

Crown Pastoral Land Tenure Review

Lease name: CAMBRIAN HILLS

Lease number: PO 284

Public Submissions - Part 1

These submissions were received as a result of the public advertising of the Preliminary Proposal for Tenure Review.

October 09



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



24 March 2009

The Commissioner of Crown Lands
C/- QV Valuations,
Dunedin Office,
PO Box 215
DUNEDIN.



Dear Sir,

Re: Preliminary Proposal for Tenure Review: Cambrian Hills Pastoral Lease (Po 069)

I write on behalf of Federated Mountain Clubs of NZ Inc. (FMC) which represents some 13,000 members of tramping, mountaineering, climbing and other outdoor clubs throughout New Zealand. We also indirectly represent the interests and concerns of many thousands of private individuals who may not currently be members of clubs but who enjoy recreation in the back country.

On their behalf, FMC aims to enhance recreation opportunities, to protect natural values, especially landscape and vegetation, and to improve public access to the back country through the tenure review process.

FMC fully supports the objectives of tenure review as set out in the Crown Pastoral Land (CPL) Act 1998, and the more recently stated government objectives for the South Island high country especially the following:-

- *to promote the management of the Crown's high country in a way that is ecologically sustainable.*
- *to protect significant inherent values of reviewable land by the creation of protective measures; or preferably by restoration of the land concerned to full Crown ownership and control.*
- *to secure public access to and enjoyment of high country land.*
- *to ensure that conservation outcomes for the high country are consistent with the NZ Biodiversity Strategy.*
- *to progressively establish a network of high country parks and reserves.*

[EDC Min (03) 5/3; CAB Min (03) 11/5 refer]

FMC appreciates this opportunity to comment on the Preliminary Proposal for the review of Cambrian Hills pastoral lease.

For your information we attach as an appendix to this submission, the report which FMC prepared on the tenure review of Cambrian Hills in 2005, at the 'Early Warning' stage of the tenure review process.

THE PRELIMINARY PROPOSAL

FMC notes that the proposed designations are described as follows:-

Proposal 1.1

An area of 2,532 hectares (approximately) to be designated as land to be restored to or retained in Crown control as Conservation Area subject to qualified designations under section 35(2)(b)(i), section 36(1)(a) Crown Pastoral Land Act 1998 (CA1).

1.1.1 Qualified Designation: Easement Concession:

An easement to convey water for approximately 5 metres under section 36(1)(a), Crown Pastoral Land Act 1998 (marked "i-j" on the plan).

Proposal 1.2

An area of 612 hectares (approximately) to be designated as land to be disposed of by freehold disposal to Cambrian Hills Limited subject to protective mechanisms and qualified designations under section 36(3)(b), section 40(1)(b) and section 40 (2)(a) Crown Pastoral Land Act 1998 (shown edged in green on Plan 1 in Schedule A).

1.2.1 Qualified Designation: Public Access and Management Easements

(a) Public access easement in gross to provide public foot, or on or accompanied by horses and mountain bike access from Cambrian Road shown marked "a-b-c-d-d1-e". Public vehicle access is permitted from "a-b" with car parking at point "b" on the plan.

(b) An easement in gross to provide Minister of Conservation Management purposes access from Cambrian Road along an existing farm tracks marked "b-f-d", "d1-g-h" on the plan.

1.2.2 Protective Mechanism:

Conservation covenant pursuant to section 40(i)(b) and section 40(2)(a) Crown Pastoral Land Act 1998

1.2.2.1 A Conservation Covenant (CC1) under section 77 of the Reserves Act 1977 over approximately 4 hectares (CC1 on the plan).

1.2.2.2 A Conservation Covenant (CC2) under section 77 of the Reserves Act 1977 over approximately 0.4047 hectares (CC2 on the plan).

FMC SUBMISSIONS

It should be noted that FMC provided a Report in May 2005, following the Early Warning meeting related to properties introduced in 2004. That Report was entitled "*Preliminary Report on the Recreational, Landscape, Historic and other Conservation Values, and Recommendations for Outcomes of Tenure Review: CAMBRIAN HILLS.*" For your information a copy of the text of that report is appended to this submission.

The details of FMC views on, and support for, or objections to, the Preliminary Proposal are presented below and are arranged in the same format as the Preliminary Proposal quoted above.

Some of the general features of Cambrian Hills pastoral lease are well described in the Conservation Resources Report (CRR, 2006):-

"The lease spans a wide altitudinal and topographical sequence and contains the typical cross profile of the North Dunstan Mountains, being a moderately steep scarp face in the southeast, an upland plateau studded with tors and rocky outcrops, followed by long back slopes that abruptly change into dissected hill country in the northwest.

The lease shares a common boundary with several other pastoral leases being Mt St Bathans to the east, Cluden to the north and both Lauder and The Cambrian to the west. To the southeast, much of the low freehold country that borders the lease has been "worked" for the alluvial gold washed down from the surrounding hard rock slopes. Nestled amongst the gold workings are the old cob cottages of Cambrians, a goldfields town established by Welsh miners in the early 1860s.

