

Crown Pastoral Land Tenure Review

Lease name : MOA HILLS

Lease number : PO 314

Conservation Resources Report - Part 3

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.

November 05

4.3 Photographs



Photo 1: Looking south from GR G43 144 145 into the northern portion of the lease.



Photo 2: The northern plateau and the lease's northern boundary from GR G43 135 127. The plateau contains an extensive wetland mosaic within a matrix of healthy and tall snow tussock.



Photos 3 and 4: Looking east from the northern plateau into Bullock Creek. Photo 3 is taken from GR G43 138 124, photo 4 is taken from GR G43 128 102.





Photo 5: The lower section of Bullock Creek and its confluence with the Pomahaka River. The steep and rocky slopes provide numerous refuges for remnant shrublands, while pockets of silver beech have persisted in some riparian margins.



Photo 6: Close up of a shrubland/silver beech refuges in the southwestern extreme of the lease.

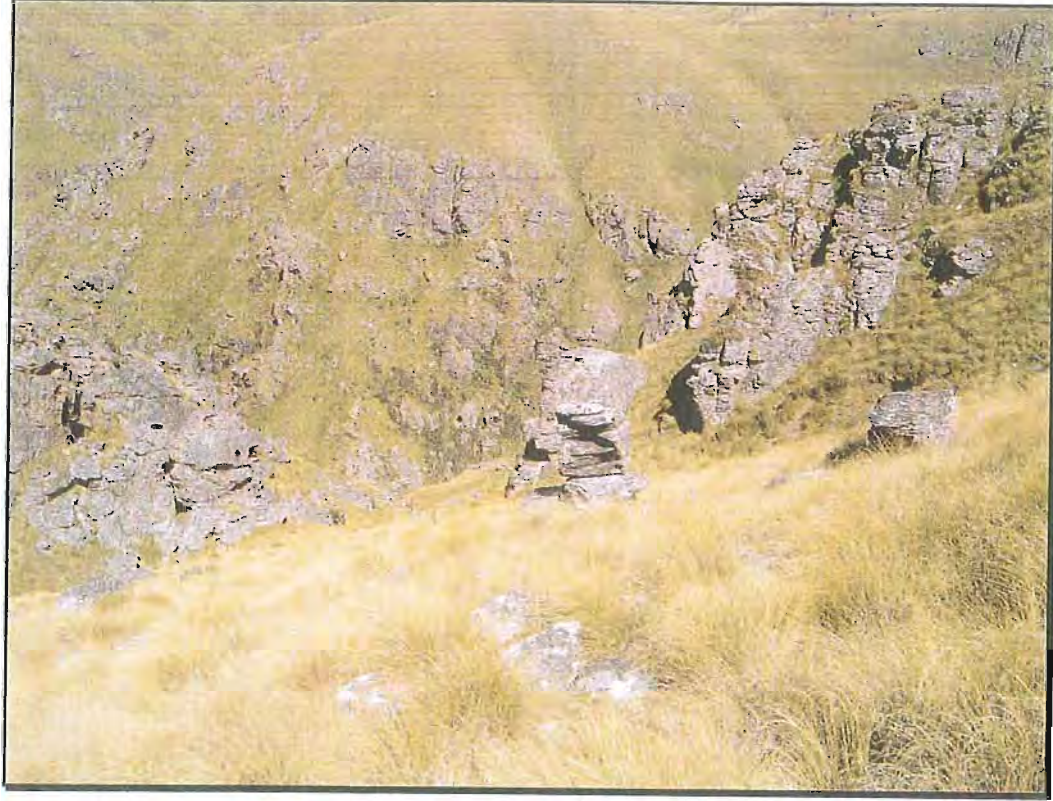


Photo 7: Looking west from GR G43 140 097 into lower Bullock Creek. The slopes in the foreground retain intact *Chionochloa rigida* grasslands while the tors harbour remnant shrublands.



Photo 8: Looking northwest from GR G43 146 098 into the higher altitude portions of the Snow Block.



Photo 9: Remnant shrublands in the tributary of Bullock Creek that drains north from Mt Benger.



Photo 10: Continuation of the remnant shrublands. These are the best example of mixed montane vegetation on the lease and within the eastern portion of the ED. Shrublands like these would once have been extensive in the ED.



Photo 11: Looking south from GR G43 173 095 into the headwaters of an infilled valley. This stream complex is distinct from other parts of the Bullock Creek catchment and such ecosystems are uncommon within the ED.



Photo 12: Looking west from GR G43 180 087. In the foreground is one of the fire research plots while in the background is the majority of the Snowy block.



Photos 13: Site 21, a large intact hut, would most probably have been a gold-miners residence possibly dating from as early as the 1870s and later used by musterer's in the early 20th century. Its location is convenient to the Pomahaka Road which was probably originally a 19th century bullock track that provided communication for miners and pastoralists between the Pomahaka River, Bengier Commonage and Roxburgh.



