Toitu te whenua
Land Information
New Zealand

Crown Pastoral Land Tenure Review

Lease name : BEN NEVIS

Lease number : PO 241

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.

June 04

DOC CONSERVATION RESOURCES REPORT ON TENURE REVIEW OF BEN NEVIS PASTORAL LEASE AND UNALIENTATED CROWNLAND – NEVIS STREAMBED

TABLE OF CONTENTS :

PART 1: INTRODUCTION

1.1

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

Ben Nevis Station is leased by Lakeland Heights Limited, of which Pioneer Generation is a stakeholder. The 14532.8 hectare property is located in the Nevis Valley, approximately 32 km from Cromwell in Central Otago. The property lies to the west of the Nevis River on the Hector Mountains. Ben Nevis pastoral lease extends from 470 m at the Nevis River below Doolans Saddle to Pt 2307m, the highest peak in the Hector Mountains. The lower slopes in the north-eastern part of the property lie on the Horn Range.

The pastoral lease is made up of approximately 200 ha of cultivated paddocks in the valley flats; 1600 ha of oversown and top dressed hill country; 3235 ha of unimproved fans and terraces; 2490 ha of unimproved moderate hill country above 900m altitude; and 7070 ha of high altitude tussocklands, cushionfields, fellfields and screes.

The property is in the Lakes Ecological Region and the Remarkables Ecological District. No Protected Natural Areas Survey Programme (PNAP) of the ecological district has been carried out. No parts of the lease are currently subject to protection for conservation purposes, although the grazing of 6844 ha of primarily high altitude country ceased in 1980.

At high altitude to the west and north, the property adjoins the Remarkables Conservation Area. Two small areas managed by the Department of Conservation adjoin the property in the vicinity of Nevis Crossing (F42018 and F42019), while the Nevis Cemetery (F42016) is located within the pastoral lease at Schoolhouse Flat. The Otago Conservation Management Strategy indicates that F42018 (Nevis Bridge Site) be retained and managed by the department, while F42019 (Nevis Bridge Reserve) be considered for disposal.

Within the pastoral lease, there are two parcels of freehold land. One is associated with a privately owned bach in the Lower Nevis, the other is the Nevis Cemetery on Schoolhouse Flat which is managed as a reserve by the Central Otago District Council.

Neither the areas managed by the department nor the small parcels of freehold land are proposed for inclusion in the tenure review.

Unalienated Crown Land

An area of Unalienated Crown Land (Streambed Blk III Nevis SD) which is fenced into Ben Nevis pastoral lease, is proposed for inclusion in the tenure review because of its inherent ecological and historic values. This area is comprised of two parcels of land (approximately 8 ha in total), and is located beside the Nevis River in the vicinity of an existing island within the river, beside Schoolhouse Flat.

Ben Nevis pastoral lease was inspected in 1994 by a team of specialists as part of tenure review under the Land Act 1948, with further inspections taking place in October 2002.

PART 2: INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

2.1 LANDSCAPE

A description of landscape values associated with the Nevis Valley as a whole is given, followed by a more detailed assessment of landscape values on Ben Nevis pastoral lease.

Summary of landscape values associated with the Nevis Valley as a whole

A landscape character description of the valley as a whole is given, with a description of key visual and scenic attributes present. Threats to this landscape are outlined.

Landscape Character

The landscape character of the Nevis Valley is derived from the following factors. The dominant vegetation cover is tussockland, which gives the hillslopes a homogenous tawny gold texture. The rock outcrops are a feature throughout. The Nevis Valley is an intermontane valley system which is a distinctive and highly visible landform. The Valley is enclosed by the steep mountain slopes of the Hector Mountains and Remarkable Range to the west, which contrast with the flat-topped Old Woman Range to the east. Old river terraces and fans are a distinctive feature of the valley floor. The Nevis Valley is characterised by having highly legible landforms with wide uninterrupted views across open features and low stature vegetation. It is these characteristics that give the valley its important open space characteristics.

The landscape has a distinct cultural character which reflects its rich cultural history. Extensive early gold and coal mining activity has created a significant cultural landscape in the valley floor. Workings include dredge ponds, tailings and other gold mining sites up and down the valley, which bear testimony to various mining techniques and the remnants of buildings and settlements at Lower Nevis and Nevis Crossing. The Nevis Road and the presence of water races contribute further to the cultural imprint.

The Nevis Valley saw early pastoral settlement. Today there are still two high country pastoral properties in the Lower Nevis Valley. The characteristics of early pastoral sheep stations are retained i.e. the old Ben Nevis homestead, farm buildings and stockyards surrounded by vast hectarages of predominantly tussocklands.

The landscape is characterised by the enclosed remote and relatively isolated nature of the valley. This is reinforced by the evident harsh climate and the isolation of the valley by snow during the winter.

Visual and Scenic Values

The Nevis Valley is well recognised as being visually very impressive. Important vantage points are gained from the Nevis Road, Duffers Saddle Road and from the tops of the surrounding mountains.

The diversity in landform e.g. flats, gorges, terraces together with tor-lined gullies and slopes contribute to the spectacular nature of the valley. The Ben Nevis farm buildings, old gold workings plantings and other cultural features add interest and diversity.

The wild and scenic characteristics of the Nevis River contribute to the scenic values of the Nevis Valley. The meandering river adds to the scenic remoteness of the valley above Nevis Crossing. Downstream of the Nevis Crossing, the Nevis River is confined within a narrow enclosed gorge, which drops steeply giving a wild stretch of water. The diversity of water and landscape types within the Nevis Valley contributes to the outstanding wild and scenic characteristics of the river system as a whole.

The visually impressive, remote but accessible nature of the Nevis Valley makes it a popular destination for recreation, such as pleasure driving, camping, fishing and mountain biking.

Threats to Nevis Valley Landscape

The character of the landscape is vulnerable to certain changes. These include:

- Modification of existing vegetation cover through use of different management regimes e.g. increased grazing pressure.
- Vegetation burning.
- Farm intensification.
- Introduction of transmission lines, structures and buildings (depending on location and design) could change the valley's remote isolated characteristics.
- Hydroelectric development.
- Large scale mining.
- Earth disturbance would cause scars and visual disruption.
- Tree planting, including shelterbelts and plantation forestry would change the visual character.
- Wilding tree spread.

Landscape values associated with Ben Nevis pastoral lease

Ben Nevis pastoral lease is considered to be one landscape unit, but has been broken into two land type units for ease of description. These are:

- Hector Mountainlands and Front Faces (LT1)
- Nevis Valley Floor (LT2)

For each unit a landscape character description is provided along with a description of the key visual and scenic attributes present. The following attributes were used to help assess the landscapes:

1. Intactness- the condition of native vegetation, patterns and processes and the degree of modification present.

2. Aesthetic Factors - include criteria such as *distinctiveness* - the quality that makes a particular landscape visually striking. Frequently this occurs when contrasting natural elements combine to form a distinctive and memorable visual pattern. A further criteria assessed under aesthetic factors is *coherence*. This is based on characteristics including intactness, unity, continuity and compatibility. Intrusions, alterations and disruptions tend to detract from coherence.

3. Historic Factors - refers to historically valued attributes in the context of a high country landscape.

4. Visibility - refers to the visibility from public places such as highways, waterways or local vantage points.

HECTOR MOUNTAINLANDS AND FRONT FACES (LT1)

Landscape Character

The Hector Mountains are essentially a natural landscape, dominated by jagged mountains which have been shaped by glaciation. There are patches of permanent snow, tarn-filled cirque basins, rocky bluffs, screes, fellfields, and cushionfields at high altitude. The upper parts of this unit have a high level of intactness. Farm tracks have been cut along the top of spurs present on the true left of Doolans Creek Left Branch and Nevis Burn, but are not particularly visible at high altitude.

The contrast between the bronze cushionfield and the tawny tussockland below contributes to a distinctive and memorable visual pattern.

At lower altitudes, this land type unit includes the front faces of the Hector Mountains, which have been shaped by glacial and fluvial processes resulting in generally undulating lumpy ice shaped landforms with prominent incised streams. The schist bedrock is a dominant feature contributing in a major way to the character of the landscape across this land type unit. Rock outcrops and bluffs occur throughout and basement rock is close to the surface.

Incised streams, including Doolans Creek Left Branch, Nevis Burn, Schoolhouse Creek and Commissioners Creek, frequently bisect the long prominent slopes. The headwaters are extremely attractive and the lower sections tend to be steep and broken.

The front faces are dominated by a band of golden snow tussockland, while patches of grey shrubland occupy stream valleys and some steep slopes within these catchments. Tussock cover and vigour is particularly good within the block which was retired from grazing in 1984. At lower altitudes, the native vegetation cover has been modified through grazing, vegetation burning and OSTD resulting in a vegetation cover characterised by sparse snow tussocks within a fescue tussockland. Adventive pasture species dominate the intertussock spaces. However, it is the

tussockland which is the principal unifying element which gives the landscape its natural appearance. Grey shrublands and briar occupy areas disturbed by past gold mining activities.

Below the Nevis Crossing, incised streams become a prominent feature with which rocky outcrops and grey matagouri-mingimingi shrubland are associated The Nevis Gorge itself is the most significant of these and is steep, incised, with extensive rock outcropping and bluffs. Rock dwelling plants such as *Anisotome cauticola* are found growing on the rock outcrops. The combination of rocky outcrops and shrublands give the land type unit a distinctive landscape quality.

Key Visual and Scenic Values

The faces and mountain tops of the eastern Hector Mountains are dramatic and form an impressive backdrop to the surrounding area. The serrated ridgeline encompassing several high peaks including Ben Nevis (2234m) and Pt 2307m, is an important landscape feature forming the backdrop to many important views in lowland Central Otago, including from the Cromwell and Manuherikia areas. This rugged ridge is in stark contrast to the surrounding Central Otago rolling block mountains e.g. Old Man Range, Old Woman Range, from which the Hector Mountains are highly visible. A key vantage point is from near Watts Rock on the Nevis Road. This ridgeline links up with others to form the Remarkables/Hector chain of mountains. Visitors have frequently recorded the spectacular features of this alpine area.

The homogenous gold tussock cover and the highly legible landforms of the front faces, with wide uninterrupted views across open features and low stature vegetation are characteristics that give the valley its important open space characteristics.

The Nevis Valley is visible only from the Nevis Road. However, it is this sense of remoteness and enclosure that give the valley its high landscape values. Key vantage points for viewing the front faces in the Nevis Valley are near Watts Rock on Nevis Road and from the tops of the Old Woman and Carrick Ranges.

The Nevis Gorge is a significant landscape feature.

NEVIS VALLEY FLOOR (LT2)

Landscape Character

The Nevis Valley is a comparatively unmodified inter-montane basin and valley system without close equivalence in Otago. It contains a diverse array of landforms including incised channels and gravel braids, cut-off meanders, floodplains, terraces, and fans of different ages. This range of geology, landforms and associated soils has given rise to a variety of vegetation types which together contribute to a highly distinctive landscape.

The seemingly natural vegetation cover resulting from the tawny brown short tussock, copper tussock remnants and adventive pasture species such as browntop, which dominate the basin, contrasts with the green of the irrigated paddocks closer to the homestead.

Of note is the large alluvial outwash fan at Schoolhouse Flat, which supports a mosaic of copper tussock remnants, short tussock grassland and waterways. It is unusual in that it is the least modified fan in the Nevis Valley.

The basin also has historically valued attributes resulting from past gold mining and early pastoral activities. There are extensive historic mining workings and settlements between Commissioners Creek and north of Schoolhouse Creek. A series of water races wind their way round the lower slopes, while tailings, sluicings and old house remains are present on the flats. The wide-open landscape and lack of forest and shrubland makes the sites highly visible and particularly easy for visitors to appreciate.

Key Visual and Scenic Values

The lower slopes, fans and flats are part of the outstanding Nevis Valley landscape. This land type unit has important cultural values due to the presence of extensive mining workings. The cultural and historic landscape of the intermontane basin contrasts with the wild and natural mountainlands of the Hector Mountains. It is this combination of landscapes which give the Nevis Valley its sense of both remoteness and stepping back in time.

The Nevis Valley intermontane basin is best seen from vantage points along the Nevis Road and from the various rangetops and ridges which surround it.

Significance of landscape

Ben Nevis Station has inherently high landscape values. The property forms part of the internationally acclaimed Remarkables/Hector Mountains landscape, of which the adjoining alpine Remarkables Conservation Area is part. Much of the property is mountainous with glacial features and largely intact and highly natural vegetation patterns. The Hector Mountains (including Ben Nevis (2234m) and point 2307m are an important landscape feature forming the backdrop for many views in lowland Central Otago, including those from parts of the Alexandra basin and upper Clutha valley.

The property is part of the Nevis Valley which, in its entirety, has landscape values of national significance. The whole Nevis Valley landscape requires consistent management as fragmentation would reduce the landscape values. The Nevis Valley landscape is defined by the homogenous dominant gold tussock cover, a distinctive, highly diverse and visible landform and cultural influences from mining and pastoralism. These factors together with the enclosed remote and relatively isolated nature of the valley contribute to a landscape that is visually memorable.

In a regional context, there is a scarcity of substantially unmodified valley floor landscapes. Within Otago, the only equivalents are the upper Manuherikia and upper Dunstan Creek valleys.

2.2 LANDFORMS, GEOLOGY & SOILS

Landforms & Geology

The Hector Mountains are composed of metamorphic rocks of Chlorite schist sub-zones 2, 3 and 4. These vary from semi-schistose greywacke and non-foliated schist through coarsely to finely foliated schist. At higher altitudes, moraine deposits, isolated cirque moraines and recent glacial lake formations are a feature. Cirque basins contain numerous tarns.

