

Crown Pastoral Land Tenure Review

Lease name : BENDROSE

Lease number : PT 097

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.

They are released under the Official information Act 1982.

April

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DEPARTMENT OF CONSERVATION RESOURCE REPORT TO KNIGHT
FRANK LIMITED ON TENURE REVIEW OF BENDROSE STATION
PASTORAL LEASE

PART ONE: INTRODUCTION

Bendrose Station is split into two distinct and separate management units. The "Flats" lie between the Twizel River/Bendrose Stream and the Pukaki River. This area is located on the outskirts of Twizel.

The "Back Block" is located west of Twizel at the dry southern end of the Ben Ohau Range. This block is bound by Lake Ohau to the west ("Lake Ohau Face"), and is dominated by an unnamed peak, which, is referred to as "Bendrose Peak". This block is bound by Dorcy Stream to the north and Gretas Stream to the south, and includes part of the tributaries which feed into the Darts Stream catchment.

Part of Bendrose Station is located in the Pukaki Ecological District (ED) while some 2000 hectares of the Back Block is in the Ben Ohau E.D. These districts were surveyed as part of the Protected Natural Area Programme (PNAP) in 1983. This survey identified three recommended areas for protection (RAP) on the property. These are Ben Ohau Upper Gretas Stream, part of Ben Ohau 8 Lower Gretas Stream and part of Ben Ohau 5 Dorcy Stream.

PART TWO: CONSERVATION RESOURCE DESCRIPTION

2.1 Landscape

The Mackenzie - Waitaki Basin is New Zealand's largest intermontane basin. It is nationally unique and contains a number of predominantly natural landscape values, including:

- the scale, diversity and extent of its glacial topography
- a number of geopreservation sites
- characteristic inland intermontane basin micro-climate
- it constitutes its own Ecological Region
- habitat to a number of endangered and rare fauna species
- impressive scenery
- dramatic location and setting of Mount Cook
- it is a highly valued natural setting and location for a range of tourist attractions and recreation pursuits.

These natural features are highly valued for visual and scenic reasons. Many of the pastoral leases in the basin are visible from State Highways, canal roads, minor roads, settlements, tourist destinations and flight paths. The combination of the physical features, and the diversity and distinctiveness of the area all contribute to the high inherent scenic and visual values.

Bendrose Station forms two distinct blocks, each with a different natural character forming part of a wider landscape character type. These are:

(i) Back Block

- relatively steep western slopes and uplands of the Ben Ohau Range (altitudinal range 560m - 1690m)
- greywacke as bedrock on the western mid-slopes. Schist of the Haast group is in the upper bedrock reaches. Lateral moraine till on the lower-mid slopes (and above the lake)
- numerous incised streams
- snow tussock associations above approximately 900m with woody shrubland regeneration below this level
- beech remnants in and above the Dorsey and Gretas Stream
- the area is part of the overall continuous landscape character area of western slopes of the Ben Ohau Range running from Glen Lyon Station in the north to Conservation land in the South.

(ii) Outwash Flats

- almost flat with a subdued morainic topography and streamlets flowing south into Bendrose Stream and the Twizel River.

2.2 Landforms and Geology

The Broad flats made up of primarily a thick layer of free draining Pleistocene fluvioglacial outwash gravels overlying Tertiary sediments. The overlying soils are shallow, stony and have low fertility. The Ben Ohau Range is folded Torlesse greywacke. Pleistocene deposits cover the lower slopes. The Ben Ohau Range run in a north-south direction and ranges in height from 550-1690m within the Black Block.

2.3 Vegetation

There are eight distinct vegetation types on Bendrose Station. Two vegetation types are found on the Flats and the other six vegetation communities are located on the "Back Block".

2.3.1 Flats

The Flats Block contains developed grasslands close to the homestead, and between the upper part of Bendrose Stream and the Twizel River; modified hard tussock grasslands in varying states of health; and matagouri shrublands occur along the Bendrose Stream.

Developed Grasslands

The paddocks close to the homestead, and the deeper soils associated with Bendrose Stream are dominated by exotic grasses (e.g. cocksfoot, *Poa pratensis*) and clovers.

