

Crown Pastoral Land Tenure Review

Lease name : RUGGED RIDGES

Lease number : PO 145

Conservation Resources Report - Part 1

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.

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RUGGED RIDGES PASTORAL LEASE



CONSERVATION RESOURCES REPORT

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PART 1. INTRODUCTION

This report describes the significant inherent values on Rugged Ridges Pastoral Lease. The lease covers 9648 hectares and encompasses the northern and western slopes of the St Marys Range in the Waitaki Valley. The front country overlooks Lake Aviemore while the back country borders on the Otematata River. The property mainly occupies hill country with some gentle rolling spurs but mostly moderately steep slopes with some incised gullies. The land rises from 280m at Lake Aviemore up to 1500m where the pastoral lease adjoins the St Marys Range Conservation Area.

The lease is run in conjunction with Otamatapaio Pastoral Lease, where the manager is based. Farm staff occupy a dwelling on the lease near the main highway. The original homestead for the lease has been subdivided out of the lease and is owned by a previous lessee. There is immediate access to the lease from the main highway.

To the east of the lease is freehold land. On the western boundary is Aviemore Pastoral Lease. The back part of the lease's southern boundary is with Sunny Peaks Crown Pastoral Lease.

Rugged Ridges lies within the St Marys Ecological District which is part of the Waitaki Ecological Region. However, there has been no Protected Natural Area survey (PNA) carried out in this district. The Otematata River forms the mutual boundary between the St Marys and Hawkdun Ecological Districts. The Hawkdun Ecological District has been surveyed (Grove, 1992).

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PART 2: INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES

2.1 Landscape and Landform

Rugged Ridges contains a range of landforms, natural features and vegetation patterns. This great variation in landscape character extends from the deeply incised Otematata River valley to the rounded ridgelines and deep gullies that stem out from the St Marys Range. In the lower more dissected hill country human intervention becomes more tangible in the form of the native cover being replaced by introduced grasses and legumes.

In landscape terms the mid and upper Parsons Rock Creek catchment, (landscape unit 3) with its uninterrupted sequence of vegetation types, rawness of the scree faces, untamed creek and general sense of remoteness, gives it a special sense of identity.

From a visual perspective the semi-arid dissected country that forms the harsh backdrop to Lake Aviemore makes an important contribution to the visual resources of the district

For the assessment of significant inherent values, Rugged Ridges has been divided into five landscape units.

Unit 1: Otematata River

This unit encompasses all of the side slopes that overlook the Otematata River as well as the river's valley floor. The slopes, which generally have a south-west facing aspect, are typified by a sequence of narrow crested spurs that lead off the ridgeline which separates the Otematata River from Parsons Rock Creek. Both of these major catchments have a north-west to south-east axis. The highest point along the ridgeline is close to the adjoining Sunny Peaks lease at 1,473m.asl.

The cross section profile of the valley progressively changes from being gorge-like above Shaw Creek, while below this tributary the river valley eventually widens with the valley floor containing an irregular width floodway. The ridgelines are tor-studded and have diagonal formations of base rock that become more prominent above the Shaw Creek confluence. Within the sub alpine zone the sunnier slopes are prone to erosion with stripes of barren eroding ground being quite a common feature.

The ground cover is dictated by altitude and aspect with the valley's slopes above 1,000m a.s.l. clad in tall tussock interspersed by short fescue tussock and golden spaniard. Below this level there is a gradual change in the vegetation composition with both tall and short tussock being codominant, while at a lower altitude the intermittent scree faces have edges colonised in matagouri shrublands. Above the Shaw Creek confluence the margins of the Otematata River are clad in a diversity of native shrublands that include Olearia, native broom, matagouri and a scattering of sweet briar. These shrublands are starting to migrate up the slopes.

Where the river valley starts to widen out, there is a distinctive change in vegetative cover with a greater presence of introduced grasses and herbs that include sheep sorrel, hawkweed, blue borage and catsear that combine to form expansive swards over the valley floor. White clover has been successfully over

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sown to about the 850m a.s.l. contour. Along the river valley floor there are still remnants of Carex wetlands which generally define old river beds. It should be noted that there is a scattering of totara still existing at a mid altitude level usually adjacent to scree slopes.

"Built" elements within the unit include several back country huts, the most substantial being at the base of Harrisons Spur, while access tracks lead off the main ridgeline both at the north and south end of the property. Primary land use is extensive grazing.

Landscape Values

This unit has moderately high landscape values that should be assessed at two scales, firstly within a wider context, this unit forms an integral part of the Otematata River valley, with an opportunity for a large tract of land to be linked with the existing retirement area and contiguous pastoral leases that collectively would create a vast natural landscape. This sense of vastness is one of the essential ingredients of the existing landscape character that is reinforced by the uniformity in both the topography and ground cover.

On a smaller scale, the natural features that are associated directly with the river are special, in particular the sequence of deep constricted gorges that have cut into the bedrock. This generates an overall impression of a wild and scenic landscape that would make a backdrop for water-borne recreational pursuits.

In aesthetic terms this unit, above the Shaw Creek confluence, is memorable owing to the striking contrasts in the texture of the exposed rock and shrublands with the surrounding fine textured grasslands.

Visual Values

This unit is only visually accessible from a few private tracks that help to reinforce its strong backcountry qualities.

Potential Vulnerability to Change

Although this unit is relatively robust the activities that could have an adverse effect on its natural landscape character include:

- Loss of existing wild and scenic qualities with the introduction of more "built" elements.
- Existing huts being painted in inappropriate colours, especially pastel tints.
- Further spread upstream of willows and wilding pines on the slopes.
- Further zigzag tracking.
- Further damage to river floor wetlands by stock pugging.