The main physical components of the lease comprise a segment of the Manuherikia Valley floor, front valleys and ridges, the catchment of Shepherds Creek, an alpine plateau and the upper catchment of the Cluden Stream that flows

directly north towards the Lindis."

It is pleasing to note that many of the recommendations made in the 2005 FMC Report have been followed in the tenure review process and now appear in this Preliminary Proposal. For example, FMC recommended that RAP A1, North Dunstan should be returned to full Crown ownership, and we are pleased to note that virtually all of RAP A1 which occurs within the boundaries of Cambrian Hills pastoral lease, is proposed for inclusion within the proposed Conservation Area CA1.

The FMC Report also stated that *"From a recreational perspective, the most significant issues in this tenure review will be the consideration of public access to the Lauder Basin Conservation Area, Dunstan Peak and over the Cluden Pass between St Bathans (via Dunstan Creek) and the Lindis country"*. We note that these issues have been addressed and partially resolved by the recommendations made in the Preliminary Proposal for Cambrian Hills. See discussion regarding access in the sections below.

We are also very pleased that the particularly attractive and bio-diverse mid-altitude reaches of Shepherds Creek, which was shown to the FMC Report's author by the runholder in 2005, and which was recommended for protection in the FMC Report (2005), has been included within the area to be returned to the Crown as a Conservation Area.

In the Report (2005) we observed that historic gold workings near Cambrians and Vinegar Hill, together with water races in this area and in Welshmans Gully, add interest to the area and recommended that examples of gold mining relics should be protected under covenant. Again, it is pleasing to note that this recommendation has been heeded and that significant gold mining remains are proposed for protection under covenant.

Proposal 1.1

An area of 2,532 hectares (approximately) to be designated as land to be restored to or retained in Crown control as Conservation Area subject to qualified designations under section 35(2)(b)(i), section 36(1)(a) Crown Pastoral Land Act 1998 (CA1).

There are significant features of the landscapes and geology of the mid and upper slopes of Cambrian Hills which are well described in the CRR (2006):-

"A large proportion of the lease makes a significant contribution to the North Dunstan Mountains high country as it overlooks the Manuherikia Valley and the wider Maniototo Basin, forming the visual backdrop where most people in the district live, work and travel.

Also significant is the lease's contribution to the maintenance of the landscape integrity of a large segment of the North Dunstan Mountains, especially the good quality and diversity of plant associations that range over a wide spatial area and altitude. Additionally of note is the visual legibility of the dynamic processes that have created the Shepherds Creek rock-cut gorge, particularly the western branch that features a series of small cascading waterfalls.

The levels of the landscape, the level of diversity and the degree of visual amenity all combine to create a vivid and memorable landscape. The extension of the lease over a wide landscape continuum that spans from unvarying tall tussock grasslands, descending to mature mixed shrublands and woodlands is also significant.

The lease contains part of Geopreservation Site No. 324 North Dunstan. The topography of the site is characterised by rolling to steep colluvial mountain slopes and broad tops, gorges, coarse talus soils, waterfalls, periglacial features (soil hummocks, solifluction lobes), scattered tors, asymmetric valleys and large-scale slumping. The parent material is schist/semi-schist and derived colluvium and the soils are upland yellow-brown earths (Dunstan), yellow-grey earths (Arrow and Blackstone)."

These are some of the more important features of the property which account for its high natural value. These natural values in turn provide a fine setting for a variety of recreational activities including walking and tramping, access across the property to other more remote opportunities, as well as more passive pursuits such as botanising and photography. All these natural and recreational values provide the rationale as to why return to full Crown ownership is justified.

The vegetation communities found on Cambrian Hills are well described in the CRR and in the Preliminary Proposal document. Their significance is considered as follows:-

"The intactness, diversity and rarity of the flora communities recorded at high altitudes, in the head waters of both Shepherds Creek and Cluden Stream, in the Shepherds Creek shrublands, on the mining tailings and on Dry Knob contribute to these areas' significance. These communities contained 23 nationally or locally uncommon plant species and five rare communities. Diversity of native species on the lease is high with 304 species recorded during the survey. Exotic species were a moderate factor of the vegetation at 22% of the species recorded and are estimated to give primary character to 30% of the land area. Major threats identified were invasion of woody weeds, fire and grazing, especially cattle and/or deer, although these are not imminent threats."

These conclusions reinforce the significance of the natural values of the area, and provide further justification for its return to full crown ownership.

The creation of this new Conservation Area will also have significant recreational benefits which include:

- Large and seemingly remote nature of the lease
- Great views of the St Bathans Range, Pisa Range and to the Main Divide further west
- Potential access to an extensive network of public access routes on nearby properties in the Lindis area which provides outstanding mountain biking and walking opportunities
- Interesting mix of rocky outcrops, woody gorges, open tussockland and alpine cushionfield vegetation
- Access to the adjoining Lauder Basin Conservation Area which until recently did not have legal access.

Thus there are landscape, geological, natural biodiversity, and recreational reasons why the designation of this proposed area as new Conservation land is justified as an outcome of tenure review of Cambrian Hills.