The Nevis Valley is a comparatively unmodified intermontane basin. It contains a diverse array of landforms including incised channels and gravel braids, floodplains, terraces and fans of different ages.

Schoolhouse Flat in the lower Nevis valley is a dominant geomorphic feature as it is an extensive outwash fan of some 4km in lateral extent. In stratigraphic sequence, the Flat is composed of:

1. Haast Schist basement
2. Dell Sandstone Member, Oil Shale Member and Coal Measure Member of the Nevis Formation evident as narrow outcrops in the terrace bordering the lowermost alluvial strip of the Nevis River.
3. Schoolhouse fanglomerate of Plio-Pleistocene age ($3\text{-}2x10^6$yr)
4. Younger late Pleistocene-aged alluvium

There are good exposures and late Quaternary traces of the Nevis Fault up to 2km on either side of Schoolhouse Creek (Hayward and Kenny, 1998).

Holocene-aged alluvial gravels bordering the Nevis River are arranged in cut-off meanders and terraces.

Soils

At high altitude, alpine steepland soils are found. These are predominantly bare rock and fellfield with high quartz content. Below about 1800m, Dunstan steepland soils are present, which are derived from schist and loess with silt or stony loams. These soils are very vulnerable to erosion if the vegetation cover is disturbed. Soils are chiefly derived from schist, loess and alluvium. Hill soils present include Carrick Hill, Arrow Hill, Tiroiti Hill and Blackstone Hill.

Matukituki soils are schist derived and are found on terraces, while a range of raw soils (Pigburn, Drybread and Middlemarch series) occupy the dry fans. Overall the soils on the flats are raw or loamy silts over a base of fine gravels. These soils are erosion prone and through summer droughtiness produce low biomass.

Significance of Geology, Landform and Soils

The schistose steeplands show a transition from the heavily dissected steep topography of the Remarkables to the Central Otago block mountains. Very deeply incised streams typify this transition zone with outwash debris forming extensive fans. Deep accumulations of solifluction

debris occur on mid and lower slopes. At high altitude glacial features such as cirque basins with many tarns are prevalent.

The Nevis intermontane valley system is without close equivalence in Otago. It contains a wide array of landforms, which are derived from a range of geological compositions. The soils associated with these landforms are some of the least modified of eastern rain-shadow regions, making the Nevis intermontane valley system highly significant. Within the Nevis intermontane valley is Schoolhouse Flat, which is a unique outwash fan of regional if not national significance.

The Nevis fault exposure at Schoolhouse Creek is ranked as a site of regional scientific, educational or aesthetic importance, which is unlikely to be damaged by humans (Hayward and Kenny, 1998).

2.3 CLIMATE

The property is subject to a semi-continental climate with warm summers and cold winters. Average annual precipitation at the homestead is estimated at 600 mm/year, rising to 1500mm on the Hector Mountains. Winters usually bring intermittent snow to lower parts of the property. Permanent snow lies in some shady locations at high altitude, while winter snow can lie for five months above about 1200m. Southerly and northerly winds are channelled down the Nevis Valley. The valley floor is subject to severe frosts.

2.4 VEGETATION

Three land units are identified for the purpose of describing the vegetation. These are:

- Nevis Valley Flats and Terraces
- Front Faces
- Hector Mountains and Associated Valley Systems

NEVIS VALLEY FLATS AND TERRACES

The focus of botanical interest in the fans is centred on Schoolhouse lat and adjacent terraces. The majority of these fans have not been developed and have only been extensively grazed. The extensive semi-arid silt and gravel surfaces of the fan support low vegetation biomass and cover. Although much fragmented, Schoolhouse Flat supports drought-tolerant plants and communities of comparatively high diversity. *Carex muelleri* dominates the relatively drier parts of the fan. This sedge has a very restricted distribution in dry eastern South Island. The Nevis Valley is its type locality and while nowhere is it common, it probably reaches its greatest national abundance at Schoolhouse Flat and associated river terraces. Other taller species are fescue tussock (*Festuca novae-zelandiae*) and the rare sedge *Carex kaloides.* The Nevis Valley population of *Carex kaloides* is its most important Otago locality.

Copper tussock (*Chionochloa rubra cuprea*) forms comparatively healthy but narrow, communities on the upper margin of the younger terrace. Copper tussock is associated with older Schoolhouse

Fanglomerate, its hydrologic regime enhanced by subterranean water emerging on the toeslope of a terrace batter. In some areas the copper tussock is 1.8 m tall. A few herbs occur with these stands including the rare *Ranunculus ternatifolius.* Other species are *Gentiana grisbachii, Gaultheria nubicola* and *Ranunculus cheesemanii.*

Exotic plants contribute substantially to vegetation cover, with mouse eared hawkweed (*Hieracium pilosella),* browntop (*Agrostis capillaris*), sheeps sorrel (*Rumex acetosella*) and Kentucky bluegrass (*Poa pratensis*) common but seldom, if ever, smothering entire sites.

Few native shrubs grow on Schoolhouse Flat today. The most common species present is porcupine shrub (*Melicytus alpinus)* while on the convex creep slope of lower Schoolhouse Flat flanking the Nevis River, O*learia odorata*, matagouri (*Discaria toumatou*) and M*uehlenbeckia axillaris* are scattered. In prehuman times, this Flat was likely dominated by drought-tolerant shrubs such as porcupine shrub, broom (*Carmichaelia petriei*), *Carmichaelia crassicaule,* matagouri, *Coprosma propinqua,* native daphne (*Pimelea oreophylla, P. suteri), Gaultheria parvula, Olearia odorata, Muehlenbeckia axillaris* and *Ozothamnus vauvilliersii.*

Numerous rare native plants are confined to special habitats on the fan:

- Periodically inundated channels on the upper margins of the extensive lower fan support the nationally rare species *Tetrachondra hamiltonii, Euchiton ensifer, Carex uncifolia* and *Ranunculus ternatifolius.* Seasonal water inundation is critical for their habitat maintenance against competition of exotic grasses. Native plant cover and diversity diminishes down-slope, corresponding to a gradient of decreasing water saturation in wet seasons.

- Small hummocky pavements of gravel below the road support a very restricted unnamed button daisy *Leptinella (*a) sp. (*aff. L. pectinata*) (B. Patrick pers. comm.) in communities of R*aoulia* spp., *Scleranthus uniflorus, Poa maniototo* and *Poa lindsayii.* This button daisy is elsewhere recorded only from Pisa Flat in the Clutha Valley. It awaits formal taxonomic description as an Otago endemic but is ranked as 'Nationally Critical' (Hitchmough in prep).

- *Galium* sp. (aff. *G. perpusillum*) is another recently recognised semi-arid habitat endemic. Known only from Kaitorete Spit, Pisa Flat (Clutha Valley) and Schoolhouse Flat, this species occurs on the unmined alluvial terraces south of Schoolhouse Flat.

- *Myosotis pygmaea* var. *glauca* occurs on the convex creep slope of lower Schoolhouse Flat flanking the Nevis River. A nationally restricted species and subject of a current recovery plan it has spread from this original natural habitat onto mining talus immediately south of Schoolhouse Flat. This rare herb occurs with O*learia odorata*, matagouri, M*uehlenbeckia axillaris* and scabweed (*Raoulia australis*).

The high terrace on the true left of Schoolhouse Creek, while more modified than Schoolhouse Flat, supports several uncommon plants. *Carex muelleri* is present on the dry parts of the terrace including the dry scarp slopes above the stream and wetland areas, with scattered fescue tussock, mouse eared hawkweed and browntop. At the lower end of this terrace, just above the Nevis Road, *Carex muelleri* grows in association with porcupine shrub, matagouri and the rare native mat broom (*Carmichaelia vexillata*).

Copper tussockland remnants are present on the upper margins of the high terrace on the true left of Schoolhouse Creek. Tussock density is high, with the following few species growing in the wet

intertussock areas- P*olytricchum* moss, browntop and scattered clumps of soft rush (*Juncus effusus).* A few willows are present nearby. Young tussocks are growing at the margins of the copper tussockland. Where copper tussocks have been removed by pastoral practices, the wetland is dominated by *Carex sinclairii,* with *C. coriacea,* browntop, tall fescue and jointed rush (*Juncus articulatus*) also present. A few scattered copper tussocks remain. The rare *Carex kaloides* is present at the margins of this wetland.

Further north towards the Ben Nevis homestead, the terraces have been more modified through pastoral development. However, both rare sedges *Carex muelleri* and *C. kaloides* are present. *Carex muelleri* is present on dry scarp slopes and also beside the Nevis River between Schoolhouse Creek and Nevis Crossing. The associated vegetation tends to be dominated by pasture species including browntop and Kentucky blue grass, with scattered fescue tussock also present. *Carex kaloides* is relatively common, found scattered at the margins of wetlands and streams, and within moist short tussock grasslands.

A small patch of the threatened button daisy (*Leptinella serrulata*) is growing on a dry knoll above the creek (GR F42 2193478 5550107) which flows immediately to the west of the Ben Nevis home paddocks.

The home paddocks near the homestead, including what was once a wetland, have been irrigated and developed. Apart from scattered fescue tussocks, and matagouri growing on knolls, few native species are present.

FRONT FACES

These are the front faces of the broad spurs rising above the flats and terraces. The lower slopes have been OSTD and have a mixture of pasture grasses, short tussock and a few scattered narrow-leaved snow tussock (*Chionochloa rigida*). The latter becomes more prominent with altitude. Fescue tussock is common, with silver tussock (*Poa cita*) occurring in the more fertile sites and along road edges.

Shrublands are common on the toe slopes and close to creeks. Old gold mining tailings occupying the toe slopes often support low growing mingimingi, native broom, matagouri and sweet briar. The creeks climb steeply and the riparian zones contain a shrubby element of matagouri, *Hebe* and *Coprosma* species. In Schoolhouse Creek on a south facing slope, a large shrubland of *Hebe anomala, Carmichaelia arborea, Coprosma ciliata* and mingimingi (*C. propinqua*) extends from 900m to 1200 m. Other creeks may host similar habitat but were not surveyed. Rocky tors, common along streamsides at the northern end of the property, support rock loving plants such as *Anisotome cauticola*.

Tall tussockland is scattered at the lower altitudes before becoming thicker at about 1250 metres. Fescue and blue tussock are a component throughout, along with adventive grasses at the lower altitudes.

Some of the front faces are part of a block which has not been grazed since 1980. Tussock cover in such areas tends to be denser. (The majority of this retired block is at high altitude and is described below).

HIGH ALTITUDE AREAS OF HECTOR MOUNTAINS AND ASSOCIATED VALLEY SYSTEMS

This area includes the true right of the Doolans Creek Left Branch and the catchments of the Nevis Burn, Schoolhouse and Commissioners Creeks. This description includes most of a 6844 ha block which was fenced off and has not been grazed since 1980. This fence is now of variable stock-proofness. The vegetation communities present include shrublands, tussocklands, herbfield, fellfield, wetland and rocky slopes. The destocked area includes an altitudinal zone extending from 800 metres near the flats to the Hector Ridge (1900 m), Ben Nevis (2234 m) and the highest point at 2307 metres.

Above 1500 metres, depending on aspect, patches of slim leaved snow tussock (*Chionochloa macra*) are present with *Celmisia sessiliflora, Aciphylla kirkii* and *A. le comptei.* Above 1700 m the snow tussock cover thins and becomes restricted to sheltered sites. The more exposed sites and those above 1750 m support cushionfield vegetation, including the species *Dracophyllum muscoides,* blue tussock, *Chionohebe thompsonii, Hectorella ceaspitosa, Luzula pumila, Phyllachne rubra, Leptinella goyenii* and *Raoulia hectori.*

The fellfields occur above about 1650m, and are predominantly stable rock with scattered plants of *Aciphylla simplex*, edelweiss (*Leucogenes grandiceps*) a small rosette cress P*achycladon novae zelandiae* and *Dolichoglottis lyallii.* Around lakes and cliffs in the upper Doolans Creek Left Branch, *Ranunculus buchananii* and *Cheesemania wallii* were recorded.

Around the tarns extensive wetlands occur as well as diverse snowbank communities. Other species recorded include *Celmisia hectori*, several clumps of *Brachyglottis bellidioides* var. *orbiculata, Gentiana divisa, Anisotome capillifolia, Brachyscome longiscapa* and *Raoulia youngii*.

Above the fellfields, extensive debris slopes occur and are largely devoid of vegetation except lichens. However, scattered clumps of *Aciphylla simplex, Parahebe birleyii*, soft cushions of *Kelleria childii* and *Myosotis glabrescens*, low shrubs of *Leonohebe epacridea* and *Hebe haastii var humilis* grow scattered on these bare areas.

Unalienated Crown Land – Nevis Streambed

This area included two parcels of land within the Nevis River streambed. It is comprised of a mosaic of stone mining tailings, dredge ponds and grassy flats with a small river channel cutting through it. The grassy flats and dry knolls support scattered fescue tussock with patches of the rare sedge *Carex muelleri* amongst sweet vernal, browntop, sheep sorrel and white clover. In dry open areas, the tiny native grass *Poa maniototo* grows with *Scleranthus uniflorus*, scabweed, *Muehlenbeckia axillaris, Aphanes arvensis* and occasional mouse eared hawkweed.

Carex coriacea and fescue tussock are common along the streambanks, while dredge ponds support *Potamogeton cheesemanii* and the exotic species ,water forget-me-not *(Myosotis laxa)*, jointed rush *(Juncus articulatus)* and *Glyceria fluitans.*

The gold mining tailings support the native woody species matagouri, tree daisy (*Olearia odorata),* porcupine shrub (M*elicytus alpinus)* and *Muehlenbeckia axillaris,* interspersed with exotic sweet briar and gooseberry. *Epilobium melanocaulon* is common in disturbed stony areas.