Photo 14: The remains of one of the three huts (site 18) which formed an occupation complex on a wide terrace on the true left of Bullock Creek. All these huts are of an early style in the gold-mining history of Otago and imply an age dating from the 1870s onwards when gold is recorded as being sought in the Pomahaka area.



Photo 15: Looking down the Pommy Faces from approximately GR G43 127 128. Of note in the foreground is the continuation of intact snow tussock grassland from the adjacent plateau.



Photo 16: Looking north from approximately GR G43 126 102. The intact flushes and seeps in this area are of particular note.

4.4 NGOs Comments

4.4.1: Southern Lakes Branch NZDA

4.4.2: Central Otago Deerstalkers Club

4.4.3: Federated Mountain Club

4.4.4: Upper Clutha Forest and Bird

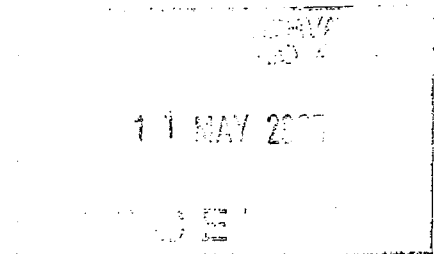
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4.4.1

Re 2004/05 Tenure review program

On behalf of the Southern Lakes branch of new Zealand Deerstalkers association like to make some comments on the current Tenure review program. The properties in question

The Homestead (Rock and Pillar)
 Carrickmore (Rock and pillar)
 Patearoa Syndicate (rock and pillar)
 Riverslea (Rock and pillar)
 The Beeches (Rock and pillar)
 Maipata Syndicate (Rock and pillars)
 Leaning rock (Cromwell grge)
 Moa Hills (Old man range)
 Mt Grand Hawea flats
 Glenfellen (upper Mataura)
 Cambrian Hills (Dunstons)
 Caithness (Kakanui)
 Mt Aspiring station
 Comet Peak



like to make a general comment on the process rather than individual properties
 We are increasingly concerned about the lack of recognition given to hunting as a recreational activity
 Access with fire arms and Dogs is still often put in the too hard basket
 Hearing a Doc staff member mentioning the three principal ways of access as being walking Horse back
 Push bike is in our eyes Cutting out a big proportion of recreationalist
 Most of the properties mentioned above do have Game animals on them Always or certain times of the year.

Hunting is not only about shooting, a lot of time is spent exploring new places and looking around.

We like more recognition given to Hunting as a recreational activity and provision made where it is appropriate for Access with firearms and or Dogs

Sincerely
 Ian Biemond
 Secretary Southern lakes branch NZDA

Wairarapa road rd 1
 Alexandra

30 Earnsclough rd.

Alexandra

28-04-05

4.4.2

Department Of Conservation

RE: Tenure review

Central Otago Deerstalkers Club wish to make a submission to the last round of reviews,
being

The Homestead
Carrickmore
Patearoa
Riverslea
The beaches 1
Wiapiata Syndicate
Leaning Rock
Moa Hills
Mt. Grand
Glenfellen
Cambrian Hills
Caithness
Mt Aspiring Station
Coronet Peak

We wish the Department to note our request

1. for good public four wheel drive access to the above blocks.
2. that permission to carry guns be met by DOC permit only
3. and dogs be allowed on those blocks

Thank You
Alan Mackie

4.4.3

PAC 12 21 310

32

**FEDERATED MOUNTAIN CLUBS OF NEW ZEALAND (Inc.)**

P.O. Box 1604, Wellington

DEPT OF CONSERVATION
OTAGO CONSERVANCY

03 JUN 2005

RECEIVED

CONS	
A.M.	
C.R.M.	
B.S.M.	
T.S.M.	
H.K.A.	
H.C.I.R.M.	<i>[Signature]</i>
K.M.	
OTHER	

30 May 2005

Tony Perrett
High Country Tenure Review Manager
Department of Conservation
PO Box 5244
DUNEDIN

Bruce

Dear Tony

Re FMC Tenure Review Report
Recreation and Related Significant Inherent Values
on Cambrian Hills, Mount Aspiring, Moa Hills and Mt Grand.

FMC has been preparing Reports on the recreational and conservation values of properties which were introduced as new entrants to the Tenure Review process at an 'Early Warning' meeting in September 2004. These Reports are a more detailed account of the recreational and related significant inherent values than was given in the earlier brief notes.

FMC have conducted inspections of some of these properties and we now enclose our reports on Cambrian Hills, Mount Aspiring, Moa Hills and Mt Grand.

We wish to thank the Crown Agents for their efforts to make the appropriate access arrangements with lessees to facilitate these inspections. Both the runholders and the Crown Agents have been most helpful in this regard.

These Reports are offered as the FMC contribution to the statutory consultation process undertaken by the Department. We hope that the Reports will be helpful to you in developing tenure review proposals for these properties. We look forward to commenting on the Preliminary Proposals in due course.

