

Crown Pastoral Land Tenure Review

Lease name : Double Hill

Lease number : Pc 127

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 November 2002

Conservation resources of Double Hill Pastoral Lease, Canterbury

Department of Conservation, Canterbury Conservancy, Pastoral Lease tenure review report to Knight Frank Limited

27 May, 1997

PART 1 - INTRODUCTION

1.1 Double Hill

Double Hill consists of 7,800 ha of pastoral lease that stretches in a semi-circle from the Rakaia River in the north, east around through Turtons Stream and the upper catchment of the North Branch Ashburton River, south into the Swin River and the north-eastern rim of the Heron Basin, and west into the Smitte River. In the 1970s the pastoral lease consisted of 14,800 ha. In 1970, 7000 ha of the middle section of the property (land that was predominantly above 1400m), was retired and classified Pastoral Occupation Licence (POL). This licence area expired in 1991 and when gazetted will be administered by the Department of Conservation.

Land adjoining to the east is Glenariffe pastoral lease, to the south is Crown Land (formerly Glenariffe POL), and a small section of Clent Hills pastoral lease, to the west is Glenfalloch pastoral lease and to the south-west is Upper Lake Heron pastoral lease. Other properties in the vicinity under-going tenure review are Glenariffe, Glenrock, Redcliffe and Mt Arrowsmith.

The majority of the property lies in the Mt Hutt Ecological District, with the Rakaia River flats and "Double Hill" in the Mathias Ecological District. Both districts have been surveyed by the PNA Programme in 1989 (Arand and Glenny 1990). Five whole or part RAPs were identified by the survey on Double Hill - Mathias 1 (Double Hill), Mt Hutt 3 (Double Hill and Glenariffe Streams), Mt Hutt 14 (Rakaia faces forest remnants), Mt Hutt 20 (Station Creek) and Mt Hutt 22 (Turtons).

PART 2 - CONSERVATION RESOURCE DESCRIPTION

2.1 Landscape

2.1.1 Context

Double Hill comprises parts of three wider landscapes - the Heron Basin, upper Rakaia River valley and the internal ranges and valley of the Mt Hutt District.

The Heron Basin landscape covers the western side of Double Hill and includes Mt Catherine and Clent Hill Saddle at the head of the Swin River, both areas identified

as being of outstanding landscape value in the Canterbury Regional Landscape study by Boffa Miskell and Lucas Associates (1993).

The upper Rakaia landscape consists of the northern faces of the Palmer Range, Black Hill Range and the Rakaia River flats. The Canterbury Regional landscape study identified the riverbed as being of national value and as an outstanding natural feature and the ranges along the southern edge of the Rakaia River as regionally significant. The Double Hill pastoral lease comprises an extensive area of river flats and includes around one-quarter of the total length of the mountain ranges along the south side of the river.

A third landscape context is the internal range and valley landscape, not at all visible from public viewpoints except by air. Double Hill forms a central part of this area, which has been identified in the Canterbury Regional Landscape Study as regionally significant.

2.1.2 Landscape units

For descriptive purposes Double Hill has been subdivided into 8 distinct landscape units. The attached map shows the location and boundaries of these units. For the purposes of the text, two units have been written together (Unit 5 Round Hill Valley and 7 Smite-Godley Valley).

1. *Rakaia Valley Floor*

This area comprises the expansive open grassy Rakaia River flats between Glenrock Stream Fan and Glenfalloch Station, a number of large alluvial fans spilling out on to the flats from the steep Rakaia faces above, and Double Hill, a isolated double ridged roche moutonnee 200m in height and around 3 x 2 km in size which rises out of the flats as a major landscape feature.

The river flats are largely open and treeless, with a dense mainly exotic grassland cover, and a number of small but clear deep streams and localised wetlands. Large and often dense patches of matagouri are common, with some particularly tall old specimens at the very northwest end of the flats.

The large alluvial fans vary in appearance. The upper level of Station Creek fan is modified with cultivated paddocks and coniferous shelter belts. The lower end of the fan and the two smaller lower angle fans immediately east of Double Hill homestead retain a more natural appearance with widespread dense matagouri and gravel. To the west of Station Creek is a large steep grass covered classically shaped fan beneath Mt O'Connor, subdivided into paddocks but with no tree planting.

2. *Rakaia Faces*

The northern faces of the Palmer Range and Black Hill Range, stretching for 16km along the south side of the Rakaia valley, are part of the "Rakaia faces", considered collectively to be the most significant natural feature of the south side of the upper

Rakaia valley because of their highly distinctive and highly visible natural form and their size. Approximately 6 km of these are within Double Hill pastoral lease.

The mid to lower slopes, rising from around 450-600m asl to 1300m asl, are large, steep, glacially smoothed and grooved, and rectilinear in shape. They are deeply dissected by Glenariffe, Double Hill, Gerard and Colonel Streams and an unnamed stream to the west of Gerard Stream resulting in a number of geometrically shaped facets or "blocks", which are more finely dissected by straight-run channels and deeper gullies incised in their surface.

These mid to lower slopes have been subdivided into smaller grazing blocks and are oversown and topdressed. Fencelines are clearly visible in some places due to sharp changes in colour of the vegetation cover. The native tussock cover is generally sparse, with a dense cover of exotic grasses. Nearly all the stream valleys and straight run gullies have a remnant cover of forest and shrubland.

The low grassland cover and the relative lack of visible cultural modification contribute to the vividness of the landforms and subtle topography of their surfaces, and to their high overall intactness and natural appearance. The large scale and simplicity of the landscape is also emphasized.

The upper slopes are a deeply dissected steep spur, valley and basin landscape. Snow tussock intermixed with areas of scree covers the slopes.

3. *Turtons Basin*

This is a broad open basin and plateau area at the head of Turtons Stream overlooking the Rakaia valley. Only the western half of the basin is in Double Hill.

Broad, rolling and terraced fluvio-glacial landforms are typical of the area, with a generally dense snow and red tussock cover. The enclosing mountain ranges are high and steep with typically wide planar slopes. Scree, bare ground and rock outcrop increasingly dominate with altitude.

