

## **Crown Pastoral Land Tenure Review**

**Lease name : MT PISA**

**Lease number : PO 271**

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**Lease number : PO 272**

## **Conservation Resources Report**

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

They are released under the Official information Act 1982.

**Copied July 03**

# MOUNT PISA CONSERVATION RESOURCE REPORT

## PART 1

### INTRODUCTION

A relatively large property (8900 ha) situated 13 km west of Cromwell on the Cromwell-Wanaka road in the upper Clutha Valley. This unit comprises two pastoral lease titles, P271 and P272. The road frontage is only 2 km but the back boundary along the Pisa Range is 17 km in length. The property runs from 220 m to 1960 m in altitude and makes up a significant part of the highly visible eastern scarp face of the Pisa Range. Included are approximately 1200 ha of flats and terraces with a rapid transition at around 500 m altitude to steep to very steep slopes. The original tussock cover has been extensively removed by cultivation on the easy country and by fire, oversowing and topdressing up to around 1100 m above which, although modified by grazing the vegetation is predominantly natural. The property lies within the Pisa Ecological District which is made up of the Pisa Range. This ecological district was surveyed under the PNA programme in 1985. Approximately 1280 ha of higher altitude land at the northern end of the property was included in the large (8560 ha) Recommended Area for Protection (RAP) Pisa A3. This area, plus a further 800 ha to the south-west with very high landscape values, has been included in a 2100 ha conservation covenant which is registered on the title.

## PART 2

### LANDSCAPE

#### LANDSCAPE CHARACTER : DESCRIPTION

Mount Pisa Station covers a large section of the Pisa Range eastern face extending from the old Cardrona Cromwell Pack Track in the south, to the Basin Burn Catchment to the north. The ridge crest forms the western boundary of the lease, however at the southern end it extends on to the ridge crest.

For ease of description the lease is broken into three descriptive areas:

- 1 Tops and eastern face
- 2 Southern ridge and valley system
- 3 Foothills, terraces and flats.

#### 1 Tops and Eastern Face

The top of the eastern face is a continuous line of glacial cirques and steep slumped slopes forming part of the collapsed eastern fault scarp face. It falls 1700 m to the Clutha Valley floor.

The cirque basins support distinct alpine communities and is characterised by tarns, ice-worn rock outcrops and moraine deposits.

Below the cirque basins is a distinct ridge and gully system and further below slumped ripply colluvial slopes. Snow tussock is extensive on the eastern face below the cirques thinning out to fescue tussockland with further modification by oversowing and topdressing. *Dracophyllum* shrubland is characteristic of many shady faces between 1300 m

and 1600 m. Briar is common at lower altitudes. Overall the vegetation cover retains the appearance of a tussock grassland.

## **2 Southern Ridge and Valley System**

This area at the southern end of the lease is characterised by a gentle ridge and valley system studded with rock tor outcrops.

The Cardrona/Cromwell pack track is of historical interest. Vegetation is predominantly snow tussock, blue tussock and Spaniard giving way to fescue tussock at lower altitude. Overall tussock grassland is intact although is somewhat depleted on dry sunny faces.

Towards the southwest of the lease, valleys drain into the Meg and streams become incised in steep-sided valleys, contrasting with the gentle undulating topography of their upper reaches.

## **3 Foothills, Terraces and Flats**

The lower terraces and flats are culturally modified. Tussock has been mostly replaced by exotic grasses and lucerne, and subdivided into smaller blocks and paddocks. Other characteristic features include shelterbelts, hay barns, irrigation dams and contrasting green areas denoting irrigated pastures and lucerne. These contrast strongly with the parched dryland areas during summer months.

The station homestead and buildings are set amongst an oasis of exotic trees. Mostly poplar, oak, ash, pine and sequoia. The homestead is built from local stone. The pine tree avenue leading to the homestead from the highway is a strong visual element. Numerous outbuildings and cottages are associated with the station homestead.

## **SIGNIFICANCE OF THE LANDSCAPE**

The most significant visual feature on Pisa Station is the dramatic and impressive eastern fault scarp face of the Pisa Range. It overlooks and dominates the Clutha Valley, and forms an important visual backdrop to Cromwell and Lake Dunstan.

The cirque basins and steep slumped slopes forming the upper section of the face are the most distinctive feature on the range viewed from the Clutha Valley and culminate in the highest point on the block range - Mount Pisa. Viewed at close range the combination of glacial features and vegetation characteristics are visually impressive.

The effect of light and shade, particularly early morning and late afternoon, and seasonal and weather changes result in special effects which contribute to overall visual and scenic values and to public appreciation of the Pisa Range. This face represents a regionally, perhaps nationally, significant landscape.

#### **LANDFORMS AND GEOLOGY**

The northern end of the property is on the eastern fault face of the Pisa Range, one of the major Haast schist block mountain ranges in Central Otago. The southern part comprises the easier slopes of the south end of the range before tipping more steeply into the gorge incised by the Kawarau River. The flats and terraces are a variable loess overlay on mainly outwash gravels both alluvial and glacial. The whole property is extensively dissected by a number of creek catchments. Towards the northern end are a number of classical cirque basins and this area includes a registered geomorphological site LAN 381. The tor and cliff formations are a feature of this property. The main soil types are:

- 1 On the flats and terraces - Drybread, Waenga and Clyde brown grey earths
- 2 On the lower slopes to about halfway - Arrow yellow grey earth steepland soil
- 3 On the upper slopes - Carrick Hill soil and Dunstan steepland soil with Obelisk soils on the crest, all these last three being yellow brown earths.

The natural fertility of the soils decreases with altitude due to the leaching effect of the increased rainfall.

**GEOPRESERVATION ENTRY**

Record ID No.        LAN 381  
Name:                Pisa Cirque Moraine  
Landform:            Cirque Moraine  
District:             Clutha  
Locality:            Cirques in Pisa Range  
Importance:         C (Regional Significance)  
                          Good examples of cirque moraine  
Map:                  F41 Easting 087 Northing 855 Date 1986  
Vulnerability:       3  
Ownership:  
Status:               None  
Access:               3  
Land Use:  
Hazards:  
Morphogenic:        Glacial  
Material:  
Age:

**CLIMATE**

Typical semi-arid Central Otago with hot dry summers and cold winters. Annual rainfall at the homestead is only 450 mm but with a steep altitudinal variation to 1400 mm to 1500 mm on the tops. Much of the higher altitude precipitation falls as snow with a winter cap down to 1200 mm and falls to the lowest levels not uncommon. The predominant wind is the dry nor-wester which exacerbates the summer soil moisture deficit at the lower levels.

**VEGETATION**

Mount Pisa lies within the Pisa Ecological District as part of the broader Central Otago Ecological Region. The property was surveyed as part of the Protected Natural Areas Programme (PNAP) in 1985. Since then a number of specialists have visited the property to assess its conservation value. The Pisa PNAP survey identified one major area on Mount Pisa station worthy of protection. This recommended area for protection (RAP) on Mount Pisa formed part of a larger RAP covering the majority of the Pisa Range tops. This RAP known as "Pisa A3 PISA TOPS" covers an area of 8560 ha of which 1280 ha is on Mount Pisa station. It is described below:

(1) Pisa Tops - Pisa A3

The part of the RAP that is on Mount Pisa station was identified in the PNAP process because of its topography and vegetation. The top portion of the eastern face on Mount Pisa is a continuous line of glacial cirques which comprise steep cliffs, rocky ridges, deep basins with tarns and slumped ripply colluvial slopes unmodified by glaciation..

The vegetation pattern is that the ridge above the cirques is very exposed and has sparse small cushions dominated by *Poa pygmaea* and *Luzula pumila*, below the crest is *Epilobium alsinoides*, *Myosotis sp*, *Aciphylla simplex* and some *Poa colensoi*. The cirque headwalls are generally steep and rocky with scenic areas. The unstable scree areas have very sparse vegetation comprising mainly *Epilobium alsinoides* and *Ranunculus pachyrrhizus* while the stable slopes have *Marsippospermum gracile*, some *Chionochloa macra*, *Celmisia viscosa*, *C. haastii* and *Dracophyllum muscoides*.

The cirque basins in the RAP have either a tarn in their head or flushes. The tarns and flushes have a sedge field surrounding them dominated by *Carex gaudichaudiana*, *C. hectorii*, *Anisotome aromatica*, *Gnaphalium mackayi* and *Brachyglottis bellidioides*.

The cushion field around the tarn and flushes is normally surrounded by *Chionochloa macra* grassland. This is generally depleted, but some areas have excellent ground cover. The *Chionochloa macra* merges with *C. rigida* at about 1300 m on shady slopes and 1580 m on sunny slopes. The *C. rigida* extends down the front faces in the RAP for another 200-300,

below 1100-1000 m it becomes very scattered, and depleted. Within the *Chionochloa* grassland *Poa colensoi*, *P. kirkii* and *Rytidosperma setifolium* is also found.

The complexity of the land form within the cirque basins is responsible for an intricate *mosaic* of distinct communities, a pattern that is not found elsewhere on the Pisa Range.

