	800 m	
	Curculionidae	<i>Anagotus sargon</i> sp.	860 m	
		<i>Anagotus</i> sp. near <i>lewisi</i>	1300 m	
Lepidoptera	Nymphalidae	<i>Percaodaimon merula</i>	1500 m	
		<i>Tawhitta glaucophanes</i>	1500 m	
	Lycaenidae	<i>Lycaena boldenarum</i>	700 m, 1000 m	
		<i>Lycaena salustrus</i>	700 m	
	Crambidae	<i>Orocrambus crenaeus</i>	1100 m	
		sp 2	860 m	
		<i>Eudonia trivingata</i>	1500 m	
		<i>Eudonia sabulosella</i>	900 m	
	Satyridae	<i>Argyrophenga antipodium</i>	700 m	
		<i>Chloroclystis neris</i>	1100 m	
		<i>Kiwaia schematica</i>	7700 m	
Blattodea	Blattidae	<i>Celatoblatta quinque-maculata</i>	1500 m	
Ephemeroptera		Mayfly sp.	700 m	
Hemiptera		<i>Dictyotus caenosus</i>	900 m	
Diptera	Tachinidae	<i>Protobystricia</i> sp. from <i>Aciphylla aurea</i>	800 m	
	Therividae	<i>Anabartynchus</i> sp. from <i>Aciphylla aurea</i>	800 m	Stillete fly
	Syrphidae	<i>Aielangynma novaezealandiae</i>	1000 m, 1300 m	Hoverfly
Plecoptera	Gripopterygidae	<i>Vesicaperlais</i> sp.	1600 m	Stonefly
Hymenoptera		<i>Oncodes</i> sp.	860 m	

**Sawtooth Creek/Dunstan Peak**

<b>Order</b>	<b>Family</b>	<b>Taxon</b>	<b>Elevation</b>	<b>Order</b>
Coleoptera	Carabidae	<i>Mecodema sulcatum</i>	1300 m	
		<i>Megadromus fultoni</i>	1300 m	
		<i>Mecodema</i> sp 1	1300 m	
		<i>Mecodema</i> sp 2	1500 m	
	Scarabaedidae	<i>Pyronota festiva</i>	1500 m	
	Curculiomdae	<i>Zenagraphus</i> sp. near <i>metallescaus</i>	1500 m	Weevil
Diptera	Asilidae	<i>Neoitamus melanopogon</i>	1300 m	
	Syrphidae	<i>Melangyna novaezealandiae</i>	1500 m	
Lepidoptera	Noctuidae	<i>Aletia cunaeta</i>	1500 m	
	Crambidae	<i>Orocambus</i> sp.	1400 m	
	Satyridae	<i>Argyrobenga antipodium</i>	1400 m	
Orthoptera	Stenlopmatidae	<i>Hemideina maori</i>	1500 m	
		<i>Zealandosandrus gracilis</i>	1500 m	
	Acridadae	<i>Sigauss</i> sp.	1400 m	

**Upper Manuherikia River Flats**

<b>Order</b>	<b>Family</b>	<b>Taxon</b>	<b>Elevation</b>	
Lepidoptera	Satyridae	<i>Argyrophenga antipodium</i>	740 m	Tussock Ringlet
		Lycaenidae	<i>Lycaena boldenarum</i>	680 m
	Crambidae		<i>Lycaena salustrus</i>	640 m
				<i>Eudonia trivirgata</i>
		<i>Eudonia sabuosella</i>	680 m	
		<i>Orocrambus ramoselus</i>	680 m	
		<i>Orocrambus aethonellus</i>	680 m	
Coleoptera		<i>Pyronota festiva</i> off <i>Poa cita</i>	680 m	
		- off <i>Aciphylla aurea</i>	740 m	
		Spittle bug	680 m	
Odonata		<i>Yanthocuemis zealandica</i>	680 m	
Diptera	Asilidae	<i>Neoitamus melanopogon</i>	740 m	



**APPENDIX THREE**

Lizard Sightings on Mount St Bathans Lease During  
Tenure Review Inspection of 8-10 February 2006.