The huge scale and openness of the area, and the smooth rolling landforms accentuated by the uniform snow tussock cover create a visually impressive landscape of highly distinctive natural character with the outwash surfaces in the valley a notable landscape feature.

A boundary fence and a 4WD track passing down the valley are the only obvious modifications on Double Hill. The upper slopes of the Palmer Range between 1300 and 1400 m have been retired but are not fenced off.

4. *Turtons-Ashburton Valley*

This 13km long fluvial valley between the Black Hill, Palmer and Taylor Ranges is drained by Turtons Stream and the north branch of the Ashburton River.

It is a large, relatively straight and open river valley trending north-south, with the valley floor altitude ranging from around 700m asl at its lower end to around 1000m asl at the upper end. The valley floor is made up of a narrow bouldery floodplain with minor terraces. Very steep, and dissected greywacke side slopes rise above the valley floor to over 2000m. The upper slopes above 1300m asl on both sides are retired from sheep grazing but there is no retirement fence.

Vegetation cover is much sparser in this valley than around Turtons Saddle, with short tussock, hawkweed and *Celmisia* over the lower slopes, intermixed with frequent erosion patches, slips, scree and rock outcrop. Snow tussock replaces short tussock higher up, with scree and rock becoming increasingly dominant with altitude.

A boundary fence, a 4WD track from Turtons Saddle to Comyns Hut, Comyns Hut and a holding paddock fence are the only obvious modifications but are insignificant in the scale of this landscape, which retains a high degree of apparent naturalness. The 4 w.d. track is mainly on an adjoining property - Glenariffe.

5 & 7. Smite-Godley and Round Hill Valleys

These are two large deep river valleys extending into the Palmer-Taylor Range and separating the existing high altitude retired areas of Double Hill and Glenariffe POLs. The 7km long Smite-Godley valley flows west into the Heron Basin and is a major contributor to the Lake Stream wetland. Round Hill Creek, some 6km long, flows east and is a major tributary of the Ashburton River.

Only the lower true left slopes of both valleys are within the lease with the exception of Godley Stream valley which includes both sides up to 1200m. The true right of the Smite valley is in Glenfalloch lease and the true right of Round Hill Creek is the former Glenariffe POL, now Crown Land.

Both valleys are deep with a narrow bouldery river floodplain and high, steep, well-dissected planar side slopes. Fluvial and peri-glacial processes have been dominant, with cirque and valley glaciation only obvious at the heads of the valleys. There is a small basin at the head of Round Hill Creek with Clent Hills Saddle on its summit rim. This area is underlain by the largest of the five tertiary rock outliers in this district and an impressive limestone escarpment forms the saddle area. A moraine ridge runs down the centre of the basin, formed by ice flowing down from the cirque high on the east side of Mt Catherine.

Surface cover in the Smite is varied including extensive scree, bare ground and exposed rock (especially on sunny faces and at higher altitudes), riparian and scree-associated matagouri-*Coprosma* shrubland, *Dracophyllum* shrubland on shady aspects, sparse short tussock with extensive hieracium, large patches of cotton daisy, open to dense snow tussock and subalpine to alpine shrubland, rock and scree vegetation. The vegetation is less modified in Round Hill Creek owing to its higher altitude and southerly aspect and is predominantly snow tussock with *Dracophyllum* on shady faces.

An old boundary fence in disrepair at the head of Round Hill Creek is the only man-made element in the highly natural landscape of these two valleys.

6. *Swin Valley*

The south-facing greywacke slopes of Mt Catherine, ranging in altitude from around 900m to over 2000m asl, form the true right of the north branch of the Swin River, and comprise two glacial cirque basins and their lower valleys. Only the lower valleys are in pastoral lease. The valley side slopes and hill faces between the valleys are smooth and planar with scree and generally dense snow tussock alternating vertically across the slopes, rising to completely scree-covered summits, with numerous rock outcrops.

The lower slopes of the Swin River valley are underlain by tertiary deposits, separated from the planar greywacke slopes above by a fault running SW-NE through the Swin and Round Hill valleys. This country is more dissected, comprising a number of small hills and valleys. Limestone escarpments can be traced along the valley, culminating in the impressive outcrops on Clent Hills saddle at the head of the Swin River. Bare ground is more apparent here with sparse snow and short tussock and widespread cotton daisy the main ground cover.

The slopes above 1500m are retired, but not fenced. The Double Hill boundary with Clent Hills cuts across the lower slopes of the true right of the Swin although there appears to be no boundary fence until the small side valley of Mellish Stream near the mouth of the Swin valley.

8. *Mt Catherine*

This landscape unit includes the west facing slopes of Mt Catherine a 2085m mountain between the Smite and Swin Rivers on the Heron basin side of Double Hill. Mt Catherine itself is very steep with extensive scree and rock outcrops on higher altitude slopes forming very steep colluvial cones on lower slopes. Only the lower slopes below about 1500m are in the lease. These lower altitude slopes are mostly vegetated in snow and fescue tussock grasslands and matagouri shrublands, with scree and slips common right to the Basin floor. The landforms are typically pyramidal in character with a distinctive south leading ridge having steep side slopes falling away either side of a sharp divide.

Home Creek, a large valley with a wide shallow tussocky cirque basin at its head bisects the western faces below Mt Catherine, with a large gently sloping alluvial fan at its mouth.

A boundary fence, a musterers hut and a small holding paddock are the only existing man-made elements. The country above 1500-1600m asl is retired but is not fenced off.

2.1.3 Visual values

All of the mountain ranges forming the south side of the upper Rakaia valley are considered to be a highly significant part of this visually spectacular valley landscape. Their value comes from the massive scale and contrasts of the dramatic glacially carved mountain slopes accentuated by the predominantly uniform tussock grassland cover, the vast braided Rakaia riverbed, and the large alluvial fans and terraces neatly subdivided into green conifer-lined paddocks

Virtually all of the mountain slopes and lower fans and flats facing the Rakaia are clearly visible from the upper Rakaia/Coleridge area - from the Algidus Road on the north side of the Rakaia, from the Rakaia riverbed itself, and from Double Hill Run Road on the west side of the river, there are spectacular views across the open expanse of the Rakaia riverbed to the Palmer Range. Here the full 16km length of the striking Lower Rakaia faces can be seen, and the enormity and power of the past Rakaia glaciers appreciated.