Unit 2: Station Creek

This unit is a discrete area consisting of the headwaters of Station Creek that drains out into Lake Aviemore just west of Parsons Rock. The upper section of the unit is characterized by subdued rolling country with its highest point being 1,388m a.s.l. located along the ridge that separates Station Creek from the

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adjoining Parsons Rock Creek. The profile of the catchment changes in its lower section to become a winding incised gorge.

The ground cover is generally narrow leaved tall tussock with a variation in density and stature depending on aspect, altitude and stock pressure. Along the more open, drier country to the east, the tussock cover is very sparse with the inter-tussock spaces being occupied primarily by mouse ear hawkweed, while on the darker slopes to the west the tall tussock is associated with both short fescue tussock and golden spaniard. Where the catchment becomes more constricted there are patches of scree that are slowly being occupied by matagouri shrublands.

Landscape Values

This unit incorporates only moderate landscape values attributable to the subdued nature of the terrain and the state of the original cover along the eastern main tributary. This unit could be described as a representative catchment, typical of many of the other short steep valleys that drain directly into the Waitaki Valley.

Visual Values

This unit has only limited visual resource values due to its discrete natural characteristics.

Potential Vulnerability to Change

This unit's primary threats would include:

- The intensification of land use that would lead to further fragmentation of the remaining tall tussock lands.
- The opening up of the depleted short tussock covers allowing opportunist species such as hawkweed and sorrel to establish.
- Further tracking over sensitive dry slopes where rehabilitation to side batters is very difficult to achieve.

Unit 3: Parsons Rock Creek

This unit incorporates all of the side slopes that overlook Parsons Rock Creek, which drains directly into Lake Aviemore at the western end of the property. The profile of the lower and mid section of the valley is constantly narrow, while the upper catchment area has a wider v-shaped character. At regular intervals the slopes are indented by small water courses that feed directly into Parsons Creek.

The distribution of the various vegetation communities depends on aspect and relief with the composition in vegetation gradually changing along the valley as it ascends in altitude. The ground cover on the slopes within the lower section of the valley is dominated by divaricating shrublands, while the mid and upper section has a good cladding of tall tussock grasslands interspersed with spaniard. The narrow valley floor has patches of shrublands that include Cassinia, koromiko, matagouri, Olearia odorata and sweet briar.

The actual creek is a significant natural feature that follows a sequence of white rapids and plunge pools that are frequently confined within scoured out rocky

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banks. Overlooking this unit there is a large alpine dome that is covered in bare ground, Raoulia, small blue tussock and gray lichens.

Landscape Values

This unit has significant landscape values, primarily because of the strong dominance of natural elements over cultural influences. The high values are centred on the wild and scenic Parsons Rock Creek and its environs, where the natural processes are so legible in the form of long scree slopes and patches of talus.

The aesthetic attributes that make this unit so vivid are the alternating vertical stripes of the scree and vegetation that contrast both in colour and texture.

From a visual perspective the steep side slopes form natural "walls" that frame the large dome that terminates the north end of the St Marys Range. The lack of "built" elements helps to generate an overall impression of isolation and semi wilderness.

In essence, it is the combination of the high natural component, remoteness qualities and the strong sense of confinement that make this unit so special.

Visual Values

This unit conveys a strong feeling of visual containment with outward views being terminated by the steep slopes and the northern limits of the St Marys Range. All views within this valley are very directional with the rangelands, being a strong focal point. This unit is extremely vivid and memorable when assessed and compared with other high country areas in the district.

Potential Vulnerability to Change

Although inherently robust the possible threats to this unit include:

- Further spread of woody weeds, in particular sweet briar.
- Side casting of material on batters of access tracks.
- The loss of wilderness qualities with the introduction of man-made elements.

Unit 4: Rugged Ridges Creek

This unit includes all of the Rugged Ridges Creek catchment, which falls gradually from the retirement area in the south towards Lake Aviemore in the north. Both the east and west sides of the unit are physically well defined by the rounded top ridgelines. The slopes that encircle the upper catchment are moderate in relief and steepen in the lower section where the creek winds through a gorge before entering the lake.

The distribution of vegetation is determined by both altitude and land use, with below the 700m a.s.l. contour being covered in a mixture of matagouri shrublands and modified short tussock. The mid section of the catchment is clad in depleted short tussock with spasmodic matagouri, native broom and sweet briar, along with a major presence of hawkweed that has colonized barren ground. Above 1,250m a.s.l. there is a noticeable change from short tussock into good condition tall

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tussock that also extends well down the eastern ridgeline to about the 1,000m a.s.l. contour. Along the margins of the creek there are continuous shrublands which in some places extend up the side slopes for some distance.

Landscape Values

The landscape character contained within this unit is typical of the dissected hill country that borders the Waitaki Valley. The dominant landform within this unit is the well-defined ridge and valley system that becomes more pronounced in the lower section. In aesthetic terms the golden sheen that is transmitted off the tall tussocks at the higher level contrasts strikingly with the dull brown coloration of the more depleted short tussock on the low country.

Visual Values

This unit has only moderate visual resource value owing to the prominent ridgelines that obscure it from State Highway 83 and other low land viewing points.

Potential Vulnerability to Change

The activities that could have an adverse effect on this unit include:

- Further unsympathetic tracking over the drier slopes that are difficult to rehabilitate.
- Spread of wilding pines and sweet briar.
- Decline in tall tussock cover.

Unit 5: Front Country

This unit incorporates the block of dissected hill country that overlooks Lake Aviemore. At the base of the hill country outwash fans and terraces tilt towards the margins of the lake. Intermittently the hill country is incised by short steep gullies that cut into Parsons Creek's eastern ridgeline. Within these deep gullies there are bands of exposed parent rock, while groupings of tors stud the ridgelines.

