



Crown Pastoral Land Tenure Review

Property: Domett Downs

Property Number: Oo 095

Conservation resources report

As part of the process of tenure review, advice on significant inherent values within the land 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.

The report attached is released under the Official Information

Copied September 2003

DOC CONSERVATION RESOURCES
REPORT ON TENURE REVIEW OF
LONE HILL PASTORAL OCCUPATION LICENCE

PART 1

INTRODUCTION

Lone Hill is a 575 ha Pastoral Occupation Licence located 20 km south of Kurow.

It is 12km off the main road and adjoins the Mt Domec Conservation Area which was originally part of the POL.

The licence is held by B. H. McCone who purchased it in 1991 after sub-leasing it for some years.

The original licence expired on 30/6/01 and the licencee was issued with a new 5 year licence during which time the tenure is to be reviewed.

Physically the property runs from 600 m altitude at the Otiake River on the southern boundary, to 1144 m at the highest point on the central ridge crest.

There is approximately 230 ha contained in the steep southeast face above the Otiake River, 240 ha in the easier westerly face on the western end of the property and 100ha of steep north lying country.

The property is all predominantly natural cover in good condition, though the northerly face is more modified than the balance.

The block was inspected on 10 April 2001 by Department of Conservation staff.

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PART 2

INHERENT VALUES; DESCRIPTION OF CONSERVATION RESOURCE AND ASSESSMENT OF SIGNIFICANCE

2.1 LANDSCAPE

CONTEXT

Access to the POL, commonly known as Lone Hill, is via Domet Road that leads out to State Highway 83 about 7km south of the rural service town of Kurow. The assemblage of landforms in the vicinity of Lone Hill include the wide Waitaki Valley followed by a series of long side valleys separated by rounded hills that stem out from the more dissected high hill country that dominates the landscape east of Lone Hill. The broken nature of the landforms is due to the complexity of the local geology with Otago's schist folding in with the greywacke that is more commonly found in Canterbury.

Lone Hill forms the mid and lower slopes of both Mount Domet (1942m.asl) and Little Domet (1860m.asl). Mount Domet, the highest peak of the St Mary's Range, is more reminiscent in character to the angulated mountains of Canterbury which is accentuated by the mountain's long scree chutes that are terminated by a convoluted line between talus and grasslands.

Matching the changes in topography there is a gradual change in land use pattern with the Waitaki Valley floor intensively farmed and frequently irrigated, with the long valleys dominated by dry land farming supplemented by green crops, while the back country is generally farmed as extensive grazing blocks.

It is interesting to note that Lone Hill, although only 575 ha. in area, has been subdivided into several grazing blocks that has resulted in some localised hard edges being created in the vegetation due to different grazing pressures.

LANDSCAPE UNIT 1

Landscape Description

This unit incorporates all of the slopes below the existing retirement fence on the south east side of Mount Domet. The altitudinal range of the LU extends between the 1100m. contour, down to the bed of the Otiake River at 600m.

From a landscape perspective it is difficult not to assess the whole of the south eastern side of Mount Domet as a total entity as there is a strong interaction and grading in of natural features and processes within the area presently administered by the Department of Conservation, and the POL. Some of the dominant natural features include long scree chutes, bare scree faces amongst grasslands and a "rumped" landform which is caused by downward creep and frequently waterlogged soils.

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The Otiake River follows a sinuous water course across the valley floor before it enters a narrow gorge defined by low river terraces. Frequently, the river terraces are broken by re-entrant gullies that cut down to the level of the river channel.

The vegetative pattern above and below the retirement fence follows a natural sequence of plant communities that are typical for this aspect and altitude, being dominated by snow tussock in good condition with a representation of silver tussock and golden Spaniard. The whole altitudinal range of plant communities from the edge of the talus scree down to the river have not been interrupted, and therefore form a coherent and legible natural landscape.

Along the shady faces of the re-entrant gullies there are localised plant communities that comprise fine leaved *Coprosma*, mountain flax and large blue Spaniards.