Short Tussock Grasslands

At the north-western corner of the Flats in the depleted short tussock grasslands, a range of exotic species such as Fescue grass, clovers, and lotus have been established. Exotic ground cover is very good where developed has occurred. There is little native component although there are some *Elymus rectisetus* tussocks present..

The majority of the Flats Block is dominated by native mat daisy, hawkweed, and sheep's sorrel. Hard tussock (*Festuca novae-zelandiae*) is localised in patches, which vary from <5% to 30% cover, and tends to be more evident further south.

Shrublands

Large matagouri shrubs are scattered in groups adjacent to the Bendrose Stream. Some reach 3m in height, whilst the majority are about 1.5m tall. Where there is deep moist soil, vegetation ground cover is exotic, and this occurs right up to the base of shrubs. Closer to the boundary fence with Omahau Station, the dry stony soil there supports a more diverse vegetation groundcover, with a native component (e.g. *Coprosma atropurpurea*, *Leucopogon fraseri*, *Muehlenbeckia axillaris*), present but this is largely dominated by exotic dryland species such as sweet vernal, and mouse eared hawkweed (*Hieracium pilosella*).

2.3.2 Back Block

The Back Block contains developed grasslands with matagouri shrublands at lower altitudes on the Lake Ohau Face, grading into tall tussock grasslands and slim snow tussock grasslands with altitude. Pockets of mountain beech forest occur at the mouth of Dorcy and Gretas Streams and also on the Lake Ohau Face. Mixed matagouri shrublands are found in the Lower Gretas Stream catchment, and fellfield and cushionfield vegetation occurs at the top of Bendrose Peak.

Upper Montane Environment

Developed Grasslands

Developed grasslands interspersed with matagouri occur only on the Lake Ohau Face below about 900m. At lower altitudes, the highly modified grassland is dominated by exotic species such as cocksfoot, Yorkshire fog, *Bromus mollis*, sweet vernal, and white clover. Hard tussocks are occasionally found at lower altitudes, but are more common at higher altitudes. Above 940m the occasional narrow-leaved snow tussock occurs along with a few native herbs which include the everlasting daisy, *Gonocarpus aggregatus*, *Coprosma petriei*, native daphne, and matagouri. There are dense patches of hard tussock located throughout this face.

Shrublands

There are several patches of more mature matagouri shrubland located approximately midway along the Lake Ohau Face, between the farm track and the lake. Matagouri occurs with scattered mingimingi and about 25% cover of sweet brier. All shrub species reach 2-2.5m in height. Ground cover is dominated by exotic species.

Mixed matagouri shrublands occur in the lower reaches of Gretas Stream and Dorcy Stream alongside the streams and extends up the slope. *Hebe subalpina*, mountain

ribbonwood (*Hoheria lyallii*), turpentine shrub (*Dracophyllum uniflorum*), desert broom *Carmichaelia petriei*, and *Coprosma* spp are common natives, and intermingle with healthy narrow-leaved snow tussocks and native herbs. Those in the lower Gretas Stream catchment are contiguous with the Lower Gretas Stream beech forest RAP on Ruataniwha Station (RAP Ben Ohau 8).

At 935m, above Gretas Stream, an area of greywacke talus supports a regenerating Halls totara shrubland. It has high native species diversity, with very few exotic species present. Native shrubs include matagouri, *Coprosma cheesemaniae*, a coral broom (*Corallospartium crassicaule*), mountain heath (*Leucopogon colensoi*), porcupine shrub (*Melicactus alpinus*), along with hard tussock, blue tussock (*Poa colensoi*), *Deyeuxia avenoides*, narrow-leaved snow tussock (*Chionochloa rigida*), grasses, and *Leucopogon fraseri*, *Craspedia lanata*, *Ranunculus multiscapus*, *Viola cunninghamii*, native daphne, *Helichrysum filecaule*, and *Luzula rufa* herbs.

