

ROCK AND PILLAR, LAMMERMOOR and LAMMERLAW Ranges

1. Landforms

The **Rock and Pillar Range** is the easternmost Central Otago range, being a fault-bound block mountain. The Hyde Fault forms the boundary between the moderately steep eastern escarpment and the Strath Taieri basin. The western back-slope is gentle but considerably dissected at lower elevations above the Maniototo basin. The broad, gently rounded range crests average 1370 m above sea level, with the summit at 1450 m. This is notably lower than other Otago block mountains.

Clusters of shaft and block tors of schist bedrock litter summit crests in random fashion; Stonehenge and 'Castle Rock' are among the more spectacular and better known examples. Small nivation cirques (caused by snow-patch erosion) developed along the lip of the leeward **scarp** during the Pleistocene, leaving short, steep **headwall** faces. Periglacial patterned ground features include earth hummocks, miniature stone stripes and nets, solifluction terraces and sliding boulders. A unique ice wedge tarn occurs in the vicinity of the summit.

The **Lammermoor Range** is a distinct but lower southern extension of the Rock and Pillar block mountain, rising to an average of 1100 m along its crest. The range crest is over 10 km broad, gentle, and intricately dissected by small valley systems. Steep faces only occur on the eastern escarpment above Deep Stream and in the upper Taieri Gorge. The Lammermoors abut the **Lammerlaws** at right angles at their highest point (1158 m), the latter extending eastwards into the Waipori catchment, and north-westwards to gradually descend into the vast Teviot uplands. The Lammerlaw range crest tends to be more narrow and undulating than the Lammermoor crest. The Taieri River begins its circuitous course from the upper slopes of the Lammerlaws on an inland route through the Maniototo, around the northern end of the Rock and Pillars, and finally southwards through the Strath Taieri and Taieri Gorge to the sea. Relatively short, steep catchments drain the southern flanks of the Lammerlaws into the Clutha and Waipori Valleys.

An extensive upland occupies the transition between the Rock and Pillars and these southern ranges. Crest elevations range between 600 and 1000 m. Distinctive landforms in this area consist of craggy tors and gullies, and huge blanket bogs such as the Great Moss Swamp, now largely inundated.

2. Vegetation and Wildlife

2.1 Climate

A distinctive feature of the Rock and Pillar Range, in comparison with other Central Otago ranges, is the relatively low elevations at which high-alpine vegetation occurs (1200 m). Similar environments occur at increasingly higher elevations further inland, reflecting increasing continentality. (2) Comparison of climatic data with that from the Old Man Range indicates that the Rock and Pillar crest experiences

similar low temperatures (an annual average of close to freezing point) and high average wind velocities despite the lower elevation of the latter. (3)

Snow lies on the crests and uppermost flanks of these ranges during the winter and can persist for up to 6 months of the year, with considerable redistribution by wind into drifts in depressions and leeward gullies. Precipitation is heavier on the Lammermoor-Lammerlaw massif with a markedly lower winter snowline than on the Rock and Pillars. This probably reflects the greater coastal influence on the former.

2.2 Vegetation (3,4,5)

2.2.1 The existing vegetation of the **Rock and Pillars** exhibits similar modifications and zonations to that found on other schist block mountains in Otago.

On the montane basin fringes the grassland is dominated by common hard tussock with matagouri and silver tussock on more favourable sites. Oversowing of exotic grasses and clovers has largely displaced inter-tussock native grasses over extensive areas. Forest remnants, chiefly of broadleaf but with some Hall's totara are concentrated in the deepest gullies on the lower eastern slopes. Between approximately 750 and 1100 m, the narrow-leaved snow tussock dominates the grassland but at 1100 m it merges with a narrow, discontinuous zone of mixed scrub up to one metre tall in which *Hebe odora* and locally, snow totara, bog pine and mountain toatoa are dominant. This shrubland zone appears to be unique for Central Otago block mountains. This zone is particularly vulnerable to damage from fires.

The high-alpine zone extends beyond the shrubs, with a herbfield community dominated by *Celmisia viscosa* and blue tussock covering most of the remaining 200 m below the summit plateau. The most exposed environments are covered by mosaics of extremely dwarfed cushion species, patches of herbfield, and snowbank communities in moist depressions. Isolated plants and patches of the narrow-leaved and slim snow tussock on the summit plateau are probably remnants of a formerly extensive alpine snow tussock grassland. The western faces of the range tend to be drier with less extensive snow tussock. Mixed fescue snow tussock grassland occupies a broad mid-altitudinal zone. Towards the southern end of the range there are several blanket bogs which are actively accumulating peat. (6)

2.2.2 The broadly crested Lammermoor-Lammerlaw massif provides the core of probably what is one of the largest



Tall tussock grasslands, Lammermoor Range.

contiguous areas of tall tussock grassland left in New Zealand. A combination of high precipitation and poorly drained soils has, until very recently, reduced the impact of extensive pastoralism to the extent that vigorous narrow-leaved snowgrass can reach chest height in some areas. Along the mid Lammerlaw crest, on the Beaumont River - Taieri River divide, is a particularly attractive and vigorous alpine grassland with New Zealand's largest mountain daisy, *Celmisia semicordata*, vying for dominance with waist-high tussock. Within the snowgrasses along the entire length of the Lammemoors there are a myriad of moss and cushion bogs containing small ponds. These provide one of the most distinctive features of the area. An intensification of burning, subdivision, oversowing, and cattle grazing is making major in-roads into the natural condition of these grasslands.

The intricate gully systems harbour diverse and dense stands of shrubs and snowgrass, being most vigorous in the Taieri River gorge where stock cannot easily penetrate. Tributaries of the Clutha support remnants of silver beech forest, usually in association with manuka shrublands.

