Toitu te whenua
Land Information
New Zealand

Crown Pastoral Land Tenure Review

Lease name : BEN LEDI

Lease number : PO 199

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.

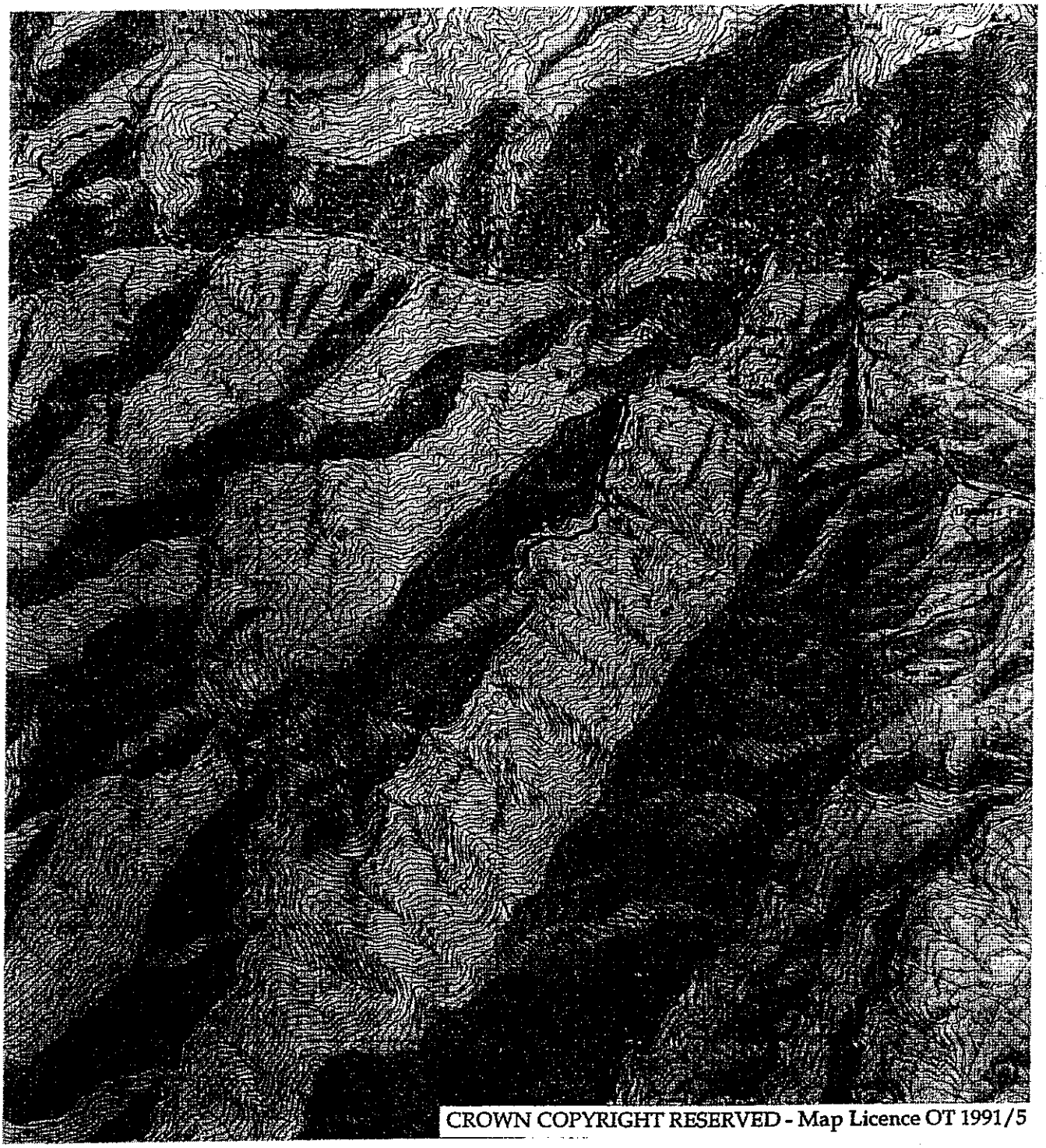
Note: Plans which form part of the Conservation Resources Report are published separately.

