

# **Crown Pastoral Land Tenure Review**

**Lease name : HOME HILLS**

**Lease number : PO 383**

## **Conservation Resources Report - Part 1**

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.

Note: Plans which form part of the Conservation Resources Report are published separately.

These documents are all released under the Official information Act 1982.

**April**

**06**

**DOC CONSERVATION RESOURCES REPORT ON  
TENURE REVIEW OF**

**HOME HILLS PASTORAL LEASE**

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**PART 1**

**INTRODUCTION**

**1.1**

Home Hills Pastoral Lease (PL) was inspected on the 7-9 November 2001 as part of a review of its pastoral lease tenure. This review was requested by the lessees of the property and is being undertaken under the provisions of the Crown Pastoral Land Act 1998. As part of the tenure review process, a range of specialists have visited the property to look at the inherent values and have contributed to this report.

Home Hills comprises 3199.5846 ha of pastoral lease, which is the subject of this report. It is run in conjunction with 294 ha of freehold land.

The property is located on Fiddlers Flat Road approximately 24 km from the town of Ranfurly in the Maniototo District of Otago. It is bounded by the Manuherikia River on the western boundary. Falls Dam is partly located on the lease and provides a focal point for the area.

It is located in the Central Otago Ecological Region and the Maniototo Ecological District. A Protected Natural Areas Programme survey report has been undertaken for this ecological district. Two areas within the property were recognised as areas of interest.

**PART 2****INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE****2.1 LANDSCAPE**

Home Hills has been divided into four into landscape units with the boundaries being defined principally by changes in aspect and land cover.

**Landscape Unit 1****Description:**

This unit incorporates all of the dissected high hills at the southern end of the property. The southern and eastern boundaries follow fairly arbitrary lines across broken hills while the western boundary follows the margin of the Manuherikia River. The northern boundary is defined by a change in topography from dissected high hills to colluvial slopes (LU 2).

Within this unit the assemblage of landforms include a series of narrow ridge lines which stem out from the highest point near Trig F, at 991m.asl, and then descend down to the edge of the river at 500.m.asl. The ridgelines are separated by deep v-shaped gullies which are typified by north facing planar slopes, while the corresponding dark slopes frequently are steeper in grade and have parent rock jutting out from the surface. The upper reaches of the gullies tend to have a winding character due to the interlocking spurs that project out from the main ridgeline. The floors of the larger gullies are occupied by small streams which flow over beds of loose gravel. The two main gully systems which form the upper catchment of the two major creeks in this unit include Home Creek which drains into the Manuherikia River while the next catchment flows into the bottom end of Falls Dam.

This unit also includes Fiddlers Flat, a semi arid alluvial terrace, of varying width, that overlooks the Manuherikia River.

In the lower hill country to the south of the property, vegetative cover is dominated by introduced grasses and scattered fescue tussock. On dry north facing slopes there are expansive areas of bare ground, while matagouri has spread over large areas. Mats of hawkweed are a common feature on the dry stony slopes and ridgelines. In places the matagouri has been cut in swathes for stock access. Above 750m.asl., there is still a dominance of introduced grasses, with some heavily modified snow tussock, blue tussock, golden Spaniard and native broom. The vegetative cover of the gullies leading off Trig F retains a high indigenous component. Sunny semi arid slopes are in short tussock while darker slopes support a mosaic of short tussock, patches of tall tussock are close to the crest, with matagouri shrublands occupying the base of the slopes and stable scree chutes. Along the margins of the creeks there are discontinuous patches of matagouri, *Coprosma*, sweet briar and elderberry.

The primary land use within this unit is extensive grazing with the dissected hills being subdivided into several grazing blocks. Parts of Fiddlers Flat have been split into several smaller paddocks and are grazed more intensively.

The most conspicuous "built" elements within this unit are the network of tracks and stock yards which are elements that are associated with a high country farming operation.

### **Landscape Values:**

The extensive conversion into pastoral farmland has resulted in the inherent landscape values within this unit being diminished. This is particularly so at the southern end where native cover has been replaced by introduced grasses and legumes. Mechanically cut swathes through matagouri shrublands gives the landscape a fragmented and artificial appearance. The landform and ground cover within this unit are fairly typical of the high hills surrounding the Maniototo Basin making this unit a fundamental component of a larger high country landscape type. The v-shaped valleys at high altitude support uninterrupted sequences of shrubland.

