Toitu te Land whenua Information New Zealand

Crown Pastoral Land Tenure Review

Lease name :Waitiri Station

Lease number :PO 270

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.

The report attached is released under the Official Information Act 1982.

Copied October 2002

DOC REPORT TO KNIGHT FRANK
ON TENURE REVIEW OF WAITIRI STATION

PART I

INTRODUCTION

This report covers Waitiri (P 270 - 6358 ha) and Eastburn (P 257 - 5103 ha) pastoral leases owned by Waitiri Station Trust Ltd. They are farmed as one unit from the Waitiri homestead adjacent to the Victoria bridge. The property encompasses a substantial part of the southern Pisa range extending from the Roaring Meg river to the Crown Range road and northwards almost to Cardrona. It includes the major part of the true left faces of the Kawarau Gorge, and contains substantial areas of high conservation values including vegetative, landscape, recreational and historic components. The property is in the Pisa ecological district which was surveyed as part of the Protected Natural areas programme in the summer of 1984/1985. Areas recommended for protection were Pisa A7 Wrights Gully (630 ha) and Pisa B6 Deaf Bills (330 ha) plus narrow strips on the true right of Roaring Meg being parts of Pisa A6 and Pisa A8 which are mainly on the adjoining Lowburn Valley property. There are no reserves or covenanted areas within Waitiri however an area of approximately 200 ha of the heavily eroding Muddy Gully catchment has been permanently retired since about 1980.

PART 2
CONSERVATION RESOURCE DESCRIPTION
AND ASSESSMENT OF SIGNIFICANCE

1 LANDSCAPE

DESCRIPTION OF LANDSCAPE CHARACTER

For descriptive purposes the property is divided into six separate areas (note they are not necessarily separate landscape types or units).

Cardrona Slopes

These are typical of the valley sides of the upper Cardrona. Landforms are ripply colluvial slopes with bands of rock bluffs and outcrops. Vegetation up to about 1000 metres is a mix of depleted short tussock and scattered tall tussock, introduced grasses and herbs, patches of tutu and exotic and native shrubland. Shrubland species include matagouri, Coprosma, Olearia, elderberry and briar. Hieracium is also present and increases with altitude. The upper limit for shrubland species is about 900 metres. At the head of the valley the property included both sides of the valley (and is

issected by SH 89). The valley becomes increasingly narrow and enclosed at its southern end. Short and tall tussock is the predominant cover. A small holding paddock is located near the saddle.

Summit Ridge

The summit ridge extends from Mount Hocken to the northern boundary of the property. Bands of schist outcrops, tussock and Dracophyllum are the main components. Stock camps occur along the ridge where green has replaced brown tussock.

Towards Quartz Knoll and Queensbury Hill periglacial action has affected the summit ridge with soil hummocks and few large tors.

Between Mount Allen and Mount Hocken the access track follows the ridge. The track has mostly 'grassed over' but is unsightly in places. Mount Hocken has several communications installations on its summit which degrade landscape value.

Roaring Meg

Contains east draining tributaries of the Roaring Meg - notably Plank Creek and Evan Roberts Creek. Landform is again slump topography. Generally tussock is in good condition on the upper slopes decreasing in density towards the bottom end of the tributary catchment. Lower parts of Plank Creek and Evan Roberts Creek catchment appear quite depleted with a high hieracium and exotic component. South facing slopes are noticeably less depleted than northern facing slopes. Evan Roberts Creek has a narrow alluvial valley floor with the creek meandering across it.

Disused water races from mining occur in the lower Evan Roberts Creek basin.

A small narrow rocky gorge is characteristic at the bottom end of the tributary creeks before they merge with the Roaring Meg.

Gentle Annie

Generally this catchment is highly modified with extensive briar and exotic grasses and herbs. Some historic/cultural features occur on the valley floor.

Kawarau Faces

The Kawarau faces extend from near the Kawarau Historic Bridge to the east faces opposite the Roaring Meg Dam.

At the western end they contain extensive regenerating native shrublands grading into snow tussock with altitude. Further downstream they are more modified with predominantly briar, some

derberry and scattered sparse short tussock. The faces are highly erodible and rabbits have contributed to degradation.

Douglas fir and larch are spreading around and above Roaring Meg.

A new pipeline alignment from the dam to the powerhouse has left bare areas from its installation.

Waitiri Bend is mainly rock, exotic pasture, briar and thyme.

Significance of Landscape Values

There are significant visual and scenic values on Waitiri/Eastburn. These are primarily to do with providing a context or setting for road corridors and recreational activities.

a The Crown Range Saddle area is one of the few Central Otago alpine passes with intact tussockland. The Crown Range road is an increasingly used and high profile tourist corridor and provides the opportunity for the public and tourists to experience and appreciate this landscape.

b The Kawarau faces provide part of the setting for the Kawarau Gorge which is recognised as a scenic corridor of national significance.

c The Cardrona Roaring Meg Pack Track traverses the eastern boundary of the property. The Meg tributaries and the summit ridge within Waitiri/Eastburn form part of the Pisa Range and as such form part of the context and setting for the packtrack and other recreational use on the range.

2 LANDFORMS AND GEOLOGY

The property is on the southern end of the Pisa schist block mountain range where it dips into the Kawarau Gorge and River. The overall slope is easy but steep faces drop into the Kawarau River and Gentle Annie and Roaring Meg Creeks.

Periglacial phenomena are widespread. Soil hummocks in particular are widespread except on the most exposed sites where lag gravels have developed instead. The faces above the Kawarau Gorge and Roaring Meg are almost completely large land slide masses with floating block rock outcrops and extensive erosion (Muddy Gully and river faces) predominantly natural.

Soil

The property is predominantly Dunstan Yellow Brown Earth hill soil with Arrow steep land Yellow Grey Earths on the Kawarau and Roaring Meg Faces and a strip of Carrick Yellow Brown Earth hill soil along the Mt Allen to Queensberry Hill ridge.

There is one geopreservation site recorded on the property:

ID LAN 121	-	Gibbston Complex Landslide
Landform	-	Complex Landslide
District	-	Clutha
Importance	-	C (Regional)
Locality	-	Gibbston landslide and others adjacent to Gibbston and Kawarau River
Significance	-	An area illustrating a number of good examples Gibbston slide being the one studied
Vulnerability	-	3 (Unlikely)
Hazards	-	None
Morphogenic	-	Mass movement
Map reference F41 918706	-	In the Muddy Creek catchment

Landform and Geology was not of itself a significant feature in the choice of the RAPs in the PNA survey.

3 CLIMATE

Although close to Queenstown and the western ranges the climate is still typical Central Otago with hot dry summers and cold winters but with a higher than typical rainfall at 650 mm - 1250 mm. Snowfalls over the whole property are common in winter and snow lies on the main spur from May-September most years.

