Toitu te Land whenua Information New Zealand

Crown Pastoral Land Tenure Review

Lease name : BRANCH CREEK

Lease number : PO 052

Conservation Resources Report - Part 1

As part of the process of Tenure Review, advice on significant inherent values within the pastoral lease is provided by Department of Conservation officials in the form of a Conservation Resources Report. This report is the result of outdoor survey and inspection. It is a key piece of information for the development of a preliminary consultation document.

Note: Plans which form part of the Conservation Resources Report are published separately.

These documents are all released under the Official information Act 1982.

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DOC CONSERVATION RESOURCES REPORT ON TENURE REVIEW OF

BRANCH CREEK PASTORAL LEASE

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PART 1

INTRODUCTION

1.1 INTRODUCTION:

Branch Creek Pastoral Lease (PL) was inspected on the 9 – 13 December 2002 as part of a review of its pastoral lease tenure. This review was requested by the lessees of the property and is being undertaken under the provisions of the Crown Pastoral Land Act 1998. As part of the tenure review process, a range of specialists have visited the property. They have each provided specialist reports on inherent values, which are incorporated within the Conservation Resources Report.

Branch Creek PL has an area of 6281 ha. It is located on the Cardrona Valley Road, approximately 18 km from the town of Wanaka. The property is bounded by the Cardrona Ski Field to the south, Motatapu Station PL to the west and Spotburn Station and "The Stack Conservation Area" to the north.

It is located in the Wanaka Ecological District of the Lakes Ecological Region. A Protected Natural Areas Programme survey has never been undertaken for the Wanaka Ecological District.

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PART 2

INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

2.1 LANDSCAPE

Location and Landscape Context:

Branch Creek PL is located entirely within, and on the western side of, the Cardrona Valley and extends from the valley floor to the spine of the Cardrona Range. The property includes deeply dissected schist based mountain slopes in the west, and low hills and terraces typical of the lower slopes within the Cardrona Valley. The Branch Burn (locally known as McPhees Creek) and its tributaries form the largest catchment, with Macdonalds Creek extending from the western ridge to join the Branch Burn. Boundary Creek forms the southern boundary of the property.

Methodology:

The pastoral lease is divided into landscape units (LUs). The units reflect areas of similar landscape character. Landscape character is the quality that makes one area different from another and can be defined as follows:

'Landscape character results from a particular combination of characteristics formed by the interaction of natural processes and cultural (human) activities' (NZ Institute of Landscape Architects).

For each unit a landscape character description is given along with a description of key visual and scenic attributes. An evaluation summary is then presented using a range of criteria to assess each unit and to assist with determining each unit's high inherent values. The criteria include:

1. Intactness: - refers to the condition of the natural vegetation, patterns and processes and the degree of modification present.
2. Legibility: - refers to its expressiveness - how obviously the landscape demonstrates the formative processes leading to it.
3. 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. Coherence is also assessed under aesthetic factors. This is based on characteristics including intactness, unity, continuity, and compatibility. Intrusions, alterations, disruptions tend to detract from coherence.
4. Historic Factors - refers to historically valued attributes in the context of a high country landscape.
5. Visibility - refers to the visibility from public places such as highways, waterways or local vantage points.
6. Significance - is the significance of the characteristics and features, or combination of characteristics and features within individual units. If they are locally, regionally or nationally significant.

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7. Vulnerability - is a measure of each landscape unit's susceptibility to further ecological deterioration, which would impact on landscape values.

Landscape Units:

The lease divides neatly into two landscape units. The mountain slopes of the main range form one unit and the low hills, terraces and alluvial flats at the base of the range a second unit. However for purposes of description, the mountain slopes are further divided into LU2a, the footslopes and lower slopes of the main range, and LU2b, the upper mountain slopes (refer to Landscape Plan 4.2). The landscape units and sub units are as follows-

LU1 Cardrona Low Hills
LU2a Lower Mountain slopes (below 1100 metres)
LU3b Upper Mountain slopes

Landscape unit 1 (LU1) – Cardrona Low Hills:

Character Description:

LU1 includes the distinctive low hills, terraces and alluvial flats typical of the western side of the Cardrona Valley between the valley floor and the main range. Gentle angular ridge and gully landform is the dominant pattern, which are underlain by sands and gravels. Outwash alluvial flats and small terraces occur within this ridge and gully system. The flats and terraces are generally irrigated providing further contrast with the surrounding pattern of low dry hills.

Vegetation is predominantly exotic grasses and herbs, with briar ubiquitous throughout the unit. Matagouri and sparse short tussock also occur. Poplar and willow are associated with the lower Branch Creek flats. Pine and other exotic plantings occur around the station homestead and buildings and in other isolated locations.

Gold workings of alluvial gravels are a significant feature scattered throughout the unit. Tailings and exposed sluice faces are the main tangible evidence of this.

Overall the unit is highly modified.

Visual & Scenic Values:

The unit forms part of the wider landscape of the Cardrona Valley landscape. The Cardrona low hills are a distinctive visual feature and landform within the valley.

From the valley floor and from the Cardrona Valley Road the unit forms part of the viewshed to the visually dominant and distinctive range behind. The mountain vistas are particularly memorable especially in winter with their snow-capped tops framed by foreground poplars and the Cardrona low hills.

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Evaluation Summary:

Table 1

Criteria	Value	Comment
Intactness	Low	High degree of modification
Legibility	High	Landform processes legible
Aesthetic Factors	Medium	Low hills significant within Cardrona Valley
Historic Factors	Medium	Gold workings part of fabric of landscape
Visibility	Medium	Partially visible from Cardrona Valley Road. Highly visible from ski field roads
Significance	Low	Low hills are significant as a landform feature. Vegetation patterns are not significant.
Vulnerability	Low	Already modified

Landscape unit 2A (LU2A) – Lower mountain slopes:

Character Description:

LU2a includes a band of mid slope country between the low hills and the higher mountain slopes above 1100 metres. Landform patterns are typically dissected mountain slopes and ripply slump topography with scattered rock outcrops.

Vegetation comprises primarily short tussock mixed with over-sown and top-dressed (OSTD) pasture. Patchy grey shrubland and briar occurs on footslopes and within gullies. Wet areas and watercourses are typical within lower gullies and basins. Scattered snow tussock occurs towards the upper limit of LU2a (approximately 1200 metres) with *Hieracium* a significant inter tussock species. Kowhai is notable on the bluffs west of the station buildings. Green stock camps dominated predominantly by barley grass are visually prominent during spring /early summer on dry spurs.

Vegetation cover is generally in good condition within the short tussock belt and includes a robust pasture sward combined with dense short tussock. Macdonalds Creek and the Branch Burn within LU2a are steep and deeply incised with significant areas of sheet and gully erosion exposing the grey schist bedrock. *Dracophyllum*, depleted tall tussock and *Hieracium* are characteristic on the dark south faces.

Visual & Scenic Values:

This unit forms part of the Cardrona Valley landscape and is typical of the mid to lower mountain slopes characteristic of the western slopes of the Cardrona. Visual values (as with LU1) relate to

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the wider valley landscape. The generally good cover of both native and exotic vegetation within this unit, combined with the landform patterns contributes to a visually coherent landscape.

As a whole the Cardrona is recognised as a visually attractive Central Otago landscape. The only visually discordant elements are the appearance of *Hieracium* and a steep access track out of Macdonalds Creek near the boundary between LU1 and LU2a.

Evaluation Summary:

Table 2

Criteria	Value	Comment
Intactness	Medium	Natural vegetation patterns modified by pastoralism but more or less intact
Legibility	Medium to High	Formative processes legible
Aesthetic Factors	Medium	Not distinctive or visually striking
Historic Factors	Low	
Visibility	Medium	Partly visible from Cardrona Valley Road. Highly visible from ski -field roads on both sides of valley
Significance	Medium	Typical Cardrona valley mountain slopes
Vulnerability	Medium	

Landscape Unit 2B (LU2B) – Upper mountain slopes:

Character description:

LU2b takes in all the upper mountain slopes. The character of this sub- unit includes the steep and very heavily dissected mountain slopes of the Branch Burn and Macdonalds Creek, and the upper tributary of Boundary Creek below Mount Cardrona. The Branch Burn and Macdonalds Creek tributaries are particularly distinctive with very steep, rugged and tightly dissected mountain slopes with extensive sheet and gully erosion within the predominantly tall tussock vegetation.

The Mount Cardrona slopes are markedly less dissected and rugged than the Branch Burn tributaries with the main features being their ripply slump topography and scattered rock outcrops. The upper alpine basins of Mount Cardrona contain peri-glacial features with massive rock tors on summit ridges, broken rock and scree. Small alpine wet areas occur within the basin floor.