PROBLEM PLANTS

Few weeds are present on Ben Nevis pastoral lease. Briar is present at lower altitudes, mainly on spurs and around old gold workings, especially the old tailings. Broom is found alongside the Nevis River and in isolated patches near the road. Hawkweed is the most widespread weed, especially on some of the flats (including Schoolhouse Flat), terraces and on parts of the hillside. A few willow trees are growing at the upper margins of a copper tussockland wetland on the true left of Schoolhouse Creek. Some unidentified deciduous trees and gooseberry bushes are growing within riparian shrubland in the Schoolhouse Creek. A number of pine trees have been planted along a fenceline on the lower Schoolhouse Flat.

Significance of Vegetation

Map 4.2.3 outlines the ecological values on Ben Nevis Pastoral Lease.

NEVIS VALLEY FLATS AND TERRACES

The Nevis intermontane basin supports a diverse range of plants and communities. The high conservation status of intermontane basins, especially of the Nevis Valley, has recently been highlighted by Walker et al (2002a). Schoolhouse Flat supports a range of drought-tolerant plants and communities of comparatively high diversity. Schoolhouse Flat is considered to have high representative conservation values in an Otago intermontane basin context because of its distinctive fan ecosystem and the numerous rare plants it supports (see Table 1). In particular, Schoolhouse Flat contains an extensive community of *Carex muelleri*, its type locality, which reaches its greatest national abundance at this site and is certainly the most important locality for this species in Otago. Copper tussocklands are also a significant feature.

Plant Species	**Threat of extinction classification (Hitchmough in prep)**	**Details**
Carex muelleri	Sparse	Dominates drier parts of fan. Nevis Valley is type locality, and probably reaches its greatest abundance at Schoolhouse Flat and nearby high terrace surfaces.
Carex kaloides	Sparse	Nevis population is the most important Otago locality
Tetrachondra hamiltonii	Serious decline	Located in periodically inundated channels on upper margins of lower fan. Seasonal water inundation is critical for habitat maintenance.
Euchiton ensifer	Sparse	
Carex uncifolia	Range restricted	
Ranunculus ternatifolius	Nationally Vulnerable	
Leptinella (a) (CHR 515297; Clutha River)	Nationally Critical	Found on small hummocky gravel pavements. Found elsewhere only at Pisa Flats, Clutha valley. Awaits taxonomic description as an Otago endemic.
Myosotis pygmaea var. *glauca*	Nationally endangered	Found on convex steep slope of lower Flat near Nevis River. Spreading from natural habitat

		onto mining talus.
Galium sp. (aff *G. perpusillum)*	Data deficient	Found on unmined alluvial terraces near Nevis River. A semiarid habitat endemic.

Table 1: Threatened plants on Nevis valley flats and terraces.

The high fan surfaces and terraces to the north of Schoolhouse Flat, including those along the Nevis River, also support threatened plants and uncommon vegetation communities. These include the rare sedges *Carex muelleri* (in dry situations), *Carex kaloides* (at margins of wetlands), the rare mat broom *Carmichaelia vexillata,* a rare button daisy *Leptinella serrulata* (both ranked as Gradual Decline, Hitchmough in prep) and copper tussocklands.

HECTOR MOUNTAINS AND FRONT FACES

This property is notable for the overall good condition of the major indigenous vegetation communities present and the high degree of natural character they impart at a landscape scale. Upland parts of Ben Nevis contain extensive alpine and subalpine plant communities which are in excellent condition and include shrublands, tussocklands, herbfield, fellfield and wetlands. These alpine lands are part of a continuum of the Remarkables-North Hector Mountains. Four alpine species (see Table 2 below) are either at their distributional limit or are listed as threatened in the most recent threat classification system (Hitchmough in prep).

Species	**Comments**
Ranunculus buchananii	Located by tarns ~1900m on true left of Doolans Creek, is at its easternmost distribution limit
Parahebe birleyi	Colonises bare rocky areas near Ben Nevis (Peat & Patrick, 1999), is at its easternmost distribution limit
Myosotis glabrescens	Colonises bare rocky areas near Ben Nevis, (Peat & Patrick, 1999), is ranked "Data deficient" (Hitchmough, in prep)
Cheesmania wallii	Located at the base of rocky bluff at ~ 2000m near tarns on true left of Doolans Creek- "Range Restricted" (Hitchmough in prep)

Table 2: Alpine species that are rare or at their distributional limit

The property's position on the eastern flanks of the Hector Mountains from range crest to valley floor, which encapsulates a variety of landforms and aspects, suggest it is likely to be highly representative of the Remarkables Ecological District.

Low alpine and subalpine communities are well represented and show little evidence of recent disturbance from pastoral activities, although the replacement of slim snow tussocklands by cushionfields on sunny spurs is likely to have resulted from past grazing pressure. The presence of the highly palatable slim snow tussocklands (*Chionochloa macra)* is significant. These grasslands were once far more widespread within Otago but have undergone a substantial retreat following pastoralism.

Narrow-leaved tussocklands are the dominant vegetation of the montane bioclimatic zone and are in particularly good condition and stature within the block which was retired from grazing in 1980.

Diverse shrublands occupy riparian zones and some montane slopes, such as Schoolhouse Creek. These are highly significant as remnants of woody cover with a species mix that reflects the likely pre-human extensive burning state. Elsewhere matagouri shrubland is present, which is likely to have responded to fertilizer applications. Future restoration and rehabilitation of the woody shrub cover in this part of the landscape will require nucleus seed sources such as these. The importance of shrubland remnants has recently been given prominence by Walker et al (2002) who highlight the conservation importance of low altitude woody vegetation and associated fauna.

The faces of the three main ridge systems are covered in largely intact tall tussocklands at mid to higher elevations, grading into exposed screes and rocky ground above 1600 metres. At lower altitudes, snow tussocks become more scattered and mix with pasture grasses and short tussock. Despite extensive grazing use, these ridge faces contain dominant tall tussockland which contribute to their natural appearance.

Unalienated Crown Land – Nevis Streambed

This area is a continuation of Schoolhouse Flat, and supports a population of the rare sedge *Carex muelleri.* This sedge has a threat ranking of "Sparse" (Hitchmough, in prep). The Nevis Valley is the type locality for this species and reaches its greatest national abundance in the Schoolhouse Fat area.

The relatively diverse shrublands associated with the mining tailings are significant as remnants of woody cover with a species mix that reflects the likely pre-human vegetation cover of intermontane valley systems such as this. Future restoration and rehabilitation of the woody cover in this part of the landscape will require nucleus seed sources such as these. The importance of shrubland remnants has recently been given prominence by Walker et al (2002) who highlight the conservation importance of low altitude woody vegetation and associated fauna, especially in the context of intermontane basins in rainshadow environments (Walker et al, 2002a).

2.5 FAUNA

2.5.1 Invertebrates

The key entomological values on Ben Nevis Station are confined to two principal areas: Schoolhouse Flat in the Nevis Valley itself and the alpine zone above 1500 metres.

SCHOOLHOUSE FLAT

Schoolhouse Flat in the Nevis Valley is a broad fan of degraded tussockland in a semi-natural condition. Despite over 100 years of grazing, invertebrate fauna has survived in these vegetation communities.

The Flat contains moths, grasshoppers, weevils and beetles that are associated with semi-natural grasslands. Caddis, mayflies and moths occur in the wetlands and small tributaries. Schoolhouse Flat contains populations of Lepidoptera of much localised distributions, including the rare moth

Orocrambus sophronellus which is usually an upland species, but here is associated with *Carex muelleri* grassland. Other important moth species present include *Asaphodes oraria (*a local species of upland Otago-Southland*), Asaphodes nephelias* (an upland species*), Notoreas n.sp., Eurythecta zelaea* and *Lycaena boldenarum*.

ALPINE ZONE (>1500M)

The alpine zone encompasses native herbfields, cushionfields, fellfields, tussock grassland and wetlands. The species diversity reflects many common elements typical of the Central Otago block mountains and also significant species from the western Otago mountains. A range of aquatic caddis and stoneflies were found in tarns, waterfalls, seepages and torrents between 1600m and 2100m. Of these, the caddis *Hydrobioisis* n.sp. (Main Divide), *Tiphobioisis montana,* and stoneflies *Holcoperla magna* (western Otago), *Spaniocercoides howesi,* and *Zelandobius mariae* are rare western species, the last named known only from the Pisa Range. The aquatic insect fauna of this part of the Hector Mountains is distinctive and nationally important (pers. comm. B. Patrick).

The remaining insect fauna consists of many orders including beetles (Coleoptera), flies (Diptera), moths (Lepidoptera), grasshoppers (Orthoptera) and black cicadas (Hemiptera). The invertebrates present are similar to that of the Remarkables, with black cicada (*Maoricicada nigra frigida*), large grasshopper (*Sigaus obelisci*), large chafer (*Scythodes squalidus*), black and white moth *(Hierodris n.sp*.), black butterfly (*Percnodaimon merula*), diurnal moths (*Notoreas galaxias*) and giant weevils (*Lyperobius hudsoni*) present. Two rare moths are known, *Xanthorhoe frigida*, whose larvae feed on the local herb *Cheesemania,* and *Eurythecta* n.sp. a flightless species known elsewhere only from the highest point on the Garvie Mountains. This alpine zone has a large number of species with quite small natural distribution patterns.

2.5.2 Herpetofauna

The Nevis Valley was surveyed by Whittaker in 1986 as part of a systematic search for the large Otago endemic skinks *Oligosoma grande* and *O. otagense.* No large skinks were found. During the tenure review inspection in 1994 a small cryptic skink *O. inconspicuum* was discovered near the Lower Nevis township.

2.5.3 Avifauna

The Hector Mountains host the occasional kea and New Zealand falcon. Skylarks and pipits are widespread throughout the property. Around the tarns, paradise ducks, Pied oystercatchers and black-backed gulls are often seen, either as pairs or in small groups. Finches and yellowhammers are present around shrubland areas on the lower slopes. The harrier hawk also ranges through the area.

An avifauna survey was conducted in November 1993 of the Nevis River. Eleven species of bird were recorded between Commissioners Creek and the Nevis Crossing. Oystercatchers were the most common species, followed by mallard and paradise ducks. Terns, spurwinged plover, black shags, magpies and white-faced herons were also recorded. The species composition in the lower

Nevis was similar to the upper Nevis Valley. Banded dotterels are numerous on the unmodified portion of Schoolhouse Flat.

2.5.4 Aquatic Fauna

The NIWA Freshwater Fisheries Database holds records for several streams on the property (Appendix 1).

Nevis River is an important trout fishery that is renowned for fly fishing. It appears that trout have extended their range into most side streams on Ben Nevis Station. However, galaxiids have been recorded as small discrete populations at three sites on Ben Nevis Station:

- A small tributary of Nevis River (GR. F42 921451) between Lower Nevis and the cemetery where a swamp has prevented trout accessing this tributary
- A small tributary of Nevis River, below Nevis Crossing (GR. F42 952541) where a small waterfall has prevented trout access
- A tributary of Nevis Burn (GR .F42 924525) where a small waterfall has prevented trout access.

Although formerly identified as Otago roundhead galaxias (*Galaxias anomalus)*, these Nevis Valley records are now considered to be the Southland gollum galaxias (*Galaxias gollumoides).* Gollum galaxias occur on Stewart Island (McDowall and Chadderton 1999) across Southland and the Catlins District and some tributaries of the Clutha River (Waters et al. 2001).

The upper reaches of other streams may also contain galaxias populations as steep rapids may have prevented the passage of trout into these catchments. These isolated galaxias populations are vulnerable to change from sedimentation, climatic events, swamp drainage and any event that allows easy access for trout.

2.5.5 Problem Animals

Rabbits and hares are common in isolated pockets on the lower slopes of Ben Nevis. Hares, feral goats and the occasional pig and chamois are present at higher altitudes. Feral goats and chamois have been subject to periodic wild animal control programmes. Some rabbit control is also necessary.

Significance of Fauna

Invertebrates

The key habitats for invertebrate fauna are the alpine zone above 1500 m and Schoolhouse Flat. The species diversity in the alpine zone reflects the diversity and excellent condition of alpine plant communities present. The Hector Mountains are a biogeographic centre for many groups of insects, resulting in an overlap of species with different distributional limits i.e. those normally associated with the Central Otago block mountains overlap with those associated with the western Otago mountains. This zone has a large number of species with quite small distribution patterns. The aquatic insect fauna is distinctive and nationally important (B. Patrick, pers. comm.). In addition,

two rare moths were recorded- *Xanthorhoe firgida* ("Sparse", Hitchmough, in prep) and *Eurythecta n.sp.* a flightless species known elsewhere only from the highest point on the Garvie Mountains.

The fan systems in Nevis Valley are important for invertebrate conservation because of their ecological diversity and the presence of moisture gradients between younger and older river meanders. Schoolhouse Flat contains populations of Lepidoptera of very localised distributions, including the rare O*recrambus sophronellus*, which has been ranked "data deficient" by Hitchmough (in prep). This moth is associated with the rare *Carex muelleri* grassland.

It must be noted that a large portion of the New Zealand invertebrate fauna has not been formally identified, for this reason the majority of species are considered to be "data deficient". The number of species listed as threatened is only a small proportion of the total invertebrate fauna. The new classification structure (Molloy, *et al.*, unpublished) for determining whether a species is threatened by extinction is therefore based on the extent of knowledge associated with each species.