**“Site locations of rare and endangered herpetofauna are recorded in the original report. Herpetofauna of this nature is at risk of illegal activities including damage and removal through unlawful interference and disturbance. Accordingly, information regarding the locations of any such herpetofauna has been deleted from this version of the report. The Department of Conservation has put in place mechanisms to ensure that such information can be released for genuine scientific and research purposes. Please contact the Department of Conservation directly to determine whether the information can be released.”**

**APPENDIX FOUR**

## Aquatic Survey Record 1998

<b>Location fished</b>	<b>Species</b>
H40 519 992	Brown trout
H40 518 017	Brook char
H40 524 983	Brown trout, brook char
H40 524 978	Brown trout, brook char
H40 659 953	Brown trout
H40 569 999	Nil
H40 595 989	Brown trout
H40 583 994	Brown trout
H40 529 902	Brown trout
H40 532 922	Brown trout

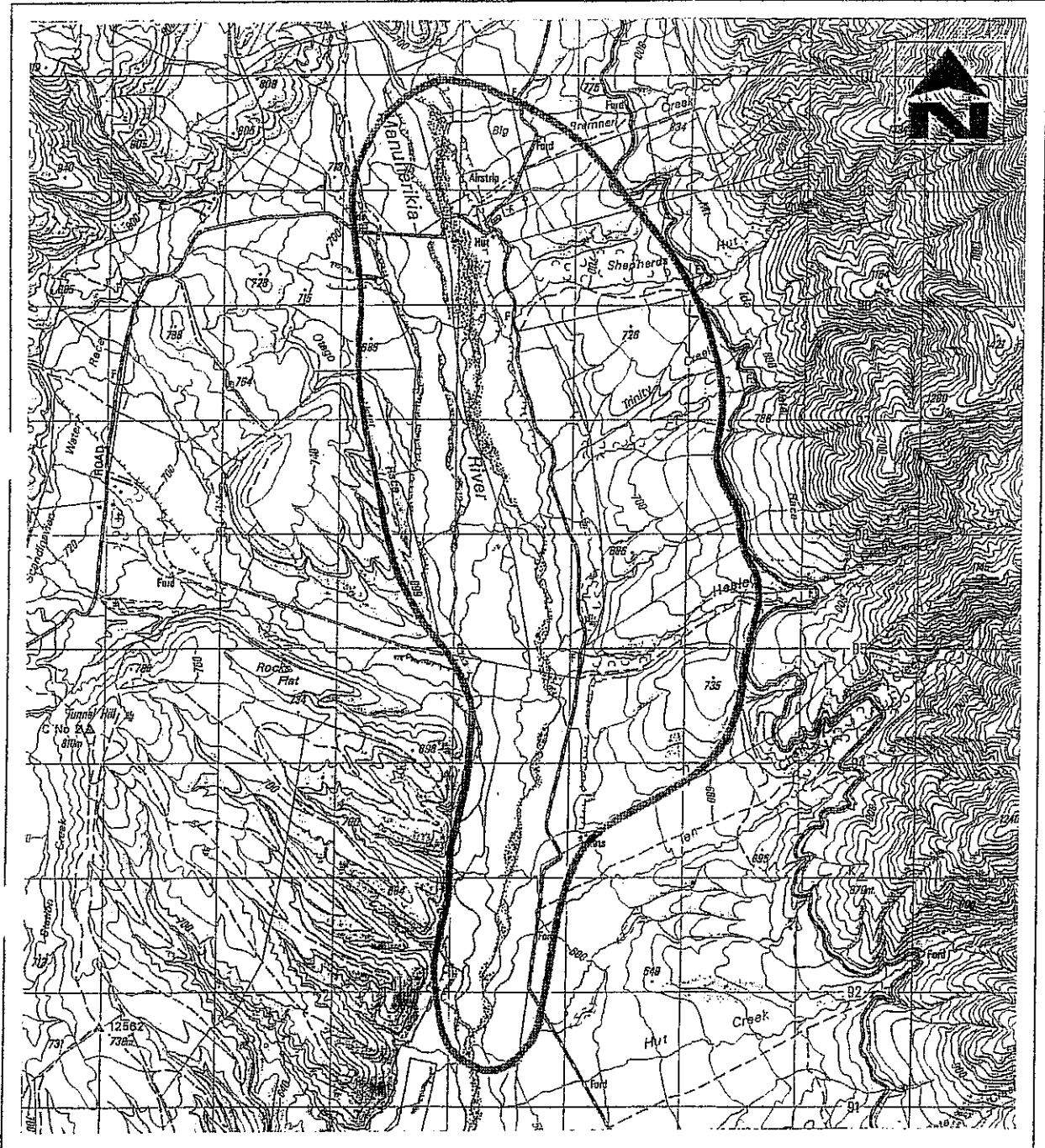
  

<b>NIWA Records</b>	<b>Species</b>
H40 531 951	Brown trout, brook char, longfin eel
H40 543 955	Brown trout, brook char
H40 553 933	Brown trout, common bully
H40 559 903	Brown trout, upland bully
H40 645 954	Brown trout, upland bully
H40 661 948	Brown trout, upland bully
H40 657 964	Brown trout, upland bully