Tall tussock is the dominant and unifying vegetation cover throughout the unit. *Dracophyllum* is extensive on the steep shady faces. Native beech and shrubland are also significant components and are expanding their boundaries within the narrow tributary gorges of the Branch Burn. Natural erosion and landslips are part of the inherent character of these rugged mountain lands.

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Visual & Scenic Values:

LU2b contains high visual and scenic values due to elevated, rugged and visually impressive nature of the mountain lands. The extremely broken and dramatic landform patterning within the Branch Burn tributaries are especially memorable. Natural patterns and processes are entirely intact. The combination of rugged steep schist bedrock, continuous and intact tussock, alpine and subalpine vegetation, and beech and shrubland lined gullys, contributes to a landscape of high visual and scenic value.

The snow tussock slopes below Mount Cardrona are in good condition though snow tussock on lower ridges and sunny faces is depleted. The tussock contrasts with impressive rock tors and outcrops associated with the upper periglacial basin.

The upper mountain slopes are visually important as the backdrop and part of the visual enclosure within the Cardrona Valley. The view from the Cardrona Valley Road up the Branch Burn to the mountain range is an important view within the valley. The south-western slopes are part of Mount Cardrona, the highest and most recognisable mountain in the Valley.

Evaluation Summary:

Table 3

Criteria	Value	Comment
Intactness	High	Natural patterns and processes intact
Legibility	High	Highly expressive of formative processes
Aesthetic Factors	High	Visually striking and distinctive both close up and from a distance. High level of coherence
Historic Factors	-	-
Visibility	Medium to high	Part of valleys visual enclosure
Significance	High	Important intact mountain range landscape
Vulnerability	High	High alpine land vulnerable to ecological deterioration

Importance of Landscape Values:

The upper mountain slopes within the Branch Creek PL landscape contain important inherent landscape values. The integrity of this mountain landscape is intact. Natural patterns and processes are entirely intact. The combination of rugged mountain slopes of steeply dipping schist, continuous and intact tussock at all upper altitudes, and outstanding alpine and subalpine vegetation, contributes to the important inherent values present. The expanding montane beech lined gully and impressive shrublands are also important natural elements within this landscape.

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Of particularly note is the highly distinctive rugged and dissected mountain slopes of the Branch Burn which is a feature of the Cardrona Range.

The periglacial features and small alpine wetlands within the upper basins of Mount Cardrona are important features, as are the impressive rock tors and bluffs. The tall tussock grasslands extending over the upper slopes are generally in good condition and retain their natural character.

2.2 LANDFORMS & GEOLOGY:

Branch Creek PL is located on the western side of the Cardrona Valley and extends from the valley floor at 488 m asl to Mount Cardrona on the south west corner of the property at 1936 m asl. Mt Cardrona, Macdonalds Peak, Highland Saddle and Middle Peak define the rear (west) of the property with Round Hill Spur to the north-east.

The catchments of Boundary Creek, Macdonalds Creek and the Branch Burn (McPhees) dissect the property. These are deeply incised, and include much steep eroding country, particularly in the headwaters of the Branch Burn.

The land adjacent to the Cardrona Road has a markedly different character, being foothills and river terraces. Although much dissected, these lower areas have more rounded hills and easier slopes.

Geologically, Branch Creek's rock type is part of the Rakaia terrane, of the Wanaka lithologic association. This consists of undifferentiated pelitic and prismatic schist and greenschist sequences.

A geopreservation site called NW Cardrona Fault, Branch Creek Road faulted aggradation surface, is located on a terrace on the property, adjacent to the Branch Creek Road. It is noted as a fault scarp on an alluvial surface. It is described as a displaced terrace surface (c. 16000y) with a trenched exposure of NW Cardrona Fault showing a high angle reverse fault with surface offset of c. 4m. Three fault movements of 1.3m surface uplift represented in exposure, suggesting recurrence interval of faulting c. 4000 – 7000 yrs (Beanland, S. 1987).

This site is not obvious to the untrained eye as it shows on the ground as a slight rise across a cultivated paddock.

Importance of Landforms and Geology:

The geopreservation site is considered significant in a geological sense. It is considered of regional scientific, educational or aesthetic importance. It is considered unlikely to be damaged by humans but could be threatened by ploughing or accelerated erosion (Beanland, S. 1987).

2.3 CLIMATE

As with much of Central Otago, Branch Creek PL is subject to a semi continental climate, with hot dry summers and cold winters. The homestead averages about 750 mm annual rainfall. Snow lies in the higher areas right through winter and can also lie for periods around the homestead area.

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2.4 VEGETATION

Vegetation Description:

A. Branch Burn (McPhees):

This is a large catchment encompassing the northern half of the property. Rugged headwater sub-catchments run to the crest of the Cardrona Range from Middle Peak (1837) in the north to Macdonalds Peak (1398 m) in the south.

The highest and most exposed crests of the range contain fellfield communities similar to those described below for the highest parts of Boundary Creek. At slightly lower altitude, spur crests retain a low cushion forming shrub and herb community comprised of *Dracophyllum muscoides, D. pronum, Hectorella caespitosa, Raoulia grandiflora, R. hectorii, Anisotome imbricata, Ourisia glandulosa, Luzula pumila, Agrostis muelleriana* and *Hebejeebie* (=*Chionohebe*) *densifolia*. The margins of eroding slip faces have similar species along with *Hebe buchananii*.

Surrounding tussock grasslands at c.1400 m are dominated by narrow-leaved snow tussock (*Chionochloa rigida*) but shrubs of *Hebe hectorii* and *Dracophyllum pronum* are particularly abundant. Common intertussock herbs include blue tussock (*Poa colensoi*), *Raoulia subsericea, R. apicenigra, R. grandiflora, Celmisia viscosa, Aciphylla kirkii*, and *Gaultheria depressa*. The only weed present is very occasional tussock hawkweed (*Hieracium lepidulum*).

Damp fine screes at the base of rock outcrops have the sprawling daisy *Celmisia angustifolia* and localised patches of the uncommon *Epilobium purpuratum*.

At a lower site c. 1100 m below Highland Saddle (2 km south west of where marked on topographical map) narrow-leaved snow tussocklands on easy terrain similarly have a strong shrub component including *Dracophyllum uniflorum, D. pronum, D. longifolium*, cottonwood (*Ozothamnus vauvilliersii*), *Hebe hectorii, H. anomalum*, and coral broom (*Carmichaelia crassicaule*), along with giant speargrass (*Aciphylla scott-thomsonii*).

Nearby riparian shrubby faces have many of the shrub species mentioned above as well as *Hebe pauciramosa*, desert broom (*Carmichaelia petriei), Brachyglottis cassinioides, Coprosma cheesemanii, C. ciliata, Olearia cymbifolia*, and *O. nummulariifolia*. Tussock hawkweed is a common understorey herb. Streamside seeps and wet gravels support bog-rush (*Schoenus pauciflorus*), *Gunnera monoica, Colobanthus* sp, *Epilobium melanocaulon, Ourisia caespitosa* and the exotic herb *Cerastium fontanum*.

Dry slopes with a north aspect at this altitude have a sparser cover of narrow-leaved snow tussock with correspondingly greater litter, bare ground and herb cover. Common native dry-tolerant species include *Leucopogon fraseri, Gaultheria depressa, Muehlenbeckia axillaris*, blue tussock, *Pimelea pseudolyallii, Lycopodium fastigiatum* and *Brachyscome* sp.

Below about 1000 m many similar dry slopes with north-facing aspect have lost their tall tussock cover and instead support a short tussock/pasture grass community with scattered relicts of tall tussock. Some dry disturbed sites within this zone have *Pimelea oreophila, Hebe pimeleoides, Oreomyrrhis colensoi, Vittadinia australis, Euchiton ruahinicum* and the introduced *Acaena agnipila*.

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Most of the upper Branch Burn tributaries have retained significant shrublands. Those on the south-facing slopes of the most northern branch (below Middle Peak and Round Hill Spur) are the most extensive and well developed, indicating a long period without fire. These very steep slopes support dense shrubland dominated by inaka (*Dracophyllum longifolium*) but with considerable mountain ribbonwood (*Hoheria lyallii*), *Olearia nummulariifolia, O. arborescens, O. avicenniifolia, Hebe subalpina,* koromiko (*H. salicifolia*), mountain wineberry (*Aristotelia fruticosa*), *Coprosma* sp.'t', and mountain flax. Common understorey plants include prickly shield fern and *Chionochloa conspicua.*

A small silver beech (*Nothofagus menziesii*) forest clothes the steep craggy slopes about halfway up the northern branch. It has a very sparse understorey of *Coprosma* spp.