2.2.3 Between the Rock and Pillars and Lammemoors, the Great Moss Swamp until recently occupied an area of 20 square km and was surrounded by *Sphagnum* moss peat bogs in tributary valley heads. Filling the Logan Burn reservoir in 1984 has destroyed one of the largest Otago high country wetlands. A similar fate had already befallen the extensive swamps at Lake Onslow. The Teviot, Red and Fortification Creek swamps are now the only remaining major upland swamps in this district.

2.2.4 The Rock and Pillar Range forms its own district of the Central Otago Ecological Region. The Lammemoor-Lammerlaw massif is part of the Waipori district of the Lammerlaw Ecological Region.

2.3 Wildlife

Wetland areas provide the focus for a variety of fauna, therefore the Lammemoor-Lammerlaw massif provides more favourable habitats for bird life than most of the drier Rock and Pillars. Mallard, grey, shoveler and paradise duck, and grey teal are generally present in large numbers at major wetlands, with large numbers of pied stilt and banded dotterel breeding in wetland environs during summer. Pied oystercatcher, black shag, white-faced heron, and bittern are also present. The New Zealand falcon ranges throughout all the tussock grasslands.

Californian quail and chukar are in moderate to low numbers on lower, scrubby country.



Hemideina maori. Photo: Ken Mason

Entomologically all three ranges are of interest. Two undescribed moths are found only on the Lammemoors, while six more species occur in that area but not on the Rock and Pillars.⁽⁷⁾ The latter range's claim to fame however, is a striped alpine weta (*Hemideina maori*).

The Taieri headwaters provide important spawning and rearing habitats for resident brown trout populations, as do major Taieri tributaries draining the western slopes of the Rock and Pillars. Most Clutha tributaries on the Lammemoors hold resident populations of brown trout, eels and native fish.⁽⁸⁾

3. History and Land Use

3.1 Pastoral Settlement

Four depasturing licences were first issued over the Rock and Pillar Range in late 1858. At the same time another three licences were issued on the Lammemoors-Lammerlaws. It was another year before the last unclaimed 'pasturage' was to be selected. This was in the extensive Taieri headwaters and on the Lammerlaw tops.⁽⁹⁾

Over the next century of pastoral occupation there was considerable subdivision of the original four large runs on the Rock and Pillars, creating approximately 30 of the smallest high country runs in Otago. The southern flanks of the Lammerlaw Range were also subdivided into smaller units, particularly in the Mt. Teviot district.

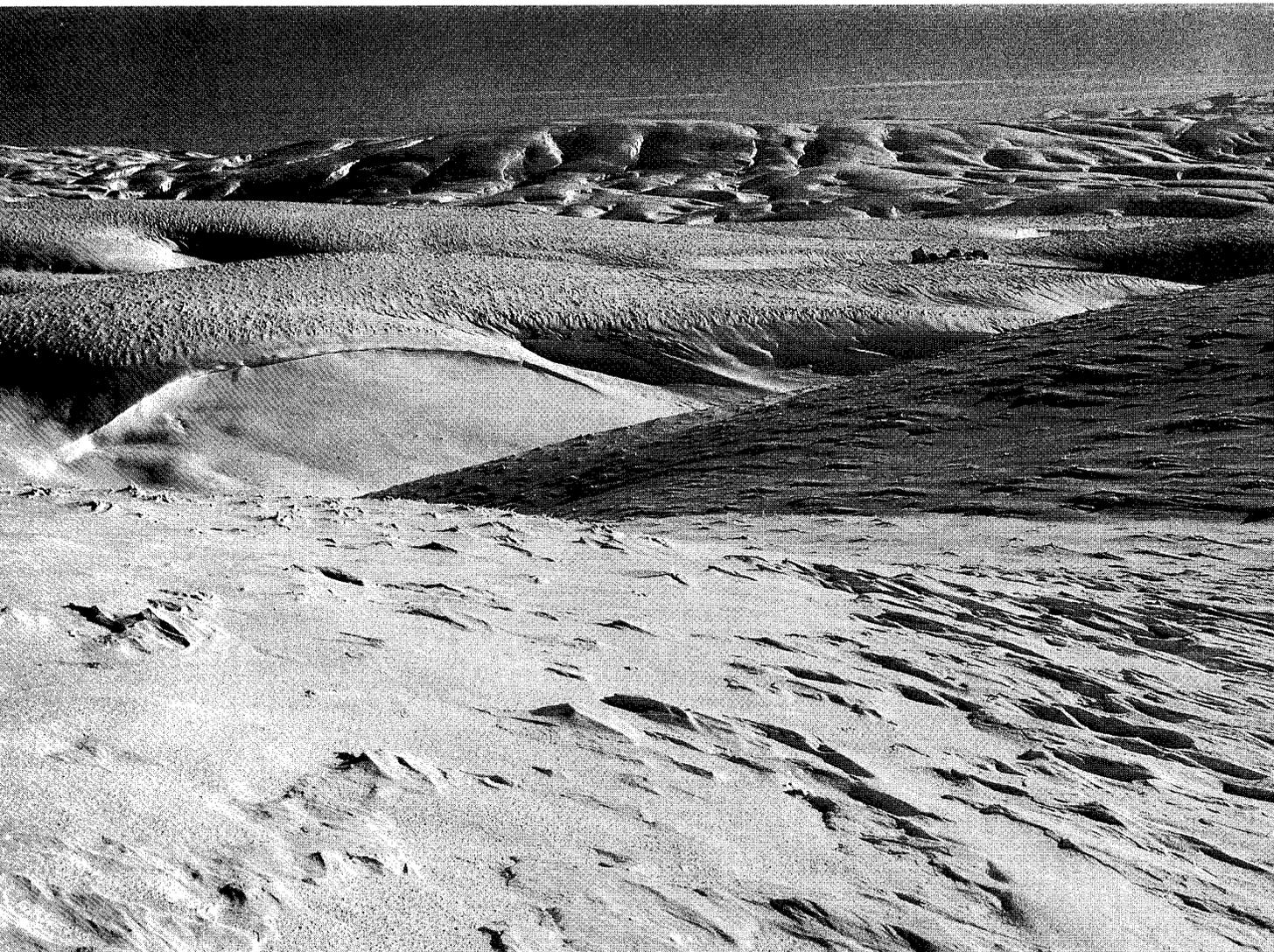
3.2 Land Tenure

Substantial areas of the Lammerlaws have been reclassified from Pastoral to Farm Land in recent years, resulting in the issuing of renewable leases and subsequent freeholding. In 1972 over 6500 ha of Beaumont Station was reclassified, including some beech forest, and manuka associations down to the banks of the Clutha River. During the 1979-81 period of Government's mandatory reclassifications, another six runs at the Teviot end of the Lammerlaws were reclassified.