Perched above the lower Gretas Stream beech forest RAP is a stand of tall (3-4m) manuka shrubland with mingimingi, mountain wineberry (*Aristotelia fruticosa*), porcupine shrub, and *Coprosma rugosa* shrubs present also. Ground cover is largely exotic.

Forestlands

Two main mountain beech (*Nothofagus solandri* var. *cliffortioides*) remnants occur on the Back Block. One is the lower Dorcy Stream catchment which is occupied on both sides by riparian beech forest, with *Hebe salicifolia*, mingimingi, mountain ribbonwood, and climbers such as *Rubus schmidelioides* and *Muehlenbeckia complexa*. A parasitic mistletoe is also present. This beech forest is in good condition, being buffered by matagouri scrub on both sides. This area was identified as RAP 5, Dorcy Stream.

The other area consists of two small patches located at the base of the talus slopes associated with the Halls totara stand. Regeneration is poor, with sign of stock and rabbit damage. There is no ground cover beneath the trees, though hard tussock, *Blechnum penna-marina*, *Celmisia gracilentia* and *Viola cunninghamii* grow where soil occurs at the forest margin. Matagouri shrubland is close by.

Narrow-leaved Snow Tussock Grasslands

Narrow-leaved snow tussock grasslands occur above about 900m, except in the Dorcy Stream and Gretas Stream gullies, where tussocks extend down to about 800m.

These grasslands have been modified on the Lake Ohau Face through OSTD to 1300m. Tussocks tend to be small, in poor condition, and with variable native species diversity. Below 1000m, white and suckling clover are dominant between tussocks where pastoral development has occurred. However, native species diversity is moderately high in the bands which were missed by the plane, and includes hard tussock, *Leucopogon fraseri* and *Rytidosperma pumilum*. Exotics such as hawkweeds, sweet vernal and sheeps sorrel are prominent throughout.

At higher altitudes on the Lake Ohau Face and the NW facing spur above the lower Dorcy Stream, the narrow-leaved snow tussock grassland is of poor stature, with much bare ground or rock (35%) between tussocks. Native species diversity is medium. There

is evidence of stock camping on the spurs. However, at about 1450m, an area of large tussocks was found, with good litter cover and up to 1% bare ground. While clover and hawkweed dominate between the tussocks.

On the Dorcy Stream Face, tussock health and stature is good below the farm track. Native species diversity is moderately good, with a low exotic component in the intertussock species, and 10% bare ground and rock. However, above the track, the tussocks are smaller with 25-30% litter, and hawkweeds are more evident, although native species diversity is similar. Mountain flax (*Phormium cookianum*) is locally common on this face to about 1300m.

The slopes above Darts Bush Stream in the NE corner of the Back Block, support medium to large sized narrow-leaved snow tussocks, along with scattered *Carmichaelia petriei*, matagouri and mountain flax. This NE facing slope is quite open, with rock and bare ground evident. A zone of hybridisation between *Chionochloa rigida* and *C. macra* occurs at about 1230m, though *C. rigida* is locally dominant at 1450m on a spur above Darts Bush Stream.

In the Gretas Stream catchment, large healthy narrow-leaved snow tussock (45% cover) in excellent condition occur between 920 to 1000m. On the stream flats, they are associated with wetland plants where there is high native species diversity. Species include *Ranunculus gracilipes*, Maori onion, *Pratia angulata*, *Lobelia linnaeoides*, *Celmisia glandulosa*, *Pernettya nana* and *Hieracium praealtum* (7%) are the dominant exotic species.

At higher altitudes (above 1100m) on the south facing slopes in this catchment, narrow-leaved snow tussock stature and cover (35-45%) remains good, with *Hieracium praealtum* and *H. pilosella* being the only exotic component, occupying the rock and rubble between tussocks. The native species found include: false spaniard, *Anisotome aromatica*, *Gaultheria depressa*, blue tussock and *Lycopodium fastigiatum*. These are present in clusters at about this altitude and are obviously spreading. The upper limit for narrow-leaved snow tussock in this catchment is about 1200m.