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

June 06

A3 Description of RAP 8

Dansey RAP 8 - Maerewhenua



GR Centre:	:	NZMS 260 I41 085785
Area	:	125ha
Altitude Range	:	420 -1000m
Tenure	:	Pastoral Lease (Mt Alexander, Benledi)
Sample Sites	:	MAE 01 - 07

Dansey RAP 8 : MAEREWHENUA

Ecological units

TWINSPAN vegetation group (no.) name and landform	Plots
(05) "Modified" tussockland on debris mantled slopes	MAE02, 03, 07
(08) Broadleaved forest on debris mantled slopes	MAE01, 04, 05, 06

Landform and soils

This RAP covers the middle reaches of the North Branch Maerewhenua River which is confined to a narrow gorge of smooth rocky surfaces and large boulders along most of the length of the RAP. South-east facing slopes above the river rise very steeply (>30°), with extensive bands of rock outcrop interspersed with rubbly colluvial slopes.

Bedrock is schist which dips steeply (60 - 65°) to the south-east. As a result, the valley has an asymmetric form, with the slopes facing north-west being steep but generally planar, without the distinctive outcrop ridges of the much steeper south-east facing slopes.

Soils on the steep low elevation slopes are mapped within the Hurunui set (Marshall 1977). However, these soils do not show the typical characteristics of the Hurunui set. Only one soil was examined within the RAP - in rubbly scree beneath broadleaved forest. This was identified as a recent soil (Hewitt 1990).

Vegetation and flora

Strips and patches of broadleaved forest (TWINSPAN group 08) remain on steep shady slopes, predominantly in hollows between rock bands and close to the stream. The main species are broadleaf *(Griselinia littoralis)*, marbleleaf *(Carpodetus serratus)*, kohuhu *(Pittosporum tenuifolium)* and lancewood *(Pseudopanax crassifolius)*. There are also occasional kowhai *(Sophora microphylla)*, cabbage tree *(Cordyline australis)*, fuchsia *(Fuchsia excorticata)*, ribbonwood *(Plagianthus regius* and *Hoheria angustifolia)* and patches of wineberry *(Aristotelia serrata)*. The understorey is mainly *Helichrysum lanceolatum, Coprosma linariifolia, C. crassifolia* and koromiko *(Hebe salicifolia)*, with an increasing abundance of *Astelia fragrans* towards the main stream. Ground cover is mainly *Asplenium* ferns, kiokio *(Blechnum* sp. 1) and hound's tongue fern *(Phymatosorus diversifolius)*. Regeneration of the tree species is generally good, particularly where the substrate is more stable.

The forest is surrounded by shrubland and tussock-grassland with a high component of exotic pasture species (TWINSPAN group 05). The shrubland, more abundant on mid to lower slopes (< 700 m), includes native broom *(Carmichaelia* sp.), *Coprosma propinqua, Helichrysum lanceolatum* and *Corokia cotoneaster,* with mountain flax *(Phormium cookianum)* in the hollows.

The shrublands merge into tussock-grassland comprising silver tussock *(Poa cita)*, small amounts of fescue tussock *(Festuca novae- zelandiae)*, with generally abundant cocksfoot

(Dactylis glomerata), sweet vernal *(Anthoxanthum odoratum)*, browntop *(Agrostis capillaris)*, some Yorkshire fog *(Holcus lanatus)*, clovers *(Trifolium pratense* and *T. repens)* and thistles *(Cirsium arvense* and *Carduus nutans)*.

Fauna

Birds recorded within this RAP were South Island tomtit, grey warbler, fantail, silvereye and brown creeper in the forest, with the occasional black-backed gull observed flying up the stream. Insect fauna were not surveyed in this RAP.

