Toitu te whenua
Land Information
New Zealand

Crown Pastoral Land Tenure Review

Property: Mt Oxford

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 June 2003

MT OXFORD CROWN LAND

CONSERVATION RESOURCES REPORT

DOC CONSERVATION RESOURCES REPORT ON TENURE REVIEW OF MT OXFORD CROWN LAND

PART 1

INTRODUCTION

The Mt Oxford Crown Land block (ex-pastoral lease) occupies 1655 ha in the Canterbury foothills about 10 km north of Oxford. Three parallel streams (Keats, Oxford and Big Ben Streams) drain the eastern slopes of Mt Oxford and flow into the Ashley River in the convoluted Upper Ashley Gorge. A further 123 ha of Crown Land (ex-Licence to Graze LG 565) adjoins the south western corner of the lease above Big Ben Saddle. This area drains into a small tributary of Coopers Creek. Oxford Hill (1340m a.s.l), at the head of Keats Stream, is the highest point on the lease. A small station hut is located at the eastern most point of the lease near the Ashley River and marks the lowest point at 365m a.s.l.

Extensive erosion is evident on the drier slopes of the Keats Stream catchment. In the mid 1980's a North Canterbury Catchment Board Run Plan recommended the Keats Stream catchment be fenced and retired from grazing in response to concerns about ongoing erosion in this valley.

The property lies within the Oxford District in the Canterbury Foothills Ecological Region. This district has not been surveyed as part of the Protected Natural Areas Programme.

The property adjoins the Oxford Conservation Area to the west and Mt Pember Pastoral Lease to the north. The Ashley River forms the eastern boundary and freehold land lies to the south and east of the property.

PART 2

INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

2.1 Landscape

The Mt Oxford block is located within the front rangelands that overlook the North Canterbury plains, about 10km north of the rural township of Oxford.

The Crown Land is within the Oxford Ecological District, which is typified by complex geology, broken topography, and a moderate rainfall that supports a diverse mixture of vegetation types. A distinctive feature of this property is the recurring emergence of side valleys into the main valley system.

The property contains a diverse mixture of plant associations, many of which have been induced by previous human intervention. The differences between the varying mosaics of plant communities would gradually become less distinguishable as more areas, through secondary succession, revert back to native shrublands. After this seral phase the reversion back to a natural state would tend to become slower as the beech seedlings emerge through the manuka shrubland canopy.

For the assessment of significant inherent landscape values the area is divided into five landscape units:

Landscape Unit 1 – Ashley Gorge Faces

This landscape unit incorporates the steep eastern faces that overlook the Ashley River which flows out to the outwash plain by way of a winding gorge. As well as the steep gorge faces, this unit includes the lower section of the three main side valleys that merge with the Ashley River gorge within the boundaries of the Mt Oxford crown land. The lower sections of the Big Ben Stream, Oxford Creek and Keats Stream are all highly visible from the Lees Valley Road, which follows a tortuous route around the face opposite Mt Oxford, at about the 600m. contour.

The cross-profile of the Ashley River gorge is asymmetrical with evenly pitched slopes being the dominant feature on the Mt Oxford side, while on the opposite side of the river there is a sequence of narrow spurs around which the river takes a circuitous route. The main side valleys emerge with the Ashley River by way of narrow v-shaped gorges. The Keats Stream confluence is the most striking as it enters the Ashley River via high outcropping of stratified rock. The gorge-like characteristics continue for another 6km east of the property.

The vegetation pattern is strongly influenced by previous pastoralism with the existing ground cover being a mosaic of plant communities that are at varying stages of regeneration. The general pattern in the succession cycle back to a natural state consists of manuka shrublands on the dark faces supplemented by bracken fern and Coprosma. On the opposite sunny slopes modified short tussock grasslands are the main cover with the lower sunny slopes frequently being colonized by manuka and gorse. On the steeper dark faces where the narrow ridgelines have formed a natural fire control line there still remain large tracts of beech forest.

The most conspicuous human modification is the access tracking, with the zigzag track on the steep face between Oxford and Keats Stream compromising the Ashley River gorge's landscape/scenic/recreational values.