Three runs on the northern end of the **Rock and Pillars** above Hyde became Farm Land during this same period. Two further reclassifications occurred on this range's eastern face; one a partial reclassification and another a complete reclassification up to 1100 m above sea level.

There are currently 22 pastoral leases on the Rock and Pillars and one block of Unalienated Crown Land (UCL), being an expired pastoral occupation licence. The huge Rocklands pastoral lease covers the Lammemoor Range, with Beaumont and 5 other pastoral leases on the Lammerlaws. As already noted, the western end of this range, the Mt. Teviot area, is now renewable lease or freehold. The Waipori Farm Settlement occupies part of the eastern Lammerlaws and the Waipori River headwaters. The most eastern extent of the Lammerlaws, up to 910 m, is deferred payment licence - a legacy from former small grazing runs which carried the right to freehold.

There are three areas earmarked for reservation on the eastern Lammerlaws. 210 ha in lower Stony Stream will become scenic reserve, and at least 990 ha of mid- to high-altitude tussock grassland in the Nardoo and upper Devils Stream catchments is intended for scientific reservation. 145 ha of mid-altitude tussock grassland at the head of Lammerlaw



Early winter. Taieri headwaters, Lammerlaw Range.

Stream is awaiting gazettal as the Black Rock Scientific Reserve.⁽¹⁰⁾ These areas have been set aside from farm settlement blocks. A further 248 ha south of Lake Mahinerangi is historic reserve, being part of the Otago Goldfields Park.

3.3 Gold Rushes and Mining

Gabriels Gully to the south of the Lammerlaws was the scene in 1861 of the first major gold rush in Otago. Once the initial pandemonium had subsided, the need for adequate water supplies for sluicing away cemented conglomerates at the head of the gully prompted the construction of lengthy water races. By the end of 1865, 380 km of race fed into the gully, some from as far away as the southern slopes of the Lammerlaws and upper Waipori catchment.

A lengthy history of hydraulic, quartz and dredge mining in the Waipori district also resulted in extensive water race construction, tapping most upper catchments on the eastern end of the Lammerlaws. The 'OPQ Gully' at Waipori has the distinction of being the site of the first underground quartz mine in Otago.

Further north the Dunstan Road, between the Lammermoors and Rock and Pillars, became established as a result of the 1862 Dunstan gold rush. This high, direct and desolate route

to Central Otago was used by thousands of miners in preference to the more circuitous Pigroot and Clutha Valley. For many years it was also the quickest route for escorted gold coaches to carry bullion and criminals to Dunedin. At Styx (Paerau), being the half-way point on the journey, a hotel and goal were built for overnight accommodation.

Around the toe of the Rock and Pillars auriferous alluvium was worked for many years by hydraulic sluicing and elevating. At Hyde, Hamiltons, and Patearoa extensive workings were undertaken, requiring the construction of numerous water races to intercept distant catchments. There are major race complexes in the Sow and Pig Bums, plus a 20 km race from near the summit of the range, across the crest and along the eastern face to above Hyde.

There were several shallow gold workings in the Lake Onslow area, and in the lower Deep Stream catchment which was also the site of a short-lived dredging venture.

The southern end of the Rock and Pillars provided the route for the first telephone link between the Strath Taieri and Maniototo. Stone huts were constructed along the route but maintenance difficulties due to snow and isolation, brought about the line's replacement by today's lower-level route which circumvents the range entirely.

3.4 Hydro-electric and Water Development

In 1890 a rock dam was built on the upper Teviot River to provide water storage for sluicing operations near Roxburgh. The water rights were acquired for hydro-electric generation on the lower Teviot River in 1921, with the crest height of the dam progressively raised over the years. A new dam was completed in 1982 which doubled the area of Lake Onslow, and provided four times the storage. The total Teviot scheme now has a 9.4 megawatt generating capacity.⁽¹¹⁾

In 1984 the Logan Burn dam was completed as part of a combined hydro-electric and irrigation scheme for the upper Maniototo, flooding most of the Great Moss Swamp in the process.

In 1936, as the first major augmentation of Dunedin's water supply from a distant catchment, a 64 km pipeline was completed, drawing water from Deep Creek to Dunedin. In 1977 the larger and adjacent Deep Stream was tapped with a new scheme, the combined supply now providing over 40 per cent of the city's water requirements.⁽¹²⁾ Water from these Lammermoor sources is given greater chemical treatment than the city's other sources, due to it being highly coloured by peat stain.

No land use controls that might affect water quantity and quality are exercised over both catchments. Deep Creek and most of Deep Stream are extensively grazed, however increasing areas in the lower Deep Stream catchment are receiving intensified farming use arising from cultivation. A large proportion of the Lammermoor-Lammerlaw massif is now utilised for Dunedin's water requirements.

The Department of Lands and Survey zoned the upper eastern Lammerlaws and Deep Stream catchments, which are within the Waipori Farm Settlement, for 'extensive grazing'⁽¹³⁾ however this area is now proposed as a scenic reserve.⁽¹⁴⁾

In 1984 the Dunedin City Council diverted part of Deep Stream by means of a 1.5 km tunnel, for the purpose of increasing power output from its Waipori generators.

