# DOC CONSERVATION RESOURCES REPORT ON TENURE REVIEW OF DINGLE BURN PASTORAL LEASE, HAWEA CONSERVATION AREA AND CROWN LAND COMPRISING THE HUNTER VALLEY RIVERBED

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## PART 1

## INTRODUCTION

1.1 The lessees of Dingle Burn pastoral lease have applied to the Commissioner of Crown Lands for a review of the property's pastoral lease tenure.

Dingle Burn (23,707 hectares) is a large pastoral lease which stretches some 47km northwards from Timaru River to Bull Flat in the Hunter Valley. Much of the property lies above 1000m. Numerous peaks at the heads of catchments which flow into Timaru River exceed 1500m, whilst much of the ridge which links Mount Jones in the south to Mount Barth in the north exceeds 1800m. The highest point on the property is at 2405 m near the summit of Mount Barth (which lies just outside the property boundary).

Eleven areas of beech forest gazetted as conservation stewardship land (ex Hawea State Forest) in the Timaru River and Dingle Burn catchments are surrounded by the pastoral lease and have no legal access. No other land within the lease is protected for conservation purposes. The stewardship land has been included in the review to rationalise boundaries when and if required. Crown land comprising the braided Hunter Valley Riverbed is described in this report as it is recommended for inclusion in the tenure review.

Flat land is confined to:
(a) A narrow ribbon on the shores of Lake Hawea between Timaru River and the mouth of the Dingle Burn.
(b) An extensive area of alluvial flats above the mouth of the Dingle Burn.
(c) A ribbon of flats and alluvial fans on the shores of Lake Hawea between the mouth of the Dingle Burn the Hunter River mouth.
(d) The Hunter River Valley delta.
(e) River flats on the eastern bank of the Hunter River Valley up to the property boundary at Bull Flat.
(f) The braided riverbed of the Hunter River.

The property is in the Lakes Ecological Region and the Wanaka and Huxley Ecological Districts. The homestead is 28km by road from Hawea Flat. No Protected Natural Areas Programme surveys (PNAP) of these ecological districts have been carried out.

The pastoral lease was acquired by the Meads from the Sarginsons in 1988. The following points are also of historical relevance:

1. Dingle Burn Station was originally part of a run known as Timaru River Station and was initially a 21 year lease issued in 1895.

2. Beech forest remnants within the lease were acquired as State Forest in 1920.

3. Land was taken for Lake Hawea hydro development in the 1950's after the Crown had purchased the property and Dingle Burn pastoral lease was issued in 1956.

4. Until 1963 the only access to Dingle Burn homestead was across the lake or via the Hunter Valley. Despite advice that a road could not be constructed, a private road was built from the current legal road end (3.5km beyond Timaru River) to the homestead.

5. A Soil and Water Conservation Plan was prepared in 1966 and partially implemented. Fencing was constructed on the northern part of the property above Lake Hawea. The run plan continued through until the mid 1970's.

6. 3.5 km of the road was legalised as far as a set of stock yards in 1981.

# PART 2

# INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

## 2.1 Landscape

The property forms part of the Inland Wanaka/Hawea Lake Basin landscape unit. Outstanding landscape characteristics distinguish this zone and are an essential part of the basis for its tourism and recreation uses.

The principal elements of the landscape are the dramatic landforms, which are summarised in the Otago Conservation Management Strategy as being:

- High mountains, often with spectacular and varied forms.
- Large lakes and rivers with clear water and attractive blue/turquoise colour in sunlight.
- Swift rivers in a dramatic setting.
- Bold glacial outwash terraces whose flat surfaces provide stark contrast to the steep, eroded sides of the mountains.
- Often rugged landforms are set off against smooth or rippling tussock grassland slopes.

The property comprises or borders all these elements.
Glaciation has been a major factor in shaping the appearance of the landscape.
Also significant is the pattern of vegetation. This pattern is the result of a rainfall gradient from east to west and north to south and from the effects of burning (Polynesian and European) and from grazing.

The property can be divided into three sub-units of the larger Inland Lake Basin landscape unit. These include:

1 Timaru River and the southern mountains. This includes the southern mountain area of Corner Peak, Dingle Peak, and Maungatika and lake faces from Timaru River to the Peninsula

2 The lower Dingle Burn Basin and homestead area.

3 The Hawea, Hunter faces and river flats and mountain tops

For each landscape sub–unit the significance has been determined by assessing four key attributes which make up the landscape. (a) Intactness is the condition of natural vegetation and the degree of modification to natural processes (b) Coherence is the level of harmony visually evident between natural elements (c) Distinctiveness/Uniqueness is the elusive quality which makes a particular landscape visually striking (d)Visibility, although not a quality attribute is an important factor to consider when considering appropriate future management.

## 1 Timaru River and Southern Mountains

### Landscape character description

This large area is characterised by steep mountain slopes and tops, deeply incised dissected landform with bare rock, scree, tussock and extensive areas of beech forest associated with gullies and moist shady faces (primarily Conservation Land)
The Timaru River faces and tributaries are dark, very steep and support large (and expanding) areas of beech forest. Towards the lower end of Timaru River beech becomes more scattered although also expanding. Shrubland, bracken and *Hieracium* are also significant components.
The lake faces (Rocky Point to Timaru River) consist of lakeshore fans at the base of a very steep glaciated rocky face. At the southern end, a series of deep gullies descend from the high ridge supporting beech and shrubland, and below Corner Peak a sheer rocky escarpment.
Along the fans and toe slope repeatedly burnt bracken, pasture and tutu are the main land cover with small pockets of remnant shrubland.
Stone revetments below the bluffs on the Dingle Burn Road dating from the early pack track are of historic and cultural interest.

### Visual and scenic values

This unit has significant visual and scenic values due to the scale, height and grandeur of the mountains, but also the pattern and extent of beech forest and the smooth predominantly tussock covered upper slopes.
The heavily glaciated escarpment from Rocky Point to Timaru River is spectacular and is equivalent to Lake Hawea what the Remarkables are to Lake Wakatipu. The whole of the escarpment is a striking visual feature and focal point from the Wanaka Haast highway and from Hawea township.
The stone revetments below the Dingle Burn bluffs contribute visual and historic value

### Evaluation summary

| | |
|---|---|
| **Intactness** | Medium to high on upper slopes<br>Medium to low on mid to lower slopes<br>Many opportunities for landscape enhancement with removal of burning and grazing e.g. lake faces, and Timaru River Valley |
| **Coherence** | Medium to high<br>Degraded areas i.e. burnt over bracken and *Hieracium* infested land tend to detract and downgrade coherence |
| **Distinctiveness/ Uniqueness** | Lake face escarpment is highly distinctive<br>Remainder of unit is typical of areas around the Inland Lake Basin |
| **Visibility** | Lake faces and mountain tops highly visible. Timaru River and tributaries and Maungatika country have low visibility |
| **Significance** | Regionally significant |

## Lower Dingle Burn Flats / Fans / Basin and Peninsula

### Landscape character description

A small basin nestled between the southern mountains and the Mt Jones to Mt Barth ridge. It consists of flats, terraces, fans, a lagoon, and lumpy ice sculptured landform.

P cts of remnant shrubland including kanuka/manuka and wetland species along water bodies and water courses and at other sites protected from burning and grazing, including the Peninsula. Elsewhere it is primarily developed land.

The formative physical processes are very apparent in the landforms.
The Peninsula is a prominent landform feature displaying classic ice over-ridden characteristics.

**Visual and Scenic Values**

Striking geomorphic patterns, remnant native vegetation and developed farmland surrounded by high mountains and a lakeside setting combine to create a high quality agricultural landscape.

**Evaluation - Summary**

| | |
|---|---|
| **Intactness** | Low |
| **Coherence** | High |
| **Distinctiveness/ Uniqueness** | Medium. Typical of areas around the Inland Lake Basin unit |
| **Visibility** | Medium. Visible from lake and in distant views from State Highway |
| **Significance** | Regional significance |

**Hawea/Hunter Faces, river flats and mountain tops between Mount Jones and Mount Barth**

**Landscape character description**

The Hawea Hunter Valley faces consist of steep upper slopes, rocky tops, scree slopes, rocky bluffs contrasting with smooth slopes descending to the lake. Fans and toe slopes are a prominent feature along the lake edge. Bracken and rough pasture cover large areas with regenerating beech and shrubland within gullies, in bands and pockets elsewhere. The majority of the lower slopes below the fence are developed with green coloration dominant most of the year. Kanuka re-growth and some beech also occur on fans. Tussock is dominant on upper slopes.

**Visual and scenic values**

The Hunter – Hawea faces are significant as they are the eastern enclosing mountains to the Hunter Valley end of Lake Hawea. The remnant areas of beech forest and shrubland are significant visual features as is the pattern of forested gullies alternating with grassland and bracken
The Hunter Hawea faces are highly visible from the Wanaka–Haast highway and from the lake.

**Evaluation summary**

Large areas are modified and developed especially the lower slopes with a higher degree of naturalness on the upper slopes. Remnant beech and shrubland are important for landscape character and sense of place.
The lake faces are visually significant in terms of the broad Lake Basin landscape. There is great potential for rehabilitation and enhancement of this unit if burning and grazing were removed or reduced.

| | |
|---|---|
| **Intactness** | Vegetation modified over large areas. |
| **Coherence** | Medium |
| **Distinctiveness/ uniqueness** | Medium |
| **Visibility** | High |
| **Significance** | Significant in terms of the broader Lake Hawea Landscape<br>Regionally significant |

**Significance of landscape**

The size and scale of the Dingle Burn landscape is immense and visually impressive.
The property accounts for almost the entire eastern side of Lake Hawea and a significant part of the Wanaka / Hawea Inland Lake Basin.

The property's location adjacent to the lake and high visibility of the front faces from SH 6 and its potential for tourism based on the landscape resource contributes to the overall level of significance of landscape values.

Glaciation has left a major imprint on the landscape, which has been little altered by human activity.

Despite modifications to land cover through pastoralism, natural characteristics dominate. Large and expanding areas of beech forest and shrubland, as well as intact high altitude tussock land and alpine communities remain. Areas of native vegetation are very important to landscape character, especially on the lake faces

The Lake Hawea / Hunter Valley faces and the mountain tops contain the most significant landscape values on Dingle Burn Pastoral Lease due, primarily to their visibility and significance to the Lake Hawea environs.

Dingle Burn adjoins and contributes to the setting of large areas of conservation land with high landscape value; particularly in the Timaru River catchment, where landscape features of the pastoral lease are integral with the natural character of adjoining conservation lands.