(3) **Balance of Property**

The remainder of the property contains eight major plant communities of which some 3000 ha comprise mainly indigenous vegetation.

(a) **Alpine Cushion Field**

The cushion field is largely confined to the broad ridge crest of the Pisa Range, and stretches over some 9 km along the range between 1769 m and 1964 m asl. The cushion field is composed of alpine cushion plants such as *Abrotanella caespitosa*, *Hectorella caespitosa*, *Anisotome imbricata*, *Raoulia hectori* and *Poa pygmaea*. The cushions are relatively small and in some instances are represented by only a single plant. The proportion of bare ground along the ridge is high. *Dracophyllum muscoides* also occurs at this altitude and when present the cushion are larger than those of other plants, but still flattened and disturbed. *Celmisia brevifolia* and *Gentiana bellidifolia* plants that are normally found in semi open, alpine tussock grasslands are relatively common in this open exposed cushion field.

(b) **Dracophyllum Cushion Field**

*Dracophyllum* cushion field occupies soil hummocks forming distinctive patterns over large areas on the Mount Pisa station over a large altitudinal range 1450 m-1900 m. This cushion field of *Dracophyllum muscoides* is largely a secondary community induced from tussock grassland in the process of burning and subsequent long term grazing. Remnant *Chionochloa macra* is present throughout much of this community above 1600 m, while remnant *C. rigida* occurs at the lower altitudes. *Celmisia viscosa* and *C. sessiliflora* are relatively common throughout this community. Any herbs present tend to be associated with remnant tussocks either *Chionochloa* or *Poa colensoi*, where there is shelter and a remnant of soil left in this desiccated



environment. The main plant species in this environment are *Craspedia sp.*, *Raoulia grandiflora var (a)*, *R. hectorii*.

Scattered throughout this community are small nivation hollows which are dominated by *Celmisia viscosa* and sometimes surrounded by *Chionochloa macra*.

South east of Mount Dotterel an extensive area of *Dracophyllum pronum* growing on a colluvial slope ranging from 1060 m to 1550 m. This *Dracophyllum pronum* forms mounds which give an overall terrace like effect. *Chionochloa macra* is scattered throughout the community along with *C. rigida* and *Poa colensoi*. Other plants of *Celmisia sessiliflora*, *Luzula rufa*, *Hebe buechanani* and *Agrastis sp.* occurs throughout.

**(c) Mixed tall and short tussock grasslands**

This community of short tussock *Poa colensoi*, *Festuca novae-zelandiae*, *Chionochloa macra* and *C. rigida* is the most extensive community on Mount Pisa station. Ranging in altitude from 1400 m to 1700 m. This community represents a transitional zone between *Chionochloa* and short tussock grasslands. The tall tussock cover is less than 20% cover. This area is a mosaic of vegetation with either patches of tussocks or single plants. The other plant species in this community are *Dracophyllum muscoides*, *D. pronum*, *Aciphylla aurea*, *Leucopogon fraseri* and *Gentiana bellidifolia*.

**(d) Tall tussock grasslands**

*Chionochloa rigida* is the major component of this community, while *C. macra* trends to be far more scattered and at a higher altitude. There are some dense stands of *C. macra* remaining in pockets on Mount Pisa station. These occur in shady slopes or slightly more sheltered area. An extensive stand occurs near Mount Dotterel over an altitudinal range from 1300 m on to 1690 m. Also good remnants occur in the headwaters of Mitre and Skeleton Creek. Elsewhere *C. macra* merges with *C. rigida* and has often become extensively hybridised. Below 1300 m a relatively extensive band of *Chionochloa rigida* occurs which thins out to scattered plants between 1100 and 1000 m contour. Below this it has been replaced with *Festuca Novae zelandiae* or over sown and top dressed pasture.

The *Chionochloa macra* on the station is highly variable, in a tributary of the Colour Burn the tussock is extremely dense and up to 1 m tall. Elsewhere it often has a short stature and is quite scattered. In many places on the broad ridges the tussock is pedestalled, suggesting erosive forces are still actively at work. The slim snow tussock remnants showed obvious signs of grazing mainly in the high basins on the eastern slopes of the Pisa range.

Scattered throughout the tall tussock grasslands is mountain cottonwood, *Cassinia vauvilliersii*, maori onion, *Bulbinella angustifolia*, *Aciphylla aurea*, and *Pimelea aridula* and mats of *Gaultheria depressa*. *Celmisia viscosa* occupies extensive areas similar to the cushion field community along with other *Celmisia* species of *Celmisia gracilentia*, *C. lyalli*, *C. sessiliflora* and *C. haastii*.

(e) Short tussock grasslands

On Mount Pisa the short tussock grasslands are predominantly composed of *Poa colensoi* and *Festuca novae-zelandiae*. As with the mixed tall tussock short tussock grasslands at the higher altitudes, this short tussock grassland community represents a transitional zone from tall tussock to short tussock or pasture grassland.

*Poa colensoi* is scattered from a low level 1000 m to the top of the range. On some spurs and in basins or cirques *Poa colensoi* is dominant. Throughout this community *Chionochloa rigida* is the dominant scattered tall tussock. *Festuca matthewsii* and *Rytidosperma setifolium* are the other major grasses found on the range along with a variety of *Poa spp.*

*Festuca novae-zelandiae* occupies the lower slopes below 1300 m on the ridges and 1000-1200 m in the gullies. In this altitudinal bond the density of *Chionochloa rigida* diminishes rapidly as it grades into the short tussock grassland. While *Festuca* is the dominant species, silver tussock, *Poa cita* occurs in the more fertile areas especially around sheep camps on the ridges and knobs. This short tussock community only survives as a narrow band on the hill slopes as it grades into extensive areas of *Hieracium lepidulum* between 1000-1100 m contour or into oversown and top dressed pasture below the 1000 m contour.

While the short tussock grasslands in the mixed tall-short tussock community at a higher altitude has a good species diversity, as already outlined, the lower slopes do not have a similar diversity. In some areas the only other dominant plant species present is *Hieracium lepidulum*.

#### SEEPAGES

The major seepages or flushes are found within the RAP surrounding the cirques. Elsewhere the seepages are confined to stream margins or the seepage zone feeding the streams. In some areas these seepages are extensive and in other areas are minor. The main plant are similar to those found in the RAP on the northern part of the property, with *Oreobolus pectinatus* dominating the less damp areas of the wetland.

As with most wetlands they are extremely vulnerable to grazing pressure, and a number of areas were observed to have stock grazing on them or the effects of stock grazing could be observed.

#### SHRUBLAND

There were no high altitude shrublands surveyed on Mount Pisa, and in contrast to adjoining properties it is not a prominent vegetation community. Shrublands are mainly confined to lower slopes around the creeks and gullies draining off the Pisa range. The majority of these gullies have been periodically burnt over the decades, so that today these shrublands lack the diversity found elsewhere on other properties. The main plants are briar, matagouri, *Discaria toumatou*, *Olearia odorata* and *Muehlenbeckia axillaris*. Some kanuka, *Kunzea ericoides* survive in Breakneck Gully along with briar and matagouri. Willows and poplars also occur in and around these gully systems.

#### LOWLAND GRASSLANDS

This broad zone occurs below 1100 m and includes mainly the improved grassland as well as the shrubland community. Very little short tussock survives in this zone having largely disappeared sometime ago. The occasional totora log remains from a bygone age.

## SIGNIFICANCE OF THE VEGETATION

The vegetation on Mount Pisa Station above 1100 m contains high inherent values. The upper part of the RAP A3 around the cirques below Mount Pisa has a diverse vegetation in a topography that is unique on the block mountains. Above 1100 m the communities all have a high degree of naturalness and are representative of the communities that once covered extensive areas of the block mountains. Some of these communities such as wetlands and seepages are extremely sensitive to modification by grazing pressure. While some plant species have possibly disappeared, they are largely intact and are well representative of this particular ecological region.

The cushion field while probably having been transformed from *Chionochloa macra* grassland is indicative of an alpine community which would have developed in response to climate and local conditions. These cushionfields have a high conservation value, because of their adaptability to natural conditions.

The tall tussock grasslands of *Chionochloa rigida* is largely natural with few exotics occurring within the grassy sward. The diversity and pattern has been modified, but the overall pattern of vegetation communities is still present.

## FAUNA

### AQUATIC VERTEBRATES

No previous fish records exist for the Mount Pisa Station on the NIWA freshwater fish database. Fish surveys on Low Burn Station and Waitiri Station found brown trout and brook char in the Roaring Meg or no fish at all in sites in the headwaters of Skeleton and Mitre Creeks. It is expected that Roaring Meg tributaries on Mount Pisa Station would either contain introduced fish species, or no fish.

Clutha River tributaries on the Low Burn face of the Pisa Range, for which no fisheries information was available, were surveyed.

In total, nine sites were fished:

**Un-named stream near Mount Pisa Homestead**

Upland bullies were common and there was occasional brown trout. Ripe bullies were present along with juveniles indicating this stream contains spawning habitat. It is uncertain if the brown trout use this stream for spawning.