4 VEGETATION

The property is within the Pisa Ecological District as part of the broader Central Otago Ecological Region and was surveyed as part of the broader Lindis, Pisa, Dunstan Districts Protected Natural Areas Programme (PNAP) in 1985. Since then, a number of DOC specialists have visited the property to assess other conservation values. The Pisa PNAP survey highlighted two areas recommended for protection (RAPs). These are as follows:

Wrights Gully : Pisa A7

This RAP of 630 ha includes the entire catchment of Wrights Gully, one of the tributaries of the Cardrona River. Narrow-leaved snow tussock comprises about 60% of the vegetation of this

itchment above 1000 m, with its vigour and density being greatest in the mid to upper catchment. *Festuca* occurs round the rocky bluffs and in the lower reaches below 900 m, along with a variety of pasture grasses. North facing slopes are also predominantly Fescue tussock with only scattered snow tussock. The upper reaches, along the 1372 metre contour line below the ridge crest is predominantly *Dracophyllum muscoides* cushionfield which extends to the ridge crest. This cushionfield is not continuous as periglacial activity has formed small soil hummocks and hollows. Scattered throughout this zone in the hollows are remnants of slim-leaved snow tussock *Chionochloa macra.*

Olearia odorata, O. bullata, Hebe salicifolia and *H. pimeleoides* occur in amongst the rocky outcrops on the lower sunny slopes along with matagouri and briar. *Carex echinata* and *Euphrasia dyerii* were recorded near a tarn close to the ridge crest.

Deaf Bills : Pisa B6

This second priority RAP of 330 ha adjoins Wrights Gully RAP (A7) and is analogous to it. As in A7, the altitudinal sequence is strong. Deaf Bills catchment is smaller and less representative than A7 and does not have the tors or wetland flushes of A7. The lower slopes of both catchments have been extensively oversown and topdressed.

Balance of Property

The property contains five major plant communities of which some 4000 ha is still relatively natural.

a Cushionfield

The cushionfields are largely confined to the narrow ridge extending from Mt Allen northwards to Queensberry Hill. This zone along the 1400 m contour is predominantly composed of *Dracophyllum muscoides* and blue tussock *Poa colensoi.* The surface is hummocky in some areas while in other areas on the crest, the ridge has been planed off to leave an essentially flat surface. The hummocks are small and very compact with the bare disturbed cushions often having *Poa colensoi* growing in their centres. In many areas the flat pebbled surfaces contain over 50% bare ground.

Dracophyllum muscoides grows primarily on the southern aspects, while *Poa colensoi* grows on the more northern aspects on the rounded ridge crest. Isolated plants of *Chionochloa macra* are present chiefly in small depressions off the main ridge crest. Other plants in this community are *Celmisia viscosa, Celmisia sessiliflora C.* sp., *Craspedia* sp., *Raoulia grandiflora* var. *(a)* and *Raoulia hectorii* ss. Away from the crest the occasional tall tussocks of *Chionochloa rigida* or *C. macra* occurs.

b Tall Tussock Grassland

The tall tussock grassland of *Chionochloa rigida* occupies the majority of the 4000 ha that is still in a relatively natural state. The narrow-leaved snow tussock of *Chionochloa rigida* is primarily found above the 1100 m contour on all the properties. With some exceptions below the 1100 m line, the snow tussock cover becomes sparser with decreasing altitude. The exceptions are the back, less accessible areas of the property where relatively good communities of snow tussock are found at lower altitudes to 900 m in the middle Roaring Meg.

The *Chionochloa rigida* vegetation has been affected by burning and grazing and is today highly variable. It presents a mosaic of snow tussock that varies from scattered snow tussock in amongst a natural short tussock grassland of *Festuca matthewsii* ss. and *F. novae-zelandiae* to dense snow tussock covering 90-100% of the ground and over one metre tall. The cover and stature of the snow tussock generally improves with altitude on both of the properties. The faces above the Kawarau River, being the catchments of Muddy Creek and the Spring Burn, contain one of the most extensive and dense stands on the whole of the Pisa Range. The remaining areas of good intact snow tussock are found in Gills Creek, Wrights Gully and above Plank Creek in the Roaring Meg catchment. Elsewhere the general trend is denser snow tussock on the south-westerly aspects or shady slopes with good regeneration in places, to the sunny slopes and ridges having depleted narrow-leaved snow tussock in amongst the short tussock grassland.

Along the crest of the Mt Allen Range, slim-leaved snow tussock *Chionochloa macra* occurs in small depressions or as isolated plants and only occupies 1-5% of the ground cover. Off the range in the western catchments of Eastburn, *C. macra* is scattered in amongst *C. rigida* and has also hybridised quite extensively. The occasional hybrid of *C. flavescens* type also occurs in these catchments, but was not noted elsewhere on the property.

As with the tussock cover the interspecies diversity is highly variable, reflecting the usual pattern found in the Otago block mountains. In some areas of dense snow tussock there is dense leaf litter with virtually no inter tussock species growing. In the more open depleted areas or drier ridges and crests the natural species diversity increases considerably. The most common plants are *Dracophyllum muscoides* and *D. pronum* on the drier ridges and hollows, with *Aciphylla aurea* being common throughout the properties and in some cases becoming the dominant plant in amongst the tussock grassland. Maori onion *Bulbinella angustifolia* was prominent on a large number of sites.

Mountain cottonwood, *Cassinia vauvilliersii* plants are scattered throughout along with *Carmichaelia petrei, Corallospartium crassicaule, Dracophyllum longifolium, Olearia odorata* and whipcord. An area of greatest woody shrubland and tussock grassland diversity is in the headwater

Muddy Creek, which has been fenced and destocked for a number of years. One plant of *Brachyglottis cassinioides* has been recorded in this steep eroding gully. Mats of *Gaultheria depressa* occupy inter tussock spaces above the 1100 m contour, along with *Celmisia gracilenta, C. lyallii* and *C. viscosa*. The occasional *Dolichoglottis lyallii* occurs occasionally at the higher altitudes alongside stream margins. The overall species diversity varies widely, but a common thread is the remarkable degree of naturalness that prevails on the higher country.

c Short Tussock Grassland

The short tussock grasslands on Waitiri, predominantly composed of *Poa colensoi* and *Festuca novae-zelandiae* and represent a transitional zone from tall tussock to a short tussock grassland. *Chionochloa rigida* is scattered throughout this induced mosaic. *Poa colensoi* is scattered from a low level (900 m) throughout the tall tussock grassland through to the higher (1500 m) cushionfields. *Festuca novae-zelandiae* occupies the lower slopes below 1100 m and the sunnier slopes that are more depleted. This vegetation type extends below the tall tussock grassland zone of 1100 m and generally grades into the oversown and topdressed country below 800 m on into the shrubland communities.

Silver tussock *Poa cita* is not common on the property being confined to the lower OSTD areas below 900 m. Small patches of *Poa cita* occur in the lower Spring Burn surrounding matagouri, *Discaria toumatou* scrub under Mt Malcolm.

The induced short tussock grasslands have the highest plant diversity range, as the open nature of the grasslands have allowed the inter tussock species to grow without the competition presented by the taller snow tussocks. The dwarf heath *Leucopogon fraseri* is common throughout along with the *Celmisia* spp. *Brachyglottis bellidioides,* whipcord Hebe, *Pimelea aridula, Craspedia* spp., *Wahlenbergia albomarginata, Euphrasia zelandica* and *Gentiana bellidifolia* type.