For their information we are sending copies to the Crown Agents as listed below.

Yours sincerely

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

Cambrian Hills
Mt Grand

Mt Aspiring

Moa Hills

Cc Ian Harvey
QV Valuations Ltd.
John Wickliffe House
Princes Street
PO Box 215
DUNEDIN

Cc Dave Payton
Opus International Consultants Ltd.
114 Rattray Street
Private Bag 1913
DUNEDIN

Cc Bevan Lill
DTZ New Zealand
PO Box 27
43 Tarbert Street
ALEXANDRA



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

PASTORAL LEASE TENURE REVIEW

**Preliminary Report on the Recreational, Landscape, Historic
and other Conservation Values, and Recommendations
for Outcomes of Tenure Review**

MOA HILLS

May 2005

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

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

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

May 2005

CONTENTS

Contents	..	..	..	..	..	..	..	..	..	..	page
List of Figures	..	..	..	..	..	..	..	..	..	..	2
Introduction	..	..	..	..	..	..	..	..	..	..	3
Methods of survey and assessment	..	..	..	..	..	..	..	..	..	..	4
General description and land resources of Moa Hills	..	..	..	..	..	..	..	..	..	..	4
Recreational use and potential new opportunities ..	..	..	..	..	..	..	..	..	..	..	5
Significant inherent values and their importance for recreation	....	..	..	..	..	..	..	..	..	..	6
Areas to be protected	..	..	..	..	..	..	..	..	..	..	7
Access requirements	..	..	..	..	..	..	..	..	..	..	8
Otago Conservation Management Strategy	..	..	..	..	..	..	..	..	..	..	8
Conclusions	..	..	..	..	..	..	..	..	..	..	8
Acknowledgements	..	..	..	..	..	..	..	..	..	..	10
figures ..	..	..	..	..	..	..	..	..	..	..	Follow page 10

LIST OF FIGURES

Fig. 1. The landscapes and views to be seen from the Old Man Range are outstanding and add greatly to the enjoyment of traversing Moa Hills. From a recreational perspective, one of its greatest values is in providing access as part of the traverse from Mt Bengier to the main crest of the Old Man Range. This view is looking down to the Clutha River and Roxburgh from the northern end on Moa Hills.

Fig. 2. There is a legal road along the eastern boundary of Moa Hills but its position just inside the boundary does not conform with the paper road. The track provides an important link between the Mt Bengier Scenic Reserve and the main crest of the range and the evolving Kopuwai Conservation Park but the problem of its legal alignment will need to be resolved. This view is looking south towards Mt Bengier.

Fig. 3. Moa Hills occupies some 3,500ha on the rolling plateau between about 800 and 1,100m on a southern extension of the Old Man Range towards Mt Bengier. From near the southern boundary at about 1,100m can be seen the Umbrella Mountains (skyline left), and in the far distance the Garvie Mountains. Both these mountain ranges lie to the west of the Pomahaka River which is the western boundary of Moa Hills.

Fig. 4. The tussock grasslands and biodiversity of the Mt Bengier Scenic Reserve have been protected as a consequence of recommendations made by the Protected Natural Areas survey of the 1980s. The Reserve lies immediately to the south of Moa Hills and was formerly part of Silverbirch Station. It could eventually be linked to the Kopuwai Conservation Park.

Fig. 5. The main recreational interest in Moa Hills is as part of the traverse along the length of the range from Mt Bengier to the Kopuwai Conservation Park which will include Hyde Rock and the Obelisk. Travel is mainly by mountain bike and 4WD, but also by horse and on skis on occasions. This view shows one of the main tributaries of Bullock Creek and the track heading north to the main summit of the range.

Fig. 6. The Old Man Plateau is characterised by a vast rolling sea of tussock grasslands and the Moa Hills landscape contributes to this in no small way. The headwaters of Bullock Creek and the Pomahaka River both lie to the north of Moa Hills and can be seen from the Pomahaka Road which runs west, close to its northern boundary. These seemingly endless rolling open spaces show little influence of development (ie. very few tracks or fences) and just invite exploration.

Fig. 7. There are significant gold mining relics in the Pomahaka Valley. There is a water race which has its intake in the Little Pomahaka and runs along the western faces of Moa Hills below the junction with the Pomahaka River. The tailings from former gold workings surround the confluence of the two branches of the Pomahaka. These relics are best reached using the Pomahaka Road, a little north of Moa Hills boundary.

Fig. 8. The objective to create a high altitude Conservation Park on the Old Man Range was foreshadowed in the Conservation Management Strategy for Otago, 1998. The Bain Block, a little to the north of Moa Hills, was the first area to be declared the Kopuwai Conservation Area. Tenure review of Moa Hills and other pastoral leases along the range provides an opportunity to further this objective and eventually link the Mt Bengier Scenic Reserve to the Kopuwai Conservation Park

Fig. 9. There is good access to Moa Hills both from the north via the Coal Creek Road, and from the Mt Bengier Road seen here crossing Silverbirch land. Both are legal roads but do not necessarily follow exactly the alignment of the paper roads. Tenure review presents an opportunity to resolve these issues but only on those parts of the road on Moa Hills land.