This unit conveys moderately high landscape values attributable to the legibility of the natural processes, especially the recurring emergence of the side valleys into the main Ashley valley. This unit is also memorable owing to the strong sense of visual enclosure produced by the steep-sided slopes, while the mixture of plant communities is also a distinctive feature.

In many respects this unit typifies the interface between natural areas and human intervention with the plant communities being a mosaic of varying successional stages. These stages follow a sequence of rapid reversion of fern land into manuka shrubland, followed by a slower phase into the beech forest. The diversity and the dynamics in the composition of the vegetation is a feature of this unit. The gorse has a modifying effect on the quality of the landscape.

This unit has a high visual resource value owing to the dramatic river gorge that can be seen from the elevated Lees Valley Road that sidles around the opposite side of the gorge. This road provides views into the side valleys of the property.

The activities and changes in land use that have the potential to have an adverse effect on this unit include:

- Further infestation of gorse. The existing patches of gorse should be contained and possibly used as a nursery crop to help expedite the successional process back to a climax native cover.
- Introduction of a monocultural land use such as plantation forestry into such a complex landscape.
- Further loss and decline of beech forest through fire and understory grazing of stock.
- Further high impact tracking, especially where zigzags are required to gain immediate height.
- Loss of semi wilderness characteristics through the introduction of conspicuous "built" elements.

Landscape Unit 2 – Keats Stream

This unit includes the upper and mid sections of Keats Stream, which is a major catchment at the northern end of the pastoral lease. The highest point within this catchment is Oxford Hill (1,340m.asl.), which forms a prominent dome at the head of the valley. Extending out from this high point are two parallel ridgelines, which gradually fall towards the Ashley River gorge in the east.

This side valley contains a series of small side spurs around which the Keats Stream winds before entering the Ashley River via a constricted gorge. Within the upper catchment on the drier slopes there is extensive wind erosion with some individual scree chutes spanning at least half the length of the side slopes.

The vegetation is influenced by previous pastoralism, with a large proportion of the darker slopes still clad in beech forest having escaped earlier fires. The margins of the forested area are convoluted and tend to follow old fire lines. On the opposite drier sunny slopes the composition of the vegetation gradually changes, depending on altitude and stability of the underlying geology. The mid section of these slopes is covered in modified short tussock with extensive Coprosma shrublands recruiting the base of the slopes. These shrublands probably occupy the original geographic range of the beech forest. On the drier slopes there are still several large remnants of beech forest, usually contained within the natural folds that have sheltered the forest from periodic fires. Above the 900m contour there is a change in the vegetative cover from a sward of grasslands to patchy manuka shrublands. These shrublands are supplemented with Hebe and Coprosma.

This unit has moderately high landscape values due to the presence of a large tract of beech forest on the shady faces and within fire sheltered pockets on the sunny slopes. The bottom section of the valley has wide and scenic characteristics, with the stream emerging into the main valley by the way of a narrow gorge.

This side valley, in a wider context, makes a positive contribution to the original character of the Oxford Ecological District, with inherent values becoming more coherent since the valley has been retired from all grazing.

This unit has moderate visual resource value as views from the Lees Valley Road into the Keats Stream catchment are interrupted due to the v-shaped characteristics of the lower section of this side valley.

The activities and changes in land use that have the potential to have an adverse effect on this unit include:

- Further encroachment of gorse on the sunny slopes either in block form or as outliers.
- Any intervention in the natural regeneration of the manuka shrublands back to climax beech forest.
- Spread of wilding pines (there are cone-bearing pines in close vicinity to this catchment).
- Any "built" elements that would compromise the existing semi-wilderness qualities of this catchment.

Landscape Unit 3 – Oxford Creek

This unit comprises the upper and mid sections of the Oxford Creek valley which is the central major catchment that feeds into the Ashley River on the property. The cross- profile of the valley is typically narrow and v-shaped. At the head of the valley there are a number of angulated side spurs that create small tributary catchments that link up at about the 600m contour to form the main stem of the Oxford Stream. In the mid reaches the stream flows over a bed load of loose gravel before connecting up with the Ashley River by the way of a narrow gorge.