Scattered throughout the short tussock land are patches of hawkweed *Hieracium lepidulum* and *H. pilosella*. The latter is not common, only forming small mats covering bare soil patches, while the tussock hawkweed of *Hieracium lepidulum* is scattered throughout.

d Seepages

These are confined to a few areas in terrain depressions found primarily in the remote western parts of the property between 1200-1300 m. The largest flush and tarn was found in Wrights Gully while lesser ones were noted in Deaf Bills and Gills Creek. These seepages have a variety of wetland plants

hat still survive despite some grazing pressure. The main plant species are *Carex echinata, C. gaudichaudiana, C. sinclarii, Oreobolus pectinatus, Drosera arcturi, Acaena* spp., as well as the normal tussock grassland herbs growing nearby.

The lower section of Evan Roberts Creek contained the only other wetland where remnants of *Carex* spp. and *Juncus* spp. survive in amongst a variety of exotic grasses. The terraces around Plank Creek have all been mined and only a few sedges survive in amongst the tussock grassland.

e Shrubland

The shrubland component is the most prominent vegetation community. It almost completely surrounds the boundaries covering an altitude bank from 300 m to 700-800 m in places. The Kawarau faces under Mt Gilroy and opposite Gibbston are the most prominent. The vegetation is a mixture of dense briar, matagouri and *Coprosma propinqua*. This mixture of briar and matagouri dominate the lower valley and gully systems, especially the Gentle Annie and Spring Burn. the briar tends to thin out at the 800 m level and has completely disappeared by the 1000 m mark.

A history of fires in the area has dictated the shrubland diversity which remains today. Refugias in gorges, gullies or around rocky outcrops have a good species diversity, while other areas present a monoculture of briar.

The steep slopes above the Kawarau are predominantly a briar/matagouri mix except in the vicinity of Muddy Creek, and above the bluffs near the historic Kawarau suspension bridge. These areas contain a dense shrubland of *Olearia odorata, O. avicenniifolia, Coprosma propinqua, Hebe rakaiensis* and possibly broadleaf, *Griselinia littoralis*, all growing amongst the matagouri and briar. The *Olearia* is well scattered and appears to be spreading with isolated plants growing well up into the *Chionochloa rigida* tussockland at 1000 m.

In the Cardrona Valley, briar and matagouri dominate the lower hillslopes and entrances to the gullies running back on to the main ridge. Alongside some of the creek beds *Olearia odorata, Coprosma* spp., and *Hebe salicifolia* grow. The only remnant shrubland of significance was noted in the RAP of Wrights Creek growing in the rocks under Mt Allen at 1300 m. Scattered throughout the shrubland are the occasional pine tree, patches of sycamore and elders. The shrublands either grade into the short tussock/tall tussock grasslands or are a mosaic within the lower improved country.

f Lowland Grassland

This broad zone occurs primarily below 1000 m and includes improved and unimproved grassland, as well as the shrubland community. Large areas on Waitiri have been OSTD and in some areas clover is found up near the main ridge of Mt Allen at 1400 m. The lowland grassland is composed of scattered fescue tussock, the occasional patch of *Poa cita* in amongst clover and introduced pasture grasses.

Significance

While recreation and landscape aspects are also important vegetation is the most significant single conservation feature on this property.

The key areas are the back basins above the Roaring Meg, the Queensberry Hill to Mt Hocken ridge crest and the shrubland faces above the Kawarau River particularly at the western end of the property.

FAUNA

Aquatic Vertebrates

Previous NIWA database records record brown trout (*Salmo trutta*) at two sites in the Roaring Meg. Anecdotal information also reports brown trout from the roaring Meg hydro-electric impoundment. There were no records of native species on Waitiri.

Fish surveys of the Roaring Meg collected brown trout and brook char (*Salvelinus fontinalis*) Brown trout were restricted to areas below the confluence of Plank Creek and the Roaring Meg. Brook char occurred in Plank Creek and the Roaring Meg upstream of the Plank Creek confluence. No fish were found in Gentle Annie Creek or Spring Creek, although brown trout could be expected in this catchment.

The NIWA database records six fish species in the Cardrona River catchment, three introduced species - brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*) and brook char (*Salvelinus fontinalis*) - and three native species - common river galaxias (*Galaxias vulgaris*), koaro (*Galaxias brevipinnis*) and longfinned eel (*Anguilla dieffenbachii*). Most previous survey sites are below the Eastburn property and do not include tributary streams of the Cardrona river.

Six sites were surveyed on the Eastburn property and in the Cardrona River.

1 Roadmans Gully - upstream of Crown Range Road
- no fish present.

2 Cardrona River at Roadmans Gully confluence
- brown trout were common, adults only.

3 Tyre Creek
- brown trout were common, including juveniles and adults.

4 Wrights Creek
- occasional brown trout and koaro.

5 Gills Creek, 500 m upstream from confluence with the Cardrona River
- no fish present.

6 Gills Creek, 150 m upstream from confluence with the Cardrona River
- occasional brown trout

It was considered that fish densities were lower than could be expected due to recent flood disturbances in these streams.

The presence of koaro in the upper Cardrona catchment was unexpected. Koaro, although a threatened species, is widespread in the upper Clutha River basin and requires little conservation effort. Similarly, brown trout are extremely common in this region.

Terrestrial species were not surveyed.

6 HISTORIC VALUES

From a 1991 report by Jill Hamel

The Kawarau Faces

The true left bank is heavily bluffed between Roaring Meg and Gentle Annie Creeks but opens between Gentle Annie and the Waitiri bend. On gentler flats beside and above the road, both miners and rabbiters worked up until the 1960s. They planted weeping willows, black and Lombardy poplars and hawthorns. Placing their huts of wood, corrugated iron and stone back against the hillside, the rabbiters dug kennels for their dogs into the clay banks or buried 44 gallon drums for them S133/534,

R880702). Of the half dozen structures which used to be there in the 1950s, there are now only the remains of two - the foundations of a stone house and a dilapidated concrete hut upon which a tree has fallen.

Water races coming down behind the concrete house and some scrub-filled channels further south along the terrace edge give little hint of the extent of workings out of sight from the road on the terrace above. Stretching several hundred metres from the Waitiri station driveway is a very complex set of sluice pits, races, tailings, reservoirs and habitations (S133/530-533, 537-539). The workings extend from a lone chimney (S133/530) on the south side of the entrance to Waitiri farmstead for over a kilometre to sluice pits (S133/539) above the rabbiters' huts described above. These workings are reasonably clear and distinct on level terraces, but they are echoed by workings (S133/335) probably nearly as large below the road which are on steeper ground and obscured by briar and other weeds. Both sets were worked by water drawn by an elaborate race system from the Springburn, coming in over the saddle north of Waitiri farmstead (GR875709). The Springburn draws on a larger catchment than the head of the Gentle Annie and there is no clear evidence of the latter being utilised.