Fig. 10. From the recreational 'cross roads' just north of Moa Hills, there is an option to follow the steep Bullock Track down the Clutha face to Roxburgh. It is well used by local walking groups for day trips and adds to the range of options for round trips by mountain bike.

RECREATIONAL AND RELATED SIGNIFICANT INHERENT VALUES

ON MOA HILLS

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. An inspection of the property was carried out from the legal road in May 2005, and a subsequent visit was specially arranged for ENGOs thanks to the co-operation of the runholder. Unfortunately FMC was unable to be present on the second inspection. This report is based on knowledge gained from the first inspection, on other recreational knowledge of the Old Man Range and visits to other properties along the range. This report is based partly on that field knowledge, and partly on information gathered from other sources listed below. This report is offered as a contribution to the statutory consultation process undertaken by DOC.

The report focuses on those features of Moa Hills which are important for public recreational interests. It should be noted that while some of this interest relates to public access, the natural and historic values and landscapes of the property have a fundamental impact on its recreational value and greatly affect 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. The landscapes and views to be seen from the Old Man Range are outstanding (Fig. 1) and add greatly to the enjoyment of traversing this property. From a recreational perspective, one of its greatest values is in providing access as part of a traverse along the length of the Old Man Range and its southern extension to Mt Bengier (Fig. 2). Tenure review of Moa Hills could also make a contribution towards the development of the Kopuwait Conservation Park foreshadowed in the Conservation Management Strategy for Otago.

Mason (1988) has described the landforms of the Old Man Range as follows:- *"The Old Man Range forms the south-westerly boundary of Central Otago's block mountains. Its easterly escarpment rises moderately steeply from the Clutha Valley to a gentle, convex summit crest at 1440-1690 m. Western back-slopes are drained by two high altitude basins, both parallel to the summit plateau.*

The summit plateau of the Old Man Range is well known for mountain tors. Clusters of schist tors stand as stark sentinels above smooth, easy rolling surfaces. There are a variety of forms, the most spectacular being vertical shafts with one of the highest examples to occur in Otago being the Obelisk. Others are overhanging pedestals or of irregular block form. On the eastern foothills fretted tors provide a dominant craggy landscape which extends down to the environs of Alexandra.

Around what must have been a Pleistocene snow cap, patterned ground has developed, providing the greatest variety and most well formed periglacial features to be found in New Zealand. On north-eastern slopes below the range crest, solifluction terraces and lobes developed from slow creeping action. Some of these are up to a metre high at the face and appear to still be active. They occur as broad, gentle steps several metres apart. Further downslope, solifluction and slumping processes have rippled the whole surface topography. On colder, gentle surfaces around the summit crest, earth hummocks have been heaved up by frost action. These merge into parallel stripes on sloping surfaces. These can cover hundreds of hectares, but are largely absent from the wind-eroded summit where the underlying schist is uncovered."

Moa Hills pastoral lease occupies about 3,500ha on the rolling plateau between about 800 and 1,100m on a southern extension of the Old Man Range towards Mt Bengier (Fig. 3). The Pomahaka River is the western boundary of the property which stretches east to the crest of the ridge overlooking Roxburgh and the Clutha Valley (Fig. 1). Beyond the Pomahaka to the west lie Glenaray and Gem Lake pastoral leases. Moa Hills is bounded to the north by two small pastoral leases and to the south by the Mt Bengier Scenic Reserve (Fig. 4). The latter has been protected as a result of recommendations made by the Protected Natural Areas survey conducted in the 1980s.

The main recreational interest in Moa Hills is as part of the traverse along the length of the Old Man Range (Fig. 5) to Mt Bengier and in possible exploration of the headwaters of Bullock Creek, mainly by mountain bike and 4WD, but also horse on occasions. Landscape, including the rolling tussock grasslands, and views from the crest of the range are the most significant inherent values (Fig. 6). There are significant historic goldmining relics along the Pomahaka River (Fig. 7) but these are more easily reached via the Pomahaka Road a little to the north of the boundary of Moa Hills.

METHODS OF SURVEY AND ASSESSMENT

A site visit and field inspection was carried out in May 2005. This report is based on observations made during the field inspection, other field knowledge of the Old Man Range and also on information gathered from other sources including an inspection of Silverbirch Station in 1997. The other sources include both publications and accounts by members of local tramping and outdoor recreation groups that have been consulted about trips undertaken in the area. A study of "Outdoor Recreation in Otago" was undertaken by Mason (1988) and published by the Federated Mountain Clubs of New Zealand (FMC). Reference is made to this recreation plan for Otago in the recreational opportunity discussion below. Land Use Capability (LUC) maps have been used to assess the extent of soil types and topographic areas and their significance with respect to sustainable pastoral use. The Survey Report of the NZ Protected Natural Area Programme for the Old Man Ecological District (1986) and the Conservation Management Strategy for Otago, have also been used as sources of reference.

