
**DOC REPORT ON TENURE REVIEW OF
CAIRNHILL PASTORAL LEASE (P83) UNDER PART
2 CROWN PASTORAL LAND ACT**

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PART 1

1.1 INTRODUCTION

The lessee of Cairnhill pastoral lease has applied to the Commissioner of Crown Lands for a review of the property's pastoral lease tenure.

Cairnhill pastoral lease (2917 hectares) is located east of Lake Roxburgh and straddles the Knobby Range. The homestead is situated on the Knobby Range Road. The western flanks of the property drain into Lake Roxburgh, while land to the east of the Knobby Range crest forms part of the Speargrass Creek catchment. Most of the property comprises rolling to steep hill country. Altitude ranges from 140 m.a.s.l at Lake Roxburgh to 938 metres on the crest of the Knobby Range.

The property is in the Central Otago Ecological Region and the Manorburn Ecological District and is largely within the Knobby Land System. The western extremity is within the Greenland Land System. A Protected Natural Areas (PNA) Survey of the ecological district was carried out during the summer of 1988/99. A final report was published in 1992 (Fagan & Pillai (1992)). At the time of the survey, access was not granted to the property; therefore it was not considered for Recommended Areas for Protection. A landscape study was completed in conjunction with the PNA survey (Smith 1989). In this report the far eastern extremity of the property comprising the headwaters of Mount Campbell Creek was recommended for protection.

A variety of specialists from the Department of Conservation inspected Cairnhill as part of this tenure review exercise in April 1999. It is of note that much of the western half of the property was burnt in a large wild fire on the 28th and 29th of February 1999.

No parts of the lease are currently subject to protection for conservation purposes.

PART 2

INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

2.1 Landscape

For this assessment Cairnhill has been divided into five landscape units with the boundaries being defined principally by the changes in land-use and physical features.

The broad geological setting for this pastoral lease is that part of Central Otago where all the block ranges (Old Man Range, Flat Top Hill and the Knobby Range) have a strong north-northwest orientation. This distinctive pattern is reinforced by the entrenched Clutha River valley which forms the western boundary to Cairnhill.

The landscape of the area has been described by McCraw (1965) as a "fretted landscape" which features a rough craggy appearance with a pattern of shallow valleys and low ridges. Numerous rock outcrops stud the valley sides and ridgetops. Valleys carrying streams occur at wide intervals.

The interior of the Manorburn Ecological District has special qualities within a regional context. These are frequently captured in books, films, and television advertisements which romanticize the high country, and help reinforce the deeply felt attachment that many people have for the South Island high country.

LANDSCAPE UNIT 1.

This unit comprises the steep western facing escarpment that overlooks Lake Roxburgh. It forms a part of the distinctive rocky backdrop to the lake, that stretches from the hydro power dam at Roxburgh to just south of Alexandra. Cutting into the steep faces is a series of incised gullies which drain directly into the lake. The largest of these deep gullies penetrates the centre of the adjoining rolling upland (LU2), from this point the gully catches the run-off from both the uplands and the western faces of the Knobby Range. Since the February 1999 fire, large areas of fractured rock, small rocky ledges, and a water race lined with revetment rock have been exposed by the recent wildfire.

The altitudinal range of the escarpment is between 450m along the upper crest, descending down to 150m close to the margins of the lake. At the base of the escarpment there is a rapid drop off that makes physical access to the lake difficult. The severity of the February fire is clearly illustrated with only pockets of grass germinating in damp hollows while the pre-fire shrubland has been virtually eliminated. In the most northern and largest gully an altitudinal sequence of kanuka shrublands has been sheltered from the fire.

From a landscape perspective, the underlying landform (escarpment) is the dominant element with these rocky walls providing a wild and scenic backdrop to the lake. The remoteness qualities of this unit are reinforced by it being hidden from SH8 by Flat Top Hill. The unit's vulnerability to further change should be assessed from within the lake's environs. The introduction of man-made elements, especially on the immediate skyline, should be discouraged.

Landscape Quality:	Intactness	low
	Coherence	low
	Distinctiveness	moderately high
	Visibility	moderately low

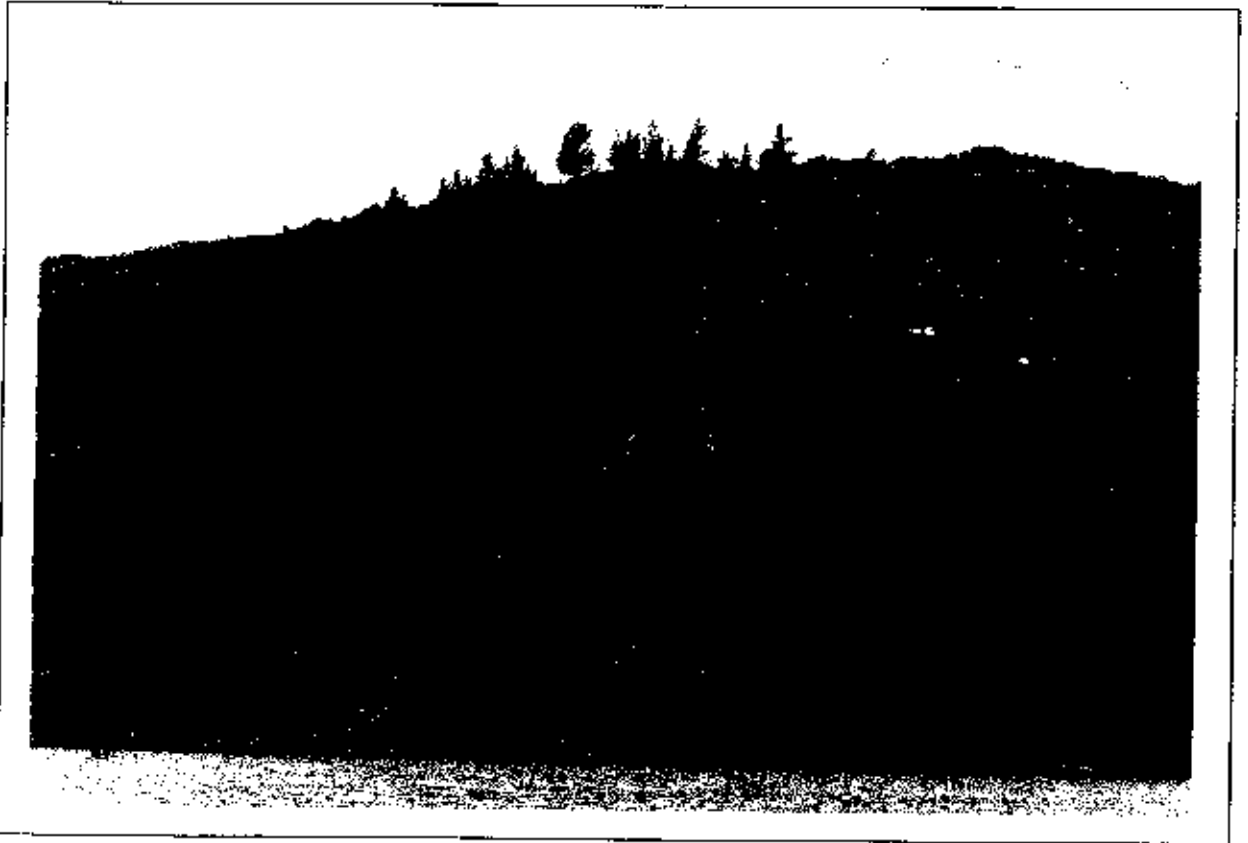


Photo 1. Rugged Lake Roxburgh Faces – note burnt kanuka and native broom. Surviving wilding pines are also evident.

LANDSCAPE UNIT 2.

This unit incorporates both the rolling uplands that separate the Knobby Range from the lake's escarpment, and the western slopes of the Knobby Range. The highest point of these low rangelands (935m) is located within this unit.

The rolling upland section of the unit is characterised by a relatively uniform surface, indented by a shallow drainage pattern. Most of the run-off from the uplands is collected by one major stream which flows into Lake Roxburgh. Forming a physical backdrop to this unit, the Knobby Range is representative of the low altitude ranges within the Manorburn Ecological District. McCraw (1965) described it as "a fretted landscape". Features that make up this distinctive landscape, such as craggy tors and rocky outcrops, become progressively less conspicuous to the south of the unit where there is a transition between rangeland and high hill country.

The indigenous characteristics of this unit have been altered by dryland farming practices with the majority of the uplands now developed into pasture. A scattering of native shrublands persist, mainly within areas which are difficult to develop, such as rocky knolls and steep gullies. The western slopes of the Knobby Range are clad in a mixture of grasses with localised patches of *Aciphylla* and coral broom. All were severely affected by the February wild fire.

Much of the more accessible front country of the property is quite highly modified with the rolling uplands now being intensively farmed.

Landscape Quality:	Intactness	low
	Coherence	low
	Distinctiveness	moderately high (only the western faces of the Knobby Range)
	Visibility	moderately high

Similar to LU1, the underlying landform is the dominant landscape element. Due to its robustness, it would appear not to be under any threat from the existing pastoral operation.

LANDSCAPE UNIT 3.

This unit comprises the upper and mid section of a major dissected valley that has its origins close to the northern boundary of the property and to the east of the Knobby Range. The unit's main water course flows in a southerly direction crossing the neighbouring pastoral lease before it drains into Lake Roxburgh via a rocky gorge.