Subalpine Environment

Slim Snow Tussock Grasslands

Slim snow tussock occurs above about 1200m. It is in excellent condition on the SE facing spur near to Omahau Station, and the Gretas Stream catchment. Tussock stature and density is good (30-45% cover, of which about 10% comprise young regenerating tussocks). Bare ground and rock make up 25% of the ground cover. Native species diversity is high and includes false Spaniard (*Celmisia lyallii*), *Raoulia subsericea*, *R. grandiflora*, *Anisotome aromatica*, *Gaultheria depressa* and *Wahlenbergia albomarginata*. Small amounts of hawkweed and sheep sorrel are also present.

At higher altitudes (1450-1550m) on this spur, gently sloping scree patches occur within the slim snow tussock grassland, on which *Ranunculus crithmifolius*, *Brachyglottis bellidioides*, *Kelleria dieffenbachii*, *Luzula pumila*, *Chionochebe pulvinaris*, *Poa colensoi*,

Dracophyllum pronum, and *Aciphylla montana* occur. *Hieracium praealtum* is present in very small amounts.

The warm north facing slopes of the Dorcy catchment support a more open slim snow tussock community, with smaller tussocks, and more bare ground and rock (35-60%). The diversity of native inter-tussock species is moderate to high, with hawkweed having more of a presence. At a site at 1600m, less than 5% slim snow tussock cover is associated with *Festuca matthewsii*, *Leptinella pectinata*, *Raoulia subsericea* and *Poa lindsayii*.

At lower altitudes, especially on the NW facing spur, exotic species are prominent in the intertussock spaces. *Hieracium praealtum* in particular (10%), but also *H. pilosella*, sheep sorrel, catsear and sweet vernal are present to 1365m.

At Flannagans Pass, the zone of hybridisation between *Chionochloa rigida* and *C. macra* occurs at about 1230m. Tussock cover is good, with good native species diversity between the tussocks. While *Hieracium praealtum*, brown top and catsear are present, they do not dominate the intertussock community. Grasses *Prasophyllum colensoi* and orchids *Thelymitra* sp. and lichen are present under both the tussocks and in the open areas. On the gentler slopes, bare ground and rock is about 10%.

Cushionfield

Dracophyllum pronum cushionfield is associated with the steep blocky fellfield, which occurs above 1500m on the south facing slopes in the Gretas Stream catchment, and on the more gentle surfaces of fine solifluction terraces, which occur on the north-east facing spur above Flannagans Pass. Species include *Chionochloa macra*, *Phyllachne colensoi*, *Poa colensoi*, and *Gaultheria depressa*.

On the ridgeline between the 1689m knoll and the saddle to the east of the 1690m peak of Bendrose Peak, patches of *Chionochloa macra*, with a diverse herb component occur.

Fellfield

Many screes, which are largely unvegetated, occur on the upper slopes of Bendrose Peak. The following scree plants were observed on an east facing fine scree at about 1500m: *Leptinella atrata*, *Epilobium pycnostachyum*, *E. glabellum*, and *Lobelia roughii*. At 1600m, native species diversity was high with *colobanthus acicularis*, *Chionohebe pulvinaris*, *Phyllachne colensoi*, South Island edelweiss (*Leucogenes grandiceps*), *Raoulia petriensis*, and *Agrostis muelleriana*. On the more blocky, west facing scree, *Koeleria novae-zelandica*, *Agrostis muelleriana*, and *Poa buechananii* grasses; and *Celmisia laricifolia*, and *Raoulia petriensis* herbs were noted.

2.4 Fauna

The Flats of Bendrose Station contain no significant fauna. The Ben Ohau Range contains the pipit, skylark and the Australian Harrier, along with the New Zealand falcon. The beech forest and shrublands in Dorcy and Gretas Stream contain rifleman, pied fantail, tom tit, grey warbler and bellbirds.

Entomological knowledge is scarce with only the alpine grasshopper, and tussock and boulder butterfly being recorded.

The spotted skink, McCanns skink and the common gecko are known to occur in the area.