GENERAL DESCRIPTION AND LAND RESOURCES OF MOA HILLS

Moa Hills is a small pastoral lease of about 3,500ha situated at the southern end of the Old Man Range on its extension towards Mt Bengier (Fig. 3). It occupies the broad rolling plateau between the range crest in the east and the Pomahaka River in the west (Figs. 3 and 5). Its altitude range is not great, ranging from about 900m in the headwaters of Bullock Creek to just over 1,100m at the south-east corner near Mt Bengier. The Pomahaka River is incised into the plateau, creating relatively steep west-facing slopes between the river and the plateau surface. Bullock creek is also incised into the plateau surface and this flows from north-east to south-west across the property. From about 800m at the NE corner of the property it drops steadily to about 600m at the SW corner where Bullock Creek joins the Pomahaka.

Almost all of Moa Hills is characterised by Carrick Hill and Dunstan Steepland High Country Yellow Brown Earth soils which have been classified LUC Class VIIc and VIIe. These soils have severe limitations for pastoral use due to climate and erosion. They generally carry tussock grasslands (Figs. 3 and 5) which have been modified to varying degrees by grazing and burning. In general, the grasslands are little modified and are mainly in a fairly natural state (Figs 3 and 5). Natural soil fertility is low and grazing and burning remove essential nutrients from soil reserves. Unless removals through burning and in animal products (meat and wool) are balanced by replenishment in the form of fertiliser, soil depletion will be inevitable because natural returns from atmosphere and soil parent material are inadequate to balance the removals. It is understood that fertilisers are not used on Moa Hills which is mainly used for summer grazing. If the nutrient balance is not maintained the system will eventually be depleted and continued pastoralism will be unsustainable. Nutrient balance might be maintained by fertiliser use but at these altitudes plant growth response is small and it is usually not economically justifiable to apply the necessary fertiliser, especially sulphur which is usually the greatest limiting nutrient factor. Furthermore, pastoral use, especially if that included burning, would not favour or promote biodiversity. For all these reasons, freeholding would not promote 'ecologically sustainable' land use. Under these circumstances conservation values need to be assessed and considered as an alternative to unsustainable pastoral use.

The only parts of Moa Hills which are not Class VII, and which have been classified LUC Class VI (with medium suitability for pastoral use), are situated in the southern half of the property. There are only about 300ha of these Dunstan soils which occupy the west-facing slopes of Bullock Creek (upstream as far as the hut) and a broad strip along its unnamed tributary which drains the northern slopes of Mt Bengier. The area is so small that it is doubtful it could be managed in a way that is ecologically sustainable, or whether the farming value of this area justifies freeholding. One possibility is that this small area might be managed in association with the freehold land which it is understood the lessee has closer to Roxburgh. If that freehold

actually adjoins the Moa Hills pastoral lease eastern boundary that suggestion may be quite feasible. If not, another alternative is that the entire Moa Hills pastoral lease is considered for return to full Crown ownership. That would allow it to be managed for conservation and recreation purposes and added to the Mt Bengier Conservation Area (Fig. 4), and possibly eventually to the developing the Kopuwai Conservation Park further north on the Old Man Range (Fig 8). This Conservation Park was foreshadowed in the Conservation Management Strategy for Otago.

A legal road runs up to Mt Bengier (Fig. 9) and thence northwards along the eastern boundary of Moa Hills and on to the crest of the Old Man Range. Where this passes through Moa Hills it is just outside the eastern boundary of the pastoral lease, but the actual formation on the ground is inside the fence. This situation needs to be resolved. To the north of the Moa Hills boundary there are options to turn west to the Pomahaka and its historic gold mining sites (Fig. 7), to head north to the crest of the Old Man Range (Fig. 5), or north east down to Coal Creek. There is a fourth option which is the steep walking track Bullock Track down the Clutha face to Roxburgh (Fig. 10). All of these tracks (with the possible exception of the steep Bullock Track) are important for recreational use by mountain bikes and horses as well as 4WD but as usual the actual formation does not always follow the legal alignment. Unfortunately 4WD use is not without its problems and indiscriminate use of alternative routes (to bypass wet holes) has churned up significant sections of the range crest. Perhaps the solution would be to designate an easement for foot and non-motorised vehicle use along the boundary of Moa Hills, and only allow 4WD use by permit.

RECREATIONAL USE AND POTENTIAL NEW OPPORTUNITIES

Recreational use of Moa Hills has been light in the past except for 4WD and mountain bike use along the eastern boundary. With increased knowledge of the wider area, development of the Kopuwai Conservation Area, its link to the Mt Bengier Conservation Area and improved access to other parts of the Old Man Range through tenure review, it is likely that recreational use by mountain bike enthusiasts and others will increase in future.