A further hydro-electric scheme has been proposed recently, involving a 60 m dam above the Taieri Falls in the river's headwaters. No approvals have been granted for construction to commence.

Summer water resources in the upper Taieri are now heavily committed, with shortages of supply for irrigation. Changes in land use, combined with increased irrigation and potable water abstractions will have major implications for the whole Taieri catchment.⁽⁴⁾

3.5 Scientific Research

All three ranges have provided convenient field laboratories for several government agencies and university researchers, who have concentrated on a variety of agronomic, hydrological and alpine ecological studies over the last 20 years. The impact on water yields from replacement of tussock grasslands with exotic pasture and forests is a continuing focus for these studies. While no conclusive results are yet broadly applicable, it appears that net precipitation gains through fog interception by tussock provides a very significant contribution to flows from higher elevations (i.e. above 800 m).⁽¹⁵⁾ The implications of stock damage to peat bogs and broad-scale tussock removal on water yields, low flows, peak flows, and

snow storage are yet to be faced up to in land use decision making.

There are also socio-political obstacles in the way, which assume expanding pastoral production to be a paramount objective over the need to conserve areas as 'controls' for monitoring agricultural impacts in the wider area, let alone for the preservation of nature. The scientifically well supported case for reserving a complete catchment (the Nardoo) on the Waipori Farm Settlement met unyielding resistance from farming interests, and from the LSB. While prepared to reserve higher elevations, the Board was not prepared to forego development potential on 400 ha of the lower catchment.^(16,17)

3.6 Land Use Capability

The greater bulk of the uplands are Class 7, with severe limitations for pastoral production brought about primarily by the cold climate. The steep upper eastern face and summit plateau of the Rock and Pillar Range is Class 8. The lower flanks of the ranges are Class 6,⁽¹⁸⁾ much of which has been developed by oversowing and topdressing. The extensive Class 7 uplands along the Dunstan Road have also seen large-scale oversowing and topdressing, greater subdivision and stocking in recent years.

The Otago Catchment Board (OCB) sees potential for intensive pastoral oversowing and subdivision along all the lowest eastern and southern flanks of the ranges, and for semi-intensive pastoralism through the extensive Great Moss Swamp basin between Sutton Stream and Paerau.⁽⁴⁾ The Lake Onslow catchment is similarly identified as having development potential, however the Board considers it essential, in this area at least, to conserve tall tussock, swamps and stream courses by controlling grazing.⁽¹⁹⁾ In relation to the Class 8 lands on the Rock and Pillars the Board considers that the special features on these lands can only be protected by total destocking.⁽²⁰⁾

3.7 District Scheme Zoning

The area is divided between three territorial local authorities:

The Silverpeaks County Council has zoned the upper crests of the Rock and Pillar Range Rural D (High Country Protection), with retirement from grazing, re-vegetation, soil and water conservation works, periodic grazing, huts, and vehicle tracks as predominant uses. Forestry, farming, recreation (to ensure compatibility with conservation objectives), and buildings are conditional uses within this zone. The Deep Stream catchment, to the crests of the Lammermoors and Lammerlaws is designated as Dunedin City Water Catchment with an underlying general zonation of Rural B 2.⁽²¹⁾

The western Rock and Pillar and Taieri River headwaters to the crest of the Lammermoors-Lammerlaws is within **Maniototo** County. A Rural B (High Country Protection) zone covers the remainder of the Rock and Pillar summit plateau. Retirement, revegetation, soil and water conservation works, periodic grazing, and huts are predominant uses. Vehicle tracks are a discretionary use, for reasons of landscape protection. Forestry and reserves are conditional uses. The balance of the high country is within the County's general Rural A zone.⁽²²⁾

The southern side of the Lammerlaw Range is within

Tuapeka County's general Rural A zone which is subject to review.⁽²³⁾

3.8 Rock and Pillar Pastoral Lands Assessment

In 1982 the Department of Lands and Survey undertook a trial assessment⁽²⁴⁾ of the recommendations of the Clayton Committee⁽²⁵⁾ regarding freeholding of Crown pastoral lands. This was one of three such assessments undertaken simultaneously throughout the South Island.

After rather severe criticism from different quarters of the terms of reference, as well as of the assessment team's initial performance, a much revised report was made for Land Settlement Committee and Board consideration. In April 1983 the Board resolved to not proceed with implementing any of the trial assessments. It did however, acknowledge that the Rock and Pillar assessment was a valuable exercise, with the report having 'value as a resource document, but not as a basis for action'.⁽²⁴⁾

The final report recommended that approximately 30 per cent of the study area be retained in Crown ownership, compared to an initial 20 per cent, with provision of foot access and retention of legal 'paper' roads to these areas. Of the 'Crown retention area', some 6000 ha of summit crests plus two tussock grassland altitudinal sequences were designated as **potential reserves**. Special features represented within the reserves would include: silver, hard and snow tussocks at a range of altitudes and aspects; unique subalpine shrublands; alpine herbfield, cushion and snowbank vegetation; rare and endangered plants; mid to high altitude wetlands; soils and fauna associated with all vegetation types; geological and periglacial features; and a range of areas of high summer and winter recreational value.

Another 5000 ha immediately west and south of the summit crests was earmarked as multiple use 'range' land, containing wetlands, high-altitude snow tussock and herbfield, with considerable potential for cross country skiing. Management of such areas was to include long term leasing for primary production, with provision for public use.

2,200 ha of multiple use 'public' land was identified on southern crests, reflecting its 'limited agricultural value and considerable botanical and recreational values.' Management of such an area could entail limited grazing on a permit basis.

The balance of the range, being some 32,000 ha, would then become available for **permanent alienation** (i.e. freeholding) subject to public access easements, laying off of riparian Section 58 strips, and a historic protection covenant at stx.