## 2.2 Landforms & Geology

Much of the property is underlain by rocks of the Otago schist group, which is a metamorphic rock laid down in the late Paleozoic or early Mesozoic era as part of the New Zealand Geosyncline. Mountain building forces deformed the sediments, folded the bedding planes changing the texture of the rock, to a point where the original sedimentary structure has become almost unrecognisable. Underlying geology in the Dingle Burn and Timaru River catchments is dominated by greywacke and schist greywacke intergrades. Greywacke rocks

· · : thought to originate from a source separate from other rocks of the New Zealand Geosyncline. Whereas the other rocks have come from the west, greywacke is thought to originate from Western Antarctica.

The Hunter Valley has been over-ridden by glaciers to an altitude of approximately 1000m. During interglacial periods (including the present) the Hunter River has down cut through deep gravels deposited by rivers on the margins of the giant valley glacier and by melt water during periods of rapid glacial recession. Small terraces near the mouths of the Dingle Burn and the Timaru River indicate that this process has occurred on a smaller scale in these catchments. Fan talus occurs on the valley floors, with slumps and partly collapsed solifluction slopes apparent in some areas.

Moraines deposited at the maximum of the last glacial advance in the vicinity of the Dingle Burn mouth show a characteristically hummocky topography underlain by a bouldery till. These deposits result from the transport of schist and some greywacke from the mountains to the north and west by a glacier that filled the lake basin 15,000 to 20,000 years ago. Before this event, within the last 100,000 years a giant valley glacier submerged much of the lower part of what now comprises Dingle Burn Station. The event most important in shaping the present form of Lake Hawea was the Hawea Advance, when two glaciers which joined at the Neck deposited massive terminal moraines that pond the present day lake. Copious amounts of melt water following the glaciation would have incised through the terminal moraines, lowering the lakes to their present day levels and leaving beach deposits high on the hillsides.

The braided riverbed of the Hunter River has formed in response to a change in river gradient from its steep headwaters to the in filled lower valley. As its gradient lessens, its velocity is checked and a large part of its sediment load and debris is dropped, causing an obstruction to flow and the division into branches which continually separate and reunite. During low water, channels are mainly sandbanks; however during floods, new channels are cut and islands often become submerged and move downstream as a result of erosion at their upper ends and deposition at their lower ends.

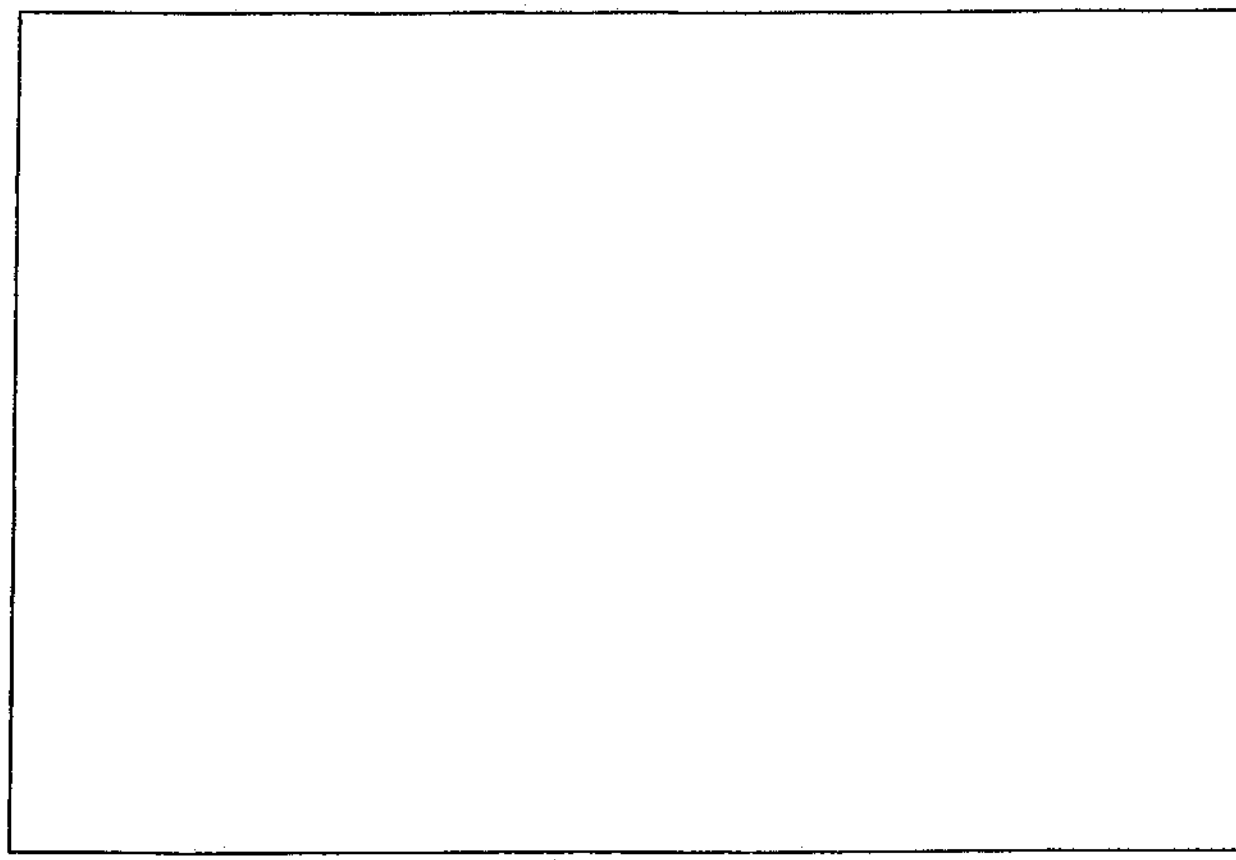


**Photo 1. Braided Hunter Valley Floor.**

### Significance of Landforms/Geology

Glacial features on the property are a visual testament to the climatic fluctuations of the Quaternary.

The Hunter Riverbed is the least modified braided river environment in Otago.

## 2.3 Climate

The property is located in a transition zone between the wet mountains of the Main Divide and the rain shadow to the east. Most rainfall is from the westerly quarter. Rainfall increases with proximity to the Main Divide (northwards). Precipitation also increases with altitude. Rainfall at the upper end of the pastoral lease in the Hunter Valley is exceeds 2000mm per annum, whilst at the mouth of Timaru River it is only 750mm. The rainfall gradient and varying aspects on the property are reflected in the vegetation and soils. Extended periods of snow lie are uncommon on low lying parts of the property whilst there are small areas of permanent or semi-permanent snow at high altitudes in the vicinity of Mount Barth.

Lake Hawea has a moderating effect on the climate of areas adjacent to the lake.

## 2.4 Vegetation

Due to the large size of the property, in particular its length and altitudinal range, it occupies a climatic gradient matched by few if any properties.

For the purpose of describing vegetation, the property has been broken into 5 units of broadly homogenous topography.

Units adopted comprise:

1. Timaru River Valley.
2. Lake Hawea Faces - Timaru River to Dingle Burn Mouth.
3. Homestead, Peninsula, Lower Dingle Burn Area.
4. Lake Hawea/Hunter Valley Faces and River Flats.
5. Braided riverbed of the Hunter Valley.

**1. Timaru River Valley.**

(a) Lower Faces above Timaru River (excluding beech forests held as conservation stewardship land).

Areas close to the river held under pastoral lease tend to be steep and in some locations unstable. Mountain beech forests are vigorously expanding into surrounding bracken fern and some small areas of pasture. In addition to beech regeneration, there is also vigorous expansion of other woody species including broadleaf, marble leaf, lemonwood, lancewood and matagouri. Kanuka/manuka shrublands are primarily confined to sunny drier aspects. There appears to be no silver beech forest in Timaru River Valley, reflecting the end of a transition from silver beech dominance in the upper Hunter Valley to pure mountain beech forest in dry eastern areas. Where kanuka and manuka dominate, the forest floor is often covered in a mat of tussock hawkweed.

(b) The Mid Altitude Zone: Deer Spur Creek and Catchment to East of Deer Spur Creek.

Forest cover has been removed from much of these catchments by fire during Polynesian and early pastoral times. A mix of tall and short tussocklands which colonised previously forested areas has largely yielded to tussock hawkweed, which forms an almost continuous cover over extensive areas. Remnant scattered tall tussock, hard tussock, blue tussock and native shrubs are present near forest remnants and on shady aspects. In all, four species of hawkweed were observed (*Hieracium lepidulum, H. pilosella, H. praealtum, and H. aurantiacum).* In one trial area in Deer Spur Creek the application of fertiliser and seed appears to have been quite successful at combating hawkweed.

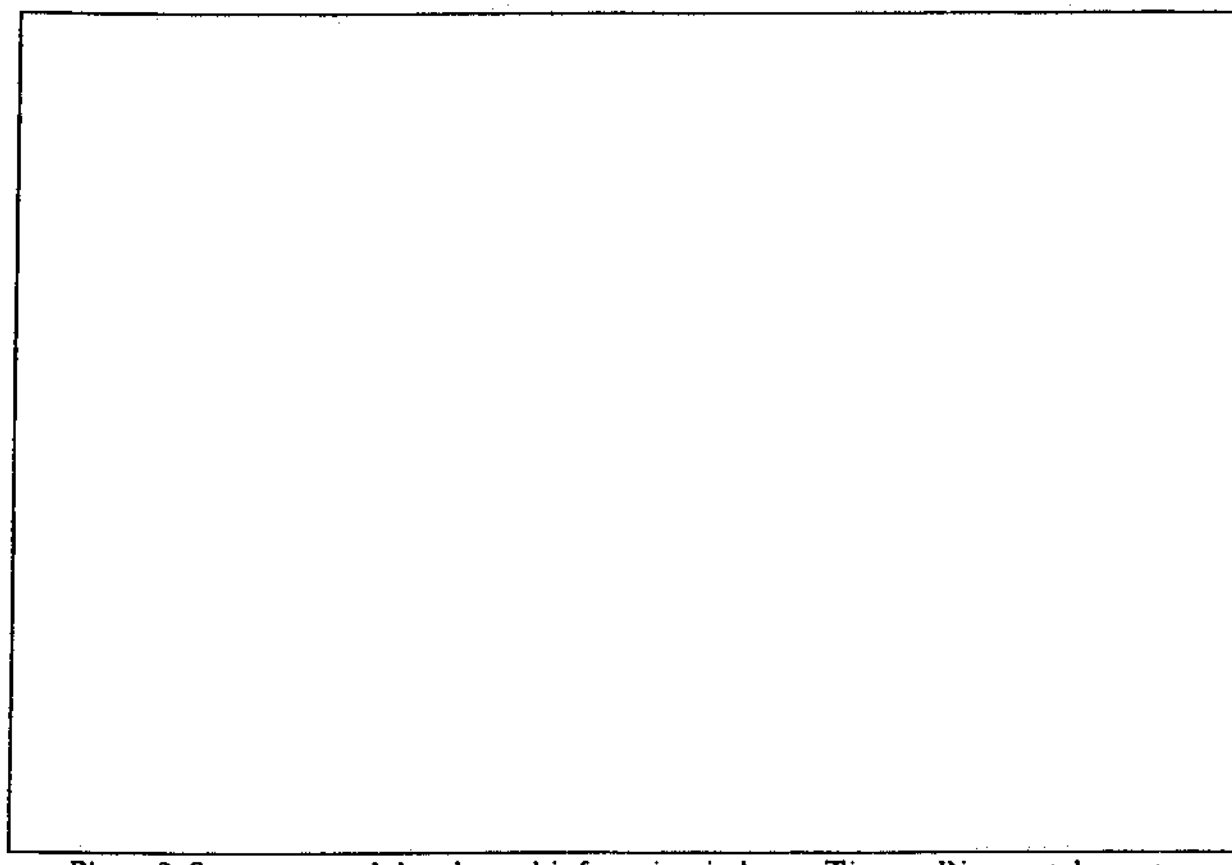


Photo 2. Severe tussock hawkweed infestation in lower Timaru River catchment.