Similar to the adjoining side valleys the vegetative cover within the Oxford Stream catchment is in an induced state, primarily attributable to the effects of previous pastoral farming. The shady slopes are clad in alternating remnants of beech forest and advanced manuka shrublands, with a presence of prickly shieldfern and Coprosma. The higher small tributaries are covered in Cassinia shrublands supplemented by Dracophyllum and Coprosma. On the opposite sunny mid slopes there is strong reversion back to a natural state with gray native shrublands starting to recruit the short tussocklands. Similar to the neighbouring Keats Stream catchment these shrublands are re-establishing over the natural geographic range of the mountain beech. In the headwaters of the catchment, above 800m.asl, the vegetative cover is predominantly modified short tussock, interspersed with depleted snow tussock and the occasional golden speargrass and Coprosma.

Several tracks have been formed to provide stock access to the upper and middle sections of this valley, with the tracks skirting above pockets of sheet erosion.

The landscape values contained within this unit are moderately high owing to the large component of native ground cover and natural processes dominating over human occupation. Although the landscape does not have any vivid or outstanding features it is representative of the front rangelands with its v-shaped profile and diverse mosaic of plant associations.

This unit has high visual resource value owing to the strong sense of visual containment with views from the Lees Valley Road being channeled towards the end of this valley.

The activities and changes in land use that have the potential to have an adverse effect on this unit include:

- Any spread of wilding pines.
- Encroachment of gorse either in block form or as outliers.
- Further zigzag tracking.
- Any impediment to the natural regeneration of the beech forest.

Landscape Unit 4 – Big Ben Stream

This unit encompasses the large basin-like valley at the southern end of the property. The highest point is 800m.asl. on the southern boundary ridgeline that drops rapidly to form the Big Ben Saddle which is the watershed between the East Branch Coopers Creek and Big Ben Stream.

This side valley is characterised by having a wide v-shaped cross section, which results in more rounded topography. These traits are possibly most conspicuous on the rolling country around the Big Ben Saddle. Close to the summit there is an occasional outcropping of rock along with stable scree faces.

Leading off the south ridgeline there is a lateral spur that descends to the Ashley River. This prominent spur forms the property's southeast boundary.

The vegetative pattern within this unit is more marked than in the other side valleys with a clearer definition between the various plant associations. The shady slopes are clad in almost continuous beech forest with the outer edges being convoluted by previous fires. The unnatural gaps along the forest margins are being colonized by manuka shrublands, while modified grasslands occupy the enclaves within the upper limits to the beech forest. At the head of the valley there are substantial fingers of beech that extend from the main forests.

On the opposing sunny and gentler slopes the vegetative cover is dominated by modified short tussock with the condition of the grassland depending on stock pressure. Over these sunny slopes there is considerable gorse infestation, which in some areas is checking the natural regeneration back to beech forest.

There is a substantial network of tracks that link up at the Big Ben Saddle where access to the property is obtained via Sladdens Bush Road

This unit contrasts markedly with landscape units 2 and 3 owing to the overall impression of spaciousness of the upper basin. The inherent values have been reduced due to the high exotic component of the grasslands and the wide distribution of gorse over the "easy" country. Over the corresponding darker faces the continuous beech forest acts as a striking foil against the more modified pastoral country.

This unit has a moderately high visual resource value as extensive areas of the catchment can be viewed from various vantage points along the elevated Lees Valley Road.

The activities and changes in land use that have the potential to have an adverse effect on this unit include:

- Decline in the ecological health of the beech forest.
- Further infestation of gorse across the modified short tussock grasslands.
- Further tracking over the thinner soils on the slopes.

Landscape Unit 5 – ex-LG 565

This unit encompasses the 123 hectares in ex-LG 565. This block of land abuts landscape Unit 4 to the north-east and the Oxford Conservation Area to the north-west. The unit's most prominent physical feature is the narrow ridgeline that projects out from the high country and then abruptly falls to a secondary ridge at the southern

end of the block, where the parcel of land is a mere "tongue" of broken country. The south-east corner of the unit comprises the upper section of a basin, which is one of the primary sources for Coopers Creek. This unit forms part of the band of high hills that is the transition between the North Canterbury front rangelands and the outwash plains.

The vegetative pattern over this broken country is relatively fragmented, with a large percentage of the main ridgeline being clad in mountain beech forest with a presence of totara. The balance of the area is clad in either manuka shrublands or broadleaf with short tussock grassland above Big Ben Saddle. There is gorse below the track up to Big Ben Saddle.