The western slopes of Mt Catherine, from Basin floor to summit, and the Clent Hills Saddle dominate the view looking north-east from the Hakatere-Heron Road in the Heron Basin. The Clent Hills saddle is a large and obvious dip on the skyline, the only one in the eastern enclosing ranges, with the limestone escarpment visible as a small bump in the middle of the saddle. Views of the saddle are framed to the north by the distinctive sharply defined, long, pyramidal shaped ridge leading south off the summit of Mt Catherine, and to the south by the bulk of the Taylor Range.

The internal range and valley landscape is not visible at all from existing public viewpoints except by air. The Turtons basin landscape, however, is a visually impressive landscape. As well, there are exceptional views out over the Rakaia valley from the hillslopes above Turtons Saddle

2.2 Landforms and geology

The underlying rock is Torlesse greywacke and argillite with minor associations of conglomerate and metavolcanics. Pleistocene outwash gravels infill the basins and mantle mountain slopes. The basement rock of the Rakaia River is greywacke and argillite, but is overlain by recent alluvium and loess. In the head of North Branch Swin River around Clent Hills Saddle there are outcrops of tertiary limestone deposits.

The major landform groups on the property are:

- high relief, steep mountainslopes of the Palmer Range with moderately wide valley floors in the tributary streams of the North Branch Ashburton River and headwaters of the Smite/Godley catchment.

- planar, very steep, glacially scoured slopes along the "Rakaia faces" dissected by several very steep-sided gorges with waterfalls and cascades (Glenariffe, Double Hill, Colonel and Gerard Streams)
- an intermontane basin (Turtons Saddle) comprising several flat-topped, low-relief outwash terrace and alluvial fan surfaces deeply dissected by tributary streams of the North Branch Ashburton River, and adjoining smoothly contoured mountain slopes.
- alluvial fans of Station, Double Hill Stream and O'Connor Creeks
- low terraces and river flats, multiple old river and flood channels of the Rakaia River
- Double Hill, a roush moutonee, a symmetrically shaped, low relief hill, with rounded to flat top, a "notch" and steep long axis sideslopes
- the Double Hill fault, marked by a 60m wide shear zone - resulting in "stepped" ridge tops and hummocky mountain slopes.
- moraines and outwash from Pleistocene glaciers along lower hillslopes in the Heron basin

2.3 Vegetation

The vegetation on Double Hill consists broadly of:

- Oversown and topdressed mountainslopes of introduced grasses with sparse silver and fescue tussock on the Rakaia faces
- Fescue tussock grasslands on land below 1100m throughout the North Branch Ashburton River tributaries, and Heron basin catchments
- Tall tussocklands throughout on slopes above 1100m
- Localised wetlands and flushes
- Forest remnants in sheltered gullies along the Rakaia faces
- Shrublands on alluvial fans and south facing slopes of Double Hill

Oversown and topdressed slopes

On the north-facing slopes of the Palmer Range (the Rakaia faces) below approximately 1100m, on "Double Hill", and on the alluvial fans and riverflats furthest from the river, the vegetation is predominantly improved grassland.

Thick swards of exotic grasses and herbs are predominant with sparsely scattered silver and fescue tussock, increasing above 900m. The main grasses are Yorkshire fog, timothy, cocksfoot, brown top, tall oat grass, and crested dogs tail along with occasional bromes and rye-grass. Other native species on these slopes below 1000m are scattered matagouri and bracken. Besides the grasses the main herbs are also predominantly exotic - white and red clover and occasional localised patches of Californian thistle.

These slopes are dissected by narrow straight run gullies with a forest and scrub cover. Above the top fence at approximately 1100m there is a sharp transition to *Chionochloa macra* snow tussocklands and native intertussock plants.

Short fescue tussocklands

These are the "unimproved grasslands" below 1100 m i.e. areas that do not appear to have been oversown and topdressed. These occur in the North Branch Ashburton River, Turtons Stream and the faces of Mt Catherine in the Heron basin. The vegetation is mainly scattered fescue tussock with abundant cotton daisy (*Celmisia spectabilis*), as well as blue tussock (*Poa colensoi*), sweet vernal (*Antoxanthum odoratum*), browntop, dwarf heath (*Leucopogon fraserii*), the hawkweeds (*Hieracium lepidulum* and *H. pilosella*), and in some areas *Festuca rubra*. Bare ground and gravel is common, sometimes reaching 10-20% in places. Other indigenous plants in this community include *Blechnum penna-marina*, dwarf snowberry (*Gaultheria depressa* var. *novae-zelandiae*), *Brachyglottis sinclairii*, *B. bellidioides*, *Rauolia subsericea* and *Gaultheria crassa*.

The Rakaia riverflats differ from these hillslopes, in being grassland, with sparse tussock cover and very little bare ground. They are predominantly covered in introduced grasses - mainly browntop and sweet vernal, often with white clover and scattered fescue tussock. Near the base of hillslopes, particularly on deeper soils - tall oatgrass, timothy and Yorkshire fog are common. On more boney ground closer to the Rakaia River brown top and sweet vernal are dominant, as well as Yorkshire fog and chewings fescue. Matagouri is usually scattered throughout, along with fescue and silver tussock. Near small streams and poorly drained ground there is often also *Carex coriacea*, lotus, an exotic buttercup (*Ranunculus repens*) and tussock sedge (*Schoenus pauciflorus*).