Shrublands at lower altitude along the south branch (particularly the true left) have a more typical 'grey' shrublands composition without the *Dracophyllum spps* ubiquitous at higher elevations. Common species include matagouri (*Discaria toumatou*), *Olearia odorata, O. bullata, Coprosma propinqua,* desert broom, mountain wineberry and koromiko. Woody weeds are present at low density and include sweet briar (*Rosa rubiginosa*) and occasional elderberry (*Sambucus nigra*). Similar shrublands are also present on the true right, extending up to 100 m up the valley side.

Patchy, mostly riparian shrublands, with a considerably greater weediness, extend right down the main stem of the Branch Burn, almost to its confluence with Back Creek. Some small groves of tall *Olearia lineata* are a feature of the lower valley.

Some infrequently flooded gravely terraces support dense turfs of herbs and semi-shrubs. Common species include *Gaultheria parvula, Coprosma perpusilla, Leucopogon fraseri, Oreomyrrhis colensoi, Hydrocotyle microphylla, Wahlenbergia albomarginata* and *Epilobium komarovianum*. Adjacent frequently disturbed stream bed has *Parahebe decora* and *Epilobium melanocaulon.*

B. Macdonalds Creek:

The upper third of Macdonalds Creek, rising to the crest of the Cardrona Range, has a predominantly natural character dominated by tall snow tussock communities and *Dracophyllum* dominated shrublands similar to those described for the Branch Burn and Boundary Creek. The lower two thirds of the valley has been considerably modified by pastoral farming practices and now supports a mixed pasture grass/short tussock cover with scattered tall snow tussock at highest elevations. Pockets of shrubland exist in the gullies.

In the valley bottom more diverse grey shrublands occur in patches and along the banks of the creek. Common species include matagouri, *Coprosma propinqua, C. rugosa C.* sp. 't', *C. rigida, Olearia bullata, O. odorata,* , desert broom, koromiko, , *Coriaria sarmentosa* and mountain wineberry. Lianes are also very common and include *Clematis marata, Rubus schmidelioides*, and *Muehlenbeckia australis*. Woody weed species at low – moderate density include sweet briar, gooseberry (*Ribes uva-crispa*), and elderberry. Numerous herbaceous pasture weeds are also present especially Californian thistle (*Cirsium arvensis*), barley grass (*Critesion glaucum*), selfheal (*Prunella vulgaris*) and woolly mullein (*Verbascum thapsus*).

A rocky outcrop in the lower valley (true right) has a fire modified cover of *Coprosma propinqua,* false beech (*Gaultheria antipoda*) and bracken fern (*Pteridium esculentum*). Rocky cracks and

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ledges provide habitat for *Epilobium pubens, Centella uniflorum, Asplenium flabellifolium* and *Elymus* sp.

Below the homestead are intensively farmed flats on the true right and hill slopes disturbed by gold diggings on the true left.

C. Unnamed catchment south of Branch Creek Road:

The upper part of this catchment rises to 1300 m and comprises moderately steep hill country. In contrast the eastern portion has gentle rolling relief with an altitude range approximately 500 – 664 m. Scattered tall tussocklands occupy the highest ground and shady gullies. Elsewhere on the steeper ground is a generally dense cover of short tussock, pasture grasses, and *Trifolium arvense*. Small rock outcrops have retained a low shrub cover of matagouri, porcupine shrub, *Coprosma* sp and very occasional kowhai (*Sophora microphylla*), indicating a taller forest cover the past.

The easier lower country is dominated by silver tussock (*Poa cita*), hard tussock (*Festuca novae-zelandiae*), pasture grasses and dry tolerant native and exotic herbs, especially *Coprosma petriei, Raoulia australis, Leucopogon fraseri, Muehlenbeckia axillaris, Leptinella serrulata, Colobanthus brevisepalus* and mouse-ear hawkweed. Sweet briar is abundant, especially along the shallow watercourses. Occasional shrubland patches are dominated by *Olearia odorata*, matagouri and porcupine shrub(*Melicytus alpinus* agg.). Damp creek terraces have cutty grass (*Carex coriacea*).

D. Boundary Creek:

The uppermost parts of this catchment rise to the crest of the Cardrona Range and its highest point Mt Cardrona 1936 m. The exposed rocky crest supports a diverse alpine fellfield community *with Hectorella caespitosa, Abrotanella caespitosa, Raoulia grandiflora, Dracophyllum muscoides, Neopaxia sessiliflorum, Chionohebe thomsonii, Phyllachne colensoi, Celmisia laricifolia*, and occasional *Aciphylla simplex* and porcupine shrub.

Many of these species are also present amongst the snow bank communities of the small cirque basin which forms the headwaters of Boundary Creek. Other common species in these communities include *Celmisia haastii, Ourisia glandulosa, Cardamine* spp, and *Kelleria villosa*.

The upper basin is flanked on its southern side by rock bluffs with *Hebe buchananii, Celmisia brevifolia, Pachycladon novae-zelandiae, Scleranthus uniflorus, Geranium sessiliflorum, G. microphyllum, Anaphalioides bellidioides,* blue tussock, *Leptinella pectinata* subsp. *pectinata* and bladder fern (*Cystopteris tasmanica*).

At around 1750 m numerous seepages merge into a small bog with a distinctive suite of wetland herbs including *Marsippospermum gracile, Abrotanella caespitosa, Plantago lanigera, Ranunculus gracilipes, Acaena saccaticupula, Psychrophila obtusa, Oreomyrrhis* sp, *Brachyscome sinclairii* and *Gentiana amabilis*. A wetland sequence continues down the basin with subtle hydrological and fertility gradients reflected in community composition. One large wet turf is comprised almost solely of *Kelleria* with occasional *Carex gaudichaudiana* and *Gentiana amabilis*. Another has the uncommon sedge *Carex berggrenii*. The banks of a small developing water course have snow groundsel (*Dolichoglottis lyallii*), bog-rush, *Hydrocotyle microphylla*, and *Coprosma perpusilla.*

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Slim snow tussock (*Chionochloa macra*) is prevalent from about 1700 m often in association with the woody shrubs *Coprosma ciliata, C. cheesemanii* and *Pimelea pseudolyallii.* Common intertussock native herbs include comb sedge (*Oreobolus pectinatus), Carex breviculmis, Stellaria gracilenta, Celmisia gracilenta, Acaena saccaticupula, Raoulia subsericea, Anisotome flexuosus, Ranunculus gracilipes* and prickly shield fern (*Polystichum vestitum*). Introduced herbs, albeit very localised, start to appear at this altitude. They include tussock hawkweed, sweet vernal (*Anthoxanthum odoratum*), sheep's sorrel (*Rumex acetosella*), and white clover (*Trifolium repens*).

Dense slim snow tussocklands continue to dominate down to about 1500 m at which point narrow-leaved tussock becomes more abundant. Common intertussock species include *Aciphylla kirkii, Hebe hectorii, Dracophyllum pronum, Brachyglottis bellidioides, Celmisia densiflora, Craspedia lanata, Lycopodium fastigiatum, Gaultheria depressa, Anisotome imbricata* and *Poa maniototo.*

At lower altitude in the catchment, tussocklands on sunny aspects are less dense with considerable litter, and intertussock species are dominated by *Leucopogon fraseri, L. suaveolens*, golden speargrass (*Aciphylla aurea*), *Raoulia subsericea*, and *Gaultheria depressa.* Tussocklands on shady aspects become increasingly woody with *Dracophyllum* spp and cottonwood. A predominantly native vegetation cover continues down as far as the mid valley fence.

Importance of vegetation:

Branch Creek Pastoral Lease falls within the Wanaka Ecological District. It contains a good representation of the plants and plant communities of the southern extent of the district, particularly those in the sub-alpine and alpine zones. The following species are listed as threatened in the most recent threat classification system (Hitchmough 2002):

Carex berggrenii - Sparse
Carmichaelia crassicaule – Gradual Decline
Clematis marata - Sparse
Epilobium purpuratum - Sparse
Hebe buchananii – Range Restricted
Leptinella serrulata – Gradual Decline
Olearia bullata – Sparse
Olearia lineata - Sparse
Pimelea pseudolyallii – Sparse

The western most half of the property is in a predominantly natural state, not withstanding the much reduced extent of beech forest following pre and post European fires. This has led to a greater expression of tall tussockland and shrublands than might otherwise be expected. Domestic stock and feral animal impacts on these communities are generally light.

Alpine communities, although not extensive on the property, are diverse, and in good condition with a suite of notable small wetlands. Wetlands nationally have undergone a 90% reduction and remaining examples are often priorities for protection.