**APPENDIX FIVE:** Extract from Maniototo Ecological District Protected Natural Area Survey Report

MANIOTOTO ECOLOGICAL DISTRICT  
MAP 3/1 : AOI 1

AOI 1  
UPPER MANUHERIKIA



**GRID REFERENCE** : INFO MAP 260 H40 670 960

**AREA** : 2040 hectares

**ALTITUDE** : 508m - 700m



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## AOI 1 UPPER MANUHERIKIA VALLEY

Reference Chapman (1985)

**Introduction** The vegetation of this area has been documented in some detail by Chapman (1985) as the botanical component of the investigations by the Liquid Fuels Trust Board into the lignite deposits of the upper Manuherikia Valley. Chapman concluded that the vegetation of this area was of high botanical value because it represents one of the best remaining examples of low-altitude red tussock grassland and associated mosaic of vegetation types on river terrace landforms. These valley-floor grasslands, shrublands and wetlands are of further significance as part of an altitudinal sequence of indigenous vegetation from the Manuherika Valley floor to the summits of the Hawkdun and St Bathans Ranges. Chapman also predicted that under present management practices, red tussock grassland plus associated fescue tussock and silver tussock grasslands would be depleted in extent and eventually replaced by exotic pasture. This would indeed appear to be the case, nearly ten years after that botanical survey. Nevertheless, examples of most of the vegetation types identified in the 1985 report can still be found, albeit with a greater exotic component in the flora, and are included in the AOI.

**Landform** The area lies at approximately 600 - 750 m bounded to the west by the foothills of the St Bathans Range and to the east by the fault scarp of the Hawkdun Range. The valley floor is a down-faulted basin filled with Manuherikia Group sediments, which are a mixture of fine grain muds and gravels. The sediments erode to produce the hummocky topography found on the western edge of the basin. Maori Bottom gravels in places overlie the sediments forming low hills. The semi-permeable properties of these gravels lead to runoff from hill slopes into flushes. The fans and terraces are composed of coarse greywacke gravels and are highly permeable. The fans, as a relatively young landform still in the process of formation contrast with the older terraces whose different levels represent different periods of deposition.

**Climate** The average yearly rainfall is 600 mm over most of the upper Manuherikia basin. Winds are predominantly northwesterly and southerly. Snow can lie for up to two weeks over most of the area during winter and frosts are severe from May until late August.

**Soils** Cass soils predominate on the greywacke hillslopes and fans. These are of moderate to low fertility and are vulnerable to wind and sheet erosion. Tasman soils are associated with river terraces, braided river channels and swampy ground, and are of medium to low fertility.

**Flora** A full list of plant species recorded in the upper Manuherikia basin is included in Chapman (1985).

In summary, the following numbers of plant species were recorded:

	Native	Naturalised	Total
Trees, shrubs and lianes	28	5	33
Herbaceous dicotyledons	80	45	125
Monocotyledonous plants	36	22	58
Ferns and fern allies	6		6
	150	72	222

Despite some extensive modification of the indigenous vegetation the number of native species far exceeds the number of exotic ones, although many of the exotic grasses and herbs do occur with a very high frequency. Two noteworthy native species which occur here are: the low shrub *Pimelea traversii* which is found in narrow leaved snow tussock (*Chionochloa rigida*) and red tussock (*Chionochloa rubra*) grassland and is near the southern limit of its distribution; *Coprosma intertexta* is a species of limited range in Otago and Canterbury and is present in shrublands within the AOI.

## Vegetation Types

The distribution of vegetation types is largely due to soil moisture conditions which are in turn determined by aspect and underlying geology. When the environment is controlled by a strong, localised influence, such as in a cushion bog or flush, certain species will constantly occur together and there will be well defined vegetation boundaries. However, more extensive vegetation types such as grasslands and shrublands do not have distinct boundaries but tend to merge into each other. The actual species composition at any one point will reflect the habitat conditions along a shallow gradient in controlling environmental factors and the way in which different combinations of plant species have adjusted to land use.

### 1. Matagouri shrubland

Matagouri (*Discaria toumatou*) 1.5-2.5 metres tall makes up approximately 60% of the vegetation cover of the shrub layer. Associated shrubby species include sweet brier (*Rosa rubiginosa*), porcupine scrub (*Melicytus alpinus*) and *Coprosma intertexta*. The lianes *Muehlenbeckia complexa* and *Rubus* sp. scramble over and among the shrubs. The shrubs overtop a sparse understorey (5-30cm) of mainly pasture grass, plume grass (*Dichelachne crinita*) and exotic herbs especially white clover, sorrel and woolly mullein.

Matagouri shrubland is most extensive on stream sides where it can form a fringe up to 10m wide. It also occurs in gully bottoms and around the base of hill slopes where there is ample water supply, and on steep hill slopes where matagouri is able to tap soil moisture below the reach of grass roots. The gully-bottom stands are distinct from the more widespread stream-side shrublands in having taller matagouri and associated shrubs over a species-rich understorey.