FMC Submission

FMC unreservedly endorses and supports this proposal for a total of 2,532ha to be designated as land to be restored to or retained in Crown control as Conservation Area for all the reasons specified above. We understand that this designation is subject to qualified designations.

1.1.1 Qualified Designation: Easement Concession:

An easement to convey water for approximately 5 metres under section 36(1)(a), Crown Pastoral Land Act 1998 (marked "i-j" on the plan)

FMC understands that the purpose of this easement is to provide for the conveyance of water some 5m in order to provide stock water to the proposed freehold land. FMC has no objection to this proposed easement.

FMC Submission

FMC has no objection to the proposed easement to provide stock water to the proposed freehold area.

Proposal 1.2

An area of 612 hectares (approximately) to be designated as land to be disposed of by freehold disposal to Cambrian Hills Limited subject to protective mechanisms and qualified designations under section 36(3)(b), section 40(1)(b) and section 40 (2)(a) Crown Pastoral Land Act 1998 (shown edged in green on Plan 1 in Schedule A).

In the FMC Report (2005) it was stated that *"The remaining land (LUC Class VI, Blackstone Hill Yellow Grey Earth soils) occupies about 600ha of the lower slopes below about 800m (Fig. 6). This area has medium suitability for pastoral use and can probably be managed sustainably so it appears suitable for freeholding. There is some historic interest in gold workings and water races (Fig. 6) which might be protected under covenant. The covenant might also permit limited grazing."*

We are pleased to note that these observations seem to have been recognised in the tenure review process which now recommends that some 612ha of the lower country on Cambrian Hills should be made available for freeholding, subject to certain conditions.

FMC is reassured that the important recreational opportunities on and across the property have also been recognised and in terms of the easements discussed below.

We are also satisfied that historical interests have been recognised by the designation of the two Covenant Areas CC1 and CC2 which are discussed below. We provide details of our appreciation of these values in the section below on Protective Mechanisms.

Because of the obvious visibility of the valley sides and interfluves associated with Welshmans Gully and Sailors Creek (within the proposed freehold area) we submit that consideration should be given to a Landscape Protection Covenant over these areas. The covenant should be designed to maintain the status quo, by prohibiting burning and cultivation, tree planting and the erection of inappropriate structures.

FMC Submission

FMC supports the proposal that the balance of the lease (some 612ha) could become freehold, subject to the stated Protective Mechanisms and Qualified Designations. We recommend that consideration be given to a Landscape Protection Covenant over the valley sides and interfluves associated with Welshmans Gully and Sailors Creek (within the proposed freehold area). So long as the proposed protective mechanisms and qualified designations prevail through the final stages of the review process, and are included in the substantive proposal, FMC supports the freehold proposal.

1.2.1 Qualified Designation: Public Access and Management Easement

(a) Public access easement in gross to provide public foot, or on or accompanied by horses and mountain bike access from Cambrian Road shown marked "a-b-c-d-d1-e". Public vehicle access is permitted from "a-b" with car parking at point "b" on the plan.

FMC recognises that this provision for car parking at point "b", and walking, mountain bike and horse access to the large Conservation Area CA1 does provide secure legal access to the formerly land-locked Lauder Conservation area to the north of Cambrian Hills boundary. However, for the majority of people wishing to access the 'Tussock Reserve' this access is not really practical as it involves an uphill walk over untracked country from about 600m to 1,600m asl. The obvious thing to do would be to seek permission from the neighbour to use existing tracks which weave in and out of adjoining properties until such time as more convenient access becomes available through other tenure review negotiations (eg Cambrian, Lauder Station or Cluden). Whilst not ideal, we accept that the requirement to provide secure legal access has been satisfied.

We believe that the public access route "a-b-c-d-d1-e" could be improved. We propose that the route should include a walk through the goldmining covenant area and the 4WD track "F-d". This would allow visitors to enjoy the views to be had from the grassy hill between "f" and "d". The new route would be "a-b-f-d-d1-e"

FMC Submission

FMC recognises that provision for car parking at point "b", and walking, mountain bike and horse access to the large Conservation Area CA1 does provide secure legal access to the formerly land-locked Lauder Conservation Area to the north of Cambrian Hills boundary. Whilst not ideal, we accept that the statutory requirement to provide secure legal access has been satisfied. We look forward to the time when more practical access becomes available through the satisfactory outcome of other tenure review negotiations.

We recommend that the public foot, bike and horse access route be changed from "a-b-c-d-d1-e" to "a-b-f-d-d1-e".

(b) An easement in gross to provide Minister of Conservation Management purposes access from Cambrian Road along an existing farm track marked "b-f-d", "d1-g-h" on the plan.

FMC Submission

- *FMC has no objection to the easement which provides for management access to the proposed new Conservation Area CA1.*

1.2.2 Protective Mechanism:

**Conservation covenant pursuant to section 40(i)(b) and section 40(2)(a)
Crown Pastoral Land Act 1998**

Both the Covenant areas CC1 and CC2 are designed to protect historic values. FMC considers this most appropriate as they represent two important early activities in this part of Central Otago, namely the development of pastoral agriculture and gold mining.