(c) Land above 1000m (lower towards head of Timaru River).

This area is essentially native tall tussocklands and alpine vegetation at high altitude. Naturalness and intactness of the native flora increases along two gradients: (a) with increasing altitude (b) from east to west. In modified areas, shady aspects retain a greater native cover than sunny aspects.

High basins to the north of Moonlight and Roses Hut support an intact *Chionochloa rigida* tussockland which grades into *C. macra* above 1400m. In some areas palatable *C. macra* tussocklands are affected by localised heavy grazing. Other native species present include *Celmisia viscosa, C. lyallii, Ozothamnus vauvilliersii, Kelleria croizatii, Aciphylla horrida, Anisotome pilifera, Dracophyllum pronum* and *Oreobolus pectinatus.*

Towards the head of Timaru River, past burning has converted beech forest areas into a mixed tall tussock/short tussockland with an inter-tussock cover of grasses and herbs including *Leucopogon fraseri, Festuca rubra, Raoulia subsericea*, catsear, *Luzula rufa* and *Celmisia gracilenta*. Beech remnants are actively regenerating and spreading into grasslands. Away from beech forest remnants, especially on shady faces, *Dracophyllum longifolium* and manuka are replacing introduced grasslands. In time, given the absence of fire, the lower faces will regenerate to beech forest.

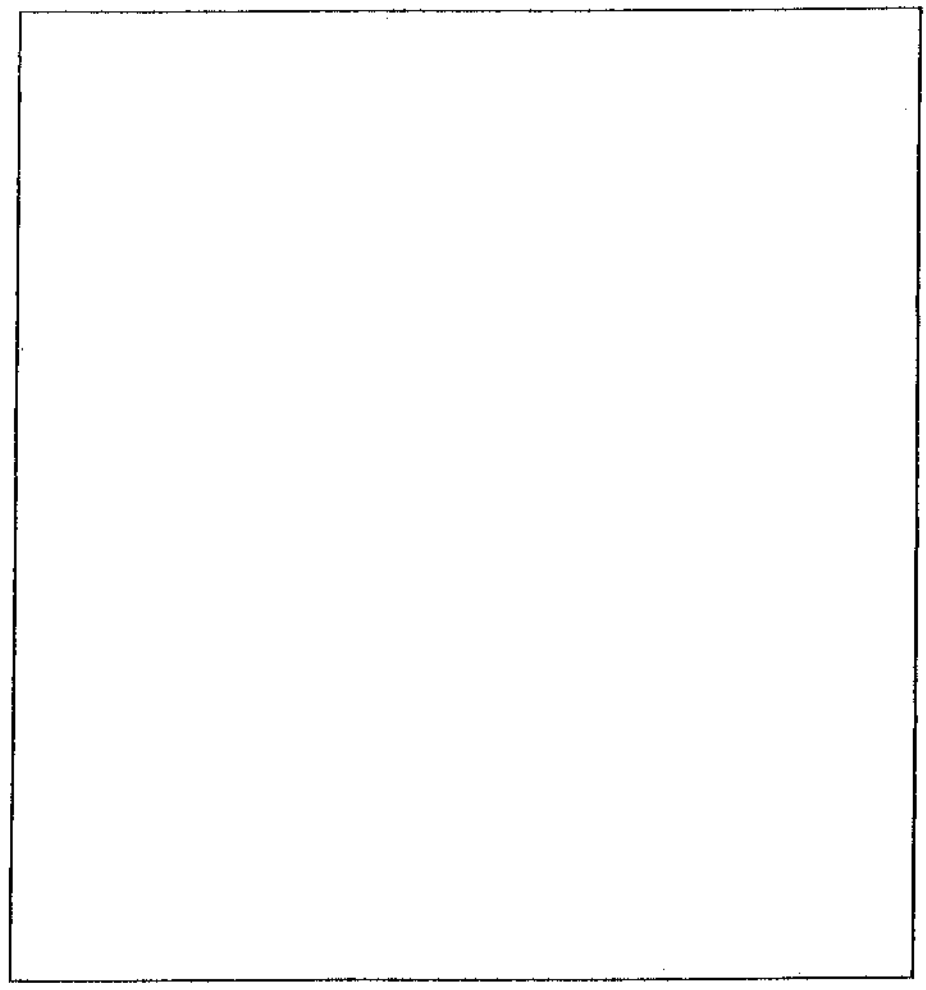
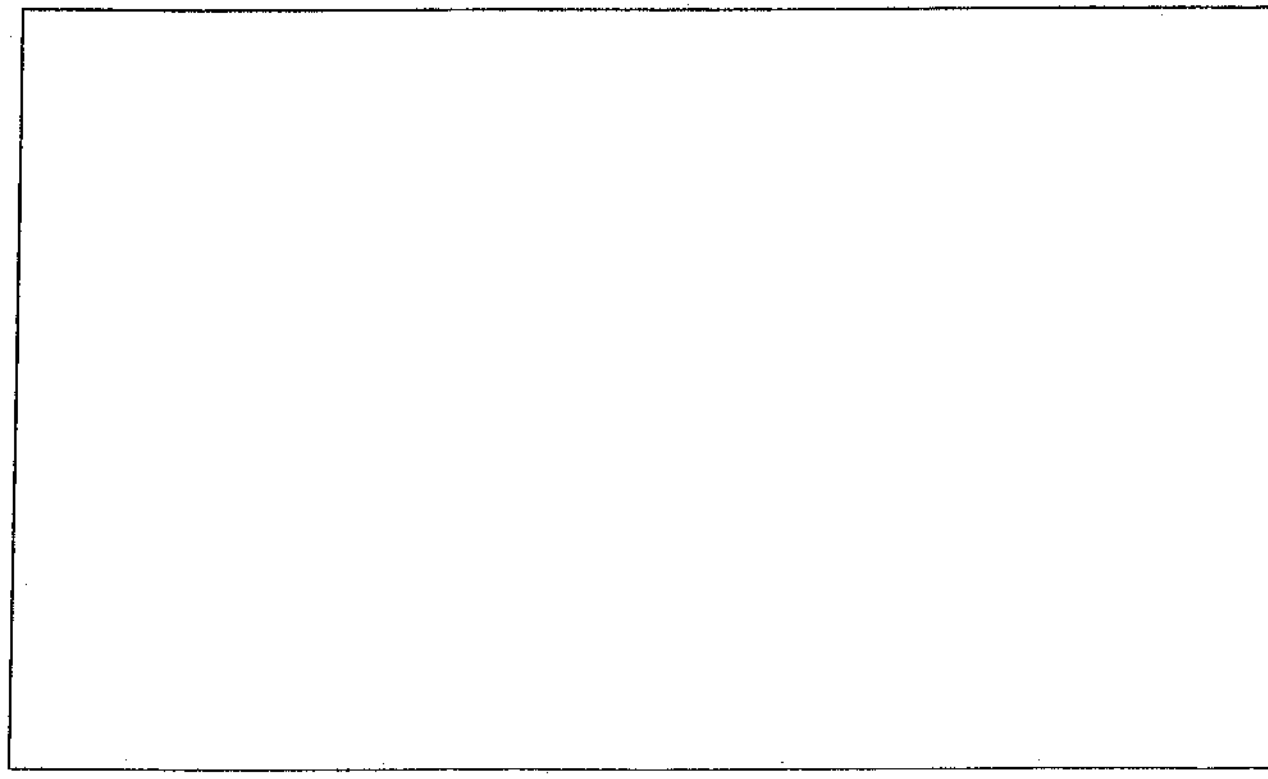


**Photo 3 and 4. Alpine lands in the Timaru River catchment.**



**Problem Plants**

Tussock hawkweed infestation is severe at middle altitudes in Deer Spur Creek and the next catchment to the north, elsewhere this species is common but not dominant. Mouse ear and king devil hawkweed form a minor vegetation component throughout this zone. A number of wilding conifers are scattered throughout the catchment. Briar is a significant component of shrublands in the valley floor in the lower part of the valley.

**Significance of Vegetation.**

Beech forests are an important remnant of the pre Polynesian forest cover east of the Main Divide. Aprons of regenerating beech outside of mature forest areas and kanuka/manuka/broad leaved shrublands represent a return to native vegetation in areas where farming attempts have proved unsuccessful. Together these areas comprise one of the largest forest/shrublands in the comparatively dry eastern part of the Wanaka Ecological District. Along with forests and shrublands elsewhere on the property, they represent an important part of a transition from silver beech dominated forest in the upper Hunter Valley to dry kanuka shrublands on the eastern and southern margins of the ecological district.

The conservation significance of montane communities in Deer Spur Creek has been greatly reduced due to invasion by tussock hawkweed. Elsewhere, intact viable tall tussocklands and diverse alpine communities are of high inherent value as they epitomise the natural character of the Otago High Country.

*C. macra* tussocklands which occur on predominantly shady aspects above 1400m once formed a continuous belt between alpine herbfields and alpine cushionfields throughout Otago. Distribution is now limited in most part to snowy south aspects, and its cover is often depleted and discontinuous.