The vegetative cover is determined by altitude and aspect. The upper catchment retains patches of snow tussock. Drier slopes are covered in sparse short tussocks. It would appear that the upper catchment was sheltered from the recent wild fires. At about the 800m level the native vegetation quickly changes into introduced grasslands. Some of the steeper rocky outcrops retain pockets of shrublands that were not affected by fire.

Landscape Quality:	Intactness	low
	Coherence	low
	Distinctiveness	moderate
	Visibility	low

This unit's indigenous character has been lost due to the conversion of a large portion of it into farmland. Consequently there are no natural landscape patterns or ecological linkages remaining between high and low country.

LANDSCAPE UNIT 4.

This is a small discrete unit comprising a narrow section of the Speargrass Creek Valley. This creek's headwaters are located within the neighbouring The Knobblies pastoral lease. The portion of the valley within Cairnhill includes a wide undulating valley floor enclosed by parallel ridges which visually, give the valley an overall feeling of containment and remoteness.

As highlighted in a Landscape Survey Report of the Manorburn Ecological District (Smith 1989), "the valley feels elevated because the enclosing hills are not high (the difference in elevation is only about 150m)".

Although the original tussock cover has been modified through pastoralism, an overall impression of continuous grasslands remains, especially on the valley floor and other discrete areas where red tussocks still dominate the vegetation.

In landscape terms this unit is distinctive due to its strong sense of place and overall impression of tussock cover; however it is inevitable that the existing values will be incrementally lost due to more intensive farming occurring on the valley floor as more intensive farming practices are used to combat invasion by *Hieracium*.

Landscape Quality:	Intactness	moderate
	Coherence	moderate
	Distinctiveness	moderately high
	Visibility	low

LANDSCAPE UNIT 5.

This unit incorporates the back block of Cairnhill which forms the western edge to the expansive rolling plateau that is typical of much of the Manorburn Ecological District. It comprises the headwaters of Mount Campbell Creek which drains northwards towards Little Valley.

The landscape is characterised by the indistinct topography which includes shallow valleys and boggy depressions. Due to the lack of physical relief, expansive views of prominent natural features such as of Pinelheugh and Gordon Peak can be obtained. The latter rocky knoll forms the southern back boundary of The Knobbies pastoral lease.

Tussock cover on the drier slopes would appear to be in a state of decline with the scattered tussocks being surrounded by mats of *Hieracium*. The tributaries of Mount Campbell Creek retain a continuous tussock sward.

Although the vegetative cover shows signs of deterioration, the unit is an important part of a broad Landscape Management Zone identified by Smith (1989). The rationale behind this zone being so large, was that this type of landscape is open, elevated, expansive, and undulating with no clear defined visual catchments (refer to attached LMZ map).

This type of landscape, due to its subtleties, is vulnerable to change, especially through further reduction of tussock cover, intrusive man-made elements, and intensification of farming.

Landscape Quality:	Intactness	moderate
	Coherence	moderately high
	Distinctiveness	moderately high
	Visibility	moderate

Significance of Landscape Values

Due to the disjointed shape of this property, Cairnhill does not contain complete and coherent high country landscapes. However, the property does make a valuable contribution to the landscape fabric of the district.

The rocky walls of the Roxburgh Gorge provide a wild and spectacular backdrop to the lake. The remoteness of this landscape adds to its uniqueness.

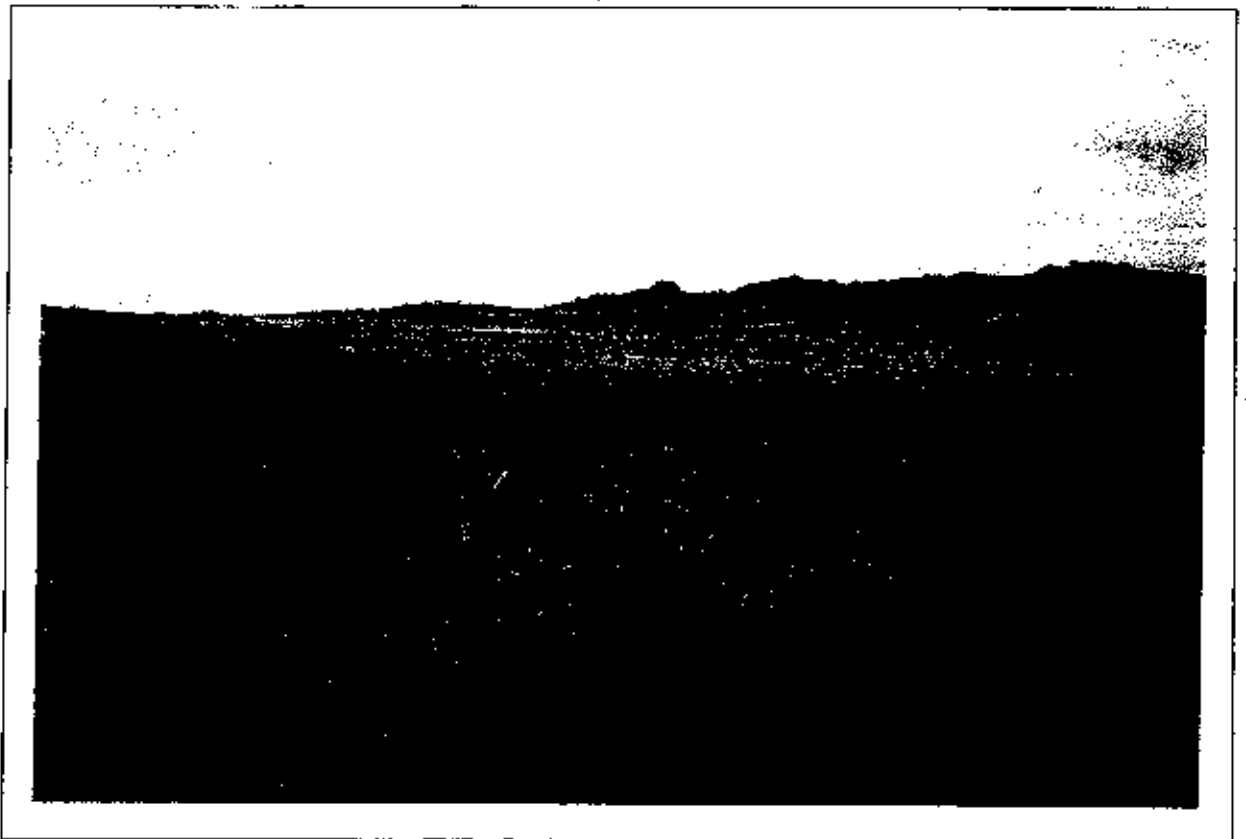


Photo 2. Red Tussocklands – Mount Campbell Creek

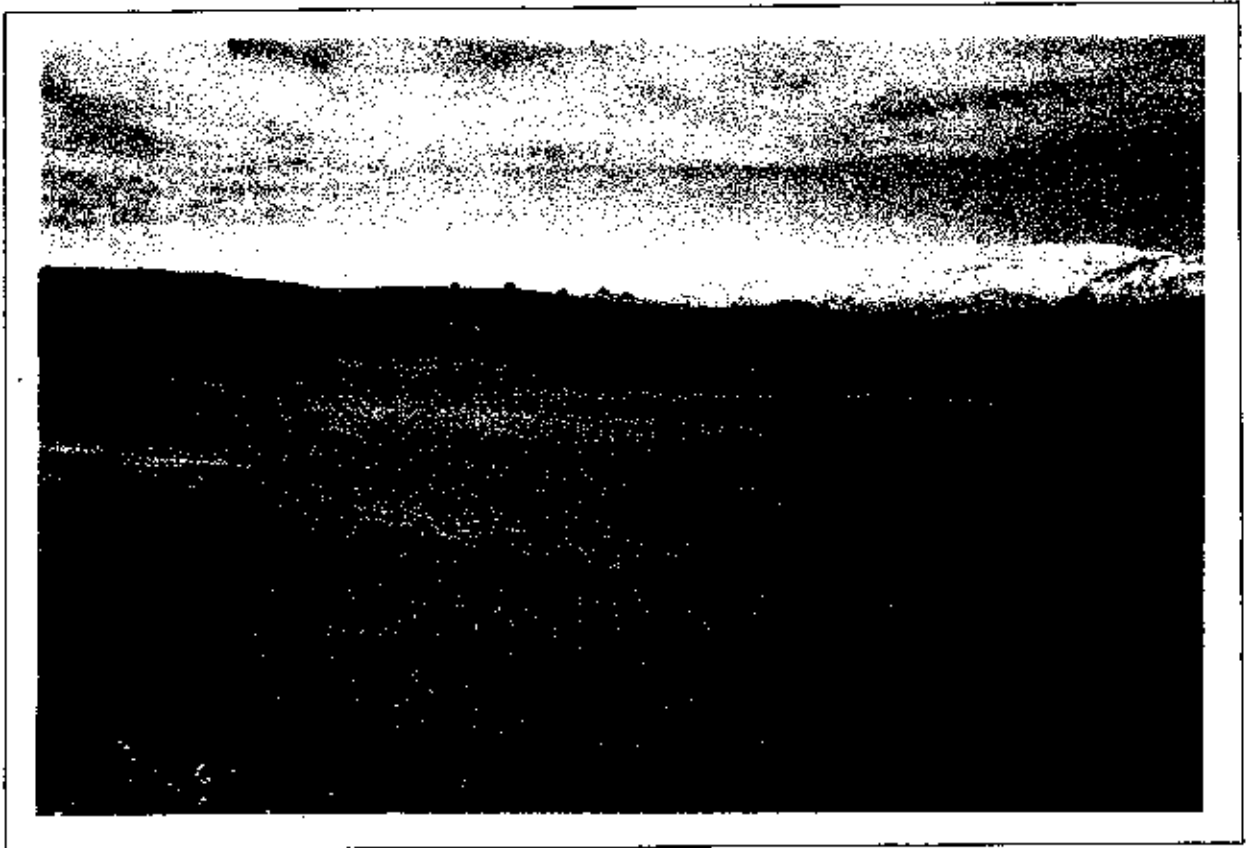


Photo 3. Looking west across Mount Campbell Creek – Old Man Range in background

2.2 Geology

The Manorburn Ecological District is an area of block-faulted uplands dissected by incised streams, rocky outcrops and prominent rock outcrops.