A tail race out of a small pit above the Waitiri driveway has been carefully revetted to carry it north parallel to the driveway, suggesting that this is the old road alignment which used to carry traffic over the narrow neck of land to the true left side of the river before the Victoria Bridge was built. A long winding pit runs north towards an intact stone house under a tor, the whole of its western edge neatly revetted. The tail races out of these pits have been cut down 2-3 m to allow deep working of the terrace.

The stone house, 5 x 4 m, under the tor is in remarkably unmodified state and could be very easily restored. It has a nicely corniced chimney set within the thickness of the end wall and two cupboard recesses built in on either side of the fireplace, similar to the pattern of the Mitchell houses at Fruitlands. In the front wall there is the usual symmetry of a four-panelled wooden door and two double hung, six-paned sash windows. Unfortunately the door is not secure and stock can enter the building. There are two rooms inside on the standard butt and ben pattern, with a wooden floor and tongue and grooved coved ceiling. There was some sort of out building with two walls dug out of the terrace and two built up with stone, making a shed about 2.5 x 3 m. A standard wooden dunny still leans against the tor.

Continuing up the line of the Kawarau River, all the known sites around the Waitiri bend to Victoria Bridge lie below the road on a strip of land which becomes wider and flatter around the head of the bend. This area was checked for the many sites recorded during the 1978 survey. There must have

een a village in the rocky outcrops immediately opposite the Nevis River confluence. The 1978 survey found a group of six fireplaces and a lone chimney.

Field Evidence in the Gentle Annie

Two side creeks entering the Kawarau within five kilometres of each other have evocative miners' names of Gentle Annie and Roaring Meg. From the road they both appear to be equally precipitous and troubled with gorges, but once through the entrance gorge of the Gentle Annie it does indeed become gentle. The creek flows down through flats which, though only 100-200 metres wide, provide a sheltered Shangri-la of levelness in this countryside. A major tributary, the Springburn, erodes gold bearing rock (in which at one stage somebody thought he had found a reef) and inevitably where the Springburn meets the main stream and on the easier gradients of the flats, the gold has dropped out. The main workings are at the Springburn junction (S133/626-9, GR 867728), and consist of a race/reservoir complex, sluicings, tailings, a drive and at least three stone hut remains.

Field Evidence in the Roaring Meg

The roaring Meg has an unexpectedly large catchment, bisecting the Pisa massif from the south and running north to head with the Luggate Burn. Most of the mining sites lie within the middle section of the valley above the confluence of Evan Roberts Creek, though this does not seem to relate to the gradients of the valley but rather to the presence of a narrow band of Tertiary non-marine gravels. This band extends in a gentle arc from a tributary of Evan Roberts Creek, up the line of the Roaring Meg to a hairpin bend and north east through Tuohys Gully.

As might be expected there are some gold bearing gravels in the lower part of the Roaring Meg, the lowest recorded being those found by Neville Ritchie in 1979. They consist of small sets of tailings in the creek bed above and below the hydro dam (S133/617, GR888779, S133/619, GR886785; and S133/620, GR884785), in a relatively precipitous part of the valley. The largest at the site below the dam is only 40 m long. Associated with the few tailings at S133/620 above the dam is a rock shelter about 3.5 x 5 m and possibly a second hut (Fig. 55, S133/621) of mud mortared schist blocks with a chimney still standing 1.9 m high in 1979. Three fragments of opium pipe suggest that this was a Chinese site. These sites were not revisited, but another site was found in this section, consisting of a 90 m length of revetted river bank, the revetting being up to 1.5 m high. Presumably it functioned as part of a wing dam/diversion system.

Up Plank Creek, gravels have been sluiced directly where they lie perched on the hillside and the secondary deposits in the creek bed have also been worked (Fig. 56). A race brought down the true right of Plank Creek was used to work the high level gravels about 300 m up the creek, and down where the creek meets the Roaring Meg it was thought worthwhile to create about 100 metres of stone revetted diversion channel for the Meg. There are two living sites in the creek near the junction. The lower one is only a heap of stone from the chimney and the back of a coal range.

ıe upper one consists of the remains of a stone hut, 8 x 4 m, a stone walled enclosure, 8 x 11 m, and a separate fireplace which may have been part of a second hut. Among the domestic debris, there were pieces of piping, corrugated iron, old billies and dixies and broken bottles and ceramics. Considering that Ballingal and Paton worked here as late as 1913-1[illegible] it is not surprising that so much evidence of habitation remains.

Roaring Meg - Cardrona Pack Track

This pack track was an important link in the gold mining era. Much of the formation still remains. From the Roaring Meg power house at the junction with the Kawarau River the first 6 km, predominantly in good order, passes through the adjoining Lowburn Valley property before crossing into Waitiri at the junction of Roaring Meg and Plank Creek. The next 2 km are in Waitiri but although undisturbed the track is not particularly obvious for much of the way because little formation was required. At the hairpin bend of Roaring Meg the track goes into the adjoining property leading up to Tuohys Saddle then down Tuohys Gully to Cardrona. This track has recently been stiled and marked for tramping by agreement with the landholders involved.

Before the coming of Europeans the route was regularly used by Maori and as with time a visible track on the line of least resistance would form - it is probably that the pack track largely followed the older trail.

Significance of Historic Sites

The sites here are important remainders from the gold mining era. They form an interconnecting whole joined by races, tracks and at the time by the communities that worked them.

Iwi Perspective

The Roaring Meg trail was part of a complex system of routes and trails but not of any significance of itself.

The major site of great importance here is the natural bridge and the land around it.

7 EXISTING LAND STATUS

The property consists of two pastoral lease titles. Previously the property also included land of different tenures but this has been sold off. There are a number of legal roads and marginal strips on the property and these are shown on the attached cadastral map. Not shown is the marginal strip up the Roaring Meg for the full distance of the property and beyond.

e position with the marginal strips crown land reserved from sale and legal roads between the present highway and the river is complex and can only be shown on large scale plans and maps, however this is only of significance in the areas of the natural bridge and the gold workings near Victoria Bridge and the detail can be addressed in the event agreement is reached on the protection if any to be put in place.

There appear to be no current prospecting or mining licenses registered on the titles. There is a registered Land Improvement Agreement (RLMP) and also one major and one modest communication structure which have not registered easements or agreements but are liable to remedy the probable oversight if tenure change proceeds. None of these issues will impact on conservation aspirations.

RECREATION/ACCESS

The Cardrona-Roaring Meg pack track provides public access through the back part of Waitiri. While parts of the pack track formation have been destroyed by farm tracks or the Roaring Meg Power Station road, the public does use the track as a walking route from Cardrona to the Roaring Meg. Currently, the power station road at the Roaring Meg is locked, but the public can walk up the road.

The pack track is signposted and marked along its length, with stiles over the fences. This development has been in co-operation with the lessees. Usage is low currently, but as the track traverses a natural tussock grassland landscape with an historical setting, the popularity will increase. The track can be treated as either a one-day or a two-day trip, with camping or the option of staying at the Meg Hut on Waiorau.