Discussion

Forests such as those contained within Maerewhenua RAP would once have been extensive throughout the lower elevation areas of the District. Forest is very rare north of the Kauru River and is found only in very small pockets where steep shady slopes and gorges have offered protection from fire. This RAP contains the largest and most intact of these forest remnants north of the Kauru River. It remains in a relatively natural condition with a variety of forest species, a closed canopy and healthy regeneration over much of the area.

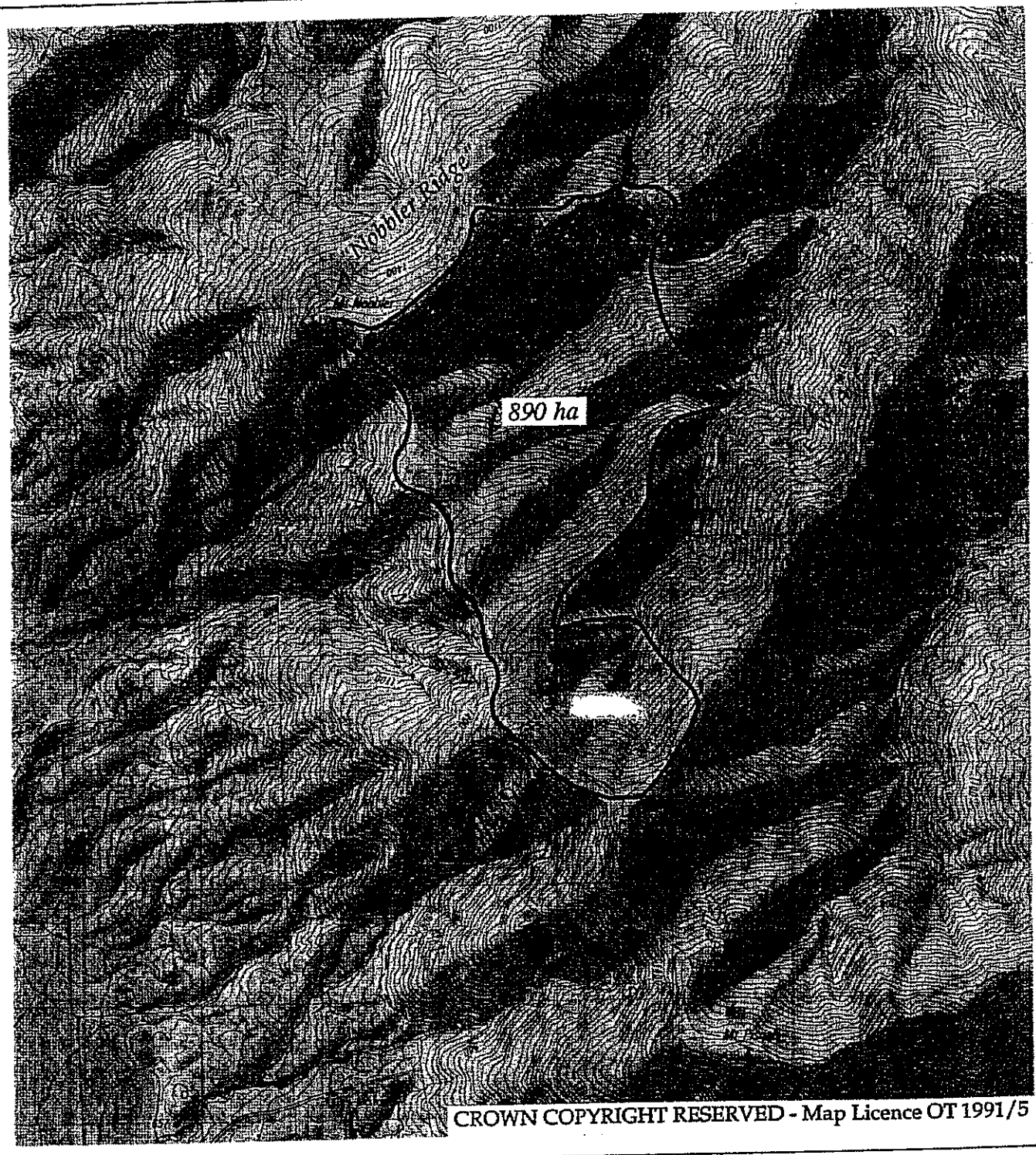
Land surrounding the forest and shrublands, particularly the upper slopes, has much lower natural values, and pasture is currently being maintained by aerial oversowing and topdressing. When considering any final boundaries for the RAP these aspects will need to be recognised.