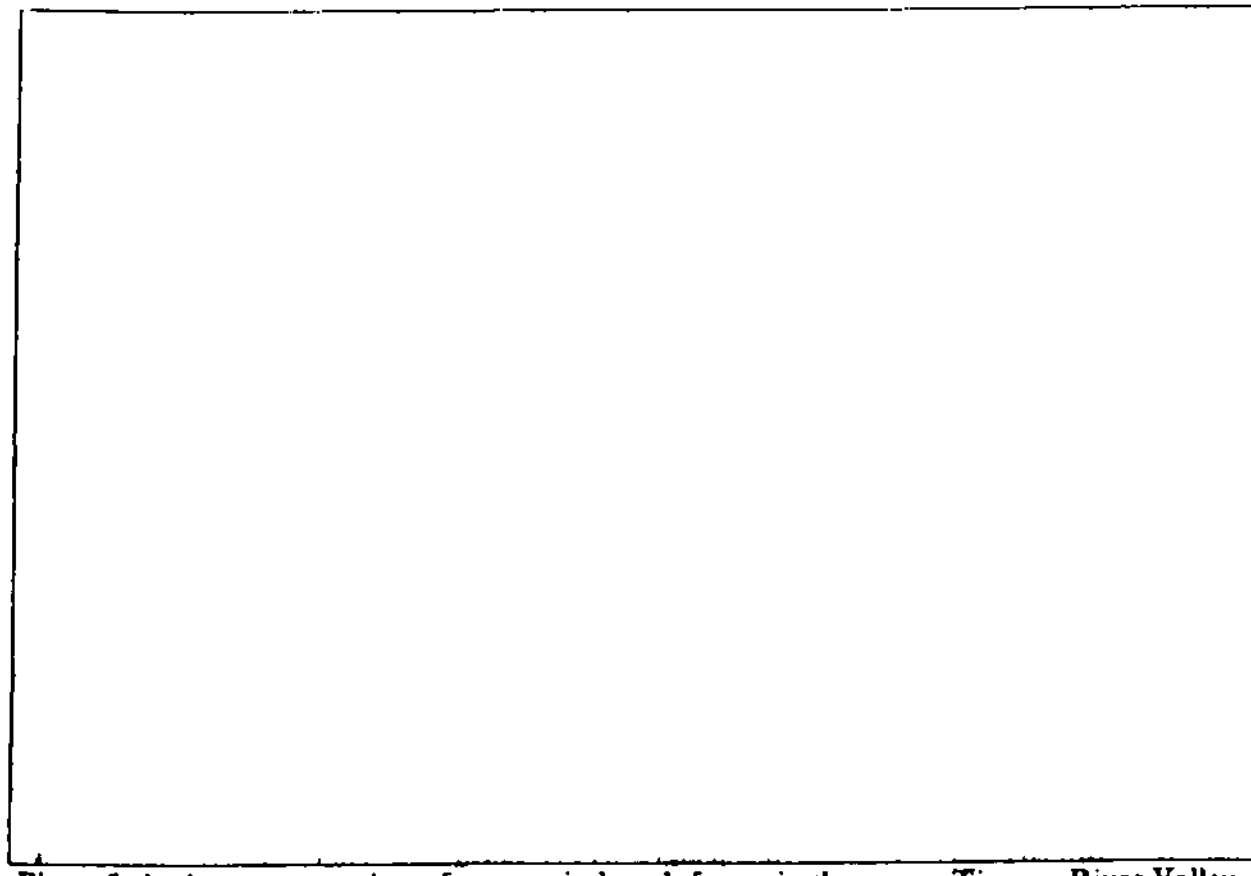


Photo 5. Active regeneration of mountain beech forest in the upper Timaru River Valley.

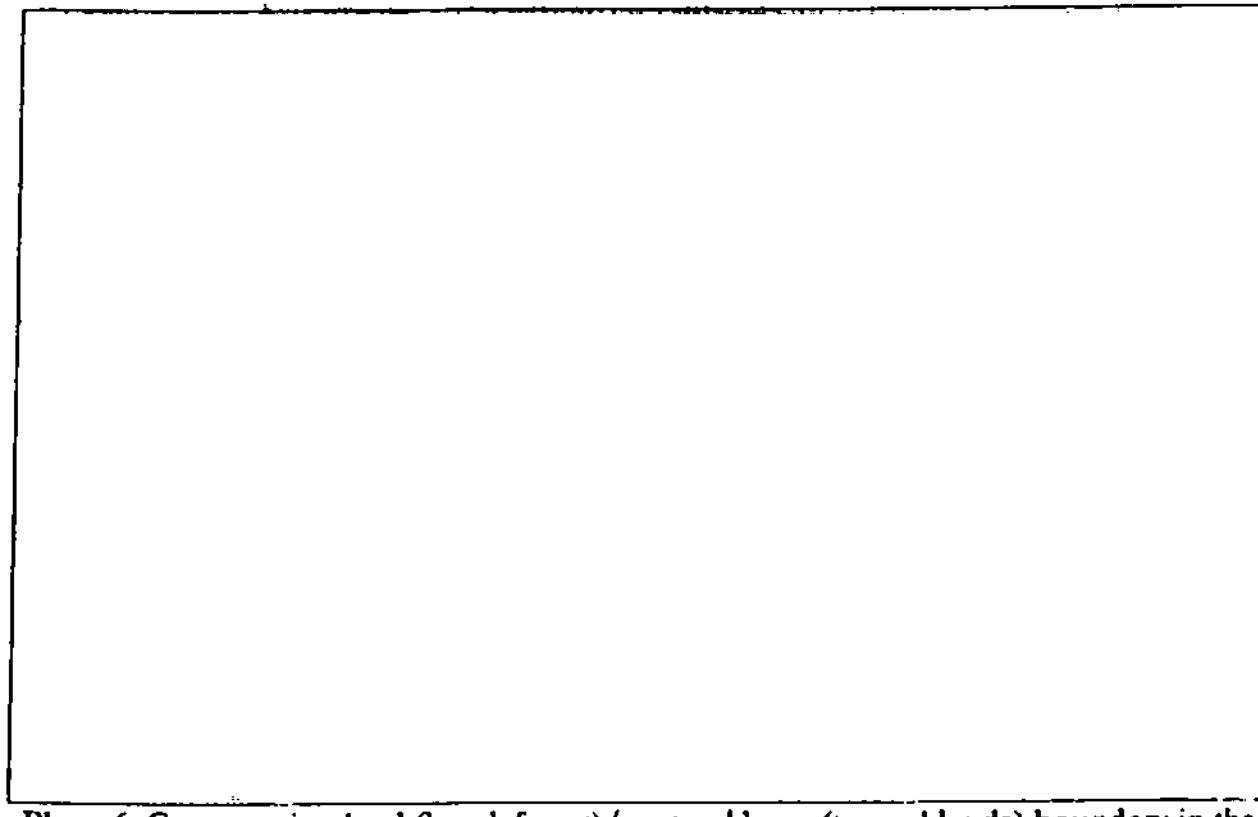


Photo 6. Conservation land (beech forest)/pastoral lease (tussocklands) boundary in the Timaru River Catchment.

**2. Lake Hawea Faces – Timaru River to Dingle Burn Mouth.**

This area is a spectacularly steep landscape which rises from the shores of Lake Hawea, at first gently up alluvial fans and then abruptly for some 1000 metres to the crest of a narrow ridge, which divides Timaru River from Lake Hawea.

Alluvial surfaces lying between the lake shore and the base of steep faces have mostly been converted into a mixture of rough pasture and regenerating tutu and bracken fern, through a mixture of burning, stock grazing and AOSTD. Historically, there have been few practical means of preventing fire from ascending steep slopes to the summit ridge. This factor, in combination with a warm westerly aspect has resulted in depletion and modification of native beech forest, tussocklands and shrublands. Only the deepest of gullies and bluffy areas contain small remnants of mountain beech forest.

The upper faces support a sparse *C. rigida/* blue tussock /hard tussock tussockland with scattered exotic grasses and herbs, including three species of hawkweed (*H. pilosella*, *H. praealtum* and *H. lepidulum*). *H. lepidulum* is a dominant species on the low to mid reaches of the faces.

Three areas in this zone support regenerating native shrublands:

(i) An area within the pastoral lease above the road in the vicinity of the Timaru River mouth supports a kanuka/manuka shrubland with an open under-story dominated by *H. lepidulum*. Over much of this area kanuka has overtopped the manuka component; however, on the fringes where burning has been more recent the two species co-exist. There is some evidence of invasion of broad leaved species; however relatively low rainfall at this site may mean that in the absence of fire, kanuka will dominate for some time to come.

(ii) An area lying above and below the Dingle Burn Road between Rocky Point and Rocky Point Creek supports a diverse mixed shrubland comprising thick bracken, cabbage trees, broadleaf, *Coprosma propinqua*, koromiko, tree daisy, native broom, kowhai, mountain flax, manuka and kanuka.

(iii) A shrubland of similar composition to that described above occurs on steep faces to the south and north of the Silver Burn below an area of mountain beech forest located within the conservation estate.

**Problem Plants**

Briar and tussock hawkweed are the most significant problem plants in this area from a conservation perspective. Some wilding pines and poplars occur within shrubland areas.

**Significance of Vegetation.**

Native shrublands in the vicinity of Lake Hawea, the Timaru River mouth and the Silver Burn provide an attractive natural landscape component to the area. These areas appear to be following a natural succession towards native forest after a prolonged absence of burning. Small beech forest remnants on the steep otherwise quite barren faces provide testament to the area once supporting a forest cover.

Native vegetation remnants are representative of the transition zone between diverse western forests and relatively species poor shrublands of Central Otago.

### 3. Homestead – Peninsula – Lower Dingle Burn Area.

This is the most developed part of the property. Fertile alluvial fans and terraces have been cultivated and some are used for hay production. Lower hill slopes below 800 metres have long since been cleared of native vegetation. Regular AOSTD has resulted in a cover of predominantly introduced grasses and herbs. Small areas of kanuka/manuka dominated shrublands remain on the margins of water courses and other areas protected from fire, including the mouth of the Dingle Burn and the south-western side of The Peninsula. Most significant mountain beech forest remnants (ex Hawea State Forest) are protected as conservation stewardship land whilst small areas on The Peninsula are within the pastoral lease. On some hill slopes fertiliser application appears to have encouraged establishment of matagouri and other shrubs.

The margins of the Dingle Burn Lagoon, (~20ha) which lies to the west of the homestead, support wetland vegetation including raupo, *Carex coriaecea, Juncus effusus,* crack willow, and a sward of exotic grasses and herbs. Localised areas support a margin of manuka, kanuka and *Coprosma.*

South of the homestead, introduced pasture grades into short tussocklands above 800m which in turn grades into sparse *Chionochloa rigida* grasslands with a high exotic component. On this sunny aspect it is only above 1400m that vegetation becomes a relatively intact native tall tussockland. High altitude vegetation consists of alpine communities similar to those described in Timaru River Valley.