A legal road part surveyed runs through the Kawarau Faces from the Waitiri homestead to Eastbourne road. The formed road has fallen into the river in a number of places and the route is now of little practical use.

Although not on a legal road, there is some use being made of a farm track that meets State Highway 89 at the Crown Range Saddle. This track traverses the ridge along the tops of Mt Hocken, Mt Allen and along to Queensberry Hill, coming out at Tuohys Saddle. Walkers use part of the route and mountain bikers utilise the majority of the track and in some cases ride down Tuohys Gully back into the Cardrona Valley.

As the property lies outside the higher main Pisa Range, the level of recreation activity is currently low. Potential does exist for this to change. The Mt Hocken-Mt Allen Ridge could provide ski touring opportunities in the right conditions, as well as providing walking, horse riding and mountain

king access. The areas around the middle Roaring Meg, provide opportunities for tramping and horse trekking as the tussock grassland environment is one of the more spectacular areas in Otago's block mountains.

9 EXISTING MANAGEMENT ISSUES

Wild Animals

There are several species of wild animals present on the property, occupying a variety of habitat and in varying numbers.

Wild Animals Present

Red Deer	-	very low numbers
Goats	-	medium numbers
Chamois	-	in low numbers but increasing
Pigs	-	in low numbers but increasing rapidly

Red Deer

Red deer are in very low numbers and generally occupy the scrub belts and high tussock basins. These animals would not be a problem for management although they could possibly be monitored for TB by MAF or ORC. They could easily be controlled by commercial game recovery or search and destroy by helicopter.

Goats

A previous station owner released large numbers of goats on to Waitiri in an effort to control briar. However, fences proved inadequate and goats free-ranged over most of the station and spread on to Eastburn, the Muddy Creek Faces, Springburn and Wrights Gully carry the most goats (71 goats seen in this area during a recent survey).

Goats have also been encountered in the head of the Roaring Meg and Crown Range, Saddle area.

Goats have now populated the extensive scrub and briar belts in the Springburn and the faces from the Crown Range to the Gentle Annie Creek. They also use the rolling uplands and high rock bluffs during summer.

Chamois

Chamois have slowly been colonising the Pisa Mountain Range and are increasing in numbers (last year 22 chamois were observed over two days in the head of Roaring Meg catchment). Chamois are present in the Muddy Creek, Rock Peak Area and the Lower Roaring Meg Gorge. Chamois have proved to be very adept at occupying a wide range of habitat.

They will need monitoring to observe habitat colonisation and population levels. Some form of control maybe needed in the future.

Pigs

Pigs were illegally released in the Roaring Meg in the early 1980's. The NZ Forest Service and later into the 1980's. The Ministry of Agriculture and Fisheries continued control because of the incidence of tuberculosis in domestic stock. Pigs were found to carry TB and 30% of pigs checked carried TB. MAF targeted pigs on the Pisa Range using various methods, as well as Judas Pig Trial and pigs in the early 1990's were reduced to a very low level.

Feral pigs are now increasing in numbers and a recent survey revealed pigs are increasing their range and quite extensive pig rooting was noticed in the Springburn, Muddy Creek Faces, TR of Gentle Annie. Pig sign was also noted in Plank Creek and the Queensberry Hill lower faces.

Pests

Animal pests present on the property are rabbits, possums, hares, stoats, ferrets and feral cats.

Rabbits

The property has a major problem with rabbit infestation, especially in the pastoral country and is included in the RLM Programme. Even with major expenditure they cannot be consistently controlled with present technology.

Possums

Possums are present throughout and favour the briar and shrub belts, lower rock bluff areas and areas bordering cultivated paddocks. Possums were targeted by MAF in their TB control programme but populations are now building up again.

Hares

Hares are present mainly in the tussocklands, alpine areas and on the cultivated paddocks. The population does not seem to be as large as on the adjacent Remarkables Range. However, little hard data is available on the effects hare have on the Central Otago tussock and alpine areas.

Stoats, Ferrets, Feral Cats

Because of the high rabbit population the above predators are quite numerous, especially ferrets and feral cats. The populations fluctuate with the rabbit populations and it is unknown if control measures would be needed. MAF have previously targeted these animals in relation to their TB programmes.

Weeds

Weeds present are briar, hieracium, small areas of broom and gorse, a small area of Old Man's Beard (by the power station), wilding trees, Hawthorn and Hemlock.

Briar

The briar rose has colonised large areas of the Waitiri Station and has caused problems for the runholders. Control of this species would be very expensive and possibly futile.

Because briar provides food, shelter and protection to wild animals and pests, it not only takes over clean country but furthers the increase, and expansion of the animal pests. Some spraying could control boundaries but in areas of this size of infestation, possibly biological control is the only viable method for the future.

Hieracium

Areas of note for this weed are the upper faces between Muddy Creek and Mt Malcolm, Upper Springburn and patches in the Gentle Annie catchment. Isolated patches have been noted in the Upper Roaring Meg catchment. The spread is definitely linked with degradation by large rabbit populations of the above areas.

Broom Gorse

Broom and gorse were noted in patches along the Kawarau Riverside and terraces and isolated patches were noted around Tyre Creek. These weeds would need to be monitored, as large areas of favourable country for these weeds to colonise, are available. There is also small patches of broom in the Upper Roaring Meg on a four wheel drive track. These were poisoned with prills during a wilding tree operation last summer.

id Man's Beard

A small patch of Old Man's Beard exists above the Queenstown-Cromwell highway about 300 m up from the Roaring Meg Power Station. This is being controlled by the Otago Regional Council and is at this stage being contained. If control methods are not successful the weed will rapidly colonise the exotic tree plantings and the scrub belt between Gentle Annie and Roaring Meg.

Hawthorn

This plant is rapidly covering an area from the Victoria Bridge and downstream around the Waitiri Peninsula to the farm entrance. This plant forms thickets of dense impenetrable cover and excludes most plants from growing.

Hemlock

This weed has been noted growing in areas covered with briar and on areas of pig rooting and rapidly covers areas of bare or disturbed soil.

Wilding Trees

The major and most important weed threat is from wilding trees. Several species are present on these stations the most invasive are the pinus contorta sp., Douglas fir and larch. Other species are present but do not represent the same threat to the tussock country. These species are pinus radiata, sycamore, poplar, will and elder berry.

There are presently three invasion routes for wilding trees:

1 The head of the Roaring Meg has two plots of seeding contorta and seed throw is reaching as far as the Evan Roberts Creek. Some tree control has been out in the Roaring Meg but needs follow up. The two plots will need to be removed to stop further seedthrow. One large seeding contorta was noticed in Plank Creek.

2 The Muddy Creek area has a large ~~contorta or~~ mugo planted area above 800 metres as well as various deciduous species further down into the creek.

3 Douglas fir and larch species have been planted around the Lower Roaring Meg and seedthrow is allowing trees to slowly advance up the Meg and across the Kawarau River on to Mt Difficulty. One large larch species was noticed with seeding cones 900 metres in the true left head of the Springburn.

Douglas fir and pine species are established and seeding along the faces from Crown Terrace to Mt Malcolm.