The undulating landform along the margins of the lake creates a series of open bays along which State Highway 83 skirts.

The ground cover is markedly zonal with the upper hill country being clothed in a mixture of tall and short tussock with the occasional golden spaniard. Below this is a band of broken rocky country that is covered with matagouri shrublands as well as the occasional grove of kowhai. The lower and more gentle terrain has been cultivated into paddocks although there are still patches of tussock and matagouri within areas which are difficult to improve. Distributed across much of the front country is an assortment of opportunist species that have adapted to the semi-arid conditions, these include blue borage, catsear, hawkweed and the ephemeral Californian poppy. On the thinner soils at a lower altitude there are naturally large areas of unvegetated ground.

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Landscape Values

Although much of this unit has been modified for farming purposes, it still has significant landscape values, in particular the special inter-relationship between the water mass that is enclosed by hills. The contrast between the pastel blue waters and the tawny semi-arid terrain is vibrant. The landscape values that are contained within this unit are unique to the mid and upper Waitaki.

Visual Values

This unit has high visual resource values due to the uninterrupted views that are obtained along State Highway 83. This highway is an arterial route and is becoming increasingly popular with tourists.

Potential Vulnerability to Change

In the past this unit has been widely manipulated for both farming and hydro power use. The inherent values that remain are confined to small vestiges, which are located in relatively inaccessible areas such as around rock outcropping and have no immediate threats.

2.2 GEOLOGY AND SOILS

Schistose rocks of low metamorphic grade compromise most of the basement in which the St Marys Range is cut. Non-foliated greywackes lie to the north-west of Mt Bitterness. In addition to ancient shearing and faulting, a well-developed block faulting episode postdates the widespread Cretaceous-Tertiary peneplanation of much of Otago, producing thick fault pugs which are liable to severe gully erosion.

Apart from the physically unstable fault pugs, the hard basement rocks are unlikely to erode at rates fast enough to cause concern. However, most of the long mountain slopes are mantled, particularly at lower levels, with thick colluvial deposits which are liable to catastrophic failure in particularly severe storm events.

Alpine soils on the steep mountain slopes and bluffs over 1650m altitude are lithosols, which in the recent past have only supported the sparsest vegetation. Mechanical breakdown of rock is often rapid, with daily freeze and thaw playing an important role.

Soils are predominantly hygroscopic high country yellow brown earths of low fertility. At higher altitudes there is a high susceptibility to wind and sheet erosion.

2.3 CLIMATE

Mean annual precipitation ranges from some 600 mm at lower levels to an estimated 1200 mm along the range summit. Snow lies above 1350 metres for two months of the year, with regular winter falls on lower areas. Cold temperatures occur year round, and very strong winds from the north-west and south occur frequently.

2.4 VEGETATION

2.4.1 Original vegetation

McGlone (2001) suggests that the prehuman vegetation of the intermontane basins of South Canterbury were dominated by grassland and scrub with low stature forest on the range slopes. The low altitude grasslands were dominated by *Poa*, *Festuca*, *Elymus* and *Rytidosperma* species. *Coprosma* and *Myrsine* scrub species and mountain totara (*Podocarpus hallii*) were the main forest species. It is likely that *Plagianthus regius*, *Hoheria angustifolia* and kowhai (*Sophora microphylla*) were also present especially on fertile soils and along river and stream courses. Snow tussock would generally occupy higher altitude sites.

It is likely that the hill slopes of Rugged Ridges Pastoral Lease would have supported short tussock grassland (dominated by silver tussock (*Poa cita*) and fescue tussock (*Festuca novae-zelandiae*) and shrubland, with snow tussock at higher altitudes. Low stature forest including totara and kowhai is likely to have existed on stream banks and protected valleys.

2.4.2 Indigenous plant communities

The vegetation communities present may be summarised as follows:

- Dry short tussock grassland / herbfield
- Shrublands
- Snow tussock grassland

Dry short tussock grassland / herbfield

The dry northeast-facing slopes above Lake Aviemore within Area A (see Values Map) have a relatively high proportion of bare ground and rock debris. Vegetation on these slopes is a mosaic of dry grassland herbfield, short tussock grassland and shrubland. They are semi-natural communities with a mixture of native and exotic species. Common adventive grasses include *Rytidosperma* spp. *Vulpia bromoides*, cocksfoot and *Poa pratensis* mixed with locally abundant native grasses blue tussock, silver tussock (*Poa cita*), *Dichelachne crinita* and *Deyeuxia avenoides*. The adventive herbs vipers bugloss (*Echium vulgare*), haresfoot trefoil (*Trifolium arvense*), purple fuzzweed (*Vittadinia gracilis*), woolly mullein (*Verbascum thapsus*) and mouse-ear hawkweed (*Hieracium pilosella*) are often present. Prominent associated shrub species include *Coprosma propinqua*, *Melicytus alpinus*, matagouri (*Discaria toumatou*), prostrate kowhai (*Sophora prostrata*), *Muelenbeckia complexa*, *Carmichaelia petriei*, *C. nana* and adventive sweet briar (*Rosa rubiginosa*). Some exotic broom (*Cytisus scoparius*) is present.