1.2.2.1 A Conservation Covenant (CC1) under section 77 of the Reserves Act 1977 over approximately 4 hectares (CC1 on the plan).

The historic values included within Covenant area CC1 well illustrate the extensive gold mining activity which took place along the foothills of the Dunstan Mountains between Matakanui and St Bathans. In the immediate vicinity of Cambrian Hills, claims were worked at Cambrians, Welshman's Gully, Vinegar Flat and Vinegar Hill. Remains included within this 4ha proposed Covenant area include examples of water races and hydraulic sluicing which was the most common mining method used in this area in the late nineteenth century. Water races and a storage dam, associated with the source of power for sluicing, are to be found in the Sailors Creek area. The recognition and protection of these examples of gold mining technology included within the covenant area add value and interest to the features of this area.

FMC is pleased that these values have been recognised and are proposed for protection under covenant.

1.2.2.2 A Conservation Covenant (CC2) under section 77 of the Reserves Act 1977 over approximately 0.4047 hectares (CC2 on the plan).

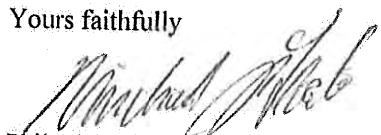
This small covenant area is designed to protect a good example of an early cob cottage. Particularly when considered in association with an impressive collection of original farm buildings on nearby Lauder Station, the cob cottage included within CC2, is an important component of what is essentially an outdoor museum of the cultural and heritage values of Central Otago. It is a good example of the pioneering structures built to support pastoral farming. The CRR describes this house as a superb example of an early twentieth century pastoral house, so it is good that its value has been recognised in the designation of this covenant area. It provides an added historical dimension to the natural and landscape values which are included in the new Conservation Area created through this tenure review. Although the lean-to structure at the back of the cottage is in imminent danger of collapse, the rest of the building, including an historic range in the kitchen is well worthy of restoration. The garden, with its heritage trees and shrubs could, once tidied up after recent felling of trees, provide a charming setting for family picnics.

FMC Submission

FMC fully supports the designation of the two covenant areas CC1 and CC2 intended to protect the cultural and historical values of an early cob cottage and gold mining remains in the Sailors Creek area. We also believe that full restoration of the cob cottage is a worthy future aim which should be supported by DOC and the NZ Historic Places Trust.

Finally, FMC is grateful to the agent, QV Valuations, for making arrangements for us to inspect the property, and the runholder for his continuing co-operation.

Yours faithfully



pp Phil Glasson
Secretary, Federated Mountain Clubs of NZ Inc.,

QVNZ - Dunedin
 26 MAR 2009
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APPENDIX.1

**PRELIMINARY REPORT ON THE RECREATIONAL, LANDSCAPE, HISTORIC
 AND OTHER CONSERVATION VALUES, AND RECOMMENDATIONS
 FOR OUTCOMES OF TENURE REVIEW ON CAMBRIAN HILLS**

**A Report for FMC based on Field Inspection and other research
 to assist in the Crown Pastoral Lease Tenure Review Process**