Around the perimeters of the unit plantation forestry is increasingly becoming a dominant land use with much of the marginal grazing country now being planted in blocks of pines.

This small unit should not be considered as a separate adjunct but as a significant component of the wider natural area network. Being contiguous with both the Oxford Forest Conservation Area and the Mt Oxford crown land block, an opportunity is provided to establish a cohesive natural area, which has boundaries that are both meaningful in a landscape and land management context.

This unit has a moderately high visual resource value as it forms the middle ground that can be viewed from many of the roads that criss-cross the plains. Additionally the prominent ridgeline forms the immediate backdrop when viewed within the Coopers Creek catchment and public car park area.

The activities and changes in land use that have the potential to have an adverse effect on this unit include:

- Further infestation of gorse.
- The spread of wilding pines through shrublands.
- Any major changes in land use to the main ridgeline, which is visually prominent from a number of vantage points.

2.2 Landforms & Geology

The soils are skeletal yellow brown earths derived from greywacke-sandstones. The steep greywacke mountain slopes are well dissected and quite rugged with exposures of bed rock and some sheet erosion. An erodable substrate derived from shattered argillites, is present in upper sections of Keats Stream and to a lesser extent in the upper Oxford and Big Ben valleys. Intrusive volcanic bedrock is exposed in low bluffs where it meets the Ashley River eg. the north side of Keats Stream where it enters the Ashley River.

2.3 Climate

The Oxford District generally receives a rainfall of 1000-1200mm per annum. Summers are warm with occasional hot fohn north-westerlies. Winters are cool with frequent frosts and occasional light snowfalls.

2.4 Vegetation

2.4.1 Original vegetation

Most of the property would have been covered in beech forest in the pre-European era, with some alpine vegetation around Oxford Hill above the natural bushline.

2.4.2 Vegetation communities

The present vegetation cover is dominated by beech forests on the shady faces of all four catchments on the property. The advent of pastoralism resulted in burning off most of the forest cover on the sunny faces apart from protected gullies where the forest escaped the fires. When the sunny faces were cleared of forest, short tussock grassland would have colonised the slopes. However the steepness of the terrain, good rainfall, unstable substrate and a plentiful indigenous seed source has combined to encourage a rapid regeneration of the indigenous scrubby vegetation at the expense of productive farmland. In the absence of fire, beech saplings would eventually emerge through the scrub and slowly re-establish as beech forest.

At present, some of the sunny faces are covered in considerable areas of short tussock grassland with tongues of grey shrubland particularly in the gullies and on the bush margins where succession and regeneration is taking place. The sunny faces of the Big Ben catchment have the most extensive areas of short tussock grassland with the other catchments having smaller grassy clearings that are rapidly being recolonised by shrublands.

The vegetation communities may be summarised as follows:

- Forest
- Shrublands
- Tall tussock grassland / herbfield
- Adventive and short tussock grasslands

Forest

Over half the property is dominated by beech forest (mountain and black beech *Nothofagus solandri*) growing particularly on the shady faces and sheltered gullies. The forest is tall at lower altitudes and becomes shorter and more stunted at higher altitudes and on exposed spurs. Sometimes podocarps are present. Young totara (*Podocarpus totara)* are present near the bushline at the head of Oxford Creek and broadleaf *(Griselinia littoralis)* seedlings are common. Tall totara trees surrounded by many totara saplings are present on the edge of the beech forest near Ashley Saddle in the headwaters of Coopers Creek (East Branch).

Pockets of rimu (*Dacrydium cupressinum)* are likely to be present in sheltered gullies amongst beech forest as they are common in gullies of the nearby Mt Thomas and Mt Grey Forests (Jane, 1985) and also in the adjacent Oxford Forest (Jane, 1987). Pokaka (*Elaecarpus hookerianus*) is present at the southern end of ex-LG 565 along with weeping matipo (*Myrsine divaricata)*, lancewood *(Pseudopanax crassifolus)*, mahoe *(Melicytus ramiflorus)* and *Coprosma propinqua* on the edge of beech forest. In damp gullies in beech forest five finger *(Pseudopanax arboreus)*, broadleaf, marbleleaf *(Carpodetus serratus)* and numerous ferns are common. Where beech forest grows on the dry rocky substrate there is only a sparse understorey of mingi mingi (*Leucopogon fasciculatus*), *Coprosma linariifolia*, lancewood and *Corokia*

cotoneaster. Scattered groups of cabbage trees (*Cordyline australis)* are present on open sites amongst grey scrub or in the short tussock grassland. In other areas glades of marbleleaf trees occupy similar open situations. Broadleaf trees are common particularly where succession is advanced.