The dry grassland herbfield on the dry faces above Lake Aviemore is the habitat of the regionally endemic native broom *Carmichaelia curta*. This plant is nationally threatened and described as 'vulnerable' by de Lange, 1999. The species is restricted to dry parts of inland Otago and South Canterbury's Waitaki River catchment where it has been recorded from stony hillsides, rocky outcrops and river terraces as well as sites of human disturbance such as road cuttings (Grove, 2001). There has been a contraction in the historic range of *C. curta* in the Waitaki

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catchment due to loss of habitat caused by land development. Grove found no plants south of the Waitaki Dam although many historic records come from the Kurow area. Plants at higher altitudes are often restricted to inaccessible sites on steep stony slopes and rock outcrops or amongst shrub thickets and therefore tend to be smaller more isolated populations.

The largest known population of *Carmichaelia curta* occurs along the southern side of Lake Aviemore from near Parsons Rock to 2 kilometres from the Aviemore Dam i.e. most of the lakeside frontage of the Rugged Ridges Pastoral Lease. Plants have been recorded along road cuttings and from 450m down to lake level (Grove, 2001). During field work for this report (May 2002) plants were recorded up to 750m on the spurs above Rugged Ridges Creek and Unnamed Stream. Clusters of *Carmichaelia curta* were scattered throughout the basin on the true left of Banks Stream usually associated with rock outcrops or rubbly slopes. Most plants had been badly chewed by stock. Only 2 plants were seen with seed pods due to the protection from browse afforded by large angular rocks.

Shrubland

Front country

Shrublands line the incised gullies that dissect the dry front country overlooking Lake Aviemore within Area A. On the higher spurs and basins of this front country are scattered solitary trees and groves of kowhai, which, together with scattered pockets of dry shrublands create a savanna-like landscape. The kowhai trees are very old with gnarled and twisted trunks and thick patterned bark. The ground around the base of the trees is bare and littered with sheep droppings due to stock camping under the shelter afforded by the protective branches. Most trees are laden with seed pods and seeds litter the ground but there are no kowhai seedlings or young trees. Although most trees are healthy and robust some trees have been battered and broken due to past storms. Their exposed positions on spurs and open basins with no surrounding tall vegetation means they have no protection from the elements and are especially vulnerable to wind. With no regeneration of young kowhai the old trees will eventually die out.

The dry shrublands contain a variety of drought tolerant and often divaricating shrubs including *Coprosma propinqua*, *Coprosma crassifolia*, *Coprosma rigida*, *Olearia odorata*, *Melicytus alpinus*, matagouri, prostrate kowhai, *Muelenbeckia complexa* and *Carmichaelia petriei*. Rock outcrops protruding from the shrublands support an array of native shrubs, climbers, herbs, ferns and grasses. Four different fern species (*Asplenium flabellifolium*, *A. terrestre*, *Cheilanthes humilis* and *Polystichum richardii*) are found on or near rock outcrops. Bush lawyer (*Rubus schmidelioides*) commonly grows over shrubs and rock faces. Other small native plants growing on open bare sites include scabweed (*Raoulia australis*), *Raoulia monroi*, *Pimelea aridula*, *Dichondra repens* and *Wahlenbergia gracilis*. Often there is a high proportion of bare ground and rubble with haresfoot trefoil providing the main ground cover, along with some mouse-ear hawkweed and vipers bugloss. Native tussocks and grasses present included silver tussock, blue tussock (*Poa colensoi*), *Elymus solandri*, *Rytidosperma pumila*, *Deyeuxia avenoides* and *Dichelachne crinita*.

The spur on the true left of Macrae Creek supports two large populations of prostrate kowhai. The lower area (Area A1) is visible from the road as a hillside covered in distinctive dark mounds. Regular browsing has given the kowhai

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clumps this mounded appearance. Higher up this spur (Area A2) is another area of prostrate kowhai. There is very little vegetation growing on the thin soil and rubble between the kowhai mounds. The prostrate kowhai appears to give some protection from browsing to some small native plants. *Convolvulus verecundus* subsp. *waitaha* was found flowering and scrambling up through the kowhai and *Einadia allanii* found sheltering below kowhai and rock outcrops. Small rock outcrops amongst the prostrate kowhai supported a variety of native ferns and herbs including *Cheilanthes humilis*, *Asplenium flabellifolium*, scabweed, *Dichondra repens*, *Wahlenbergia gracilis*, *Vittadinia australis* and *Oxalis exilis*.

Higher on this spur where stock pressure is high *Carmichaelia petriei* commonly takes on a prostrate, low growing form that is rhizomatous and suckering. This form is quite common in the Waitaki Valley (Heenan, 1996). Native grasses in this area include silver tussock (severely cropped), *Dichelachne crinita* and *Lachnagrostis filiformis*. Scabweed and mouse-ear hawkweed form the meagre ground cover around the shrubs *Coprosma propinqua*, matagouri and *Muehlenbeckia complexa* and some golden spaniard (*Aciphylla aurea*).

Higher up in the headwaters of Banks, Boundary and Dry Streams is a band of broken rocky country with *Coprosma propinqua* / matagouri dominated shrublands and occasional clusters of *Olearia odorata*.

At about 800m the dry shrublands of Dry, Boundary and Banks Streams open out into silver tussock and fescue tussock grassland with scattered *Olearia odorata*. *Olearia lineata* is occasionally present in the head of Dry Stream. The dwarf broom *Carmichaelia vexillata* often occurs as an intertussock species at about 900m across the head of Dry and Banks Streams. The short tussock grassland / shrubland communities gradually merge into tall tussock grassland.

The best example of the drought tolerant shrublands is in Banks and Boundary Streams where young and old kowhai trees are present in dense and diverse shrublands. Kowhai saplings appear to receive some protection from the other shrub species although some exposed young plants are browsed. Occasional briar bushes are present.