### 2. *Chionochloa rubra* tussockland

#### a) Red tussock on terraces and hill slopes

Red tussock 1m - 1.3m high forms an open canopy through which matagouri and fescue tussock (c. 70-90cm) are scattered with occasional shrubs of *Carmichaelia petriei* and *Coprosma intertexta*. A sward layer (c. 40cm) includes species such as *Poa cita* and the exotic grasses *Holcus lanatus* and *Poa pratensis*. Dwarf shrubs and both naturalised and weedy herbs (c. 15cm tall) form a species-rich ground layer. *Leucopogon fraseri* and *Coprosma petriei*, *Bulbinella angustifolia* and *Ranunculus foliosus*, and *Hieracium pilosella* are all characteristic species. Patches of *Pernettya nana* are scattered within red tussock grassland on these sites, associated with local rises in the water table. Smaller patches of *Euphrasia zelandica* and the clubmoss *Lycopodium scariosum* occur on terraces.

#### b) Red tussock fringing water seeps

Red tussock up to 2m tall forms a dense canopy with up to 90% cover. Exotic species such as *Holcus lanatus* and *Juncus effusus* occupy the inter-tussock spaces with a scattering of low herbs eg white clover (*Trifolium repens*) and *Ranunculus foliosus*.



c) Red tussock on periodically waterlogged sites

Red tussock (c. 90cm tall) forms an open canopy interspersed with shrubs such as *Olearia bullata* up to 2m high. An intermediate vegetation tier (20cm-60cm) of varying density is formed by *Juncus effusus*, *Schoenus pauciflorus* and *Carex coriacea*. Low moisture-loving herbs such as *Montia fontana* and *Hydrocotyle heteromeria* are also present.

Within the whole valley basin, red tussock occurs on the deep soils of higher terraces and gentle south or southeast facing hill slopes of the Maori Bottom hills, and on the lower slopes of the St Bathans and Hawkdun Ranges. It is (or was) the dominant vegetation cover of the poorly draining hummocky ground of the valley floor and in places still forms a dense fringe to water seeps flowing down hill slopes and through the hummocky ground. Red tussock merges into narrow-leaved snow tussock (*Chionochloa rigida*) grassland above about 900m, where some hybridisation is evident, and into pasture on lower altitude, freely draining soils.

### 3. Fescue tussock grassland

Fescue tussock (*Festuca novae-zelandiae*) 50 - 60cm high forms an open canopy in which silver tussock (*Poa cita*) may be co-dominant. Matagouri is scattered among the short tussocks with occasional native broom (*Carmichaelia* sp.), red tussock and snow tussock. Browntop (*Agrostis capillaris*) is the most abundant species in a sward layer 20-30cm tall, with sweet vernal (*Anthoxanthum odoratum*), *Lachnagrostis* sp. and blue tussock (*Poa colensoi*) sometimes present. *Carex breviculmis* and *Luzula rufa* are present at low frequency. There is a sparse ground cover with up to 30% bare soil or small stones. Exotic herbs especially *Cerastium fontanum*, *Hypochoeris radicata* and white clover dominate the ground cover with a sparser distribution of native species such as *Raoulia subsericea* and *Scleranthus uniflorus*.

Fescue tussock grassland is characteristic of low terraces and low to mid-altitude hill slopes, especially lower altitude sites which have been burnt or heavily grazed. Fescue tussock gradually gives way to red tussock on less disturbed terraces and moister sites and to snow tussock at higher altitudes. Much of the original cover has been converted to pasture but a substantial amount of fescue tussock remains on the terraces within the AOI. *Hieracium pilosella* is abundant on burnt or heavily grazed ground and *Bulbinella angustifolia* on damper sites.

### 4. Silver tussock grassland

Silver tussock (c. 50cm tall) forms a canopy of variable cover with several low or grazed shrubs including matagouri and native broom, and fescue tussock. Narrow leaved snow tussock, red tussock, sweet brier and *Olearia bullata* are scattered emergents. Blue tussock (c. 30-40cm tall) is a major component of the sward layer. Pasture grasses including browntop, sweet vernal and Yorkshire fog also make significant contributions. A dense, species rich ground cover is dominated by exotic species including white clover, Californian thistle (*Cirsium arvense*) and *Hieracium pilosella*. Silver tussock grassland occurs on low- to mid-altitude sites between 750 and 900m. It predominates on gentle, free draining hill slopes and some areas of low lying flat ground. Fire and grazing have led to the exclusion of silver tussock from some sites to be replaced by fescue tussock. Much of this vegetation type has been converted to pasture by oversowing and topdressing.