Many of the beech tree trunks are covered by the black sooty mould fungus that results in the production of honey dew.

Shrublands / Grey Scrub

Grey scrub is the term used to describe a mixed community of divaricating shrubs which have an overall fine-textured, bushy, grey-brown appearance. On this property these shrublands occupy land that once supported beech forest and are the first step in the regenerating process returning the induced grassland to shrubland and eventually beech forest. The grey scrub often forms a mosiac with manuka, bracken and gorse on sunny slopes. The deciduous *Fuchsia excorticata* and tutu (*Coriaria sarmentosa)* occupy damp well drained depressions on sunny slopes and their reddish hue adds to the mosaic of colour in the scrub.

The grey scrub on the property contains a diverse array of coprosma species including *Coprosma propinqua, C. pseudocuneata, C. sp 't', C. intertexta* and *C. obconica*. Other divaricating shrubs commonly present include *Aristotelia fruticosa, Pseudopanax anomulus, Corokia cotoneaster* and matagouri (*Discaria toumatou*). Weeping matipo is occasionally present on bush margins and *Melicytus alpinus* occupies dry rocky sites in short tussock grassland.

Scattered plants of cottonwood *(Ozothamnus fulvida)* and *Gaultheria antipoda* occur in open situations. Broadleaf, matagouri, fuchsia, marbleleaf and mahoe are common near bush margins. *Dracophyllum acerosum* forms a dense and colourful mosaic above the beech forest at the head of Keats and Oxford Streams. Snow totara *(Podocarpus nivalis)* is occasionally present on exposed sites.

Gorse forms a significant cover on some parts of the property. The worst areas of gorse infestation are on ex-LG 565 below the 4wd track which provides access to the property, in the Ashley Gorge on the faces between Big Ben and Keats Streams and on the sunny grassland faces of Big Ben Stream. From a conservation point of view gorse is not a problem where there is a nearby seed source of indigenous trees and shrubs. It serves as an excellent nurse crop and will rapidly be overtopped and shaded out by the indigenous vegetation. This is already happening in the Ashley Gorge where the gorse is completely surrounded by native shrublands and beech forest. Regeneration would be slower where grassland surrounds the gorse as in some areas of the sunny faces of the upper Big Ben Stream. However, even here regeneration of the indigenous vegetation would eventually occur if natural succession was allowed to take place.

Tall tussock grassland / herbfield

The only alpine vegetation on the property is around the trig and telecommunications tower on Oxford Hill. A mixed tall tussock grassland / herbfield covers the area dominated by slim leaved snow tussock (*Chionochloa macra*) and *Dracophyllum acerosum*. Celmisias (*Celmisia lyallii, C. spectabilis, C. angustifolia, C. discolor*) are scattered throughout. Other small woody plants and herbs present include *Pentachondra pumila, Gaultheria novae-zelandiae, G. crassa, Kelleria dieffenbachii, Myrsine nummularia, Lycopodium fastigiatum* and *Coprosma atropurpurea*. Gentians, blue tussock (*Poa colensoi*) and woolly moss (*Racomitrium lanuginosum*) are

common intertussock species. Lower down mixed Dracophyllum / tall tussock forms a dense cover with occasional *Astelia nervosa, Aciphylla aurea, Hebe odora* and *Hebe venustula* scattered throughout.

Adventive and short tussock grasslands

Short tussock grasslands clothe parts of the sunny faces of the three valleys draining into the Ashley River. However, on the Keats and Oxford faces recolonisation by manuka and coprosma shrublands is well advanced. Extensive areas of short tussock grassland still exist on the sunny faces of the upper Big Ben Valley and extend around on to the ex-LG above Big Ben Saddle. On the Big Ben faces there are patches of gorse and regeneration of manuka and coprosma scrub is well advanced in places, especially in the gullies. Gorse is particularly dense on the middle section of the 4WD track leading down the boundary spur of Big Ben Stream.

