

## **Crown Pastoral Land Tenure Review**

**Lease name : MT ALEXANDER**

**Lease number : PO 284**

### **Conservation Resources Report**

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.

**March**

**10**

**DOC CONSERVATION RESOURCES REPORT ON TENURE REVIEW OF  
MOUNT ALEXANDER PASTORAL LEASE**

**PART 1**

**INTRODUCTION**

The lessees of Mount Alexander pastoral lease have applied to the Commissioner of Crown Lands for a review of the property's pastoral lease tenure.

Mt Alexander is a 3982 ha fine wool unit lying to the south of the Dansey's Pass road at the northern end of the Kakanui Range, and extends east and south from the Pass itself.

It has been held by the present lessees for over 20 years.

The property runs from 500 m altitude near the homestead at the northeastern end, to Mt Nobbler, 1550 m, at the south western corner and is predominantly moderately steep.

It is in the Dansey Ecological District which was surveyed under the Protected Natural Areas programme in the summer of 1989/90. Two Recommended Areas for Protection were identified, Dansey RAP 10 – Nobbler, and Dansey RAP 8 – Maerewhenua.

No parts of the lease are currently subject to protection for conservation purposes.

The property was inspected on 21<sup>st</sup> and 22<sup>nd</sup> February 2001 by Department of Conservation specialists for the purpose of identifying the conservation resource.

## **PART 2**

### **INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE**

## **2.1 LANDSCAPE**

### **METHODOLOGY**

For this assessment, Mt Alexander has been divided into three landscape units with the boundaries being defined principally by changes in landform and land cover. After defining the landscape units (LU's) the following assessment criteria was applied to each unit to help determine its distinctive character and landscape values.

### **LANDSCAPE CHARACTER DESCRIPTION**

This section of the assessment explains the overall appearance of the LU using common descriptive terms to help create a “mental picture” of the primary elements which include:

- Landform - which reflects the topography and natural processes such as erosion and weathering.
- Land cover – which covers vegetation and water bodies.
- Land use – which reflects cultural and social processes such as farming.

### **ASSESSMENT OF LANDSCAPE VALUES**

The criteria used to assess and evaluate each of the landscape units is based on the attributes recommended in a recent milestone Environment Court decision that dealt with defining a district's outstanding natural landscape (Wakatipu Environmental Society v The Queenstown-Lakes District Council).

- Natural science values – which encompasses the geological and ecological dynamic component of a landscape.
- Legibility – which is an expression of the clarity of the formative processes and how striking these physical processes are.
- Aesthetic values – which includes the concepts of memorability and naturalness. Aesthetic factors which can make a particular landscape vivid include simplicity in landform, muted colours and fine textured ground cover.

### **VALUES THAT WILL BE ASSESSED WHEN APPROPRIATE**

Other values that may be assessed when considered appropriate include:

- Transient values – ephemeral events such as the occasional presence of wildlife.
- Maori values – Tangata whenua spiritual significance.
- Landscapes commonly valued – quintessential landscapes reflected in popularity through photographs, art work, tourism and recreation.
- Historical values – areas containing high heritage importance.

## **VISUAL VALUES**

Visual values in a sub set of landscape values and relates to the visibility of a particular landscape/or natural feature as soon from key viewing locations such as regional highways systems, tourist routes and prime recreational areas.

A term frequently used is “visual amenity” which is basically the value of a particular view in relation to what is seen and how people respond to it.

## **POTENTIAL VULNERABILITY TO CHANGE**

This is a measure of each landscape unit’s susceptibility to further modifications based primarily on the criteria set out in 2.0 Methodology. **In general terms the less modified an area is, the more vulnerable to further change as a result of human activities that unit is likely to be.**

## **LANDSCAPE CONTEXT**

The physical setting for the Mt Alexander pastoral lease is the northern end of the Kakanui Mountains. Unlike most of the rangelands in Central Otago the Kakanui Ranges have nearly an east-west axis with the eastern extremities (Horse Range) tilting down towards the eastern coastline making it one of the few districts in New Zealand where there is still a full altitudinal range of tussock grasslands from coastal lowlands to the alpine zone.

The Kakanuis also form the edge to the Central Otago block mountains, however their physical relief in many respects is more typical of the adjoining angulated greywacke mountains found in Canterbury. This mountain range also forms a vivid backdrop when travelling over the Pigroot and can be viewed from many parts of the North Otago downlands.

The drainage pattern of the Kakanuis varies in character depending greatly on aspect with all the streams draining off the south faces (overlooking the Maniototo Basin) being contained within ravine like gullies, while on the northern side (overlooking the Waitaki Valley) of the mountains the streams are confined to winding deep valleys surrounded by long back slopes. The land- use of the Kakanuis is dominated by traditional pastoral farming with more intensive arable farming e.g cropping occupying the fertile valley floors and rolling downlands.

## **LANDSCAPE UNIT 1**

### **LANDSCAPE DESCRIPTION**

This landscape unit encompasses all of the upper and mid catchment areas of the North Branch Maerewhenua River (NBMR). From a farming management perspective this unit incorporates all of the extensive back grazing block (commonly known as the Wether Block). It is located at the northern end of the Kakanui Mountains and incorporates the sub and low alpine zones within these rangelands. The unit spans an altitudinal range between 1,550m. asl (Mt Nobbler) down to about 750m. asl at the confluence of three major tributaries of the NBMR. The low alpine saddle between Mt Nobbler and Mt Alexander has a north-south axis, while the lateral ridges stemming off the main axis mainly have a SW-NE orientation, and nearly form a grid pattern. The lower boundary of the unit follows the lateral ridge that contains Trig H.

The landform is principally a dissected ridge and valley system characterized by rounded ridge crests that dip down into a series of small basins in the upper section of the catchment, while within the mid section these ridgelines transform into narrower spur crests with distinctive layers of rock outcropping, especially on the steeper SW faces. On the drier sunny faces there are localized areas of bare soils while scree patches are a common feature along the upper slopes of Mt Nobbler.

The drainage pattern is typical of a strongly dissected landscape with each tributary having its headwater just below the ridge crest normally originating from cushion or finger bogs. From this point the streams are contained along the floor of valleys, with the appearance of the valleys changing markedly at a lower altitude into a more entrenched v-shaped valley. Within the lower section the stream channel becomes more winding due to the series of truncated spurs leading off the main ridge. Due to the rapid fall of these tributaries the stream channel contains numerous small waterfalls and long reaches of broken white water.

The vegetative cover is strongly influenced by aspect, altitude and stock pressure with narrow leaved snow tussock still dominating the shady faces with an intermingling of golden Spaniard, false Spaniard and the tufted blue tussock. On the corresponding drier faces, the ground cover is more open and sparse with an intermixture of silver tussock, spasmodic snow tussock and introduced pasture grasses such as sweet vernal, browntop and legumes. Over localized stock camp sites the vegetative cover is both heavily grazed and highly modified, with pasture grasses being frequently invaded with unwanted adventives such as barley grass. On the upper drier slopes mats of hawkweed is also conspicuous. Along the stream sides where the tributaries of the NBMR join, there is a discontinuous ribbon of mixed shrubs dominated by *Coprosma* spp.

Within the low alpine saddle (part of the identified RAP) the mosaic of ground cover is dictated by ground water retention with red tussock and sedges occupying the poorly drained land and wet flushes, while occupying the freer draining soils, is narrow leaved snow tussock in good condition and some slim snow tussock above 1000m.asl.

The “built” elements within this unit include a well formed access track that nearly encircles the whole back block along with boundary and sub divisional fencing. On a prominent knoll north of Mt Alexander there is a repeater station located along with stock yards.

## LANDSCAPE VALUES

Unit 1 conveys a moderately high degree of indigenous natural character, i.e. natural landscape patterns having a dominance over cultural influences. This probably is most conspicuous in the low alpine zone where there is still intactness of the tussockland communities though there are some localized variations due to stock grazing patterns). This unit’s formative processes are not as vivid as those on the neighbouring St Mary’s range where the scree chutes from the exposed greywacke are noticeable. However this unit makes an important contribution to the inherent landscape character of the Kakanui Mountains.

The landscape/aesthetic values of this unit include:

- The back block, managed as a single entity , conveys an overall impression of spaciousness and remoteness.
- Due to the lack of sub-divisional fencing the vegetative cover naturally grades in, i.e. no hard edged nutrient transfer lines.
- The restricted palette of the colours expressed in the ground cover is very limited with a tonal range covering muted gray on the drier faces, yellow ochre over snow tussock and copper shades where red tussock dominates.
- Generally the landscape has a fine texture due to the lack of woody species and rocky outcrops.

## **VISUAL VALUES**

This unit is not readily visible from the surrounding road network or small settlements as most of this unit comprises a long back slope that runs off the Kakanui Mountains. Within the unit most views are generally focused towards the side slopes or surrounding ridgelines.

## **POTENTIAL VULNERABILITY TO CHANGE**

The possible threats to the existing landscape character include the further receding of tall tussock cover over the dark faces, while further fragmentation by both fire and grazing pressure is also a possible cause of change to the vegetative cover.

Around the fringes of the identified RAP AOS & TD could also threaten the tall tussock communities with the inter-tussock species being replaced by introduced grasses and legumes.

Further earth disturbances could create corridors allowing the spread of hawkweed and other tenacious adventives such as barley grass.

As groupings of wilding pines begin to cone on the escarpment overlooking the Maniototo this “clean” area could become vulnerable to air distributed wildings.

Tussocklands, due to their homogeneous character are visually vulnerable to high impact activities such as zigzag tracking especially along narrow spurs.

## **LANDSCAPE UNIT 2**

### **LANDSCAPE DESCRIPTION**

This unit incorporates all of the dissected high hill country that is located below the back block (LU1) and falls towards the north and Danseys Pass. The upper limits of this unit are well defined by the prominent lateral ridge that contains Trig H that leads off the ridge crest near the repeater station at a level of 1,325m. asl. The lower boundary of the unit is defined at about the 650m. contour where there is a marked difference in both landform and land cover.

This unit contains a series of small catchments that eventually drain into the NBMR. The tributary streams within each of these dissected catchments follow two stages with the upper part following a sinuous course over the floor of small basins while the mid stage winds around the foot of rocky outcrops and interlocking spurs.

As the characteristics of the drainage pattern changes, with descending altitude, so does the physical relief with the upper sections being represented by open rounded ridges and gently side slopes, Below 850m. contour the terrain becomes more enclosed with narrow spur lines becoming prominent, that dip down towards the numerous stream gorges.