Tall tussocklands

Tall tussock grasslands of *Chionochloa macra* are the predominant vegetation throughout the property on mountain slopes above 1100m i.e. on the Rakaia faces, in the Turtons/Ashburton River catchment, in Round Hill Creek, Swin River and the faces above Lake Heron. Tussock cover is mostly around 50-70%, sometimes less, but not often more. They are the most dense and most extensive on low angled slopes such as around Turtons Saddle and in localised valley heads. The intertussock vegetation in most areas is made up largely of cotton daisy (abundant where tussocks more widely spaced), fescue tussock, blue tussock, dwarf snowberry, *Raulia subsericea* and dwarf heath. *Hieracium pilosella* is common

throughout, particularly in areas below 1300 m and can have covers of between 10-30% in places. On south facing slopes and on shady gully faces *Dracophyllum uniflorum* often shares dominance with *Chionochloa macra*. Above 1400m in Round Hill Creek and the Swin River *Celmisia lyalli*, rather than *Celmisia spectabilis* is the common tussock associate and other common species at this altitude are *Raoulia grandiflora*, blue tussock, and *Aciphylla monroi*.

Chionochloa flavescens (broad-leaved snow tussock) occurs sporadically on Double Hill but appears limited to Round Hill Creek, the Swin River and to a limited extent on the Rakaia faces. It occurs in two main types of situations - firstly on steep, shady and often rubbly gullies usually with *Dracophyllum uniflorum*, cotton daisy, and *Schoenus*, and secondly it also occurs on some north facing gravelly slopes such as above Clent Hills Saddle. Here the main associates are the heath *Leucopogon colensoi*, cotton daisy and blue tussock as well as fescue tussock and *Raoulia subsericea*.

Red tussocklands

Red tussock occurs on Turtons Saddle, as small patches in the notch of "Double Hill", in Round Hill Creek, and as small groupings of individual plants on the Rakaia River flats near streams. It could also be on other flush sites on other parts of the property not inspected.

On "Double Hill", red tussock occurs at the upper end of the wide, gently sloping notch of Double Hill set amongst exotic grassland. With the exception of some peripheral areas of silver tussock, the intertussock plants are all exotic - mainly Yorkshire fog, browntop, sweet vernal and white clover.

The red tussock in the head of Round Hill Creek near Clent Hills Saddle also has some brown top and sweet vernal but includes bog rush (*Schoenus pauciflorus*) and *Carex* species.

The red tussocklands on Turtons Saddle are the best and most extensive red tussocklands on Double Hill, occurring on dry as well as less well-drained sites amongst *Chionochloa macra* and fescue tussockland. With the red tussock on wetter sites is bog rush, *Celmisia gracilentia*, *Anisotome aromatica*, *Acaena profundincisa* and *Microseris scapigera*. Dry areas have fescue tussock, cotton daisy and *Hieracium* between the red tussock.

Wetlands

Small localised wet areas or flushes are characteristic of Double Hill and Glenariffe Stream sides and some of the fault traces along the Rakaia faces. *Schoenus pauciflorus* is the most common species on these sites, and depending on drainage and the modification there can also be *Carex sinclairii*, mosses and localised herbs such as *Ranunculus gracilipes*, *Epilobium* spp, *Juncus articulatus*, *Nertera* sp. and *Craspedia* spp.

At the base of Double Hill there is a small floodplain wetland dominated by a rushland of *Juncus gregiflorus*. Much of the year the wetland is dry and openings in the *Juncus* are occupied by *Montia australasica*, and *Potamogeton cheesemanii* or pure *Leptinella maniototo* turflands. This wetland is part of an RAP, Mathias I.

Forest

Small patches of forest remain on the property in steep-sided bluffy gullies that dissect the northern slopes of the Palmer Range, and as isolated trees amongst scrub on the steep side-slopes of Double Hill. The two largest gullies, at the northern end of the property are named on imperial maps as the Glenariffe and Double Hill Streams (Double Hill being the one furthest west). These two catchments contain the largest remnants of forest on the property and along the length of the Rakaia faces.

In both streams the forest is mixed broadleaved forest broken by bluffs and patches of beech forest. The broadleaves are mainly lancewood, broadleaf, mountain three-finger (*Pseudopanax colensoi*), golden akeake (*Olearia paniculata*), *O. aviceniifolia*, mountain ribbonwood, marbleleaf and kowhai. The understorey is dominated by *Pittosporum tenuifolium*, *Coprosma linariifolia*, *C. robusta*, *C. propinqua* and *Hebe salicifolia* with ferns of prickly shield fern, *Asplenium richardii*, *Blechnum chambersii* and *B. penna-marina*. *Hieracium lepidulum* is a common ground cover, especially closer to forest edges. Cabbage trees grow more prolifically in Glenariffe Stream, than in Double Hill.

Other deeply incised guts that contain forest remnants such as Colonel Stream, Gerard Stream and the stream between, are dominated by the same broadleaved trees as Double Hill and Glenariffe Streams. Colonel Stream and the unnamed stream to the east also have scattered beech at mid altitudes, but Gerard Stream has only broadleaved trees and a limited area of marginal scrub of matagouri, *Corokia*, and mingimingi (*Coprosma propinqua*). Colonel Stream also contains three miro, an uncommon species in Canterbury, particularly in the high country.

On the steep south facing wall of Double Hill, nearest the road, (furthest from the river) there are areas of scrub and treeland. The trees are broadleaf, mountain beech, and kowhai with occasional lancewood, mountain three-finger, (*Pittosporum tenuifolium*) and cabbage trees. The scrub surrounding is matagouri, mingimingi, *Corokia*, porcupine shrub (*Melicytus alpina*), *Olearia aviceniifolia*, Hebes and native broom.

Shrublands

The main type of shrubland on Double Hill is matagouri which occurs on alluvial fans, terrace faces, stream sides, in the notch and sidewalls of Double Hill and as scattered shrubs across the Rakaia riverflats and colluvial slopes of the Heron basin.

On the fans of Station Creek and Glenariffe Stream - matagouri is commonly scattered, up to 3m high over a grassland dominated by browntop and sweet vernal

along with *Hieracium pilosella*, clover and catsear. At Station Creek, the matagouri is much denser, taller, larger in aerial extent than other, and includes around 30 kowhai in the middle of the fan. Glenariffe Stream has some kowhai, but not the same quantity.