### 5. Riverbed vegetation

Riverbed vegetation occurs on periodically-flooded sections of river channel made up of stones and gravel with various proportions of sand and silt. This unstable substrate can only be colonised by a limited number of native species; characteristically prostrate creeping herbs and cushion plants, plus a variety of adventive herbs and grasses. Vegetation height ranges from 1-2m of brier and matagouri down to prostrate herbs and cushion plants. The vegetation type is best developed on the gravel braids of the Manuherikia River. It also occurs on gravel sites associated with tributaries flowing from the Hawkdun and St Bathans Ranges.

Native mat-forming herbs and cushion plants such as *Raoulia bookeri*, *R. tenuicaulis*, *Muehlenbeckia axillaris*, *Epilobium microphyllum* and *E. brunnescens* predominate on the most unstable and flood-prone sections of riverbed, commonly lining the waters edge. The mats and cushions are in turn colonised by small herbs such as *Anisotome aromatica* and *Wahlenbergia albomarginata*. *Scleranthus* spp. and *Colobanthus* spp. are scattered among the mats and cushions. Naturalised annual or biennial weedy species with a wide ecological tolerance are scattered across riverbed sites, their particular distribution being determined by chance. Drier sites which usually escape flooding are colonised by species associated with tussock grasslands such as *Geranium sessiliflorum*, *Bulbinella angustifolia* and brier.

### 6. Cushion bog vegetation

This term describes patches of vegetation in which comb sedge (*Oreobolus pectinatus*), dwarf rushes, grasses and creeping herbs combine to form more than 80% of the cover. The structure of a cushion bog varies according to its particular species composition but the low, single-tiered structure contrasts sharply with the surrounding grassland or shrubland. Grasses, rushes and sedges (30cm - 1m) are scattered across the bog surface and become dense towards the edge. The most abundant species within the comb sedge matrix are *Rytidosperma pumilum*, *Gnaphalium* spp., and *Isolepis aucklandica*. Some cushion bogs at the southern end of the area are dominated by a new species of *Gallium* ('tarn').

Cushion bogs are restricted to areas in which there is surface water seep. These are most common on hillsides in gully heads, on the edge of high terraces where streams flow down from adjoining steep hill slopes, on gravel fans adjoining drainage channels and in the hollows on hummocky terrain underlain by Maori Bottom gravels. Comb sedge tends to predominate on bogs where the surface water is slow-moving and poorly aerated. Dwarf rushes and herbs predominate where there is a more rapid water flow and consequently more available air and nutrients.

### 7. Flush vegetation

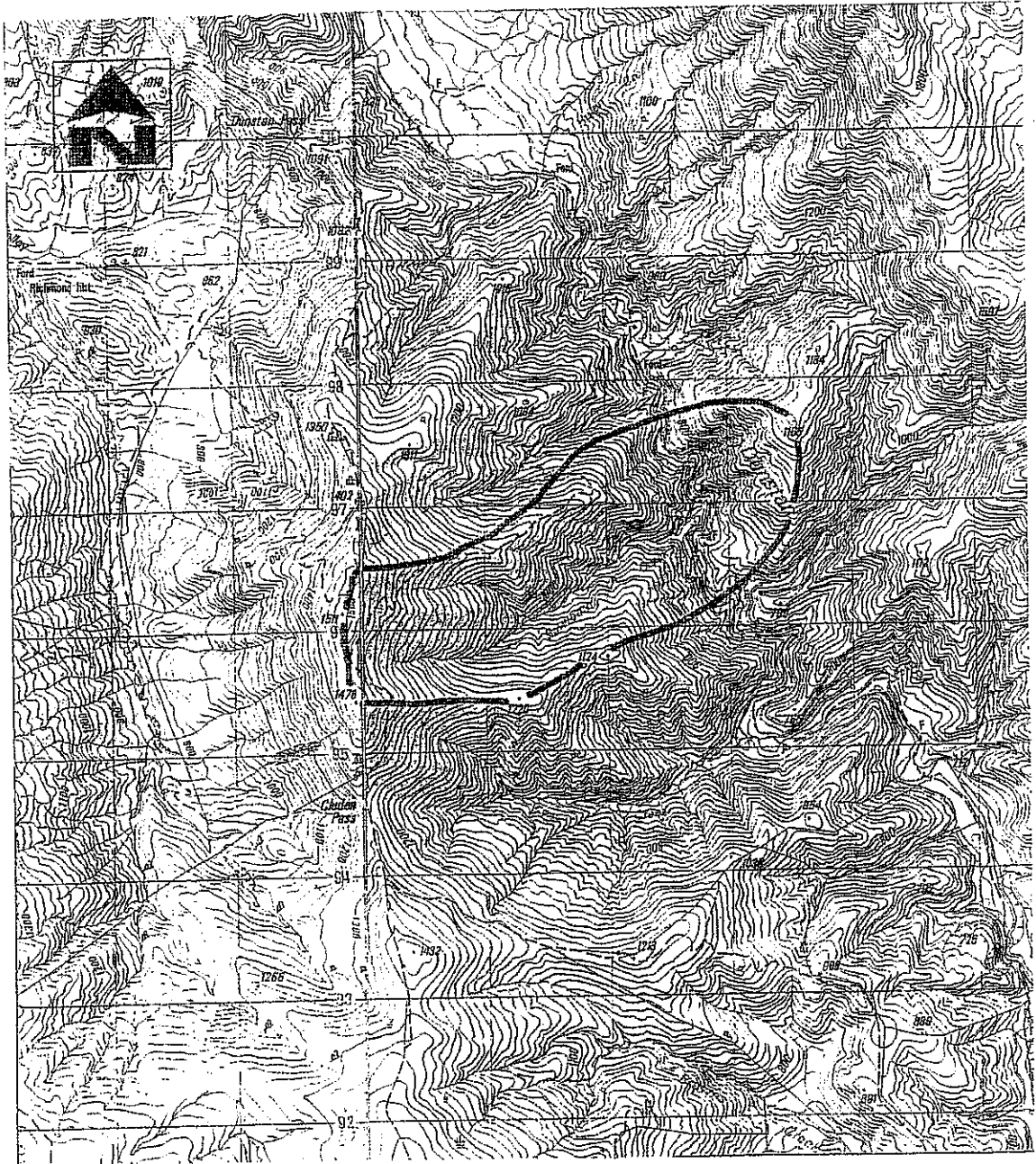
The term flush vegetation is used to describe an assemblage of plants in which a combination of *Carex coriacea*, jointed rush (*Juncus articulatus*), *Ranunculus glabrifolius*, *Mimulus moschatatus* and *Myosotis laxa* ssp. *caespitosa* are characteristic. No single species occurs in every example of flush vegetation; the species composition is variable and determined by particular site conditions. Flush vegetation occurs where there is moving surface water and a silty substrate. Gully heads on hillsides, natural seepage channels and the edge of ponds are characteristic habitats and are scattered throughout the AOI.