Herpetofauna

There are no skinks of significance recorded on Ben Nevis Station.

Avifauna

Kea are occasionally seen at Ben Nevis pastoral lease, and are ranked as being Nationally Endangered (Hitchmough, in prep).

New Zealand falcon are ranked as being in "gradual decline" (Hitchmough, in prep). They are present on this property and throughout the Central Otago region. They are present in a grassland habitat with some shrubland present, while elsewhere in Central Otago, they are recorded where there is a mix of forest, grassland and shrubland habitats.

Aquatic Fauna

Small discrete populations of Southland galaxias (*Galaxias gollumoides*) are present. Although ranked 'Not Threatened' (Hitchmough in prep) this species is subject to a species recovery plan (Waters in prep). Their presence in the Nevis River is evidence that this river once flowed southwards (Waters et al, 2001). It is locally common, but it appears to have a fragmented distribution as a result of trout interactions and the impacts of farming development. Its historic range and present-day population abundance are unknown.

2.6 HISTORIC

The Nevis Valley has had a long history of human occupation, beginning from about the 14th Century and continuing to this day. The early history of the lower Nevis is documented in a report on Ben Nevis and Craigroy (Hamel, 1994). Hamel's report is summarised here, briefly outlines the known history of the area. Key sites are numbered, and presented on Map 4.2.4.

Maori Sites

There are two recorded sites on Ben Nevis lease. A moa hunter site (Site Record Number F42/7) at the mouth of Schoolhouse Creek was an early and important living site, judging by the reports on its artefacts and its size. It was first recorded in 1917, and has been heavily modified by dredging and later occupation by a hamlet of sod cottages. Today it is difficult to find any trace of it. A small moa butchery site was first discovered in 1917 up the side of the valley. However, it has never been relocated.

Farming

There are two farmsteads in the Nevis Valley, one of which is Ben Nevis. The design of the Ben Nevis farmstead is typical of the early runs and obeys the two basic principles of placing the living quarters upwind of the yards and the woolshed closest to the road entrance. The similarity of two early stone buildings to those at Galloway built about 1859, suggests that the farmstead was established in the early 1860s.

The other early farmer in the Nevis Valley was William Masters who is said to have farmed in the upper valley, was wiped out by bad weather and shifted to the lower valley to become a miner. His homestead, as a miner, is at the north end of the Nevis township.

Gold Mining in the Lower Nevis

Ben Nevis pastoral lease

The Lower Nevis goldfield is a mosaic of all types of workings of all the major periods of historic gold working in Otago from 1863 to the 1930s. There were 600 miners in the valley in 1866 and totals of 5000 ounces of gold per year were still being taken out in 1875. Though later dredging destroyed many of the early workings in the riverbed, the ground sluicings are very likely to belong to the 1860-1880s period. These include the workings along the edges of the higher terraces of both the Nevis River (Craigroy side and Schoolhouse Flat), along the banks of Schoolhouse Creek and probably those in Scotchmans Creek. The head races, sluice faces and tailings of areas **1 to 4** (see Map 4.2.4) can be considered to be representative of this period.

Two townships were established, the main one (**5**) at the upper end of the valley and a store and hotel near the Crossing (**6**). The Nevis Township is spread out for about two kilometres along the Nevis Road. About a dozen buildings and foundations are still visible, and include the earth and corrugated iron house which was Masters' homestead, the stone ruins of the Nevis Hotel and Jimmy Stewart's house, two houses which are still occupied and cobble and stone wall foundations of about seven other buildings. There are also two recent cribs. The bakery at the hotel is very similar to the one at Bendigo and may be one of a series of bakeries established in the 1860's by James Lawrence. Masters' homestead is a simple earth and corrugated iron house set within a large garden area marked by stonewalling and trees. It was probably built about 1870 and though not very well maintained, is still intact.

The settlement at the Crossing is located on both sides of the Nevis River. Historic buildings on Ben Nevis pastoral lease include a single stone wall which is all that is left of a hotel (**6a**).

There are two isolated occupation sites near the mouth of Schoolhouse Creek – the stone foundations of the first school set halfway between the two townships (**6c**), and the foundations of a

hamlet of earth huts which could have been the dredgemen's quarters (**6d**). The latter lie in the vicinity of the moa hunter site, just below the road bridge over Schoolhouse Creek.

In the lowest river bed flats, different mining techniques succeeded one another, with dredging predominating at the turn of the century. The ponds and large heaps of tailing left by hydraulic elevating and dredging stretch along the whole river flats from the Crossing to the Nevis Township, with some of the ponds being neatly rectangular (**7a to 7b**). The remains of what was probably the Nevis Crossing dredge (**7c**) lie south of the Schoolhouse Creek confluence. It worked on the river from 1902 to 1939 and was probably the longest operating small dredge in Otago and Southland.

A major group of sluice faces lie behind and south of the Nevis Township. These were mostly worked by the Masters and Adie families and by Robertson at the turn of the century. Some efforts were made to work the deposits from shafts and adits, but these were not generally successful. The most southern group of faces (**8**) were worked by Robertson, from at least 1891, using the lowest races from Commissioners Creek. In addition one of the great high races of Otago, an 11 kilometre race (built 1983) from the head of Coal Creek on the Garvie Range along the 1400m contour (**9**) was used. Robertson dropped water down a gully to carry out hydraulic sluicing on his claim west of the Nevis Township. Masters' sluicings (**10**) were fed by the middle two races from Commissioners Creek. Adies' sluicings (**11**) were worked by the highest race from Commissioners Creek and smaller races brought in from the north from Schoolhouse Creek. Adies' high race was built about 1891 and they and M. McLean continued working behind the Township up to the 1950's.

Workings in the Nevis basin run not only up the river but also along a fault line at the foot of the western hill slopes. Starting from workings behind the Township described above, the Adie family worked some sluice faces in the 1930's, where the big races run south out of Schoolhouse Creek (**12**). More 1930's workings extend north from the creek and include Johnston's (**13**) and Sutherland's (**14)**, and the Unemployed Men's (**15)** pits, fed by races from both Schoolhouse Creek and Scotchman's Creek. The race complex from Scotchman's Creek had head races from creeks further north including the Nevis Burn.

On the same fault line as the gold workings, there are three or four coal pits in the Nevis Burn, and near the Crossing. From the winter of 1863 onwards, these supplied coal for household fuel for the miners, and were intensively worked in 1900's to supply the dredges and other stationery engines (**16, 17, 18**).

Unalienated Crown Land – Nevis Streambed

The Unalienated Crown Land (Streambed Blk III Nevis SD) located within the Nevis River bed in the vicinity of Schoolhouse Flat, have important historic values relating to the Lower Nevis goldfield. This goldfield spans both sides of the Nevis River. Hamel (1994) suggests that "mining around the adjacent flats probably began with ground sluicing in the 1870s. These deposits were revived with dredging and hydraulic elevating in the river bed (included in **7a** to **7b**) at the turn of the twentieth century", and ended with Fache's dredgings in 1939, who "took out islands and pillars in the river itself, shifting upstream to above the mouth of Schoolhouse Creek". Small tailings, dredge tailings and irregularly shaped dredge ponds are still evident on the Nevis Streambed Blocks.

Significance of Historic values

Ben Nevis pastoral lease
The workings marked on Map 4.2.4 form unusually intact systems of alluvial gold mining sites, from which much more can be learnt than from parts of systems on their own. The area around the Nevis Township in particular contains whole systems of races, workings, tailings, tailraces and residence sites.

A wide range of technologies and eras are represented from 1860s ground sluicings through 1900s dredging and hydraulic elevating to 1930 hydraulic sluicings. This is unusual, since dredging and hydraulic lifting often destroys all earlier workings e.g. Gabriels Gully. The association of the remnants of a bucket dredge, the Nevis Crossing dredge, with workings that are extensive in both area and time, cannot be matched anywhere else in Otago or Southland. Clearly identified 1930s workings are not so far known for Otago, and cannot be protected under the Historic Places Act. All these groupings and their good survival give the area as a whole regional significance.

The workings are set in a landscape that has been little modified since nineteenth century. Cultivation has had minor effects only in the area around the Crossing.

Families who still rent or own properties at the Nevis Township provide a strong link with the past. Much more historic documentation and identification of names with sites are available in the Nevis compared with most other alluvial workings, such as the Bannockburn sluicings.

The wide open landscape and lack of forest and shrubland makes the sites highly visible and particularly easy for visitors to appreciate. Though an area such as Skippers has similar mining values, the vegetation and steep terrain makes the latter more difficult for visitor interpretation. There is no other alluvial gold field known of in New Zealand that has both such high heritage values and such ease of interpretation. This gives the field national importance.

Other significant sites in the valley include the Schoolhouse Creek moa hunter site (location significant to iwi and protected under the Historic Places Act) and the early farmstead at Ben Nevis.

Unalienated Crown Land – Nevis Streambed
The presence of dredge ponds and tailings is significant as they were formed by the longest running dredge in Otago (the Nevis Crossing Dredge which operated in 1902-1939). These ponds and tailings, in association with the gold mining workings from a range of eras on Ben Nevis pastoral lease, contribute to the area as a whole being of regional significance.

The workings are set in a landscape that has been little modified since nineteenth century.

2.7 PUBLIC RECREATION

2.7.1 Physical Characteristics

The Otago Conservation Management Strategy (1998) outlines the Recreation Opportunity Spectrum (ROS) for Otago, where the characteristics of recreation settings, activities and experiences in outoor recreation areas are detailed. This planning tool has been adopted by the

department as a systematic approach for looking at the distribution of outdoor recreation across all areas regardless of land tenure. ROS aims to minimise conflict between groups with contrasting expectations.

The alpine lands of Ben Nevis Station are classified "Remote" experience. This recreation opportunity is characterised by a sense of complete isolation from human interaction and activity. The naturalness of the setting is an important part of the experience. Outdoor survival skills and experience, with a high degree of self-reliance, will be essential in order to minimise risk.

Access to such areas requires some effort, as travel from the nearest public road will be at least a day by foot. The experience is likely to be associated with tranquillity and solitude and may include a sense of self-reliance and spiritual growth. The key activities associated with this class are tramping, climbing, backcountry ski touring and hunting.

The remainder of the property is classified as "Backcountry 4X4 Drive In" where "4WD vehicles are desirable to give access to high country tussock grasslands and more rugged remote areas". It is "characterised by a feeling of relative remoteness from populated areas". The highly natural setting is a valued part of the experience and may be associated with motivations of 'escape from town', education and nature appreciation" (Harper, 1992).

In 1988, Federated Mountain Clubs compiled an outdoor recreation plan for Otago's Alps (Mason, 1989). The document maps the Hector Mountains, from about 1200m upwards, as *Natural* Experience. This zone provides opportunities for a wide range of recreational activities and experiences ranging from small scale remote to easily accessible. The lower slopes of the Hector Mountains, including those on Ben Nevis Station are zoned O*pen Space* where recreational use tends to be site specific e.g. visiting historic sites, or as a backdrop for angling.

2.7.2 Legal Access

Access to Ben Nevis pastoral lease is via a formed public road (Nevis Road) which links Cromwell and Garston, crossing the Carrick Range near Watts Rock. The northern end of this gravel road is suitable for 2WD in summer, but is restricted to 4WD use during bad weather and in the winter. The Nevis-Garston Road is closed by the District Council during winter.

In addition, a paper road runs north from Nevis Crossing, crossing towards the Doolans Saddle. The existing 4WD track is not always aligned to this paper road, but does join onto the legal Coal Pit Road on the neighbouring property, providing legal access via Coal Pit Saddle to Gibbston in the Kawarau Gorge.

The Nevis River has a marginal strip on the true left. Marginal strips were laid off up Commissioners Creek, Schoolhouse Creek and the Nevis Burn when the Ben Nevis lease was renewed in 1992.

The Doolans Creek Left Branch has a marginal strip running along its length. While these marginal strips provide riparian protection to the creeks, they only provide limited recreation access. Once the creeks enter the confines of the valley systems, they climb steeply making foot access extremely difficult.

2.7.3 Activities

The remote nature of the Nevis Valley and the outstanding views of the jagged Hector and Remarkable Mountains to the west and the rolling ranges of Central Otago, make the journey between Bannockburn to Garston via Nevis Valley a classic 4WD and mountain biking trip. The Nevis Valley has been a popular horse trekking route for the Cavalcade and an annual mountain bike race also takes place along the road.

Another classic mountain bike and 4WD route utilises public roads and a 4WD track from Gibbston via Coal Pit Saddle to Bannockburn, crossing Ben Nevis Station between Doolans Saddle and Nevis Crossing.

The most popular area is the Nevis River and its environs. In the summer, picnickers and campers make use of the broad river flats. Here the main pastimes are fishing, camping, mountain biking, shooting, gold panning and exploring the old gold workings. The Nevis River provides a range of kayaking challenges- the upper section is a moderately difficult, the middle section is easy, while the Nevis Gorge is difficult.

The alpine lands of Ben Nevis Station are an important climbing and tramping resource in the summer. In winter, the North Hector Mountains are used for backcountry skiing and heliskiing.

The vastness of the alpine lands of the North Hector Mountains and the Remarkables coupled with their relatively easy access from Queenstown create a recreation setting with huge potential.

PART 3: OTHER RELEVANT MATTERS & PLANS

3.1 CONSULTATION

The property was discussed with conservation/recreation orientated NGO's on September 13th 1994 in relation to the Land Act 1948 tenure review process.

The main issues highlighted were:

- Tall tussocklands should not be freeholded
- Need for riparian access and informal camping areas along the valley floor, where high public recreational use.
- Open space retention important
- Need to address riparian land uses and cultivation of terraces in relation to water quality and fisheries.