The kowhai/dry shrublands are representative of the vegetation that was formerly present in this drought prone area (McGlone, 2001). A savannah-like vegetation, where stands of trees co-exist with scrub and grassland, with a greater density of trees and shrubs in the incised gullies, would have provided the original vegetation cover. The present extent of tree and shrub cover has been much reduced by past fires and grazing has contributed to lack of regeneration.

Parsons Rock Creek

The lower reaches of Parsons Rock Creek are covered in briar. Upstream the native shrub component increases with altitude as *Olearia odorata*, *Coprosma propinqua*, matagouri, and occasional koromiko become more common on stream banks and steep rubbly slopes rising out of the valley. Several steep boulder fields descend into the valley with bracken (sometimes with the native jasmine *Parsonsia capsularis* climbing through) and *Muehlenbeckia complexa* scrambling over the boulders. Occasional weeping mapou (*Myrsine divaricata*) grow out of the rubble beside the track and *Helichrysum intermedium* cling to rock outcrops. Where the track meets the retirement area fence *Olearia odorata* dominates near

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the stream with clusters of tauhinu (*Ozothamnus leptophylla*). Silver tussock, *Melicytus alpinus* and *Pimelea aridula* are also present.

Steep slopes of shattered rock rise up the western side of Parsons Rock Creek that is within the lease. *Aristotelia fruticosa*, *Hebe buchananii*, matagouri and *Pimelea aridula* cling on to the rock outcrops and screes. Sparse tussocks (*Chionochloa rigida* and fescue tussock) and native grass (*Lachnagostis filiformis*) are present. Where the shrubs merge into snow tussock on the spur between Parsons Rock Creek and Station Creek there is some of the dwarf broom (*Carmichaelia vexillata*).

Otematata River

The lower slopes and river flats of the Otematata River Valley are generally highly modified with some oversowing and topdressing on the lower slopes. Haresfoot trefoil dominates the stony river flats with its pinkish hue and briar, vipers bugloss and *Bromus tectorum* are commonly present. Further upstream the native shrub component increases on the rocky river banks as the valley becomes more gorge like. The occurrence of rock outcrops increases with its associated plants *Helichrysum intermedium*, *Brachyglottis haastii* and *Anisotome caudicola*. The predominance of *Olearia odorata*, matagouri, *Muehlenbeckia complexa*, *Rubus schmidelioides* and *Coprosma propinqua* increases although briar is always present to some degree. Less common are weeping mapou and bristle tussock (*Rytidosperma setifolia*).

Two adjacent valleys (Area C1) contain boulder fields that support mountain totara (*Podocarpus hallii*). The large boulders are likely to have provided a refuge from past fires. It is likely that forest covered the valley floor in earlier times and these remaining totara represent an earlier forest / tall shrubland cover (McGlone, 2001). A lone pine stands above the first grove of totara.

Just south of the totara valleys, where the valley floor track passes through a fence, the briar component in the shrublands stops abruptly and *Olearia odorata*, matagouri and *Coprosma propinqua* then become the dominant shrub species in the fescue tussock grassland.

Where the track crosses Shaw Creek large matagouri 'trees' (some up to 3m high) line the stream bank. The gully is protected by bluffs and rock outcrops which probably served to protect the matagouri from fire and allowed the matagouri to attain tree-like size. Matagouri exposed above the gully is more stunted. There is a solitary large willow in Shaw Creek.

Miller Creek and its tributaries all have *Olearia odorata* dominated shrub filled gullies with *Coprosma propinqua* and matagouri common. In one of the tributaries there is a large solitary *Olearia nummulariifolia* amongst *O. odorata* shrubland. *Clematis marata* often climbs through the *Olearia* shrublands. Boulderfields amongst shrubland support *Melicytus alpinus*, *Blechnum penna-marina*, *Celmisia lyallii*, blue tussock and golden spaniard.

Large solitary willow trees grow near the hut in Miller Creek, above the track in a tributary gully of Miller Creek and above the track in Shaw Creek.

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The scrub filled gullies of the lower slopes, described above, grade into *Chionochloa rigida* covered slopes at higher altitudes, leading up to the St Marys Retirement Area.

Tall tussock grassland

Front Country

Tall tussock grassland is the dominant community in all of Area B, excluding the lower faces of Parsons Rock Creek (described in Shrublands). Most of the Rugged Ridges Creek catchment is extremely dry with a very stunted vegetation of fescue tussock, mouse-ear hawkweed and browsed *Carmichaelia petriei* on the spurs and scattered *Coprosma propinqua* in the valley. Above 1200m *Chionochloa rigida* appears with fescue tussock, mouse-ear hawkweed, *Raoulia subsericea*, *Brachyscome* sp, *Aciphylla aurea*, *Carex muelleri* and *Carmichaelia vexillata*. Higher up this spur at 1500m (near the retirement fence) the vegetation becomes alpine in nature with a low vegetation cover of *Festuca matthewsii*, blue tussock, *Raoulia subsericea*, *Scleranthus uniflorus*, *Celmisia sessiliflora* and *Dracophyllum muscoides*. Mouse-ear hawkweed and king devil (*Hieracium praealtum*) are occasionally present. There are some small alpine bogs on the gentle slope. Species present include *Schoenus pauciflorus*, *Oreobolus pectinatus*, *Carex berggrenii*, *Gentiana amabilis* and *Gnaphalium laterale*.

Oversowing and topdressing in the upper catchment of McRae Creek has encouraged luxuriant growth of snow tussock which descends down to 800m. Oversown species of *Lotus pedunculatus*, clovers and grasses dominate the intertussock spaces. Below the snow tussock, scrub fills the valley with a high proportion of *Coprosma propinqua*, briar and matagouri. Toetoe (*Cortaderia richardii*), golden spaniard, *Olearia odorata*, bracken and bush lawyer are common. On the drier spur lower down clumps of *Melicytus alpinus* and *Carmichaelia petriei* are a distinctive feature.