**APPENDIX SIX**      Extract from Lindis, Pisa and Dunstan Ecological Districts  
Protected Natural Area Survey Report

DUNSTAN ECOLOGICAL DISTRICT

DUNSTAN - RAP B2

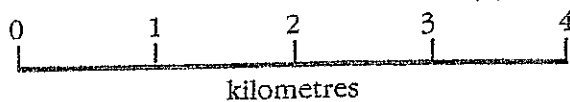
SAWTOOTH CREEK



GRID REFERENCE - INFO MAP 260 H40 520 965

AREA - 560 hectares

ALTITUDE - 670m - 1505m



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## DUNSTAN RAP B2 - SAWTOOTH CREEK

Bioclimatic Zones Montane to low alpine

Ecological Units	Vegetation types	Landforms
	Dis tou-Cop pro	on derivative slope
	Dis tou-Cop pro	on outcrop/rubblefield
	Mixed shrubland	on derivative slope
	Mixed shrubland	on riparian slope
	<b>Mixed outcrop vegetation</b>	
	Chi rig-Fes mat-Poa col	on colluvial slope
	Chi rig-Fes mat-Poa col	on derivative slope
	Fes mat-Poa col-Aci aur	on colluvial slope
	Chi mac	on colluvial slope
	Chi mac	on ripply colluvial slope

**Landform** Includes a section of the meandering Dunstan Creek gorge together with the catchment of Sawtooth Creek. The area is generally transitional in character between the Dunstan and St Bathans Ecological Districts. The rock in the gorge is steeply dipping semischist forming bold outcrops and small areas of talus (c.f. adjacent St Bathans Range). Upper Sawtooth Creek is formed in more typical gently dipping schist which has slumped down the centre of the catchment. Elsewhere stable colluvial slopes are predominant with little exposed rock. Alluvial surfaces lie adjacent to Dunstan Creek as a narrow strip.

Soils are hygrous yellow-brown earths - Dunstan soils in the west, transitional to Kaikoura soils (generally formed from greywacke) in the east.

**Vegetation** The area is dominated by narrow-leaved snow tussockland, which is generally depleted on steep sunny aspects with abundant golden spaniard. At higher altitudes on shady aspects, and east of Dunstan Creek, it is intact with little modification.

Slim snow tussockland forms a narrow zone above 1400 m in Sawtooth Creek and also extends down to c. 1000 m on a strip of slumped ground on east to southeast aspects. It contrasts with narrow-leaved snow tussockland on stable colluvial slopes.

Extensive matagouri shrublands are found on derivative slopes on the lower part of Sawtooth Creek and along Dunstan Creek, with a more diverse mixed shrubland along the streamside.