Criteria summary

Representativeness	H	largest forest remnant north of the Kauru River.
Diversity	MH	high species diversity, low number of vegetation groups.
Naturalness	M	high in forest, medium to low in surrounding modified tussockland/shrubland.
Special features	L	
Viability	M	largely intact, medium size.
Buffering	M	good on shady aspects with gradual transition from forest to tussockland; poor on sunny aspect and unnatural boundaries.
Threat	M	fire, stock ingress, possums.

A4 Description of RAP 9

Dansey RAP 9 - Benledi



GR Centre:	:	NZMS 260 I41 030720
Area	:	as shown
Altitude Range	:	900 - 1550m
Tenure	:	Pastoral Lease (Benledi)
Sample Sites	:	BEN 01 - 18, 24, 26 - 31

Dansey RAP 9 : BENLEDI

Ecological units

TWINSPAN vegetation group (no.) name and landform	Plots
(01) High-altitude cushionfield on debris mantled slopes	BEN10, 29, 31
(02) Shrubland on debris mantled slopes	BEN01, 14, 15, 28
(03) Slim snow tussockland on debris mantled slope	BEN02, 04, 06, 08, 12, 13, 16, 18, 24, 25
(04) Narrow-leaved snow tussockland on debris mantled slopes	BEN05, 07, 11
(07) Cushion bog and sedgeland on mountain top saddle	BEN03, 17
(07) Cushion bog and sedgeland on debris mantled slopes	BEN09, 26, 30

Landform and soils

This RAP includes part of the steep headwaters of the North Branch Maerewhenua River and encompasses a series of rounded spurs that fall gently to the north-east from the broad main ridge crest of the Kakanui Mountains.

The underlying bedrock is schist, which dips 45 - 50° to the north, resulting in a marked asymmetry of the valley profile. Sunny north-west facing slopes are predominantly planar and well-drained, with frequent patches of bare ground and soil terracettes. The topography is more hummocky on the shady aspects, with extensive areas of poorly drained soils. There are localised areas of rock outcrop and associated coarse talus on shady aspects and more extensive area of bluffs in the lower reaches of the southern-most catchment.

The soils over the majority of this RAP have been mapped within the Kaikoura set, except the broad main summit ridge which is mapped in the Puketeraki set (Marshall 1977). Hewitt (1990) examined four soils on mountain slopes within the Kaikoura set. Well-drained podzols occur on planar north- and west-facing sunny slopes. On hummocky south and east facing shady slopes where drainage is impeded, there are gley and gley podzol soils, but where these aspect slopes are planar, the soils are high country yellow-brown earths. Soils were also examined along the main summit ridge within areas mapped as the Puketeraki set. Hewitt (1990) identified peaty gley soils under comb sedge *(Oreobolus pectinatus)* wetlands, and high country yellow-brown earths under snow patch areas.

Vegetation and flora

Snow tussocklands are widespread within the RAP with slim snow tussock *(Chionochloa macra)* (TWINSPAN group 03) covering the broad ridge crest and the higher altitude slopes (> 1100 m), particularly those facing east and south. Narrow-leaved snow tussock *(Chionochloa rigida)* is more common at lower elevations, in hollows and streamsides, and on north- and west-facing slopes (TWINSPAN group 04). False spaniard *(Celmisia lyallii)* and blue tussock *(Poa colensoi)* are the dominant inter-tussock species with a low cover (< 5%) and a low number number of adventive species (4 recorded).