Mason has described the history and current recreational use of the Old Man Range as follows:-

"The Old Man Range has long been an attraction for winter recreation. This has been due to ease of access to the snowline and proximity to centres of population. In 1953 the Vincent Ski Club was formed in Alexandra with the intention of developing ski grounds on the slopes near the Obelisk above Fruitlands. By modern standards (variety of gradient, vertical height, reliability of operation) there is no potential for skifield development on these ranges. The limited extent of steeper snow slopes can, however, be utilised by more proficient cross country skiers."

Mason goes on to inform readers that:- *"The primary winter recreational potential of the area is for cross country skiing. Ease of access has resulted in the Old Man and Old Woman ranges being among the most frequently used areas in Otago. Road access to the snowline on the Old Man Range provides one of the few opportunities for day trips from Dunedin or Invercargill. The major natural limitation to utilising the vast extent of easy rolling terrain is the severity of weather conditions. A few disused mustering and miners' huts provide some overnight shelter, however due to rapid changes in the weather no reliance can be placed on locating them. Experience in alpine travel and survival are essential prerequisites for safe use during winter. There have been several close-calls, even for experienced parties, in one instance involving survival conditions in a snow trench for several days"*.

"A 40 km traverse the length of the Old Woman and Old Man ranges is possible, with an overnight camp. However, no quick escape to low country is available in the event of being overtaken by storm conditions."

The suitability of the range crest between the Pomahaka and the Clutha faces for cross country skiing depends entirely on the snow conditions from year to year. Because the terrain is lower in altitude than further north, the opportunities to use the Moa Hills area are less frequent than on the summit crest of the Old Man Range.

Mason adds that:- *"Summer recreation is largely dominated by the use of off-road vehicles and numerically, this activity probably exceeds all other activities. The traverse of the County road between Waikaia and*

Shingle Creek and along the range crest by trail bike being the major activities on the Old Man Range. Even during summer, riders regularly suffer from hypothermia on these exposed tops."

There are historic features on Moa Hills which add considerable interest and value for recreational visitors. These are mainly situated in the Pomahaka valley, close to the river where the flats have been extensively worked for alluvial gold. There are remains of old water races and cottages, piles of tailings, and traces of wing dams. Although some of these historic features are located on Moa Hills they are best accessed from the Pomahaka Road, just north of the Moa Hills boundary. Just south of the same boundary, and beside the Bullock Creek is an historic stone cottage. As well as its historic interest, this cottage could also provide shelter for recreational users of the range tops if a little repair and restoration work was carried out.

The recreational use of Moa Hills should be considered in the wider context of public recreation on the Old Man Range, the Mt Bengier Conservation Area and the development of the Kopuwai Conservation Park foreshadowed in the Conservation Management Strategy for Otago. A start has been made to the establishment of this Conservation Park by declaring the Bain Block to be the Kopuwai Conservation Area and this tenure review could make a contribution by providing at least part of the link to the Mt Bengier Conservation Area.

Any assessment of recreational value should include not only present usage, which is relatively light, but also future potential usage by trampers, mountain bike and horse riders, and skiers. It is likely that with increasing pressure for new recreational areas and increasing knowledge of this area, together with improved access, usage will increase following the completion of this and other tenure reviews along the range.

Access to and along the crest of the range is the main recreational use at present. However, good access is available via the Waikaia Bush Road and via Symes Road to the Obelisk. Good access to the range crest is also needed further south in the vicinity of Mt Bengier. The legal road across Silverbirch to Mt Bengier provides that access to the Mt Bengier Conservation Area. It has been pointed out above that the northern boundary of Moa Hills is something of a cross roads for recreational use of the range as several legal roads meet at or near its north east corner. These legal roads are represented on the ground by the track along the crest of the range from Mt Bengier to Hyde Rock and beyond, while there is also the Pomahaka Road to the west and the Bullock Track to the east, down the steep face of the range to Roxburgh.

In summary, this assessment indicates that there is considerable scope for increased recreational use of the Old Man Range and its southern extension to Mt Bengier by walkers, mountain bikes and horse riders. This is likely to be the most popular recreational use of the area as it can be coupled with walking access from Roxburgh via the steep Bullock Track, and exploration of historic and other interests in Bullock Creek and the Pomahaka Valley.

Resolution of issues concerning the legal road along the crest of the range will also be required. There are also a number of historic sites on the property which add to the interest for visitors, so protection of, and public access to, these features should be provided as outcomes of this tenure review.

SIGNIFICANT INHERENT VALUES AND THEIR IMPORTANCE FOR RECREATION

This report focuses on those features of Moa Hills which are important for public recreational interests. It should be noted that while some of this interest focuses on public access, the natural and historic values and landscapes have a fundamental impact on the recreational value of the place and greatly influence the quality of recreational experience enjoyed. It is for this reason that reference is also made to the natural, historic and landscape values of this pastoral lease.