**Problem Plants**

From a conservation perspective, tussock hawkweed represents the most serious weed problem in this zone.

**Significance of Vegetation.**

Intact tall tussock and alpine vegetation are of high inherent value. Although most beech forest areas are not within the pastoral lease, aprons of regenerating saplings around forest remnants are probably outside of conservation lands and are of conservation significance. Scattered native shrublands including those forming a backdrop to the small lagoon near the homestead provide an attractive natural component to the landscape.

Tall tussocklands and alpine vegetation above 1300 metres are in a predominantly natural state, and represent a resilient and attractive vegetation cover which has evolved to cope with cold winters, poorly developed soils and a short summer growing season.

### 4. River Flats, Lake Hawea/ Hunter Valley Faces and Mountain tops between Mount Jones and Mount Barth.

(a) Gentle toe slopes, fans and river flats: Dingle Burn Mouth to Bricks Gully

The lower Lake Hawea faces have largely been developed into farmland. Fan and toe slope vegetation ranges from pasture dominated by cocksfoot, clover and sweet vernal to a bracken fern pasture mix. In some locations where development has been more recent or less intensive, cover is dominated by bracken fern, kanuka, matagouri and briar.

Areas where terrain and soil type have rendered previous development attempts (primarily burning) unsuccessful have regenerated through a predominantly natural succession process into diverse shrublands. In these areas there is now a native altitudinal sequence extending from the shores of Lake Hawea to alpine lands above 1700m. Vegetation is dominated by kanuka and manuka. Other common species include marbleleaf, broadleaf, lemon wood, *Dracophyllum longifolium*, tree fuchsia, matipou and the lawyer vine *Rubus schmidelloides*.

Further north, lower slopes show a strong tendency to regenerate towards a native shrubland/broad leaved forest. Bracken covered slopes are vigorously invaded by small broad-leaved trees, which in some areas have had sufficient respite from fire to form a continuous canopy dominated by lemon wood (*Pittosporum tenuifolium*). Other common species include lancewood, fuchsia, karamu (*Coprosma lucida*), broadleaf, wineberry, tree tutu and cabbage trees. Burning is used to clear these areas and is quickly followed by bracken fern regeneration. Bracken and rough pasture clothes large areas of the Hunter/Hawea faces. The three largest areas of regenerating shrubland/forest comprise (1) three small catchments below Mt Jones, (2) an area comprising five small catchments opposite the Big Hopwood Burn and (3) the southern end of a large fan at the Mouth of Bricks Gully Creek.

Mountain beech forest would have once formed a continuous forest cover along these faces. Its present cover probably dates to large Polynesian fires prior to the arrival of European pastoralists. Today its distribution is confined to deep gullies which afford almost total protection from fire. One such remnant visited supports a diverse understory community including lancewood, *Coprosma parviflora*, *C. colensoi*, *C. lucida* (karamou), tree fuchsia, wineberry, marbleleaf and *Helichrysum lanceolatum*. At ground level a range of ferns are present including *Blechnum vulcanicum*, prickly shield fern, hounds tongue and *Grammitis billardierii*.

Areas of river flats including Green Bush, Wind Pudding Flat and Bull Flat have mostly been converted into exotic pasture; however, a scattering of large native and exotic shrubs are present including a number of large *Olearia virgata* trees. Elderberry is quite common at and below Green Bush Flat. The native vine *Muehlenbeckia australis* drapes over much of the shrubby vegetation.

(b) Mid altitude faces above upper Lake Faces Fence.

Most of this zone is predominantly clothed in native vegetation. In many areas developed land below the fence gives way to tall bracken fern interspersed with broad leaved shrub species.

Only on truncated spurs below 800 m has regenerating shrubland and bracken yielded to a *Festuca novae–zelandiae / Festuca rubra* short tussock grassland with inter–tussock cover of native and introduced grasses and herbs. Species noted include sweet vernal, *Raoulia subsericea*, *Leucopogon colensoi*, *Coprosma rugosa* and cats ear. Notably absent in this zone is tussock hawkweed, although the occasional king devil hawkweed was observed.

The balance of land in this belt lies within steep basins forming the headwaters of numerous streams which feed into Lake Hawea. These areas support large areas of kanuka/manuka and broad leaved shrublands similar to those described previously, mountain beech forest remnants (which probably also contain silver beech) and steep bluff and scree country.

(d) Lower – Mid Altitude Faces North of Bricks Gully.

Above Bricks Gully only the Hunter River Flats, small areas of creek fans, and an extensive area of river flat and fan in the vicinity of Green Bush Hut have been successfully converted into pasture. Right from their base, the Lake Hawea/Hunter Valley faces are clothed in impenetrable regenerating shrublands. As is the case further south, a series of steep gullies, protected from fire, retain beech forest remnants. The ratio of silver to mountain beech increases from south to north reflecting silver beech's preference for moister cooler sites.

On faces on the northern 5km of the property, past burning has been patchy and some areas appear not to have been burnt since human settlement. Here mountain beech/silver beech forest clothes much of the mountain slopes, in many places up to the natural bush line at approximately 1300m. Snow totara/halls totara hybrids and celery pine are also prevalent at or near bush line. Elsewhere there is a fire induced sequence of manuka-kanuka scrub, through bracken on mid–slopes, to subalpine short tussock grasslands grading to penalpine tall tussocklands.

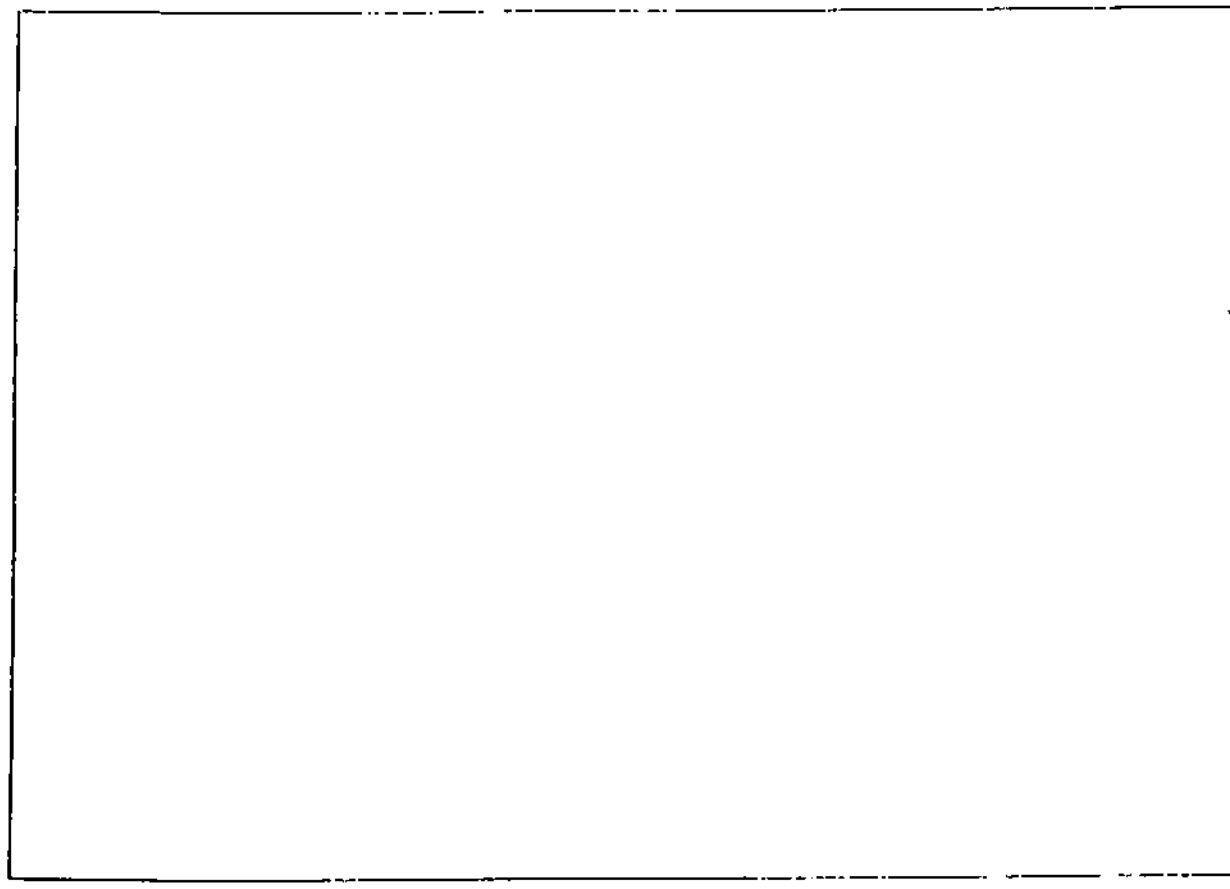


Photo 7. Diverse native kanuka dominated shrublands north of Yards Gully.

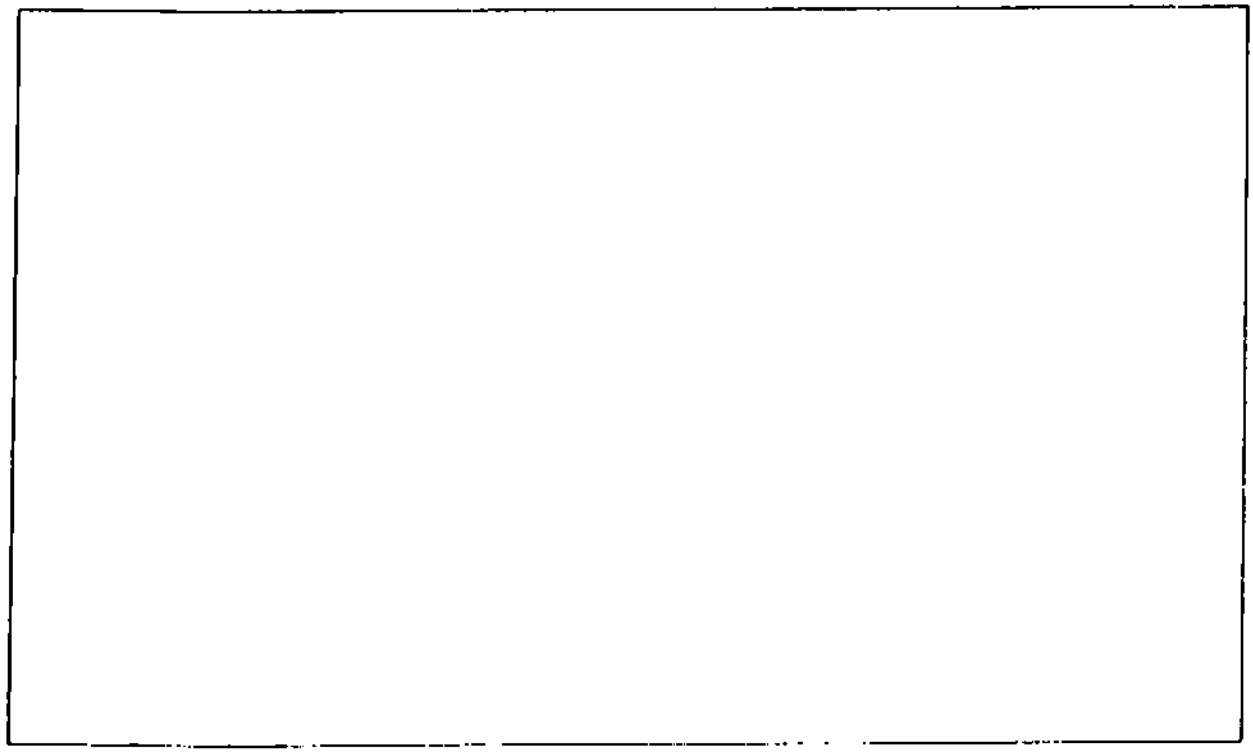


Photo 8. Intact mountain/silver beech forest near northern boundary of property.