The dominant "built" element is the recently improved access track that cuts across the POL at the 800m. contour, and then descends via several zigzag corners down to the river.

Landscape Values

This unit should be considered as a part of a continuum that contains a diverse range of inherent values. It is noted that the POL has been subdivided into several blocks, with LU1 forming the back block. Having been grazed in a conservative manner has permitted significant values inherent to remain predominantly intact. The uniformity of the tussocklands and the visibility of the natural processes combine to form a unified landscape. The vivid changes in colour between the blue-grey scree faces that dominate above the fence line and the muted colour range of the tussocklands also forms a memorable high country landscape.

Visual Values

Landscape unit 1 is not visually conspicuous from any main public viewing points, being obscured by the dissected hill country between it and the Waitaki Valley. The DOC administered land that includes Mount Domet is a prominent landmark in the mid Waitaki Valley being the southern edge to the eroding and exposed greywacke country.

Potential Vulnerability to Change

Potential threats to the landscape values on Lone Hill would include any disruptions or fragmentation to the existing coherent ground cover as the snow tussock has homogenous characteristics that cannot absorb any abrupt changes in a landscape context. The possibility of the spread of wilding pines into the "clean" tussocklands would also have a negative effect on the intrinsic values. Although dozed tracks are desirable for rapid access into the back country, the cuts into the upper slopes and side casting of surplus material frequently have a greater visual impact than the actual track.

LANDSCAPE UNIT 2

Landscape Description

This unit encompasses all of the south east slopes that extend from the crest of the main ridgeline (1144m.asl) down to the Otiake River and are characterized by a series of narrow

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spurs that dip quickly down to the valley floor. These dip slopes frequently have exposed bedrock jutting out from the ridges. In the upper sections there are isolated patches of scree.

Within this LU the Otiake River is contained within a deep incised gorge, with the river meandering around low interlocking spurs. The long reaches of white broken water give the river a wild and scenic character.

The vegetative pattern is strongly influenced by aspect and altitude with snow tussock in good condition being present through the whole altitudinal sequence. Other species represented include silver tussock, golden Spaniard, *Celmisia* spp., snowberry and blue tussock. Along the drier and more exposed top faces there are large patches of bare ground that are frequently encircled by mats of *Raoulia* with some patches of hawkweed.

This landscape unit contains two separate areas where the vegetation pattern has been modified by pastoral farming, with the warmer eastern corner of the unit being converted mainly to silver tussock while along the river terrace there is an abrupt change in vegetation owing to a boundary fence line.

Landscape Values

It is considered that this landscape unit should not be looked upon as a separate entity but as a part of a sequence of different landscape settings, with the immediate setting to the river being dramatic due to the long reaches of broken white water. Furthermore, landscape unit 2 should be looked upon in a complementary way to landscape unit 1, that collectively embrace a wide range of natural features that are continually being modified in the lower rangelands.

Visual Values

This unit is a memorable feature due to its overall feeling of enclosure with the river acting as a strong focal point. This sense of isolation is reinforced by the surrounding ridgelines that screen out all surrounding landforms.

Potential Vulnerability to Change

Due to the steepness of the terrain it is considered that threats to this unit are marginal with the possibility of incremental changes to the tussockland composition occurring over a long period of time. Any new access tracking would despoil the natural features such as the narrow dip slopes and rocky outcrops.

LANDSCAPE UNIT 3

Landscape Description

This unit incorporates the north facing slope off the main ridgeline that extends out towards the east. This slope descends rapidly to the colluvial valley floor where an enclosed basin has been created by the surrounding ridges and low passes.

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Along the edge between the valley floor and slope is one of the main tributaries of Lone Creek which is entrenched within a winding channel. A number of small water courses drain off the northern faces to link up at regular intervals with the main tributary.

Having a dry aspect, this slope has extensive areas of bare ground and loose weathered rock which frequently has only sparse vegetative cover. While in most areas the co-dominant species are snow tussock and silver tussock with spasmodic golden Spaniard and matagouri, on the shadier slopes there are occasional mountain flax. Native coral broom is also represented on the more free draining upper slopes.