Within this unit the distribution of the various plant communities is strongly influenced by altitude, aspect and grazing pressure with the upper sections of the unit being dominated by a mixture of tall tussock and silver tussock with the presence of pasture grasses and adventive species such as barley grass becoming more prevalent when descending in altitude. This transformation from primarily native

cover to more exotic grasslands becomes more apparent over the lower “broken” country where the effects of AOS & TD become more noticeable.

Within the lower sections of the unit natural areas are usually confined to rocky outcrops and over steepened faces which shelter the woody species from both fire and grazing.

The main tributary of the NBMR which is contained within a deep winding gorge forms a natural physical boundary to the property along the eastern side. The steep side slopes within the gorge contain a series of layers of bedrock that tilt down towards the stream. In between the outcrops, the terrain is relatively hummocky with numerous razor-back spurs that have been truncated by the downcutting of the stream. Features within the gorge are the long reaches of broken water and the numerous small waterfalls. This gorge could be described as sub unit 2(a) the steep slopes that dip down into the main stem of the NBMR and contains Dansey RAP 8, identified as being the best example of a low altitude broadleaved shrubland and forest within the ecological district, should encompass all of the incised valley to where the main tributaries connect.

### **LANDSCAPE VALUES**

The dominant landscape element is the ridge and valley system which becomes more pronounced in the lower section. This “middle ground” could be described as a transitional zone between the higher altitude area which has intact coherent values, to the lower country where cultural values become more obvious. This middle ground helps to create the overall impression of distance and spaciousness which is an inherent characteristic of tussocklands.

### **VISUAL VALUES**

Due to the fact that only localized views are obtained within this unit this area has therefore only limited importance as a visual resource. Outward views are focused generally on the adjacent long Maerewhenua Spur and the distant St Marys Range.

### **POTENTIAL VULNERABILITY TO CHANGE**

Because the unit has been divided into eleven grazing blocks the variation in vegetative cover will increasingly become more accentuated due to the various grazing regimes. Besides the continual changes to the ground cover other threats include the spread of wildings pines over less accessible grazing areas and adventive species following disturbed ground lines.

## **LANDSCAPE UNIT 3**

### **LANDSCAPE DESCRIPTION**

This landscape unit includes the primary valley that contains the Danseys Pass Road and the lower section of a series of secondary valleys that extend out from the higher dissected hill country. The altitudinal range of the unit is from 650m. asl where the land cover of the secondary valleys becomes similar to those contained within the primary valley.

The dominant physical features are the lower slopes of the surrounding valley and ridge system formed by the down cutting of the local streams. The drainage pattern consists of a major tributary to the MBMR that flows out towards the Waitaki River parallel with the Danseys Pass Road, along with a number of lateral branches that drain the mid and upper catchments, which have already been described within LU1 and LU2.

There is a marked variation in relief with the shady south faces being frequently over steepened with the stratum of bedrock jutting out, while on the corresponding side the slopes are more moderate and include single terraced treads.

The variation in ground cover has been influenced by pastoral farming with the sunny gentle slopes, terraces and small floodways being covered with modified short tussock and introduced grasses, while the steeper slopes are clad in gray shrublands that include matagouri, *Coprosma* spp, blue Spaniard, mountain flax and shield fern. On sites protected from fire such as rocky outcrops and scree faces there is a scattering of mature broadleaf, while adult kowhai are present on the dryer slopes.

There are groupings of amenity tree planting amongst the shrublands along the main valley floor along with some blocks of plantation forestry.

Within this unit there is a strong cultural presence with a scattering of homesteads, farm buildings, stockyards and pylons which crisscross the valley floor.

### **LANDSCAPE VALUES**

The dominant landscape element of this unit is the entrenched physical relief formed by the down cutting of local streams. This creates a strong feeling of enclosure with the surrounding steep slopes forming natural "walls". This unit conveys a strong local identity, being a part of a sequence of diverse landscape types experienced when traveling over the Danseys Pass Road. These variations in viewing experiences are emphasized with the rapid changes in vegetative cover with both sides of LU3 being predominantly open grasslands whereas through this corridor there is a random mixture of shrublands and exotic grasses that form a striking contrast to the surrounding areas.

### **VISUAL VALUES**

This unit has a strong feeling of visual containment with views being terminated by the surrounding steep slopes. The views are very directional, with the side valleys being a point of interest.

### **POTENTIAL VULNERABILITY TO CHANGE**

The possible threats to this unit include the further loss of native shrublands which form distinctive vegetation patterns across the valley floors. The possibility of utilities being sited in visually sensitive areas such as immediate skylines would affect the visual amenities of this area.

### **LANDSCAPE SIGNIFICANCE**

On the Mt Alexander pastoral lease the natural landscape patterns and ecological processes have been extensively modified with most of the areas with a high inherent value now remaining within the low alpine zone or on impenetrable faces.

Two areas of predominantly natural vegetation, corresponding largely to the RAPs, contribute significantly to the local landscape character and are also an integral part of a wider Kakanui Range landscape of regional significance. They are vulnerable to change by grazing and to the spread of wilding pines and adventive species such as *Hieracium*.

The landscape corridor along the Dansey's Pass road is also of regional significance, the part contained within the subject property because of the rugged landform rather than the vegetation.

## 2.2 LANDFORMS and GEOLOGY

The property lies between two main ridges – one north from Mt Nobbler to Dansey's Pass, and one northeast from Mt Nobbler to the homestead in the north east corner.

The contour is almost all moderately steep with south lying faces being steeper than northern slopes. All of the property drains into the North branch of the Maerewhenua River.

Class II and III Haast Schist Metamorphic rocks of the Carboniferous to the middle Triassic dominate the property. A band of Red and Green Schist is incorporated into the Chlorite II band in the northern third of the property (Mutch 1963).

## 2.3 CLIMATE

Climate is typical of the Central Otago region with warm summers and cold winters. Winters usually bring intermittent snow to lower parts of the property. Snow can lie for up to four months at higher altitudes. Rainfall at the homestead is in the vicinity of 750mm and rises with altitude from east to west being over 1000mm on the tops.

## 2.4 VEGETATION

### INTRODUCTION

Three land units are identified for the purpose of describing the vegetation. These are Front Block (land overlooking the Danseys Pass Road), Back Block (headwaters North Branch Maerewhenua River east of Mt Alexander), and Middle Reaches North Branch Maerewhenua River.

### VEGETATION DESCRIPTION

#### Front Block

This block has been oversown and fertilised and the predominance of exotic species reflects this. Despite this, a gradient of gradually improving tussock occurs from the lower pasture dominated slopes through to the higher tops. At mid elevations narrow-leaved tussock (*Chionochloa rigida*) cover is sparse but with considerable silver tussock (*Poa cita*) and hard tussock (*Festuca novae-zelandiae*). Near its boundary with the Back Block, a dense narrow-leaved tussock cover exists however inter-tussock cover remains strongly exotic.

Matagouri (*Discaria toumatou*) is common below 700 metres. More diverse but patchy riparian shrublands are present along major watercourses. Species include broadleaf (*Griselinia littoralis*), *Coprosma propinqua*, *C. rugosa*, *C. crassifolia*, *Olearia bullata*, *Meliccytus* aff. *alpinus* and kowhai (*Sophora microphylla*). Vines of *Muehlenbeckia australis*, *M. complexa* and *Rubus schmidelioides* drape the shrublands.

Several weeds of agricultural concern, in particular barley grass (*Critesion glaucum*) and nodding thistle (*Carduus nutans*), are well established in this block.

**Back Block**

This block is mostly vegetated in tall tussock, areas of which have been very heavily grazed. Around the valley bottom at 740 m the stream is deeply incised in the bedrock with numerous deep pools. Riparian vegetation is dense and woody, especially on south-facing aspects. Common species include *Dracophyllum longifolium*, *D. uniflorum*, mountain flax (*Phormium cookianum*), *Coprosma ciliata*, *Aristotelia fruticosa*, and *Olearia bullata*. Talus slopes have abundant *Blechnum novae-zealandiae* and giant spaniard (*Aciphylla scott-thomsonii*).

Beyond the stream gorge but below about 1400 m, narrow-leaved tussocklands of moderate stature and density predominate. Inter-tussock species are mostly native and are typical of dry hillslopes in the district. Common species include *Celmisia lyallii*, *Gaultheria depressa*, *Lycopodium fastigiatum*, *Pimelea oreophila*, *P. pseudolyallii*, *Leucopogon fraseri*, *Pentachondra pumila*, *Celmisia densiflora*, *Kelleria dieffenbachii*, *Raoulia subsericea* and *Dracophyllum muscoides*. Mouse-ear hawkweed (*Hieracium pilosella*) and catsear (*Hypochoeris radicata*) are the most frequent weeds, but except on the driest ridge crests, are seldom common.

Depleted grasslands high on the dividing ridge which separates the Front Block and Back Blocks have lost most of their tall tussock and instead support hard tussock, cushion plants and pasture grasses.

Rock outcrops in this zone have much lichen and moss, and a range of plants less commonly encountered in the tussockland. These include *Anaphalioides bellidioides*, *Stellaria gracilenta*, *Anisotome aromatica*, *A. brevistylis*, *Polystichum richardii*, *Blechnum penna-marina*, *Colobanthus* sp., *Myosotis australis*, *Brachyglottis bellidioides*, *Poa lindsayi*, *Geum parviflorum*, and *Melicytus alpinus*.

Shady faces southeast of Mt Alexander have a fine shrubland of *Dracophyllum pronum*, *D. uniflorum*, *Ozothamnus vauvilliersi*, *Hebe rakaiensis* and *Coprosma ciliata*. Below this, poorly drained soils support red tussock (*Chionochloa rubra*) and red tussock- narrow-leaved tussock hybrids. Boggy areas in and around the tussocklands have *Sphagnum cristatum*, *Oreobolus pectinatus*, *Celmisia gracilenta*, *C. glandulosa*, *Gnaphalium mackayi*, *Drosera arcturi* and *Plantago novae-zealandiae*. The shrubland and wetland areas are part of a much larger diverse representative area extending west into the headwaters of Nobbler stream (outside of this property).