At higher altitudes (> 1200 m), bands of *Dracophyllum pronum* are prominent on shady tussock-covered slopes that extend down from ridge tops, particularly on the slopes below

Nobbler Ridge. Boulders are scattered throughout these shrublands.

A series of wetlands (TWINSPAN group 07) lying in wide-angled depressions at the head of streams are a feature along the main ridge crest. Comb sedge is the dominant species, with sphagnum moss *(Sphagnum cristatum)*, sundew *(Drosera arcturi)*, *Celmisia alpina*, *Carpha alpina* and *Carex* spp. Bog rush *(Schoenus pauciflorus)*-dominated flushes with *Bulbinella angustifolia* and *Dolichoglottis lyallii* are common on southerly aspect slopes at mid to low altitudes (< 1200 m).

The area of steep colluvial slopes with bedrock outcrops and coarse talus in the lower part of the southern-most valley is covered in a tussock-shrubland of turpentine scrub *(Dracophyllum uniflorum)*, narrow-leaved snow tussock, scarlet snowberry *(Gaultheria crassa)* and *Hebe odora*, with increasing turpentine scrub near the rock outcrops (TWINSPAN group 02). *Hebe odora, Coprosma ciliata* and prickly shield fern *(Polystichum vestitum)* are more commonly associated with the coarse talus slopes. There is also some snow totara *(Podocarpus nivalis)* on the lower fringes of these shrublands, mainly in association with finer gravels. Scattered turpentine scrub extends beyond these bedrock areas and is a common component of the tussockland on south-facing slopes.

Fauna

A wide range of grassland, shrubland and wetland insect species are present in this RAP. Species of note include two species of pompilid wasp, a black cicada *(Maoricicada clamitans)* and a small diurnal moth *(Notoreas ortholeuca)*. The black mountain butterfly *(Percnodaimon merula)* was found here also. An undescribed diurnal moth in the genus *Trachypepla* occurred in the cushionfield on Mt Nobbler.

Discussion

This RAP represents the range of vegetation types and associated landforms of the mid to higher altitude zones of the District. Both naturalness of the area and overall condition of the vegetation are very good. The tussocklands are the best in the District in terms of areal extent, and the tussock height (> 1m tall) and cover (> 60%).

Benledi RAP also contains the most extensive and least modified areas of wetland along the main range. These wetlands and the shrublands on steep colluvial slopes with bedrock outcrops have been identified by Patrick (1991) as key habitats for the conservation of insects.

The inclusion of the upper-most slopes of the southern-most tributary stream of the North Branch Maerewhenua River makes the RAP boundary here less readily definable (ie. it no longer follows any natural feature). The practicalities of protecting the natural features of this part of the RAP will need to be considered further when implementing the proposal. The downstream section of this catchment is not included as it contains communities similar to those in the main part of the RAP, but without the diversity and high naturalness characteristic of the more northern catchments.

Criteria summary

Representativeness	H	representative of range of tussockland, high altitude wetland and shrubland communities in District.
Diversity	H	high species richness and diversity of communities
Naturalness	H	low abundance of adventive species, minimum modification of vegetation.
Special features	M	presence of mountain top wetlands, snowbanks.
Viability	MH	large area, isolated, high altitude.
Buffering	MH	surrounding landscape is relatively natural.
Threat	L	fire, tracking, pigs, future earth disturbance of a limited area of cushionfield on Mt Nobbler.

A5 Description of RAP 10

Dansey RAP 10 : NOBBLER

Ecological units

TWINSPAN vegetation group (no.) name and landform	Plots
(02) Shrubland on debris mantled slopes	NOB07, 21
(03) Slim snow tussockland on debris mantled slopes	NOB07, 08, 10, 11, 13, 14, 18, 23, 25
(04) Narrow-leaved snow tussockland on debris mantled slopes	NOB01, 02, 05, 06, 16, 17, 19, 20, 22, 24, 27
(04) Blockfield (species list only)	NOB04
(06) Red tussockland on debris mantled slopes	NOB03, 09
(07) Cushion bog and sedgeland on debris mantled slopes	NOB12, 15, 26

Landform and soils

This RAP includes the headwaters of Nobbler Stream, part of the northern tributary headwaters of the North Branch Maerewhenua River, and the broad saddle between Mts Nobbler and Alexander.