The vegetative cover for the colluvial flats is dominated by both snow tussock and silver tussock while the native inter-tussock species have frequently been replaced by introduced grasses.

Landscape Values

The landscape character contained within this unit has no single outstanding features and could be best described as typical low rangelands, however from a landscape perspective the whole eastern ridge should be looked upon as a single entity with corresponding natural values being present due to different aspects.

Visual Values

From a visual perspective this unit is only of local value being obscured by all the front hill country when viewed from the Waitaki Valley.

Potential Vulnerability to Change

The main threat to this unit would be further tracking and subdivisional fencing that is at right angles to the slope. This could result in hard edges being developed due to different grazing pressure.

SIGNIFICANCE OF THE LANDSCAPE

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Although this POI only incorporates 575ha., it contains an assortment of natural landscape features that are worthy of protection. The diversity of landforms is derived from the complexity of the local geology with a transition occurring between schist and greywacke bedrock. The legibility of natural features that include a colluvial flat, steep dip slopes, solifluction processes and scree faces culminate in a diverse back country landscape.

The POI has been subdivided into several grazing blocks and inherent values are modified due to localized stock pressure. However generally the vegetation is intact with a full altitudinal sequence still remaining along the south-east slopes of Mount Domet.

All of landscape units 1 and 2 and part of landscape unit 3 contain a suite of landforms and land cover which alone or collectively sustain the special natural quality and integrity of the North Otago landscape, especially the indigenous component.

2.2 GEOLOGY AND LANDFORMS

This property is traversed by the Domet Fault which runs approximately NNE-SSW. Basement rock is derived from the eugeosynclinal greywacke and argillite suite of the New Zealand Geosyncline.

Highest schist metamorphic textural zone IIB occurs on the south-western part of the property, with a small area of Zone IIA south and east. Zone IIA is slightly foliated greywacke and in IIB the foliation is more penetrative and rocks tend to split only in the direction of the foliation. Zone IIIA occurs on the north-eastern side of the property, on the other side of the Domet fault. This is strongly schistose fine-grained schist with foliation giving a slightly rough or rippled appearance.

The steep slopes on part of the property and adjacent areas are the result of relatively recent uplift. Screes are more prominent on less foliated rocks. This is evident in the extensive blocky screes on Little Domet to the west, and to a much lesser extent on the western boundary of the property, in contrast to the high bluffs visible across Otaike River to the south-west of the property. High erosion rates resulting from this uplift mean that careful management is needed to retain vegetative cover, especially where basement rock is less foliated.

The northern part of the property is part of a fault controlled basin, along which a tributary of Lone Creek flows. This basin is covered with moderately weathered gravel of late quaternary age underlying slightly dissected aggradational terraces. The Domet Fault has a wide crush zone in which down slope creeping of material has resulted in relatively gentle slopes covered with solifluxion, slopewash and slump deposits.

2.3 CLIMATE

The property is located in the St Marys Ecological District which is characterised as having a semi-arid climate. There is no specific climate data for the property. Rainfall is probably in the range of 600-800mm pa, with some southerly and easterly rainfall influence. Summers are warm and dry, with very cold winters. Snow falls in winter from southerly weather. Summer droughts are common.

2.4 VEGETATION

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Introduction

Two land units are identified for the purpose of describing the vegetation. These are the Western Block (lower slopes of Little Domet) and the Eastern Block (ridge between Otaike River and Lone Creek tributary).

VEGETATION DESCRIPTION

Western Block

This is comprised of predominantly wet colluvial slopes beneath the extensive screes of the upper slopes of Little Domet. Drier interfluvial support generally dense narrow-leaved tussock (*Chionochloa rigida*) with occasional patches of hard tussock (*Festuca novae-zelandiae*). Common intertussock species include *Pimelea pseudohyllii*, *Lycopodium fastigiatum*, *Gaultheria depressa*,

entabondra pumila, *Cebrosia byallii*, *Raoulia subsericea* and *Brachyglottis bellidioides*. Occasional taller shrubs include *Dracophyllum uniflorum* and *Leucopogon suaveolens*. King devil hawkweed (*Hieracium praealtum*) is at low density, with few other weeds present.