May 2005

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LIST OF FIGURES

- Fig. 1. Cambrian Hills is a relatively small pastoral lease of 3,000ha situated at the northern end of the Dunstan Mountains overlooking the lower reaches of Dunstan Creek and the Manuherikia Valley. It extends from about 600m at Cambrians village to 1,600m at its back boundary with the Lauder Basin Conservation Area. Unfortunately, this property does not provide good access to this landlocked Reserve because the only available tracks are on neighbouring properties.
- Fig. 2. This fence separates the Lauder Basin Conservation Area (right) from Cambrian Hills pastoral lease (left). Pristine tussock grasslands in the Reserve, which extend over the crest of the Dunstans, are only part of the 2,760ha RAP A1 identified by PNA surveys. Tenure review offers an opportunity to protect another 700ha of the RAP on Cambrian Hills pastoral lease, part of which can be seen on the left.
- Fig. 3. This view is looking from the eastern boundary of Cambrian Hills across Shepherds Creek to the western boundary at about 1,100m. This mid-altitude country lies almost entirely within the RAP A1 North Dunstan and should be protected as an outcome of this tenure review. Only the foreground, on the true left of Shepherds Creek should be excluded from the proposed Conservation Area.
- Fig. 4. A track runs northwards from Dunstan Peak to Cluden Pass. This would provide a good mountain bike trip from St Bathans to the Lindis country and SH 8. However, both the track and Dunstan Peak itself are just outside Cambrian Hills pastoral lease and are therefore outside the scope of this tenure review.
- Fig. 5. The most northerly part of Cambrian Hills occupies some of the smooth northern slopes of the Dunstans and drains into the Cluden/Lindis river system. In this view the Cluden (C) and Dunstan (D) Passes over the Chain Hills can also be seen. The LUC Class VII land seen here may not be able to be managed in an ecologically sustainable way unless nutrient losses due to burning and removal of animal products are balanced by fertiliser application to replenish soil nutrient reserves.
- Fig. 6. LUC Class VI land occupies about 600ha of the lower slopes below about 800m. This area has medium suitability for pastoral use and can probably be managed sustainably so it appears to be suitable for freeholding. There is also some historic interest in gold workings which include water races like the one seen here leading to Vinegar Hill. Historic relics could be protected under covenant.
- Fig. 7. A temporary, and only partial, solution to the lack of public access to the Lauder Basin Conservation Area might be to designate walking only access up the western boundary of Cambrian Hills. This would start on a farm track near Welshmans Gully and continue as a route up the spur seen in this view. This view over the Manuherikia Valley is from Trig '1' at 1,644m, about 800m west of the boundary. It shows part of RAP A6 North Dunstan and the boundary which runs down the crest of the spur.
- Fig. 8. The PNA survey reported that *"in the north of the Dunstan Mountains, the summit dome has very little cushion and herbfield. It is dominated by extensive dense slim snow tussockland"*. Where there are herbfields they make a strong contrast with the tussockland especially when the *Celmisia* are profusely flowering. This view shows part of RAP A1 North Dunstan at the head of Shepherds Creek basin.
- Fig. 9. *"Important remnants of forest vegetation include broadleaf forest particularly in the north, and more widespread Hall's totara treeland with traces of celery pine and bog pine. Matagouri shrublands are abundant throughout below 900m. Shrublands or scrub dominated by Coprosma propinqua are also widespread adjacent to streams, including some mixed scrub of high species diversity."* There is a good example of one such forest remnant situated in the lower reaches of Shepherds Creek. The presence of waterfalls in this creek makes it a particularly attractive place to explore.
- Fig. 10. Historic gold workings near Cambrians and Vinegar Hill, together with water races in this area and in Welshmans Gully, add interest to the area and might be protected under covenant. Farming operations could be allowed to continue so long as these historic features are not damaged by erosion due to animal grazing pressure. Wilding pine control will be required.

INTRODUCTION

This Report has been prepared following the Early Warning Meeting in September 2004 at which the properties entering the tenure review process in 2004 were introduced. Federated Mountain Clubs of NZ (FMC) inspected Cambrian Hills with the runholder in April 2005 and have subsequently written up this report. It is offered as a contribution to the statutory consultation process undertaken by the Department of Conservation (DOC).

The Report focuses on those features of the property which are known to be important for public recreational interests. It should be noted that while some of this interest relates to access, the natural and historical 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 the natural, historical and landscape values in this Report.

Cambrian Hills was originally part of the large Lauder Station and now consists of some 3,000ha at the northern end of the Dunstan Mountains (Fig. 1). It ranges from about 600m at Cambrians village to about 1,600m where it adjoins the Lauder Basin Conservation Area (Tussock Reserve, Fig. 2). This area of almost pristine snow tussock grassland was identified as a Recommended Area for Protection (RAP A1 North Dunstan) by the PNA survey carried out in the 1980s (Fig. 2). The total area of RAP A1 is significantly larger than the existing Conservation Area and a large part of the remainder (about 700ha) lies within Cambrian Hills pastoral lease (Fig. 3). The future status of this area will be an important issue in this tenure review.

From a recreational perspective, the most significant issues in this tenure review will be the consideration of public access to the Lauder Basin Conservation Area, Dunstan Peak and over the Cluden Pass from St Bathans (via Dunstan Creek) to the Lindis country (Fig. 4).

METHODS OF SURVEY AND ASSESSMENT

A site visit and inspection was carried out in May 2005 with the helpful co operation and permission of the lessee. This report is based in part on the field inspection and in part, on information gathered from other sources. The other sources include studies of topographical and Land Use Capability (LUC) maps, consultation with recreational user groups and a knowledge of the landscapes acquired from other trips in the general area of St Bathans and the Dunstan Mountains. A study of "Outdoor Recreation in Otago" was undertaken by Mason (1988) and published by FMC. Reference is made to this Recreation Plan for Otago in the recreation section below. The Conservation Management Strategy for Otago and the Survey Report of the Protected Natural Areas Programme have also been used as a source of reference.

GENERAL DESCRIPTION OF CAMBRIAN HILLS

Cambrian Hills is a relatively small pastoral lease of about 3,000ha situated on the north eastern flanks of the Dunstan Mountains (Fig. 1). It rises from about 600m at Cambrians village to 1,600m on its back boundary where it adjoins the Lauder Tussock reserve (Fig. 2). The property includes the entire catchments of Shepherds Creek and Welshmans Gully which drain into Dunstan Creek. The most northerly part of Cambrian Hills (some 500ha near Cluden Pass) occupies the headwaters of an unnamed creek which runs into Richmond valley, and eventually the Lindis River (Fig. 5).

There is currently no public access on the property although there is a 4WD track up the ridge to the west of Donald Stuarts Creek on Cambrian Station. There is also a 4WD track to Dunstan Peak and Cluden Pass (Fig. 4) which is close to the eastern boundary but situated on the neighbours property, Mount St. Bathans or Dunstan Burn. The lack of tracking on Cambrian Hills does not seem to be a practical farming problem as these neighbouring tracks provide access for the runholder. They do not however, solve the problem of recreational access to the Lauder Basin Conservation Area (Tussock Reserve) and the northern end of the Dunstan Mountains, or to Dunstan Peak and Cluden Pass. This needs to be addressed in this tenure review.