Sedimentary rocks which form the basis for Otago schists were deposited in a marine environment before or during the Jurassic. During the Rangitata Orogeny these sedimentary rocks were accreted to the edge of the Gondwana continental margin and metamorphosed to form schist – the base rock of the Manorburn Ecological District.

The late Cretaceous was associated with a period of uplift followed by a long period of erosion and tectonic stability resulting in the formation of a large peneplain which was eventually buried by terrestrial sediments. Blocks of schist impervious to weathering remained engulfed in the regolith to be partially exhumed at a later time as tors.

Manuherikia group sediments were deposited during the Miocene in a lake basin that covered much of Central Otago.

Renewed tectonic activity in the Late Tertiary dissected the peneplain and sediments, resulting in the formation of a fault controlled drainage system.

During inter-glacial periods vast quantities of sediment were deposited in a series of terraces flanking major river systems. Thick alluvium was deposited in low lying areas (for example Speargrass Creek valley floor). Increased runoff during inter-glacial times eroded the landscape and carved the present drainage system.

2.3 Soils

There is a climate related sequence of soils, ranging from brown-grey earths (semi arid soils) at lower altitudes, yellow grey earths (Pallic soils) in the intermediate zone, and yellow brown earths (brown soils) on higher altitude higher rainfall land.

2.4 Climate

The climate is semi - continental. Annual rainfall is in the region of 425 -750 mm (increases with altitude). Prolonged snow lie is confined to uppermost crest of property. Summers are warm and often droughty. Winters are cold and frosty.

2.5 Vegetation

2.5.1 Communities Which Retain an Indigenous Component

Short tussock/introduced pasture grasslands

This is the dominant community over the western half of the property on land below about 700 m. Introduced pasture grasses form a dense ground cover, with *Poa cita* (silver tussock) and *Festuca novae-zelandiae* (hard tussock) ranging in abundance from scattered individuals to a light - moderate cover.

Mixed shrublands

These occur above the fenceline at the foot of the Knobby Range near the northern boundary. They were not burnt in the most recent fire, but are limited in extent. Patches of low matagouri and occasional *Olearia lineata* are linked by scattered *Carmichaelia petriei*. Short tussocks and *Aciphylla aurea* are common although the inter-tussock flora is largely exotic.

Kanuka shrublands

Kanuka dominated shrublands on the steep faces overlooking Lake Roxburgh have been severely reduced in extent and vigour by fire, with large areas obliterated. Associated shrub species were/are *Melicytus alpinus*, *Coprosma propinqua*, matagouri and manuka. Little low growing vegetation remains apart from regenerating thyme.

Chionochloa rigida Tussocklands

These are present above approximately 700 m along the crest of the Knobby Range and the hills east of Speargrass Creek. The tussocks are mostly short in stature and of low to moderate density. Other associated native species include speargrass, hard tussock, *Poa colensoi* and occasional shrubs of *Olearia bullata*. The inter-tussock flora is strongly exotic with pasture grasses, clover and *Hieracium pilosella* dominating. Common native species include *Leucopogon fraseri*, *Raoulia subsericea*, *Blechnum penna-marina*, *Oreomyrrhis ramosa* and *Gnaphalium* spp.

Extensive areas of these grasslands on the western slopes of the Knobby Range were burnt during the February 1999 fire.

Chionochloa rubra Tussocklands

These are mostly restricted to small areas within the damp valley bottom of Speargrass Creek and a more extensive area covering approximately 200 ha in Mount Campbell Creek at the eastern most extremity of the property. In Speargrass Creek red tussock cover is patchy and exotic species, particularly browntop, dominate between tussocks.

In Mount Campbell Creek the gently sloping valley floor, numerous small gullies and flat, poorly drained areas support an almost intact red tussock cover. Some 40 native inter-tussock species including *Neopaxia australasica*, *Oreobolus pectinatus*, *Gonocarpus micranthus*, *Ranunculus multiscapus*, *Carex coriacea*, *Hydrocoryle novae-zelandiae* and *Viola cunninghamii* are present.

More open red tussocklands in Mount Campbell Creek on better drained locations have been invaded by *Hieracium pilosella* to the extent that it is the dominant inter-tussock species at many sites. Native inter-tussock species which have persisted to varying degrees include *Poa colensoi*, *Festuca novae-zelandiae*, *Pimelea oreophila*, *Kelleria dieffenbachii*, *Gaultheria macrostigma*, *Cyathodes fraseri*, *Pentachondra pumila*, *Aciphylla aurea* and *Acaena caesiiglanca*. Scattered *Chionochloa rigida* tussocks are also present. There is also evidence of hybridisation between *Chionochloa rigida* and *Chionochloa rubra*.

On the eastern slopes of Mount Campbell Creek numerous coral broom (*Carmichaelia crassicaule*) and occasional native broom (*Carmichaelia petriei*) are scattered throughout the red tussockland.

Tors

Rock tors are present along the higher portions of the Knobby Range. Many of these have provided a refuge from fire and grazing over the years (including the February 1999 fire). Smaller tors are present on the east side Mount Campbell Creek, some of which support species uncommon elsewhere on the property. These include coral broom *Carmichaelia crassicaule* and *Astelia nervosa*. Common native species present are *Poa colensoi*, *Brachyglottis bellidioides*, *Leucopogon fraseri*, *Asplenium terrestre* and *Scleranthus uniflorus*. The ubiquitous mouse-ear hawkweed is also common.

2.5.2 Problem Plants

Hieracium pilosella is abundant throughout the property and represents a serious threat to production and conservation values. Extensive areas near the Knobby Range Crest, the headwaters of Speargrass Creek and the headwaters of Mount Campbell Creek are dominated by this species. *Hieracium lepidulum* (tussock hawkweed) is scattered throughout eastern parts of the property and represents a possible future threat. Thyme and briar are common on the western portion of the property, but do not generally coincide with areas which retain natural values.

Significance of Botanical Values

- Much of this property has been developed into improved pasture. Most of the remainder is discontinuous short and tall tussockland with a high degree of modification through oversowing, fertiliser inputs, historic and recent burning, and *Hieracium* invasion.
- Areas of k nuka shrubland on the lake faces have largely been destroyed by the February 1999 fire; however gradual recolonization by this and other native shrub species will occur. Other shrublands are small, fragmented and of low botanical significance.

- Although substantially modified, the Mount Campbell Creek headwaters comprise semi-intact red tussockland. This vegetation type which once covered virtually the entire Manorburn plateau has mostly been converted to a mix of short tussock / exotic grassland or degraded *Hieracium* infested grasslands. Coral broom is relatively rare and usually occurs as isolated plant on rock outcrops; its prevalence in this area is of conservation significance.

2.6 Fauna

2.6.1 Herpetofauna

The past distribution of the endangered grand and Otago skinks (*Oligosoma grande* and *O. otagense*, respectively) included most of central Otago (Hardy 1977, Thomas 1982). The tor habitat on Cairnhill is likely to be/have been suitable for both of these rare skinks, based on research from Macraes Flat. Cairnhill may well have had the rare grand and Otago skink present in historic times, however these species have not been detected in the vicinity since the 1960's (Whitaker 1986). No sign of grand or Otago skinks was found during a thorough search of the area in 1985 (Whitaker 1986).

Two sites were surveyed on Cairnhill for resident skinks and geckos. Both burnt sites and unburnt sites were investigated for lizards by lifting rocks and by scanning ahead for moving or basking lizards. Crevices were also searched for both lizards and droppings; in particular for the distinctively large droppings of grand and Otago skinks.

Site 1. NZMS 260-G43 232 308

This site was surveyed on April 14th 1999 during fine, sunny but cold weather. This site had large rock tors in a thoroughly burned depleted tussockland. This site faced the Lake Roxburgh. The gecko species *Hoplodactylus* "Otago" (Hitchmough 1998) was abundant at this site, and toe samples for DNA analysis were taken from two geckos at this site. The skink species *Oligosoma maccanni* was also very abundant at this site, and during a period of sunshine, 10 skinks were observed over 30 minutes.

Site 2. NZMS 260-G43 263 302

This site was surveyed on April 14th 1999 during fine, sunny but cold weather. This site was characterised by a mixture of burned and unburnt large castle-like rock tors. Again, *Hoplodactylus* "Otago" and *Oligosoma maccanni* were both very common at this site, in particular on tors that were not burned.