Above 1400 m, around the summit of Mt Nobbler and along the ridge to the north-east, slim snow tussockland (*Chionochloa macra*) exists in a very depleted state. Heavy browsing has led to many dead tussock stumps and areas of bare ground. Previous heavy grazing is likely to have led to the virtual absence of slim snow tussock from patches on the ridge crest and consequent expansion of cushion and mat forming herbs and shrubs. The groundcover is quite diverse with characteristic species of the low-alpine bioclimatic zone. Common species include *Celmisia sessiliflora*, *C. viscosa*, *Kelleria villosa*, *Hectorella caespitosa*, *Chionohebe thomsonii*, *Scleranthus brockei*, *Raoulia hectorii*, *R. grandiflora*, *Myosotis pygmaea* var. *drucei*, *Leptinella pectinata* subsp. *villosa*, *Pachycladon novae-zealandiae*, *Euphrasia dyeri* and *Neopaxia sessiliflora*. Sheep's sorrell (*Rumex acetosella*), and to a lesser extent mouse-ear hawkweed are weeds common in disturbed areas.

**Middle Reaches North Branch Maerewhenua River**

Steep southeast facing rubbly slopes above the middle reaches of the North branch Maerewhenua River support broadleaved forest, especially close to the river and along tributary creeks. The main tree species are broadleaf, marbleleaf (*Carpodetus serratus*), kohuhu (*Pittosporum tenuifolium*), lancewood (*Pseudopanax crassifolius*), and cabbage tree (*Cordyline australis*). Also present are lowland ribbonwood (*Plagianthus regius*), narrow-leaved lacebark (*Hoheria angustifolia*), kowhai (*Sophora microphylla*), wineberry (*Aristotelia serrata*) and fuchsia (*Fuchsia excorticata*). Common understorey and margin plants include *Coprosma crassifolia*, *C. linariifolia*, *Helichrysum lanceolatum*, *Gaultheria antipoda*, and *Hebe salicifolia*. Ground cover is often provided by *Blechnum novae-zealandiae*, *Fuchsia perscandens*, *Scandia geniculata* and *Microsorium pustulatum*. Small rock outcrops support *Asplenium terrestre*, *Myosotis macrantha* and *Einadia allanii*.

Mid slopes above the forest are mixed shrubland and tussockland. The shrubland includes *Carmichaelia* sp., matagouri, *Olearia bullata*, *Coprosma rugosa*, *C. sp.(t)* of Eagle, *Corokia cotoneaster* and *Meliclytus alpinus*.

Above the shrublands, hard tussock and silver tussock are mixed with exotic pasture grasses. Mountain flax is abundant on steep rocky outcrops. Higher still, near the ridge crest, tutu (*Coriaria sarmentosa*) and prickly shield fern (*Polystichum vestitum*) prevail. This gives way to heavily grazed exotic dominated pasture on the ridge crest.

## **PROBLEM PLANTS**

No weeds were identified as being of immediate conservation concern. The three most common hawkweeds (*Hieracium pilosella*, *H. praealtum*, *H. lepidulum*) are all present in areas with high inherent values but are either in small localised patches or widely distributed at very low density. Maintenance of a tall tussock cover probably provides the best protection against further spread of these potential problem plants.

## **SIGNIFICANCE OF THE VEGETATION**

The Front Block is comprised of hill country where remaining indigenous communities are highly modified through fragmentation and compositional shift favouring introduced grasses and weeds. With the exception of some riparian shrublands and regenerating treeland, remaining indigenous vegetation has low conservation significance.

The broadleaf forest present in the middle reaches North Branch Maerewhenua River would once have been widespread throughout the lower altitude parts of the ecological district. Small pockets have persisted in steep shady sites that offered protection from fire. This remnant is the largest and most intact of these forests north of the Kauru River and as such, has high representativeness and significance.

The Back Block is a large area comprised of predominantly indigenous vegetation communities which retains a high degree of natural character, despite some detrimental changes wrought by pastoral farming. It is of sufficient size, encompassing a variety of altitudes and aspects, to be highly representative of the ecological district. Two communities now regarded as uncommon and diminishing in the district, are present. Both red tussockland and slim snow tussockland have narrow ecological ranges in the high country. Red tussocklands are vulnerable to pastoral development through their penchant for valley floors and other poorly drained landforms. Highly palatable slim snow tussocklands, which in Otago occupy a generally narrow altitudinal zone between the upper extent of narrow-leaved tussocklands and alpine communities, are vulnerable to overgrazing. Remaining examples of both communities are significant in the ecological district context for their reflection of the original vegetation pattern.

## **2.5 FAUNA DESCRIPTION**

Mt Alexander Pastoral Lease is located at the northern end of the Dansey Ecological District in the Kakanui Ecological Region. The property is located to the south of Danseys Pass and extends across to the North Branch of the Maerewhenua River. The property extends from 500 metres to Mt Nobbler at 1550 metres. Mt Nobbler and Mt Alexander and the ridge extending northwards to Danseys Pass form a watershed between the Taieri and Waitaki River Catchments.

The property is well developed in the northern half with indigenous communities dominating in the south.

## 2.5.1 INVERTEBRATE FAUNA

### PREVIOUS WORK

Invertebrates were sampled as part of the 1991/92 PNAP Survey of the Dansey Ecological District (Comrie 1992). A separate report (Patrick 1982) reported on the invertebrate values of the Ecological District.

Patrick identified the key features of the Kakanui Mountains insect fauna as:

- Many of the genera recorded are represented by a large number of species. Examples were *Orocrambus*, *Eudonia*, *Scoparia*, *Glyphiterix*, *Gelophaula*, *Asaphodes*, *Notoreas*.
- There were a number of diurnal, or dayflying, species in normally nocturnal groups.
- The insect fauna recorded has a strong autumn-emerging element, which is characteristic of the Eastern South Island.

Patrick (1982) concluded that the ecological district contains a predominantly native insect fauna which is characteristic of the Eastern South Island. He identified nine areas as the key sites in the Danseys Ecological District for the conservation of insects. These include wetlands both to the north and south of Mount Nobbler and the high alpine fellfield cushionfield and herbfield on Mount Nobbler.

### TENURE REVIEW INSPECTION

Invertebrates were sampled across the property by sweep nets turning rocks and gathering by hand. Emphasis was placed on the southern and eastern sections of the property. The insect community recorded was diverse. Predatory carabid and *Coccinellidae* (ladybird) beetles and tachnid flies were found throughout. Key insect grazers such as grasshoppers were found throughout the grasslands sometimes in particularly dense numbers. Pollinators both in the form of flies and moths were present throughout the property.

*Mecodema* sp. beetles are predatory carabid beetles that prey on a range of worms, larvae and small invertebrates. They are themselves prey of spiders and under one rock five elytra (the hard outer wing case found on beetles) from *Mecodema* sp. were found adjacent to spider webbing. The tiger beetle, another predatory carabid was found at various places on the property.

The Copper Butterfly was recorded at a variety of sites on the property. The tussock ringlet butterfly (*Argyphenga antipodium*) was also present at a variety of altitudes across the property. The presence of red admiral butterflies (*Bassaris gonerilla*) above RAP 8 indicates that a full range of food plants such as stinging nettle is present in the RAP shrub community.

The distribution of grasshoppers and in some places the numbers seen were remarkable. In particular on the saddle to the southeast of Mt Alexander the numbers observed were extremely high. Grasshoppers are an important component of the tussockland ecosystem as they graze on plants and form the greatest part of the animal biomass in such systems. Cicadas are also an important grazer in these tussocklands.

## 2.5.2 AVIFAUNA

### PREVIOUS WORK

The Atlas of Bird Distribution in New Zealand (Bull *et al.* 1985) describes generally the distribution of birds. In the Danseys Pass area bellbird are only found to the East, isolated records of grey warbler are found around the locality.

Subsequent to the above report vertebrate fauna specific to this property were recorded in the PNAP report for the two RAP's (Comrie 1992). For RAP 8, Maerewhenua, tomtit, grey warbler, and brown creeper were recorded. For RAP 10, Nobbler, birds recorded were pipits amongst the summit area, and a grey warbler on the southern side of the RAP.

### TENURE REVIEW INSPECTION

A full list of birds recorded on the property is at Appendix One. Harrier and pipit were present throughout the open parts of the property. Forest birds such as bellbird and grey warbler were associated with RAP 8.

## 2.5.3 Herpetofauna.

**“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.”**

Survey for lizards was carried out on the 21<sup>st</sup> and 22<sup>nd</sup> February, 2001. Of particular interest was the possibility of scree skinks (*O. waimatense*) and Danseys Pass geckos being present.

Rock outcrops at the Mt Alexander summit were searched for lizards but none were seen. The land here appeared to have been heavily grazed. A pregnant female McCann's skink (*Oligosoma maccanni*) was sighted. Rock outcrops adjacent to the road were searched for geckos but none were found.

Scree slopes on the north and west facing slopes below the high point 1506m asl were searched for scree skinks by scanning with binoculars. None were found however, McCanns skinks were seen. Although habitat appeared suitable for scree skinks, no skinks or their scats were seen. However evidence of high stocking levels of sheep was apparent from the peak down to the level of the lower part of the screes.

A scree at \_\_\_\_\_ was searched but no lizards were seen. The scree here was composed of larger blockier rocks that may not have been suitable for scree skinks.

On 22<sup>nd</sup> February the scree slopes at \_\_\_\_\_ were searched again. McCanns skinks were seen, but no scree skinks or their scats. Evidence of lizard predators was noted – hare bones had been broken by a larger animal e.g. cat or ferret, hedgehog scats were seen.

The ridge above RAP Dansey 8 was surveyed by checking rock outcrops for geckos. None were found. Trees and shrubs here are well down towards the stream (North Branch Maerewhenua River).

The form of screes (i.e. rocks) searched on Mt Alexander were similar to those where scree skinks had been found previously in the headwaters of Blue Duck Creek

The skink *Oligosoma nigriplantare polychroma* was recorded at: the saddle to the SE of Mt Alexander, on the leading spur to the NE of spot height 1506m and on the leading spur to the SE of Trig H Numbers were low but present throughout a range of habitat types and physical aspects.

It is surprising that so few lizards were found under the relatively good weather conditions and amount of search effort, given the amount of potentially suitable habitat for several lizard species, including scree skinks, on Mt Alexander. Browsing shrubs to the point of almost total destruction, loss of cover and habitat for prey animals (invertebrates), trampling of screes and fouling all contribute to lizard habitat degradation. It may be that the degree of habitat loss and modification has reduced lizard populations to a low level so that they are difficult to detect.