The tall tussockland communities are in very good condition. Narrow-leaved tussockland and slim snow tussock communities are both well represented. Slim snow tussock communities

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occupy a narrow altitudinal range in Otago and have undergone substantial retreat following pastoralism.
A well developed woody shrub component is a feature of these tussocklands, indicating a long absence of fire.

The extent and variety of shrublands on the property is one of its most significant vegetation features. Sub-alpine shrublands are well represented and range from *Dracophyllum* 'monocultures' to more diverse mixed *Hebe, Coprosma*, and *Olearia* dominated shrublands. On steep shady slopes they form almost impenetrable barriers to sheep and wild animals; a particularly outstanding example occurs on the south-west facing slopes below Middle Peak and Round Hill Spur. The stature, density, and composition of the shrublands here are more like those in the western mountains and are unusual in the context of a range this far east.

Seral shrublands on sunny faces around the beech forest remnant in northern tributary of the Branch Burn are precursors to beech forest re-establishment. 'Grey' shrublands flanking the main valley sides often contain the threatened shrub *Olearia bullata* at higher elevations with *O. lineata* present at lower sites. Shrublands are a rare ecosystem, particularly those in the montane bioclimatic zone, where their former extent has been drastically reduced by fire and pastoralism. The importance of shrubby remnants has recently been given prominence by Walker et al. (2002).

2.4.1 Problem Plants:

Relatively few problem plants were identified in the areas of highest conservation interest. The generally dense tall tussocklands have been thus far little affected by hawkweeds; however tussock hawkweed is a conspicuous ground cover beneath many of the montane shrublands. Its impact on shrublands is not clear.

Briar and elderberry are present at low density in montane shrublands. Elderberry in particular has the potential for further spread and impact which should be monitored. A range of other common, mostly herbaceous weeds, exist in and around shrublands but these are judged not to pose a significant threat to the inherent values.

2.5 FAUNA

2.5.1 Invertebrate Fauna:

The invertebrates recorded on this inspection are listed in Appendix 5. A wide range of invertebrates were recorded from sweep netting and ground searching throughout the property.

The alpine cockroach *Celatoblatta quinquemaculata* was present in the higher alpine areas of both Mt Cardrona and the Upper Branch Burn. It is widespread and common in eastern South Island Mountains.

Eight species of predatory ground beetle were found across the property. Species such as Tiger Beetle (*Neocicindela dunedinensis*), and *Megadromus sandageri* are widespread in Otago. A few weevils are recorded from a range of plants in particular *Aciphylla* sp. The large tussock grassland weevil *Anagotus latirostrus* is found in alpine areas of Otago and can be locally common. Two species of chafer were recorded. One, *Prodontria captio* is a member of a genus of flightless

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beetles endemic to southern South Island. Five species of cicada were recorded on the property. In some places cicada were present in large numbers. Most of the species recorded are widespread in Otago alpine areas, however, others such as *Kikihia subalpina* are considered to have a localised distribution. The cicada *Maoricicada campbelli* was recorded from the lower parts of Macdonalds Creek and the Branch Burn.
The shield bug *Hypsithocus hudsonae* was recorded from both the slopes of Mt Cardona and the Upper Basins of the Branch Burn. The common spider hunting wasp *Priocnemis monachus* was recorded in the Upper Branch Burn. Two species of parasitic flies were recorded from the Upper slopes of Mt Cardrona and the Upper Macdonalds Creek.

A total of 20 species of moth and butterflies from six families were recorded from the property. Many of these such as *Orocrambus vittellus* are common and widespread in Otago grasslands and alpine areas. However others such as *Eudonia oreas, Stenoptilia lithoxesta* and *Asaphodes periphaea* are rarer species and restricted to alpine zones in Otago. Other species such as *Eudonia torodes* are widespread in Otago but occur in specific localities. Some such as *Glaucocharis epiphaea,* are found more on wetter areas such as snow banks or seeps. A new species of the tussock butterfly *Argyrophenga* genus was recorded. This species as yet undescribed is restricted to the western high country in Otago.

Three species of grasshopper and one species of cricket were recorded. In places the number of grasshoppers observed was very large. Common species such as *Phaulicridium marginale* were present throughout the property. *Sigaus obelisci* was recorded from the slopes of Mt Cardrona. It could be expected to be present in other alpine areas on the property in fell fields and short tussock grasslands.

The ground weta *Hemiandrus focalis* was recorded from the lower Branch Burn and the slopes of Mt Cardrona. Additionally an undescribed cave weta was recorded from the top basin under Mt Cardrona.

Importance of Invertebrate Fauna:

A wide range of insects were recorded on this inspection. Functional groups present in the headwaters of the Branch Burn, Macdonalds Creek and Boundary Creek (the slopes of Mt Cardrona) included: herbivorous moths, cicadas and grasshoppers, detritivores parasitic fly's (Tachnids), predatory carabid beetles, and spider hunting wasps. Numbers present in some of these groups, particularly the herbivores, was impressive.

The insects recorded are representative of the complex alpine environments of the Lakes Ecological Region. The alpine ecosystems including snowbanks and grasslands are rich in herbs that have significant natural character. The diversity of insects recorded reflects the variety of communities present. At lower altitudes, the invertebrate fauna is indicative of shrub and tall tussock communities and herbfield (eg the presence of cicada *M. campbelli*, grasshoppers and the predatory tiger beetle). Some of the lower altitude habitats (particularly in the Branch Burn) retain important inherent values, having an assemblage of regionally endemic insects.

Both the alpine flightless shield bug *Hypsithocus hudsonae* and the Otago endemic grasshopper *Sigaus obelisci* are threatened species and classified as –'range restricted' (Hitchmough 2002).

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2.5.2 Herpetofauna:

Five species of lizards were found during the inspection of the property. They were located generally along ridgelines, on slopes with dense growths of tussock or in rocky valley gorges, being areas of an altitude between 600-1700m asl. None were found in highly modified areas of lowland pasture or within 3 km of the Cardrona Valley Road.
The following lizard species were observed:

Geckos: - *Hoplodactylus* sp. 'Cromwell Gorge' (Hitchmough, 1997) is moderately abundant in rock outcrops in the north-facing slope which descends into the main branch of Macdonalds Creek, at 1580m altitude, and one in the middle (western most) branch of Branch Creek, at 1160m altitude.

Skinks: - *Oligosoma chloronoton* was found at two sites with dense tussocks and occasional small rocks, one on the ridgeline between Boundary Creek and Macdonalds Creek at 1580m, and one in the middle (western most) branch of Branch Creek, at 1160m altitude.

- *O.inconspicuum* was positively identified in Macdonalds Creek and on the south facing slope which rises out of it, between 700-920 m altitude, among semi-developed tussockland. Unconfirmed sightings were made in tussockland high up in the Boundary Creek catchment (1500 -1700m).

- *O. maccanni* was widespread on the lease in both intact and semi developed tussock lands, usually in association with rocky habitats.

- *O.n.polychroma* was found only in the northern branch of Branch Creek, between 640-680m altitude, in mixed pasture-shrublands.

In the head of the northern branch of Branch Creek a lizard dropping was found in a boulder scree at 1450m but no other evidence of lizards was found at this site.

Importance of Herpetofauna:

The four skink species which were found on the lease are widespread in Otago and Southland.

In the Cardrona area *O.n.polychroma* is nearing its western range limit (for Otago but not Southland), where it is considered rare.

In the Cardrona area *O.chloronoton* is also nearing its western range limit for Otago, where they are considered locally sparse. The discovery of two populations of *O.chloronoton* on the lease is important as there are few records in Otago of populations of this species, known to be extant from west of the Manuherikia River. *O.chloronoton* is a threatened species classified as 'gradual decline' (Hitchmough, 2002)

The gecko *H.sp.* 'Cromwell Gorge' is found from Wanaka southwards through the Dunstan, Pisa and Cardrona Ranges to the Kawarau and Cromwell Gorges, where it is common but shows a considerable amount of geographic variation. The specimens observed on Branch Creek PL are fairly typical examples of the species; however they are either on or very close to the western limit of the species range at this particular latitude.

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2.5.3 Avifauna:

The birds observed on this inspection are listed in Appendix Four. A falcon was seen in the middle reaches of Macdonalds Creek and keas were heard in the head basin of Branch Burn. The kea is at their eastern distributional limit.

The other birds recorded are of no particular conservation significance.

Importance of Avifauna:

Eastern falcon is considered a threatened species with a classification of 'Gradual Decline'. Kea have a classification of 'Acutely Threatened - Nationally Endangered' (Hitchmough 2002).