General aspects of the climate and geology of the Dunstan Mountains has been well described in the PNA Survey Report:

"The Dunstan Mountains are the driest of the alpine Central Otago ranges because their location is the most central. The Pisa Range and Lindis Mountains provide extra shelter from the north-west; the Old Man Range from the south-south-west, particularly the snow-bearing winds of winter; while 120 kilometres of basin, range and plateau country lie to the south-east and east."

"The Dunstan Mountains typify the Central Otago pattern of fault-block mountain ranges uplifted along faults on their south-eastern edges and tilted to the north-west. The mid-Tertiary peneplain surface is expressed as long gently sloping ridges (2-6 degrees) on the north-west slope and the smooth crest of the range." (Fig. 5).

"There is no evidence of the Dunstan Mountains ever having generated glaciers - an indication of the low precipitation in comparison with the adjacent Old Man Range of similar height which has several notable cirques and small glacial valleys. Schist tors and periglacial phenomena (in particular soil hummocks) are very well developed on the higher parts of the upland surface.

Apart from these minor effects, the absence of glaciation results in a simple topographic pattern, with steep slumped slopes characteristic of the dissected fault scarp on the southeast face, contrasting with the long north-west slope."

A large part of Cambrian Hills (about 2,400ha) is characterised by Carrick Hill and Dunstan Steepland High Country Yellow Brown Earth soils which have been classified LUC Class VIIe, with severe limitations for pastoral use (Fig. 5). These soils are generally situated above about 800m and there is considerable doubt as to whether they can be managed in a way that is ecologically sustainable. This is because nutrient removals in animal products (meat and wool) probably exceed inputs and the system is slowly but surely being depleted unless fertiliser is applied to replenish losses. At higher altitudes, fertiliser application is usually not economically justified because pasture growth response is severely limited by climate. Where oversowing and topdressing have been carried out, and where maintenance fertiliser has been applied regularly, the pastoral use of the land may be sustainable. However, this should be assessed against important landscape and natural values identified by PNA Survey. This will be discussed under the heading of Significant Inherent Values.

The remaining land (LUC Class VI, Blackstone Hill Yellow Grey Earth soils) occupies about 600ha of the lower slopes below about 800m (Fig. 6). This area has medium suitability for pastoral use and can probably be managed sustainably so it appears suitable for freeholding. There is some historic interest in gold workings and water races (Fig. 6) which might be protected under covenant. The covenant might also permit limited grazing.

RECREATIONAL ACTIVITIES AND POTENTIAL

The recreational significance of the property lies in its position on the flanks of the Dunstan Mountains, including features of natural interest in Shepherds Creek and access to Dunstan Peak and the Cluden Pass (Figs. 4 and 5). Its proximity to the Lauder Basin Conservation Area (Fig. 2) is also important as we understand that this magnificent area of pristine tussock grasslands is still landlocked from public enjoyment.

Mason (1988) commented "Hot, semi-arid conditions, with an absence of features, provides little of general interest for summer tramping over much of the range. A climb up to Leaning Rock from the vicinity of Clyde is one exception.....There are many botanical and geomorphological features of more specialist interest. With greater awareness of the features identified in the PNA survey it can be anticipated that summer visitation will increase."

Although Mason did not refer to mountain bike riding, this has become much more popular in the 14 years since his account was written. A mountain bike trip would be possible to Dunstan Peak, over Cluden Pass and out to the Lindis country (Fig. 4). While several properties in the Lindis area have completed tenure review and access is available, public access to Dunstan Peak is not yet available. In fact, public access to the tops of Cambrian Hills depend on access over the neighbouring properties of Lauder Station and Mount St Bathans. Although public access may eventually become available through tenure review this cannot be progressed through the review of Cambrian Hills.

The problem of public right of access to the Lauder Basin Conservation Area also still persists. A possible temporary solution might be to provide walking only access up the western boundary of Cambrian Hills (Fig. 7). There is a farm track up to about 1000m on a spur overlooking Welshmans Gully, and from there a walking route could be formed near the western boundary.

Although there is little use of Cambrian Hills for recreation at the present time there is potential for greater use on foot within the Shepherds Creek catchment and up to the Lauder Conservation Area.

FMC believes that the recreational significance of this property (and other 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 less than its potential for a number of reasons. There is potential for greater use and it is the full range of possibilities which should be considered during this tenure review.

SIGNIFICANT INHERENT VALUES AND THEIR IMPORTANCE FOR RECREATION

This report focuses on those features of Cambrian Hills which are known to be, or could become 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 of the areas concerned all have a fundamental impact on the recreational value of the back country. So too do the views to be had from vantage points which 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 this property.