The Nobbler Stream catchment comprises strongly foliated schist which dips moderately (30 - 35°) to the north. This structural control results in a pronounced asymmetric valley profile of steep (> 35°) slopes with extensive rock outcrops on shady southern aspects, and a planar, more gentle dip slope on the opposing northern aspect. On these north-facing slopes, a prominent area of large rock slabs lies parallel to the slope in the mid-reaches of the stream.

An area of ripply ground on south-facing slopes under and to the east of Mt Alexander may be a result of slumping associated with a nearby north-east-trending fault, and solifluction. There are small areas of blockfield in the headwaters of the Maerewhenua River, and more extensive areas associated with rock bluffs in the Nobbler Stream.

Soils on the broad slopes of the saddle between Mts Nobbler and Alexander have been mapped as the Puketeraki set , while the steeper mountain slopes of the Nobbler Stream and Maerewhenua River catchments are mapped in the Kaikoura set. Hewitt (1990) examined four soils in the RAP, two within each set. In the Puketeraki set, gley soils occur under the red tussockland on the poorly drained south-facing ripply ground, and also under the poorly drained snow tussocklands at the base of the saddle. In the Nobbler Stream, within areas mapped in the Kaikoura set, a recent soil was identified under shrubland on a well-drained scree slope, and a high country yellow-brown earth was identified between the prominent rock slabs on a sunny aspect slope.

Vegetation and flora

In Nobbler Stream, the vegetation is predominantly extensive shrublands (TWINSPAN group 02). Turpentine scrub *(Dracophyllum uniflorum)* is abundant throughout, particularly on south-facing slopes. Narrow-leaved snow tussock *(Chionochloa rigida)* of varying cover is mixed commonly with the turpentine scrub, as are scattered plants of mountain flax *(Phormium cookianum)* on the lower slopes, scarlet snowberry *(Gaultheria crassa)* and the

giant spaniard *Aciphylla scott-thomsonii*.

The shrublands on shady faces in the lower reaches of the RAP are more mixed, depending on substrate. On the more stable steep slopes with abundant bedrock outcrops, the vegetation is similar to that already described. Between and below outcrops there are rubbly slopes with abundant *Hebe rakaiensis, Coprosma ciliata* and some *Olearia cymbifolia,* as well as fescue *(Festuca novae-zelandiae)* and occasional silver tussock *(Poa cita)*. Thousand-leaved fern *(Hypolepis millefolium)* is also common. One lone adult Hall's totara *(Podocarpus hallii)* persists in the lower catchment at 850 m.

The sunny-aspect slopes of Nobbler Stream are covered mainly by narrow-leaved snow tussockland of variable cover (TWINSPAN group 04), but with increasing density in the upper parts of the catchment. Also, on the sunny-aspect slopes between exposed rock slabs, turpentine scrub and snow totara *(Podocarpus nivalis)* are common, with associated species being *Myrsine nummularia, Pimelea traversii, Leucopogon colensoi,* some patches of *Exocarpus bidwillii* and, on streamside areas, *Coprosma serrulata.*

On the more gentle slopes above the bluffs, in the saddle area and in the headwaters of the Maerewhenua River, extending up to Mt Nobbler and Mt Alexander, the vegetation is dominated mainly by narrow-leaved snow tussock, with small areas of slim snow tussock *(Chionochloa macra)* at the highest altitudes (> 1200 m) (TWINSPAN group 03). The main species associated with the snow tussock are blue tussock *(Poa colensoi)*, false spaniard *(Celmisia lyallii)*, golden spaniard *(Aciphylla aurea), Gaultheria depressa* var. *novae-zelandiae* and a mat daisy *Raoulia subsericea*. In some areas the introduced species catsear *(Hypochoeris radicata)* and mouse-eared hawkweed *(Hieracium pilosella)* are locally abundant.