Outcrops and derivative slopes support *Helicbrysum selago*, *Pimelea traversii*, *Corokia cotoneaster*, coral broom, mountain flax and toetoe.

**Flora** Coral broom, mountain flax and toetoe are uncommon in the District.

**Discussion** The RAP occupies a transition zone between the Dunstan and St Bathans Ecological Districts, and straddles Dunstan Creek, the nominal district boundary. A section of the eastern side of Dunstan Creek is here included in a Dunstan priority area in order to indicate a fully representative section of the gorge, and because the snow tussocklands and shrublands there are generally more varied and of higher quality than on the western side adjacent

to ~~the~~ Sawtooth Creek. This area will need reassessment in the context of a survey of the St Bathans District.

Matagouri shrubland and more diverse matagouri-dominated shrublands are among the most extensive in the District and grow on a great variety of landforms and aspects, and are contiguous with snow tussockland.

Slim snow tussockland in Sawtooth Creek is in good condition and descends to its lowest altitude in the District, showing an interesting relationship with the landform.

Black shag use the Dunstan Creek gorge. The combination of diverse shrubland and tussockland in good condition with abundant rock outcrops and coarse talus would be expected to provide good habitat for lizards and various invertebrates.

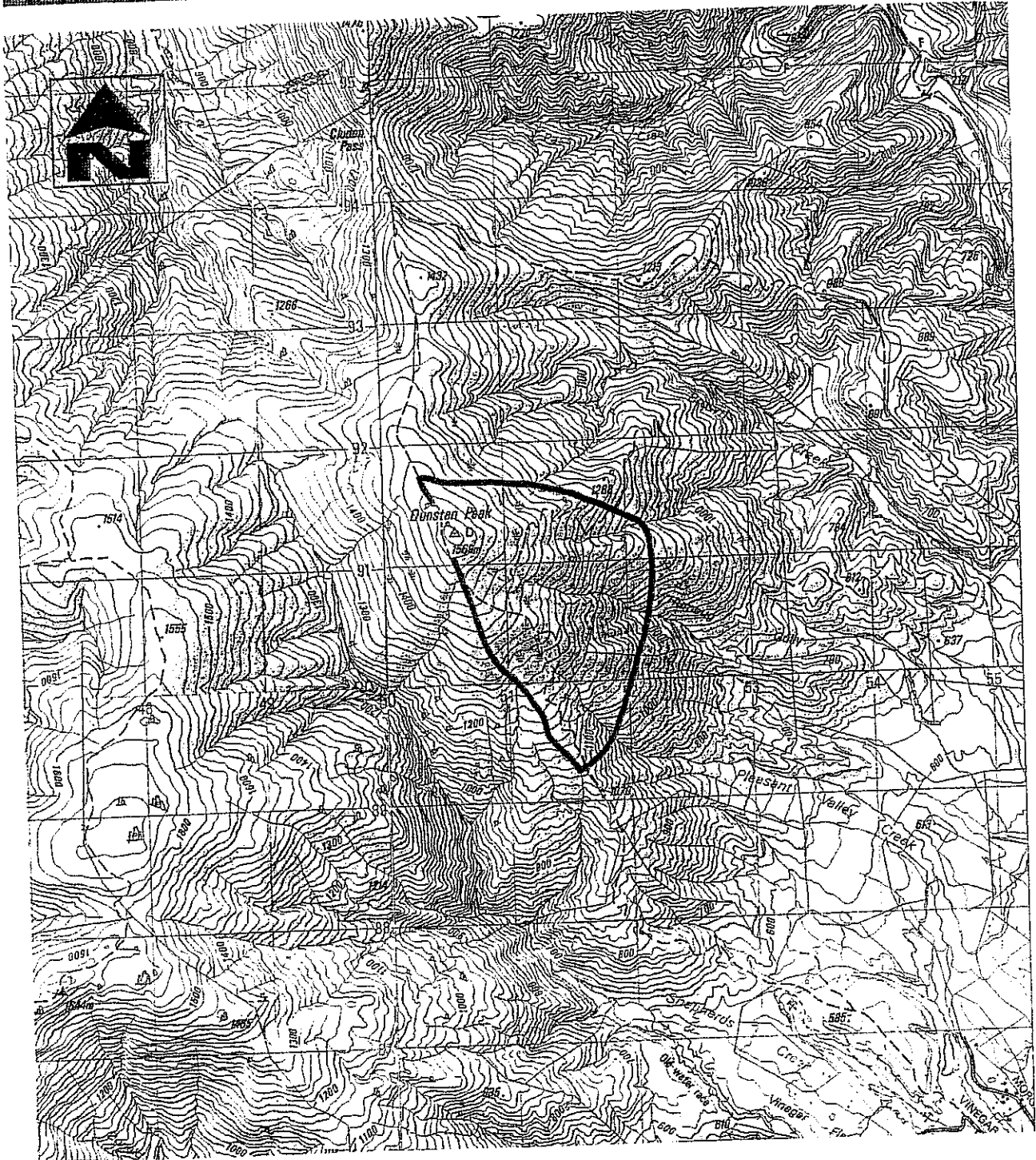
### CRITERIA SUMMARY : DUNSTAN RAP B2 - SAWTOOTH CREEK