(d) Subalpine–Alpine Zone: Mount Jones to Mount Barth.

Subalpine shrublands contain *Dracophyllum longifolium, D. uniflorum, Phyllocladus alpinus, Ozothamnus vauvilliersii* and large *Chionochloa rigida* tussocks.

With increasing altitude, in the penalpine zone, shrublands grade into *Chionochloa rigida* tussocklands. Above 1400 m *Chionochloa macra* becomes dominant.

Alpine areas support a diverse alpine flora with few exotics present. Species observed include, *Aciphylla crenulata, A. dobsonii, Anisotome flexuosa, Brachyglottis bellidioides, B. haastii, Chionohebe thomsonii, Hectorella caespitosa, Kelleria croizatii, Leucogoenes grandiceps, Phyllachne colensoi, Polystichum cystostegia, Raoulia grandiflora* and *R. youngii.*

Hollows above 1700m where snow lie is prolonged, are vegetated by a distinct community. Species observed include *Aciphylla gracilis, Celmisia densiflora, C. haastii, C. laricifolia, C. lyallii, Coprosma niphophylla, Gentiana corymbifera, Hebe hectorii* and *Plantago lanigera.* Where snow is near permanent, mosses provide nearly all the cover.

Areas above 2000m. in the vicinity of Mount Barth, support no vascular vegetation although lichens are present on rocks in stable locations.

**Problem Plants**

Much of this zone is virtually weed free.

Hawkweed species are present at mid- upper altitudes and represent a minor threat; however, higher levels of precipitation than in the Timaru River Valley and other physical factors appear to create a less favourable environment for these weeds. Some briar is present although increasing rainfall to the north makes for a progressively less favourable habitat. River flats and fans, especially in the vicinity of Green Bush Hut, support numerous elderberry trees, some domestic fruit trees and exotic shrubs including briar and gooseberry.

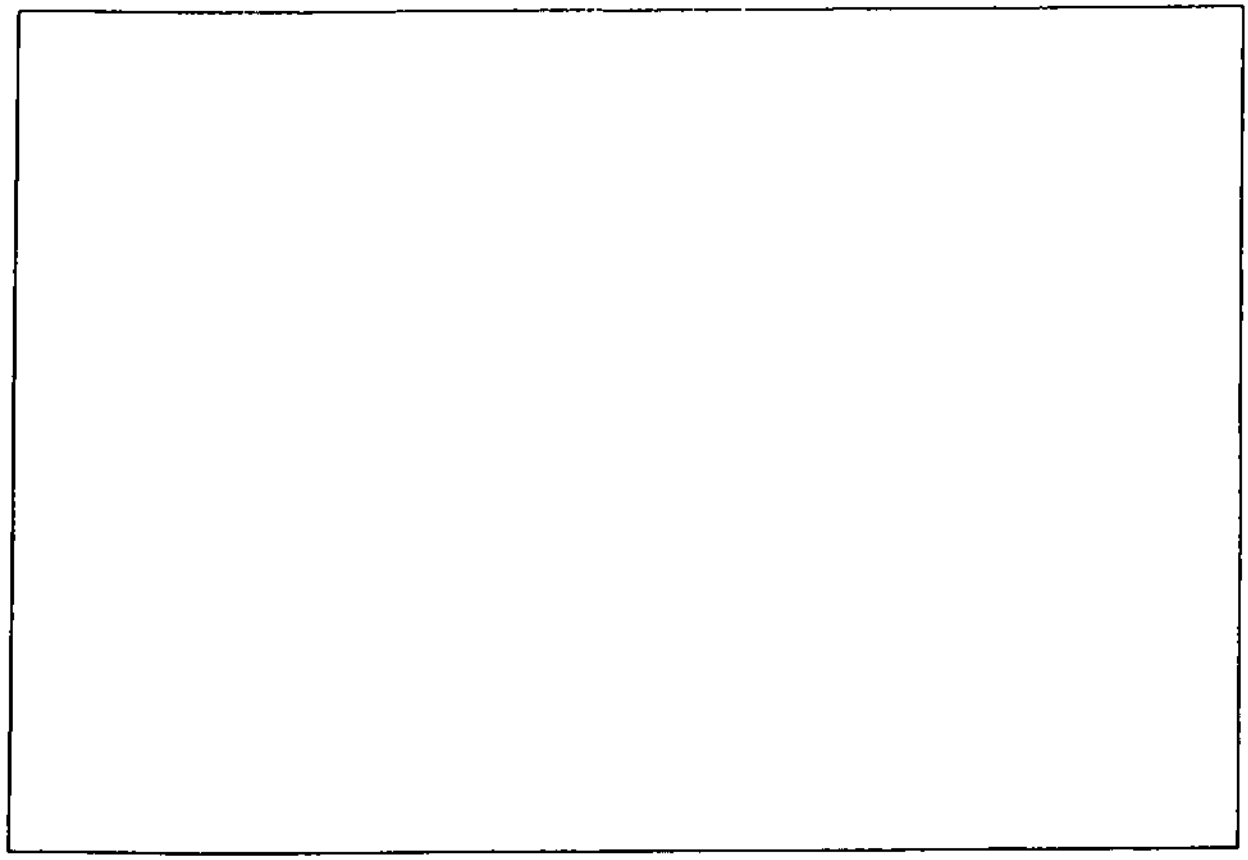


Photo 9. Intact *Chionochloa macra* tussocklands on Mount Jones Ridge.

## Significance of Vegetation

Virtually pristine high altitude areas support an impressive array of alpine communities. Intact montane to alpine tall tussock grasslands provide a stable, resilient, and in places diverse native vegetation cover. In many areas there is an intact native altitudinal sequence comprising beech forest remnants, sub alpine shrublands, tall tussocklands, alpine herbfields, snow hollow vegetation and scree/bluff communities. Faces in the upper valley are in an advanced stage of regeneration towards a broad leaved shrubland/forest in contrast to drier parts of the property where kanuka/manuka dominate the succession process. Undisturbed beech forest, shrublands and alpine lands in the upper valley adjoin forests within the Hunter Conservation Area.

### 5. Braided River Bed of the Hunter Valley

This area which lies outside of Dingle Burn pastoral lease comprises a broad braided riverbed. Most of the bed is subject to regular flooding, although some low terraces on the margins, and islands between semi–stable channels, have persisted for decades. Vegetation cover, stature and composition reflects time elapsed since inundation and erosion by flood waters. In broad terms three vegetation communities are present:

**(a) Gravel riverbed.** In these areas ground cover comprises 90% or more gravel and sand; however a surprising diversity of opportunistic native and exotic herbs and grasses is present. Recorded native species include *Acaena fissistipula, A. caesiiglauca, Carex*

*Gnaphalium spp, Gunnera dentata, Hydrocotyle novae-zelandiae Leptinella pusilla, Muehlenbeckia axillaris Poa cockayneana, Raoulia hookeri, Raoulia tenuicaulis* and *Scleranthus uniflorus.*

(b) **Recent islands** support the above species; however in this environment vegetation cover exceeds 50%, and composition is heavily dominated by *Carex coriacea, Lotus pedunculatus,* white clover, ragwort and sweet vernal. Other species include *Coriaria sarmentosa* (larger leafed tutu), and the occasional *Hebe subalpina* seedling. Two native grasses (*Lachnagrostis lyalli* and *Rytidosperma setifolium*) are present. One gorse bush was noted.

(c) **Stable islands and Valley Floor Margins.** These areas appear to be subject to infrequent flooding. Some locations appear not have been flooded for a decade or more. Here grass cover is dense and tall (~60cm). Ground cover composition is similar to that described for recent islands, except that *Festuca rubra* is a major grass component and large silver tussocks are common. Scattered throughout the grassland are mature *Olearia lineata,* matagouri, *Coprosma propinqua,* kanuka and briar trees/shrubs.

**Problem Plants**

Gorse and buddleia have been subject to a Crown Land weed control program. Buddleia is now believed eradicated and gorse is rare. Crack willows are present at the river mouth delta. Broom is absent.

**Significance of Vegetation**

Although overwhelmingly a gravel/sand environment there is a surprising diversity of native species (and exotic) adapted to survival in a disturbed environment. Native species provide habitat for insect fauna which in turn are a food source for river birds. Vegetation also serves to stabilise the riverbed in places, creating a diversity of habitat. The lack of shrubby weeds (particularly gorse and broom) make this the least modified braided river environment in Otago.