On "Double Hill" matagouri is dense on south facing slopes of the "notch" and on the south facing wall of the hill nearest the Double Hill Road (described under treelands above). On south facing slopes of the notch, other shrubs mixed with the matagouri are mingmingi (*Coprosma propinqua*) and fuchsia, some mountain ribbonwood, the ferns prickly shield fern (*Polystichum vestitum*) and *Asplenium richardii*, as well as a ground cover of *Blechnum penna-marina* and *Hieracium lepidulum*. Within a small gully there are also shrubs of *Olearia avicenniifolia*, *Hebe traversii*, *H. salicifolia*, mountain wineberry and mingimingi and areas of bracken. These shrublands are part of an RAP, Mathias 1.

On the Lake Heron side of the property on riversides, particularly in shallow gullies and talus slopes shrublands, dominated by matagouri are common. There is usually a mix of other species including mountain ribbonwood, mingimingi, tutu, mountain wineberry and sometimes also *Hebe traversii*, *Corokia cotoneaster*, and *Olearia virgata*.

At altitudes above 1000m, there are limited areas of shrubland, often mixed with snow tussock and usually dominated by *Dracophyllum uniflorum*. Other shrubs that occur at this altitude are *Bracyglottis cassinioides* (very localised in Round Hill Stream and above Double Hill Stream), mountain toatoa (*Phyllocladus alpinus*) - above Double Hill Stream and small localised areas of snow totara.

Weeds

Weeds are limited on Double Hill - there are some scattered broom plants on the front hill faces of the Palmer Range, and in the Smite River. Other sources of potential weed spread are *Pinus muricata* and green alder (*Alnus viridis*) planted by the Catchment Board in the stream south of Comyns Stream on Glenariffe, as well as willows in Turtons Stream. Nasella tussock has also been a problem in the past along the Rakaia faces. Its status on Double Hill is not known by the Department.

2.4 Fauna

2.4.1 Birds

A brief faunal survey was carried out for tenure review and birds were also recorded during the vegetation field work. The information presented here is therefore limited by the ground and expertise covered. Birds recorded in the forest remnants located in the deep, steep-sided gorges of the Rakaia faces included bellbird, South Island fantail and the South Island rifleman. In the open tussocklands NZ pipit, Australasian harrier hawk, kea, and falcon (a category B threatened species) were recorded. At the confluence of the Smite and Godley Rivers a large colony (upwards of 80 birds) of Black-backed gulls were nesting.

2.4.2 Lizards

Common skinks (*Leiopisma* sp.) appear moderately abundant in the grasslands and common gecko (*Hoplodactylus* sp) were observed in many areas. Other lizard species that could be present in this kind of this country but were not seen, are the endangered scree skink *Leiopisma otagense* form "waimatense", the spotted skink *Leiopisma lineocellatum* and the jewelled gecko *Heteropholis gemmeus*.

2.4.3 Invertebrates

Alpine weta (*Hemideina maori*) were common on screes, boulder-fields and beneath stones in the tussock grasslands. The scree weta, *Deinacrida connectens*, is likely to be present in the extensive screes. The alpine grasshoppers *Sigaus australis*, *S. villosus*, *Paprides nitidus* and *Brachaspis nivalis* occur throughout the tussocklands on the property.

2.4.2 Freshwater Fish and invertebrate fauna

Double Hill, Glenariffe and Turtons Streams are the main waters occurring within the pastoral lease. Double Hill and Glenariffe Stream are important salmon spawning tributaries of the Rakaia. They are also known to support brown trout, brookchar and rainbow trout. More information on these sports fish and gamebirds is included in Section 2.6.1.

Freshwater database records show that native species present include long-finned eel, common river galaxias, upland bully, alpine galaxias, koaro and lamprey. Long-finned eel are also likely to be present in some of the streams draining into the Heron basin.

Turtons Stream and a small tributary were electro-fished in January 1996. Alpine galaxias were abundant with common river galaxias, upland bully and brown trout fingerlings present in lesser numbers. Several schools of galaxid fry were observed. These were probably common river galaxias.

The invertebrate fauna of Turtons Stream are typical of high elevation, cobble-bedded streams with good water quality. Mayflies and caddis dominated the fauna. In addition the larvae of net-wing midges (*Blepharacerae*) were present on rapids - also indicative of water quality.

2.5 Historic values

The first parts of what became Double Hill were taken up in 1858 by Colonel Alexander Lean. He and subsequent owners added land at regular intervals until around 1910 when it included the present-day properties of Double Hill, Glenrock, Glenariffe and Redcliffe.

The only known historic places on the property are the cookshop and stables, both

on freehold. In the 1989 Historic Resources Inventory of Heron Ecological Region the stables were rated as being of local importance, but the cookshop was given a regional interest rating because it was an excellent example of mud and stud construction and visually attractive in its own right.

2.6 Recreation

2.6.1 Access

Legal access to the pastoral lease is possible from the downstream or Rakaia Gorge end of the property via a legal road following for most of the distance the formed Double Hill Road and a side road, Ensors Road. According to the cadastral map, however, this connection between legal road and formed road finishes at the homestead and does not continue on west to Glenfalloch from where Ensors Road diverges from the Double Hill Road. Legal, unformed roads also run into pastoral lease up the Smite River (following approximately the riverbed), and more or less up the Swin River over Clent Hills Saddle and down Round Hill Creek. This latter route does not follow any formed or practical foot access.

Access from the Rakaia River is possible via Section 24 marginal strips (formerly Section 58 Land Act strips) which have been laid off either side of Glenrock Stream across Glenariffe freehold. A legal road then follows the approximate line of Glenrock Stream south from Glenariffe freehold across Turtons Saddle and down Turtons Stream to where it meets the North Branch Ashburton River. This, however, is not an easy line to establish on the ground - it follows neither the stream banks nor the 4 wheel drive track. This also means that access to Turtons Saddle requires permission from Glenariffe lessees, i.e. there is no legal arrangement for Double Hill lessees to gain access to the Turtons-Ashburton Valley. Double Hill is also land locked on the Heron basin side - access to Double Hill is required from the lessees of Upper Lake Heron and Clent Hills. POL from the North Branch of the Swin River on Clent Hills.