**Waterrace from Tinwald Burn, fished near the junction with Tinwald Burn**

Brown trout were common in areas with good cover. A range of year classes were present.

**Tinwald Burn 200 metres below waterrace junction**

Abundant brown trout with both adults and juveniles collected, indicating spawning occurs in the Tinwald Burn.

**Tinwald Burn, at an altitude of 640 metres up the Pisa Range**

No fish were present.

**Breakneck Gully**

Abundant brown trout, with both adult and juveniles collected, indicating spawning occurs in Breakneck Gully.

**Amisfield Burn at the lower track ford (NZMS 260 G41 123 796)**

Abundant brown trout, both adults and juveniles and one koaro.

**Amisfield Burn at the upper track ford (NZMS 260 G41 113 801)**

Abundant brown trout, both adults and juveniles.

**Park Burn at track ford (NZMS 260 G41 115 789)**

A few brown trout.

**Park Burn tributary alongside track (NZMS 260 G41 115 792)**

Rare brown trout restricted to deeper pool sections.

The presence of brown trout in nearly all areas fished and the near absence of native species gives the property little value for indigenous fish conservation. Two native species were found on Mount Pisa Station. One, the koaro is considered threatened (category C), while the upland bully is a common fish in the South Island.

Due to the fact only one koaro was caught in the Amisfield Burn it is unlikely that a self-sustaining population is present in this stream, and the single fish represents a rare colonising event. Increased recruitment can be expected since the creation of Lake Dunstan, but any koaro population is likely to be limited by the presence of brown trout.

### **BIRDS**

Black-backed gull, South Island pied oystercatcher, banded dotterel and black-fronted tern all occur on the higher parts of the property. All breed in the locality, most of them probably on Mt Pisa also. Although the numbers are not great, their high altitude breeding is a distinctive and special feature.

### **HISTORIC RESOURCES**

An early map of Mount Pisa Station shows the property as including most of the Pisa Range stretching from Luggate to the Kawarau Gorge and including most of the eastern slopes of the Cardrona Valley, except for a section south of Mount Barker where the station boundary ran down the Luggate burn. The station was made up of two sets of smaller runs, an eastern series numbered 245, 245a-d, and a western series numbered 240, 240a-d. The eastern 245 series was known as Mount Pisa and was taken up first by Herbert Myers about 1858 but he soon transferred to Wilkin and Thomson who had 6000 sheep by 1860. The western 240 series was described as simply in a remote part of Upper Clutha West and was taken up by C Maude and J Britten who quickly relinquished to Wilkin and Thomson. The run was described as too distant in 1858 to be inspected for stock numbers.

Robert Wilkin is credited with being the first settler in the Upper Clutha. He sold the Pisa Runs in 1867 to Isodore Loughnan who established the homestead for the run on the site of the present house, though it is thought that a cottage had already been built there in 1859.

An 1876 photograph shows the line of *Pinus radiata* on the drive as already nearly twice the height of the house. The big Wellingtonia, which was 49 metres high in 1981, was planted by the goldfields warden, Vincent Pyke, about 1864. It is a registered tree and the second tallest and thickest Wellingtonia in New Zealand.

Mount Pisa's lessees were important in local affairs and steady employers during the early years of farming in the valley. The manager in 1906 brought in 10 stud merino rams from Wirrilla, South Australia, which were used throughout the district. In 1881, Mount Pisa is listed as including 82,044 acres held by Howell and Loughnan. By 1882 the agitation for run subdivision led to Mount Pisa being put up for auction but the occupiers outbid everyone else and continued as before. Similar "dummy" auctions of Morven Hills and the other local runs caused conflict between the local small farmers and the runholders, the latter clearing off all horses and cattle which had previously grazed at large on their runs. The Mount Pisa lessees remained in possession of the big run until 1924 when the block was divided into 12 smaller units.

## MINING

The major mining area on the eastern Pisas was at Lowburn, south of modern Mount Pisa Station. There was also steady mining of the edge of the main river terrace of the Clutha, north of Luggate, and in some tributaries such as the Locharburn, Gravelly Gully and the Poison Burn. The southern section of Mount Pisa Station is crossed by the Cardrona-Cromwell Pack Track which according to old survey maps, and even the modern cadastral maps, started from Ripponvale and followed spurs and ridges into the head of the Roaring Meg where it joined the Cardrona-Roaring Meg Track. Its course across country will be discussed below in conjunction with Murrell's Hut.

The big Westmoreland Race starts on Mount Pisa Station. Work began on it in 1866, when it was known as the Westmoreland Canal. It was to be the longest race in the province, running for 25 miles from "Lockar Creek" to Cromwell along the foot of the range, picking up many of the creeks and delivering 45 heads of water. In fact, its licence (No. 1097) describes it as starting in the Park Burn which is about 7 km and about five gullies south of the Lochar Burn. The race runs about 13 miles and has rights to about 17 heads, 12 of them from the Park Burn. However, it can now take in only about eight heads and delivers about one head at Webbs Orchard.

The Westmoreland was to be the main system supplying the miners in the Kawarau Gorge and even in its abbreviated form it did a lot of work on the west bank of the Kawarau and the Clutha around Cromwell. It was to become the largest and most complex licence on the Otago Catchment Board files, with numerous extensions and amendments.

Towans Race (Licence 1922 Cromwell) has a first priority dated 1891 and was a relatively late race. It was described as starting in Moonlight Creek taking four heads, then picking up two heads in Deep Creek, ending at Burns Cottage Creek by way of Titree Creek. Moonlight Creek (after Captain Moonlight) was an old name for Mitre Creek and would have been changed because Moonlight had another creek named after him behind Queenstown. Deep Creek was the old name for Skeleton Creek. The race was owned by members of the Towan family well into the 1900s, Elizabeth Towan, widow, owning most of the race in 1906. From the Towans the race passed to the Crabbe family and is now used by Kevin Jackson Holdings mostly for irrigation.

The third live race which crosses Mount Pisa Station is Winter Creek Race (No. 2573 Cromwell), which does not rise in Winter Creek. The original licence for it was granted in 1894 to carry two heads of water from its intake in the Leopold Burn via Stratford Creek to Hatters Gully in the Smallburn (north of Lowburn) for mining there. In 1909 the licence was acquired by John Swan who had a high quality apple orchard at the top of the Lowburn Valley. Other land owners who used water from the race were the Readheads and Arthur Wood (airy farmers), Pat Mooney (orchardist) and the Partridges (sheep farmers). rising at 5800 feet asl, it may be the highest altitude race still in use in Otago. It is something of a



mystery as to why this race should be called Winter Creek Race, since Winter Creek of the modern topo maps is only a gully flowing into a creek south of the Leopold Burn, and the name does not even occur on the 1893 map. It is suspected that a Mr Winter dug the race and later dug another high race which is still visible in Winter Creek itself, and the names have become muddled. There was a family called Winter in Otago in the 1880s-1890s, so the name does not have to be derived from the season.

The workings on the northern edge of Mount Pisa Station which were known to the McMillan family as Chinese diggings have no associated name but a brief search of the Cromwell Argus showed that on 5 May 1891 Ah Fat and four others were granted licences for water races from the second left and first right branches of "Lochart" Creek and from Tinwald Creek, Pisa. Lochart Creek is almost certainly the Lochar Burn, since the Mount Pisa Chinese workings lie between Tinwald and Lochar Burns.

#### **MOUNT PISA FARMSTEAD**

The major 19th Century building of the farmstead is the stone farmhouse itself. It now appears as a long low building of basically Palladian design with a side gable, dwarfed by the growth of trees around it. The two front gables clearly place it as the building of early photographs. It is relatively unmodified, though the double hung windows have been replaced with aluminium windows and a modernised kitchen area has been added at the back. The stonework is rubble-laid, lime-mortared and plastered, the interior walls are stone and there were about 14 rooms in the older part of the house. There are back-to-back fireplaces in the bedrooms and stone chimneys. The roof is corrugated iron, lined with raupo grown in a gully near the house. The house has been added to many times over the years.

There are no less than three basic Georgian cottages around the farmyard, built in stone, wood and corrugated iron and of various ages. The stone one, which is thought to be the earliest and lived in by the Loughnans while the main house was being built, is still used and has had sections added round it. It still retains its double-hung six pane windows and old front door. In the photographs of the 1860s there are two small buildings behind the

homestead. The one closest to the homestead may be either the stone dairy/meat store or the wooden Georgian cottage. The ages of the cottages are probably the inverse of their sizes, the oldest being the smallest; the stone one is 6.5 x 6.5 m, the wooden one 8 x 6 m and the corrugated one 10.5 x 6.5 m.

The old homestead was quite uncompromisingly set in the flat-bottomed valley, well away and west of the woolshed and main yards. There was, however, even at an early stage a small set of yards to the northwest of the house, with either a thatched shed or a haystack beside them. These have been replaced by horse yards and stables (constructed in the 1930s), and an orchard has been established to the south of them. The modern woolshed, erected about 1984, is the third building on its site. The first wooden woolshed of the 1870s was replaced in 1903 by a curiously elegant building (combining aspects of a stable, church and dairy factory) designed by the Dunedin architects, Lawson and Salmond. Unfortunately the wood used in construction was not particularly durable and the building lasted only 80 years, to be replaced by a corrugated iron structure. There are shearers' quarters and a cookshop (now a house) set close to the woolshed, and there was once a proper bread oven on the south side of the cookshop.