On the more gentle, ripply south-facing slopes under and to south-east of Mt Alexander, poorly drained soils are dominated by red tussock *(Chionochloa rubra* ssp. *cuprea)* or hybrids between red and narrow-leaved snow tussock (TWINSPAN group 06). *Bulbinella angustifolia, Acaena caesiiglauca, Ranunculus multiscapus* and *Geranium microphyllum* are common through the red tussockland. Open areas between red tussock patches are dominated by sphagnum moss *(Sphagnum cristatum), Carex* sp. and sometimes browntop *(Agrostis capillaris).*

In the saddle area and in hollows at the head of drainage-ways, there are cushion bogs (TWINSPAN group 07) dominated mostly by comb sedge *(Oreobolus pectinatus)*, with a mixture of other species depending on locality and drainage. Species include sphagnum moss, *Gentiana bellidifolia, Carex* spp., *Gnaphalium* sp. "narrow leaf" and *Euphrasia dyeri.*

On the footslopes above Maerewhenua River there are small blockfield areas derived from rock outcrops. These are vegetated with snow totara *(Podocarpus nivalis), Coprosma ciliata,* giant spaniard, thousand-leaved fern and scarlet snowberry. There are also some blockfields at mid-slope (1100 m approx.) on south facing slopes that are unvegetated except for shrubs on their margins. *Coprosma ciliata* is the most common shrub, but *Hebe rakaiensis* and *Hebe odora* are usually also present.

Fauna

The birds recorded in the RAP included a number of pipits flying and landing around the summit areas and in the snow tussocklands, and a grey warbler was heard singing amongst the shrublands below the bluffs in Nobbler Stream.

A large range of grassland and wetland insect species characteristic of the District are present in this RAP. The moths *Asaphodes nephelias* and *Orocrambus lectus* are typical of the rich wetland fauna. A newly discovered and undescribed diurnal moth in the genus *Trachypepla* occurs in the high-alpine cushionfield of Mt Nobbler. These wetlands between Mts Nobbler and Alexander also yielded a number of aquatic invertebrates including a crustacean *Microcyclops monocanthus*.

Discussion

Subalpine shrubland on steep slopes with bedrock outcrops is common in small patches throughout the District. The Nobbler RAP contains the most extensive area of this vegetation type within the Ecological District and the greatest diversity of shrubland species. Because of the steep nature of the country, the area appears to have escaped the majority of fires and there is very little evidence of grazing. Weed species are minor except in the lower catchment on sunny accessible faces.

The Nobbler RAP also includes areas of cushion bog, uncommon in the Ecological District, and red tussockland, a vegetation type now very limited in distribution within the District and not known from areas north of the Kakanui volcanic plateau in the southern part of the District.

This RAP was the only recorded locality in the District of two plants, *Exocarpus bidwillii* and *Acaena glabra*. Nobbler Stream may represent their south-eastern limit, as they are more typical of the greywacke mountains of Canterbury.

Patrick (1991) identified the wetlands and high alpine cushionfield of this RAP as key habitats for invertebrates.

For the future viability and integrity of the area the boundaries could be extended to encompass a larger area up to the top of Mt Nobbler and including a more extensive area of snow tussockland and wetlands (see dashed line on the attached map). These areas have been included within a dashed line as a second priority to the main area of the RAP as it contains similar vegetation to that represented in other RAPs in the District.

Criteria summary

Representativeness	H	representative of high altitude, wetland and subalpine plant communities
Diversity	H	moderate species richness, diverse plant communities
Naturalness	MH	moderate number of exotic species, some modification of communities, but high naturalness in bluff sites

Special features	M	contains species uncommon and of limited distribution in District
Viability	M	consider additional area to increase viability
Buffering	M	surrounded by semi-natural areas, but increased modification adjacent including recent burning
Threat	M	fire