Many wet seepages have low cover dominated by *Sphagnum* moss, *Schoenus pauciflorus*, *Blechnum pernanmarina*, and a range of small wetland herbs. Prostrate shrubs include *Coprosma cheesemanii*, *Gaultheria depressa* and *G. macrostigma*. One wet area has a dense shrubland of *Ozothamnus ussilliersi* with numerous *Aciphylla aurea*.

Small waterways draining seepages have giant speargrass (*Aciphylla scott-thomsonii*), *Olearia bullata* and *Carrichaelia petriei* along the channel sides. Larger gullies support mixed tussockland/shrubland along small alluvial terraces. Matagouri (*Discaria tomentosa*) and narrow-leaved tussock dominate but *Olearia bullata*, *Dracophyllum uniflorum*, prickly shield fern (*Polystichum vestitum*) and mountain flax (*Phormium cookianum*) are also common.

Dry rock bluffs close to the river have a diverse range of shrubs and herbs. Common shrubs include *Helichrysum intermedium*, *Hebe buchananii*, *Gaultheria crassa*, *Melicope alpinus* and coral broom (*Carrichaelia crassicaule*). Herbs present include *Anisotome brevistylus*, *Colobanthus buchananii*, *Brachyglottis bellidioides* and *Wahlenbergia albomarginata*.

Eastern Block

A fenceline separates the lower slopes of the true left of the Otiake River from the remainder of the hill massif. Below this fence the grasslands are very modified with most narrow-leaved tussock replaced by hard tussock, occasional silver tussock (*Poa cita*) sweet vernal (*Anthoxanthum odoratum*), chewings fescue (*Festuca rubra*) and common pasture weeds. Matagouri and golden spaniard (*Aciphylla aurea*) are scattered throughout.

Above the fenceline, low stature narrow-leaved tussockland predominates although a woody succession comprising shrubs of *Gaultheria crassa*, *Dracophyllum uniflorum* and *Myrsine noronularia* is well advanced. Shallow dissecting gullies also have mountain flax (*Phormium cookianum*) and *Coniaria sammitosa*.

Rocky outcrops at about 1000 metres above sea level have additional alpine species including *Coprosma "alpina"* and *Leucogenes grandiceps*. Surrounding dry ridge crests have mouse-ear hawkweed (*Hieracium pilosella*) at moderate density. Near the ridge crest at about 1100 metres, concentrated grazing has induced areas of cushionfield with *Cebrosia sessiliflora* and *C. densiflora*.

The threatened broom *Carrichaelia vexillata* was recorded at two sites near the ridge crest. This has a national threat status of 'vulnerable' in the latest listing of threatened and uncommon plants in New Zealand (de Lange et al 1999).

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North facing slopes above the Lone Creek tributary are sunny and dry with sparse narrow-leaved tussock and considerable bare ground. Some rocky ribs inaccessible to stock have abundant coral broom. This species has a national threat status of 'Declining' in the latest listing of threatened and uncommon plants in New Zealand (de Lange et al 1999). Gullies have mountain flax along their length, almost to where they disgorge in the valley bottom.

Alluvial flats alongside the tributary of Lone Creek consist of degraded hard tussock with abundant mouse-ear hawkweed. Other common species include silver tussock, golden spaniard, *Raoulia subsericea*, *Leucopogon fraseri*, *Pimelea pseudobyallii*, clover and pasture grasses.

Problem Plants

No weeds were identified as being of immediate conservation concern. Mouse-ear hawkweed is the most prevalent of the two hawkweeds observed and tends to have a moderate cover in small localised patches. Maintenance of, or restoration to, a tall tussock cover probably provides the best protection against further spread of this potential problem plant.