There is no doubt that the most significant inherent value on this property is its magnificent rolling tussock landscape. This appears to extend towards the horizon in all directions and gives the impression that Moa Hills is only part of a much more extensive landscape.

Mason (1988) has described the Old Man Range vegetation as follows:- *"On the lower northern flanks there are extensive semi-desert scabweed communities which have been induced from the original short tussock grassland by overgrazing by both sheep and rabbits. Above this zone and on lower and wetter eastern faces*

is a light cover of short, fescue tussock grassland supporting oversown exotic grasses and clovers. Matagouri is generally prominent, giving a savannah-like appearance to the vegetation. With increasing altitude the shorter fescue tussock grades into the evergreen narrow-leaved snowgrass, to be completely displaced above 1000 m. The golden Spaniard is dominant where tussock cover has been reduced by fire. The shorter slim snowgrass becomes dominant at the upper extent of the tussock grasslands."

In practice, part of Moa Hills has been modified to varying degrees by grazing and occasional burning over the years. It is however still dominated over most of its area by tall snow tussock grassland which greatly enhances the rolling plateau landscape. The least modified tussocklands with tall snow tussock and wetlands with extensive stands of red tussock appear to be in the northern part of the property especially in the north-west corner and the slopes above the Pomahaka. There are also important areas of red tussock in the wetter spots towards the north-east corner of the property.

AREAS TO BE PROTECTED

There is a real problem with making recommendations for the protection of significant inherent values on Moa Hills. The problem is how to protect the integrity of the landscape. There is no doubt that the most important inherent value on Moa Hills is the landscape of rolling tussock grasslands which appears to extend beyond the horizon in all directions. The tussock grasslands on Moa Hills are part of an extensive landscape which extends far and wide beyond its boundaries. Of course, it is impossible to make recommendations for this tenure review which affect properties beyond its boundaries, but the hope is that the entire landscape will eventually be incorporated into the Kopuwai Conservation Park.

One solution would be to recommend the return of the entire property to full Crown ownership and control, so that it would be managed for conservation and recreation purposes. That could be the best outcome but there may be a better alternative.

It has been argued above that most of the property has serious limitations for pastoral use and is classified LUC Class VII. It was also argued that it cannot be managed in an ecologically sustainable way unless nutrient balance is maintained and that losses sustained through burning and the removal of animal products are replenished. There is a small area which might be capable of being managed in an ecologically sustainable manner because limitations are less severe on Class VI land in the lower reaches of Bullock Creek catchment.

It may be possible to manage the whole area of Moa Hills in an ecologically sustainable manner under a Sustainable Management Covenant (s97 Crown Pastoral Land Act 1998). This might be successful in protecting the inherent values if sufficiently rigorous conditions were imposed. The covenant would require strict conditions as follows:-

A farm management plan should be drawn up to demonstrate how the area would be managed in an ecologically sustainable manner. This would require occasional replenishment of nutrients even if fertiliser use is not justifiable for production reasons.

- Weed and pest control would be necessary.
- No burning would be permitted.
- Strict stock limitations would have to be imposed.
- Strict adherence to these conditions would be required.
- Monitoring should be carried out to ensure that no adverse effects were accruing.
- Any infringements would incur penalties.

With these conditions in place, the Sustainable Management Covenant would be the preferred outcome.

If this course is adopted there will, be a need to protect the historic features in the Pomahaka valley, probably by the designation of an Historic Reserve. It may still be possible to permit limited grazing within such a reserve.

Another historic feature of interest on Moa Hills is the stone hut by Bullock Creek. With some repair and restoration this could also provide shelter for recreational users of the range. It is recommended that a small area of Historic Reserve should be established around the hut, with the intention the DOC would carry out repair and restoration work.

ACCESS REQUIREMENTS

Access to and along the crest of the range is an important recreational issue in this tenure review. Although the track formation along the eastern boundary is inside the boundary, we understand that the legal paper road is on the other side of the fence. It is recommended that the existing road formation should be formally recognised as the legal road through this tenure review. If legal road status is established, then foot, bike, horse and vehicle traffic would be permitted.

If for some reason legal road status is not established over the existing formation then a legal easement will be required. That legal easement should permit foot, horse and non-motorised vehicle traffic only. Other users, such as motor bikes and 4WD vehicles, should be regulated so as to minimise the extent of damage to the road. This might be achieved by the issue of a limited number of permits.

Public foot access to other parts of the property will also be required. Public foot access should be permitted to the proposed Historic Reserve in the Pomahaka valley by way of an easement designated for that purpose. Public foot access should also be permitted (by legal easement) to the historic stone hut beside Bullock Creek in the north-east corner of the property.