The vegetation patterns of the Dunstan Mountains have been well described in the PNA Survey Report:- *"In the north of the Dunstan Mountains, the summit dome has very little cushion and herbfield. It is dominated by extensive dense slim snow tussockland. This community has abrupt boundaries with narrow-leaved snow tussockland, without significant hybridism, at altitudes varying according to aspect from 1,400m on sunny slopes and 1,100m on shady faces."* (Fig. 8).

"The Dunstan [Ecological] District lacks the snowbank communities characteristic of the Old Man and to a lesser extent Pisa Districts, but has numerous alpine flushes up to several hectares in extent, particularly on the northern summit dome. Narrow-leaved snow tussockland has survived in some abundance on the south-east face down to 900 metres with more scattered snow tussocks within fescue tussockland down to as low as 600m."

"Important remnants of forest vegetation are widely scattered on the eastern faces. These include broadleaf forest particularly in the north, and more widespread Hall's totara treeland with traces of celery pine and bog pine (Fig. 9). Forest vegetation has essentially been eliminated from the north-west slope, although single specimens of celery pine are known. Matagouri shrublands are abundant throughout altitudes below 900 metres. Shrublands or scrub dominated by Coprosma propinqua are also widespread adjacent to streams, including some mixed scrub of high species diversity." (Fig. 9).

There is a particularly good example of one such forest remnant which is situated at the south east corner of RAP A1 North Dunstan, in the lower reaches of Shepherds Creek (Fig. 9). The presence of waterfalls in this creek makes it a particularly attractive place to explore.

The PNA Survey Report also contains a brief description of what is referred to as the 'Cambrians Land System':- *"The Cambrians Land System represents the northern segment of the dissected fault-scarp on the south-east face of the Dunstan Mountains. The altitudinal sequence of landform styles is less marked. In particular the mid-altitude steeper stable zone is less obvious. Although there are significant rock outcrops, these generally have been less effective fire refuges. Shepherds Creek is an exception, as it is more sharply entrenched than the other streams dissecting the Dunstan fault-scarp. It lies along the line of a north-north-west trending fault zone marking the beginning of the geological transition through semi-schist to the greywacke mountains of the St Bathans Range."*

"In vegetation features, snow tussocklands are extensive at mid-upper altitudes, and remnant forest vegetation including broadleaf and Hall's totara are important, though concentrated mainly in Shepherds Creek."

Ecologically, Cambrian Hills is important as it contains a significant part (about 700ha) of the total area (2,760ha) recommended for protection and identified as Dunstan RAP A1 North Dunstan. Much of this RAP has already been protected within the Lauder Tussock Reserve but some 700ha still remain within this pastoral lease (Fig. 3). Tenure review presents another opportunity to consider protection for this area.

There is some historic interest in gold workings near Cambrians and Vinegar Hill which, together with water races in this area and in Welshmans Gully, might be protected under covenant (Fig. 10). Wilding pines are a threat in this area and conditions of freeholding should include control of wildings. We see no compelling reason why farming operations should not be allowed to continue around the historic features so long as features such as the water races are not damaged by erosion due to animal grazing pressure. Some form of monitoring would be required to ensure that this does not happen. It would be important that secure public access be provided, probably in the form of an easement across the lower freehold land in some location that does not interfere with farming operations.

AREAS TO BE PROTECTED

For the reasons discussed above, which include the significant inherent natural and landscape values of the Shepherds Creek catchment and the public enjoyment of landscapes viewed from the upper part of the catchment, FMC recommends that much of the Shepherd Creek catchment should become conservation land. It would include the whole of the remaining part of RAP A1 North Dunstan within Cambrian Hills pastoral lease land. It should also include the tussock grassland with significant natural and landscape values which occupies the true right of the catchment below Point 1,555m up to the divide separating Shepherds Creek from the Cluden drainage system. It is particularly important that the forest remnant and waterfalls in the lower reaches of Shepherds Creek are protected. For all these areas the preferred protection (as stated in the CPL Act 1998) is return to full Crown ownership and control for management by DOC for conservation and recreation purposes.

Protective covenants are required over historic features (including gold workings and water races in the vicinity of Vinegar Hill in Welshmans Gully) which are situated on land likely to become freehold through tenure review. Wilding pines are a threat in this area so conditions of the covenant should include control of wildings. In addition to a protective covenant over these features, arrangements (such as monitoring and enforcement of grazing conditions) will need to be made to ensure no environmental damage occurs if farming operations are allowed to continue.

ACCESS REQUIREMENTS

An ongoing problem at the northern end of the Dunstan Mountains is the absence of public access to the Lauder Basin Conservation Area. The ideal would be to provide access for foot, horse and non-motorised vehicles over a convenient 4WD track. Unfortunately, the only convenient 4WD tracks are on neighbouring properties so this is not an issue to be resolved during the tenure review of Cambrian Hills. However, a temporary solution to provide walking only access may be possible. We recommend an easement be designated over farm tracks up to about 1,000m on a spur overlooking Welshmans Gully. From that point on upwards a public walking easement should be designated over any remaining freehold to the lower boundary of the proposed Conservation Area.