Fire as a threat to resident skinks and geckos

There was a clear difference in the abundance of *O. maccanni* and *H. "Otago"* in burned areas directly adjacent to unburnt areas. It is a possibility that many animals migrated to nearby safe areas during the recent fire; however it is more likely that the fire killed many skinks and geckos directly.

It is likely that following the fire, rabbit predators switched prey to lizards. A feral cat was observed in the burnt area (Site 2). Also, 3 unidentified scats (in close proximity) were found containing many skink remains (Site 2). The scats are likely to be that of a weasel.

No rabbits and few insects, except woodlice, were found in burnt areas. The fire destroyed fruiting shrubs which are an important food source for lizards. Cover was also destroyed.

2.6.2 Avi Fauna

No native birds were sighted during the tenure review inspection; however this is probably attributable to the weather which was cold, windy and cloudy.

2.6.3 Aquatic Fauna

Waterways on the property were electric fished. Introduced trout were in several streams. No native fish species were recorded, despite the presence of ample habitat.

2.6.4 Insect Fauna

The composition of insect fauna reflects the relatively modified nature of the property. Insect life is likely to have been significantly affected by the wildfire.

Studies by Patrick (1994) indicate that short tussocklands, tors, scattered shrublands and wetlands each have a distinctive native insect fauna with elements that are endemic to Central Otago. Even semi-natural grasslands have retained a predominantly native insect fauna.

Significant moth species likely to be present in wet areas in Mount Campbell Creek are *Eurythecta leucothrinca*, *Scoparia apheles*, *Heloxycanus patricki* and *Asaphodes sericodes*.

2.6.5 Problem Animals

Moderate to high numbers of goats inhabit the Roxburgh Gorge faces. Goats were also observed well above the gorge. Parts of Cairnhill are moderately to highly rabbit prone (primarily the lower western part of the property). Cats, ferrets and possums are also present. Extensive pig rooting was observed in the headwaters of Mount Campbell Creek. Hares are present throughout.

Significance of fauna

Only two species of lizard were found on Cairnhill. *Hoplodactylus* "Otago" is a common a widespread species, and is found on numerous sites managed by DOC. This is also the case for *O. maccanni*, which can reach very high numbers throughout semi-arid Otago, and seems to cope with disturbance associated with land development. A recent report which ranks Otago lizard species in order of importance for conservation action ranks *H.* "Otago" as medium, and *O. maccanni* as a low priority for conservation action (Blair and Tocher in prep.).

2.7 Historic

2.7.1 Recorded Sites

The shoreline and faces of the Roxburgh Gorge contain a number of recorded archaeological sites. These all relate to the mining history of the area which dates from 1862 through to the 1930s. This area was originally surveyed for historic sites during 1980 and reported in Harrison (1982). Prior to the current survey this area of the gorge was swept by a large wild fire which improved site visibility; however a number of sites were damaged by falling trees.

Eleven sites were recorded by Harrison on Cairnhill. Of these seven were in a cluster on and around a large river terrace near the northern boundary of the lease (grid reference NZMS G42 226 321). The other four sites are rock shelters near the southern boundary. Six of the seven sites were hut sites of which at least one was of Chinese origins as it contained a broken rice bowl. One of the other huts was probably built during the later

period of mining as it was partly constructed of concrete. There was no sign of gold workings but as these were usually confined to the beaches and lower terraces of the river they have been inundated by the formation of Lake Roxburgh. This locality was known as the Willows to the miners (*ibid.*:20).

The Coach Road along the crest of the Knobby Range was the original route followed by horsedrawn coaches and bullock supply teams. Impressive stone cairns were built along side the road to aid travellers in times of poor visibility; however none of these structures are present on Cairnhill pastoral lease.

2.7.2 Significance of Historic Sites

Huts and rock shelters are common along the gorge (Harrison (1982) recorded 111) and those on Cairnhill are typical. Most are protected by the Historic Places Act 1993 which covers archaeological sites that predate 1900.

The Knobby Coach road is of historical significance. As the route is a legal road it is not part of the pastoral lease.

2.8 Public Recreation

2.8.1 Physical Characteristics

In 1992 DOC compiled a Recreation Opportunity Spectrum for the entire conservancy whereby all areas regardless of land tenure, were classified and mapped according to setting, activity and recreational experience characteristics. Cairnhill has been zoned as "Backcountry 4x4 Drive In" which "is characterised by a feeling of relative remoteness from populated areas". "The highly natural setting is a valued part of the experience and may be associated with motivations of "escape from town", education and nature appreciation". "Four wheel drive vehicles are desirable to give access to high country tussock grasslands and block mountains and more rugged remote areas."

2.8.2 Legal Access

There is a network of formed and unformed legal roads in the Knobby Range area. The road to the crest of the Knobby Range (Knobby Range Road) is a well formed gravel road. A well formed farm track (historic pack track) traverses the crest of the Knobby Range through Cairnhill right through to Alexandra near the confluence of the Clutha and Manuherikia Rivers. A legal road also corresponds with a well formed farm track which skirts around the head of Speargrass Creek (Knobbies pastoral lease), over the summit of Gordon Peak and southwards around the headwaters of Mount Campbell Creek where it re-enters Cairnhill pastoral lease.

2.8.3 Activities

The property currently receives no regular commercial recreational use. Lake Roxburgh which forms the eastern boundary of the property receives a moderate level of use by boat owners (both power boats and kayakers). Historic sites on the lake margins with Cairnhill pastoral lease add to the recreational experience of lake users. Some goat shooting occurs in the Roxburgh Gorge. The legal road which dissects the property on the crest of the Knobby Range is subject to frequent use by mountain bikers who follow the route to Alexandra. This route is regularly utilised by the Goldrush triathlon which is a commercially run event. Four wheel drivers and horse trekkers also use this route; although the gate providing access to the road is often locked. Four wheel drivers occasionally utilise other tracks on the property with permission from the lessee. From

the crest of the Knobby Range magnificent views of the Old Man, Dunstan, Remarkables, Hawkdun and St Bathans Ranges can be attained. From the eastern crest of the property the scale of the Manorburn plateau can be appreciated.

PART 3

CONSULTATION AND OTHER PLANS

3.1 Consultation

Conservation resources on Cairnhill were discussed at a meeting with "umbrella" recreation and conservation groups (NGO's) in Dunedin on the 18th May 1999.

Key points raised at the meeting were:

- Maintain an open space / landscape corridor along the crest of the Knobby Range on grounds that it is a frequently used recreational route which affords fine views (PANZ/Forest and Bird).
- Need to apply marginal strips to Lake Roxburgh.
- Make sure that the Old Coach Road corresponds with legal road line.
- Withheld comment on conservation values in Speargrass and Mount Campbell Creeks until they have visited the area (FMC/Forest and Bird).

3.2 District Plans (Matters of National Importance)

Cairnhill is located within the Central Otago District which is currently subject to the provisions of two planning documents; the current plan (the transitional district plan) and the Proposed District Plan. The transitional district plan remains the principle planning document at the present time. However, both documents are used when assessing activities involving the use of natural and physical resources in the district.

Under the transitional Central Otago District plan the entire property is zoned 'Rural 1'. Rural 1 is the zone comprising the District's productive land which is predominantly utilised for intensive grazing, pastoral use, horticulture, market gardening etc. Conditional uses include industries ancillary to farming and other primary industries.

Section 6c of the RMA (1990) requires the council to recognise and provide for protection of indigenous vegetation and significant habitats of indigenous fauna, as a matter of national importance.

With respect to the proposed Central Otago District Plan released for public submissions in 1998 the document states that the council shall:

- (a) Encourage and advocate to DOC that the department negotiates directly with landowners whose properties may contain areas of significance worthy of protection.
- (b) Encourage and advocate to Central Government, that in consultation with affected lessees, areas of significance be appropriately protected through the tenure review process.

- (d) Encourage land owners to provide voluntary protection and enhancement for such areas.
- (e) Review the extent to which significant areas are protected by being included in the conservation estate or made subject to restrictions to protect natural values once the tenure review is complete or when the district plan is reviewed, whichever is earlier.

Only areas with current formal protection have been identified as areas of significant natural value. For this reason no such areas are present on Cairnhill.

Controlled activities in the proposed plan residential activities, subdivision, and retail activity. There are a number of standards which provide the basis for the other types of activities. Restricted Discretionary activities include activities in breach of standards on tree planting, storage and signs. Discretionary activities include activities in breach of standards on residential activities, traffic generation, earthworks and outstanding and significant landscapes. Non-complying activities include activities in breach of the significant indigenous vegetation, habitats of indigenous fauna and wetlands (matters of national importance) standard.

3.3 Conservation Management Strategies

The Otago Conservancy of DOC has prepared a Conservation Management Strategy (CMS) which was approved by the Minister of Conservation in August 1998.

The CMS identifies 41 special places of conservation interest in the Otago Conservancy. Cairnhill pastoral lease is within the vicinity of the "Drylands Special Place.

The CMS objectives for the Drylands Special Place are "To protect a full range of Central Otago and lowland semi-arid indigenous landscapes, ecosystems and species along with significant historic resources associated with them, and to provide and manage appropriate recreational opportunities in those settings.