It is clear that in terms of the biological and recreational features *that were identified* within a very severe time constraint for the assessment, the central areas of nature conservation and recreation value were adequately accommodated within the areas recommended for retention of Crown ownership. The tenures appropriate within this area will remain a subject of continuing debate, dependant largely on refinement of management objectives, the nature of landholders' occupation rights, and the policies under which conservation and recreation values are administered.

In terms of the 70 per cent of the area that would have been made available for freeholding if the assessment report was

adopted, systematic evaluation by a Protected Natural Areas survey may identify further localities requiring special protection. Additionally, the major flaw in the terms of reference to exclude water and soil conservation values from consideration would have to be fully rectified in any future tenure decisions.

The nature conservation and recreation values that were identified in the assessment exercise have not disappeared from public consciousness merely as a result of the LSB's decision not to proceed with implementation of the final report. The report will remain as a starting point for the future allocation of such Crown lands to achieve integration of a multiplicity of uses on a *best-fit* basis.

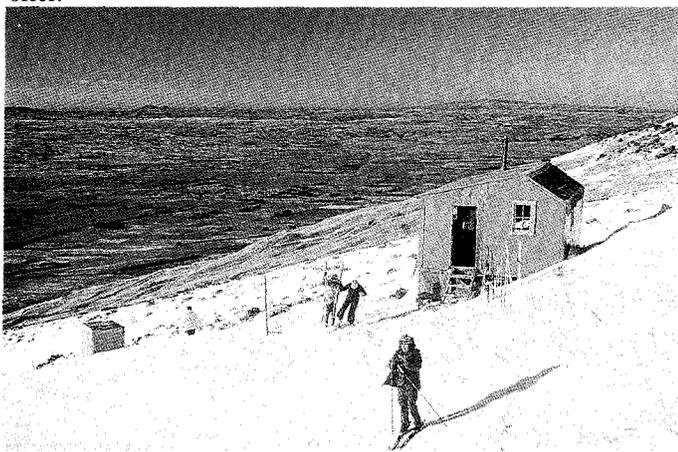
4. Recreational Opportunities

4.1 Skifields

The Rock and Pillars are the *home ground* for club skiing in Otago.

Recorded winter usage goes back to 1932 with the formation of the Otago Ski Club (OSC). An existing stone hut at the base of the range provided accommodation, with the necessity of a daily climb of 1000 m uphill on foot carrying skis, and returning each evening. This was the usual pattern of use until 1938 when a small stone hut, accommodating 28 people was built on the crest of the range. By 1947 growth in membership resulted in a larger hut being built beside the earlier one. It accommodated 70 skiers.

The next few years saw heavy use of the range until skiing techniques improved to the stage that the slopes became too gentle for an increasing number of proficient skiers. From 1948 a portable tow was periodically operated in 'Big Gully' on the western side of the range crest, and on the 'Home Run' near the hut. However, patronage at Coronet Peak grew at the expense of the Rock and Pillars. The attractions of better weather and access, facilities and terrain were telling. In 1958 a final effort was made to reinvigorate use of the range. A rope tow with 180 m vertical lift was installed on the steeper eastern face below 'Castle Rock', with vehicle access constructed up to the snowline. Accommodation was provided by a relocated Otago University Ski Club hut which became known as the '*Leaning Lodge*'. This field was intermittently used until 1965 when it was finally abandoned and the tow removed.^(26,27) The club and its downhill skiing membership had basically outgrown all that the Rock and Pillars had to offer.



'Leaning Lodge', with *Middlemarch* below. Photo: Ewan Paterson

Daybreak. Slowly, very slowly, the first slender rays of light filter thinly through the one window. Gently fades the gloom, and in its place appears a picture of orderly chaos as the various objects vaguely assume their shape. Orderly, indeed, for the hut rules and regulations have been widely circulated and carefully followed; chaos, too, for it could not be otherwise with such a mass of human bodies and personal gear within this limited space. By the window, the most clearly defined object in sight, a large table with its trim shelves and tins of food sets the standard - "a place for everything". Beside it, on one side, is the cooker which provides so many a welcome hot drink for parties arriving wet and cold, or late at night; on the other side, thirty pairs of skis are neatly stowed away in their wooden rack. The distant, dark side of the hut also becomes slowly visible, and is shown to be entirely filled with two great wooden shelves, on which are sardined together a mass of shapeless forms. Twenty-eight is the official maximum capacity of these benches, though it is whispered that an extra one or two have sometimes squeezed in, either beside, or on top of, their fellows. . . . And from mutual warmth and individual sleeping bags, we have all slept so warm and comfortably through the coldest winter night. The end positions are, of course, the worst, for the man there has on one side of him only the cold, roughly unyielding wall of rock and clay from which the hut has been built. But there are no complaints.

Due to the present-day requirements for skifields being greatly different from those of the 1930's and 40's, there is no potential on any of the three ranges for a modern lift-serviced skifield.

4.2 Cross Country Skiing

4.2.1 The excellent touring potential of the Rock and Pillars was quickly utilised by OSC members. 'One popular eight mile journey (*in heavy snow years*) is to cross over to the Styx where there is a small but comfortable hotel.'⁽²⁸⁾ The first recorded ski traverse the length of the Lammerlaw and Lammermoor ranges was completed in 1941, but the intention of continuing on to the Rock and Pillars eluded the Gilkinson-Craigie party.⁽²⁷⁾

In addition to slalom and downhill competitions on the Rock and Pillars, the OSC held langlauf (cross country) competitions over a 20 year period. The club's prominence in this field is indicated by the production of seven national title holders over the period 1938 to 1959. Ski jump competitions were also a regular feature from 1951 to 1959.⁽²⁷⁾

With the OSC shifting its organised activities to Coronet Peak, only a few of the club's Rock and Pillar stalwarts continued to visit the range for ski touring. Throughout the 1960's and 70's however, regular use of the range was made by other Dunedin mountain clubs for snowcraft instruction as well as for limited touring on alpine skis. This latter activity tended to be erratic due to the weight of modern downhill equipment to be carried uphill to reach snowline. Easier alternatives were available.