Forest and Bird Protection Society (Upper Clutha Branch) provided a written submission in November 2002. The main comments are:

- Any reviewable land designated for disposal as freehold will require adequate overall landscape protection covenant placed over it, to protect it from forestry or undue earthworks. The CODC Plan is inadequate to protect the landscape in this respect.
- Historic values require protection either by retaining them in full Crown ownership, or by covenants.
- Recreational use will increase once access is assured. Any land returned to full Crown ownership will be welcomed by those interested in the outdoors.
- The 6844 ha block which is retired from grazing, plus any land below 1000m asl. should be retained by the Crown and managed for conservation purposes.
- The numerous tarns and tor rocks are an outstanding feature of the area.
- Schoolhouse Flat, wetlands and river meanders should be protected by return to full Crown ownership and control, or adequate covenants.
- Legal road from Nevis Crossing to Doolans Creek should be surveyed and aligned with present track formation.
- Provide adequate fishermens' access to Nevis River from Nevis Road where ever considered necessary.
- Provide walking access up existing farm tracks up spurs to Hector Mountains.

The full written submission is attached as Appendix Two.

In November 2002, Federated Mountain Clubs (FMC) provided a written submission on the recreational and related significant inherent values of the property. The main outcomes sought are:

- All land above about 1000m, should be restored to full Crown ownership and control and be managed by DOC for conservation and recreation purposes. This would include the fenced area of area 6,844ha on the slopes of the Hector Mountains including the upper catchments of Commissioners Creek, Schoolhouse Creek, Nevis Burn and part of the Doolans, which has already been retired from grazing.
- Schoolhouse Flat be managed by DOC for conservation purposes due to the high endemic flora values present.
- Nevis Township could be considered as a Historic Reserve
- Other historic sites could be covenanted
- A landscape covenant is required for all land to be freeholded on account of the high landscape values of the Nevis Valley as a whole.
- The preferred arrangement to secure public access would be for the actual formations of the Nevis Crossing to Doolans Saddle road (Coal Pit Road) to be formally recognised as the legal road. Alternatively, but less desirably, a formal easement for foot, mountain bike and equestrian use is recommended.
- At least 3 legal foot access routes to the Nevis River for fishing and other purposes such as family picnics will be required
- Public access be made available to the Hector Mountains by way of formal easements for foot, mountain bike and equestrian use on the 4 major spurs on Ben Nevis.

A copy of the full written submission is attached as Appendix Three.

3.2 REGIONAL POLICY STATEMENTS & PLANS

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

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

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

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

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

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

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

There are no provisions of the Otago Regional Policy Statement which relate specifically to this property. The property is subject to the Otago Regional Plan: Water rule which requires resource consent for suction dredge mining. The Schoolhouse Flat Significant Wetland Area within this property is listed in Schedule 9 of the Otago Regional Plan: Water.

3.3 DISTRICT PLANS

The property is located within the Rural Resource zone of the Central Otago District Plan.

The western two-thirds of the property (above 900m a.s.l.) are in an Area of Outstanding Landscape. Development and tree planting requires resource consent in this area, but not clearance of vegetation.

Outside of the Area of Outstanding Landscape, the proposed Central Otago District Plan (amended to incorporate Council decisions) does not act as a trigger for the protection of tussock grasslands and smaller wetlands and forest areas. Resource consent is required for excavations or tree planting within specified distances of a water race or irrigation pipeline, and for development work within 10m of any water body.

There are two historic sites registered in schedule 19.4:

Item 275, Midden/Ovens (NZHPT no. 5615, category II). Any exterior alteration, removal or demolition requires resource consent.

Item 276, Stone Hotel Ruins, Nevis Valley. Modification or disturbance of the site requires resource consent.

The Nevis Cemetery (R238) is designated for the purposes of "cemetery" and is listed in schedule 19.2.

The Schoolhouse Flat Wetland is listed as a significant wetland in schedule 19.6. Resource consent is required to drain or affect the indigenous vegetation or fauna,

No other areas of significant indigenous vegetation and habitats of significant indigenous fauna and wetlands are set out in the schedules of the plan.

3.4 CONSERVATION MANAGEMENT STRATEGIES & PLANS

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

The CMS identifies 41 special places of conservation interest in Otago Conservancy. Ben Nevis pastoral lease lies within the Remarkables Special Place.

The CMS objective for the Special Place is:

To protect the very high landscape and ecological values of the area, and its historic value, and the remoteness of parts of it, while allowing appropriate parts of it to be used for a range of recreational opportunities including the existing commercial skifield.

The key implementation methods relevant to Ben Nevis are:

- Through pastoral lease tenure review negotiations, endeavour to add appropriate contiguous areas on The Remarkables, Hectors and in the Nevis catchment to the core Remarkables Conservation Park proposal.
- Recreation and tourist concessionaires of the area may be allowed where any potential adverse effects on the natural and historic resources and remote experience recreational opportunity can be avoided, remedied or mitigated, and subject to any requirements of the existing ski area lease.
- Pressure will be maintained to control goats using helicopters as necessary in accordance with Otago WAC objectives.
- Liaison with neighbouring landholders will be maintained to facilitate increased recreational opportunities and retention of natural values, and goat and tree control.
- Commercial guiding and other non-skifield commercial operations will be assessed in accordance with the provisions of Part IIIB of the Conservation Act, and subject to consultation with the existing ski area concessionaires.
- Efforts will be made to secure the landscape (both historic and natural) qualities of the Nevis Valley, and examples of its indigenous ecosystems.

Priorities for Remarkables:

Creation and management planning for the conservation park will be a priority, although timing and extensions will be kept under review as tenure review proposals develop on adjoining properties.

In terms of ecosystem conservation, the CMS lists the Lower Nevis as one of the most intact known indigenous valley floor short tussock grasslands in Central Otago.

Objective for Ecosystem Conservation:

Ensure that intact, viable and well buffered examples of all indigenous ecosystems in Otago are thriving under appropriate conservation management.

To allow natural successional processes to continue, for their intrinsic worth and for the pruposes of scientific study, except where special indigenous communities are placed under threat of local or global extinction and it is practicable to preserve them in confined areas while allowing that successional process to continue elsewhere.

Priorities for Ecosystem Conservation

Remaining relatively intact valley floor grasslands are a priority for protection action, while the linking and buffering of protected indigenous ecosystems of all kinds is still a priority in the Otago landscape.

3.5 WATER CONSERVATION (KAWARAU) ORDER 1997

The Nevis River is preserved as part of the Kawarau Water Conservation Order 1997, which protects the water and its immediate environs. Below the Nevis Crossing to the Kawarau River confluence, the Nevis River is protected for its wild characteristics, and recreational purposes (in particular fishing and kayaking). Above the Nevis Crossing, the river is protected due to its outstanding scenic characteristics, and recreational purposes, in particular fishing.

Schedule 2 outlines the following restrictions and prohibitions:

1. "No damming of the Nevis River is allowed unless a rule in a plan or condition in any water permit granted makes provision for river flows to be provided at sufficient levels to enable kayaking to be undertaken in the gorge at times states in the plan or permit, and the extent of any impounded water is not beyond S143:836485.
2. Fish passage to be maintained
3. Water quality to be managed to Class CR (below Nevis Crossing only), Class F, and Class FS standards."

3.6 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 is necessary to:-

-Maintain and restore viable populations of all indigenous species across their natural range and maintain their genetic diversity.

The strategy outlines action 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.

PART 4: MAPS ETC.

4.1 BIBLIOGRAPHY

Hamel, J. 1994: The Cold Sequestered Nevis. Unpublished Report, Department of Conservation.

Harper R.K. 1992. Otago Recreation Opportunity Spectrum. Department of Conservation Miscellaneous Series #10.

Hayward, B.W. and Kenny, J.A. 1998: Inventory and maps of important geological sites and landforms in the Otago Region. Geological Society of New Zealand Miscellaneous Publication 99.

Hitchmough, R.A in prep. Department of Conservation Threatened Species Database. DME WGNCR-29195.

McDowall R.M., and. Chadderton, W.L. 1999: *Galaxias gollumoides* (Teleostei: Galaxiidae), a new fish species from Stewart Island, with notes on other non-migratory freshwater fishes present on the island. *The Journal of the Royal Society of New Zealand 29:* 77-88

Mason, B. 1989: Outdoor Recreation in Otago. A Recreation Plan. Volume Two: Silver Peaks and Otago Alps. Federated Mountain Clubs, Wellington.

Molloy, J. and Davis, A. 1994: Setting priorities for the conservation of New Zealand's threatened plants and animals. Dept. of Conservation.

Molloy, J., Bell, B., Clout, M., de Lange, P., Gibbs, G., Given, D., Norton, D., Smith, N. and Stephens, T. 2001. Classifying species according to threat of extinction. A system for New Zealand. Biodiversity Recovery Unit, Department of Conservation, Wellington, New Zealand.

Peat, N. & Patrick. B. 1999: Wild Central. Discovering the natural history of Central Otago. University of Otago Press.

Walker, S.; Lee, W. G.; Rogers, G.M. 2002: Woody biomes of Central Otago, New Zealand: their present and past distribution and future restoration needs. Landcare Research Contract Report: LC0102/084 prepared for Department of Conservation.

Walker, S.; Lee, W. G.; Rogers, G.M. 2002a: Post-pastoral succession in intermontane basins and valleys of eastern South Island, New Zealand. Landcare Research Contract Report: LC0102/106 prepared for Department of Conservation.

Wallace, M. 1988 : High Country landscape – Recommended Areas for Protection. Unpublished Report, Department of Conservation.

Waters, J.M. in prep: New Zealand non-migratory galaxiid recovery plan. 2003 –2013. Department of Conservation.

Waters, J.M., Craw, D., Youngson, J.H., and Wallis, G.P. 2001: Genes meets geology: fish phylogenetic pattern reflect ancient, rather than modern, drainage connections. *Evolution 55(9)*: 1844-1851.

4.2 ILLUSTRATIVE MAPS

4.2.1 Topo/Cadastral Ben Nevis Pastoral Lease

4.2.2 Land Type Units and Landscape Values

4.2.3 Values – Significant Inherent Ecological

4.2.4 Values – Significant Historic/Recreational

APPENDICES:

Appendix One: NIWA Fish Database- findings in the Nevis catchment

Appendix Two: Royal Forest and Bird Protection Society of New Zealand Submission on Ben NevisTenure Review.

Appendix Three: FMC's written submission on recreational and related inherent values of Ben Nevis Pastoral Lease.

Appendix One- NIWA Fish Database- findings in the Nevis catchment

Year	Locality	Easting	Northing	Altitude (m)	Species Code
1984	Nevis River tributary	21924	55525	760	galaxi
1984	Nevis River tributary	21924	55525	760	saltru
1992	Commissioners Creek	21910	55432	710	saltru
1992	Nevis River	21916	55438	690	saltru
1992	Nevis River tributary	21927	55462	700	saltru
1992	Schoolhouse Creek	21946	55484	670	saltru
1984	Commissioners Creek	21910	55433	710	saltru
1984	Nevis River tributary	21926	55458	700	salfon
1984	Nevis River tributary	21926	55458	700	saltru
1988	Schoolhouse Creek	21946	55485	670	saltru
1988	Commissioners Creek	21912	55431	710	saltru
1988	Nevis River tributary	21926	55458	700	saltru
1991	Nevis River	21957	55533	630	saltru
1991	Nevis River	21956	55532	640	saltru
1991	Nevis River	21945	55523	670	saltru
1991	Nevis River	21945	55523	670	salfon
1991	Nevis River	21955	55514	650	saltru
1992	Nevis River	21901	55407	750	saltru
1991	Nevis River tributary	21952	55541	630	galano
1991	Nevis Burn tributary	21924	55525	750	saltru
1991	Doolans Creek Left Branch	21929	55590	610	nospec
1991	Commissioners Creek	21905	55433	730	saltru
1991	Nevis River tributary	21921	55451	700	galano
1991	Nevis River tributary	21927	55459	680	saltru
1991	Nevis River tributary	21960	55530	660	saltru
1991	Nevis River tributary	21960	55530	660	galano

Note: saltru = *Salmo trutta* (Brown trout)
salfon = *Salvelinus fontinalis* (brook char)
galano = *Galaxias anomalus.* This species is now considered to be *G. gollumoides (*Gollum galaxid*)*

Appendix Two: Royal Forest and Bird Protection Society of New Zealand Submission on Ben NevisTenure Review.

ROYAL FOREST AND BIRD PROTECTION SOCIETY OF NEW ZEALAND INCORPORATED

Upper Clutha Branch
PO Box 38
LAKE HAWEA

10TH November 2002 (tperrett@doc.govt.nz.)
Mr Tony Perrett
High Country Tenure Review Manager
Department of Conservation
Otago Conservancy
PO Box 5244
DUNEDIN

Dear Tony

BEN NEVIS and CRAIGROY - TENURE REVIEW REPORT.

At the Early Warning meeting you held in Alexandra on 19th September 2002 you intimated that these two properties, and others, which had been withdrawn from the process some time ago, were to come back into the process later in the year.

Today we were advised by another NGO that any comments we wished to make were required in your office, yesterday, Friday 8th November. Therefore we would be most grateful if you would accept these comments and suggestions from our branch per e.mail - which should be on your desk on Monday morning the 11th. This to be followed by a signed copy per New Zealand Post.

1. GENERAL:

1.1 While we would have liked, and fully intended to do, an on ground inspection of these properties after the snow had gone back, The lack of time has precluded this. This report therefore is based on our branch's executive members' knowledge of these properties.