## 2.5.4 FRESHWATER FAUNA

### Introduction

The NIWA Freshwater Fisheries Database holds no records for the streams on this property. However, there are University of Otago records for Canterbury galaxias (*Galaxias vulgaris*), for the tributary of the North Branch Maerewhenua River which flows beside the Danseys Pass Road.

Five sites were electric fished on the property, all on unnamed tributaries of the North Branch Maerewhenua River. Fish were absent from the two higher sites (700-800 metres altitude), but galaxiids were found at the three lower sites (450-500 metres), all of which were relatively close to the Danseys pass Road. Samples of the galaxiids taken were all identified as Canterbury galaxias (*Galaxias vulgaris*).

The Canterbury galaxias is one of the few non-migratory galaxias not ranked as threatened, according to Molloy and Davis (as revised by Tindall,1994).

The site containing the most abundant population of galaxiids was also characterised by a healthy cover of native riparian vegetation (including numerous broadleaf bushes). The uppermost site on this stream (I41 055 784), was one of those from which fish were absent, but which contained high numbers of invertebrate bottom fauna.

### Sites Fished

I 41 056 766 Unnamed tributary, North Branch Maerewhenua River  
I 41 055 784 Unnamed tributary, North Branch Maerewhenua River  
I 41 084 798 Unnamed tributary, North Branch Maerewhenua River  
I 41 073 803 Unnamed tributary, North branch Maerewhenua River  
I 41 058 808 Unnamed tributary, North Branch Maerewhenua River.

## 2.5.5 PROBLEM ANIMALS

Cats, mustilids and hedgehogs are all present and almost certainly impacting on herpetofauna and avifauna numbers.

The property has resident populations of rabbits and hares , but while the potential exists for the rabbits in particular to become a problem, they are currently being kept to a level which has minimal impact. Pigs pass through from time to time but are kept below troublesome numbers by recreational hunting.

## **SIGNIFICANCE OF THE FAUNA**

The features discussed in this report are of high significant inherent value for the reasons set out below.

### **VERTEBRATES**

The native bird species recorded in this and previous surveys are limited. However the presence of bellbird, brown creeper and tomtit on Mt Alexander Pastoral Lease are extensions on the previous recorded ranges of these species. Bellbirds are only found to the east. The brown creeper and tomtit records are substantial new extensions of the range for these species.

### **INVERTEBRATES**

The invertebrate community recorded on this inspection has all the features of an intact functioning ecosystem. It has a full range of trophic levels present from predatory beetles and flies through grazers such as grasshoppers, pollinators in the form of moth and scavengers such as blowflies.

Many of the genera present are represented by large numbers of species. The property contains key sites for insect conservation in the Dansey Ecological District, namely wetlands north of Mount Nobbler and the high alpine fellfield and cushionfield on Mt Nobbler.

## **2.6 Historic**

Part of a water race of gold mining vintage extends on to the property but there are no known sites of any significance.

## **2.7 Public Recreation**

### **2.7.1 Physical Characteristics**

The property is predominantly moderately steep, with a still substantially natural appearance in the back block and on the face leading down to the Maerewhenua River, but of an obviously modified character elsewhere. A significant part of the back block and most of the Maerewhenua River face are insulated from obvious man-made features once well into these areas, but it is not possible to travel far in any direction without striking fences, tracks, or other structures.

In 1992 DOC compiled a Recreation Opportunity Spectrum for the entire conservancy whereby all areas regardless of land tenure, were classified and mapped according to setting, activity and recreational experience characteristics.

All of Mount Alexander property is classified as Back Country 4WD.

### **2.7.2 Legal Access**

A legal road extends from the Dansey's Pass road along the back boundary to Mt Nobbler.

There is a marginal strip in place on the North Branch of the Maerewhenua River which bounds the property for approximately 7 km, and also marginal strips extending 2 km and 1.5 km into the property on un-named tributaries.

While it is probable that the formed track from Dansey's Pass to Mount Alexander is close enough to the legal road to be deemed to be the road, this is not certain. Beyond Mount Alexander the deviation is more significant.

### 2.7.3 **Activities**

The predominant recreational activity is sightseeing, both on foot and by 4WD vehicle. The property has an extensive network of mainly good standard tracks. Current use is reasonably high particularly along the Dansey's Pass to Mt Nobbler ridge. There is also limited recreational hunting for pigs.

## **PART 3**

### **OTHER RELEVANT MATTERS & PLANS**

#### **3.1 Consultation**

The property was discussed with NGO's on 12 December 2000.  
None were familiar with the property, but the areas of interest noted were:

- (a) the RAPs
- (b) land above 1100m
- (c) landscape corridor along Dansey's Pass road
- (d) Access along back boundary to Mount Nobbler

No written submissions were received subsequent to the meeting.

#### **3.2 Regional Policy Statements & Plans**

**(a) Regional Policy Statement.** The Regional Policy Statement for Otago provides a policy framework for all of Otago's significant regional resource management issues. It does not contain rules. District Plans shall not be inconsistent with the Regional Policy Statement.

In respect of natural values the Regional Policy Statement includes the following policy and method:

Policy: "To maintain and where practicable enhance the diversity of Otago's significant indigenous vegetation and significant habitats of indigenous fauna, trout and salmon...".

Method: "Identify and protect Otago's significant indigenous vegetation and significant indigenous vegetation and significant habitat of indigenous fauna, trout and salmon, in consultation with relevant agencies and with Otago's communities."

In respect of landscapes and natural features it includes the following policy and method:

Policy: "To recognise and provide for the protection of Otago's outstanding natural features and landscapes..."

Method: "Prepare, in conjunction with relevant agencies and in consultation with the community and affected landowners, an inventory of outstanding natural features and landscapes that are regionally significant."

#### **3.3 District Plan**

The property all lies within a Rural Scenic Zone in the Waitaki District Proposed District Plan.

##### **Permitted Activities:**

Forestry

Tree Planting

Farming

Residential Activities

Visitor Accommodation (farmstay)

Mineral Prospecting (subject to Regional Council consent)

Recreational Activities

Commercial Activities, limited to retail sales of on-site produced handcrafts and farm/orchard produce.

##### **Controlled Activities:**

Earthworks excepting normal farming activities

Vegetation clearance

Farming of goats thar chamois wallaby and fitch

There are no significant landscape protection controls

### 3.4 Conservation Management Strategies & Plans

The Otago Conservancy of DOC has prepared a Conservation Management Strategy (CMS) which was approved by the Minister of Conservation in August 1998.

The CMS identifies 41 special places of conservation interest in Otago Conservancy

The Mt Alexander property is situated in the northern part of Kakanui Special Place 14.

The significant features are the indigenous vegetation and the importance of the setting for the Dansey's Pass road corridor, a high use tourist route.

**Objectives** for the Kakanui Special Place are to maintain the natural resources contained within the existing protected areas on the Kakanui Mountains, while taking opportunities that may arise through pastoral lease tenure review to negotiate protection of and access to areas of high natural and recreational value.

## **PART 4**

### **MAPS ETC.**

#### **4.1 References**

Whitaker, A.H. 1994. Survey Methods for Lizards. *In* Ecological Management, no.2., Science Publications Unit, Department of Conservation, New Zealand.

Bull, P. C., P. D. Gaze & C. J. R. Robertson (1985) The atlas of bird distribution in New Zealand. The Ornithological Society of New Zealand, Wellington.

Comrie, J. (1992) Dansey Ecological District. Survey Report for the Protected Natural Areas Programme Number 23. Department of Conservation, Wellington..

Mutch, A. (1963) Geological Map of New Zealand Sheet 23 Oamaru. Wellington, New Zealand, DSIR.

Patrick, B. (1982) Lepidoptera of Danseys Pass, Otago. *New Zealand Entomologist* 7(3): 332-336.