Otematata River

Good snow tussock grassland clothes the slopes above the 900m contour (approximate) above the Otematata River, Area C. Near point 1431 close to the retirement fence intertussock species include blue tussock, *Rytidosperma pumila*, *Anisotome flexuosa* and *Kelleria dieffenbachii*. *Raoulia petriensis* was present on the bare frost shattered spurs below Mt Bitterness.

Near Mt Weta there is a good comparison of good robust *Chionochloa macra* in the retirement area and heavily cropped *Chionochloa macra* on the grazed side of the fence. On the grazed side cropped *Chionochloa macra*, blue tussock and mouse-ear hawkweed provide the most cover. Other intertussock species include *Raoulia subsericea*, *Scleranthus uniflorus*, *Geranium sessiliflora*, *Agrostis muelleriana*, *Euphrasia zelandica*, fescue tussock and the adventives sheeps sorrel (*Rumex acetosella*) and king devil. Over the fence in the retired area the vegetation is in better condition with tall *Chionochloa macra* and *Festuca matthewsii*. The species present are similar but there is less mouse-ear hawkweed and bare ground.

The snow tussock in the block below Mt Weta is grazed with a high component of mouse-ear hawkweed. The snow tussock continues down to about 1100m. At this altitude the vegetation is dominated by *Chionochloa rigida*, fescue tussock and mouse-ear hawkweed. Other species present include *Raoulia subsericea*,

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Leucopogon fraseri, *Pimelea aridula*, *Lachnagrostis filiformis*, *Wahlenbergia albomarginata* and *Carmichaelia vexillata*. The headwaters of Station Creek are also quite heavily grazed but there is a reasonable snow tussock cover and diversity of species above 1100m.

2.4.3 Notable plant species

<u>Plant Species</u>	<u>Known distribution in area</u>
Threatened	
<i>Carmichaelia curta</i>	Along the front faces above Lake Aviemore
<i>Carmichaelia vexillata</i>	In snow tussock grassland
Uncommon	
<i>Podocarpus totara</i>	In side valley of Otematata River
<i>Sophora microphylla</i>	In Banks, Boundary and Dry Streams
<i>Sophora prostrata</i>	On spur west of McRae Creek
<i>Convolvulus verecundus subsp. waitaha</i>	In prostrate kowhai on spur west of McRae Creek
<i>Einadia allanii</i>	In prostrate kowhai on spur west of McRae Creek.

2.5 FAUNA

2.5.1 Birds

A total of fifteen bird species have been recorded on Rugged Ridges Pastoral Lease, comprising one endemic species, five native species and nine introduced species. Other bird species that likely utilize Rugged Ridges include: Banded dotterel, paradise shelduck, NZ Falcon, spur winged plover, welcome swallow, little shag, pied fantail, pied oystercatcher, marsh crake, Australasian bittern, song thrush and greenfinch (Ornithological Society of New Zealand files).

Important wetland habitats on Rugged Ridges include: the Otematata River and two associated un-named wetlands. Otematata River is a moderately fast flowing mountain stream with a gravelly bottom that is adjoined by associated wetlands and native shrublands. This valuable riparian habitat passes through modified tussock grassland. The Otematata River provides valuable habitat for black shags and probably little shags, banded dotterel (Category C species) and South Island pied oystercatcher.

The un-named wetlands on the true right of the Otematata River have formed from seepage below old river terraces. These areas of *Carex* swamp have been modified through grazing but likely provide habitat for marsh crake and bittern.

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Bird Species of Rugged Ridges Pastoral Lease

Endemic species

Grey warbler *Gerygone igata*

Native species:

Australasian harrier *Circus approximans*
Black backed gull *Larus dominicanus*
Pipit *Anthus novaeseelandiae*
Black shag *Phalacrocorax carbo*
Silvereye *Zosterops lateralis lateralis*

Introduced species

Californian quail *Callipepla californica*
Hedge sparrow *Prunella modularis*
Blackbird *Turdus merula*
Starling *Sturnus vulgaris*
Chaffinch *Fringilla coelebs*
Goldfinch *Carduelis carduelis*
Redpoll *Carduelis flammea*
Yellow hammer *Emberiza citrinella*
Skylark *Alauda arvensis*

2.5.2 Invertebrates

Rugged Ridges has several invertebrate communities established in small streams, open tussock grasslands, shrublands and sub-alpine environments with the shrublands and grasslands providing the main habitats.

The sub-alpine tall tussock grasslands that clothe the upper Otematata River slopes (above 1000m) provide a 'moderate to high' invertebrate community. The large mountain weta (*Hemideina maori*) was found near Mt Weta. The mountain weta is a fascinating species of tree weta which has adapted to living on the ground. It hides under stones and wood and also it can be found beneath low shrubs. Several black cicadas *Maoricicada* spp were heard singing with each species having a distinctive call. This area has a good representation of the alpine invertebrate communities found in the Mackenzie Country region. No rare species were noted but the area holds good populations of common Mackenzie Country invertebrates.

The shrublands and grasslands in the Banks, Boundary and Dry Stream catchments provided the best invertebrate habitats on Rugged Ridges. The common red damselfly/kihitarā was seen flying over the shrublands and grasslands communities. The lowland grasshopper *Phaulacridium otagoense* was commonly found on all areas that were hot/dry and below 900 metres. This grasshopper is endemic to Central Otago and Mackenzie Country (Morris 2002 & 2002a). Three species of copper butterflies were commonly seen flying over both the shrublands and grasslands region of the pastoral lease (Morris 2002b). Robber flies were noted along the stream edges and around the shrubland. Robber flies often catch insects almost as large as themselves, trapping them between their long, sturdy legs which are fitted out with large claws. Several species of the darkling beetles were found on the pastoral lease (Morris 2002).