1.2 We regard any land that can be retained by the Crown coming from the Ben Nevis as essential to the proper establishment of the proposed 'Remarkables National Park' or 'Conservation Area'. Similarly any retained from Craigroy will be an important addition to the 'Kopuwai' or 'Old Man' conservation area.

Both the 'Old Man' and the 'Remarkables' areas are mentioned in the Conservation Management Strategy for Otago, adopted in 1998. The value of these areas is fully appreciated in the Strategy; it suggests that the goals sought could be achieved through the tenure review process.

2 SIGNIFICANT INHERENT CONSERVATION VALUES:

2.1 **The Landscape.** The whole of these two properties - which make up the middle reaches of the Nevis Valley - have outstanding landscape values. There are very few remote mountain valleys of this nature left in New Zealand which people can enjoy the experience of driving through. Therefore any reviewable land which may be designated for disposal as freehold, will require an adequate overall landscape protection covenant placed over it, to protect it from forestry or undue earthworks - to mention but two activities that could ruin this type of landscape. The CODC District Scheme Plan is inadequate to protect the landscape in this respect.

2.2 **Historic Values:** There are considerable mining relics and human occupation sites on the valley floor and on the hills on either side of the valley worthy of protection. Here again adequate covenants will be required to protect these values on any land which may be disposed of on a freehold basis. Better protection for some sites would be to have them retained in Crown ownership.

2.3 **Recreational Values:** While there is a only a moderate amount of use of these hills for recreational purposes at present: mainly due to lack of access (or lack of knowledge of any access) any future forecast for recreational use can only be for a steady increase. The tops of the mountains on both sides of the valley in winter are the Mecca for cross country skiers. Any land returned to full Crown ownership and control will be welcomed by all those interested in the outdoors because of the remote experience this country has to offer, be it photography, scenic appreciation, or the more strenuous activities associated with mountains.

2.4 **Other Inherent Values:** Probably the main significant inherent values on these two places are the mountain tops; their form, their cover and their fauna. The 'Remarkables' may be outside what are generally known as the Southern Alps of New Zealand but they support some of the plants found in the Southern Alps, this unusual feature must be protected.. The tussock cover on the upper faces, basins and streams on the east side of the Hector mountains varies, but it is the dominate plant of the landscape. The tussock is interspersed with woody shrubs and other alpine plants.

We understand that a considerable area (6,844 ha) was voluntarily fenced off and retired in1980. This area includes the headwaters of the Nevis Burn, Schoolhouse and Commissioner Creeks also the true right bank of Doolans Creek. Given that it is already retired from grazing and has considerable conservation values it should be retained by the Crown and managed for conservation purposes.

2.5 **Tarns and Torr Rocks:** The numerous tarns and torr rocks on both sides of the valley - but especially on the Hector mountains - are an outstanding feature of the area. On the eastern side of the valley the hills are a little lower in altitude than those on the western side, and are of different form; more rounded and rolling and typical of the block mountains of the rest of Central Otago, This type of fascinating country on both sides of the valley support an infinite variety of vegetation, and the associated aquatic life in and around the tarns .

2.6 **Wetlands and Fans:** Consideration must be given to protecting the biota of Schoolhouse Flat also the wetlands and river meanders (particularly on the east side of the Nevis river) either by an adequate covenant or preferably by return to full Crown ownership and control. While some of this area may have been damaged by mining they are still recoverable.

3. ACCESS;

3.1 **Legal Roads:** The legal road going from the Nevis Crossing towards Doolans creek should be surveyed and aligned with the present track formation. The legal road from Duffer's saddle to the crest of the Old Woman range should be treated in a similar manner.

3.2 **Fishermens' Access:** Adequate access should be made available from the Nevis to Garston road to the Nevis river where ever considered necessary.

3.3 **Walking Access:** Adequate and reasonable access will be required from the Nevis Garston road to both conservation areas created out of these to runs. While we believe there are marginal strips on the main streams on the eastern side of the Hector mountains, these will be impractical in parts. The farm tracks already up the spurs in between these streams should be used.

4. DESIGNATIONS:

4.1 We believe all the land above 1000 masl on the western sides of the valley (Ben Nevis) should be returned to full Crown ownership and control. This would add to that area of land retired on Loch Linnhe and that restored to Crown ownership from the Wentworth tenure review. This will then form part of the suggested 'Remarkables' National Park or Conservation area.

4.2 The same should apply to the land on the eastern side of the valley - Craigroy. The retirement fence would be somewhere below the Carrick Range water race. This will be a valuable addition to the Cairnmuir Conservation Area, and so enlarge the 'Old Man – Kopuwai' Conservation area.

4.3. The land below 1000 masl, could be disposed of on a freehold basis, if proven ecologically sustainable,

4.4 The question also suggests itself to us that perhaps the two runs may have to be amalgamated to form a viable economic unit.

IN CONCLUSION:

We would stress the importance of these two runs for conservation and believe the first consideration in these two reviews (they cannot really be considered separately) is to give full protection to the intrinsic values contained in the whole of this remote alpine valley. It is unique – it has historic values as well as conservation values.

We pose the question, can the land under review in this valley be managed in an ecologically sustainable manner?

Can it be farmed in an economic manner when one considers the bulk of these two properties are well over 600 masl? They are remote from markets and services. Can it be economic to bring in manure to replace the animal products that are exported from it?

We thank you for the opportunity to pass these comments, and we hope you will take them into consideration when you make your recommendations for a preliminary proposal.

Yours faithfully
John L Turnbull, For Upper Clutha Branch, Forest and Bird

Appendix Three: FMC's written submission on recreational and related inherent values of Ben Nevis Pastoral Lease.

RECREATIONAL AND RELATED SIGNIFICANT INHERENT VALUES ON BEN NEVIS and CRAIGROY

A Report for FMC to assist in the Tenure Review Process

November 2002

INTRODUCTION

This report is offered as a contribution to the statutory consultation process undertaken by the Department of Conservation (DOC).

The report focuses on those features of Craigroy and Ben Nevis which are known to be important for public recreational interests. It should be noted that while much of this interest focuses on access, the natural and historic values and landscapes have a fundamental impact on the recreational value of the property and greatly influence the quality of recreational experience enjoyed . It is for this reason that reference is also made to the natural and landscape values in this report. Much of the land on these properties has outstanding natural, and landscape values and its recreational significance is high because they are easily accessible in the Nevis Valley, from either Bannockburn or Garston.

METHODS OF SURVEY AND ASSESSMENT

Because of severe time constraint this report is unlike most other FMC Reports, which are based on field inspections and detailed research. Instead, this report is based on existing knowledge of the area, on two earlier Reports on Outdoor Recreation in Otago (Mason 1988,1989) and the Otago Conservation Management Strategy.

GENERAL DESCRIPTION OF BEN NEVIS AND CRAIGROY

Craigroy and Ben Nevis occupy a large tract of land in the lower Nevis Valley and stretch up to the crests of the Old Woman Range and the Hector Mountains respectively. Craigroy covers almost 4,500 ha on the eastern side of the valley between the Nevis Valley floor at about 600m and 1600m on the Old Woman Range, near Mt Black. Ben Nevis (14,500 ha) lies on the western side of the valley and its upper boundary runs along the summit ridge of the Hector Mountains including Ben Nevis (2234m) and James Peak (2072m). Ben Nevis also includes a series of stream catchments which are all tributaries of the Nevis River. From north to south these are the Left Branch of the Doolans, which marks the northern boundary of the property, the Nevis Burn, Schoolhouse Creek and Commissioners Creek, each of which are separated by prominent spurs running from valley floor to mountain top.

The homesteads of both properties are situated on the valley floor some 30 km from Cromwell but the whole Nevis Valley has a remote character because of its isolation. This isolation is due to the necessary crossings of either the Carrick Range (almost 1,300m at Duffers Saddle) or over the Slate Range, at 1,100m above Garston.

The Nevis Valley has been the site of much gold mining activity both on the valley floor and on the lower slopes of the valley sides. The place is like an outdoor museum with evidence of all stages of alluvial mining form the earliest paddocking and sluicing methods to electric and coal powered dredging operations which were at their peak around the turn of the century. There was also much hydraulic sluicing which has made its mark on the valley sides, with evidence clearly visible today.

RECREATIONAL ACTIVITIES AND POTENTIAL

Craigroy and Ben Nevis are both important for recreational uses but for different reasons – Craigroy because it is associated with the Old Man – Old Woman – Garvies system of mountain ranges, and Ben Nevis because of its close association with the Hector Mountains and the Remarkables.

The higher parts of Craigroy provide the obvious route from Duffers Saddle, along the crest of the Old Woman Range to the Garvies. The Old Man and Old Woman Ranges are popular for cross country skiing in winter because they easily accessible by road to the snowline in the vicinity of Duffers Saddle. Mason (1988) reported that *"ease of access has resulted in the Old Man and Old Woman Ranges being among the most frequently used areas in Otago. Road access to the snowline provides one of the few opportunities for day trips from Dunedin or Invercargill……a 40 km traverse the length of the Old Woman and Old Man ranges is possible, with an overnight camp."*

There is potential for similar trips to be made by mountain bike in summer and there is always demand from horse riders for new places to go.

The Remarkables are undoubtedly better known than the Hector Mountains but the latter offer a range of opportunities for summer and winter recreation. Traditional access has been from the Queenstown side, and more recently easy access has become available via the Remarkables skifield, Perhaps also, the western approach is more popular because Queenstown is where many recreational users start out from. Lake Hope, Ben Nevis, James Peak and Staircase Creek are the usual objectives for tramping parties setting out on the western side, but all of these, except Staircase Creek, could equally well be approached from the Nevis side.

With the improvement in, and securing of, public access through tenure review it is highly likely that recreational use from the Nevis side will increase. By vehicle it is not difficult to get to a dramatic and remote setting in the Nevis valley where lots of opportunities open up for day trips or longer excursions to the Hectors and Remarkables, and over Coal Pit Saddle to the Kawarau Gorge.

Mason 1989) has underlined the historic and continuing importance of the Remarkables and Hectors for recreation*: "The Remarkables, since the time of the earliest European settlement, have been regarded as the single most spectacular feature in a highly scenic region.*

Passive appreciation remains its greatest recreational value. The "stupendous declivity" of jagged crags, from level base to saw-toothed summit ridge, has a dominating presence over the Queenstown district. It is unrivalled by any similar landform in New Zealand and provides a backdrop for all manner of outdoor activities undertaken by many thousands of visitors from throughout New Zealand and overseas. For many it is an object of marvel and inspiration, without generating a need to touch or climb. The absence of any natural or man-made weaknesses in the 'declivity' inspires almost mystical qualities that give it a value beyond mere rock and cleft.

Government geologist T.N. Hackett and party made the first recorded ascent of Double Cone in October 1864. As Queenstown became less of a goldrush town and more of a resort, interest in climbing to the summit increased. Since at least the 1890s the climb up the northern Kawarau face or the western face, to Lake Alta and the summit, has been a popular attraction.

Before road construction, the Lake Alta area of the Rastus Burn was the focus of attention for trampers and climbers, with Single or Double Cone the objective. Two days, or a very long day, was required for the return trip."

The Garston – Nevis Road gets a great deal of public use when flooding of tributary creeks is not a problem. In recent times it has become increasingly popular for mountain biking and an annual 'Pub to Pub' bike race is now held between Garston and Bannockburn. The valley floor and Nevis River are popular destinations for family groups, and for picnicking, fishing, camping, and gold panning.

FMC believes that the recreational importance and value of leases in the tenure review process should be assessed not only on its present usage but also on its potential. This is because current usage is usually less than its potential for a number of reasons. Partly because of the current land tenure under pastoral lease, access to parts of Ben Nevis and Craigroy has not been easy in the past so the recreational use is less than it might have been if public access was more readily available. There is significant potential for greater use in summer and winter (eg camping, exploring historic relics on the valley floor, climbing, skiing and tramping in the Hectors, and cross country skiing or mountain biking along the Carrick – Old Woman Ranges) and it is the full range of possibilities which should be considered during this tenure review.

Public access for tramping and mountain bike trips into the Doolans and over the Coal Pit Saddle road, tramping routes up the major spurs on Ben Nevis, cross country skiing on the Old Woman Range, ski mountaineering and touring on the Hector Mountains, together with exploration of historic gold mining areas and other family activities in the Nevis valley, are the main priorities for recreation in this tenure review.

SIGNIFICANT INHERENT VALUES AND THEIR IMPORTANCE FOR RECREATION

It should be noted that while much of the recreational interest focuses on access, the natural values and landscapes of the recreational settings have a fundamental impact on the value of the back country. Furthermore, the views to be had from the many vantage points, and opportunities for exploring the relics of the gold mining era also greatly influence the quality of recreational experience enjoyed. It is for this reason that reference is also made to natural, historic and landscape values of these properties.

Mason (1988) recommended that the Old Woman Range be classified Natural Experience Zone. He stated *"While it is acknowledged that portions of the zone have been modified in historic times by burning, grazing, and more recently by farm and communications tracking, natural landscapes and systems prevail. The morphology of the alpine tundra and grasslands provides a distinctive setting for wildland recreation."*

The Old Woman Range has high landscape, recreation and nature conservation values by virtue of the area's intactness, remoteness and the predominance of natural values. Despite over 130 years of pastoralism, the native biota greatly outnumbers exotic species so essentially natural processes exist especially at higher altitude.

The mountain area is an enormous upland plateau forming the border between northern Southland and Central Otago. Views out to the surrounding ranges and valleys are spectacular. This area, which Mason (1988) has referred to as the "Polar Plateau," provides the largest continuous tract of cross-country skiing terrain in New Zealand. The area's sheath folded summit tors, summit peneplain landforms and active periglacial features are rated as internationally and nationally important geopreservation sites respectively.