The short tussock grassland is dominated by silver tussock *(Poa cita)* with the exotic grasses browntop *(Agrostis capillaris)* and sweet vernal *(Anthoxanthum odoratum)* providing the main intertussock cover. Fescue tussock *(Festuca novae-zelandiae)* is present on higher slopes. There is no sign of any clover or other oversown species. Of particular note is the virtual absence of hawkweeds. Only one very small patch was noted on a 4WD track.

Areas of short tussock grassland extend up to Ashley Saddle. Above this altitude grassland areas are dominated by tall tussock.

2.5 Fauna

Birds seen or heard during the vegetation and landscape surveys were noted. These included the New Zealand falcon, bellbirds and grey warblers. Other native birds likely to be present include harrier hawks, fantails and paradise shelducks.

Shortfin eels, longfin eels, torrentfish, koaro, inanga, Canterbury galaxias, upland bully, common bully, giant bully, Chinook Salmon, Common Smelt and Brown Trout have all been found in the Ashley catchment and could expected to be in Big Ben, Oxford and Keats Streams.

2.6 Historic

There are no known historic sites within the Crown Land. There is a small station hut near the Ashley River at the eastern most point of the property but this is just outside the Crown Land boundary.

2.7 Public Recreation

2.7.1 Physical Characteristics

The property covers the eastern slopes of Mt Oxford. Well defined spurs descend eastwards down to the Ashley Gorge. The spurs and tributaries of the ex-LG descend southwards into Coopers Creek. The area has considerable potential for tramping and mountain biking but is not readily accessible from public roads. To gain access from the Lees Valley Road would require wading up the Ashley River from the Middle bridge in the Ashley Gorge or dropping down off the Lees Valley Road through freehold land to the River and crossing the River to the block.

2.7.2 Legal Access

The main vehicle access on to the property is to Big Ben Saddle via a 4WD track extension of Sladdens Bush Road. There is a legal road, which the formed track may follow. There is also a legal road (unformed) access up the Ashley River from Middle Bridge in the Ashley Gorge. The bottom of the ex-LG can be accessed by a legal road extension of Mountain Road.

2.7.3 Activities

There is considerable use of the Mt Oxford area by walking groups, particularly school and scout groups based in nearby lodges. The western boundary of the Crown Land is a popular walking route, in conjunction with trips over Mt Oxford.

From a public perspective this property has considerable potential, either to be enjoyed in a passive sense from the viewpoints along the Lees Valley Road, or as a backdrop for water-based activities such as white-water kayaking. The property also provides the potential to expand the local tramping and mountain biking network. Trips are possible over the spurs and valleys of the property from Lees Valley over Mt Oxford to Coopers Creek or linking with the Wharfdale Track. From Oxford Hill panoramic views may be gained of Lees Valley, the mountains of the Puketeraki Range and Banks Peninsula across the plains.

Although there are many dozed fencelines and tracks originating at Big Ben Saddle none are presently drivable apart from 2km along the track leading east along the boundary spur. However, these tracks could be useful for mountain biking.

Hunting (deer, pigs) is also popular in the area.

PART 3
OTHER RELEVANT MATTERS & PLANS

3.1 Consultation

Meetings were held in Timaru on 10 September 2002 and in Christchurch on 11 September 2002 with non-government organisations to discuss properties in the tenure review programme. Comments on Mt Oxford included:

- Good vegetation around the top of Mt Oxford.
- The river is a natural boundary with access up from the middle bridge.
- The area is significant to local hunters as it backs onto Conservation Areas.
- It would be good to have a contiguous protected land system from Mt Oxford to Mt Thomas.
- Access to the tops would be good.
- Marginal strip issues need to be resolved

3.2 District Plans

The Waimakariri District Plan includes the property in the "Ashley Gorge Outstanding Landscape Area". The protection of ridges, prominent landforms, vegetation cover and views are the main objectives of this landscape area.

3.3 Conservation Management Strategies & Plans

The Mt Oxford Crown Land and ex-LG 565 are within the Puketeraki unit of the Canterbury Conservation Management Strategy. Relevant objectives for this unit are listed as:

- To identify the significant native vegetation and threatened species.
- To use effective and efficient means to protect a representative range of indigenous biodiversity.