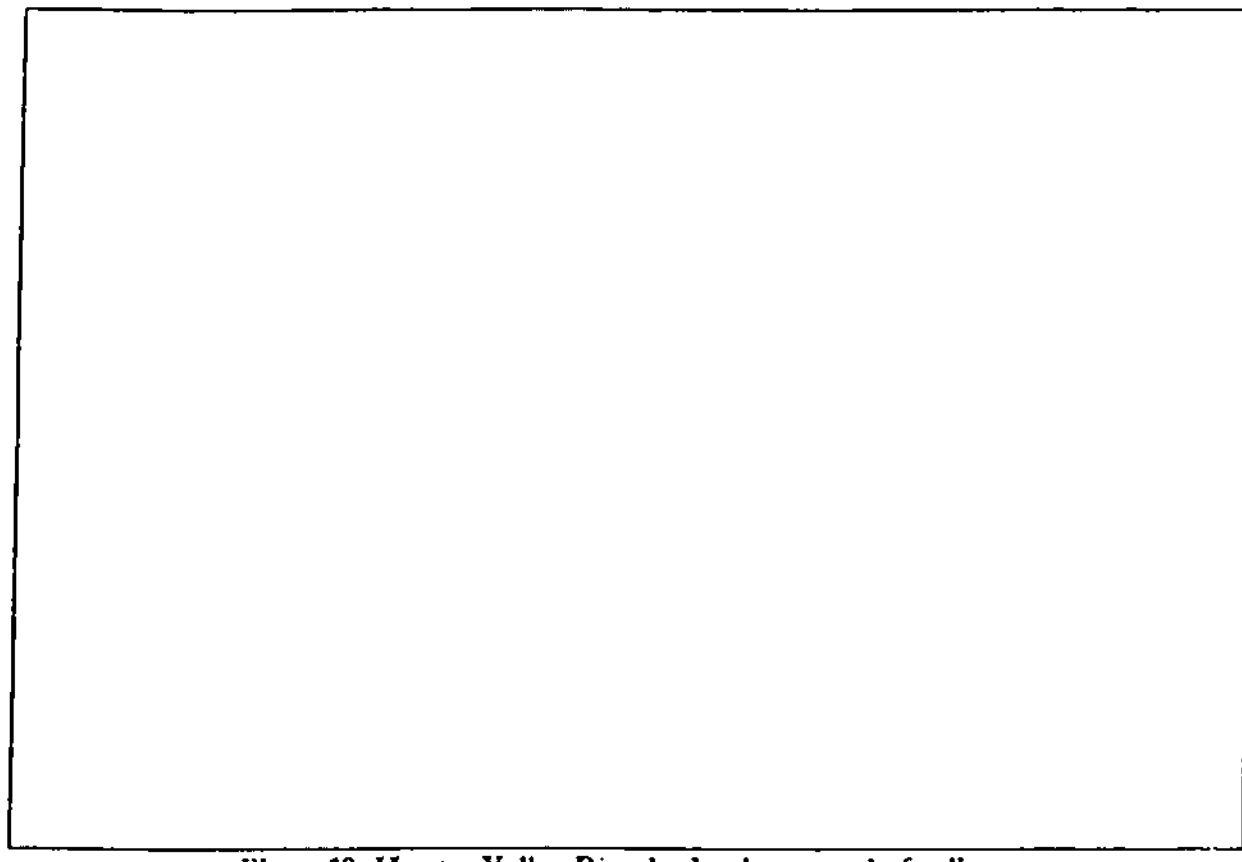


**Photo 10. Hunter Valley Riverbed at lower end of valley.**

## 2.5 Fauna

### 2.5.1 Herpetofauna

The property has not been surveyed for lizards, however it is of note that the only known beech forest population of jewelled geckos occurs within adjoining conservation lands in the Hunter Valley.

### 2.5.2 Insect fauna

The range of insects recorded on the property is typical of montane- alpine areas of western Otago. Species present reflect the property's location in a geological, climatic and floristic transition zone. In total some 96 species from 6 orders have been recorded within the pastoral lease. Of particular note is the high number of diurnal moths recorded along the high ridge between Mount Jones and Mount Arnold.

### 2.5.3 Birds

(a) **Pastoral Lease.** Forest and shrubland areas support a range of native species including tomtits, riflemen and bell birds, fantails and greywarblers. Pasture lands are home to a number of exotic passerines.

Montane and alpine areas are inhabited by kea and New Zealand falcon.

Dingle Burn Lagoon is a large pond with intact riparian vegetation which provides feeding and breeding habitat for waterfowl.

**(b) Crown Land on the Hunter Riverbed.**

Regular bird surveys of the riverbed since 1966 have revealed the presence of eight species of water–fowl, three species of gulls and terns and five species of waders. Black fronted tern, black backed gull, black billed gull, banded dotterel, wrybill and the South Island pied oyster catcher are dependent on the riverbed for all or part of their life cycle.

Other species recorded are paradise duck, grey duck, mallard, NZ shoveller, pied stilt, spur winged plover, black shag, white faced heron, Canada goose, black swan, grey teal and scaup.

### 2.5.4 Aquatic Fauna

The NIWA fish database contains records for brown trout, rainbow trout and an unidentified galaxias (likely to be koaro) at map ref. NZMS 260 G39 174 236. Koaro (*Galaxias brevipinnis*) has been recorded at the Dingle Burn Bridge. This is a Category C species threatened (Molloy and Davis 1994).

### 2.5.5 Problem Animals

A variety of wild animals inhabit the property. Deer and chamois are concentrated in more remote parts of the property. Thar are present in Timaru River, the Dingle Burn and on the high tops above Lake Hawea/ Hunter River Valley. Pigs are a threat in the Timaru River Valley. Possums and hares are widespread. Rabbits are present in low numbers over most lower altitude parts of the property, although they can reach quite high levels on the lake faces north of Timaru River.

**Significance of Fauna.**

New Zealand falcon, kea , wrybill and black fronted tern are Category B threatened species (second priority threatened species) (Molloy & Davis 1994). Banded dotterel are a Catergory C species (third priority for active protection measures). Dingle Burn pastoral lease and Crown land comprising the Hunter Valley riverbed provide year round habitat for these species including for breeding. A comprehensive native insect fauna reflects a relatively intact native flora over much of the property, especially at higher altitudes.

Dingle Burn Lagoon was identified by the former Wildlife Service as a "Site of Special Wildlife Significance" of moderate ranking on the basis that it provides good breeding/feeding habitat for waterfowl.

*Galaxias brevipinnis* is a Category C threatened species (Molly and Davis (1994). This means it ranks as priority three for active protection measures.

Black fronted tern, black backed gull, black billed gull, banded dotterel, wrybill and the South Island pied oyster catcher are dependent on the Hunter riverbed for all or part of their life cycle. Black fronted tern and black backed gull are endemic species.

## 2.6 Historic

**Maori Sites.** Knowledge of pre-European history on the property is limited. While Lake Hawea and the Neck were used extensively for hunting and camping, the Dingle Burn environs is reputed to have been used principally for wahi tapu sites. This activity would have primarily occurred along the shores of Lake Hawea and the Hunter River, portions of which have been drowned due to the raising of Lake Hawea. There is one recorded archaeological site on the property (NZAA site G39/2). This site is recorded as ovens and adzes found along the stream below Dingle Burn homestead.

**European History.**

The pastoral lease was part of Timaru River Station until the early 1950's. An old cob cottage near the Dingle Burn shearing shed dates back to the 1880's. This building is in reasonable condition. The woolshed is thought to date back to approximately 1910.

**Significance of Historic Sites**

The old cottage is protected under the Historic Places Act as it is over 100 years old. Other sites are of interest as they are part of the South Islands early pastoral history, however, due to their location they are not under threat.

## 2.7 Public Recreation

### 2.7.1 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.

With the exception of the margins of Lake Hawea and the Hunter Valley River flats, the entire property was zoned "Backcountry walk in" where the opportunity 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, exercise and/or a sense of being close to nature. Access, although relatively close to visitor centre developments, is only possible on foot and is often associated with tramping tracks or routes.

The balance of the property is zoned "Backcountry 4WD 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."

A Federated Mountain Clubs publication titled "Outdoor Recreation in Otago - A Recreation Plan" (Mason 1989) zoned the Hunter Valley floor and low lying country in the vicinity of Lake Hawea as "Open Space". FMC recommended that for recreational purposes the primary management objectives should be the provision of public access ways, and the maintenance of tussock grassland and native forest settings. The balance of the property was zoned

Natural Experience". According to this document management of the Dingle- Timaru River "natural experience zone" requires:

- Maintenance of mountain, forest, river, and grassland landscapes without obvious signs of development.
- Retirement from grazing and removal from pastoral leasehold, followed by management for conservation and recreation purposes as a conservation area.

### 2.7.2 Legal Access

Crown land reserved from sale along Timaru River and part of the Hunter River is now deemed to be marginal strip, the boundaries of which do not change.

Lake Hawea foreshore since the raising of the lake for hydro electric development has had no marginal strip laid off. However, a margin of at least 20 metres from the lake's maximum control level remains Crown Land under the Land Act.

The Lake Hawea Timaru River Road is legal as far as a set of cattle yards approximately 3km north of the Timaru River Bridge. North of this point the road is private.

Legal access to conservation stewardship land which was formerly Hawea State Forest is confined to the Timaru River marginal strip. Isolated forest remnants and the forests of the Dingle Burn have no legal access.

### 2.7.3 Activities

The property receives a high level of recreational use. A breakdown of current known use is as follows:

**Fishing.** Timaru River, the Dingle Burn and the Hunter River have a reputation as world class wilderness fisheries. Foot or 4WD access to these waterways entails access through the pastoral lease.

**Hunting.** Timaru River, the Dingle Burn and the Mount Jones to Mount Barth area are popular with hunters seeking deer, chamois and thar. The Dingle Burn lagoon and Hunter River are utilised for gamebird hunting.

**Tramping/Climbing.** The pastoral lease is utilised both for accessing public conservation lands and huts in the Dingle Burn and Timaru River and for attractions within the property. Junction and Moonlight Huts in Timaru River are used by parties climbing peaks including Dingle Peak and Maungatika and for a variety of tramping routes in the catchment and into the Dingle Burn.

**Four Wheel Driving.** Four wheel drive owners and mountain bikers periodically travel up the Hunter Valley, often crossing the Hunter River at green Bush and completing a round trip via Hunter Valley Station.

**Mountain Biking.** The above described 4WD route is also popular with mountain bikers.

**Camping/Picnicking.** The mouth of Timaru River is a popular camping and picnic spot. The area is Crown Land set aside for water power development and is administered by Land Information New Zealand. Part of the area is designated as a Nohanga site as part of the Ngai

Tahu Land Claim settlement. It is unclear as to where the exact pastoral lease boundary is at this site and as to whether recreational activities are confined to public lands. Little routine maintenance is currently undertaken at this site.

**Jet Boating.** The braided channels of the Hunter River are popular with jet boaters.

**Commercial Activities.** The lessees hold a recreation permit under s.66A Land Act (1948) for certain recreational activities including heliskiing, accommodation and guided walking.

Several fishing guides hold concessions for use of the Hunter River marginal strips. Jet boats are used in conjunction with guided fishing.

**Huts.** Public use of Junction and Moonlight and Roses Huts in the Timaru River Valley and Little Green Bush Hut in the Hunter Valley occurs with permission from the lessees.