A similar situation exists with respect to public access to Dunstan Peak and Cluden Pass. It would be ideal to provide for mountain bike access up the track close to the eastern boundary of Cambrian Hills. However, this is entirely outside the Cambrian Hills pastoral lease and will have to await some future opportunity to secure public access.

If arrangements can be made to protect, under covenant, the historic features in Welshmans Gully and in the vicinity of Vinegar Hill secure public access to the covenanted area(s) will be required. This could be in the form of an easement across new freehold land.

CONSERVATION MANAGEMENT STRATEGY FOR OTAGO

There are important statements in the Conservation Management Strategy (CMS) for Otago, in which the North Dunstan Mountains are recognised as a Special Place. It is noted in the CMS that the Lauder Basin Conservation Area is landlocked and that public access to the area is required. The objective for this Special Place is: "*To extend protection in the area to cover the remaining higher altitude areas of nature conservation importance, and to secure*

appropriate public access."

Implementation includes:- *"Pastoral lease tenure review on properties in the area may provide opportunities to negotiate to protect the areas of interest. Overall management of these new areas with the existing conservation areas will confer net conservation and management benefits."*

The CMS objective and intended implementation accord very closely with the recommendations made in the present report. Furthermore, it should be noted that the priority for the North Dunstan Mountains Special Place is:- *"The negotiation of protection arrangements for areas of biodiversity importance and recreational opportunities and access are the priority activities in this Special Place."*

It is clear that the tenure review of Cambrian Hills presents a good opportunity to make progress with the achievement of these objectives.

CONCLUSIONS

1. The tenure review of the Cambrian Hills pastoral lease presents an opportunity to enhance the recreational potential and use of the Dunstan Mountains area. There is also an opportunity to enhance the quality of recreational experience on those lands by recognising and protecting the significant landscape and other natural values described above.
2. Cambrian Hills pastoral lease ranges from about 600m at Cambrians village to about 1,600m where it adjoins the Lauder Basin Conservation Area (Tussock Reserve). This area of pristine snow tussock grassland was identified as a Recommended Area for Protection (RAP A1 North Dunstan) by the PNA survey carried out in the 1980s.
3. The total area of RAP A1 is significantly larger than the existing Conservation Area and a large part of the remainder (about 700ha) lies within Cambrian Hills pastoral lease. The future status of this area will be an important issue in this tenure review.
4. From a recreational perspective, the most significant issues in this tenure review will be the consideration of public access to the Lauder Basin Conservation Area, Dunstan Peak and over the Cluden Pass between St Bathans (via Dunstan Creek) and the Lindis country.
5. The location of Cambrian Hills at the northern end of the Dunstan Mountains is important in that it adjoins the Lauder Basin Conservation Area and there are 4WD tracks which lead to this Conservation area and to Dunstan Peak and the Cluden Pass. Unfortunately, these tracks are not situated on Cambrian Hills pastoral lease but instead are situated close to the Cambrian Hills boundaries and on neighbouring properties. Public access over these tracks cannot therefore be provided through the current tenure review. Instead, it may be possible to provide, as a temporary solution, walking only access to the boundary of a new Conservation Area and thence to the Lauder Conservation Area.
6. Land above about 800m has been classified LUC Class VII and there is considerable doubt as to whether it can be managed in a way that is ecologically sustainable. Where oversowing and topdressing have been carried out, and where maintenance fertiliser has been applied regularly, pastoral use of the land may be sustainable. However, this should be assessed against important landscape and natural values identified by PNA Survey.
7. LUC Class VI occupies about 600ha of the lower slopes below about 800m. It can probably be managed sustainably and appears suitable for freeholding.
8. There is a particularly good example of a forest remnant which is situated at the south east corner of RAP A1 North Dunstan, in the lower reaches of Shepherds Creek. The presence of waterfalls in this creek makes it a particularly attractive place to explore. These features should be included in the new Conservation Area.

9. Ecologically, Cambrian Hills is important as it contains a significant part of the total area originally recommended by the PNA Programme for protection as Dunstan RAP A1 North Dunstan. Tenure review presents an opportunity to consider protection over the remaining 700ha within the pastoral lease.
10. FMC recommends that much of the Shepherd Creek catchment should become conservation land by return to full Crown ownership and control. It would include the whole of the remaining part of RAP A1 North Dunstan within Cambrian Hills pastoral lease land. It should also include the tussock grassland with significant natural and landscape values which occupies the true right of the catchment below Point 1,555m up to the divide separating Shepherds Creek from the Cluden drainage system.
11. Protective covenants are required over historic features (gold workings and water races in the vicinity of Vinegar Hill and in Welshmans Gully) which are situated on land likely to become freehold through tenure review. Wilding pine control should be one of the conditions of the covenant(s).
12. If arrangements can be made to protect, under covenant, the historic features in Welshmans Gully and in the vicinity of Vinegar Hill, secure public access to the covenanted areas(s) will be required. This could be in the form of an easement across new freehold land.
13. It is clear that the tenure review of Cambrian Hills presents a good opportunity to make progress with the achievement of the objective declared for the North Dunstan Special Place in the CMS for Otago.

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