There are a small scattering of wilding pines present.

SIGNIFICANCE OF THE VEGETATION

The entire area (with small exceptions on the periphery) has a predominantly indigenous vegetation cover over a range of landforms. It exhibits vegetation sequences reflecting the range in altitude from river gorge (600m asl) to ridge crest (1144m asl), variation in aspects and management history. Vegetation includes seral shrublands, sub-alpine cushionfields and wetlands. The area has a high degree of representativeness and naturalness with good long term ecological viability.

Two species of native broom, regarded as nationally threatened are present on the property. Coral broom (*Carrichaelia crassicaule*) was recorded from a number of sites but was especially abundant on the steep north-facing slopes of the eastern block. It has a status of "Declining".

A dwarf broom (*Carrichaelia vexillata*) was recorded from two sites along the ridge crest of the eastern block. This species is ranged as "Vulnerable".

Good examples of *Ozothamnus vaucilliersii* dominated shrubland on wet substrate, such as that observed on the western block, are uncommon in the ecological district.

The entire area complements the natural values on the adjoining higher altitude Little Domet Conservation Area. It adds the biologically diverse montane to sub-alpine bioclimatic zone and landforms not represented in the conservation area.

2.5 FAUNA

Introduction

The POL is situated to the east of Mt Domet and Little Domet in the head waters of the Otiake River which flows into the Waitaki River. The licence faces south east and extends from 600 m asl to 1144 m asl.

2.5.1 Avifauna

The only birds recorded were skylark and NZ falcon. NZ falcon was recorded in the centre part of the property.

2.5.2 Herpetofauna

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There were few rock outcrops on this property. The rock types visible in outcrops varied from small scree slopes in the south-west adjacent to Little Domet to blocky tors of schist in the north eastern part of the property.

Geckos (probably *Hoplodactylus* 'Otago') and common skinks (*Oligosoma polychroma*) are present on the property. The geckos were found at two locations in rock outcrop and *Chionochloa rigida* tussockland.

2.5.3 Invertebrate Fauna

The fluvial slopes extending down from Little Domet held good numbers and diversity of graziers in the form of cicadas (*Sigaus australis*, *S. campestris* and *Kiktha exulis*), predatory beetles (*Neocicindela tuberculata*) and pollinators in the form of butterflies (*Argyrophenga antipodium* and *Anachlorts subocharia*). Also present are detritivores in the form of flies.

Further downstream on the steeper shadier slopes the remains of predatory carabid beetles (*Mecodema* sp.) were recorded. Also collected in this part of the licence was the native snail *Thalassohelix igniflua*.

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 elytra (the hard outer wing case found on beetles) from *Mecodema* sp. were found adjacent to spider webbing.

2.5.4 Aquatic Fauna

The NIWA Freshwater Fisheries Database holds no records for streams on this property, nor does it hold any records for the entire Otiake catchment.

The only site able to be fished on the property was an unnamed tributary of the Otiake River. This tributary was a mountain stream, which contained good fish habitat, being a series of pools and riffles, with gravel and cobble substrate. There were considerable deposits of fine clean sediment in the bottoms of the pools. Fish were absent, but large numbers of invertebrates (primarily mayflies and stoneflies) were present.

The two other sites fished were on Lone Creek (approximately halfway up) and the Otiake river mainstem at its junction with Lone Creek. Fish were absent from the Lone Creek site, while the introduced species, rainbow (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) were common at the Otiake site, along with the native species, upland bullies (*Gobiomorphus breviceps*) and common river galaxias (*Galaxias vulgaris*).

None of the native fish species captured are threatened.

It is likely that, if there are no barriers preventing fish access, the fish fauna upstream in the Otiake River and thus included within the Lone Hill property would be similar to that of the Otiake mainstem site.

2.5.5 Problem Animals

There are no animal pests of concern on the property. Hares are present in low numbers, and occasionally, pigs may move through the area.