2.5.4 Aquatic Fauna:

The National Institute of Water and Atmospheric Research (NIWA) Freshwater Fish Database holds no records for Branch Creek PL.

Macdonalds Creek, Branch Burn and Boundary Creek are the main streams on the property, all of which flow into the Cardrona River, a tributary of the Clutha River/Mata-au.

A survey of these creeks was carried out on 20th – 21st January 2003 using a backpack electric fishing machine. Survey results have been assessed based on the criteria: *"Non-migratory galaxiid survey methods"*(R Allibone). Habitat measurements taken were recorded on a NIWA freshwater data form. In-stream invertebrates were noted when they could be identified during electric fishing survey but no specific task of collection was undertaken.

17 Sites were surveyed as listed in Appendix 6 and are described as follows:

Branch Burn:

There were 10 sites surveyed in the Branch Burn and its tributaries. Three species of fish were recorded, brown & rainbow trout plus the non-migratory galaxias Sp. D. Three sites had no fish recorded.

Some bank erosion is evident from periodic high flows. As the stream reaches the valley it slows and widens, although there still signs of occasional high flows. The substrate is mainly coarse cobble/gravel with a fine layer of silt causing some armouring of the bed.

There were low numbers invertebrates present. This could be partly due to the lack of interstitial spaces in the bed and the high flows. The species that were present indicate high water quality as all are highly ranked in a water quality measuring system called the "Macro-invertebrate Community Index".

Boundary Creek:

Five sites were surveyed in Boundary Creek and its tributaries. Fish recorded were brown trout and the non-migratory galaxias Sp. D. Three sites had no fish.

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The creek and tributaries at times carry high volumes of water and in parts the stream banks have been under cut. This erosion has resulted in a fine layer of silt on most of the bed.

Coarse cobble/gravel dominates the particle size of the stream bed with some armouring of the bed due to high volumes of silt periodically being carried.

There were low to moderate numbers invertebrates. This could be partly due to the lack of interstitial spaces in parts of the bed. In one tributary high numbers of invertebrates were found, which may be due to the stable nature of the boulder dominated bed. The species present indicate high water quality.

Macdonalds Creek:

Two sites were surveyed on McDonald's Creek with only one having fish, being the galaxiid Sp. D.

There were signs that the coarse gravel dominated creek bed has being turned over at times of high flows. There were also obvious signs of bank erosion.

There was low invertebrate presence which could be due to the regular disturbance of the bed. However, the species that were presence indicated high water quality.

Importance of freshwater fish fauna:

Galaxias sp D is ranked 'Nationally Vulnerable' (Hitchmough, R. 2002) and is the fourth rarest fish in New Zealand. This species occurs in the Clutha River/Mata-au catchment and areas of the Catlins District. The species occurs as four clusters of populations; from Bannockburn upstream in tributaries of the Clutha and Lindis Rivers at Queensberry and in around the Chain Hills (Lindis); a small number are known from Rough Ridge; the tributaries in the mid reaches of the Pomahaka River; and a group in the Catlins, Tahakopa and possibly the Mokareta Rivers. Genetic data indicates that the different clusters, while all part of the *Galaxias* sp D group, are distinct. Protection of populations throughout the range of this species is required to preserve this diversity and the present geographic range.

Brown trout *(Salmo trutta)* was first introduced into New Zealand in 1867. They are found throughout New Zealand and form a very important recreational fishery for many anglers. The fish are likely to be a resident population, due to their small size and low numbers.

Rainbow trout *(Oncorhynchus mykiss)* was first introduced in 1886, and are now throughout New Zealand. A single rainbow trout was found in Branch Burn suggesting that the numbers of this species is very limited.

2.5.5 Problem Animals:

Feral goats, hares, possums, rabbits mustelids and the occasional red deer are known to be present on the property.

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Possums and mustelids have been subject to recent control measures to assist with the eradication of TB vectors. Goats frequently travel along the range and are subject to recreational shooting within the property and formal DOC control on surrounding properties. At inspection rabbits were in moderate numbers on lower sunny country and have historically required frequent control.

2.6 HISTORIC

Maori sites:

There are no recorded Maori archaeological sites on the lease.

European sites:

Potentially the oldest site on the lease is the musterers hut adjacent to current homestead. This dates to the original Wanaka Station which was first taken up in 1858. It is built of mortared roughly dressed schist. There are two separate rooms each with fireplace with a smaller side room. Overall dimensions are approximately 4.5 m by 10m. The building is in good condition and is still used as shearers quarters. Its association with the earliest permanent European settlement of the Wanaka area gives it considerable regional significance.

There are extensive ground sluicings (grid ref. F40 907 904) along the true right of MacDonald Creek from below homestead to junction with Branch Burn. These consist of un-patterned amorphous tailings piles and minor sluice faces up to 4m deep. An overall impression of this site is difficult to make because of a dense cover of briar rose. These workings are typical of ground sluicing for gold.

There are also extensive ground sluicing along the true right of an un-named creek south of Macdonalds Creek which extend for more than a kilometre up the valley. There is a small area of hydraulic sluicing on the ridge between Macdonalds Creek and the un-named creek: (grid ref. F40: 968 897). These typical ground sluicings cover a greater area than the above site and are more visible.

Visually most impressive is an extensive area of sluicing on a spur of the main ridge line at the eastern boundary of the lease. There is one large hydraulic sluice face, numerous tailings piles and multiple tail races (grid ref. F40 973 895). These workings are much more extensive and probably had a longer life span than those in Macdonald creek and may be those that were referred to historically as the Branch Creek workings.

In 1875 the gold fields warden commented "at Branch Creek, six miles below the Cardrona, being a mining gully of about 8 years standing, there are about 20 miners, who having large water rights are doing well. These men evidently anticipate permanent employment as they built comfortable houses, and fenced in gardens for themselves" (Appendices to the Journals of the House of Representatives 1875 H3:24). This description seems to fit the workings in the un-named gully although no house sites were noticed in the brief visit made.

The Lone Star dredge operated in Branch Creek for several years after 1903 but no obvious signs of dredge workings were found.

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Importance of Historic:

The gold workings on the pastoral lease are typical of 19th century sluicing. They date from the 1860s and 1870s and are therefore protected under the provisions of the Historic Places Act 1993.

The former Wanaka Station musterers hut is of historic importance.

2.7 PUBLIC RECREATION:

2.7.1 Physical Characteristics:

Branch Creek is characterised by a relatively narrow road frontage of about 4km onto the Cardrona Valley Road and a long back boundary of about 14km along the top of the range.

A key feature is the neighbouring Cardrona Skifield. This brings in large numbers of people to ski on the south boundary of Branch Creek. The Cardrona Road has high vehicle numbers especially during the ski season. The Waiorau Snow Farm across the valley also attracts numerous visitors. The road is also used as an alternate route over the Crown Range to Queenstown.

Another feature is the wide gravel creek beds that provide easy access into the back country from the Branch Burn bridge on the Cardrona Valley Road. The rear of the property has Mt Cardrona and Macdonalds Peak as well as the Highland Saddle, which provides a relatively low access route into the Motatapu catchment. It should be noted that the Highland Saddle is incorrectly positioned on the topographical map, it being some 2km further south down the range.

2.7.2 Legal Access

Branch Creek PL fronts onto approx 3.5km of the formed Cardrona Valley Road. An unformed Branch Creek Road approximates the beginning of the farm access track noted as the Branch Creek Road on the topographical map. However it is on a different line (to the south) over most of its 600m length. It has no apparent use as a practical public access route.

A further unformed legal road skirts the boundary on the south side of the PL near Boundary Creek. Again it appears to have no practical use.

There are no marginal strips laid off on the creeks within the property. The Branch Burn and Macdonalds Creek appear to have beds wider than 3 metres for much of their length and will attract marginal strips as a result of the disposition of the land when tenure review is implemented. These are likely to in future be important routes for public access to the rear of the property.

The marginal strip on the Branch Burn will also provide access to the easement starting at Back Creek which traverses Round Hill Spur. This access was created during the tenure review of the adjoining Spots Creek PL (Spotburn) and provides access to The Stack Conservation Area.

2.7.3 Activities

Currently there is little public recreation occurring on Branch Creek

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Winter heliskiing and ski touring are the main potential activities. There is also potential to extend the current Cardrona Skifield area and the south west corner of the property has been zoned 'Cardrona Skifield Subzone' with this in mind.

Summer tramping with climbs to Middle Peak and over the Highland Saddle to the Motatapu River are possibilities. There are also opportunities to link through The Stack Conservation Area to the many entry/access points which have been created during other tenure reviews eg: Roys Peak walk.