Access for anglers along the banks of Glenariffe and Double Hill Streams is by local arrangement only. For access to the Rakaia River, a legal road crosses the far north-western corner of the property starting at the Double Hill Road and ending at the Rakaia River through Glenariffe. The formed 4 w.d. track along the base of "Double Hill" does not follow the legal road, however.

At the time of the POL expiry public access was negotiated from the Ashburton River up Boundary Stream on Glenariffe to the Taylor Range and across Clent Hill Saddle to link up with the Double Hill POL, and to link with the legal road in the Swin River (on Clent Hills) providing legal access to the expired POL.

2.6.1 Activities

There is currently little recreation use of Double Hill. The area beyond Turtons Saddle and in the North Branch of the Ashburton River has some use from tramping parties gaining access to the lower reaches of the Ashburton River. The terrain on

the tops of the expired POL is not technically interesting for climbers as basins easily accessible from Mt Hutt and Glenfalloch for heliskiing.

There are opportunities for tramping trips through Double Hill (and Glenariffe) via Turtons Saddle, following Turtons Stream to Comyns Hut then Round Hill Creek and over Clent Hills Saddle and the north branch of the Swin River. This currently requires permission from the lessees of Glenariffe and Double Hill to gain access to Turtons Saddle and Round Hill Creek, as well as permission from the lessees of Clent Hills to go down the Swin River unless you keep to the legal road in the Swin and upper Round Hill Creek. This, however, requires very precise navigation skills and is not a practical route to follow. There are also possibilities of trips down the Ashburton River to Alford Forest if the river is sufficiently low or a round trip down the North Branch of the Ashburton and return via the Swift and Redcliffe Saddle on Glenrock - again requiring permission from adjacent lessees.

Sports fish and gamebirds

Double Hill comprises a number of habitat areas for sportsfish and gamebirds. Glenariffe and Double Hill Streams are regionally and nationally significant Quinntat salmon spawning areas. Double Hill Flats Stream is one of the major spawning areas for salmon in the Rakaia River. Brown trout also spawn here. Glenariffe Stream is an important trophy trout fishery due to significant numbers of large resident brown trout and also a vital spawning area for trout occupying the main Rakaia River. The nearby Rakaia River is a popular area for early season trout anglers (from October 1) and salmon anglers from December to the end of February.

There are no long term historical records or information on gamebirds but Canada geese, paradise shelduck, mallard and grey duck all frequent the area. Paradise sheslduck have been known to congregate on "Double Hill" (the hill) at an area of wetland during the moult. They have also been observed at a ponded area of water near the base of Double Hill along with other waterfowl. Some harvesting of waterfowl by hunters does occur, but to what extent is not known. The NFG Council suspects it is low. Upland gamebirds such as Californian quail and chukor do exist, but their numbers do not attract much attention from hunters.

The tops of the surrounding ranges are very open and offer little cover for deer, and chamois. During the survey none of these wild animals were observed, although there was plenty of sign in Round Hill Creek.

PART 3 - CONSULTATION AND DISTRICT PLANS

3.1 Consultation

A NGO meeting was held in the Christchurch DoC office on 27 February 1997 with representatives from FMC, North Canterbury Conservation Board, Save Our Seas Coalition, Canterbury Environment Trust, Forest and Bird, and Waimakariri Protection Society to discuss a number of issues including tenure review. A brief outline of some of the issues and interests on Double Hill was made to the group

and an invitation made to phone up or send in any comments they may have on the property. No comment has so far been received.

3.2 District Plan provisions

Double Hill lies within the Ashburton District. The proposed District Plan was notified in March 1995. Under this Plan Double Hill is zoned Rural C (High Country). The plan also identifies areas on the property that are of significant conservation value - Area 3 covers the Rakaia River bed and the beds of Double Hill and Glenariffe Stream on the flats (SSWIs); Area 5 which covers Mt Hutt RAP 14 (Rakaja Faces forest remnants), Area 7 is Mt Hutt RAP 22 (Turtons Saddle), Area 15 is Mathias RAP 1 (Double Hill), Area 19 which includes Mt Hutt RAP 3 (Double Hill and Glenariffe Streams), Mt Hutt RAP 19 (Smite-Godley), and the far northern corner of Mt Hutt RAP 20 (Station Creek). The Rakaia Riverbed is an area of landscape importance.

For areas of landscape importance, areas of significant conservation value, riparian¹ and alpine environments (areas above 1000m) the District Plan has a number of rules:

- No earthworks to exceed 20 metres³ in volume and/or 50 metres² in area in any one hectare in any continuous period of five years, or to be located on slopes greater than 20 degrees.
- No clearance of indigenous vegetation in the Rural C zone to exceed 100m² in area in any one hectare in any continuous period of five years, except for amenity plantings.
- No exotic tree planting, except amenity tree plantings (and in the case of riparian management areas - no exotic tree planting intended for commercial purposes)
- No buildings to be erected.

For general landscape values, except for what is provided in the rules above, all building, tree planting (other than of amenity trees), and earthworks (other than the repair and maintenance of operational tracks located on slopes with an angle of greater than 20°), are Controlled Activities in respect of siting, design and methods of construction.