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SIGNIFICANCE OF THE FAUNA

Avifauna

New Zealand falcon are a vulnerable species and are considered by the Department of Conservation to be a Category 'B' species in terms of priority conservation action.

Herpetofauna

This property has little habitat where lizards other than species common in Otago would be expected, but does provide good habitat for common skink and gecko species, although the number of sites suitable for the latter seems limited. Skinks and geckos are predators of insects and their presence on this property indicates an intact ecosystem.

Invertebrate Fauna

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 graziers such as grasshoppers, pollinators in the form of butterflies and scavengers such as blowflies.

Aquatic Fauna

There were no indigenous fish species recorded of significance. Tributary streams surveyed that did not contain fish, did contain abundant aquatic invertebrate fauna, indicating an ecosystem in a healthy state. "Fishless" streams are a relatively uncommon feature.

2.6 HISTORIC

There are no recorded archaeological sites, and no historic sites located on the property.

2.7 PUBLIC RECREATION

2.7.1 Physical Characteristics

The property is located adjacent to the Mt Domet Conservation Area at the eastern end of the St Marys Range. It is in effect, the mid to low altitude slopes of this terrain and drains into the Otiake River. This catchment is part of the much larger Waitaki River catchment. There is a network of 4WD access tracks throughout the property, mostly in useable condition except for the southern track which descends to the Otiake River. The best access to the POL is via the track through the adjoining conservation area.

2.7.2 Public Access

There is no legal access to either the POL or the adjacent conservation area. Access is by arrangement with the adjacent landholders.

There are no marginal strips along Lone Creek or the Otiake River either within the POI or downstream.

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7.3 Activities

Apart from occasional pig hunting, there is little or no recreational use of the area, nor is there much scope for its development. The adjacent Mt Domet Conservation Area is much more frequently used by trampers and climbers, however this use is only low-moderate. It is possible that access to some parts of the conservation area may be improved by access via the POL.

PART 3

OTHER RELEVANT MATTERS

3.1 Consultation

NGO comments were sought at an early warning meeting held in Dunedin on 12 December 2000.

Little was known of the attributes of the POL, possibly due to its relatively small size and location.

It was suggested that the Otago Conservancy CMS objective for the Oteake Special Place should be pursued regarding its protection, especially if relevant to the proposed Oteake Conservation Park.

3.2 Regional Policy Statement and Plans

The land is zoned Rural Scenic in the proposed Waitaki District Plan. However there are effectively no provisions that protect scenic values. Under the Canterbury Regional Land Plan (Vegetation Burning) any burning would be subject to performance standards relating to topdressing and spelling from grazing. The burning of wetland vegetation is not permitted.

3.3 District Plans (Matters of National Importance)

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

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There are no significant landscape protection controls and there are no matters of national importance section 6 of the Resource Management Act on the licence area shown in the provisional district plan.

3.4 Conservation Management Strategies and Plans (CMS and CMP)

3.4.1 Otago Conservancy CMS

The property is not specifically referred to in the Otago Conservancy CMS. As such, the general policies of the CMS would apply to ensure the retention of its conservation values.

3.4.2 New Zealand Biodiversity Strategy

The New Zealand Government is a signatory to the Convention on Biological Diversity. In February 2000, Government released the New Zealand Biodiversity Strategy which is a blueprint for managing the country's diversity of species and habitats and sets a number of goals to achieve this aim. Of particular relevance to tenure review is Goal Three which states:

- *Maintain and restore a full range of remaining natural habitats and ecosystems to a healthy functioning state, enhance critically scarce habitats, and sustain the more modified ecosystems in production and urban environments; and do what else is necessary to;*
- *Maintain and restore populations of all indigenous species and subspecies across their natural range and maintain their genetic diversity.*

The Strategy outlines action plans to achieve this goal covering terrestrial and freshwater habitat and ecosystem protection, sympathetic management, pest management, terrestrial and freshwater habitat restoration, threatened terrestrial and freshwater species management, etc.