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PART 3

OTHER RELEVANT MATTERS & PLANS

3.1 CONSULTATION

An NGO early warning meeting was held on the 22/5/03 with interested groups. The following views were expressed:

- There are remnant stands of silver beech that are important which in time will spread out.
- Walking access will be catered for via marginal strips and on the adjoining property via Round Hill Spur.

The Southern Lakes Branch NZDA submitted a report (Appendix 2) on 31/3/03 that the property had red deer hunting with future access available via Branch Creek.

On 25/6/2003 FMC submitted a report (Appendix 1) on the significant inherent values of Branch Creek with the main points summarised as follows:

- Key tramping access to the Cardrona Range.
- Ski opportunities include extensions to the Cardrona Skifield or extended traverses of the range.
- Consideration should be given to off the road secure car parking.
- There should be consideration of the recreational potential for the Cardrona Range and not just existing use.
- Significant natural, historic and landscape values should also be protected.

On the 29/6/03 Forest and Bird Upper Clutha Branch provided a report (Appendix 3)following their inspection of the property. The main points are as follows:

- The land on the Cardrona Range has significant landscape values.
- There are significant vegetation values on the back country.
- Although yet to be fully appreciated, recreational values are high.
- Higher land is not ecologically sustainable where it is uneconomic to fertilize.
- The headwater catchment to the west of Middle Peak should be protected.
- There is a need to protect some of the lower country with SIVs. The whole dark face from Back Creek to the rear of the property should be protected.
- Round Hill Spur will provide suitable access to the Cardrona Range.

3.2 REGIONAL POLICY STATEMENTS AND PLANS:

The whole property is subject to the Otago Regional Plan: Water rule which requires resource consent for suction dredge mining.

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3.3 DISTRICT PLANS:

The property is located within the General Rural zone of the Queenstown Lakes District Plan.

In general, the proposed Queenstown Lakes 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 subdivision and subsequent development, buildings, forestry and also ski area activities. No forestry shall be undertaken in an alpine area with an altitude greater than 1070m. There are no registered historic sites, protected features or areas of significant indigenous vegetation as set out in the appendices of the plan. The protected landscape provisions of the Plan are in the process of going through the Environment Court. However, it is likely that part of this property will be in an Area of Outstanding Landscape (Wakatipu Basin). Protection is limited to the controls set out above.

The southernmost part of the property, being the south bank of Boundary Creek, is also in the Cardrona Ski Area sub-zone. This sub-zone excludes the area from the landscape classification but most other rules for the General Rural zone apply.

3.4 CONSERVATION MANAGEMENT STRATEGIES AND PLANS

The Otago Conservation Management Strategy has a general objective regarding Central Otago ecosystems.

This is to recognise the distinctive contribution the ecosystems of Central Otago make to the diversity of New Zealands flora, fauna and ecological communities and processes and to retain representative examples through protection at lower altitudes and more extensive protected areas at higher altitudes.

This objective is to be implemented by the following:

- The protection of representative examples of ecosystems including aquatic ecosystems on privately occupied land will be negotiated using a range of options including acquisition through tenure review, covenants, management agreements and land purchases or exchanges. Attempts to secure buffer zones and ecological linkages between areas will be included in this exercise.

- Survey of areas for the PNA Programme will be completed as access and resources become available and efforts will be made to negotiate formal protection for areas identified as a priority for protection.

- The value of tussock grasslands as a contributor to the character of New Zealand and its landscape and biodiversity will be promoted and retention of tussock grasslands advocated.

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 habits and sets a number of goals to achieve this aim. Of particular relevance to tenure review, is goal three which states:

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

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PART 4

MAPS ETC.

4.1 Additional information

REFERENCES

Allibone, R.M (Draft Report) Non-migratory galaxiid survey methods. Department of Conservation

Hitchmough, R. (compiler), 2002: New Zealand Threat Classification System lists 2002. *Threatened Species Occasional Publication 23*, 210 p.

R.M. McDowall 2000; The Reed Field Guide Book New Zealand Freshwater Fishes

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.

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4.2 ILLUSTRATIVE MAPS

Topo/Cadastral

Landscape Units and Important Landscape Values

Areas of important natural value

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4.3 APPENDICES

Appendix 1	Federated Mountain Clubs Submission
Appendix 2	Southern Lakes Branch NZDA Submission
Appendix 3	Upper Clutha Forest and Bird Submission
Appendix 4	Bird List
Appendix 5	Electric fishing Sites
Appendix 6	Invertebrate Species List
Appendix 7	Photos

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APPENDIX 1

FEDERATED MOUNTAIN CLUBS SUBMISSION

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FEDERATED MOUNTAIN CLUBS OF NEW ZEALAND (Inc.)
P.O. Box 1604, Wellington.

26 JUN 2003
RECEIVED

CONS	
A.M.	
C.R.M.	
B.S.M.	
T.S.M.	
H.R.A.	
H.C.T.R.M.	Debbie
K.A.M.	
OTHER	

copies to Pam + Tim

25 June 2003

Tony Perfett
High Country Tenure Review Manager
Department of Conservation
Private Bag 5244
DUNEDIN

Dear Tony

FMC Reports on Recreation and Related Significant Inherent Values on Pastoral Leases currently under Tenure Review:

PPL 14-01-52 PPL 14-02-96

Branch Creek and Temple Peak

FMC has been preparing reports on the recreational and related significant inherent values of the pastoral leases which entered the review process in October 2001 and September 2002, and we are now pleased to offer our Reports on the Branch Creek and Temple Peak Station pastoral leases as part of the statutory consultation process.

The FMC Report has been compiled following recent inspections and/or other research of the properties to assess their recreational and related significant inherent values. As you will gather from the content of the Reports, we have made use of various sources of published information.

FMC hopes that this Report will be helpful to you and the Crown Agents in developing tenure review proposals for these properties. We look forward to commenting on the Preliminary Proposals in due course.

Yours sincerely

Michael J Floate

Dr Michael J S Floate
FMC Co-ordinator, High Country Tenure Review Otago/Southland/Westland

cc Ken Taylor (re Temple Peak)
Manager
DTZ New Zealand Ltd.
PO Box 27
ALEXANDRA

cc David Paterson (re Branch Creek)
QV Valuations
John Wickliffe House
PO Box 215
DUNEDIN

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FEDERATED MOUNTAIN CLUBS OF NEW ZEALAND (Inc.)
P.O. Box 1604, Wellington.

PASTORAL LEASE TENURE REVIEW

Preliminary Report on
Recreational and Related Significant Inherent Values

BRANCH CREEK

June 2003

Compiled for Federated Mountain Clubs (FMC) of NZ (Inc.)
by Dr Michael J S Floate, High Country Consultancy.

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RECREATIONAL AND RELATED SIGNIFICANT INHERENT VALUES of BRANCH CREEK

A Report for FMC based on map and literature research to assist in the Crown Pastoral Lease Tenure Review Process

June 2003

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Map showing the preferred allocation of public conservation land and freehold land (green and red outlines respectively) and important recreational access routes (yellow)

Figures .. .. Follow page 7

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LIST OF FIGURES

Fig. 1 This view is from Little Criffel at the north end of the Pisa Range, looking up the Cardrona Valley. The high, snow covered ground (skyline, right) includes the Cardrona Skifield, Mt Cardrona and Macdonalds Peak on the western boundary of Branch Creek pastoral lease. Branch Creek includes most of the ground in shadow on the far side of the valley and rises from about 500m at the homestead to 1,936m on Mt Cardrona.

Fig. 2 The Cardrona Skifield is a popular family field which brings many recreational users to the valley. The base buildings are clearly seen in this view in which Branch Creek pastoral lease land is situated to the right (or north) of the skifield. This tenure review should consider the potential recreational use of pastoral lease land in the context of all other neighbouring opportunites.

Fig. 3 Branch Creek pastoral lease covers about 6,000ha and includes some alluvial soils on the valley floor. In the middle distance are downlands on Pleistocene gravels which have been worked for gold in places, and in the distance can be seen the higher tussock grasslands extending up to Mt Cardrona (1,936m) and Macdonalds Peak (1,398m) which are situated near the middle of what has been called 'Cardrona Range'.

Fig. 4 Macdonalds Peak and the upper catchments of Boundary and Macdonalds Creeks, and Macdonalds Spur are central in this view. The high ground is characterised by Dunstan Steepland Soils, classified LUC Class VIIe, while the foreground shows LUC Class VI land on the downlands which are typical, but not actually part of Branch Creek pastoral lease. Class VI land is suitable to become freehold, because with appropriate maintenance it can be managed in a way that is ecologically sustainable.