The key implementation methods relevant to Cairnhill pastoral lease are:

- (a) Attempt to negotiate protection of carefully selected examples of important native ecosystems and key historic sites in the area as they become available, particularly in the context of pastoral lease tenure reviews.
- (b) Protection of significant natural and historic resources in the area will be advocated through Resource Management Act and other statutory processes.

PART 4 RECOMMENDATIONS AND JUSTIFICATION

(FOR OFFICIAL USE ONLY)

4.1 Recommendations

- 4.1.1 That the proposals described below be submitted to the CCL's Agent, during the consultation process on the preliminary proposal for this tenure review, as representing the views developed under delegated authority from the Director-General of Conservation.
- 4.1.2 Note that statutory consents will be required before the CCL can include the following proposals in the preliminary proposal for this tenure review:
- 4.1.3 Note that any disposition of land by the Crown will be subject to the relevant provisions of Part IVA Conservation Act.

4.2 Proposals and Justification

4.2.1 Land to be Restored to Full Crown Ownership and Control

4.2.1.1 Name: MOUNT CAMPBELL CREEK (Proposed Conservation Area)

Existing Status: Pastoral Lease

Authority: s.35(2)(a) (i) CPLA

Proposal: To restore approximately 200 hectares of land in the headwaters of Mount Campbell Creek to full Crown ownership as a conservation area under DOC management.

Description: The area is on the eastern margin of the property and the western extremity of the vast Manorburn Plateau. It comprises part of larger block which incorporates all land on the property to the east of Speargrass Creek. It is the only part of Cairnhill pastoral lease which drains into Mount Campbell Creek. Approximately 75 hectares forming the very head of Mount Campbell Creek are part of the adjoining Knobbies pastoral lease. A conservation resources report for "The Knobbies" recommends that the headwaters of Campbell Creek are also incorporated into the proposed conservation area. The area comprises a gentle basin with low ridges separating it from Speargrass Creek to the west and the West Branch of Little Valley Creek to the east. Much of the area (especially the flat valley floor and numerous shallow gullies) are clothed in red tussock.

Justification: The land contains features which sustain the special natural quality and integrity of the high country landscape and therefore has significant inherent values.

From a landscape perspective although the vegetative cover is showing signs of being in decline, the unit is an important part of a broad Landscape Management Zone identified by Smith (1989) who recommended that a large area of the Manorburn plateau was worthy of protection as a heritage landscape.

The head of Campbell Creek represents one of the strongest red tussockland remnants on the Manorburn Plateau. The desirability of protecting remaining low-mid altitude red tussocklands has been well aired over recent years. Red tussock is a an attractive perennial grass which thrives in areas with poor soil fertility and low pH (and limited potential for economic pastoral development). These soils are vulnerable to loss of nutrients and structure through burning and to a lesser extent from grazing. These factors (and land development) have resulted in the loss of vast areas of red tussock on the Manorburn plateau and elsewhere in the South Island. In many localities red tussocklands have given way to *Hieracium* dominated wastelands of little productive or conservation value.

In terms of the CPLA the land is characterised by having the following significant inherent values:

1. Sustains the special natural quality and integrity of the High Country landscape, especially the indigenous component.
2. Sustains culturally valued scenic, aesthetic, recreational and historic attributes within a natural High Country landscape.
3. Meets the Protected Natural Area Programme (PNAP) criteria for protection as priority natural areas*.
4. Makes a special contribution to the overall quality, natural functioning and ecological integrity of significant values.

*The land meets criteria adopted for assessing natural areas under the Protected Natural Areas Program. It ranks between moderate and high for 5 out of 7 primary criteria outlined in the Reserves Act 1977 for assessing the conservation value of a natural area. If combined with adjoining land recommended for protection on Cairnhill pastoral lease it ranks between high and moderate for all 7 criteria. The following table ranks the area against each of the 7 criteria.

- | | |
|--|------------------------------|
| • Representativeness: | High |
| • Diversity: | Moderate-High |
| • Rarity: | High (ecosystem vs. Species) |
| • Naturalness: | Moderate to High |
| • Long Term Ecological Viability: | Moderate |
| • Size and Shape: | Moderate to High |
| • Buffering, Surrounding Landscape and Boundaries: | Moderate to High |

Naturalness and long term ecological viability were rated moderate to high due to the prevalence of mouse ear hawkweed. Increasing tall tussock cover stands to largely inhibit this species over time in the absence of grazing and deliberate burning; however this is not a certainty.

Given the paucity of protected red tussocklands, the area merits protection on its representiveness alone. It is considered that in the absence of grazing and deliberate burning, increasing tall tussock cover will serve to exclude or retard invasion of hawkweed. However over as much as a third of the area, *Hieracium pilosella* forms

an almost continuous sward. In these areas re-establishment of a red tussock cover will be extremely slow if it happens at all. Invasion by *Hieracium lepidulum* which is rare within the area is a possible future threat.

Management and boundary issues:

(a) Fencing:

The proposed conservation area is fenced on three sides. The northern boundary with Matangi pastoral lease comprises an old but stock proof #8 wire fence with standards. This fence will require annual maintenance checks and may require replacement in the medium term (especially if Matangi Station were to run cattle). The eastern boundary with Matangi comprises a fair to good #8, 6 wire fence with standards and wooden posts. This fence appears to be stock proof but would require regular checking and maintenance. The short fence on the northern boundary with the Knobbs pastoral lease is a relatively new #8, 7 wire fence with post and standards (barbed on top). This fence will become redundant if the small portion of Campbell Creek within the Knobbs pastoral lease becomes part of the conservation area (tenure review is occurring simultaneously on this property). The western boundary of the proposed conservation area is unfenced. Approximately 1.5 km of new fencing would be required (and an additional 800 m on the Knobbs pastoral lease) to make the area stock proof.

(b) Grazing:

Grazing should cease at the time fencing associated with tenure review is completed.

(c) Problem Animals. Although rabbits appear to be virtually absent from the area, historic burrows provide testament to high numbers in the past. Extensive pig rooting was observed. Consideration should be given to some pig control, although it is possible that recreational hunting may keep numbers to an acceptable level. Pigs are likely to utilise an area much larger than the proposed conservation area. Periodic monitoring of pests will be required.

(d) Weeds. *Hieracium pilosella* represents a serious threat to conservation values in the area. Control of this weed is best achieved through encouraging an improvement in tussock stature and density through destocking and excluding burning. This strategy does not incur management costs. A summer wildfire would compromise the area's viability as a conservation area. If tussock cover improves over the decades the area will be better able to recover from an accidental fire.

4.2.2 Land to be Restored to or Retained in Crown Control

N/A

4.2.3 Existing Reserve

N/A

4.2.4 Existing Conservation Area

N/A

4.2.5 Land Being Disposed of Subject to a Protective Mechanism

4.2.5.1 Name: ACCESS TO MOUNT CAMPBELL CONSERVATION AREA VIA SPEARGRASS CREEK

Existing Status: Pastoral Lease

Authority: s.40(1)(c) CPLA

Proposal: Public foot, mountain bike and horse access easement under Section 7 Conservation Act (1987). Guns and dogs permitted subject to holding a hunting permit for proposed Mount Campbell Conservation Area.

Justification: This route will provide the most practical access to the proposed Mount Campbell Conservation Area. A legal road around the head of Speargrass Creek will provide an alternative but less direct route. This legal road also provides a potential opportunity for a round trip for those who access who the proposed conservation area via Speargrass Creek.

Management and boundary issues:

The route will be accessed from the top of the Knobby Range Road via the roughly formed Old Coach Road which is a legal road. This will require erection of appropriate sign posting at the entrance at the formed road end. The route crosses 4 fencelines (including the proposed boundary fence on the eastern boundary of the conservation area). Between one and four stiles will be required depending on the landholders attitude towards the need to lock gates. Sign posting will also be required where the route enters the conservation area. Given the relatively small size of the conservation area, access with firearms and dogs along the route is not considered a priority. If access to hunters is refused the legal road via the head of Speargrass Creek can be utilised.

Attachments: Terms and conditions

4.2.6 Land Being Disposed of Subject to a Qualified Designation

4.2.6.1 Name: DOC ACCESS TO MOUNT CAMPBELL CONSERVATION AREA VIA SPEARGRASS CREEK FOR MANAGEMENT PURPOSES

Existing Status: Pastoral Lease

Authority: s.36(3) (b) CPLA

Description: Route is the same as that described under 4.2.5.2. Purpose is to provide vehicle access for DOC staff for management purposes associated with proposed Mount Campbell Conservation Area and Speargrass Creek proposed public access route.

Justification: If an area is formally protected in Campbell Creek it is essential that DOC secures legal access to the area to ensure that the department can carry out day to day management functions.

Management and Boundary Issues: Minimal. Most concerns relating to access along the route relate to public access. DOC usage of the route is unlikely to be frequent.

Attachment: Terms and Conditions.

4.2.7 Exemption or Variation in Marginal Strip Width

N/A

4.2.8 Other Matters

4.2.8.1 LAKE ROXBURGH FACES (Proposed QE2 Covenant)

Existing Status: Pastoral lease

Authority: s40(1) (c) CPLA

Proposal: That subject to the approval of the Queen Elizabeth the Second National Trust, an area of approximately 200 hectares be designated as freehold land subject to the creation of an 'Open Space Covenant' for the purpose of preserving landscape, amenity and historic values.