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4.1 Additional Information

- 1 Photos of Areas of Conservation Interest on Lone Hill Pastoral Occupation Licence.
- 2 Bibliography

4.2 Illustrative Maps

- Map 1 Cadastral
- Map 2 Values

Bibliography

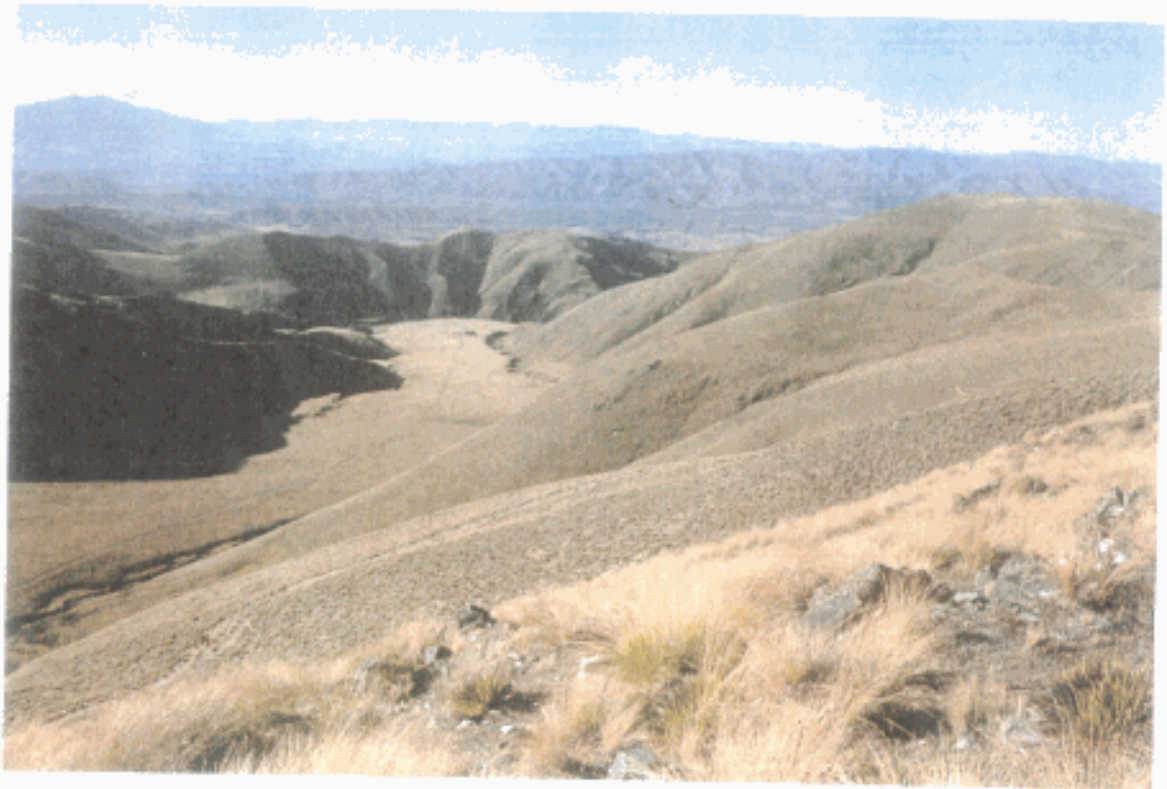
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Lone Hill POL

View of northern corner of POI , from the central ridge crest, overlooking the fault controlled basin of Lone Creek

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Lone Hill POL

Ozothamnus shrubland on the lower slopes of Little Dome, on wet substrate, an uncommon feature in the St Marys Ecological District



Lone Hill POL

Southern corner of POL near the Otiake River, looking towards Mt Domet. Note intact *Chionochloa* tussocklands at low altitude.

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Lone Hill POL

View down the Otiake River from southern corner of the POL



Lone Hill POL
Central range crest , looking south.

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Lone Hill POL
Upper slopes of the POL adjoining the Mt Domet Conservation Area fenced boundary. Note continuum of intact native vegetation sequences.