OTAGO CONSERVATION MANAGEMENT STRATEGY

In the Otago Conservation Management Strategy for Otago (CMS) the Old Man - Garvie area is recognised as a Special Place. The objective for this Special Place is:

"To protect the entire high altitude range crests for their landscape, nature conservation, cultural, and recreational importance, to improve legal access to them, and to ensure that recreational and commercial uses are managed to sustain resources and ensure quality recreational experiences... .."

It should be further noted that the CMS states that *"Protected areas boundaries will be rationalised by disposals, acquisitions, swaps and other means (including tenure review) to link as far as practicable the existing inland protected areas and areas of indigenous vegetation between them."* [underlining our addition].

It is also noted that the CMS includes the following statements: *"Pastoral lease tenure review on adjacent properties will provide opportunities to negotiate to protect the entire range crest."* And *"Continued identification of key natural and historic resources to enable well informed decision making in the pastoral lease tenure review process."*

Finally, it should be noted that the CMS priority for the Old Man area states that *"Completion of protection negotiations, including tenure reviews, will be a priority in this Special Place."*

From statements in the CMS, it is clear that DOC is committed to achieving its objectives for the Old Man - Garvie Special Place and that significant progress would be made towards achieving the objectives if this tenure review can be successfully negotiated.

CONCLUSIONS

1. Significant conservation and recreation gains are possible outcomes of this tenure review.
2. Moa Hills occupies the broad rolling plateau between the range crest in the east and the Pomahaka River in the west. Its altitude range is not great, ranging from about 900m in the headwaters of Bullock Creek to just over 1,100m at the south-east corner near Mt Bengier.
3. The landscapes and views to be seen from the Old Man Range are outstanding and add greatly to the enjoyment of recreational visits to Moa Hills. One of its greatest values is to provide easy access to a traverse along the length of the Old Man Range from Mt Bengier to Hyde Rock and the Obelisk.

4. Almost all of Moa Hills is classified LUC Class VII and has severe limitations for pastoral use. Pastoral use of these lands cannot be ecologically sustainable unless nutrients lost through grazing and burning are replenished.
5. There is only a small part of Moa Hills which is classified LUC Class VI (with medium suitability for pastoral use), situated in the southern half of the property. This might be farmed in association with other freehold land.
6. Return to full Crown ownership and control would allow the entire property to be managed for conservation and recreation purposes and added to the Mt Benger Conservation Area, and possibly eventually to the developing the Kopuwai Conservation Park further north on the Old Man Range.
7. Recreational use of Moa Hills has been light in the past except for 4WD and mountain bike use along the eastern boundary. Increased knowledge of the wider area, development of the Kopuwai Conservation Park, incorporation into the Mt Benger Conservation Area and improved access to other parts of the Old Man Range through tenure review, is likely to increase use of Moa Hills by mountain bike enthusiasts and others in future.
8. There is considerable scope for increased recreational use of the Old Man Range and its southern extension to Mt Benger by walkers, mountain bikes and horse riders. There is walking access from Roxburgh via the steep Bullock Track, and round trips can be made on foot and mountain bike by a variety of routes.
9. There is no doubt that the most significant inherent value on this property is its magnificent rolling tussock landscape. This appears to extend towards the horizon in all directions and gives the impression that Moa Hills is only part of a much more extensive landscape.
10. There are historic features in the Pomahaka Valley which add considerable interest for recreational visitors. These include remains of old water races and cottages, piles of tailings, and traces of wing dams where the flats have been extensively worked for alluvial gold. The features which are on Moa Hills land as well as the historic stone hut beside Bullock Creek should be protected by the designation of Historic Reserves. Limited, controlled grazing might be permitted in these reserves.
11. There is a real problem with making recommendations for the protection of significant inherent values on Moa Hills; that is how to protect the integrity of the landscape. One solution would be to recommend the return of the entire property to full Crown ownership and control, so that it would be managed for conservation and recreation purposes. That could be the best outcome but there may be a better alternative.
12. It may be possible to manage the whole area of Moa Hills in an ecologically sustainable manner under a Sustainable Management Covenant. This might be successful in protecting the inherent values and the integrity of the landscape if sufficiently rigorous conditions were imposed. Appropriate conditions are listed above. The Sustainable Management Covenant proposal is preferred.
13. It is recommended that the existing road formation along the eastern boundary should be formally recognised as the legal road through this tenure review. If legal road status is established, then foot, bike, horse and vehicle traffic would be permitted.
14. If legal road status cannot be established over the existing formation then a legal easement will be required. That legal easement should permit foot, horse and non-motorised vehicle traffic only. Other users, such as motor bikes and 4WD vehicles, should be regulated so as to minimise the extent of damage to the road. This might be achieved by the issue of a limited number of permits.
15. Public foot access to the proposed Historic Reserve in the Pomahaka valley and to the historic stone hut beside Bullock Creek should be established by way of a legal easement.
16. It is clear that significant progress would be made towards achieving the objectives stated in the

Conservation Management Strategy for Otago if this tenure review can be successfully negotiated.

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