Description: The lake face escarpment comprises a steep rugged, arid face which rises some 360 metres above the lake. This distinctive landscape continues up the lake to the Manuherikia – Clutha junction near Alexandra. For most part State Highway 8 is located well away from the lake, contributing to the gorges wild and remote character. Historic mining relics scattered throughout the gorge add to the aura of this inhospitable landscape. Prior to the wildfires of February 1999 the faces retained a sparse and expanding native shrubland comprised of kanuka, manuka, native broom and *Ozothamnus*. Small areas of these shrublands have survived the fire and will provide a seed source for re-establishment.

Key features which should be addressed in a covenant are:

- (i) activities which stand to compromise the Roxburgh Gorge's wild and remote landscape qualities should be excluded.
- (ii) Generic protection should be provided for historic mining related sites present on the lake face escarpment.
- (iii) The covenant should satisfactorily address the issue of wilding tree control and spread.

Justification: Although the Roxburgh Gorge faces have been quite highly modified by 150 years of pastoral activity, mining, rabbit plagues and weed invasion (primarily thyme) they are nevertheless one of the most distinctive landscapes in Central Otago. The degraded nature of the land and steep loose faces with numerous rock outcrops combine to create a truly semi-arid environment. The importance of the landscape is reflected in DOC's submission to the proposed CODC plan in which the gorge is specifically mentioned as an area below 900 m which warrants protection; however District Plan protection appears unlikely. Although historic sites on the lake faces are protected under the Historic Places Act, this covenant will serve to give them additional protection.