Representativeness	H	Important communities, representative of northern Dunstans - St Bathans transition.
Diversity	M	Limited number of vegetation types considering area, though good species diversity.
Naturalness	M	Majority of narrow-leaved snow tussockland of poor quality, though alpine communities and steep shrublands rate better.
Special Features	M	Some uncommon species in gorge, low altitude slim snow tussockland.
Viability	H	Snow tussockland on driest faces may be too depleted to be sustainable, otherwise good viability.
Buffering	H	Remoteness, steepness and strong catchment boundaries give good buffering, enclosed by generally similar vegetation.
Threat	M	Fire, especially in shrublands, weeds.
Landform	H	Typical catchment of Sawtooth land system and good representation of Dunstan Creek gorge, though atypical of District as a whole.



**DUNSTAN - RAP B3**

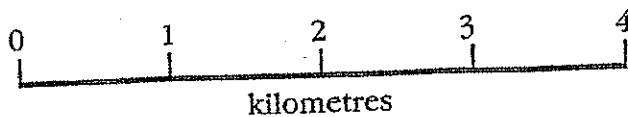
**DUNSTAN PEAK**



**GRID REFERENCE** - INFO MAP 260 H40 514 902

**AREA** - 275 hectares

**ALTITUDE** - 980m - 1580m



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## DUNSTAN RAP B3 - DUNSTAN PEAK

**Bioclimatic Zones** Subalpine to high alpine

Ecological Units	Vegetation types	Landforms
	Chi rig-Fes mat-Poa col	on colluvial slope
	Chi mac	on colluvial ridge crest
	Chi mac	on colluvial slope
	Chi mac	on ripply colluvial slope
	Fes mat-Poa col	on colluvial ridge crest
	Poa col	on colluvial ridge crest
	Dra mus-Rao hec	on soil hummocks
	Car gau-Ore pec-Moss	on flush

**Landform**

Part of the dissected eastern face of Dunstan Peak, an outlier of the northern Dunstan summit plateau. The upper slopes and ridges are generally smooth and of moderate angle, but break away to steeper slopes below with incised gully heads and localised slumping.

Soils are hygroscopic yellow-brown earths - Carrick soils with localised soil hummocks on the upper ridges, Dunstan soils below.

**Vegetation**

Dominating the vegetation is an area of dense slim snow tussockland mainly on the smooth upper slopes with shady southeast aspect. Slim snow tussockland abruptly gives way downslope to narrow-leaved snow tussockland, generally near the break in the slope.

At the summit is a small area of *Dracophyllum muscoides* cushionfield which adjoins slim snow tussockland to the south, and grades into blue tussock-alpine fescue tussockland to the north. Blue tussockland on the upper western slopes of Dunstan Peak (outside the priority area) shows a conspicuous fire boundary against slim snow tussockland.

**Flora**

Typical of the northern part of the District.

**Discussion**

A small area of good quality, but with a limited range of alpine communities analogous to Dunstan A1 (North Dunstan). The slim snow tussockland is the densest in the District, but at c. 80 ha is small compared with the area in A1, and of restricted aspect variation and lower maximum altitude. This community appears to have escaped fire for many years, and clearly has never been subjected to severe fire in contrast to the neighbouring area of blue tussockland.

Narrow-leaved snow tussockland is also of good quality. The lower boundary of the priority area is placed to include a representative area generally above the limit of oversowing and topdressing. Lower slopes are strongly modified, but snow tussock persists in decreasing proportion to unusually low altitude of about 600 m at the ecological district boundary.

**CRITERIA SUMMARY : DUNSTAN RAP B3 - DUNSTAN PEAK**

<b>Representativeness</b>	H	High quality snow tussockland communities though limited altitudinal range.
<b>Diversity</b>	M	Mainly snow tussockland with only small examples of other communities.
<b>Naturalness</b>	H	Smaller areas of fire-induced short tussocklands and cushionfield, but long-established.
<b>Special Features</b>	M	Densest slim snow tussockland in District.
<b>Viability</b>	H	Stable communities.
<b>Buffering</b>	M	Surrounding vegetation is tussockland, buffering decreases with altitude.
<b>Threat</b>	M	Fire.
<b>Landform</b>	L	Limited variation of landform and aspect, only upper slopes.