# PART 3

# OTHER RELEVANT MATTERS & PLANS

## 3.1 Consultation

The property was discussed at an NGO early warning meeting held in Alexandra on November 2 1999. Forest and Bird, FMC and Public Access NZ members have inspected the property by air. The array of views expressed reflect the size and complexity of the property. ***Legalising the Dingle Burn Road to the area in the vicinity of the homestead was identified as the most important issue.*** It was suggested that the cost of maintenance and legalising access are separate issues and that the latter should be dealt with first. Public Access New Zealand consider that failing legal road status, the road should be designated a Government Purpose Reserve. One group raised possibility of introducing a road toll. Others disagreed with this concept. Other major points raised were:

- Rpute from Dingle Burn homestead to the Hunter Valley is important for 4WD owners. Accepted that status quo regarding permission for access from landholder for vehicle access is acceptable in future.
- Need for an easement for foot, mountain bike and horse access up Hunter Valley identified.
- Very important to attain foot access into Dingle Burn from the homestead area.
- Dingle Burn lagoon requires a marginal strip and access from road.
- Boundaries of public campground at mouth of Timaru River require securing and access to the area formalised (if it is not already).
- If land on which huts are located in the Timaru River is freeholded, public access to them and use needs to be secured.
- Pointed out that Moonlight Hut receives frequent use by trampers, hunters etc.
- Concern about need for landscape protection of Lake Hawea lake faces.
- Suggested that existing fencing be used as a boundary on the Hunter/ Lake Hawea faces upstream of the Dingle Burn.
- General uncertainty about what should happen between Timaru River and the Dingle Burn.
- Concern at past fire damage to isolated forests within conservation estate.
- Regenerating shrublands on Hunter/Lake Hawea faces should be placed in conservation estate.

FMC also produced a draft report outlining recreation/conservation values on the property. Key recommendations outlined in this report are that:

(a) Tenure review represents an important opportunity to greatly enhance the recreational opportunities of the Hawea–Lindis area.
(b) In conjunction with Unoccupied Crown land in the Dingle Burn, tenure review is seen as an important opportunity to create the core of an "Ahuriri–Dingle Conservation Park. FMC in Canterbury are promoting a larger conservation park extending from Lake Pukaki southwards to the Hunter Valley, which they suggest be named Ohau Conservation Park).
(c) Tenure review on Dingle Burn is seen as being pivotal to achieving objectives set out in the Otago Conservation Management Strategy for the Hawea – Lindis Special Place."

A full copy of the FMC report is appended.

### 3.2 Regional Policy Statements & Plans

**(a) Regional Policy Statement.** The Regional Policy Statement for Otago provides a policy framework for all of Otago's significant regional resource management issues. It does not contain rules. District Plans must reflect the Regional Policy Statement.

In respect of natural values the Regional Policy Statement includes the following policy and method:

Policy: "To maintain and where practicable enhance the diversity of Otago's significant indigenous vegetation and significant habitats of indigenous fauna, trout and salmon...".

Method: "Identify and protect Otago's significant indigenous vegetation and significant indigenous vegetation and significant habitat of indigenous fauna, trout and salmon, in consultation with relevant agencies and with Otago's communities.

In respect of landscapes and natural features it includes the following policy and method:

Policy: "To recognise and provide for the protection of Otago's outstanding natural features and landscapes..."

Method: "Prepare, in conjunction with relevant agencies and in consultation with the community and affected landowners, an inventory of outstanding natural features and landscapes that are regionally significant."

### 3.3 District Plans

The property lies within the Queenstown Lakes District, which is currently subject to the amended Proposed Queenstown Lakes District Plan (1998). The 1995 version of the Proposed Plan was amended in 1998 to incorporate the Council's decision on submissions received and heard. The amended Proposed Plan is now the principal planning document in the Queenstown Lakes District except where provisions are subject to appeals lodged to the Environment Court. The Minister of Conservation has appealed provisions in respect of significant natural areas. Appeals are currently in the process of being heard or negotiated and will take at least another 12 months. The plan will not become fully operative until these appeals have been resolved. During this period the Transitional District Plan is also relevant.

Under the Transitional Queenstown Lakes District Plan, Dingle Burn is zoned Rural B. The zone statement for Rural B reads "Soils found in this zone have limited cropping value and are suitable for pastoral use. The land in this zone is generally stable hill country and high country which forms a scenic backdrop to the Rural A Zone. It is anticipated that extensive pastoral farming will continue to be the major rural activity in this zone with some commercial forestry."

The "policy with respect to hill and stable high country land is to maintain and support its function of providing extensive grazing in conjunction with lower lying fertile land in the Rural A Zone. Other uses compatible with scenic values and land stability will also be

permitted in the Rural B Zone." Uses specified include a full range of rural industries/community facilities, outdoor recreation and commercial forestry.

Under the amended proposed plan (1998), Dingle Burn lies within Rural General Zone. The Rural General Zone includes the majority of the District's rural lands and is characterised by farming activities and diversification to activities such as viticulture and includes the vast majority of the District's natural areas.

Section 6(a) of the Resource Management Act 1991 requires the Council to recognise and provide for the following matters of national importance:

(a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development.
(b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development
(c) The protection of significant areas of indigenous vegetation and significant habitats of indigenous fauna

The amended Proposed Queenstown Lakes District Plan includes the following policies:

(i) To promote the long term protection of sites and areas with significant conservation values.

(ii) To encourage the protection of sites having indigenous plants or animals with significant nature conservation values

(iii) Encouraging the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.

(iv) To maintain or enhance the natural character and nature conservation values of the beds and margins of lakes, rivers and wetlands.

The amended plan includes the following objective for landscapes:

(i) Subdivision, use and development being undertaken in the District in a manner which avoids potential adverse effects on landscape values.

Controlled activities (which require consent that the Council must grant with or without conditions) include buildings, retail sales and mineral exploration. Discretionary activities include residential units on sites between 4 and 20 hectares, mining, forestry activities and a breach of site standards for significant indigenous vegetation and forestry and shelter belt planting. Non complying activities include power generation facilities, residential units on sites of less than 4 hectares and commercial activities. There are no prohibited land based activities within the zone. There are also no rules protecting outstanding natural features and landscapes and clearance of indigenous vegetation in general and significant natural areas in the interim (i.e. those areas that have not been identified in the plan).

Only those significant natural areas with current formal protection have been identified as areas of significant natural value in the amended proposed plan. The plan does not identify outstanding natural features and landscapes. For these reasons no such areas on Dingle Burn are recognised in the amended Proposed District Plan.

However, it should be noted that the 1995 Proposed Plan identified a large area comprising the Hawea faces between Timaru River and the Dingle Burn Peninsula, as an area of landscape importance. The 1995 proposed plan also identified a number of sites of "Significant Nature Conservation Value". These sites are: Site 91A - Dingle Lagoon, Site 120A - Hunter Forest and Bush Remnants, Site 112A - Dingle Burn Forest and Bush remnants and Timaru River Forest and bush remnants.

The amended proposed plan of 1998 removed all reference to Areas of Landscape importance and retained only the Dingle Lagoon as a site of significant nature conservation value.

Due to a recent Environment Court decision, landscape and significant natural value provisions of the amended Proposed Plan will be altered and specific sites are likely to be reincorporated into the plan. The department has negotiated a settlement (not yet lodged with the Court) addressing the identification of significant natural areas. Matters in respect of an indigenous vegetation clearance rule and interim rule protecting significant natural areas remain unresolved.

### 3.4 Conservation Management Strategies & Plans

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 Otago Conservancy. Dingle Burn pastoral lease lies within the Hawea - Lindis Special Place.

The CMS objectives for the Hawea - Lindis Special Place are:

"To manage and enhance recreational opportunities on lands administered by the Department in the Hunter - Hawea area to maintain the natural and historic resources of areas while providing for an appropriate range of recreational activity of high quality.

To achieve permanent protection for areas of significant nature conservation importance in the area.

To maintain and where appropriate enhance the quality of aquatic habitats in the area".

The key implementation methods relevant to Dingle Burn are:

(a) Negotiation opportunities presented by pastoral lease tenure review or land exchanges on the large pastoral runs in the area or Crown Land allocation opportunities will taken with a view to:

- Protecting areas of significant nature conservation value.
- Linking and buffering existing lands administered by the Department.
- Improving public access and recreational opportunities on lands administered by the Department.
- Protecting landscape qualities in the area, particularly those visible from visual catchments visible from the state highways.

(b) Negotiating whether in the context of pastoral lease tenure review or otherwise, for secure appropriate public access through Hunter Valley, including 4WD access, to the edge of lands administered by the department.

(c) Negotiations can provide for monitored grazing of conservation lands provided net conservation benefits can be shown in the total package.

(d) Maintaining red deer and chamois numbers at acceptable levels by relying initially on control by recreational and commercial hunters (the latter in less accessible areas) and encouraging them, where necessary, through the maintenance or placement of facilities.

(e) Removal of exotic conifers and broom.

(f) Given the significance of recreational values in the Dingle Burn Valley, the department considers it an inappropriate location for regular landings of commercial or private aircraft. Consequently, the existing aerial access concessions will be allowed to expire in accordance with its phase out conditions and further concessions are unlikely to be granted and landing permission refused except in emergencies or for management purposes.

(g) Maintaining thar numbers at near zero density in the upper Hunter Valley and vicinity and zero elsewhere, using official control operations and continuing or expanding the use of Judas thar if appropriate.

(h) Monitoring possum impacts (particularly on mistletoe species) and control as resources permit.

(i) Monitoring any adverse effects that may arise from rabbits, hares, pigs and goats in forest in the forests, scrub and alpine areas and take control action as resources and priorities permit.

(j) The department will seek the protection of the braided river characteristics of the Hunter Valley by adding them to the conservation estate and will endeavour to mitigate the adverse effects of jet boat access up the river by seeking or retaining controls on speed.

(k) Protection of braided rivers from stock incursion to protect nesting birds.

Stated priorities for Hawea -Lindis are "*Consolidation of protected areas and protection of key habitats through tenure review negotiations, improving public access and animal and pest control activities will be priorities in this special place*".

# PART 4

# MAPS ETC.

## 4.1 Additional Information

### 4.1.1 References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**Wardle P. 1991.** Vegetation of New Zealand. Cambridge University Press.

..1.2 Attachments

**Floate M, Federated Mountain Clubs.** Recreational and Related Significant Inherent Values on Dingle Burn Station. A Report to FMC based on Field Inspections and other research to assist in the Crown Pastoral Lease Tenure review Process. November 1999.

## 4.2 Illustrative Maps

### 4.2.1 Topo/Cadastral

### 4.2.2 Values – Landscape

### 4.2.3 Values – Vegetation / Fauna