Type of Protective Mechanism: Open Space Covenant under Section 22 of the Queen Elizabeth the Second National Trust Act 1977

4.3 Comparison of Proposals to those Recommended by NGO's

- Maintain an open space / landscape corridor along the crest of the Knobby Range ✖
Given that this is a modified semi cultural landscape without significant inherent natural values it is considered that its protection is a district planning issue.
- Need to apply marginal strips to lake Roxburgh. ✓
- Confirm that the Old Coach Road corresponds with legal road line. ✓
- Withheld comment on conservation values in Speargrass and Mount Campbell Creeks until they have visited the area (FMC/Forest and Bird).
- ✓ Indicates that the proposal fully meets NGO recommendations
- ✖ Indicates that the proposal differs from NGO recommendations. Where this is the case an explanation of why the difference occurs is provided.

PART 5 ATTACHMENTS

5.1 Maps

- 5.1 Topo/Cadastral
- 5.2(a) Biological Values
- 5.2(b) Landscape/Historic Values
- 5.2(c) Proposed Landscape Management Zone from 1989 Landscape Survey Report
- 5.3 Boundaries

5.2 References

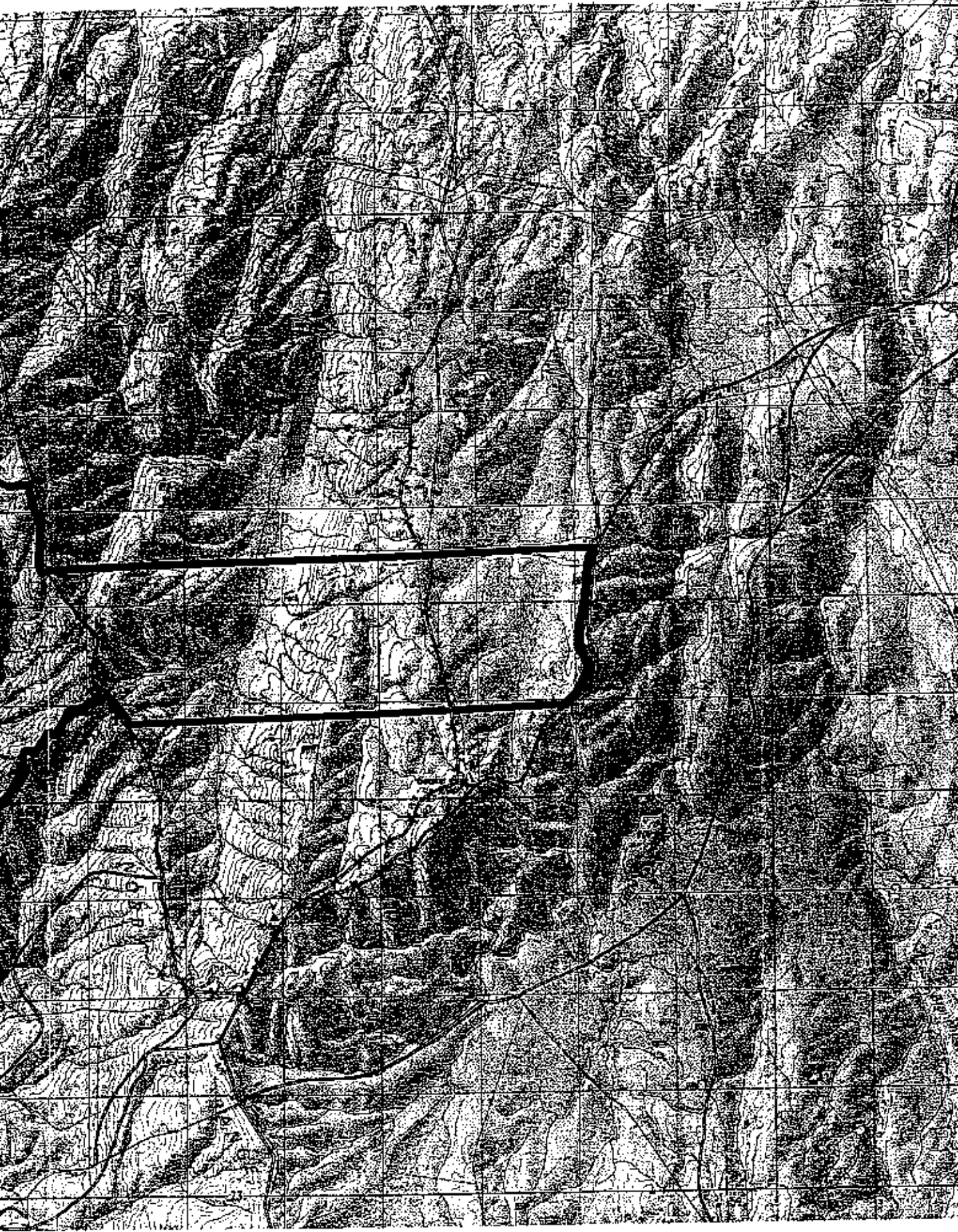
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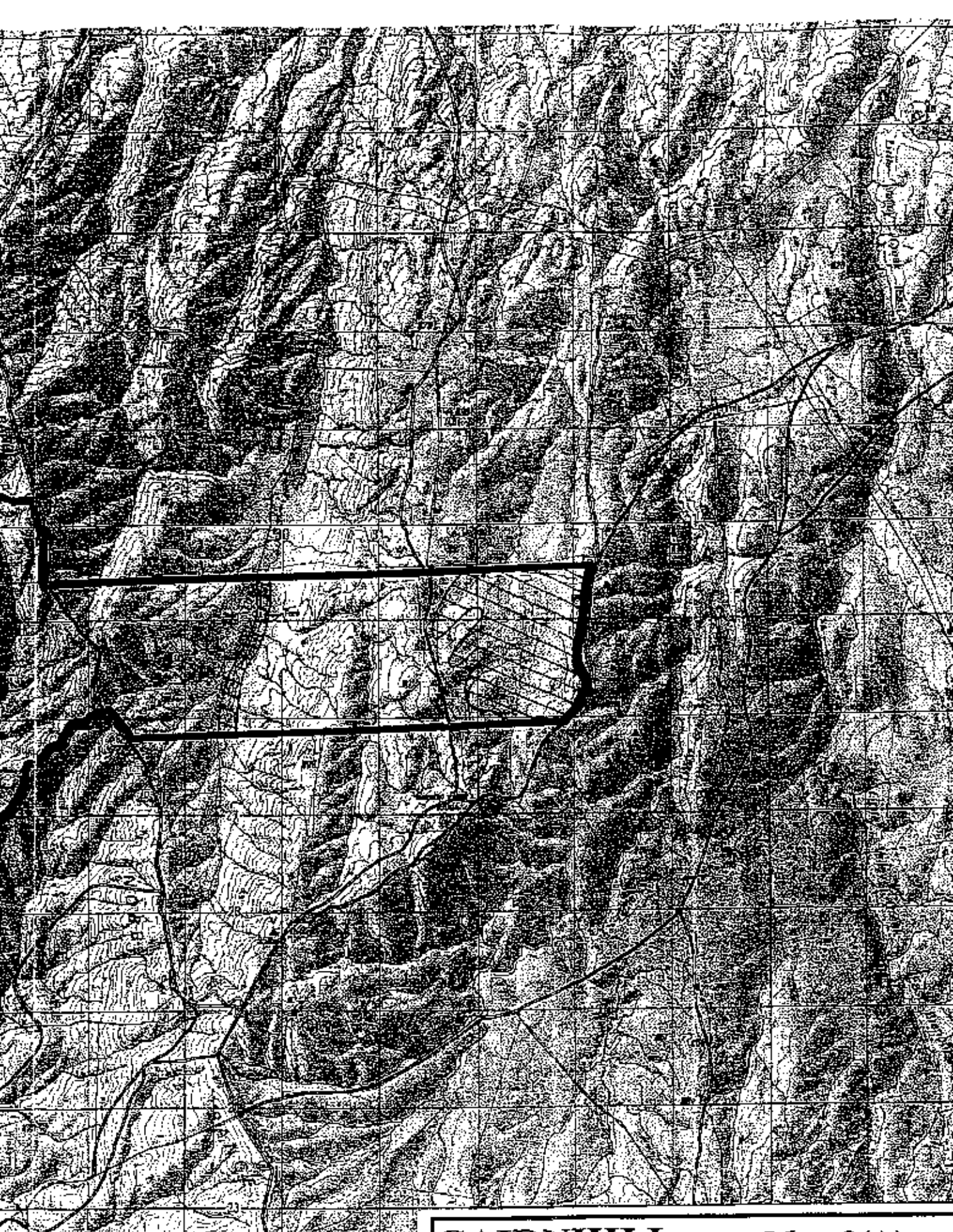
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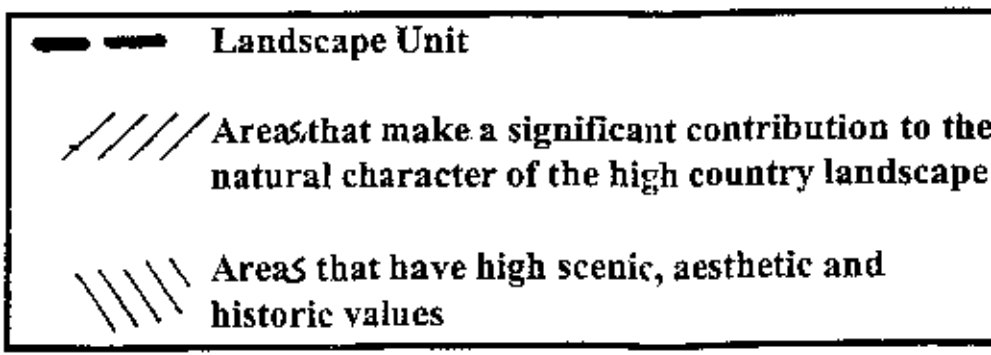
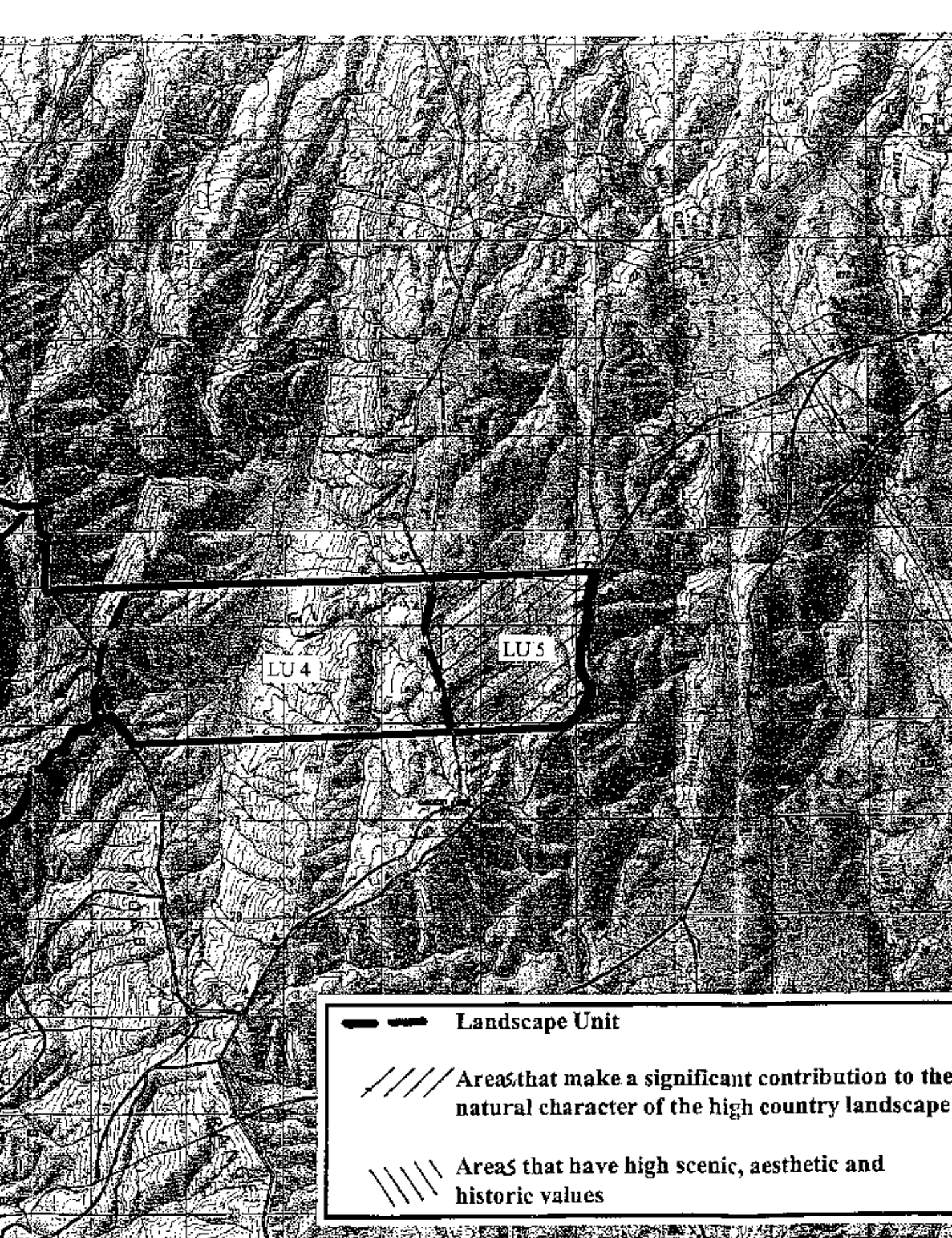
CAIRNHILL Map
— Pastoral Lease Boundary
x x x Legal Roads