PART 4

MAPS ETC.

4.1 References cited

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Wilson, H.D. 1991. Distribution maps of small leaved shrubs in Canterbury and Westland. *Canterbury Botanical Society Journal 25:* 3-81.

4.2 Illustrative Maps

4.2.1 Topo/Cadastral (attached)

4.2.2 Values (attached)

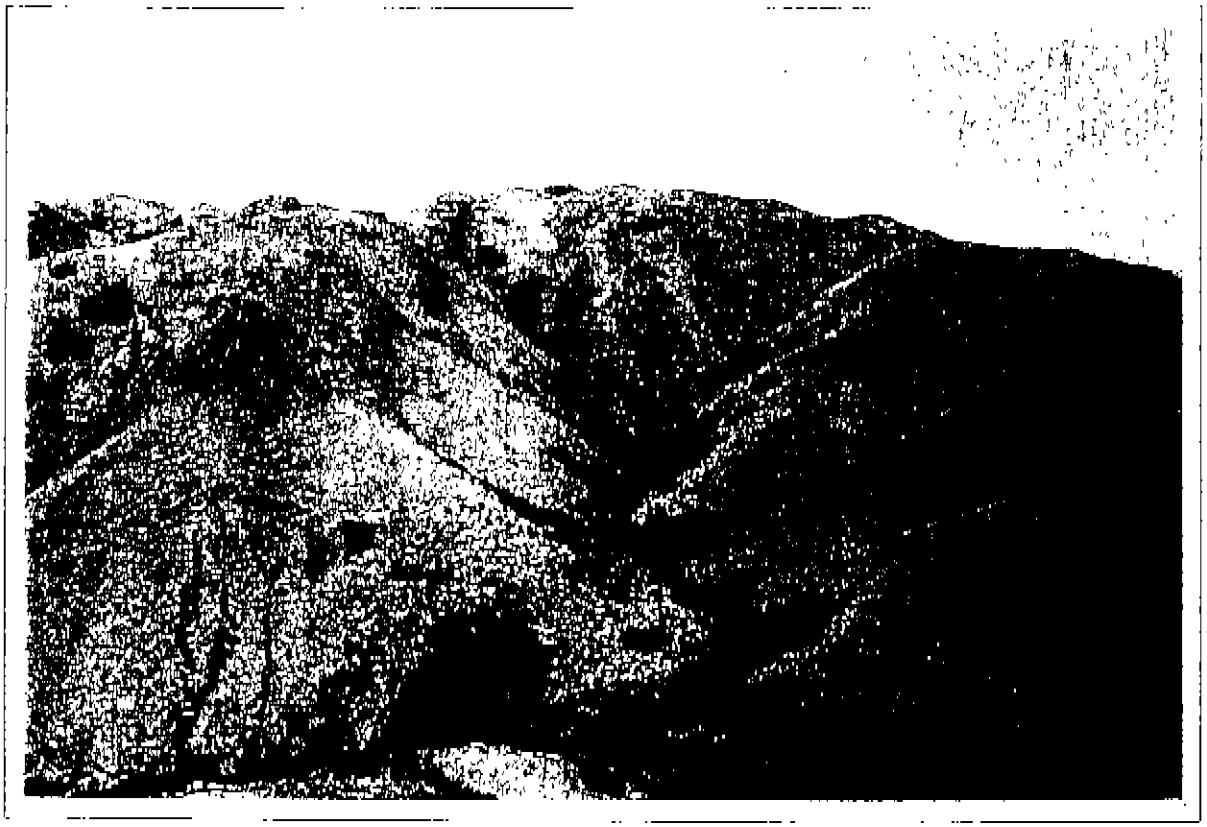
4.2.3 Landscape Units and Photos.

LU1: Looking up the Ashley River Gorge, directly above the elevated Lees Valley Road. The most striking feature is the mosaic of varying plant communities, which reflect the different stages of secondary succession back to beech forest.