#### **4.2 Illustrative Maps**

##### **4.2.1 Topo/Cadastral Mount Alexander Pastoral Lease**

##### **4.2.2 Values – Landscape**

##### **4.2.3 Values – Ecological**

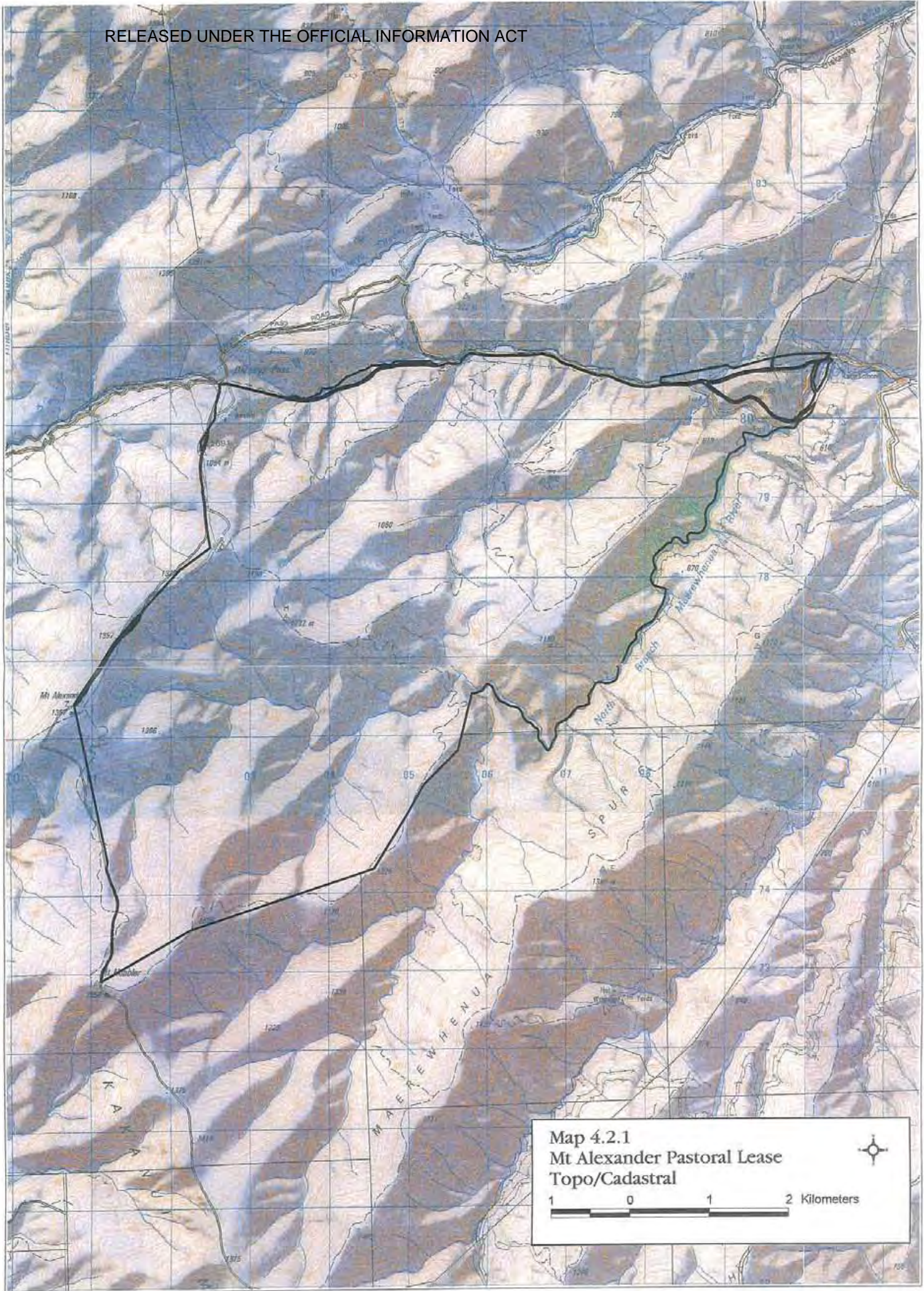
#### **4.3 APPENDIXES**

**1 Bird List Mt Alexander**

**2 Invertebrate List**

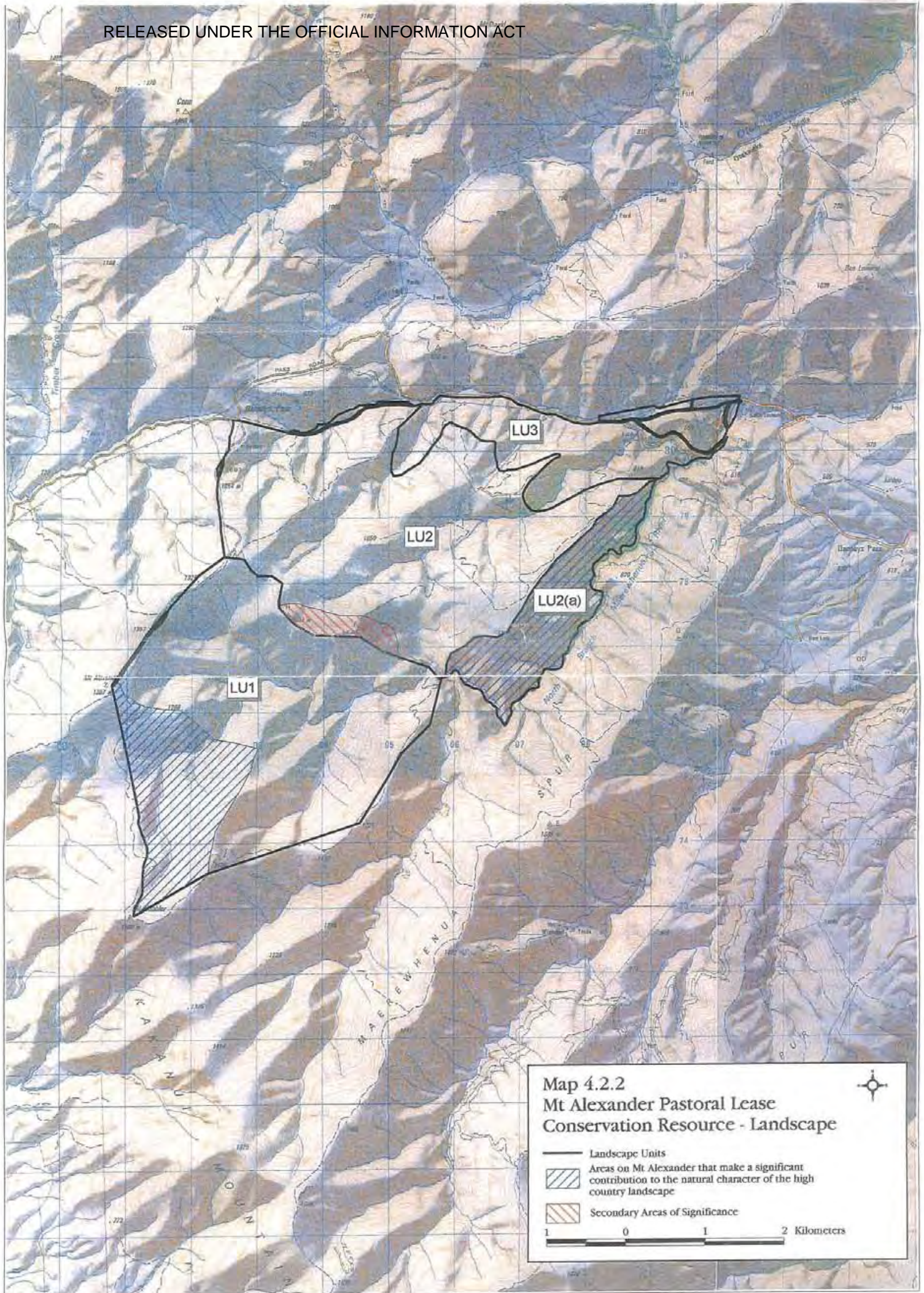
**3 Extract from Otago Conservation Management Strategy – Special Places**

**4 Extracts from Protected Natural Areas Programme Report, pp 64-66; 71-75.**



Map 4.2.1  
Mt Alexander Pastoral Lease  
Topo/Cadastral

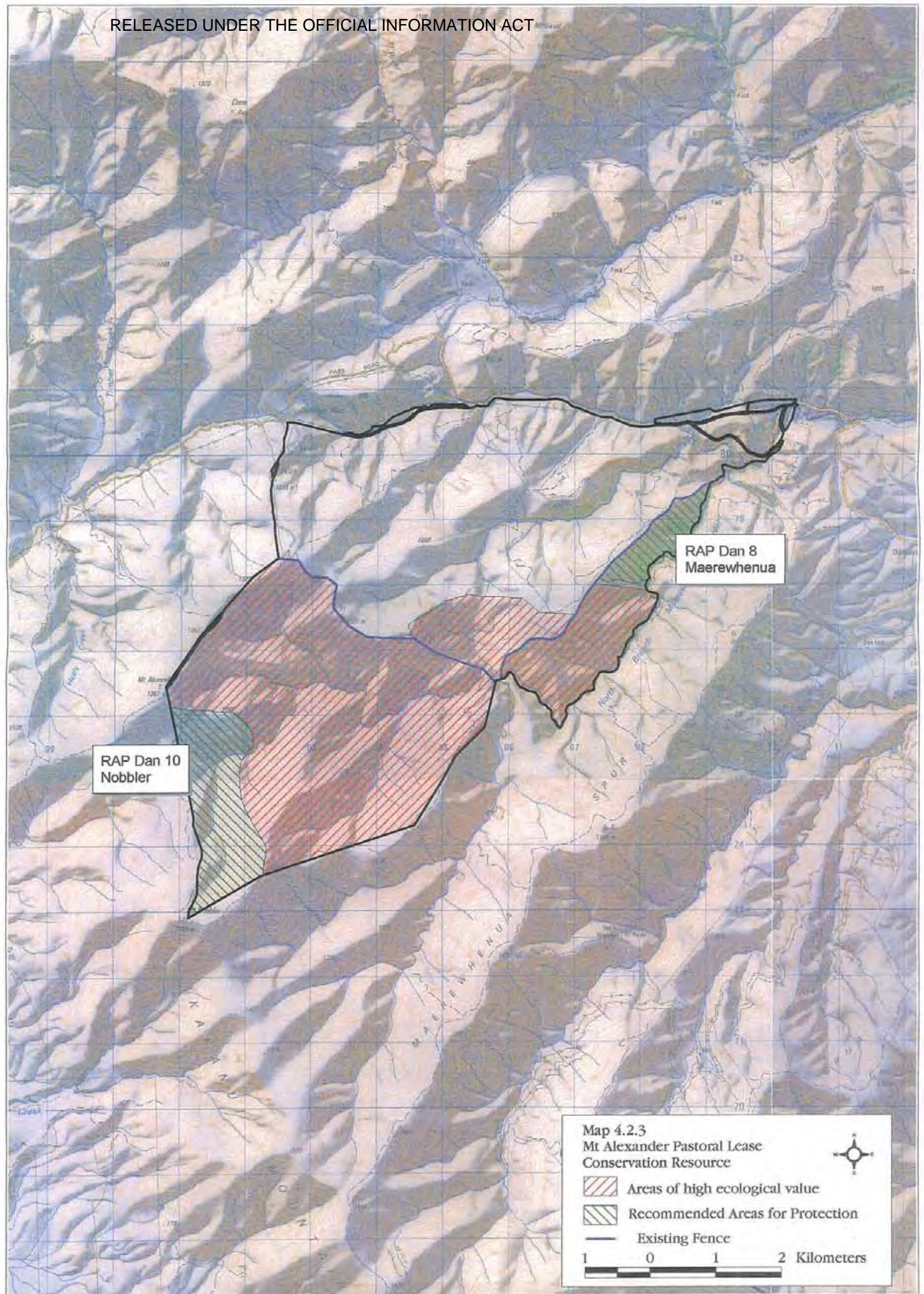
1 0 1 2 Kilometers



Map 4.2.2  
Mt Alexander Pastoral Lease  
Conservation Resource - Landscape

- Landscape Units
- ▨ Areas on Mt Alexander that make a significant contribution to the natural character of the high country landscape
- ▨ Secondary Areas of Significance

1 0 1 2 Kilometers





**Landscape Unit I:**

A panoramic view of the low alpine saddle between Mt Alexander (close to foreground) towards Mt Nobbler. This area has high landscape values owing to the intactness and naturalness of the tall tussock cover.



**Landscape Unit 2**

A panoramic view from south east of Trig H looking down towards the dissected hill country.



**Landscape Unit 2(a).** Lowr section of the gorge containing the North Branch Maerewhenua River (Dansey RAPS) A distinctive feature is the emergence of cabbage trees through the shrubland canopy at the bottom of the gorge while other shrub species are repamannng the mid slopes



**Landscape Unit 2(a).** The upper section of the North Branch Maerewhenua River where the channel follows a winding course around the interlocking spurs. The broadleaved shrublands a feature in the lower section is replaced by mixed tussock. The river acts as a natural boundary at this point with the property only occupying the foreground



**Landscape Unit 3.** The upper limits to this unit are defined by similar characteristics found in the Danseys Pass valley which includes over steepened slopes, protruding rocky outcrops and fragmented shrublands



**Landscape Unit 3.** The Danseys Pass valley looking towards the Manioloto. The sense of enclosure directional views and fragmented shrublands gives this unit a special identity



Back block viewed north east from Mount Alexander. Mount Nobbler on skyline at right.