Dorcy Stream contains the nate koaro *Galaxias brevipinnis* (category C for conservation)

2.5 Historic Values

Bendrose Station was formerly part of the Ben Ohau Run that was applied for by H and S Fraser in 1857. In 1918 Ben Ohau was sub-divided into Bendrose, Ruataniwhā and Omahau Station. No historic sites are located on Bendrose Station.

No information is known on Maori cultural values on the property.

2.6 Existing Land Status

Bendrose Station is in two separate blocks. The flats are bounded by crown land strips alongside the Twizel and Pukaki Rivers. An unformed legal road runs off the Rhoboro Downs Road and up Dart Bush Stream over the tops to Flanagan Pass and down the Lake Ohau Face that is slightly south of Dorcy Stream. There is a formed legal road along the shores of Lake Ohau.

The Mackenzie District Scheme became operative in 1986. This scheme identified part of the property as being Rural 1 which is a general farming zone, with the only conditional use being commercial forestry that is in excess of 50ha. The majority of the Block is zoned Rural 2 (Erodible High Country) being class VII or Class III land that is unsuitable for grazing or commercial forestry.

The proposed MacKenzie District Plan to replace the district scheme, is proposed to be publicly notified in October 1996.

2.7 Recreation/Access

2.7.1 Access

Marginal strips and unformed legal roads have been dealt with in section 2.6. Bendrose Station is relatively accessible from farm tracks and a road alongside Lake Ohau. Access is also available via tracks up Gretas Stream across the Lake Ohau Face, up from the Glen Lyon Road near Dorcy Stream and up Darts Bush Stream and over Flanagan Pass. Tracks on the adjoining Omahau and Ben Ohau Stations also provide access points.

2.7.2 Uses

The fringes of the "Flats" receive a variety of use: fishing, horse riding, limited four wheel drive and trail bike use, passive recreation and natural history activities. The 'Back Block'

receives some use for para gliding, mountain biking, running and tramping. Some commercial use already exists in the form of heli-biking along with endurance events.

Being close to Twizel the hill country could provide for a wide range of activities, especially if tenure review proceeds on adjoining properties.

Through routes on existing tracks along the tops have exciting potential. Mountain biking and tramping along the range would provide some interesting traverses as well as spectacular views.

Access to the 'Flats' has considerable potential and this process could legitimise existing use.

2.7.3 User Issues

One commonly recurring issue is the maintenance of the four wheel drive farm tracks if vehicle access is allowed. Controlling access to the 'Flats' in order to prevent disturbance to farming activities or wildlife needs consideration and management.

2.8 Existing Management

Management issues that affect the high inherent conservation values on Bendrose Station are:

i) Weeds

Broom is prevalent in the Twizel River along with the sweet brier. Control of these species in the matagouri shrubland areas is difficult. *Hieracium* is present to varying degrees and poses problems from a farming and conservation perspective. Tenure Review should allow natural processes to occur and may allow development of other areas to proceed. Sweet brier is prevalent on the hill country but can be considered to be only part of the existing shrublands. Wilding pines are not an issue now but their presence still needs careful observation and management.

ii) Pests

Bendrose Station has been part of the Rabbit and Land Management Programme. Rabbit numbers can be high on the flats and lower hill slopes. Any commitment to rabbit control will depend on the values being protected, and changes in management may provide a less attractive habitat.

iii) Continued grazing could have a detrimental effect on the high inherent ecological values including the faunal ones.

P. T THREE: CONSULTATION

On 28 November 1996 an NGO meeting was held in Timaru. This meeting was attended by representatives from Forest and Bird, Public Access New Zealand, tramping clubs, deer stalkers associations and Aoraki Conservation Board.

The questions/issues arising from discussions on Bendrose Station were:

- The PNA surveys details or cursory
 - That existing paper roads should be closed if farm tracks exist nearby
 - Protection of upper Greta Stream and access through it
 - Shrublands on forest faces are reasonably extensive
 - Concerned about front flats being freeholded
 - Concerned about forestry on hill slopes
 - Fragmentation of properties undesirable - need to consider what may happen on adjoining properties
 - Concerned about track maintenance - who pays?
 - Ongoing question of ~~gr~~azing on tops.
- Flannagans Pass is a popular focal point.