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2.5.3 Reptiles

Skins/mokomoko and geckos were commonly seen within the pastoral lease.

2.5.4 Freshwater Fish

Canterbury galaxiid and upland bully are found in the streams. Rainbow and brown trout can also move up into the lower reaches of streams on the front faces and are in the upper Otematata River.

2.5.5 Problem Animals

Introduced animals noted on the lease have included red deer, rabbits, possums and pigs.

2.6 HISTORIC RESOURCES

The Waitaki River was an important area for Maori. Three historical sites are recorded on the NZAA site index in the Rugged Ridges area. Two of the sites are now underwater and the other, an artefact find spot, is not able to be found again.

The land was purchased from Ngai Tahu by the Kemp Purchase of 1848 and has been variously occupied as part of Run 243D and part of Run 243C. The original very large Run incorporated Sunny Peaks lease. The Munro family, who still occupy freehold land within the lease boundaries, were the lessees for most of the 1900s. In 1992 a Land Improvement Agreement was instituted and a large part of the back country on the Run was retired. A portion of the front country has also been taken for the development of water power.

Historic remains include huts in the Otematata River including a substantial cottage and a smaller, near derelict, musterers hut. Near the original homestead on the lake front are the remains of a cob house, probably the home of W.G.Munro who worked on the Run between 1858 and 1871.

2.7 PUBLIC RECREATION

2.7.1 Physical Characteristics

Rugged Ridges lies within the "Natural" and "Open Space" zonings of the Department's Recreation Opportunity Spectrum and would be covered by the 4x4 Drive In, Back Country physical setting. The environment is modified by tracking and farming development, particularly in its lower reaches. However, natural vegetation cover has been retained at higher altitudes and in more remote areas.

The front country of the lease, adjacent to Lake Aviemore and the State Highway has some flat country but is predominantly spur and gully country running off the St Marys Range. There are two large streams (Rugged Ridges Creek and McRae Creek) and three smaller ones (Boundary Stream, Banks Stream and Dry Stream) running down through this country. Parsons Rock Creek is on the boundary of this flat country and runs right up into the retired area on the St Marys Range.

Between the upper reaches of Parsons Rock Creek and the Otematata River there is the upper part of the catchment of Station Creek, which flows on down through

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Aviemoire Station to Lake Aviemoire. This land slopes steeply into Parsons Rock Creek but is gentler in the Station Creek catchment with some smooth plateau country around Mt Weta at the head of the catchment.

The back country of the lease is all the land on the true right banks of the Otematata River. Where this land adjoins the Station Creek block the faces extend from the ridgeline to the river. Higher up the Otematata River valley the top boundary of the lease drops off the main ridge to follow the retirement boundary to a saddle between Rugged Ridges and Sunny Peaks. There are a number of streams flowing down the Otematata faces to the river with the major named ones being Millar Creek and Camp Creek. There is a little bit of flat land adjacent to the river, particularly at the foot of Harrisons Spur where the track comes over from Parsons Rock Creek to the Otematata River.

2.7.2 Legal Access

State Highway 83 runs along the side of Lake Aviemoire and provides legal access to the front country of the lease. There are some portions of legal road, probably where the old road used to run before the lake was formed, running through the lease between the State Highway and the Lake. There are no legal roads leading off the State Highway onto the country between the highway and the St Marys Range.

A legal road starts near Lake Aviemoire and the Aviemoire homestead and runs up through the Aviemoire lease to enter Rugged Ridges in the Station Creek block. There is also a portion of legal road roughly following the Harrisons Spur track down to the Otematata River. A legal road lines follow the true left bank of the Otematata River, outside the Rugged Ridges lease boundary, all the way back down the river to Otematata.

There is little legal access to the St Marys Range Conservation Area, which bounds on to the upper part of the Rugged Ridges lease. Resolution of this problem by having legal access through Rugged Ridges would be ideal.

2.7.3 Activities

Fishing is popular on the lakeside and boat access is provided just outside the lease boundaries. Fishing is also carried out on the Otematata River with access through Aviemoire and Otematata leases. Hunting is carried out on the lease with permission from the managers.

4WD trips linking access through the lease with trips on the St Marys Range and through to Sunny Peaks and Kyeburn leases are popular. Some walkers also gain access onto the St Marys Range through the lease.

PART 3 OTHER RELEVANT MATTERS AND PLANS

3.1 CONSULTATION

At meetings held with Non-Government Organisations in Christchurch on 25 September and in Timaru on 26 September, 2001 the following comments were made:

- There are a huge number of actual and potential areas for cycling around the mountain tops. Access should be provided through to the Maniatoto and Danseys areas.
- Good opportunity for cross country skiing on the tops.
- Horse-riding should be provided for.
- The upper part of the Otematata River should be protected.
- The adequacy of public reserves along the Lake Aviemore shoreline should be looked at.

3.2 DISTRICT PLANS

Rugged Ridge pastoral lease lies within the Rural S (Rural Scenic) Zone in the Waitaki District. The Rural Scenic Zone contains areas of the District which have significant scenic values – the high country, rangelands and inland basin areas. The majority of this zone lies above the 400 m contour (a.s.l.).