Trig H viewed from the south east over vigorous *Chionocloa rigida* tussockland



Back and middle blocks of the property viewed northwards from Mount Nobbler.

RAP Dansey 8  
On true left face of  
Maerewhenua River



**Appendix 1 Bird List Mount Alexander**

<b>SPECIES</b>	<b>LOCATION</b>	<b>STATUS</b>	
Bellbird	RAP 8	Native	
Blackbird	RAP 8	Introduced	
Chaffinch	RAP 8	Introduced	
Grey Warbler	RAP 8	Native	
Harrier Hawk	Mt Alexander	Native	
Magpie	Mt Alexander, RAP 8	Introduced	
Pipit	Mt Alexander	Native	
S Black backed gull	RAP 8	Native	
Yellowhammer	RAP 8	Introduced	

**PROPOSED DESIGNATIONS REPORT:  
TENURE REVIEW OF MOUNT ALEXANDER PASTORAL LEASE  
(P284) HELD BY N.T. and M.A. HORE UNDER PART 2 CROWN  
PASTORAL LAND ACT**

(FOR OFFICIAL USE ONLY)

**1 Recommendations**

- 1.1** That the proposals described below be submitted to the CCL's Agent, during the consultation process on the preliminary proposal for this tenure review, as representing the views developed under delegated authority from the Director-General of Conservation.
- 1.2** Note that statutory consents will be required before the CCL can include (in the preliminary proposal for this tenure review) the designations set out in paragraphs **2.5.1** and **2.5.2**
- 1.3** Note that any disposition of land by the Crown will be subject to the relevant provisions of Part IVA Conservation Act.

**2 Proposals And Justification**

**2.1 Land to be Restored to Full Crown Ownership and Control**

- 2.1.1 Name:** Mt Nobbler Block and Maerewhenua Face  
**Existing status:** Pastoral Lease  
**Authority:** Section 35(2)(a) (i) CPLA

***Proposal:** That an area of approximately 2000 hectares be designated as land to be restored to full Crown ownership and control as a Conservation Area to be managed by the Department of Conservation for the protection of natural resources.*

**Description:** The proposal includes some 1700ha of tussockland lying to the north of Mt Nobbler and approximately 300 ha of mixed tussockland, shrubland and forest on the true left face of the North Branch of the Maerewhenua River.

**Justification:** The land is characterised by areas that have the following significant inherent values:

### Significant Inherent Values Associated with Natural Resources

1. *Areas which alone or collectively sustain the special natural quality and integrity of the High Country landscape, especially the indigenous component.*

The Back Block and Middle reaches North Branch Maerewhenua River have a predominantly indigenous vegetation cover over a range of landforms. These areas have a high degree of representativeness and naturalness, with good long-term ecological viability. They are of Ecological District Significance in their own right, and further are an integral part of the wider Kakanui Range High Country Landscape of regional significance.

2. *Areas which sustain the most culturally valued attributes (e.g. scenic, aesthetic, recreational and historic) and their context within a natural High Country landscape.*

The proposal is extensively used for recreation, key features being the very extensive landscape visible from the higher points and the back country experience with minimal intrusion from man made influences in the central parts of the area. The proposal contains a natural high country landscape of Ecological District significance in its own right and of Regional significance in the context of its contribution to the wider Kakanui Range landscape

3. *Areas which would currently meet the Protected Natural Area Programme (PNAP) criteria for selection as priority natural areas (e.g. RAPs),*

A PNAP survey of the Dansey Ecological District was carried out during the summer of 1989/90 and Recommended Areas for Protection (RAPs) were identified in Comrie (1992). Two RAPs are located wholly or in part on this property. RAP 8 - Maerewhenua lies entirely within the unit described under 'Middle reaches North Branch Maerewhenua River' and part RAP 10 - Nobbler lies within the unit described under 'Back Block'. This most recent evaluation of the inherent values confirms and endorses the RAP descriptions in Comrie (1992) including the key features of the forest remnants in RAP Dan 8 and the natural wetlands and mixed shrublands/ tussocklands in RAP Dan 10.

The invertebrate values described in the Dansey PNAP report are still present and intact.

4. *Type localities and habitats of species and communities which are at their distributional limits and/ or endemic or which have specialised habitat requirements in the High Country, and species, communities habitats or ecosystems which are uncommon and/ or endemic in the ecological district.*

***NB:*** *This standard will apply to native fish as well as other indigenous animals and to indigenous plants.*

Red tussockland, such as that found in RAP Dan 10, is a vegetation type now very limited in distribution within the ecological district.

Slim snow tussock has a narrow ecological range in the high country and is becoming increasingly uncommon due in part to its high palatability.

Broadleaved forest is rare north of the Kauru River and restricted to small remnants of which the Maerewhenua example is the largest and most intact.

Presence of bellbird establishes a distributional limit. The presence of brown creeper and tomtit establishes new isolated populations.

The wetlands and high alpine cushionfield of RAP Dan 10 has previously been identified (Patrick 1991) as a key site for the conservation of insects characteristic of the Dansey Ecological District. This same site also contains a newly discovered and undescribed diurnal moth in the genus *Trachypepla*.

- 5 *Areas which make a special contribution to the overall quality, natural functioning and ecological integrity of significant values (e.g. linkages, buffers etc.) whether in their present or potential state.*

Riparian shrubland and treeland adjoining the North Branch Maerewhenua River contributes to the overall water quality and natural functioning of that waterway. In the absence of fire and heavy grazing this contribution will increase with time. The back block beyond the RAP Dan 10 has significant conservation values in its own right, but in addition provides a substantial buffer to the RAP and also a robust linkage between RAPs 8 and 10. With adjoining pastoral leases also likely to have significant areas recommended for Crown ownership and control on conservation grounds, the proposal will probably become an important linkage in a much more extensive landscape.

### **Management and boundary issues:**

#### **Animal Pests**

Rabbits and hares are present. Numbers are not sufficient to be of concern. Monitoring of rabbit numbers would be necessary. Pigs appear from time to time but recreational hunting would keep under control.

#### **Weeds**

Some pines are present and periodic control will be necessary. Otherwise free of significant weeds, but periodic checking for gorse and broom near the Maerewhenua River would be needed.

#### **Fences**

The existing fences are in good condition, but each spring, repair of snow damage to the higher altitude fences will be required. An additional 2.5 km of new boundary fence will be required to make the proposal stockproof.

#### **Fire**

Risk of fire is low, particularly on the Maerewhenua River faces. Any fire would be more likely to occur in the back block and access for control is very good.

#### **2.2 Land to be restored to or retained in Crown Control**

Not applicable

#### **2.3 Existing Reserve**

Not applicable

#### **2.4 Existing Conservation Area**

Not applicable

## **2.5 Land being Disposed of subject to a Protective Mechanism**

**2.5.1 Name:** Public access along ridge from Dansey's Pass to Mount Alexander

**Existing Status:** Pastoral Lease.

**Authority:** Section 40 (2) (c) CPLA

**Proposal:**

It is proposed to create an easement providing for Public vehicle, foot and bicycle access, on the existing formed track where it lies within the subject property, and adjacent to the boundary fence where the track passes into the neighbouring property.

**Justification:**

The existing track is extensively used at present, both as a recreational feature in its own right, and as an access route to the Kakanui Range crest. It will also give good access to the proposed Conservation Area (2.1.1)

While it is probable that the existing track is close enough to the legal road to be deemed the road, this is not certain and creation of the easement will both secure public access and avoid conflict with the adjoining landholder where the track ( and the legal road ) passes into that property.

The proposal meets the DOC guidelines for public access in tenure review.

**Management and Boundary Issues:**

There are no significant management or boundary issues.

**Fire:**

Risk of fire is low and in the event that a fire did occur there is very good access.

**Type of Mechanism**

Section 7 (2) Conservation Act 1987 easement.

**Attachment**

Terms and conditions.

**2.5.2 Name: Department of Conservation** access along ridge from Dansey's Pass to Mt Alexander

**Existing Status:** Pastoral Lease.

**Authority:** Section 40 (2) (b) CPLA

**Proposal:**

It is proposed to create an easement providing for vehicle access for the Department of Conservation from the Dansey's Pass road to proposal 2.1.1 for the purpose of management. The easement will be on the existing good formed track where it lies within the subject property .

**Justification:**

Vehicle access to the proposed conservation area is essential for day to day management, for monitoring of weeds and pests, and for control operations should they become necessary.

The existing track is on the legal road line where it passes into the neighbouring property but deviates from the legal line in Mount Alexander.

This proposal will secure DOC management access.

**Management and Boundary Issues:**

There are no significant management or boundary issues.

**Fire:**

Risk of fire is low and in the event that a fire did occur there is very good access.

**Type of Mechanism**

Section 7 (2) Conservation Act 1987 easement.

**Attachment**

Terms and conditions.

**2.6 Other Qualified Designations**

Not applicable

**3.0 Exemption or Variation in Marginal Strip Width**

Not applicable

**4.0 Other Matters**

**4.1 NGO Concerns**

The property was discussed with NGO's on 12/12/2000

The proposed designations meet all their expressed concerns excepting for protection of the Dansey's Pass road corridor. In fact very little of the property is visible from the highway, most of that which is has already been heavily modified and no protective mechanism is justified.