Fig. 5 This view shows an extensive area of Dunstan steepland soils (LUC Class VIIe on the higher country above about 1,000m. These soils have serious limitations for pastoral use and are almost certainly not capable of ecologically sustainable grazing. The tussock grasslands do on the other hand have significant inherent values so such areas should be returned to full Crown ownership and control.

Fig. 6 This view from the Branch Creek Road near Branch Burn Bridge shows the Round Hill Spur leading directly to Middle Peak. This route, possibly in combination with the marginal strip along the creekbed, would provide good tramping access to the middle section of the 'Cardrona Range'.

Fig. 7 Having gained the 'Cardrona Range' crest at Middle Peak (far right in this view from Roys Peak above Lake Wanaka) it is possible to traverse along the ridge to Mt Alpha (skyline, centre) and across to the top of the popular walk to Roys Peak. Although easily accessible, such trips offer both challenge and a sense of remoteness. New opportunities such as this are important as they increase the range of options available from increasingly busy tourist centres like Wanaka and Queenstown.

Fig. 8 Both Mt Alpha and Roys Peak offer superb views over Lake Wanaka and the Upper Clutha area and are a fitting reward for the effort expended in gaining and traversing the 'Cardrona Range'. Such trips are part of the developing network of new opportunities which is essential to meet the needs of both visitors and New Zealanders. Tenure review offers a unique chance to add to the existing limited range of options.

Fig. 9 A view showing the upper part of the Crown Range Road heading up the Cardrona valley (left of centre). There is a parallel recreational option to traverse southwards from Macdonalds Peak along the 'Cardrona Range' towards Crown Peak. This peak (C) can just be made out to the right in this view, beyond which can be seen the Remarkables. This illustrates the extent of vistas to be had from the little known 'Cardrona Range'

Fig. 10 Parts of the traverse south from Macdonalds Peak provide a true ridge crest experience, with views into the Cardrona Valley to the east and spectacular views into the valleys of the Soho and Golspie to the north. This illustrates another challenging and apparently remote experience which is also within easy reach of Queenstown. The trip could in time also become available to the public through tenure review if the wider context of each individual review is brought together within a recreational framework.

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Fig. 11 There was extensive gold mining activity with sluicing in both Boundary Creek and Branch Burn valleys. Sluicings can be seen in the Pleistocene gravels on the right in this view. This sluicing was powered by water which was delivered from water races. The line of one such race is marked by a horizontal line of trees across the downland slopes (middle distance, left). The best of these goldmining relics should be protected as an Historic Reserve.

Fig. 12 Some of the goldmining remains can be clearly seen from the Cardrona Road. Quite extensive workings can be seen in the gravels beyond the power pole in the centre of this view. Although protection as Historic Reserve would be appropriate, continued sheep grazing could probably continue as this is unlikely to do much damage to the mining relics.

Fig. 13 The high country in the upper catchments of Macdonalds Creek and Branch Burn is not capable of sustainable pastoral use and is prone to erosion. It does however, have highly significant inherent natural and landscape values. This makes a fine setting for recreation and justifies the return of such landscape to full Crown ownership and control.

Fig. 14 The higher ground in the western and northern parts of the property stretches from about 1,000m to the crest of the 'Cardrona Range'. This area has very significant inherent value as tussock grassland, with sub-alpine herbfield and cushionfield at the highest altitudes. It should be returned to full Crown ownership and control to be managed for conservation and recreation purposes.

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INTRODUCTION

This report has been prepared following the Early Warning Meeting in September 2002 at which the properties entering the tenure review process in 2002 were introduced. We understand that Branch Creek entered the process a little later, in substitution for Hunter Valley Station which was withdrawn. This report is offered as a contribution to the statutory consultation process undertaken by the Department of Conservation.

The report focuses on those features of Branch Creek which are important for public recreational interests. It should be noted that while interest focuses on access, the natural and historic values and landscapes of the areas concerned 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 natural, historic and landscape values in this report.

Branch Creek is situated in the Cardrona valley immediately north of the property known as Mt Cardrona and the Cardrona Skifield (Fig. 1). To the north it is bounded by Spotts Creek. To the west Branch Creek adjoins Motatapu Station along the crest of what Mason (1989) calls the 'Cardrona Range' between Knuckle Peak(1804m) and Middle Peak (1837m). Mt Cardrona, at the southwestern corner of the property is the highest point on Branch Creek at 1936m.

The Cardrona Skifield (Fig. 2) is well used by the public and although other neighbouring properties are not yet in the tenure review process, it is important that a broad view is taken of the overall outcomes of tenure review in the Cardrona Valley. It is recommended that as each lease is reviewed it should be assessed in this broader context and that consideration should be given to the emerging network of recreation opportunities. Recreational use in the future will depend on decisions made now, so it is important that adequate provision is made for public access and recreational enjoyment. This is particularly important with properties which are within easy reach of Wanaka and Queenstown.

METHODS OF SURVEY AND ASSESSMENT

Despite numerous attempts to arrange a mutually convenient time, it was not possible to carry out a field inspection of Branch Creek before winter snow made an inspection of the higher country impossible. This report is therefore, written without the benefit of on-site information and instead relies on observations from the valley floor and from the Waiorau Snow Farm access road. Information has also been gathered from other sources. Those sources include studies of topographical and Land Use Capability (LUC) maps, and consultation with other recreational users and NGOs. A study of "Outdoor Recreation in Otago" was undertaken by Mason (1989) and published by FMC. Reference is made to this Recreation Plan for Otago in the recreation section below. The Conservation Management Strategy for Otago has also been used as a source of reference.

GENERAL DESCRIPTION OF BRANCH CREEK

Branch Creek is a modertately sized property of a little over 6,000ha in extent (Figs. 1 and 3). The homestead is situated on the floor of the Cardrona Valley at about 500m. The back boundary runs along the prominent skyline ridge crest of the 'Cardrona Range' from Mt Cardrona (1936m), over Macdonalds Peak (1398m) and through the Highland Saddle at about 1500m, rising again to Middle Peak (1837m) at the northernmost point on the property.

The northern and southern boundaries of Branch Creek follow prominent spurs. The southern boundary runs almost due east off Mt Cardrona while the northern boundary follows the Round Hill Spur from Middle Peak to the valley floor of the Branch Burn.

Most of the higher country (above about 1,000m and up to about 1800m) is characterised by High Country Yellow Brown Earth Dunstan Steepland soils (Figs. 4 and 5) with some Carrick Hill soils toward the lower end of this altitude range. The country immediately below the high points of Mt Cardrona, Macdonalds Peak, Highland Saddle and Middle Peak is extremely steep and is prone to erosion. All this land has been classified LUC Class VIIe with severe limitations for pastoral use. There are two small areas of LUC Class

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VIII land which are entirely unsuitable for pastoral use. These are on the highest slopes of Middle Peak and in the vicinity of Knuckle Peak.

The lower slopes, below about 1,000m and intruding as fingers up the valleys of the main creeks (Branch Burn and Macdonald Creek) are mainly characterised by Arrow Steepland Yellow Grey Earth soils which have been classified LUC Class VI (Fig. 4). There are some areas of Blackstone Hill Yellow Grey Earth soils, generally associated with the valleys of Branch Burn, Macdonalds Creek and Boundary Creek. These are classified LUC Class IV. These Class IV and VI soils are described as having high and medium suitability respectively for pastoral farming. There are also significant areas of Naseby Yellow Grey Earth soils on the downlands and gravelly terraces close to the Cardrona River which are also LUC Class VI lands of medium suitability for pastoral use. It is likely that with appropriate maintenance fertiliser treatment, these areas of land (LUC Class VI and better) can be managed in a way that is ecologically sustainable so they are likely to be suitable for disposal on freehold title.

The higher country, generally above 1,000m, land classified LUC Class VII has severe limitations for pastoral use and may not be capable of being managed in a way that is ecologically sustainable (Fig. 5). Some is so steep as to be almost inaccessible for grazing stock while to qualify for long term sustainability, essential nutrients removed in animal products (meat and wool) must be replenished by farming practice. Recent studies have shown that sulphur (S) is in negative balance in lightly stocked high country pastoral systems. This will inevitably lead to progressive depletion and soil degradation unless it is replenished by the use of maintenance fertiliser. On lower country this should be normal practice and is justified economically by significant pasture growth response to applied fertiliser. However, this may not be economically justifiable at higher altitudes where pasture response to applied fertiliser is small and limited by climate. Under these conditions the natural values of the tussock grasslands, remnant shrublands and landscapes are more important. Because of these significant inherent values, a more appropriate outcome would be to return such land to full Crown ownership and control, for it to be managed for conservation and recreation purposes.