Contorta species will grow in tussock country up to and above 1500 metres, so a considerable amount of Eastburn and Waitiri is under threat from wilding trees, of this type if not controlled.

Fire

This area would have a high fire risk during summer and the Crown Range Road would be one area of concern, with the high public usage adjacent to tussock grasslands. The majority of the property is covered by the Lakes District Council Rural Fire Authority. However, there are some areas of small reserves that have the one kilometre safety zone that impinge on the Lower Eastburn and Roaring Meg.

PART 3

Consultation

An "early warning" meeting was held with the NGOs on 23 May 1996 covering this and other parties. Most were not familiar with the property but general issues were raised plus a more specific submission in writing.

Issues raised in regard to this property were:

1 Foot access from Crown range road to Mt Allen down ridge to Gentle Annie and out to SH 6.

2 Foot mountain bike and horse access Crown range road to Mt Allen to Mt Queensberry.

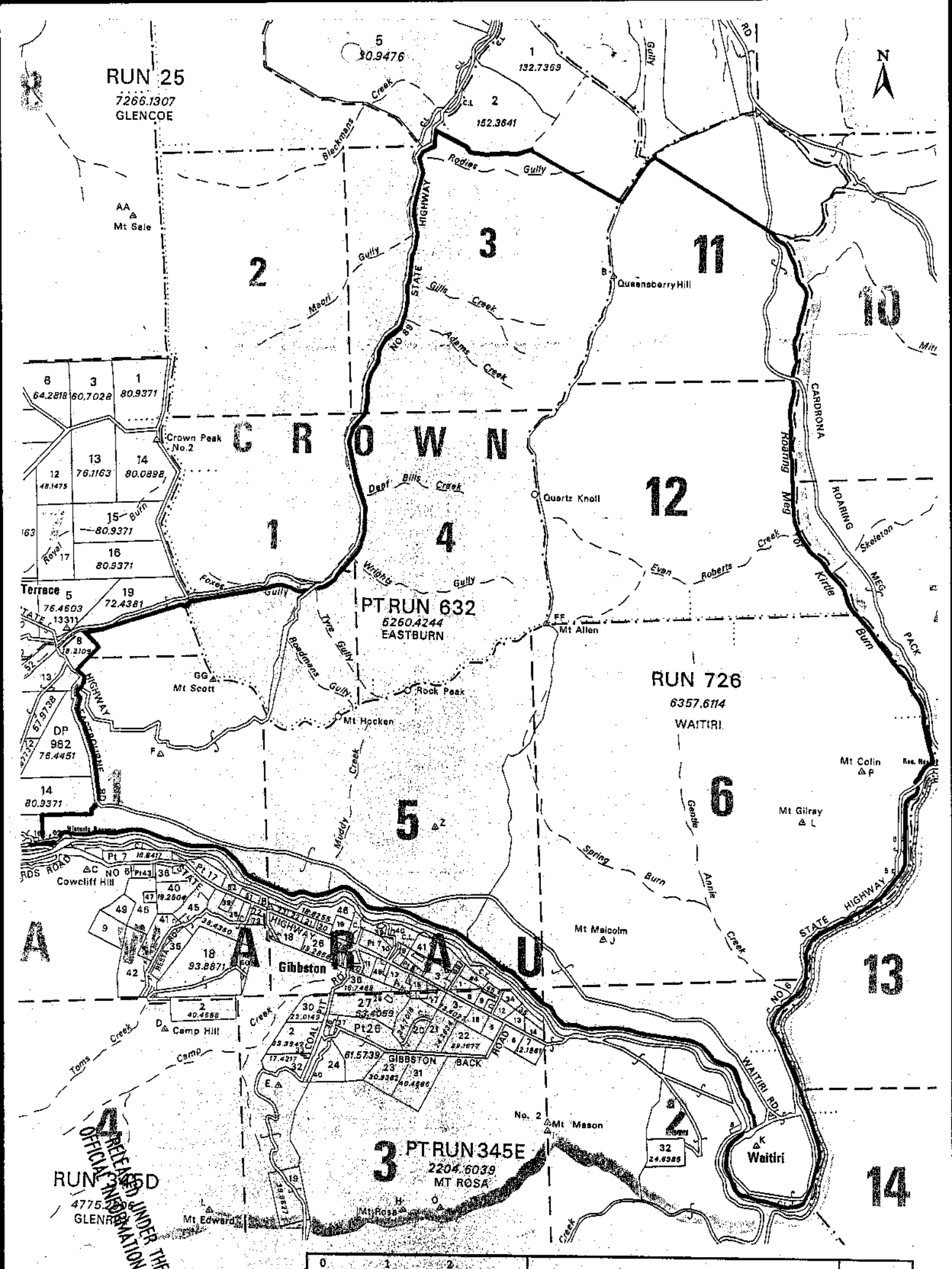
3 Foot access up to Mt Scott from Crown range road and then along Crown range ridge.

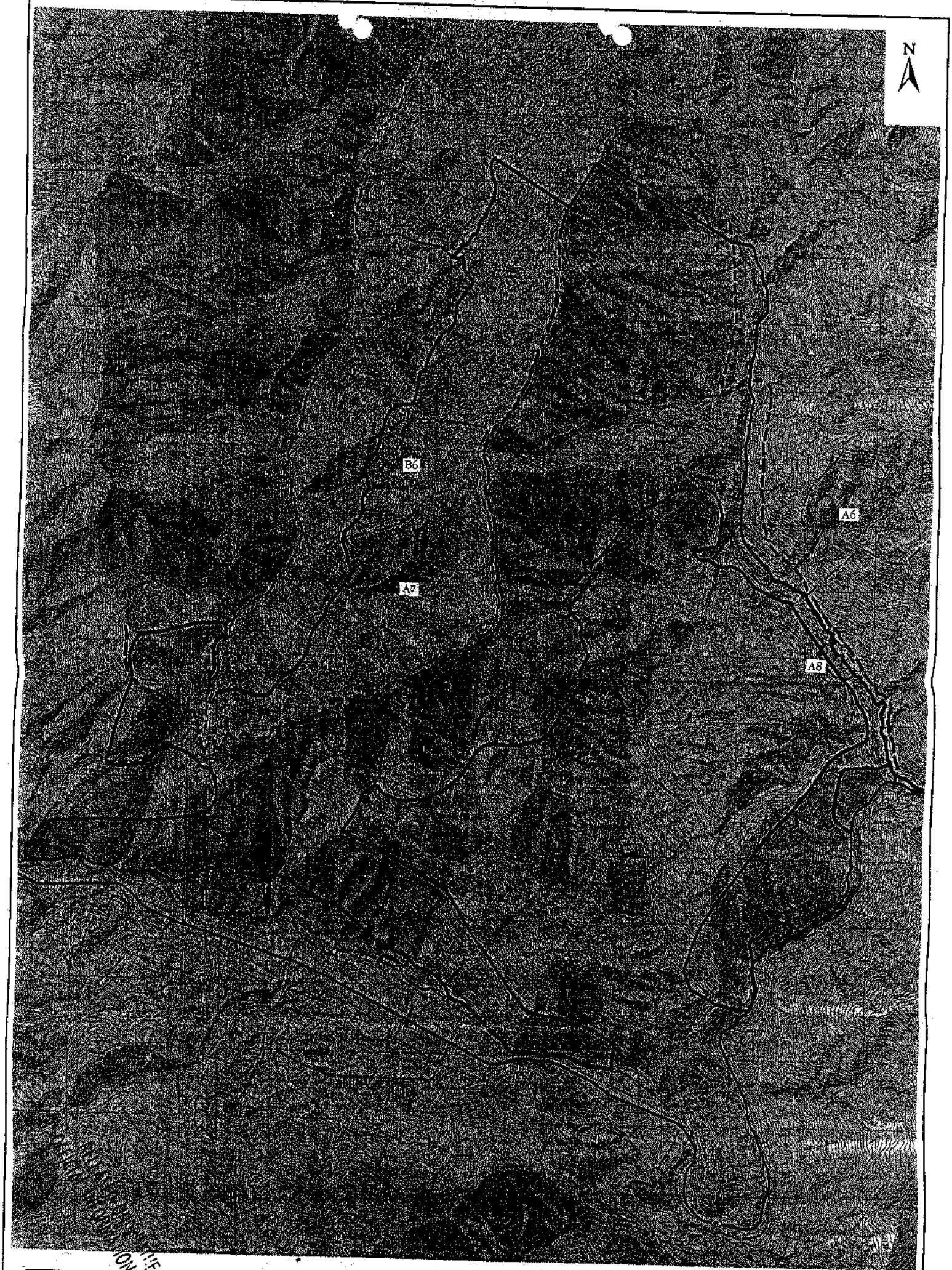
4 Top of Cardrona faces (including the two RAPs) down to the existing subdivision to become conservation land.