**5.0 Attachments**

**5.1 Additional Information**

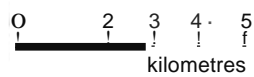
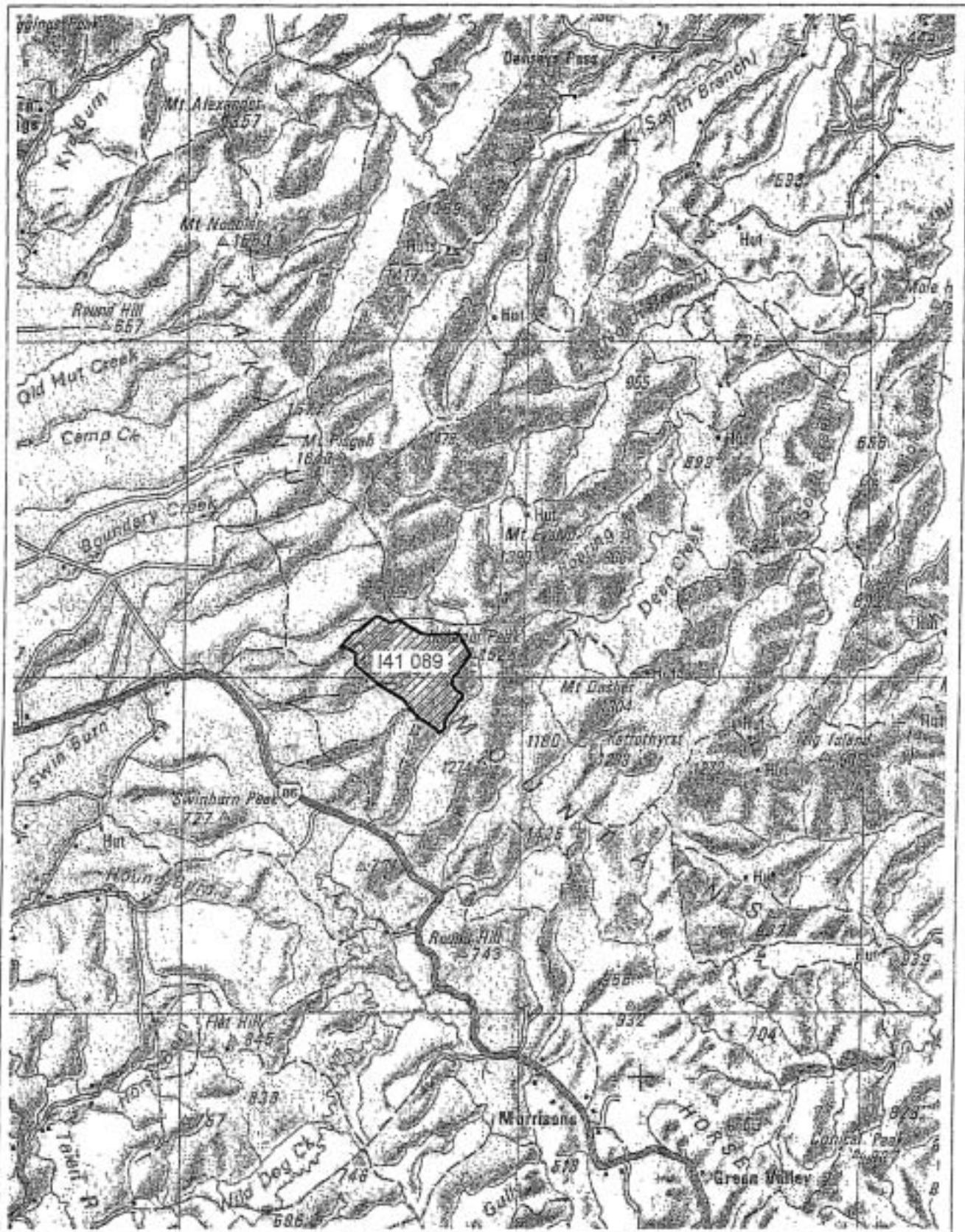
Draft Access Easement

**5.2 Illustrative Map: Proposed Designations**

Appendix 2 Invertebrate List Mount Alexander

ORDER & Family	GENUS	SPECIES	COMMON NAME	ALTITUDE (M)
<b>COLEOPTERA</b>				
Carabidae				
	Mecodema	sp.	Ground beetles	1200
	Neocicindela	tubercuhta	Tiger Beetle	900,1000
Coccinedlidae	Coccinella	undecimpunctata	Eleven Spotted Ladybird	900, 1357, 1550
Scarabidae	Pyronota	festiva		900
			Weevil	900
<b>DIPTERA</b>				
Muscidae	Stomoxys	calcitrans	HouseFly	1000, 1357
Syrphidae	Melangyna	novaezealandiae	Hover Fly	760,1357, 1500,1550
Tachinidae	Protohystricia	sp.	Great hairy Tachnid	1000
Therividae	Anabarhynchus	sp.	Stilto Fly	1357
<b>HYMENOPTERA</b>				
			Bumble bee	760
<b>LEPIDOPTERA</b>				
Arctiidae	Nyetemella	annulata	Magpie Moth	760
Crambidae	Orocrambus	sp		760, 1000 , 1200
Lycaenidae	Lycaena	salustius	Copper Butterfly	760,900, 1000, 1357
Nymphalidae	Argyrophenaga	ancipodium	Tussock ringlet	760, 1000, 1357
	Bassaris	gonerilla	Red Admiral	900, 1000
Pieridae	Pieris	rapae	Cabbage white	1357
	Notereas	sp.		1550
<b>ORTHOPTERA</b>				
Cicadidae	Maoricicada	clamitans	Occada	760
	Maoricicada	nigra frigida	Ciccada	1500
	Maoricicada	otagoensis	Ciccada	1200
	Melanlpsalta (?)	subalpma	Ciccada	1000
Acrididae	Phyllaeridium	marginale	Grasshopper	760,1357
	Sigauss	australis	Grasshopper	1000, 1357

# Map 5-14 Kakanui



Public Conservation Land / Reserves

## 10.14 KAKANUI

CONS. UNIT NO.	NAME	STATUS	AREA
141089	Kakanui Peak	Conservation Area	690.00 ha

### 10.14.1 *Ecological District*

Dansey

### 10.14.2 *Local Authority*

Waitaki District Council, Central Otago District Council.

### 10.14.3 *Land Administered by DOC*

The Kakanui Peak Conservation Area protects Part of an unstable catchment, of typical alpine species dominated by *Chionochloa rigida*.

### 10.14.4 *Other Land*

The remainder of Kakanui is held predominantly under pastoral leasehold tenure, and tenure review is underway on a number of properties. Two covenants protect areas of *Chionochloa rubra* var. *cuprea* grassland.

### 10.14.5 *Description*

The Kakanui mountains are the north-eastern most of the Otago schist mountain ranges, effectively forming a transitional barrier between Central-eastern Otago and North Otago. Danseys Pass is a saddle between the Kakanui Mountains and the St Marys Range and carries a metalled road connecting the Maniototo to the Waitaki Valley. The Kakanui mountains consist of a series of steep peaks including Mt Nobbler, Kakanui Peak and the highest, Mt Pisgah (1643 metres), with several gently sloping substantial spurs running at right angles into North Otago.



Summit ridge\_ KakaouJ.

A variety of typical schist landforms and periglacial features are found on the crest including tors and patterned ground.

The entire range is clothed in indigenous vegetation.

Fellfield with low herbs, cushion plants and lichens dominate the crest of the range while large areas of snowgrass with some shrubland remnants covers the flanks. Snowbanks are rare but many wetlands are present in the alpine zone. Areas of ~~copper~~ tussock grassland occur on the plateaux.

A significant ~~and~~ visually striking area of extinct volcanic cones and basaltic boulder fields are found near the south-eastern end of the mountains with several significant basalt peaks such as Kattothyrst, Mt Dasher and Siberia Hill. Snowgrass, wetlands and bluff systems are the dominant ecosystems of the basalt area.

Most of the Kakanui mountains is Crown land in pastoral lease tenure, with only a modest area of snowgrass below Kakanui Peak managed for conservation. Importantly, the mountains are essentially natural, especially with increasing altitude, and form a cohesive unit of natural ecosystems dominated by native vegetation.

Transmitters exist on a peak near Mt Alexander and on the basaltic Obi, with 4WD access both to these and beyond to the highest crests linking up with several tracks up the spurs.

To the northeast the range is drained by the Maerewhenua and Kakanui Rivers, while the Shag River and Kye Burn drain the south-western slopes.

#### 10.14.6 Values

The Kakanui mountains form an impressive natural backdrop to both North Otago and Maniototo communities with more intimate views from the Danseys Pass and Pigroot Roads.

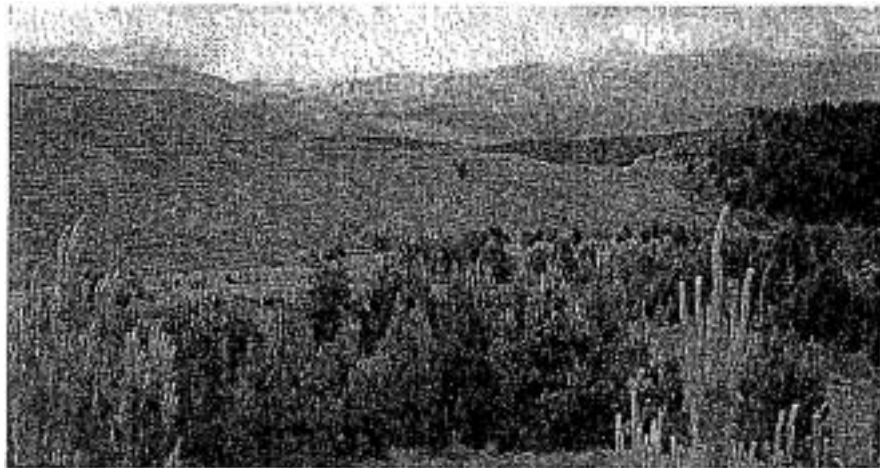
Geologically the volcanic area centred on Mt Dasher-Siberia Hill is significant, together with its cover of *Chionochloa* ~~macra~~ and *C. rubra*, extensive wetlands and bluff/scree systems. Shrubland containing snow ~~tara~~ and mountain toa tea are also a feature.



Mt Dasher-Siberia Hill area, with its distinctive volcanic landforms, especially the truncated pyramidal shapes of Kattothyrst and Mt Dasher. A natural landscape with outstanding intrinsic values.

The intact high-alpine vegetation of the rest of the range is also of considerable conservation value with large areas of fellfield and scree with smaller areas of snowbanks containing cushion species ~~such~~ as *Kelleria childii*. Large areas of *Chionochloa macra* and diverse wetlands are a feature of the alpine zone with shrublands of *Dracophyllum* and *Hebe* species surrounded by *Chionochloa rigida* on lower slopes.

The area was surveyed under the PNAP in 1989/90 and 10 representative areas ranging in size from 2,000 hectares to 125 hectares were recommended for protection.



Wilding conifers ~~spread~~ out from Naseby Forest, Kakanui mountains behind.

Seedlings from Naseby Forest have resulted in a widespread wilding pine (mainly *P. contorta*) problem on the southwest slopes of the Kakanui mountains.