The farmstead shares with so many of its contemporaries the placement of the woolshed at a point closer to the road than the house, though the formation of a new long driveway to the south has obscured this. Its setting relative to the Clutha is very similar to the setting of Glenaray relative to the Waikaia, just inside a flat-bottomed tributary and slightly sheltered from the prevailing winds but as close to the access road as possible. This farmstead gives the feeling of being particularly well laid out, possibly because of the concentration of dwellings around a large central grassy area and the clear separation of the woolshed and yards from the farmyard. The avenues and groups of well cared for mature trees lead towards and fill spaces between buildings so that they form a pleasing whole.

There were probably several musterers' huts on the old Mount Pisa Station, but the only one on the present station is the Deep Creek Hut in the head of Skeleton Creek (GR 00950). The earliest date that Murray McMillan has located for it is 1891, but it would well be older. It is a corrugated iron hut of unusual design. The main room with the coal range has an extended

'cove, built on later to serve as a dining room with a pot-bellied stove in it. there is a verandah with a small separate bunk room for the cook, a total of six bunks, a kauri dresser, a wood store and a shed for a portable diesel generator to provide electric light. It is a building both of character and convenience, in which the basic single-gabled hut with its six paned windows is still visible among the surrounding additions. Nearby a second small hut and stove has been installed to provide hot showers.

### THE RACES

The live section of the Westmoreland Race proper at present starts in Eight Mile Creek to the south of the Park Burn (or Nine Mile Creek) but the company complex as a whole starts in Breakneck Creek and by the time it crosses the boundary of Mount Pisa Station 3 km to the south, there are two or three parallel races, of which at least two are still in use. On the 1893 Mount Pisa Station map a long extension runs further north deep into Tinwald Burn at close to 2000 ft asl. However, where it reaches the Amisfield Burn it is lower than the line of the race tapping the Amisfield, which in turn is lower than the race tapping the Park Burn which is the one marked as continuous to Lowburn. This pattern may provide an explanation of why the original plan was to start from the Lochar Burn but the present licence gives the original Park Burn as the intake. Long races were sometimes started in several places (the Carrick Race was started at three different points) and it may have been that the Westmoreland Race was so badly surveyed that the upper sections were formed too low down. The present race is relatively large, and capable of carrying eight heads, but so difficult to maintain that it delivers only one head.

Towans Race is a larger race, about 80 cm across, with a 40 cm deep channel. It starts in the head of Mitre Creek (GR 935815) and crosses quickly into the head of Skeleton Stream, both creeks coming down off Mount Dotterel and flowing into Roaring Meg. Having collected water that ought to go west into the Roaring Meg, the race sidles round below the actual line of the pack track (getting confused with it on the NZMS 1 topo map), around the head of Skeleton Stream and across the main southern spur of the range to Burns Cottage Creek. The numerous diversions and extensions were not traced since the race crosses the Mount Pisa Station boundary high on the spur at GR 952800. Only the top 2-3 km of the race are

within the station. The whole high section of the race almost as far as Mount Michael follows a similar course on both the 1893 Mount Pisa Station map as on the modern topographical map.

The highest and most dramatic race is Winter Creek Race, which rises on in the Leopold Burn (GR 970875) on an adjoining property and uses a pass at the head of the Colour Burn to cross on to the Lowburn Face of the range. The Leopold and Colour Burns are "internal" creeks in the Pisa Range, running into the Roaring Meg Creek which drains the central plateau to the south. The high section of the race runs at 5800-5600 ft asl through low tundra herb field, and is still maintained to supply water to Lowburn orchards. Once the race crosses the boundary on to Mount Pisa Station it falls quite quickly through tussock country into Stratford Creek (GR 974853). It is a small race, only 50 cm wide and 20 cm deep where it crosses the high saddle, and there would be less than 2 km of it on Mount Pisa Station. This race, with its licence date of 1894 is not shown on the Mount Pisa map and is useful evidence of the date of the map. Since an 1893 date for the map is confirmed by other evidence, the absence of this race indicates that the 1894 licence was not applied to an old abandoned race, but that Winter Creek Race was indeed dug about 1894.

Another high altitude dry race was not examined. It runs between 5000 and 4500 ft asl across the most easterly extension of Mount Pisa Station. It could be an extension of the dry race in Winter Creek which brings water from the Colour Burn across country to Mitre Creek, suggesting that there are workings in Mitre Creek (off Mount Pisa Station). It still shows as a faint trace on the tussock covered slopes.

#### **THE CARDRONA-CROMWELL PACK TRACK AND MURRELL'S (MORRELL'S?) HUT**

Miners in general followed the most direct route possible between their diggings and the towns where they bought their supplies. The Cromwell-Cardrona Pack Track begins from two different places - the gardens at the Ripponvale corner of the Kawarau Gorge (GR 958688) and from Lowburn Valley up Packspur Gully at the head of Swann Road (GR 002779). The route from Ripponvale climbed the longest and easiest spur at the southern

nd of the range, whereas the Packspur Gully line was shorter and steeper. Unfortunately, after climbing over Mount Michael and continuing up to 4600 ft asl, the southern route then dropped very sharply 700 ft into the head of Skeleton Stream and straight out up the other side for 700 ft, where it sidled in a more reasonably manner until reaching a spur leading down into the Roaring Meg. This drop and climb must have caused resentment fairly promptly and though the 1893 Run map and the cadastral and topographical maps still show this route there is now no mark on the ground showing its descent into Skeleton Stream. Instead the known marks (where these have not been obliterated by farm roads following the same line) follow the spur up out of Packspur Gully, then circle the head of Skeleton Stream and keep above Towans Race.

Some hopeful person must have considered that the packhorses first halt would be in Skeleton Stream, rather than further on in Roaring Meg Creek. At some very early date a substantial stone house, a stone shed and stone walled yard were built of carefully dressed stone where the official track would have crossed Skeleton Stream (GR 934806). There is very little flat ground and most of it is boggy around the buildings and there is no sign of any mining nearby. Peat is available in the stream flats for fuel.

The buildings have the appearance of having been constructed by somebody paid to do so and not by a miner with other calls on his time and energy. The house and shed are made of well-dressed schist slabs mined from the nearby tors and laid with a mud mortar. The house (6 m x 5 m) was a simple barn shape with a single gable and a chimney at the southeast end, a doorway and window on the north side and possibly a window on the southwest wall which is now collapsed. The chimney is remarkably complete, standing about 4 m high with a stone-built cowl and side vents at the top, which have not been seen elsewhere during this survey. The square vent on the south side of the chimney appears to be deliberate. There is a certain amount of placer work, ie, side laid stones, particularly at the top of the chimney. The massive lintel stone over the fireplace would have required two men at least to lift it.

Twenty metres to the northeast of the house is a stone shed, the same length as the house (6 m) but only 3 m deep. There are sufficient of the walls left standing to show that the roof had a simple forward pitch. Though the building looks as if it could have been a stable, the

Door is relatively narrow to put a horse through and it may have been a storage shed and/or separate sleeping quarters. The house does have a sufficiently high gable for a mezzanine sleeping area where the few women and children travelling the pack track would traditionally have been expected to sleep.

There was no need for a stable since there is a very well made stone yard about 150 m up the valley, 10 m x 18 m in size, with walls still standing to 1.4 m in the corners.

There are no local traditions about the owners of this hut and the only clue to its use is its location beside an early route of the pack track, the fact that it is too well built for a brief stay by a prospector and the name Morrell or Murrell beside it on the old survey map dated 1884.

(Note: All grid references given are for the NZMS 1 series maps.)

#### **SIGNIFICANCE**

The farmsteading is a good example with most of the 19th Century buildings still standing and other features still identifiable and as such is an important site. The rest of the historic structures on the property, while of interest as part of the overall mining and communication pattern, are not themselves of major significance.

#### **EXISTING LAND STATUS**

The property is made up of two pastoral lease titles. There is a legal unsurveyed road on the line (approximately) of the old Pack Track at the southern end of the property (see map attached). If tenure change proceeds the consent of existing mortgagees will be required and consent under the Resource Management Act will be necessary as the change will represent a subdivision under existing interpretation. There are no other impediments on the title to any likely options. The conservation covenant can transfer to the new freehold title if necessary or be allowed to lapse if the underlying land transfers to DOC.

## CENTRAL OTAGO DISTRICT COUNCIL TRANSITION PLAN

Mt Pisa is located in the Rural 1 zone of the Vincent Section of the Central Otago Transitional District Plan.

X The plan recognises the significance of the district's landscape amenity, but makes no specific references to natural values or include any mechanisms for protection of those values. Landscape is regarded as an asset for recreation and tourism and the plan expresses a desire to maintain a high level of visual amenity throughout the Rural 1 zone. In assessing applications for building and planning consents, special attention will be given to ensuring works are sited so as to minimise any possible effects in the landscape.