The proposed Waitaki District Plan was publicly notified in December 1996. Following public submissions and hearings on the proposed plan, the District Plan as amended by Council decisions was released in September 1999. The Plan establishes what sort of activities are Permitted, Controlled, Discretionary or Non-complying. The Plan also establishes Site Development Standards and Critical Zone Standards for these activities. A permitted or controlled activity that does not comply with any one or more of the Site Development Standards becomes a restricted discretionary activity. However, the Plan has undergone a number of changes in the Rural Scenic Zone following Council's decisions on submissions and a number of matters are still to be resolved.

3.3 CONSERVATION MANAGEMENT STRATEGIES AND PLANS

Rugged Ridges is within the Waitaki Unit of the Canterbury Conservation Management. The key priorities for this unit are:

- To identify, maintain and seek to enhance the natural landscapes and natural landscape values of the unit – through appropriate methods such as tenure review and district plans.
- To identify the significant native vegetation and threatened species of the unit and to use a range of effect methods to protect a representative range of indigenous biodiversity of the unit as well as protecting and enhancing the viability of priority threatened species populations and their habitats in the unit.
- For recreation and access the Conservancy's objectives are to provide new recreational facilities and opportunities by the Department and other organisations and concessionaires where natural and historic resources and cultural values are not compromised, and to liaise with adjacent landholders to

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resolve conflicts over access for recreation to land managed by the Department.

- To reduce and maintain rabbit and thar densities to levels that ensure their adverse effects on natural values are minimised.

Other priorities identified in the CMS that are Conservancy wide and relevant to tenure review on these properties are – to undertake necessary actions to secure the conservation of Category A and B species, including predator control, fencing and habitat protection.

PART 4 MAPS AND ACKNOWLEDGEMENTS

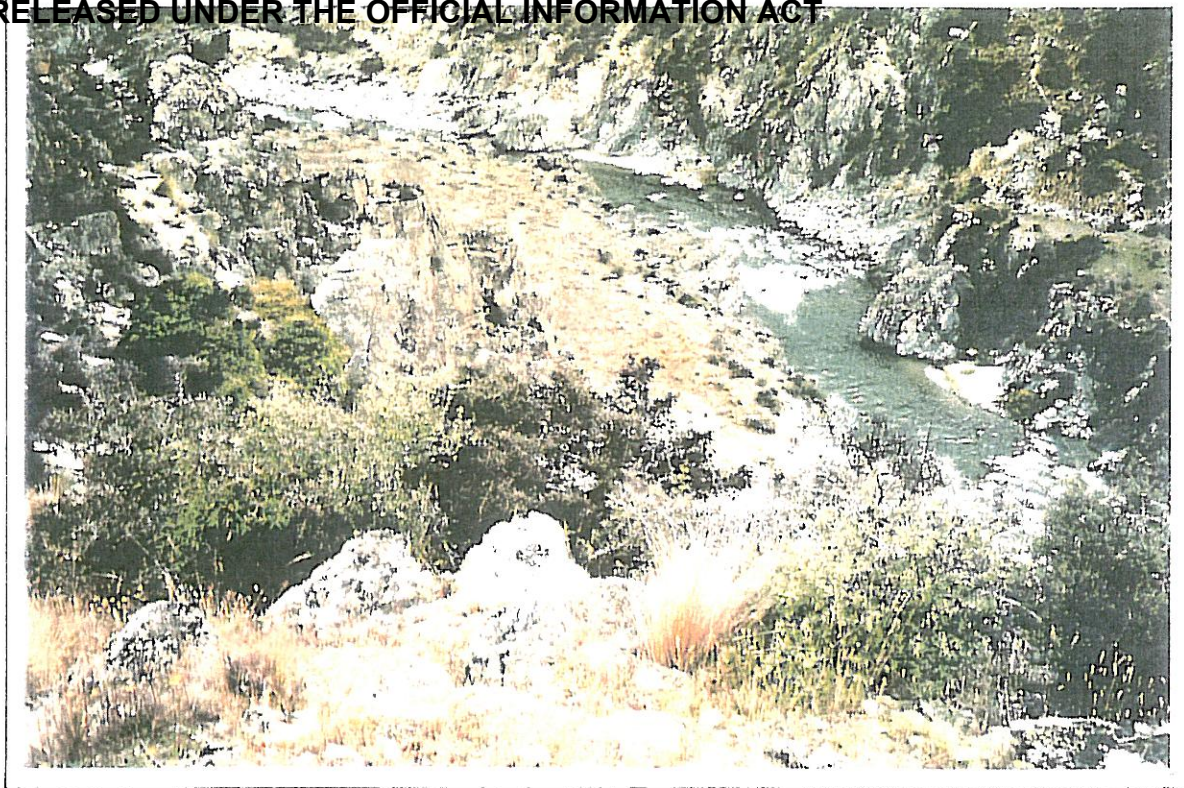
4.1 Illustrative Maps

4.1.1 Topo/Cadastral (attached)

4.1.2 Values (attached)

4.2 Acknowledgements

The Department would like to thank the manager of Rugged Ridges, Anne Scanlan for her assistance with the survey. Also our thanks to members of the survey team – Carol Jensen, Alan Petrie, Simon Morris and Kerry Brown.



LUI Looking down into the confluence of the Otematata River and Shaw Creek; above this junction the river valley becomes very constricted mainly attributable to the jagged rocky outcrops. The upper river corridor has extremely high landscape values.



LUI Looking into the Shaw Creek catchment which is clad in Olearia shrubland. This tributary could possibly be used as a lower boundary for Conservation land.



LU1 Looking towards the upper catchment of Shaw and Millar Creek. Note the "tender" nature of the ground cover on the sunnier faces.



LU2 Upper western catchment of Station Creek that still possesses good condition snow tussock; this natural area could be linked to the extensive sub-alpine tussock lands of LU1.