As with the flora, the fauna is typical of other Central Otago mountains but with a distinct North Otago element including two unnamed giant ~~weevil~~ species (*Lyperobius* n. spp.), giant weta *Deinacrida connectens* and a diurnal moth *Notoreas ischnocyma*. The variety of ecosystems present is reflected in the invertebrate fauna with various assemblages of species, ~~each~~ dependent on wetland, shrublands, rock bluffs/tors, grasslands or fellfield vegetation. The lower Kakanui catchment is the only known Otago location of the long-jawed galaxias (*Galaxias prognathus*).

Back country drive-in and walk-in settings for recreation are available along the range provided access permission is obtained, with the highest peaks forming a core of remote country.

Recreation values centre on summer time 4WD activities, with tramping less important because of the area's remoteness, private occupation and lack of huts. A traverse along the range taking in the volcanic area and the higher peaks would make a ~~satisfying~~ tramp of 3-4 days. Many of the higher altitude vehicle tracks would provide challenging mountain bike touring. Skiing has occurred occasionally on the Kakanui mountains but the unreliability of snow has curtailed activities in more recent times.

Historic values are found on the periphery of the Kakanui mountains. A short but significant burst of activity looking for gold has left a legacy of diggings and water races, while a slate quarry near "The Dasher" has local historical significance.

### 10.14.7 *Management Issues*

At present the only areas under protection are the Kakanui Conservation Area and the two covenants for red tussock grassland at Mt Stalker, while the balance of the area is utilised for pastoral farming, including burning and ploughing for exotic pasture development in places. Most of the PNA survey recommendations have yet to be implemented.

Public access to the range is very limited.

- Protection from fire.

Fencing to exclude stock from fragile areas.

- Wilding pine control in the southwest.

Landscape protection on the balance of Kakanui Mountains, ie, advocacy on burning, tracking issues and plantation forestry.

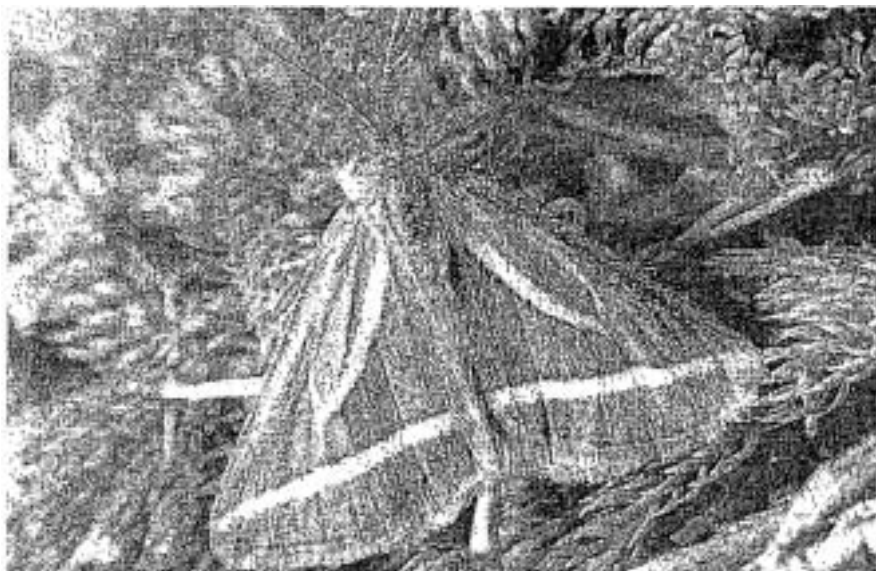
- Further siting of installations in Visually sensitive locations especially on skylines.

#### *Objectives for Kakanui*

To maintain the natural resources contained within the existing protected areas on the Kakanui Mountains while taking opportunities that may arise through pastoral lease tenure review to negotiate protection of and access to areas of high natural and recreational value.

#### *Implementation*

- (a) Control wilding conifers that threaten natural resources on the Kakanui mountains, including liaison and cooperation with neighbours.
- (b) Foot access negotiated at key points for the public to areas managed by the department, with public vehicular access having a lower priority.



*Aponotoraas insfgnis*, a diurnal geometrid moth found in the Kakanui Mountains.

- (c) Co-siting of future telecommunications buildings and towers will be advocated on the Kakanui mountains.
- (d) Resource information that assists management of existing areas administered by the department or assists pastoral lease tenure review discussions will be gathered.
- (e) Protection of key areas for natural and historic resources will be sought through pastoral lease tenure review negotiation opportunities.
- (f) Advocate against burning of native grasslands or shrublands where its effect is to degrade significant natural and historic resources, especially landscape and soil and water, in the context of Resource Management Act and other statutory processes.

*Priorities for Kakanui*

In this Special Place, tenure review negotiations and wilding tree control will be the priority method for implementing the objective ~~during~~ the course of this eMS.

## Dansey RAP 8 - Maerewhenua



GR Centre: NZMS 260 I41 085785

Area 125ha

Altitude Range : 420 -1000m

Tenure Pastoral Lease (Mt Alexander, Benledi)

DOCDM-372068 Mt Alexander CRR - Info.doc  
Sample Sites MAEOI-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 ( $> 30^\circ$ ), with extensive bands of rock outcrop interspersed with rubbly colluvial slopes.

Bedrock is schist which dips steeply ( $60 - 65^\circ$ ) 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 exconicata*), ribbonwood (*Plagianthus regius* and *Hoheria angustifolia*) and patches of wineberry (*Annotia 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 (*Cannichaelia* sp.), *Coprosma propinqua*, *Helichrysum lanceolatum* and *Corokia cotoneaster*, with mountain flax (*Phonniwn cookianum*) in the hollows.

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

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(*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

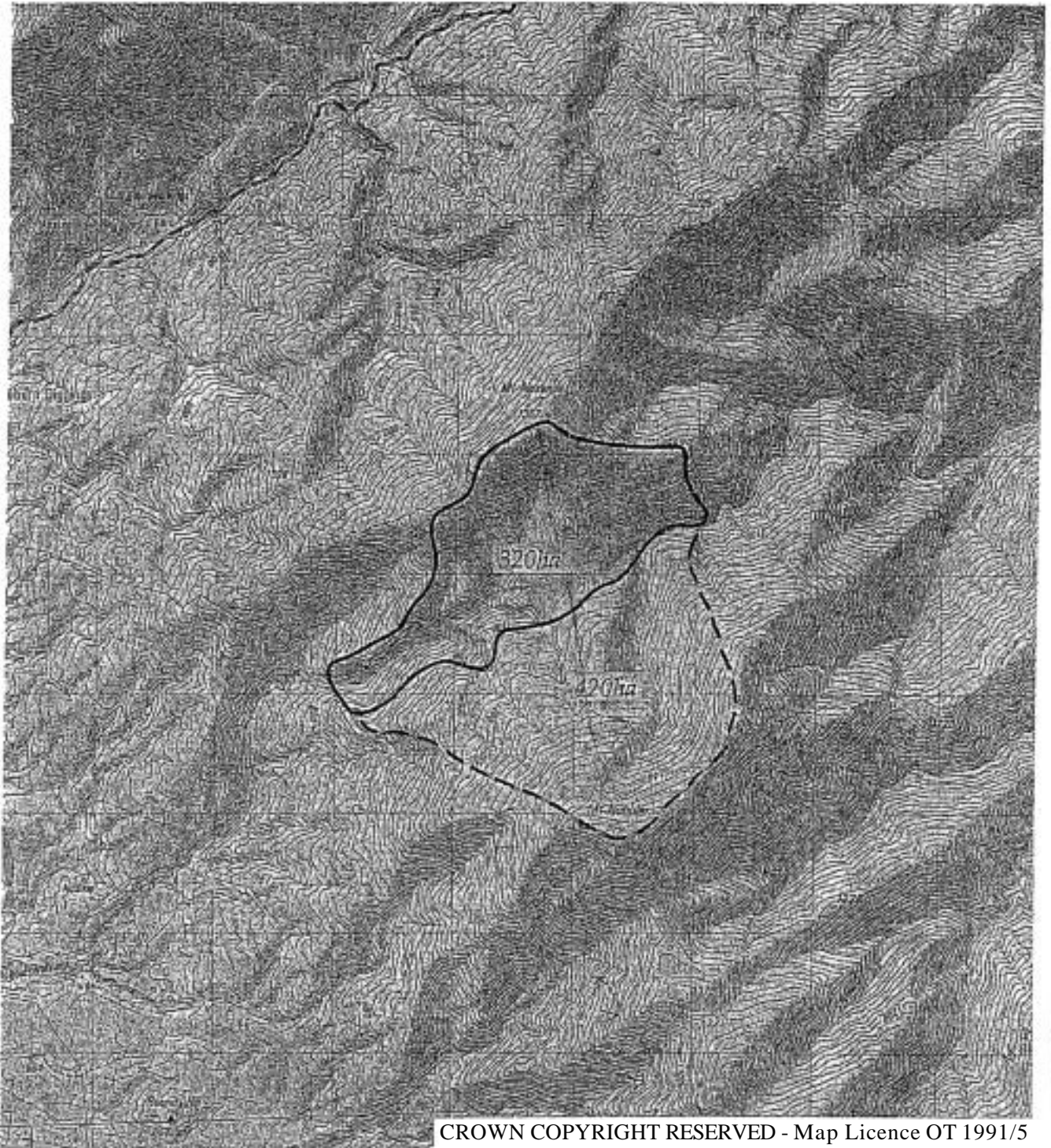
Forests such as those contained within Maerewhenua RAP would once have been extensive throughout the lower elevation areas of the District. Forest is very rare north of the Kauru River and is found only in very small pockets where steep shady slopes and gorges have offered protection from fire. This 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 Overseeding 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.

# Dansey RAP 10 - Nobbler



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GR Centre: NZMS 260 141005753

Area as shown

Altitude Range.: 740 - 1350 ha

Tenure Pastoral Lease (Mt Alexander and Shortlands)

DOC DM-372068 Mt Alexander CRR - Info.doc

Sample Sites

NOB 1 - 6, 7 - 10, 11 - 20, 21 - 27

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## 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 sedge-land 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 unijlorum*) 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 cooldanum*) 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 (*Chionoehloa 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 (*Chionoehloa 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 leems* 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 *Mierocyclops 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 *Aeaena 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 additionU area to increase viability
.Buffering	M	surrounded by semi-natural areas, but increased modification adjacent including recent burning
Threat	M	fire