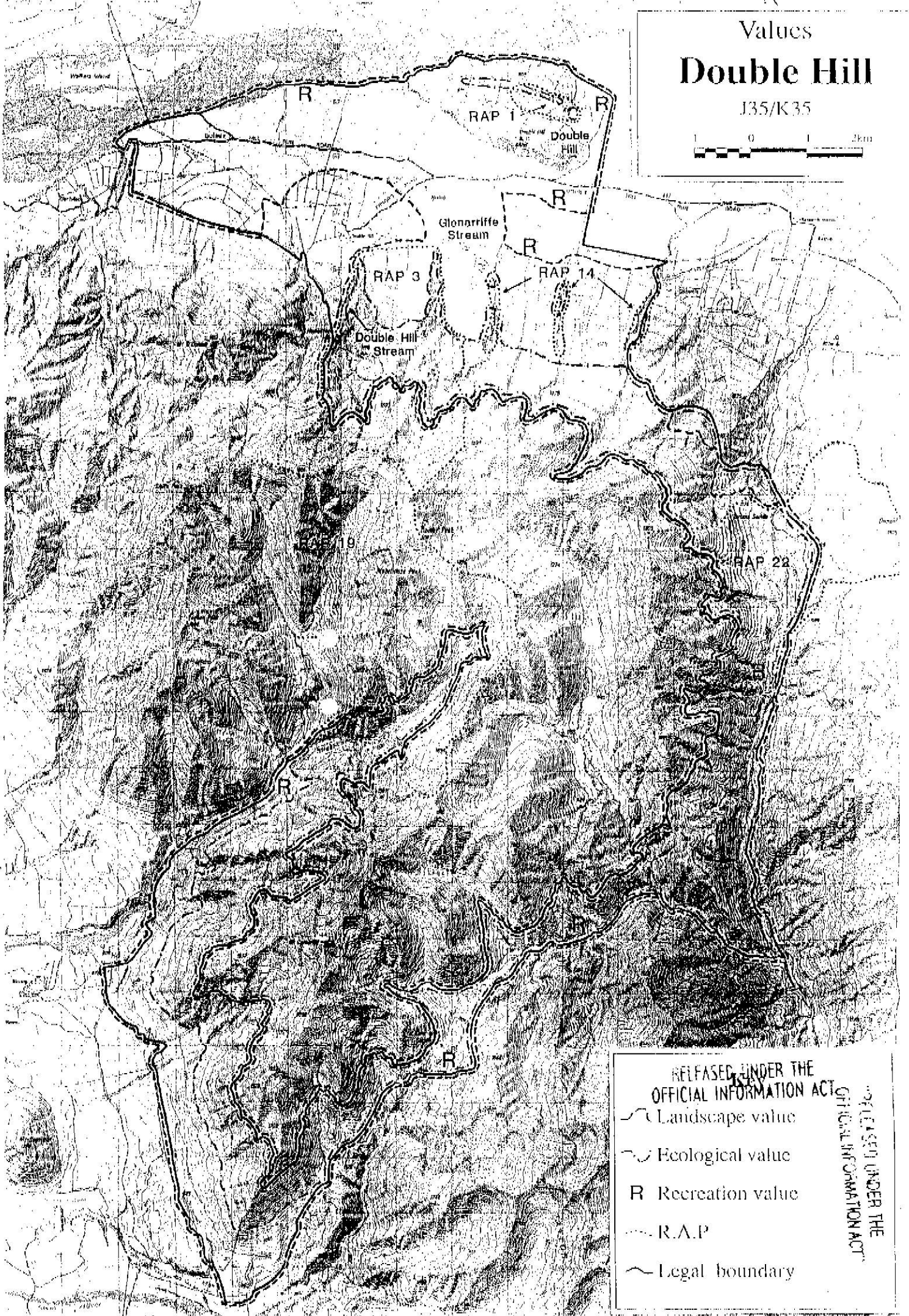
For general "natural conservation values" except for what is provided for in the rules above, there should be no clearance of indigenous vegetation (other than matagouri), which has an average maximum height of the canopy of greater than three metres, shall exceed 1000 m² in any area in any continuous period of five years.

¹ any land within the bed of any lake, river or stream; within any naturally-occurring wetland; and/or within 100m of any lake, or 20m of any river or stream (other than the main stem of the Rakaia River below Lake Stream).






Values

Double Hill

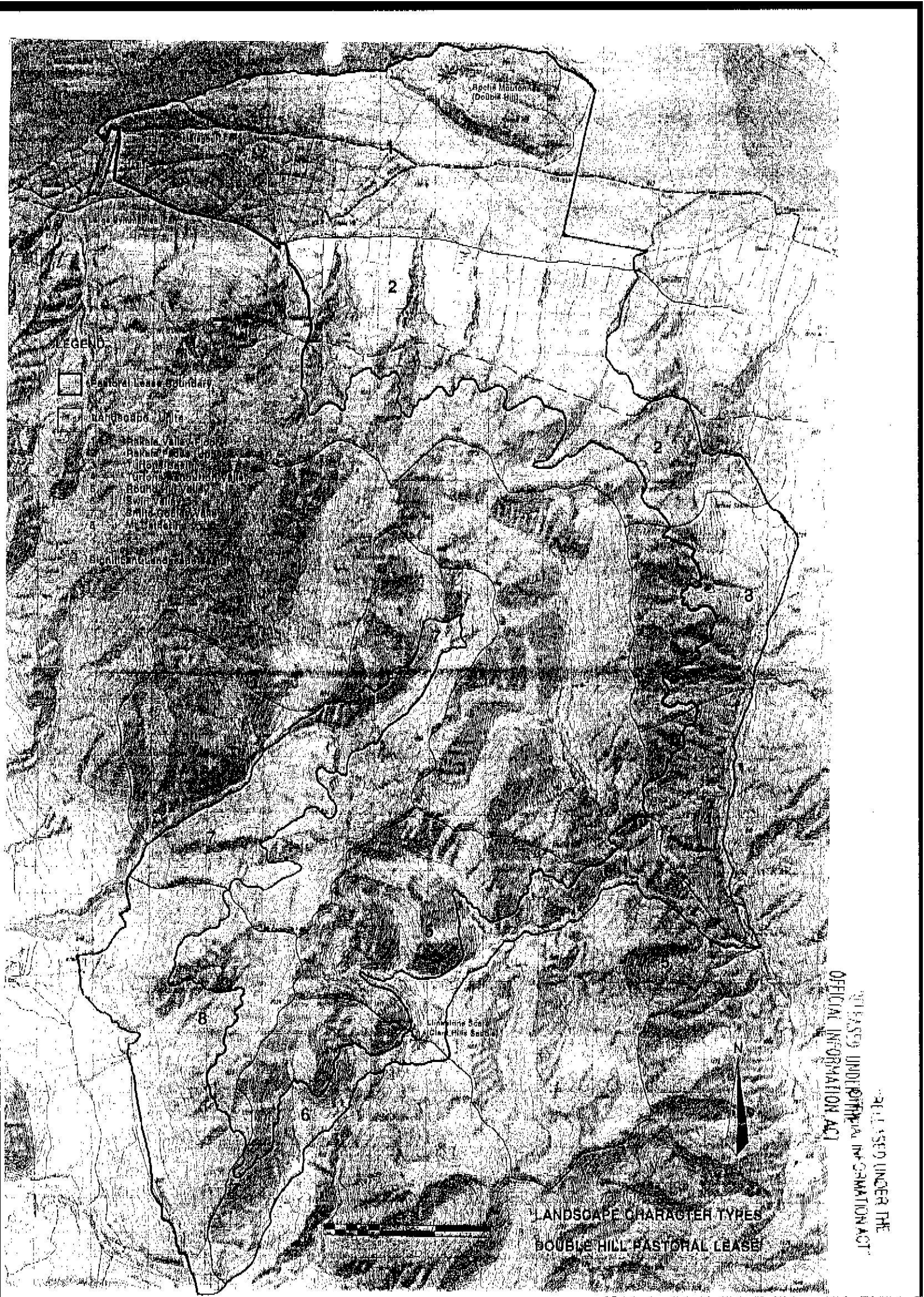
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-  Landscape value
-  Ecological value
-  Recreation value
-  R.A.P.
-  Legal boundary