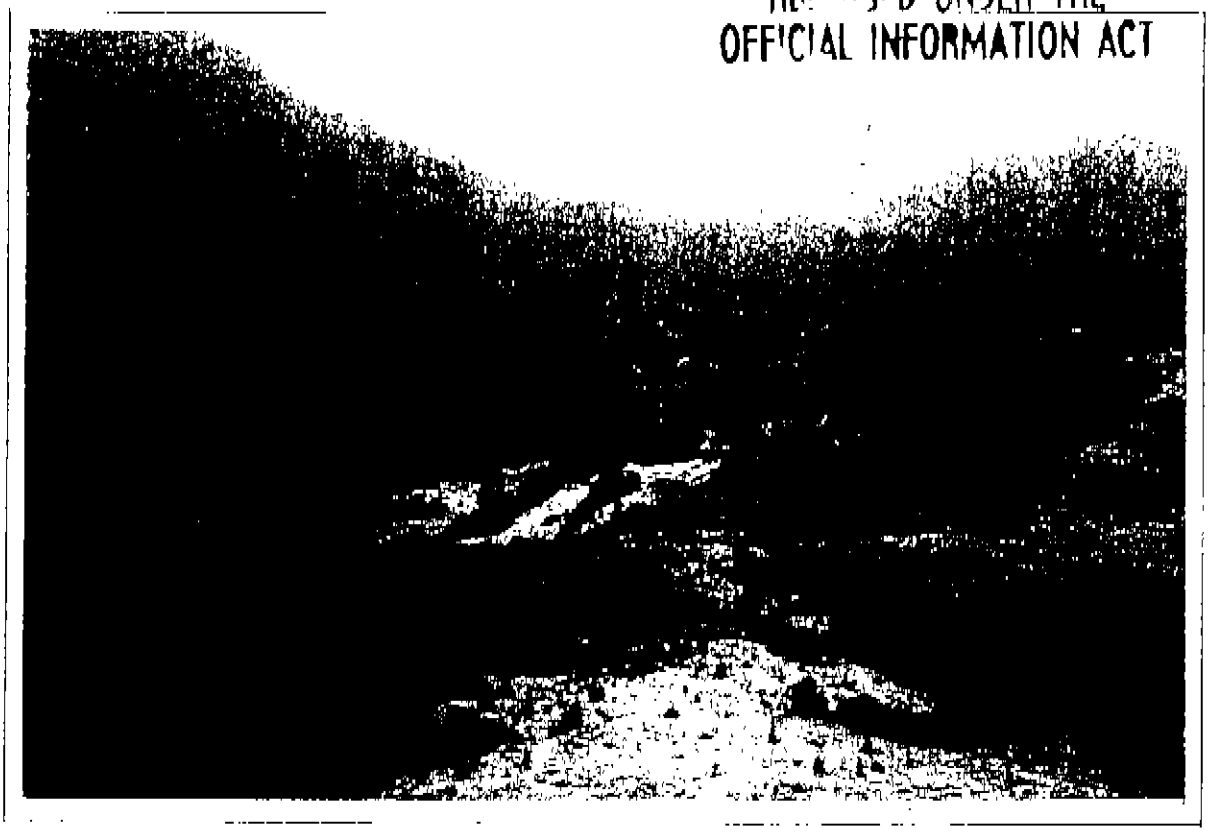
LU1: The emergence of Keats Stream into the Ashley River Gorge. The most dominant landscape element is the steep sided slopes which help to convey a strong sense of visual containment directing views up the side valleys. Note the extent of gorse infestation.

LU2: Looking north-east, down the Keats Stream valley, with Ladbrooks Hill in the background. The extent of eroding land is confined to the sunny slopes while the opposite darker faces are clad in beech forest and advanced shrublands. This catchment has been retired from grazing. Photo/DoC.

LU3: Looking upstream, lower reaches of the Oxford Creek catchment. The diversity in ground cover is strongly influenced by aspect, land stability, and previous farming activities. It would appear that the unimproved grasslands are gradually being recruited by gray shrublands.



LU4: The Big Ben catchment, close to the saddle, has a more rounded open character that makes this side valley more amenable to pastoral farming. Mixed shrublands are recruiting the deeper gullies and sunny faces. Gorse infestation is a major issue on this gentler terrain. Photo/DoC.



LU5: The lower "tongue" of LC565 where the beech forest covers the prominent ridgeline, but the vegetation becomes more fragmented in the lower country. The south-east corner would possibly be conducive to a production land use such as forestry.