Historic values and the historic character of settlements such as Clyde and Bannockburn are recognised in the plan as components of the landscape amenity. They gain a certain amount of protection as components of the landscape but, for the Rural 1 zone at least, there are no specific mechanisms for addressing or protectin them as historic values.

## RECREATION/ACCESS

### ACCESS

The only legal access through the property at present is the paper road, largely on the line of the old Pack Track, at the southern end of the property.

Three access tracks run through the property to the Pisa crest. The two northern ones are steep, negotiable in dry weather by true cross country vehicles only, and too dangerous in adverse conditions at any time to be suitable for use by the public.

The track at the southern end that enters Mount Pisa from Lowburn Valley property and passes through on into the Pisa Conservation Area along the western side of the Pisa crest is of a better standard and is the main vehicle access to the southern end of the Pisa Range. The

Pack re-enters Mount Pisa at some points along the Pisa Ridge and it is possible, again in a true cross country vehicle, to connect with both the Waiorau and Locharburn access tracks.

## USES

A modest number of shooters (quail, rabbits, goats, pigs) and trampers make use of virtually all of the property and the present lessees have a good record of giving access permission. The greatest use, however, is vehicle access up the southern track, plus tramping and horse riding on the old Cardrona Pack Track. The musterers' hut on this route is unlocked for emergencies and available for use by permission. It receives a moderate level of use both summer and winter when it is a useful starting point for cross-country skiing.

An informal agreement was negotiated with MacMillans and with the lessees of the adjoining Lowburn Valley property to mark and stile the old Pack Track and this has significantly increased its use by trampers.

There is potential for increased use of this area. There are good areas for cross-country skiing in the southern block and along a narrow strip on the crest though there the best skiing is in the adjoining conservation area.

A modest number of horse riders make use of the Pack Track on both a casual and guided (commercial) basis.

## EXISTING MANAGEMENT

The most significant problem plants are briar at lower altitude and *Hieracium* (particularly *Lepidulum*) through the mid-altitude (600 m-1100 m) belt. Rabbits are a major pest, particularly at lower altitude, although the property is not included in the Rabbit and Land Management Programme. Pigs and goats are present though kept to acceptable levels by recreational hunting. Subdivision fencing is causing overgrazing in places, particularly at



gher altitude though shifting the fences would probably only shift the area of pressure in most cases.

While there is considerable patch burning, particularly at lower altitude (gully matagouri briar) large-scale tussock burning is not practised.

#### ATTACHMENTS

- Map of conservation resources
- Cadastral map
- Extract from PNA report



Pisa A3: PISA TOPS

LANDFORM

A large area encompassing about half of the gently west-tilted summit plateau of the Pisa Range and a smaller segment of the steep eastern fault-scarp face. Generally high altitude - two thirds of area is above 1500 m.

The top of the eastern face is a continuous line of glacial cirques. Steep cliffs, derivative slopes and small talus cones form the cirque walls. Cirque floors have complex microtopography including tarns, ice-worn rock outcrops and moraine deposits, modified by solifluction since deglaciation.

At maximum glaciation, ice spilled downslope to below 1000 m from the large complex cirques below the main Pisa summits flanking Sallys Pinch. Slopes below the smaller cirques to the north are slumped ripply colluvial slopes unmodified by glaciation.

The impact of glaciation on the summit plateau is localised. The Lake McKay and Cliff Burn basins are unusual glacial valleys without the steep headwall normally characteristic of cirques. Instead snow accumulation was concentrated on the lee side of the valleys relative to strong northwest winds. Successive west-trending valleys south of Cliff Burn show a transition of glaciation intensity through incipient glaciation and large-scale nivation to essentially fluvial valley form in the south.

Ridges generally have smooth rounded profiles except for scattered tors. The contrast between the smooth plateau surface and the abrupt edge of the eastern face is dramatic. The most exposed sites on the summit ridge have lag gravels and stone pavements. Soil hummocks cover a large proportion of the area on ridges and gentle slopes. Other periglacial phenomena are well developed, especially solifluction lobes on shady slopes; some associated with snowbanks are still active.

Alluvial surfaces are prominent below 1500 m in Roaring Meg and tributaries and below 1400 m in Luggate Creek tributaries. Peaty valley-fill wetlands are further developed on alluvium in some valleys.

Towards the southwest of the priority area near the edge of the plateau, streams become deeply incised in steep-sided valleys, contrasting with the gently undulating topography of their upper reaches.

Haast Schist basement rock is overlain by quartz sands and gravel of the Manuherikia Group in a small area at the NW extremity of the priority area west of Princess Burn. The sediments were previously worked for gold, hence several water-races and patches of sluiced ground in this area.

Upland hygrous yellow-brown earths cover most of the priority area; stony Obelisk soils near the main summit ridge, Carrick soils elsewhere on the undulating plateau surface, Dunstan soils on the steeper lower valleys and down the eastern face till they grade into yellow-grey earths near the lower margin of the area.

#### VEGETATION

High alpine cushionfields and short and tall tussocklands dominate a wide-ranging altitudinal sequence of vegetation types.

Dracophyllum muscoides cushionfields are very extensive on exposed sites above about 1600 m on the summit plateau. Cushion communities are diverse and vary markedly according to local site factors. Raoulia hectori, blue tussock and Celmisia viscosa are major associated species, often co-dominant. The alpine rush Marsippospermum gracile is scattered or locally dense on damp sites.

On sites of extreme exposure with lag gravels, the rich species diversity and high proportion of ground cover generally characteristic of cushionfields is reduced to sparse cushions and tufts of a few species including Poa pygmaea, Luzula pumila, Anisotome imbricata and Chionohebe thomsonii.

At its lower limit, cushionfield gives way to blue tussockland or alpine fescue - blue tussockland. This boundary is commonly abrupt on sunny faces at a little under 1700 m and may be marked by a greater concentration of Celmisia viscosa in cushionfield.

The complexity of landform within cirque basins is responsible for an intricate mosaic of distinct communities. Talus slopes are colonised by very sparse vegetation including Epilobium tasmanicum and Cotula goyenii with Raoulia youngii and Colobanthus buchananii on slightly more stable substrate. Snowbanks persist into mid or late summer with associated communities characteristically including Raoulia subulata, Celmisia haastii, Cotula goyenii, Ranunculus pachyrrhizus and Caltha obtusa. Typical flushes have a cushion vegetation dominated by mosses, Carex gaudichaudiana and Oreobolus pectinatus and a similar community is found on wet areas around tarns. These "specialist" communities are also found more widely dispersed on appropriate sites within the non-glacial or incipiently glacial valleys of the summit plateau.

Hummocky terrain around rock outcrops and moraine on cirque floors have a variety of cushionfields and blue tussockland with slim snow tussockland on colluvial slopes, extending down valley beyond the cirque floors.

Slim snow tussockland is generally best developed on shady faces below 1700 m, although the valley draining north from Lake McKay also has extensive dense slim snow tussockland. On the open valley sides on the plateau, dense slim snow tussockland is found only on a few patches up to 30 ha, although individual tussocks and clusters are scattered widely throughout the associated blue tussockland and cushionfields.

Slim snow tussockland also grows on an alluvial fan at the head of Lake McKay associated with small ponds and complex wetlands, and on alluvial terraces of Roaring Meg and tributaries. Wetter alluvial sites have flush vegetation, grading into extensive wetland areas on peaty valley fills in some Roaring Meg tributaries.

Below 1500-1550 m on sunny faces and about 1350 m on the shadiest, slim snow tussock gives way to narrow-leaved snow tussock, which may be scattered within alpine fescue dominated tussockland, or in historically favoured sites, remain as dense snow tussockland.

Narrow-leaved snow tussockland is extensive on the eastern face below the cirques, thinning out to fescue tussockland below, with further modification by oversowing and topdressing near the lower boundary of the priority area. Matagouri shrubland is associated with watercourses and rock outcrops below about 900 m in this area.

Dracophyllum pronum shrubland is a distinctive community characteristic of many shady faces between 1300 m and 1600 m on the Pisa Range, found at a few sites on the eastern, northern and western periphery of the area but more extensively developed further north and south.

#### FLORA

The area includes the largest known population of Poa pygmaea, a rare and distinctive dwarf grass confined to the high alpine zone of the Pisa Range and a few localities on the Dunstan Mountains and Mount Cardrona. The rare herb Chionohebe myosotioides has its type locality here. Another rare species Epilobium purpuratum was not found during the survey, but has been reported to be present (Mark and Bliss, 1969). Other uncommon species in the very diverse alpine flora are Aciphylla simplex, Anisotome pilifera, Raoulia youngii, Poa kirkii and P. novae-zelandiae.

#### DISCUSSION

This priority area is of outstanding representative significance. The Pisa Range is the highest of the fault block mountains characteristic of the Central Otago region, and one of the most distinctive landform and ecological systems of New Zealand. It includes a remarkable summit landscape of broad gently undulating ridges, dramatically contrasting with the glacial cirques and steep slumped slopes of the eastern fault scarp face falling 1700 m to the Clutha valley floor.