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LEGEND

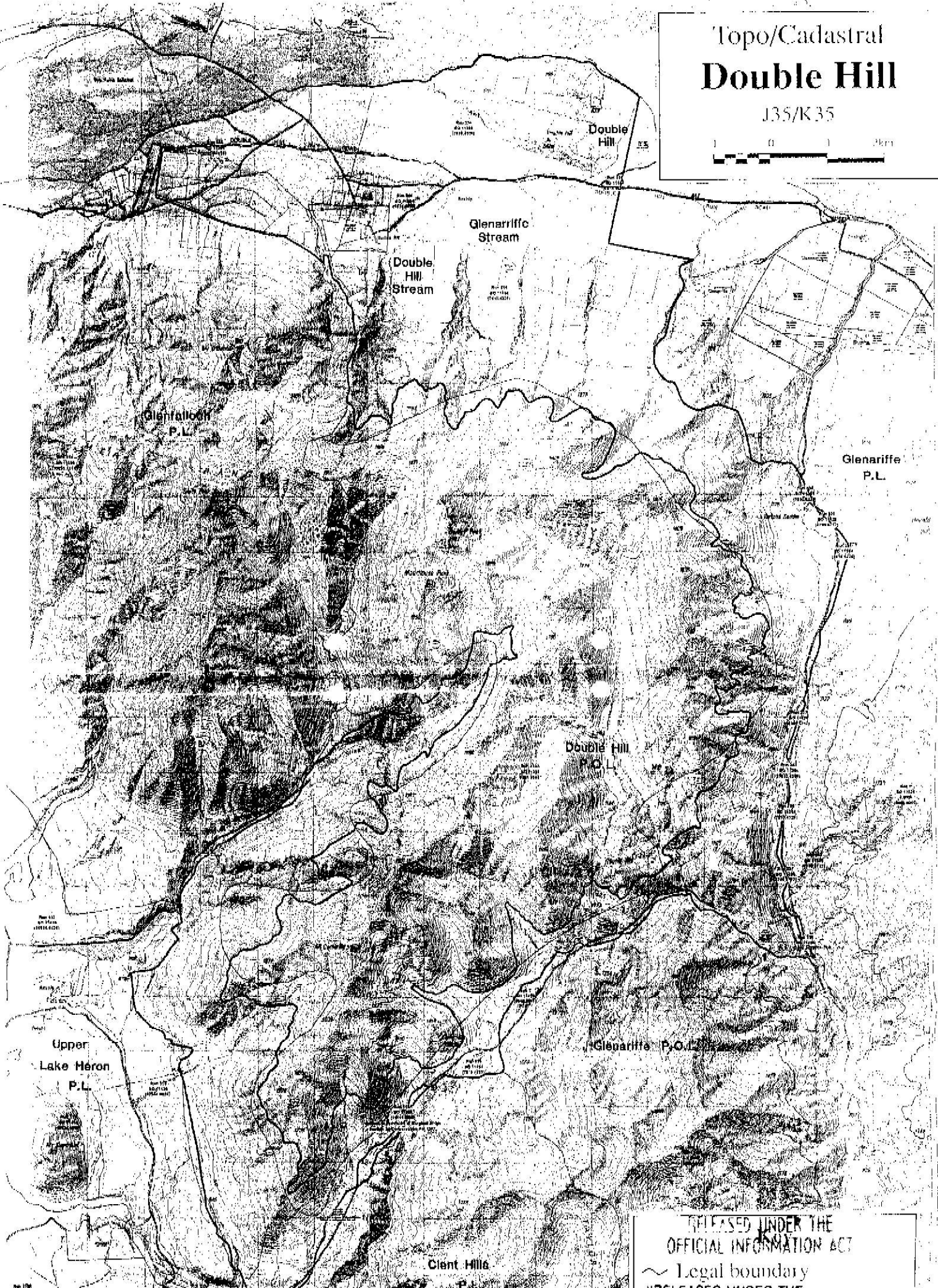
-  Pastoral Lease boundary
-  Landholder title
-  Parkers Valley
-  Parkers Hill
-  Tiltons
-  Tiltons boundary
-  Bourkes Valley
-  Swin Valley
-  Smiths Valley
-  Mt. Dora
-  Significant landscape

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LANDSCAPE CHARACTER TYPES
 DOUBLE HILL PASTORAL LEASE

Topo/Cadastral
Double Hill

J35/K35



Glenarriffe Stream

Double Hill Stream

Glenfalloch P.L.

Glenarriffe P.L.

Double Hill P.O.L.

Glenarriffe P.O.L.

Upper Lake Heron P.L.

Clont Hills P.L.

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~ Legal boundary
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