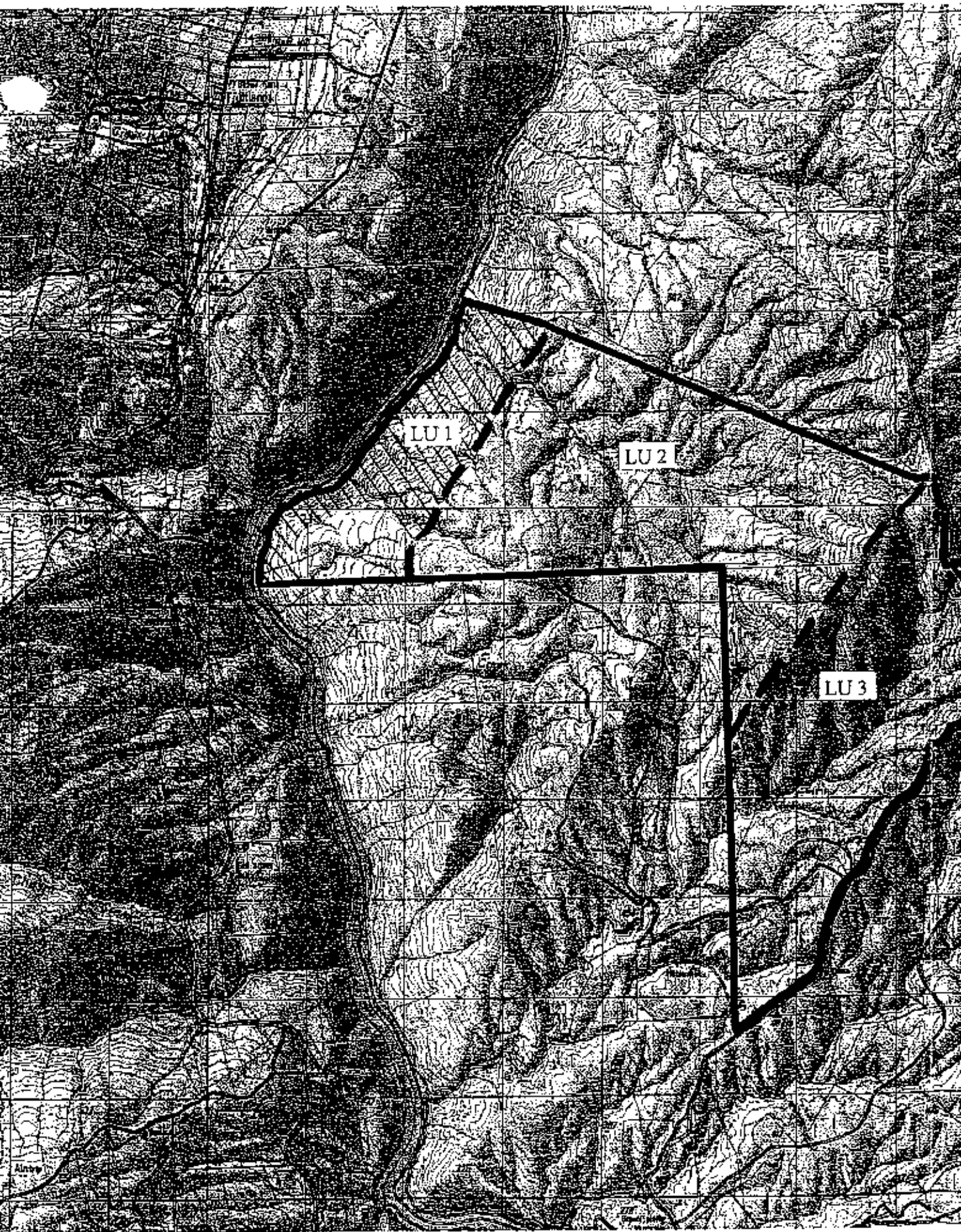


CAIRNHILL **Map 2(A)**
Biological Values
//// Red Tussocklands





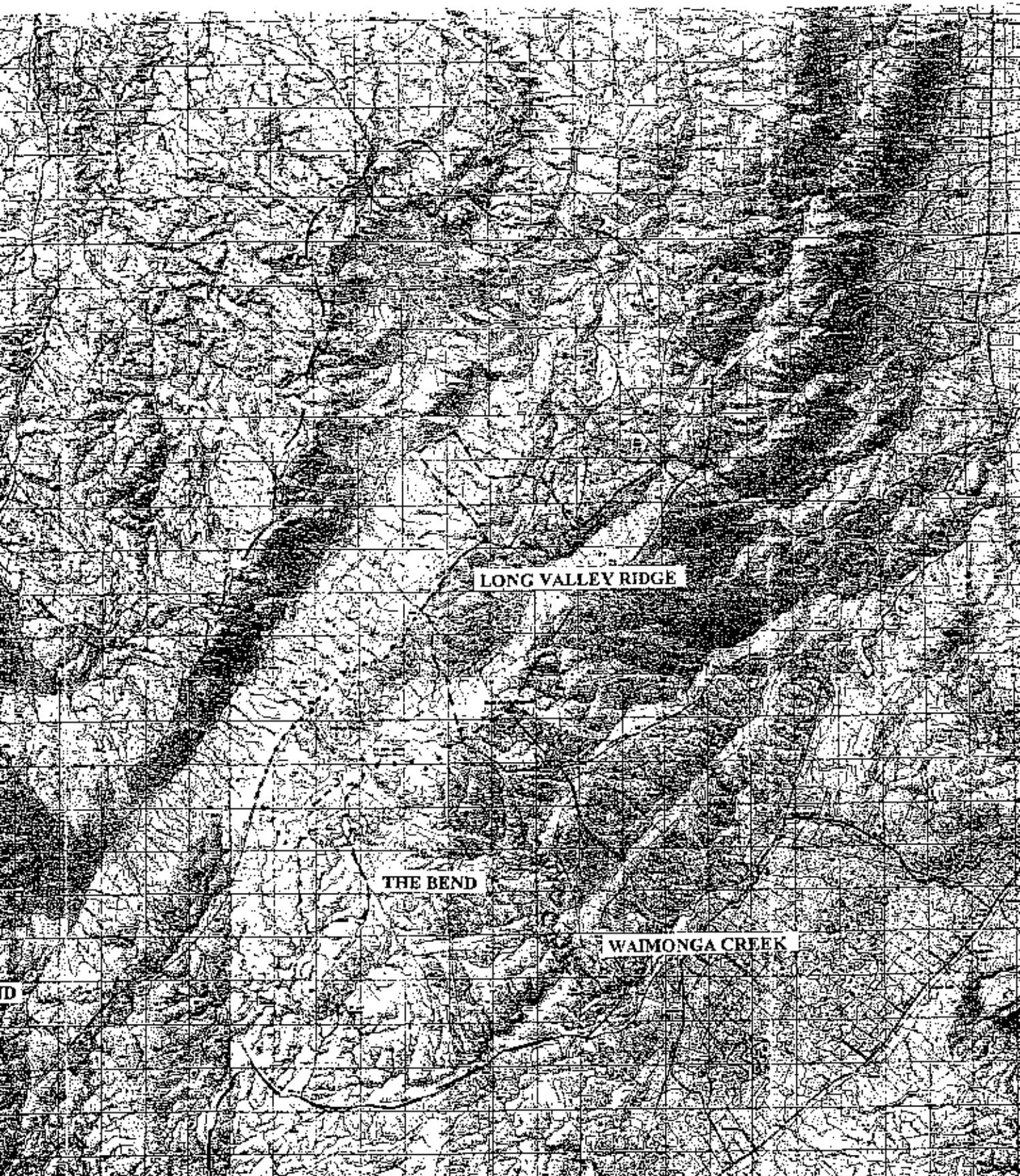
CAIRNHILL **Map 2(B)**
Landscape/Historic Values



LU1

LU2






LU3



LONG VALLEY RIDGE

THE BEND

WAIMONGA CREEK

-  Proposed Manorburn Landscape Management Zone
-  Ecological RAP, Provisional Boundaries
-  Area extended on basis of Landscape Values
-  Part 'The Knobbs' Pastoral Lease
-  Part 'Cairnhill' Pastoral Lease

PROPOSED MANORBURN LANDSCAPE MANAGEMENT ZONE

(From Landscape Survey Report for Manorburn/Maniototo PNA Assessment - Smith 1989)

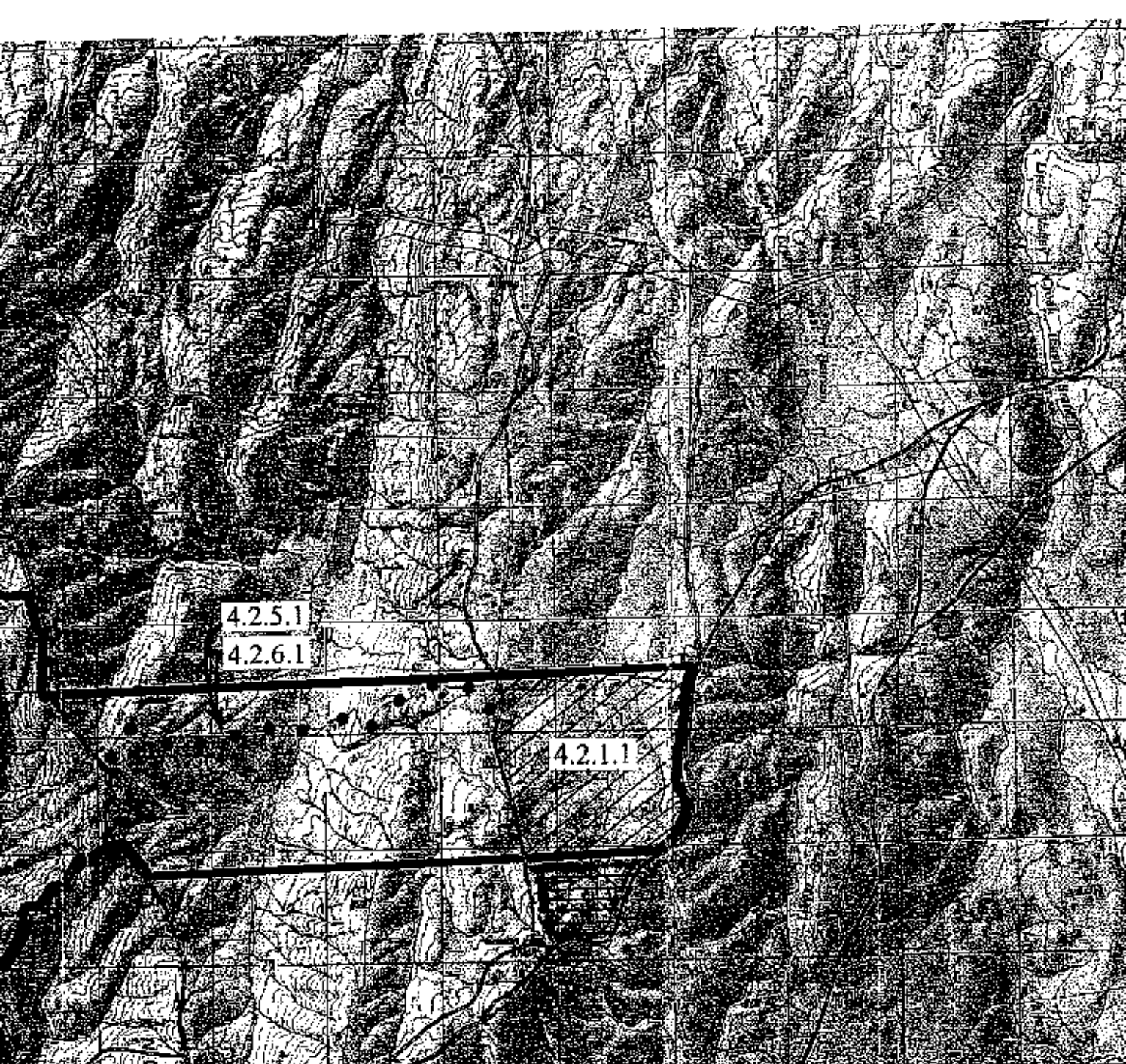
MAP TWO (C)




WALTERS GORGE

PINELHEUGH

GREENLAND





- ● ● Public Access Easement & Easement for DOC Management Access
- × × × Legal Road Line of Strategic Importance to Conservation Land
-  Open Space Covenant (QE II Trust)
-  Conservation Land
-  Land Proposed as Conservation Land on adjoining Knobbs Pastoral Lease

CAIRNHILL **Map 3**
Boundaries