RECREATIONAL ACTIVITIES AND POTENTIAL

The recreational significance of Branch Creek lies in its location in the Cardrona Valley, adjacent to the Cardrona Skifield (Fig. 2), and its situation part way between the tourist and adventure centres of Queenstown and Wanaka.

The property has very few farm tracks and does not therefore possess good facilities for mountain bike enthusiasts. On the other hand, a combination of creek bed travel and climbing Round Hill Spur provides good tramping access to the 'Cardrona Range'. Round Hill Spur (Fig. 6) leads directly to one of the highest points along the range, Middle Peak, and from here it is possible to traverse northwards along to Mt Alpha and Roys Peak overlooking Lake Wanaka (Figs. 7 and 8) or to descend into the Motatapu Valley. It is also possible to traverse southwards over the Cardrona Skifield, above the back bowls, and along the crest of the range to Crown Peak, with spectacular views into the Soho and Golspie valleys (Figs 9 and 10). This property is therefore in a position to provide key access to the central part of the 'Cardrona Range'. Although less than 15km from Wanaka as the crow flies, this area has a sense of remoteness which belies its relatively easy access from major tourism centres (Figs. 7 and 10).

The Cardrona Range, with access via Round Hill Spur could thus provide new recreational opportunities for trampers in summer and may also offer other opportunities in winter. Consideration has already been given to extending the Cardrona Skifield into the back bowls. The high basins on Branch Creek (below Macdonalds Peak, Knuckle Peak, Highland Saddle and Middle Peak) offer alternatives for skifield extension. The basins in the headwaters of Macdonalds Creek and particularly Branch Burn have advantages due to generally southerly aspect and better snow retention that the Cardrona Skifield itself. There may also be opportunities for extended ski traverses of the Cardrona Range in some seasons.

As indicated in the introduction, the recreational use and potential of Branch Creek should be assessed in the broad context of the Wanaka/Queenstown area, and in the light of other recreational opportunities which may arise out of neighbouring tenure reviews. Consideration should be given to the emerging network of recreation opportunities. Recreational use in the future will depend on decisions made now, so it is important that adequate provision is made for public access and recreational enjoyment.

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An increasing problem for people wishing to make trips involving overnight stays in the backcountry is security of car parking at road ends. Consideration should be given during the tenure review process to making provision for car parking, where possible off highways, in the most secure places possible near the start of new easements over land which becomes freehold through tenure review. In the case of Branch Creek, consideration should be given to the provision of a parking area somewhere along the Branch Creek Road, ideally somewhere near the foot of Round Hill Spur.

Finally, it is argued that the recreational significance of Branch Creek should be assessed not only on its present usage but also on potential. This is because current usage is much less than its potential for a number of reasons. Because of the current land tenure under pastoral lease, and because access to some parts of the 'Cardrona Range' has not been easy in the past, the recreational use of this area is much less than it might have been if access was freely available. Where there are suitable settings there is significant potential for greater use and it is the full range of possibilities which should be considered during this tenure review.

In summary, this assessment indicates that there is considerable scope for greater recreational use, particularly tramping, along the 'Cardrona Range' and over into the Motatapu Valley. There is also a future possibility for extension of the Cardrona Skifield into the upper basins of Macdonalds Creek and Branch Burn, together with ski traverses of the Cardrona Range. It is recommended that public access to and along the ridge should be secured as an outcome of the tenure review of Branch Creek.

SIGNIFICANT INHERENT VALUES AND THEIR IMPORTANCE FOR RECREATION

This report focuses on those features of Branch Creek which are important for public recreational interests. It should be noted that while interest focuses on access, the natural and historic values and landscapes of the areas concerned and views to be had from vantage points have a fundamental impact on the recreational value of the back country and greatly influence the quality of recreational experience enjoyed. It is for this reason that reference is also made to natural, landscape and historic values of this property.

There is considerable historic interest in Branch Creek. It was part of the original Wanaka Station and there is evidence of an early homestead at Branch Creek prior to the break up of Wanaka Station. There was also extensive gold mining activity with sluicing in both Boundary Creek and Branch Burn valleys (Fig. 3). This sluicing was powered by water which was delivered from water races across the lower slopes of Mt Cardrona, evidence of which is still to be found (Fig. 11). There was also dredging in the valley of Branch Burn and at least one dredge hole survives today.

There are two areas on the Branch Creek property which show evidence of historic gold workings. The first of these is on the true left of Boundary Creek close to its confluence with the Cardrona River but upstream of the bridge on the Cardrona Valley Road (Fig. 11). The second is on the terraces at the toe of Macdonalds Spur, just north of Branch Creek Road, between Macdonalds Creek and Branch Burn (Fig. 12). These sluicings and tailings add significantly to the recreational interest in the property and are easily reached from the Cardrona Valley Road. They should be protected as an Historic Reserve but sheep grazing may be permitted because it is unlikely that this would damage the historic relics.

The steep upper slopes associated with Mt Cardrona, Macdonald Peak, Highland Saddle and Middle Peak carry extensive tussock grasslands of high intrinsic natural and landscape value (Fig. 5 and 13). The entire shady face on the true left of Branch Burn, below Highland Saddle and Middle Peak has been described as near virgin native vegetation with fine examples of beech forest on the lower slopes, and well developed shrublands extending up towards sub-alpine cushionfields. This entire toposequence has outstanding inherent value and should become conservation land.

The higher ground in the western part of the property and stretching up from about 1,000m to the crest of the 'Cardrona Range' has been classified LUC Class VIIe. Much of it is very steep and prone to erosion (Fig 13) and for reasons discussed above is thought to be not capable of being managed in a way that is ecologically sustainable. This area has very significant inherent value as tussock grassland, and sub-alpine herbfield and cushionfield at the highest altitudes (Fig 14) and should be returned to full Crown ownership and control to be managed for conservation and recreation purposes.

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AREAS TO BE PROTECTED

Because of the past history of oversowing, topdressing and pasture development and use on the lower slopes of Branch Creek, much of the vegetation has been modified and little of significant inherent value remains. However, there are areas of scrub, particularly in the middle reaches of Macdonalds Creek and Branch Burn valleys which have potential to revert to native shrublands of significant stature. FMC has argued before that it is not only the current vegetative state which should be considered during tenure review, but also the potential of communities to revert to their native state. Much of the Branch Burn catchment should be returned to full Crown ownership and control. There are also some areas of native shrubland below 1,000m in the valley of Macdonalds Creek which have potential to revert to native shrublands of significant stature and should be protected from grazing and burning. A binding covenant would allow these areas to eventually recover their former ecological stature.

There are some 2,000ha of higher country, between about 1,000 and 1,900m in the western half of the property stretching up to the ridge crest of the 'Cardrona Range' which has been classified LUC Class VIIe and which FMC considers cannot be managed in a way that is ecologically sustainable. Because this area has very highly significant inherent value, it is recommended that this area should be returned to full Crown ownership and control to be managed for conservation and recreation purposes. Proposed boundaries are indicated on the attached map.

There are two areas of historic gold workings in the form of sluicings and tailings which add significantly to the recreational interest in the property. These should be protected as Historic Reserve(s).

The front faces of the Branch Creek (seen from the Cardrona Valley Road) are considered to be part of an outstanding natural landscape. This is seen by increasing numbers of tourists who are using this road to travel between Wanaka and Queenstown, both in summer and during the ski season. For these reasons this landscape should be protected from inappropriate subdivision, use, and development, including afforestation and the erection of inappropriate structures. Although the Queenstown Lakes District Plan may afford some degree of protection, FMC does not accept that this is sufficiently robust or durable to provide adequate protection of the outstanding natural landscape values.

ACCESS REQUIREMENTS

The following access provisions will be required:-

It may be appropriate that marginal strips be laid off along Boundary Creek and Branch Burn/Macdonalds Creek if these waterways are of sufficient width to justify the creation of marginal strips. This may provide good walking access in the lower reaches of Branch Burn leading to Round Hill Spur.

Whether or not access is provided by the marginal strips, walking access is required up the Round Hill Spur from the Branch Burn Valley to Middle Peak. This could be in the form of an easement to permit walking access across the new freehold land on the lower slopes of this spur. If the upper slopes and the entire crest of the 'Cardrona Range' becomes conservation land as recommended above, this will provide adequate access for more extensive traverses of the range which may become available as tenure review proceeds on adjoining properties.

CONCLUSIONS

The tenure review of Branch Creek pastoral leases presents an important opportunity to enhance the recreational potential and use of the Cardrona Valley. This is important because of its ease of access from Wanaka and Queenstown, and the increasing numbers of visitors to these places both in summer and in the ski season.

There is also an opportunity to increase the quality of recreational experience on those lands by recognising and protecting the significant natural, historic and landscape values described above.