5 Back block (Queensberry) to become conservation land.

Attachments

Two conservation resource maps
Cadastral map
Copy of Federated Mountain Club submission
Extract from important places section of CMS report.


RUN 25
7266.1307
GLENCOE
RUN 726
6357.6114
WAITIRI
PT RUN 632
5260.4244
EASTBURN
PT RUN 345E
2204.6039
MT ROSA
RUN 345D
4775.2206
GLENROY
CROWN
Gibbston
Mt Scott
Mt Hocken
Rock Peak
Mt Allen
Quartz Knoll
Queensberry Hill
Mt Sale
Crown Peak No.2
Cowcliff Hill
Camp Hill
Mt Edward
Mt Rosa
Mt Mason
Mt Colin
Mt Gilray
Mt Malcolm
Waitiri
Terrace
Blacksmans Creek
Rodies Gully
Maori Gully
Gills Creek
Adams Creek
Deaf Bills Creek
Wrights Gully
Foxes Gully
Boardmans Gully
Tyre Gully
Muddy Creek
Roaring Meg
Evan Roberts Creek
Skeleton Creek
Spring Burn
Annie Creek
Tams Creek
Camp Creek
Waitiri Rd
Coal Pit Road
Gibbston Back Road
Cardrona
Kirtle Burn
Pack
STATE HIGHWAY 6
STATE HIGHWAY 89
RUN BOUNDARY
0 1 2 kilometres
scale 1:50 000
File Ref : P 257/270 Map Ref : F41
MAP 1
WAITIRI / EASTBURN
CADASTRAL
RELEASED UNDER THE OFFICIAL INFORMATION ACT