The priority area is a partial transect across the district, biased towards the higher altitudes, and including extensive representation of the Meg and Lowburn land systems.

A large area is necessary to include the full range of landforms, including the steep valleys entrenched into the southwestern edge of the summit plateau and the sequence of high alpine valleys showing the south to north transition from non-glacial to fully glacial form.

A very wide range of vegetation types is represented, closely dependent on large and small scale variation of the landform in addition to factors such as altitude, wind exposure, aspect, snow lie, drainage and historic factors. Judging from the nature of the existing snow tussockland patches, it is clear that snow tussockland is now less extensive than originally, and that much of the short alpine tussockland and cushionfield was induced by early pastoral practices.

Black-backed gull, South Island pied oystercatcher, banded dotterel, black-fronted tern and grey duck all breed within the priority area, using the open ridges and valley sides, wetlands, gentle streams, tors and other rock outcrops of the summit plateau. Although the numbers of these birds are seemingly not great, their high altitude breeding is a very distinctive and special feature of great interest.

The priority area gives includes representation of the larger and smaller cirques with their complex vegetation communities and the mid altitude ripply slumped slopes characteristic of the Lowburn land system. Snow tussockland of good quality is extensive on these slopes within the priority area but strongly modified to the north and south. The lower eastern boundary at the existing fenceline extends the priority area into oversown fescue tussockland of low naturalness.

The northern boundary is placed to include the paired catchments of two branches of the Fall Burn (of similar size and northerly aspect, but one of glacial form and the other not) while excluding the more modified mid altitude slopes almost devoid of snow tussock and with a high concentration of golden spaniard. A small area in the northwest includes the ecological pattern on Manuherikia Group sediments. The boundary in the west generally follows the catchment boundary of Roaring Meg. The relatively low naturalness of the entire Criffel land system precludes extending the priority transect further west across the Pisa district.

The deeply entrenched mid-reaches of the Colour Burn and Winter Creek shelter dense snow tussockland which has been buffered from the modification centred on Meg Hut by bluffs, waterfalls and gorges below their confluence. The boundary in the southwest corner of the priority area is placed to include this natural buffer. The remainder of the southern boundary follows catchment boundaries and existing fencelines.

CRITERIA SUMMARY

- Representativeness - H - Includes all high alpine communities, significant amount of low alpine communities, descending to montane zone in the east.
- Diversity - H - A very large range of communities.
- Naturalness - H - Generally high throughout area except near lower eastern boundary, although some cushionfield and alpine short tussockland have probably been fire-induced.
- Special Features - H - Several rare and locally endemic species, complex vegetation patterns in cirque basins, highest altitude in Central Otago region, alpine breeding of several bird species.
- Viability - H - Extensive reasonably stable vegetation communities.
- Buffering - H - Large area, buffered by similar vegetation to that within area on all high altitude boundaries.
- Threat - M - Localised stock impacts especially in alpine wetlands and flushes, off-road vehicles in fragile cushionfields.
- Landform - H - Very wide range of distinctive landforms, thorough representation of summit plateau and eastern fault-scarp face.



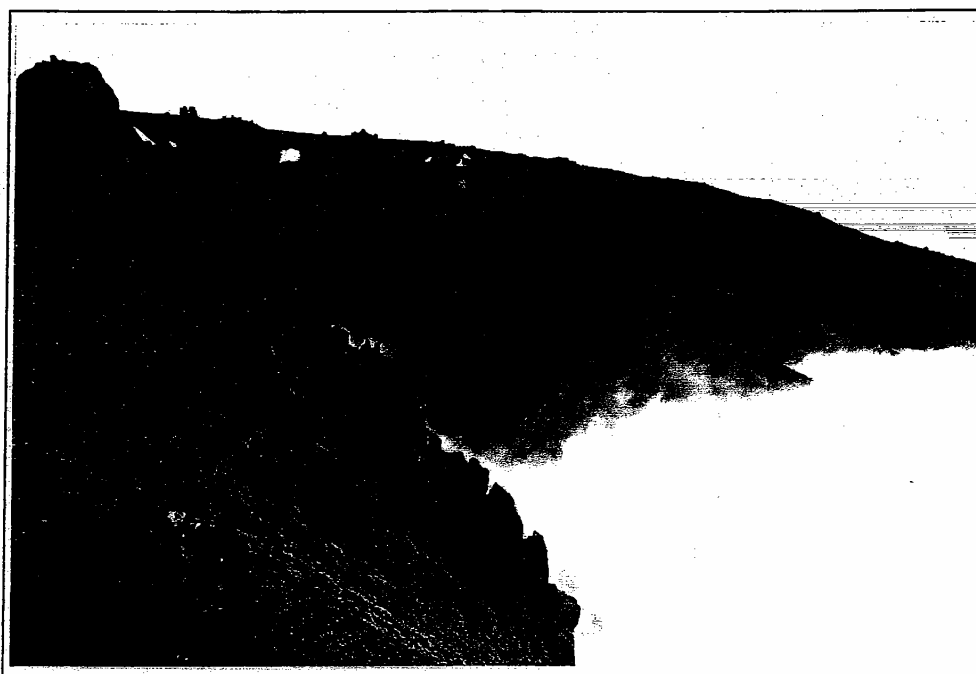
Cardrona - Lowburn Pack Track.



Upper Amisfield Burn catchment.

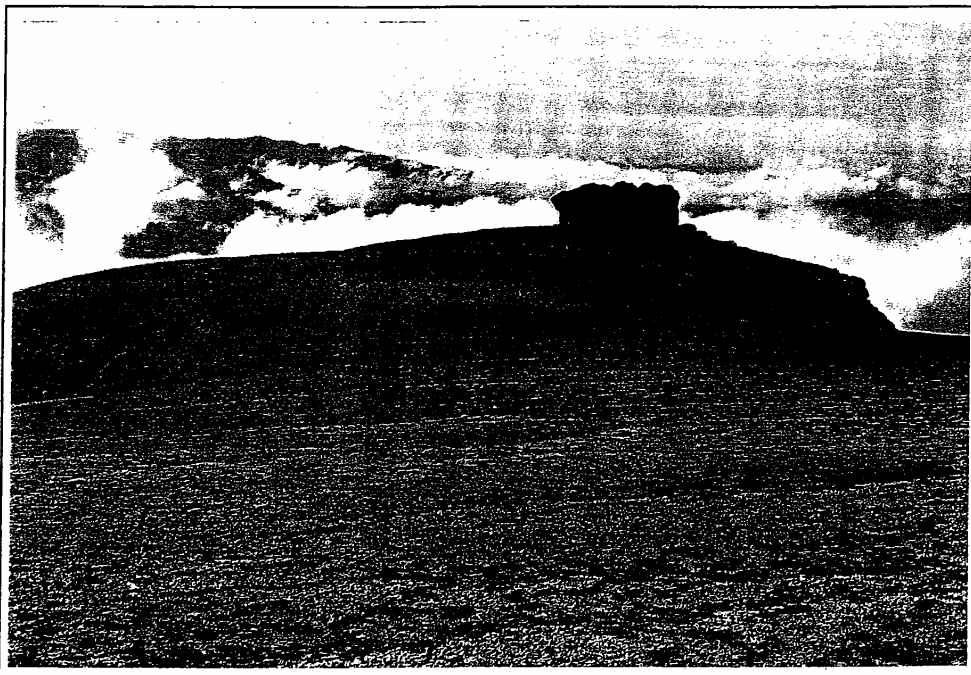


From Cardrona - Lowburn Pack Track.