The area was surveyed as one of the initial PNA surveys and virtually the entire mountain system over 1,000m was recommended for protection. This survey identified an area in the Barn Creek as an area recommended for protection (RAP 1/4). This RAP includes an elongated broad catchment extending from the summit tors at 1393m to a narrow constricted gorge flowing into the Nevis River at 670m. The dominant vegetation in the upper RAP is fescue tussock with patches of *Chionochloa rigida* scattered throughout.

A dominant feature above 1100m is the golden Spaniard. Below this point the fescue tussockland becomes dominant. The key ecological interest in the balance of this RAP is largely confined to scattered shrubland plants located within the lower catchment at 860-920m around the rock tors and boulder surfaces. At 920m a large patch of snow totara *(Podocarpus nivalis)* occurs. This is very restricted in the Old Man Ecological District and was noted as a special feature in the PNAP report.

Similar to other block mountain systems in Otago, this system contains several plant and animal species endemic to small areas within it. Additionally several nationally threatened or rare species including the grass *Simplicia laxa* are recorded here, as well as *Geum pusillum* and *Gingidia enysii. Luzula crenulata* and

Parahebe trifida are endemic. Typical alpine ecosystems are well represented although shrublands are confined either to the wetter parts of the area or to remnants on tor refugia.

The valley floor and lower slopes of both Craigroy and Ben Nevis contain many remains of 19th century gold mining activities which are of representative significance. There are examples of all stages of alluvial mining form the earliest paddocking and sluicing methods to electric and coal powered dredging operations which were at their peak around the turn of the century. There was also much hydraulic sluicing which has made its mark on the valley sides. The evidence, which is still clearly visible today includes not only the sluicing scars, but also the many water races which fed the sluicing and hydraulic elevating operations.

The flats and terraces contain a wide diversity of plants, many of which are small but significant because of their rarity. The relatively rare species include an unnamed *Leptinella* and *Galium,* both only found elsewhere in Otago on the Pisa Flats. A sedge, *Carex kaloides* is also becoming increasingly rare in Otago and the Nevis population is now one of the most important. Near the terrace edge above the Nevis River, *Olearia odorata* and matagouri occur, along with *Muehlenbeckia exillaris, Myosotis glauca* and *Raoulia australis*

The focus of botanical interest in the flats is centred around Schoolhouse Fan and adjacent terraces. The majority of these fans have not been developed, and have only been extensively grazed. The flat is a mosaic of short tussock, sedges, exotic grasses, bare ground, cushion vegetation and the occasional remnant of *Chionochloa rubra cuprea.*. A few herbs occur within these stands including the rare *Ranunculus ternatifolius.* Other species are *Gentiana grisebachii, Gaultheria nubicola* and *Ranunculus cheesemani.* The remaining conservation interest on parts of this broad fan is the sedge *Carex muelleri,* a dense tough rhizomatous species only 10-16 cm high. It forms distinctive communities that at first glance look like highly degraded festuca grasslands. This species is not common in Otago and the Nevis is described as the type locality for the plant. Schoolhouse Flat is the only area where it survives as a viable community.

The Ben Nevis run on the western side of the Nevis Valley constitutes the back-slopes of the Remarkables and Hector Mountains. These slopes are steep and mountainous, but are not as spectacular as the much better known front faces of the Remarkables. The crest height of the Hectors lies between 1920 and 2225m as far south as James Peak near the southern end of the Ben Nevis property.

Mason (1989) has described the natural values of the Remarkables and Hectors as follows: *"The flora of the area is somewhat unique in its combination of a few of the larger, more colourful alpines that characterise the wet mountains west of the Otago lakes, together with many of the distinctive high-alpine cushion plants that are a special feature of the drier Central Otago highlands. In addition there are a few alpine species of limited east-west range that are centred on the Remarkables and Hectors.*

The plant cover consists of a mosaic pattern of high-altitude snow tussock grassland, dwarfed cushion, snowbank, herbfield and bog, with sparsely vegetated fellfield and rock debris slopes. These different environments are separated chiefly by altitude and topography. The most extensive plant community is snow tussock grassland rising from 1,000m to 1,800m dependent on aspect. The narrow-leaved snow tussock gives way to slim snowgrass at 1,200-1,500m, which in turn merges into blue tussock, or ends abruptly at the toe of the fellfield. The condition of the grassland is generally as good as, or better than, that found on the Central Otago ranges.

The extensive fellfields are relatively stable, consisting of jagged schist. The highest peaks of the Hectors are more rubbly than the central Remarkables and this is reflected by the restricted distribution of several fellfield species. A notable feature of these fellfields are heavy growths of leaf-like and twiggy lichens.

Unlike the Central Otago ranges, herbfields within the Remarkables and Hectors are infrequent, as are alpine bogs. The latter are largely confined to the vicinity of tarns in the upper Rastus Burn and Wye Creek."

It is understood that a large fenced area (6,844 ha) which includes the true right bank of the Doolans left branch, and the catchments of the Nevis burn, Schoolhouse and Commissioners Creeks, was voluntarily retired in 1980 and is fenced. The botanical values in this area vary and include shrublands, tussocklands, herbfield, fellfield, wetlands and rocky slopes. These are found within an altitude zone extending from 800m near the flats to the crest of the Hector Mountains at about 2,000m. The lower slopes of all these valley systems include scattered tall tussock at the lower altitudes which is thicker above about 1250m. Fescue and blue tussock are a component throughout, along with adventive grasses at the lower altitudes. The creeks climb steeply and the riparian zones contain a shrubby element of matagouri, Hebes and Coprosmas. In Schoolhouse Creek on a south facing slope, a large shrubland of *Hebe anomala, Carmichaelia orborea, Coprosma ciliata* and C. *propinqua* extends between 900m to 1,200m. Above 1,500m, depending on aspect, slim leaved snow tussock *(Chionochloa macra)* occurs in patches along with *Celmisia sessiliflora, Aciphylla kirkii.* Above 1,700m the snow tussock thins and becomes restricted to sheltered sites. The more exposed sites and those above 1,750m contain cushion vegetation off *Dracophyllum muscoides, Poa colensoi, Chionohebe thomsonii* and *Raoulia hectori.*

Given that this area has been voluntarily retired from grazing, and contains significant inherent values, it should be restored to full Crown ownership and control and managed for conservation and rexcreation purposes.

Most of the higher ground on Craigroy is characterised by High Country Yellow Brown Earth Carrick and Dunstan soils of Land Use Capability (LUC) Class VII, with only a narrow band of Obelisk Soils of LUC Class VIII along the ridge south of Mt Black. The lower slopes are characterised by Yellow-Grey Earth Blackstone Hill soils of LUC Class VI below about 800m.

On the Ben Nevis property, most of the Hector Mountains are characterised by High Country Yellow Brown Earth Dunstan Steepland soils with extensive areas of alpine soils and bare rock. Almost all the land above 1,000m is either LUC Class VII or VIII with a much higher proportion of Class VIII land than on Craigroy. As on Craigroy, there are Yellow Grey Earth Blackstone Hill soils of LUC Class VI on the lower slopes below about 800m and alluvial soils of LUC Class IV on the flats. These areas of higher capability are the most suitable for freeholding because they can be managed in a way that is ecologically sustainable, but they occupy less than a quarter of the property.

Land which is classified LUC Class VIII or VIIe, is either entirely unsuited (Class VIII) or of very limited suitability (Class VII) for pastoral farming. Because sheep grazing on high country soils is a depletive process, the land cannot be managed *"in a way that is ecologically sustainable"* (as required by the CPL Act 1998) unless nutrient removals are replenished by fertiliser applications. Such applications are not likely to be economically justifiable above about 1,000m because of climatic limits on growth potential. The alternative is that these lands be restored to full Crown ownership and control and be managed by DOC for conservation and recreation purposes. The removal of grazing and burning would allow recovery of formerly more extensive ecosystems such as shrublands on the lower slopes and alpine cushionfields higher up. The tussock grassland would also benefit from the cessation of grazing and their vigour would improve. FMC favours this approach.

AREAS TO BE PROTECTED

There are two major reasons why FMC believes that significant areas of Craigroy and Ben Nevis should be restored to full Crown ownership and control. The first of these is the significant inherent value of vegetation and landscape and the potential of the existing alpine communities, tussock grasslands, herbfields, and remnant shrublands to recover from past grazing and burning and regain their former ecological status. The second is that they cannot be managed in a way that is ecologically sustainable (as required by the Act) without nutrient replenishment (see the discussion above).

FMC therefore recommends that these lands (generally of LUC Class VIII and VIIe, above about 1,000 to 1,100m), should be restored to full Crown ownership and control and be managed by DOC for conservation

and recreation purposes. This would include the fenced area of area 6,844ha on the slopes of the Hector Mountains including the upper catchments of Commissioners Creek, Schoolhouse Creek, Nevis Burn and part of the Doolans, which has already been retired from grazing.

The upper slopes of Craigroy should similarly be returned to full Crown ownership and control, above about 1,000 to 1,100m. Much of this land is adjacent to, and would form an extension to, the Cairnmuir Conservation Area. A convenient dividing line between conservation land and possible freehold would be the line of the Carrick water race. On Craigroy the RAP 1/4 in Barn Creek should also become conservation land because of the significant inherent values identified in PNA surveys.

Reference has been made above to the highly significant landscape values for which the whole Nevis Valley and the Remarkables are well known, The integrity of these landscape values should be protected by some instrument such as a binding covenant over the entire area to become freehold. This should protect the landscape from the adverse and intrusive effects of erection of inappropriate structures and fencing, and from inappropriate developments such as forestry. FMC is not convinced that landscape protection provisions in District Plans under the Resource Management Act are sufficiently durable or robust to afford adequate protection of such significant inherent values.

The valley floor of the Nevis contains important historic and botanical values especially on the less modified parts of Schoolhouse Flat. A significant part of this Flat should be returned to full Crown ownership and control to protect the rare endemic plants which have survived there. The historic values are also important but may not be destroyed by grazing so a covenant may be more appropriate in this case. There is merit in considering an historic reserve to include the Nevis Township.

Mason (1989) reported that*: "At the conclusion of a year-long study in 1977, a Lands and Survey study team, commissioned by the former Land Settlement Board, recommended that a 20,000 ha scenic reserve be gazetted over the alpine zone of both the Remarkables and Hector Mountains. This was to include the high altitude Class 7 and all Class 8 lands between the Rastus Burn in the north, and Staircase and Commissioners Creeks to the south. The team concluded that only the Right Branch of Doolans Creek was suitable for skifield investigation.*

Only a small part of the reserves recommendation has been implemented and the skifield recommendation disregarded by Government decision. However, there remain strong recreation and landscape reasons for a large scenic reserve covering the northern Hector Mountains, retired pastoral lease and stewardship lands."

This has been accepted in principle by the Otago Conservation Board who made appropriate recommendations in the Conservation Management Strategy for Otago (see below).

ACCESS REQUIREMENTS

It is understood that there are legal roads on both Craigroy and Ben Nevis which do not coincide with the formations on the ground. These are (i) the road running south along the crest of the Carrick Range on Craigroy, and (ii) the road leading north from the Nevis Crossing towards the Doolans Saddle on Ben Nevis. The preferred arrangement to secure public access would be for the actual formations of these roads to be formally recognised as the legal road. Alternatively, but less desirably, a formal easement for foot, mountain bike and equestrian use is recommended.

It is understood that marginal strips already exist on the Nevis River and all major tributary creeks (Left Branch of the Doolans, Nevis Burn, Schoolhouse Creek and Commissioners Creek, on Ben Nevis and on Coal Creek on Craigroy.. Because of the steep and rugged nature of the upper catchments of these creeks, the marginal strips do not provide satisfactory access. There are however, much more useful access tracks up the spurs between these tributary creeks on the western side of the valley. It is recommended that public

access be made available by way of formal easements for foot, mountain bike and equestrian use on the 4 major spurs on Ben Nevis.

Access to the Nevis River for fishing and other purposes such as family picnics will be required. It is suggested that at least 3 access routes to the river be established by way of formal easements for foot use.

CONSERVATION MANAGEMENT STRATEGY FOR OTAGO

There are important and significant statements made in the Conservation Management Strategy (CMS) for Otago which was approved in 1998. The statements, objectives and stated priorities for action which were identified at that time are particularly relevant to the current tenure reviews. The CMS identified a number of Special Places which included the 'Remarkables' and the 'Old Man – Garvie' areas.

With regard to the 'Remarkables' Special Place the CMS stated:-

"Neighbouring land, in pastoral or special lease, also has high scenic, recreational and biological values. Part of Loch Linnhe Station has been retired and is under the department's management with a special lease allowing emergency use for grazing. The lower flanks of The Remarkables are covered by a special lease with conditions for landscape protection. The Hector Mountains and the Nevis Valley beyond are all in pastoral leasehold tenure, with virtually all properties having entered the tenure review process."

"Best known of the area's values are its recreational opportunities, particularly the ski area visited by tens of thousands of skiers each year. Climbing, tramping and ski touring are also of importance while parapenting, hang-gliding, hell-viewing, botanising and photography are other pursuits popular in the area. Angling for trophy brown trout in the Nevis is growing in popularity while the lower Nevis gorge is considered to be a supreme kayaking challenge."

"The botanical values are well known and particularly high. The tussock grassland is extensive and largely unmodified. The alpine and sub-alpine plants are notable as the most eastern extension of several species including snow patch tussock (Chionochloa oreophila), Ranunculus buchananii and Parahebe birleyi. The area has a wide range of habitats (rock bluffs, boulderfields, cushionfields, tussockland, wetland, forest and shrubland) from 350m to 2,320m."