Extent of Ecological Values

A7 RAPS

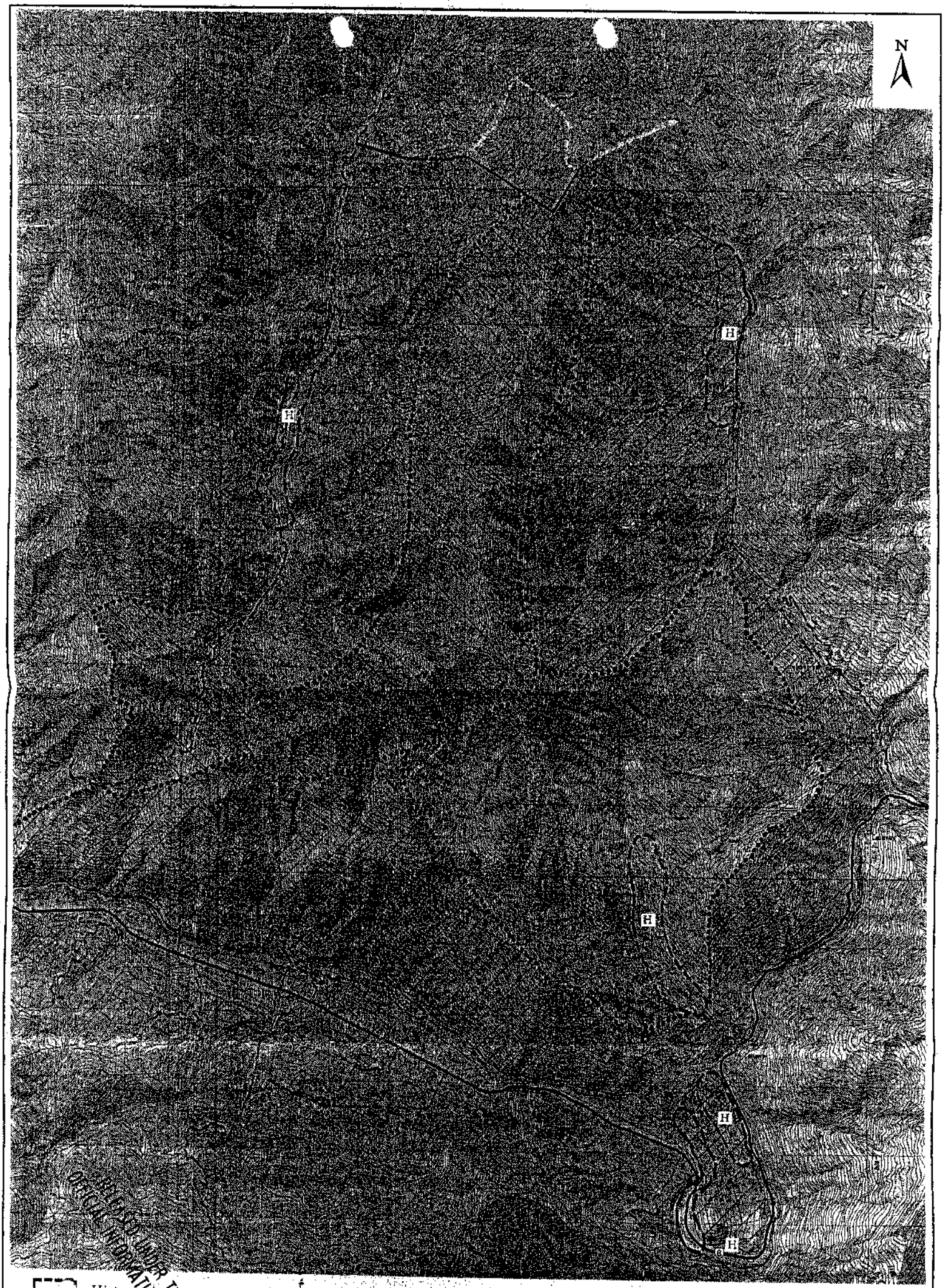
Recreational Access

0 1 2 kilometres

scale 1:50 000

File Ref: P 257/270 Map Ref: E41

MAP 2
WAITIRI / EASTBURN
CONSERVATION RESOURCE



Historic Areas

Landscape Descriptive Areas

Priority One

Priority Two

0 1 2 kilometres

scale 1:50 000

File Ref : P 257/270 Map Ref : P41

MAP 3
WAITIRI / EASTBURN CONSERVATION RESOURCE

DEPARTMENT OF CONSERVATION TE PAPA ATAWHAI

Pastoral Lease Tenure Reviews May 1996

Notes for Early Warning Meeting 23 May 1996

CONTRIBUTION FROM MIKE FLOATE FOR FMC

Station	Reference	Location	LUC Map(s)
PISA/KAWARAU AREA			
Glencoe	Po 144	Arrowtown	S123, S124, S133
Eastburn	Po 257	Arrowtown	S124, S133
Waitiri	Po 270	Gibbston	S124, S133
Lowburn	Po 256	Cromwell	S124, S133
Mt Pisa	Po 271, 272	Cromwell	S124,
Mt Difficulty	Po 257	Arrowtown	S133
HAWKDUN/NASEBY AREA			
Eweburn	Po 074	Naseby	S126, S135
ROCK AND PILLAR/ROCKLANDS AREA			
The Burgan	Po 079	Middlemarch	S154
Styx Run	Po 333	Patearoa	S145, S154
Kelvin Grove	Po 280	Middlemarch	S154

Matters of recreational interest/concern

Eastburn (Po 257)

Land above 1000-1100m to go to DOC
All LUC Class VIII and most Class VII land to go to DOC
DOC/Freehold boundary to be consistent (landscape) with neighbouring/related runs
Access for foot and mountain bikes via 4WD track from Crown Range Road to Mt Allen, linking with access from Tuohy's Gully and Meg Hut (Waiorau) via 4WD track over Queensberry Hill and Quartz Knoll along the boundary between Eastburn and Waitiri.
Posible continuation from Mt Allen (on foot) via fence line on spur to Gentle Annie valley and 4WD track to SH 6 (on Waitiri).
All water courses greater than 3m to have marginal strips laid off

Waitiri (Po 270)

Land above 1000-1100m to go to DOC
All LUC Class VIII and most Class VII land to go to DOC
DOC/Freehold boundary to be consistent (landscape) with neighbouring/related runs
Foot and mountain bike access via Cardrona-Meg pack track
Access for foot (and mountain bikes?) from Tuohy's Gully and Meg Hut (Waiorau) via 4WD track over Queensbery Hill and Quartz Knol along the boundary between Eastburn and Waitiri.
Posible continuation over Mt Allen (on foot) and via fence line on spur between Dingle Burn and Gentle Annie Creek, leading to Gentle Annie 4WD track and SH 6.
Possible route (day trips?) to Mt Gilray
All water courses greater than 3m to have marginal strips laid off

Extract from Important Places Section of CMS Report:

KAWARAU GORGE

Cons. Unit No.	Land	Status	Area
F 41 086	Kawarau Bridge	Historic Reserve	2.9 ha
F 41 093/094	Kawarau River	Marginal Strip	73.0 ha
F 41 095	Roaring Meg	Recreation Reserve	1.2 ha
F 41 096	Roaring Meg	Conservation Area	6.1 ha
F 41 100	Victoria Bridge	Conservation Area	0.1 ha
F 41 087	Kawarau Bridge	Conservation Area	9.2 ha

Ecological District
Pisa

Local Authority
Queenstown Lakes District Council

DOC Land
With responsibility for the marginal strip along most of the length of the Kawarau River and for three small but significant historic or recreation reserves (Kawarau Gorge Mining Centre, Kawarau Bridge and Roaring Meg), the department has a key role in protecting the main entry to the Wakatipu Basin. The larger conservation areas are outside the gorge proper.

Other Land
Most of the land in the gorge is in pastoral lease. State Highway 6A occupies the narrow terrace on the true left bank. The Roaring Meg Power Station is located at the confluence of the Roaring Meg and Kawarau Rivers. The department is party to a management agreement covering the slopes beneath Mount Difficulty.

With the formation of Lake Dunstan, which has flooded the Cromwell Gorge, the Kawarau Gorge is the last remaining spectacular semi-arid rocky gorge in Otago.

Values
The flow characteristics of the Kawarau as an outstanding waterway has been given interim protection by the draft Kawarau Water Conservation Order. The Order identified outstanding values for the Kawarau River as its wild and scenic characteristics; natural characteristics, in particular the return flow in the upper section when the Shotover is in high flood; scientific values; recreational purposes, in particular rafting, and kayaking.

The Kawarau Gorge has high scenic value due to its rocky outcrops, swift river, deep entrenchment and high surrounding mountains giving a feeling of enclosure. It has a colourful history having been used as a route by both Maori and early Europeans to gain access to the Wakatipu Basin. There are also stone huts, dams, sluicings and historic plantings in the gorge.

Whata to Rere is the traditional Maori name of the Natural Bridge which it is said spanned all but a metre of the river but eroded or collapsed in the 1870s. This crossing of the Kawarau gave access to the Wakatipu Basin and beyond to the pounamu sources. Another

trail went from Whata to Rere via the Roaring Meg into the Orau (Cardrona Valley) and then down to Wanaka. A kaika nohoaka was situated in the vicinity where travellers rested.

Management Issues

- Managing the river margins to retain natural character of the river.
- Lack of practical access to the river margins except at Shotover and Arrow confluence, Gibbston, Roaring Meg, and Kawarau Gorge Mining Centre.
- Protection and restoration of historic features.
- Maintenance of historic character of the Kawarau suspension bridge in face of massive public use for bungy jumping.
- Retention of high scenic values in the light of past scarring from mining and associated roading and protection from similar onslaughts in the future.
- Improvement of the Roaring Meg confluence area for recreation and walking access onto the Pisa Range.
- Natural large scale erosive processes and instability.
- Wilding exotic trees and increasing density of briar.

Objective

To protect the values of the Kawarau Gorge as a scenic corridor along with associated natural and historic resources, with a small range of recreational and commercial opportunities provided which are compatible and sustainable.

Implementation

(a) The department will liaise with the Queenstown Lakes District Council and adjoining landowners to get improved access to the marginal strip.

(b) Priority will be given to interpretation of selected historic features to increase public appreciation and enjoyment.

(c) Pastoral lease tenure reviews in the area will be utilised to improve negotiated protection of and public access to key areas.

(d) Access to and along the Meg Pack Track will be negotiated/identified and its natural and historic resources will be protected as resources permit, in relation to demand.

(e) The protection of significant natural and historic resources in the area will be advocated in Resource Management Act and other statutory processes.