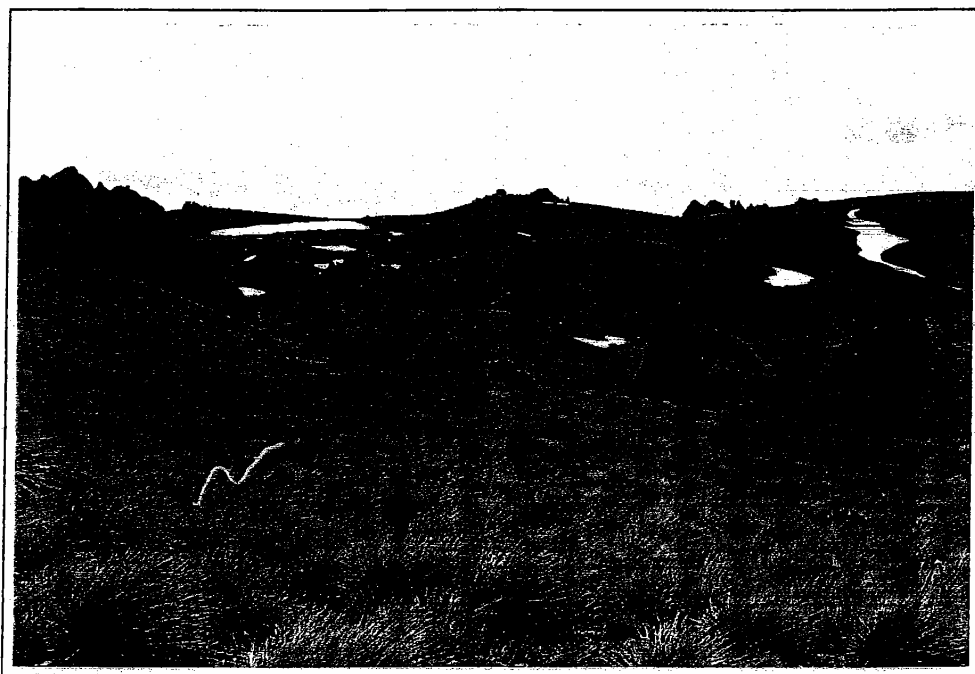


Gordon Rocks

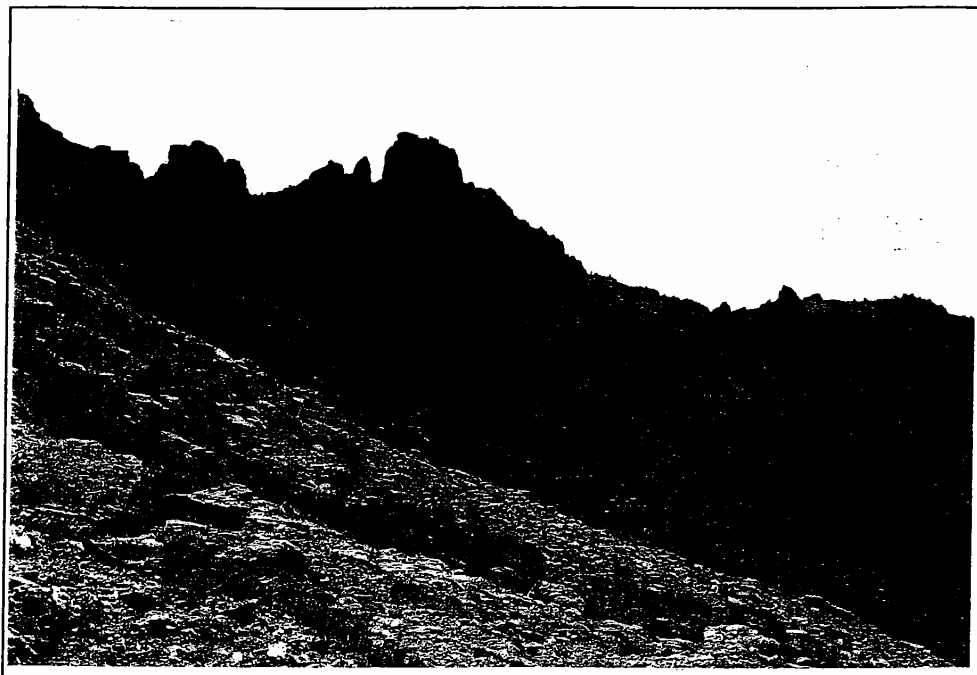




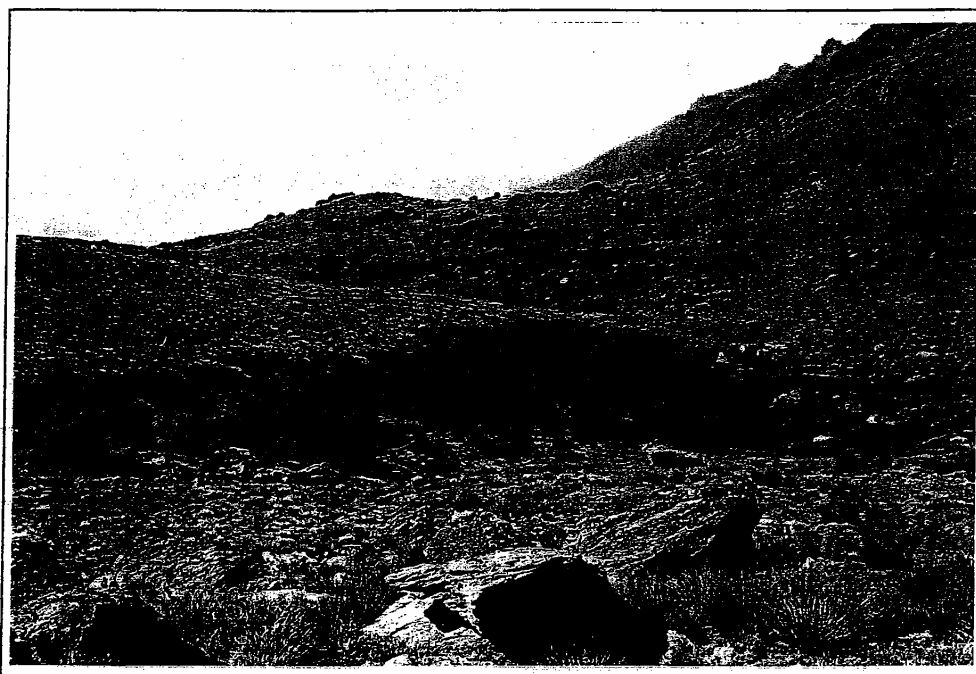
Pisa Range crest.



Pisa Range crest southern end.



Park Burn ridge.



Wetland Upper Park Burn catchment.

## PART II

### NGO AND OTHER PERSPECTIVES

An "early warning" meeting was held with the NGOs on 23 May 1996. The issues/objectives raised were:

- 1 Land above 1100 m to go to DOC
- 2 Class VIII and most Class VII land to go to DOC
- 3 Foot and mountain bike access on old Pack Track
- 4 Foot access on Breakneck Spur or alternative
- 5 Horse access on old Pack Track
- 6 All water courses greater than 3 m to have marginal strip laid off
- 7 Use of musterers' hut in back block
- 8 DOC/freehold boundary to be consistent (landscape) with neighbouring runs.

In addition to the above meeting, letters have been received from Otago Goldfields Heritage Trust and from Cromwell Riding Club requesting horse access over all the land transferred to DOC from tenure change on this property (and others).

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### PART III

#### JUSTIFICATION AND RECOMMENDATIONS

Some 4000 ha of Mount Pisa station contains significant high inherent values to warrant their protection as conservation land in public ownership. The mix of ecological and landscape values when combined with the recreational value of the area result in these high inherent values. The property's location next to the existing Pisa Conservation Area and other lands of high inherent value has the potential to create a large contiguous area on the Pisa Range.

These high inherent ecological and landscape values are all found above the 1100 m contour where there is a marked demarcation zone between the tall tussock grasslands and the oversown and top dressed country. Part of this proposed area (2100 ha) is already partially protected under a Conservation Covenant that seeks to protect part of RAP A3 on Mount Pisa station for ecological values and another 657 ha for its landscape value. Under tenure review the majority of this covenanted area is proposed for greater protection by destocking and coming under direct management of the Department of Conservation. This covenant was negotiated as part of PNAP implementation and was primarily focused on RAPs and any other values that could be negotiated. Consequently land further south along the range was ignored.

This southern area south from the Gordon Rocks is already fenced into two blocks - the Crows Nest 740 ha and the Back Block 1400 ha (D and E). Under tenure review these two areas would encompass all of the high inherent values that have been identified there.

The expansive southern landscape with its spectacular Tors contains some of the best ecological values on the Pisa Range. The mixed tussock grasslands in the headwaters of Skeleton and Mitre Creeks is the most extensive on the range. The remnants of *Chionochloa macra* in the gullies and below Mount Dotterel are better than most other areas on the range. These mixed tussock grasslands if destocked have the potential to recover into tall tussock grasslands and the *Chionochloa macra* stature and vigour would be enhanced.

The cushion fields of *Dracophyllum muscoides* and the hummocky *D. pronum* areas while induced are indicative of original alpine communities and are part of the evolutionary

ransition zone. The cushion field is common on the Pisa Range, while the *Dracophyllum pronum* is not. The extensive area near Mitre Rocks is similar to an area on Waiorau above the Roaring Meg. Destocking these areas may reduce the extent of these cushionfield communities in the very long-term, but this is dependent on the aspect, climate and local physical conditions. Some increase in *Chionochloa macra* may occur, but it is more than likely that blue tussock *Poa colensoi* will mainly invade bare ground and some suppression of the cushion fields may occur. Outside of the cirque basin some of the best wetland communities occur on this southern area. Long-term total removal of grazing is essential but in the interim continued restricted grazing will be necessary to achieve what is a very valuable conservation outcome bearing in mind that over 2700 ha will be removed from grazing elsewhere on the property.

North of Gordon Rock the area of conservation interest is the area already highlighted for protection by the conservation covenant. The steep headwaters of the Park Burn and Amisfield Burn catchments include an impressive landscape of rock tors and ridges, and the start of the cirque landforms. The vegetation above 1100 m is strong *Chionochloa rigida* that grades into wetland seepages, snow banks, mixed tussock grassland and cushion field. An area of high inherent ecological and landscape value. Currently this middle portion of the property is fenced into one large block of some 1010 ha, with the snow line fence running into the gullies at 680 m. There is some 400-500 ha of land that has been OSTD, has *Hieracium lepidulum* covering extensive areas that has little conservation value. The landform may provide an opportunity for a higher snow line fence of 1100-1200 m that would clearly be the demarcation line between conservation land and farmland. While this would allow some class VII and VIII country to be freeholded, it is clearly desirable to establish a practical boundary line that can be established and maintained. The 400-500 ha (Area C) contains valuable grazing. Fencing would be difficult but if possible, or some other effective means of reliable grazing control devised, freeholding and continued grazing is acceptable.