"The natural and historic resources of the Nevis Valley are still being uncovered. Recent discoveries include uncommon galaxid species in the streams and special plant communities on the valley terraces, including red tussock grasslands, Carex muelleri and uncommon Galium and Leptinella species. The lower Nevis has a long history of human occupation and use, beginning with moa hunters in the l4th Century and periods of goldmining and farming right down to the present time. The Nevis Valley is a supreme example of a little modified and virtually treeless Central Otago landscape, and is said to be the most intact goldfields landscape remaining in Otago."

The Objective for the 'Remarkables' Special Place is*:-"To protect the very high landscape and ecological values of the area, and its historic value, and the remoteness of parts of it, while allowing appropriate parts of it to be used for a range of recreational opportunities including the existing skifield."*

This is to be implemented through a number of methods which include:-

(a) Action will be taken to create and gazette a Conservation Park covering the lands administered by the department in this area, subject to its own management plan. The management plan will provide for an amenities zone covering the existing commercial ski area and any approved expansion of it, and will not derogate from the provisions of the ski area lease agreement.

(b) Through pastoral lease tenure review negotiations, endeavour to add appropriate contiguous areas on The Remarkables, Hectors and in the Nevis catchment to the core Remarkables Conservation Park proposal.

The Priority for the 'Remarkables' Special Place is:- *"Creation and management planning for the Conservation Park will be a priority for this Special Place, although timing and extensions will be kept under review as tenure change proposals develop on adjoining properties."*

In relation to the 'Old Man - Garvie' Special Place the CMS stated: that the objective was:- "*To protect the entire high altitude range crests for their landscape, nature conservation , cultural and recreational importance, to improve legal access to them, and to ensure that recreational and commercial uses are managed to sustain resources and ensure quality recreational experiences, including the remote quality of the Old Woman – Garvie area*."

The stated intention is that this objective will be implemented through:-

(a) "Pastoral lease tenure review on adjacent properties will provide opportunities to negotiate to protect the entire range crest. Overall management of these new areas with the existing areas will confer net conservation and management benefits (eg, rationalise fencing).

(b) The integrated management of the high altitude areas administered by the department will be promoted through the concept of a "Kopuwai Conservation Park". If the park proposal proceeds, a management plan will be developed."

The priority for the 'Old Man – Garvie' Special Place is: *"Completion of protection negotiations, including tenure reviews, will be a priority in this Special Place."*

The tenure reviews on Craigroy and Ben Nevis pastoral leases thus present an opportunity to make very significant advances towards these declared objectives and in particular to make major progress towards the realisation of two Conservation Parks – Kopuwai and Remarkables.

CONCLUSIONS

The tenure review of Craigroy and Ben Nevis is important as it provides an opportunity to secure public use and enjoyment over an area of outstanding scenic and recreational value, which also has very significant historical gold mining features.

It also provides an opportunity to increase the range of opportunities available in the general Lake Wakatipu/Queenstown area where there is increasing demand for recreational opportunities with increasing numbers of tourists. Furthermore, it is also an opportunity to ensure that the quality of recreational experience on those lands is maintained by recognising and protecting the significant natural, landscape and historic values described above.

It provides an opportunity to cater for the demands of tourists and satisfy a real need for true back country and remote experiences for NZ recreation seekers too.

The outcome of the tenure review of Craigroy and Ben Nevis, if it includes the important recreation and conservation recommendations included in this report, could contribute significantly to the achievement of the objectives declared for the 'Remarkables' and 'Old Man – Garvie' Special Places in the Conservation Management Strategy for Otago, and in particular to make very significant progress towards the realisation of two important Conservation Parks.

PHOTOS:

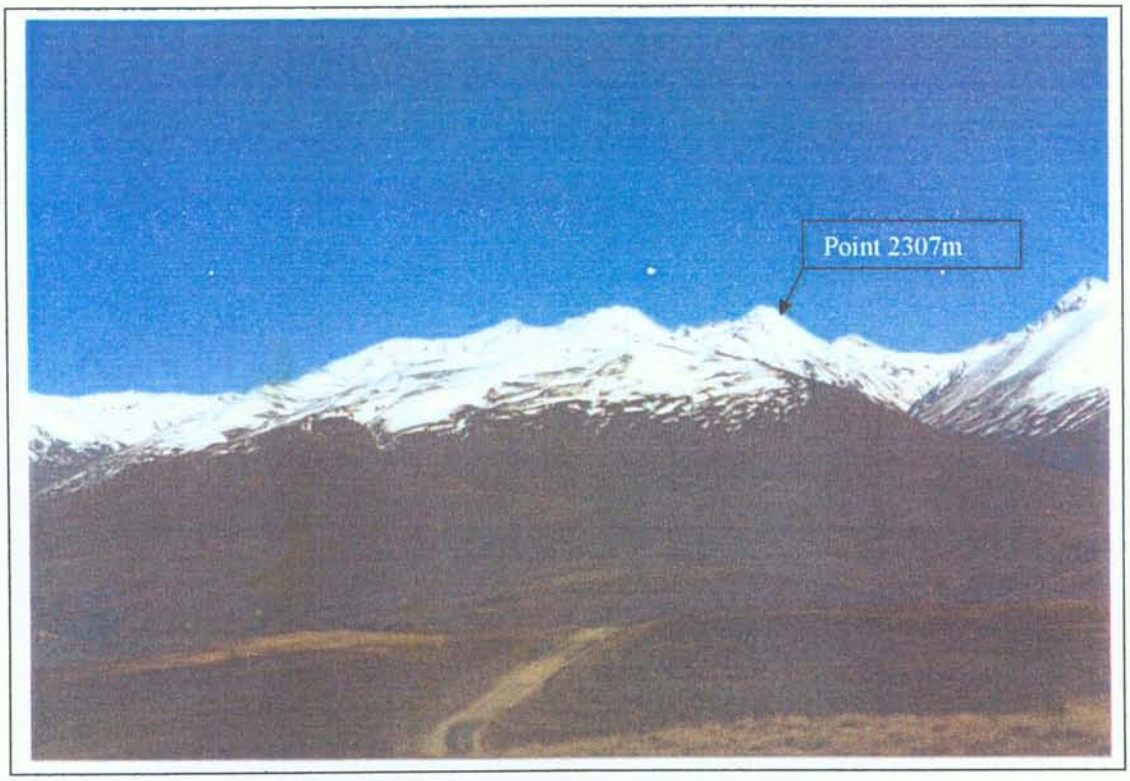

Photo 1: View of Hector Mountains from Nevis Road. Jagged ridge and peaks partially hidden behind front country. Point 2307m arrowed

Photo 2: Nevis Valley. Schoolhouse Flat gently slopes down to the meandering Nevis River, and is bisected by the Nevis Road.

Photo 3: Upper Schoolhouse Flat, looking across current gold mining activity in Schoolhouse Creek. Note the patch of threatened *Carex muelleri* in foreground. Yellow tinge to Flat is due to *Carex muelleri* and fescue tussocks. Old tailings line the Creek.

Photo 4: Copper tussockland on high terrace on true left of Schoolhouse Creek. *Carex muelleri* grows on dry slopes adjacent to the wetland, while the rare sedge *Carex kaloides* is present within the wetland.

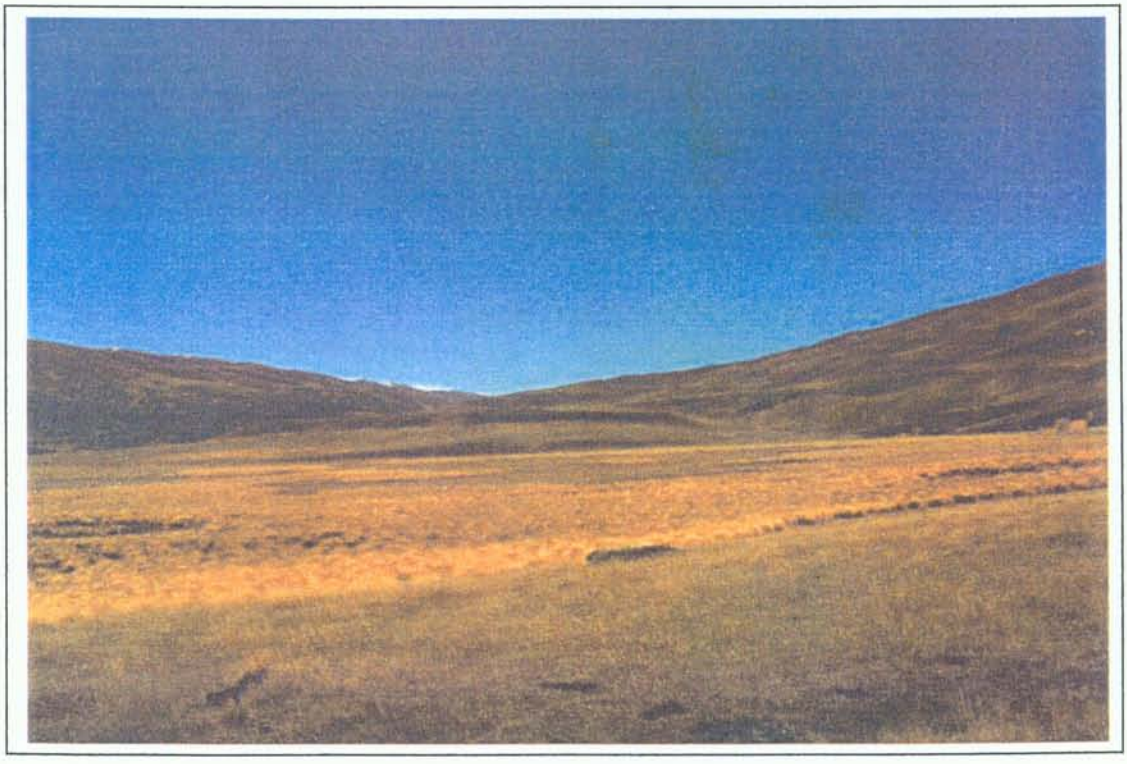

Photo 5: Remains of old stone building at site of Lower Nevis Township.

Photo 6: Johnston's Workings, located above the copper tussockland in Photo 4.

LETTER FROM LINZ WEBSITE.

File: PAL 14-04-241 & PAL 14-04-233

14 June 2004

David Paterson
QV Valuations
PO Box 215
DUNEDIN

Dear David

Ben Nevis and Craigroy Tenure Reviews- SIVs in Proposed Hydro Lake Footprint

As you requested, the department has assessed the type, extent and distribution of the significant inherent values within the footprint of the proposed hydro lake, as defined on the plan (dated 2 February 2002) supplied by the lessee.

Of particular importance is the presence within the footprint of threatened plant species and their habitat; and historic sites.

Threatened Plants

The most significant plant species are:

a) *Leptinella* (a) (CHR 515297: Clutha River) (a tiny button daisy) found on small hummocky gravel pavements, known elsewhere only at Pisa Flats (Clutha valley) and awaiting taxonomic description as an Otago endemic; and
b) *Myosotis pygmaea* var. *glauca* (a forget-me-not) found on convex steep slope of the lower flat near Nevis River, spreading from natural habitat onto mining tailings.

Leptinella (a) (CHR 515297; Clutha River) and *Myosotis pygmaea* var. *glauca* are respectively ranked Nationally Critical and Nationally Endangered on the Threatened Species list, the highest and second highest ranking according to threat of extinction.

The department does not have a thorough, up-to-date and comprehensive knowledge of the extent and characteristics of other populations of these plants in either the Nevis Valley or in similar habitats in Otago i.e. Manuherikia Valley. Conclusively determining the significance of the populations of these occurring within the footprint is therefore not possible.

Subsequently, the department recommends that the lessee employ a contractor to survey both the recorded populations of these species and similar habitat within the Nevis Valley, for the purpose of better determining their extent and distribution. Such a survey would be best conducted in spring and the department would recommend Neil Simpson as a contractor (C/o Conservation Consultants, PO Box 478, Queenstown, ph (03) 442 2035), given his familiarity with the area and these species. The department would make available to the contractor its records of these species distribution and would also advise of likely key potential habitats.

Historic Resources

The recorded historic resources within the footprint comprise of a Moa Hunter site and sites associated with gold mining.

To the department's knowledge, the most significant site is the Moa Hunter site (site record number F42/7, information held by Central Otago File Keeper of the NZ Archaeological Association [Dr Jill Hamel, 42 Ann St, Dunedin]), located adjacent to Schoolhouse Creek near Trig Y. The contribution made by the historic resources (associated with gold mining) that lie within the footprint to the overall sequence of unusually intact systems of alluvial gold mining sites within the Nevis Valley is also of considerable significance.

However, the department does not have the requisite detailed knowledge of all the individual historic sites within the footprint, necessary to enable a full assessment of the proposal's impact. Again therefore, the department recommends that the lessee employ a contractor to determine the extent and distributions of these resources. The department would recommend either Dr Jill Hamel or Peter Petchey (36 District Road, Sawyers Bay, Pt Chalmers) as possible contractors and as per the threatened plants the department will assist the contractor to the best of its abilities.

Please note that the lessee would be required to gather the information on the extent and distribution of significant values, including botanical and historic resources, whilst formulating their application for the necessary resource consents.

If you require clarification or any further information please do not hesitate contacting me.

Endorsed

HCTRM

_____

Tony Perrett / /

Yours sincerely

Bruce Hill
for Conservator

otago-de021 letter to qv alvs in lake footprint may 04