By 1976-77 increasing availability of light-weight cross country ski equipment resulted in rapid growth of this activity within mountain club membership. The large (1947) hut and '*Leaning Lodge*' now provide convenient bases for cross country skiing. Long distance traverses between the Dunstan Road, the summit, and Hyde, as well as day touring around the summit plateau are now undertaken by a growing number of enthusiasts.

However conditions for cross country skiing, as on other Central Otago ranges, are highly variable. Strong and frequent

winds tend to redistribute snow cover off the summit plateau and into leeward gullies. Snow conditions range from wind-packed powder, to sastrugi, knobbly and sheet ice. Towards the spring, conditions generally become more consistent with higher day temperatures producing granular corn snow.

The summit plateau has a truly *arctic* environment during winter, with broad expanses offering little in the way of shelter from the prevailing westerlies. Experience in alpine navigation and knowledge of survival techniques are necessary prerequisites for winter recreation on any of these ranges. Proximity of the Rock and Pillars to Dunedin is a major factor in the relative importance of this range for winter activities, in comparison to other ranges. It is only 80 km on sealed highway to the base of the range.

There is now some interest from commercial operators in the range, however the inhospitable climate and unpredictable snow conditions mitigate against operation. Despite these limitations one operator has purchased an oversnow vehicle in anticipation of official approvals for ski tours. Such a mechanical intrusion above snowline will conflict with the low impact approach of other winter users.

4.2.2 Length of access to the higher country means that the Lammerlaws and Lammermoors receive less frequent attention from cross country skiers. In winter conditions this whole large upland has a *remote experience character* due to the absence of habitation for a considerable distance beyond the skiing country, and a general absence of fencing along the crests. Traverses of 35 to 50 km are possible in favourable conditions, although there can be logistical difficulties in arranging transport either end. All the range crests, with the exception of the eastern Lammerlaws, are traversed by bulldozed fire-breaks. Were it not for the presence of these, the area would present a very wild scene for the traveller on foot or ski. Further tracking is under construction for fire control (*and the use of fire*). There are few huts near the range crests that could be useful for winter shelter, therefore tents or snow shelters are necessary.

4.3 Summer Recreation

Traditionally, summer recreational use of the Rock and

Pillar Range has been markedly less than in winter. Organised tramping on the range goes back at least to 1925, when an Otago Tramping Club party visited the summit.⁽²⁹⁾ There is however, increasing recreational interest in the mix of landforms and vegetation to be found over the summit plateau. Huts near the summit provide convenient bases for individuals and groups to explore alpine herbfields and snowbank areas, or to clamber over the weird forms of the schist tors. The 'Big Hut' and '*Leaning Lodge*' are now maintained by Dunedin tramping clubs. Views of the distant Mt. Aspiring, or of patterned ground underfoot, are additional attractions. Equivalent climate, scenery and vegetation are found only at much higher altitudes and at considerably greater distances inland. Some visitors appreciate the Rock and Pillars as a quiet weekend *get-away* from Dunedin.

In comparison, the **Lammermoors-Lammerlaws** is infrequently visited. The area does however, hold particular attractions for recreational naturalists and for those wishing to disappear from the sights and sounds of civilisation. The untracked upper Taieri has *wilderness values* but not with sufficient buffering or area to justify designation as a Wilderness Area.

Disorientation when out of sight of a track is relatively easy, even in fine weather conditions. The rolling, 'featureless' terrain, dissected by numerous m&i-directional drainages has created a natural maze. This recreational challenge is there for anyone who wishes to take it up.



White-out. Photo: Ewan Paterson

Recreational vehicle use is heaviest on the Old Dunstan Road which is usable by two wheel drives during dry conditions. This is a distinctive motoring experience, although rapid pasture development, roadside fencing, and road upgrading is taming the wildland character of this upland. This historic route receives a significant level of vehicle use in summer. Traverses by horse or bicycle are also occasionally made. The Lammermoors and Lammerlaws are occasionally visited by off-road vehicle clubs, although there are considerable hazards for these activities due to extensive peat bogs, snow storms year-round, and the considerable distance from help if this is required.

Game birds are widely distributed (quail and chukar) but difficulty of access for shooters is the main limitation to hunting, although in the Lake Onslow and upper Taieri headwaters waterfowl and upland game bird hunting are currently among the main recreational activities. These areas are also important spawning and rearing habitats for brown

trout, with Lake Onslow being extremely popular as a recreational fishery, as is the new Logan Burn reservoir.

Red deer and pig are found throughout the area but since the advent of helicopter hunting the former have been reduced to low numbers. Runholder agreements with local Deerstalkers Branches were withdrawn in the early 1970's.

The historic hotel and jail at Paerau is a popular summer attraction for holiday visitors to the Maniototo. Goldfields sites in the vicinity of Lake Mahinerangi are relatively unknown and unvisited despite their proximity to Dunedin. Identification of one site by the Otago Goldfields Park has focused some attention on this area, however much more could be done with site preservation and interpretation to realise some of the area's recreational potential.

5. Zoning

5.1 Natural Experience

5.1.1 The crest of the **Rock and Pillar Range** above approximately the 1070 m contour is zoned *natural experience*. This includes the discontinuous sub-alpine shrub belt, alpine herbfields, and mountain tor landscape along the summit plateau.

Existing patterns and intensity of public usage, both summer



On the *summit* plateau, Rock and Pillar Range

and winter, indicate that the natural qualities of this zone should be conserved for aesthetic appreciation, and as a setting for compatible recreation.

The management required within this zone should include:

- * prohibition of soil disturbance by further farm or vehicle access tracking;
- * prohibition of burning;
- * landscape protection by controls over the siting and design of communications installations, wind powered generators, power transmission lines and scientific installations;
- * controls on recreational developments, either buildings or tracks;
- * prohibition of vehicle use off tracks, snowmobiles etc.