The northern catchments from Breakneck Spur to the Locharburn boundary includes the RAP A3 already identified. These high cirques are unique on the Otago block mountains and provides a distinctive land form and ecological system. Without question the majority of the RAP has high inherent value. However these values disappear at about 1100 m, where the *Chionochloa rigida* becomes sparse and then gives way to extensive areas of *Hieracium*.

The latter occupies a zone between 1050 m to the snow line fence which is the boundary of the OSTD country. Approximately 200 ha have limited conservation value plus the potential for increased *Hieracium* dominance, at least in the short-term. However the lessees are adamant that it is not practical to fence any higher in that locality.

This proposal would establish a large conservation area with high conservation and recreation values. It would have a 13 km common boundary with the existing conservation area ex Waiorau and would form a contiguous area with conservation areas from two other properties, one where agreement has already been reached and one where the prospect of agreement is realistic.

This large contiguous area would pave the way for implementing the Otago Conservation Management Strategy proposal for the formation of a high altitude Conservation Park. This park would protect these "high altitude lands for their landscape, nature conservation and historical values" as well as "providing enhanced public recreational opportunities".

The public recreational opportunities would be improved by this proposal by providing for an expanded area for recreation. As outlined previously there is a range of recreational activities that take place on the Pisa range. This property is one of the keys to improving public access and improving the recreational opportunities. Access on to the range is currently limited and in most instances requires permission. Recently the lessees of Lowburn valley gave permission for their 4WD farm track on the approximate alignment for the Cardrona Cromwell pack track to be marked for foot, and mountain bike access. This access point is one of the key routes on to the range. This farm track crosses on to Mount Pisa station close to the line of the Cardrona Cromwell Pack Track. The lessees of Mount Pisa station agreed to the development of the Cardrona Cromwell Pack Track but requested that the access be kept away from the Musterers hut in the head of Skeleton Creek. This condition was met by using Towans water race and then linking back into the pack track. Under this proposal it is envisaged that the 4WD track/pack track would lie within the conservation land and therefore access would be freely available. The musterers hut would become a Department of Conservation hut available for recreational use. This hut already receives a moderate degree of recreational use especially over the winter months as it is a good stepping off point for ski touring. With time it will become popular for walkers using the pack track and back country users enjoying the broad tussock tops and tors.

Incorporating the land along the tops provides freer access on to the conservation land adjoining and allows good access through from the Meg Hut , on Waiorau, to the tops. Mount Pisa is a focal point along with the Tarns in the cirques. The opportunity for camping, tramping and ski touring is immeasurable and very spectacular.

Access to the Pisa range is still restricted and relies on permission from other landowners. Foot access through the adjoining property Locharburn provides access to the northern Pisas which is some distance from Mount Pisa and the Cirque Basins. It is desirable for another foot access route on to the Pisas to be considered under this process. This would enable a more direct route to be undertaken by trampers on to the tops and the cirques. While 4WD tracks are possibly the most desirable access routes a direct ascent for trampers could be considered. The options that need to be explored is public as of right foot access from State Highway 6 to the tops. These options are a direct route from the vicinity of the homestead directly up the fence line on Breakneck Spur. Although steep, this route provides a direct and steady pull on to the tops. A farm track up the Tinwald Burn that ultimately links up with Breakneck Spur could be considered as an alternative route. This latter choice would enable mountain bikers to get on or off the range. Another alternative is a route up the northern boundary. While less desirable it is practical and provides less potential for stock disturbance.

Vehicle access over the tracks is not being sought because of the ongoing maintenance costs, safety and environmental factors. On the Pisa range damage is occurring on the cushion fields where vehicles have not followed the existing tracks. It is desirable for some control on vehicle use and this could be by ORV users seeking permission of the landowners.

From a management perspective this area of conservation land should provide few management problems. Apart from patches of *Hieracium* weeds are non existent in the high altitude area. No wilding pines were recorded here but some isolated trees do occur further west, so some ongoing vigilance will be required. Limited pest control may be required in time, but in the short term some level of monitoring to ensure that goat chamois and pig numbers do not exceed acceptable levels.

Recreational use will require ongoing funding over a long term. Initial costs associated with developing access and sign posting should be minimal. The Cardrona-Lowburn Pack Track

marked, signposted and has styles over the fences. Some track re-routing will be required upon completion of this deal near the hut, but this is only a few hours work. The hut itself is relatively tidy, but some maintenance money could improve the hut and tidy the surrounds.

The other proposed foot access route will require styles, markers and a couple of signs, largely at a minimal cost. Access from other areas will be provided for and developed on other properties.

While several 4WD tracks enter the proposed conservation land they are not required for public use though DOC access for management purposes is desirable especially for hut and track maintenance.

New fencing may be required north of the Gordon Rocks along the 1100 m contour north to the Locharburn boundary. It is envisaged that the cost of erecting the 5 km would be borne by the tenure review process. South of the Gordon Rocks existing fences could be utilised and these would become the conservation freehold boundary line. One significant cost would be the removal of the internal fences within the proposed conservation land.

Depending on the outcome of tenure review on adjoining properties, this could involve up to 25 km in the short-term and 33 km long-term. Removal is desirable for both landscape and safety reasons. Unfortunately, the majority of the materials are not particularly suited to use elsewhere and payment will be necessary for removal of most of the fencing.

#### **RECOMMENDED PRIORITY FOR LANDSCAPE PROTECTION**

It is recommended that the priority for landscape protection on Pisa Station is the upper eastern face which includes all the main cirque basins.

This area already has a conservation covenant (Reserves Act) in place protecting the landscape. It is intended that the area transfer to DOC and not be grazed. This will give adequate future protection to the landscape values.



The landscape in the southern block, particularly along the old Pack Track, is also important. The major element here is the vegetation. This area also will transfer to DOC and although it is likely that grazing will continue for some time, long-term vegetation improvement and the opportunity to remove fences will enhance the landscape.

In addition to the above measures it is recommended that the department actively promote the protection of the eastern face of the Pisa Range through district scheme provisions.

## RECOMMENDATIONS FOR PROTECTION OF HISTORIC VALUES

### Mount Pisa Farmstead

The site of greatest interest is the Mount Pisa farmstead with its tidy and functional grouping of the homestead, four old out buildings and early tree plantings. The pattern of the 19th Century farmstead is clearly visible, even though the woolshed has been replaced by a modern structure and various new buildings added. The homestead and the stone killing shed have been listed for classification by the Historic Places Trust but not yet visited. A heritage covenant over an area which includes the older buildings and the plantings would provide a useful acknowledgement of the value of this pattern of buildings to our understanding of 19th Century runholding. The covenant should not restrict any further developments of the farmstead which do not pose a threat to the older buildings but should provide for assistance and advice on modifications which allow the older buildings to continue to have a useful life. There should be provision for discussions with an archaeologist when the surface of the ground around the homestead is to be disturbed so that records can be made of any traces of earlier structures that might be revealed.

There could also be provision for assistance with compiling and caring for an archive at the farmstead of documents connected with the station, such as the old run map and a compilation of records of changes in the development of the farmstead, both past and present. The present owner has begun this archive, but does not hold the originals for some of the photographs nor Samuel Butler's painting. It would be worth discussing the future of this material with the owners and the Historic Places Trust, with a view to arranging some

ort of guardianship system which allowed as much material as possible to remain in the homestead throughout future changes of ownership.

It is recommended that the Historic Places Trust be encouraged to continue with the above initiatives.

Both the Deep Creek Hut and the Murrell's group of buildings are on land that will come to DOC if the tenure change proceeds.

The Chinaman Creek sluicings and associated races require little action for their protection. They are tucked out of sight in their gully and are hardly effective as a landscape feature. A "do nothing" policy under the present grazing regime would be sufficient to preserve them.

#### RECOMMENDATIONS IN SUMMARY

- 1     Approximately 4000 ha (see attached map) to transfer to DOC as a conservation area and have grazing removed, the majority (Blocks A, B and D) from signing of agreement.
- 2     An access easement under section 7(2) of the Conservation Act in favour of the public allowing foot access at all times be established up the northern boundary and then up Tinwald Burn as per attached map.
- 3     DOC to write to Historic Places Trust supporting the continuation of their endeavours with regard to the homesteading.
- 4     Public access throughout the proposed conservation area to be restricted to foot and mountainbike. Horse riding to be restricted to the old Pack Track. No vehicle access except by permit, however it is intended to negotiate vehicle access to a parking area nearby in the adjoining property at the southern end.

- 5 Redundant fencing to be removed over time as finances and other negotiations permit.