The existing pastoral lease tenure does not recognise the important recreational and natural characteristics of this zone, the low relative worth for grazing, nor provide for continuing public access and use.

A more appropriate status of scenic reserve-conservation area would allow more effective management of both land and public uses.

5.1.2 Approximately 25,000 ha of the Lammermoor-Lammerlaw massif is zoned *natural experience*. This contains the most extensive and least modified tall tussock grassland in eastern Otago, with limited pastoral potential overall. Although economic considerations might inhibit further development, reliance on such restraints is inadequate to ensure protection for the high natural values. The national interest is probably better served by management of the area for the combined functions of water harvesting and nature conservation, rather than for continued expansion of primary production. Compatible recreation can be a secondary use.

Management of these lands should be directed towards maintenance of natural settings and the avoidance of detrimental land uses and activities such as new vehicle track formations and off-road vehicle use. Extension of pasture development, and consequential increases in stocking rates, should be discouraged within the zone.

During winter the whole zone has remote experience characteristics. It is buffered from vehicle access to its boundaries by poor road conditions, with the nearest inhabitants a considerable distance from the boundaries.

5.2 Remote Experience

10,000 ha of the Lammermoor-Lammerlaws within the Taieri headwaters are zoned *remote experience*. At any time of the year this untracked valley head provides opportunities for foot recreation on a scale that is increasingly rare in inland Otago. Although this area does not approach the minimum requirements of Government's Wilderness Policy for formal identification as a 'Remote Experience Area', conscious retention of wildland values, during management for other purposes, is highly desirable. It is one of the last areas of unroaded tussock grassland in Central Otago.

5.3 Open Space

5.3.1 Below approximately 1070 m, the dip slope of the Rock and Pillar Range as far as the Paerau Gorge to the west, the eastern escarpment, and to the Dunstan Road in the south is zoned *open space*. This is contiguous with the Lammerlaw-Lammermoor *open space zone*.

Management requirements in this zone include:

- * controls on the siting and revegetation of farm access tracks and roads to take into account prominent viewing directions from public thoroughfares, both from within and outside the zone (especially the steep eastern escarpment);
- * designated public foot accessways through this zone to the *natural experience zone*. There is little need or attraction for active public foot recreation within the *open space zone*, therefore public use can be accommodated by legal roads and easements/walkways.

5.3.2 The extensive snow tussock grasslands on the Lammermoor-Lammerlaws, is zoned *open space*. This semi-natural pastoral high country provides expansive panoramas over moderate relief uplands, and provide the setting for more

popular recreational activities such as angling, and motoring along the Old Dunstan Road.

To retain the open and undomesticated landscapes which currently prevail will require sensitive placement of farm buildings and structures within sight of major public use areas, avoidance of fencing or other visual alienation along the Dunstan Road, and exclusion of forestry or farm woodlots.

6. Recommendations

Rock and Pillar Range

6.1 The summit plateau, from the vicinity of McPhees Rock northwards, be designated Scenic Reserve. This should include adjacent upper slopes of the eastern escarpment that lie within the natural experience zone, and the headwater catchments of the Styx and Rock and Pillar creeks, and Sow Burn. Reservation should be achieved by progressive removal from pastoral lease of Class 8, and severely eroded Class 7 land (if any), and incorporation of the one area of UCL on the range.

6.2 The balance of the natural experience zone become a Conservation Area under DOC, with grazing and tenures determined through management planning procedures.

6.3 Management of the proposed reserve I *naturalexperience zone*, while it remains under pastoral lease, be in accordance with the considerations contained in 5.1.1.

6.4 Regularly spaced public foot accesses be provided from the Strath Taieri to the reserve, and from the Dunstan Road to McPhees Rock.

6.5 The OCB's free-burning zone on the eastern face of the range be revoked, so that all burning on pastoral lease can be subject to permit application, and DOC's oversight.

Lammermoor-Lammerlaw ranges

6.6 The Crown exercises its jurisdiction over burning, stock limitations, cultivation, oversowing, firebreaking, and vehicle tracking within the *natural experience* and *remote experience zones* to prevent further degradation of natural values.

6.7 The Crown negotiate with the one private land owner in the eastern Lammerlaws to achieve the above objective.

6.8 **No** farm, firebreak, or other tracking be permitted within the Taieri headwaters which should be managed to retain *remote experience values*.

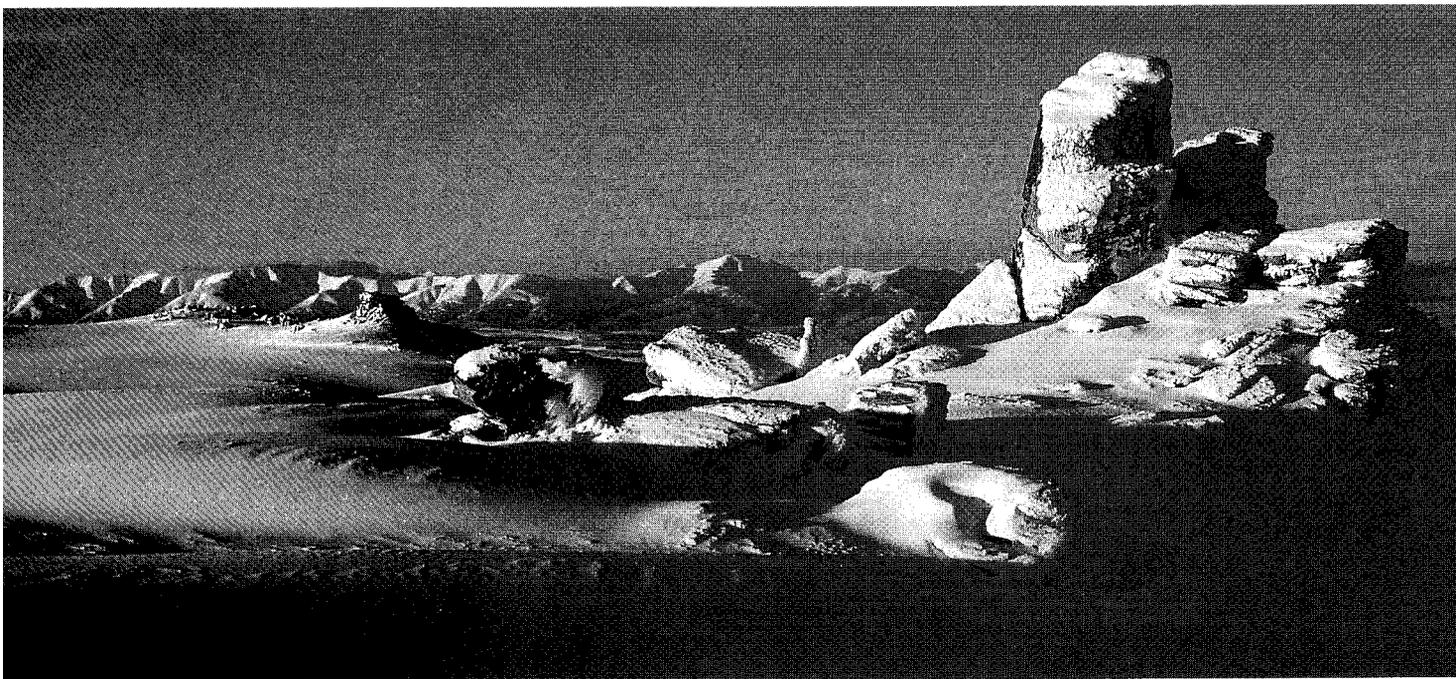
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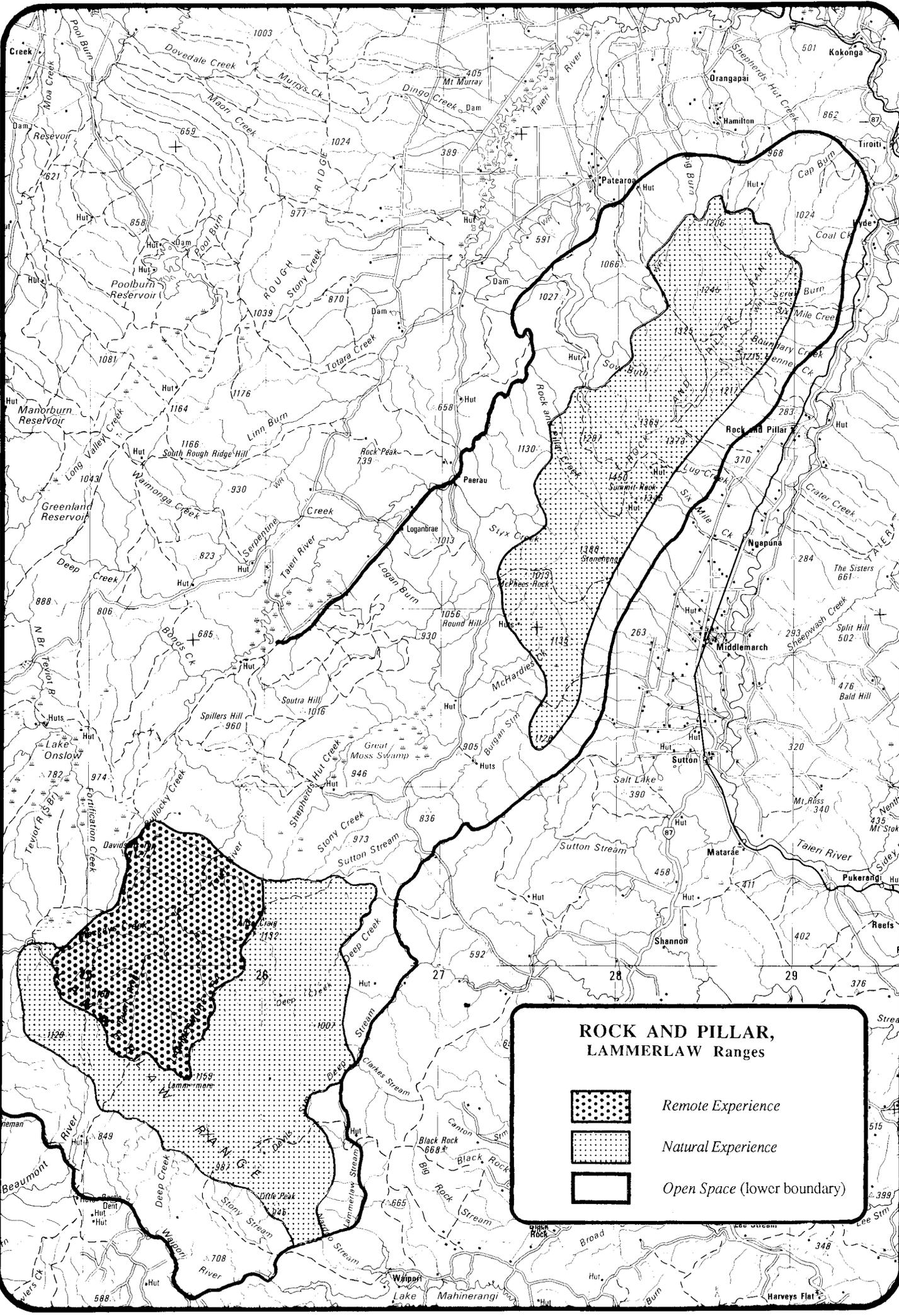
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**ROCK AND PILLAR,
LAMMERLAW Ranges**

-  Remote Experience
-  Natural Experience
-  Open Space (lower boundary)