This unit has only moderate resource values. The landform, having a highest point of 990m.asl, is absorbed within the rangelands that surround the Maniototo basin. Trig F and the south slopes of Home Hills can be viewed from State Highway 85 and from the local network of roads. Owing to the extensive modifications to the natural ground cover, the resulting landscape has an incoherent character.

Being relatively modified this unit's main threats include further spread of weedy species such as hawkweed, grazing that would see a decline in the tall tussock cover above 700m.asl., spread of wilding pines, further tracking over the semi arid slopes, and the siting of insensitive structures such as communication towers on Trig F. Burn-offs would be detrimental to the grey native shrublands that are regenerating on the dark side slopes.

### **Landscape Unit 2**

#### **Description:**

This unit includes north facing colluvial slopes that form a transitional zone between the dissected high hills and the outwash fans to the north (LU4).

The gradient of the slopes is relatively moderate with the highest point being 810m.asl. and the lowest 605m.asl. The topography has a rounded or convex appearance. Small waterlogged depressions containing finger bogs are the source of small streams. The surface of this expansive colluvial slope is broken by a large gully that has been etched into the ground surface in an easterly direction. Similar to the gullies in LU 1, this gully is typified by a smooth sunny slope while the shady face is steeper with rocky outcrops. The numerous small spurs which lead off the main ridgeline are truncated at their bases due to the down-cutting of a stream, which originates just below the eastern side of Trig F. The northern boundary of the unit follows the upper edge of Johnstones Creek which flows from the adjoining Hawkdun Range.

Tall tussock in good condition dominates this unit. Amongst this is golden spaniard, matagouri and native broom. Around the margins of the finger bogs are intact turf associations, while red tussocks are on areas that have a high water table. At a lower altitude, just above Johnstones Creek, is a definite change in the vegetative cover from intact tall tussock to a sward of mixed introduced grasses and fescue tussock with an intermingling of matagouri and sweet briar.

### **Landscape Values:**

In landscape terms, this unit makes a positive contribution to the high country because of the continuous broad band of tall tussock grasslands over the upper and mid colluvial slopes. The uniformity of these tall tussocks is distinctive as they contrast markedly with the more extensive depleted fescue tussock grasslands found in the adjoining valley floor. These tall tussock grasslands form an outlier of a similar vegetation type found extensively on the adjoining Hawkdun Range, resulting in a rather disjointed landscape pattern.

These colluvial slopes add to the visual setting of the southern end of the upper Manuherikia River valley and provide a strong sense of enclosure, which differs from the more open and spacious valleys and basins found in the Maniototo District.

This unit has a relatively high vulnerability to change due to the homogenous characteristics of the tall tussock. Activities that could have an adverse effect on the existing values include a decline in stature, density and vigour of the snow tussock, further encroachment of fescue tussock into the mid-altitudinal zone, or fragmentation by tracking and subdivision which would result in hard edges being created in the tussock grasslands. Although relatively robust in nature the shrublands which occupy the lower valley would be vulnerable to fire.

### **Landscape Unit 3**

#### **Description:**

This unit is well defined by the relatively steep slopes that overlook the Manuherikia River below the Falls Dam structure. These westerly slopes are broken by an elevated gravel terrace, of varying width. Close to the river the slopes change dramatically to vertical rocky cliffs with the river channel contained within a deeply incised gorge. The river passes through exposed rock strata with a series of long pools and white water rapids.

Along the mid slopes are impressive rocky outcrops surrounded by stable scree slopes. Established on the semi arid slopes is a diverse mixture of native gray shrublands along with sweet briar and occasional elderberry. Where soil is deeper there is fescue tussock and introduced grasses.

The Fiddlers Flat Road follows an elevated terrace overlooking the river. Four concrete chimneys surrounded by a row of willow trees provide a distinctive cultural feature.

#### **Landscape Values:**

This unit has high landscape values with its wild and scenic qualities dominated by the rugged river gorge. The gorge creates a strong feeling of enclosure with the surrounding

steep slopes forming natural "walls". This unit conveys a strong local identity. When traveling along the Fiddlers Flat Road a sequence of diverse landscape types is experienced. The views are very directional with the river and its rapids being a strong focal point. This unit is extremely vivid and memorable due to its distinctive landscape context.

Although inherently robust the possible threats to this unit include the further loss of native shrublands and the siting of any structures in visually sensitive areas such as immediate skylines.

#### Landscape Unit 4

##### **Description:**

This unit comprises the floor of the upper Manuherikia River valley. The valley above Falls Dam forms one distinct landscape character unit, which extend beyond the pastoral lease boundary. The unit includes the valley and the enclosing mountain and hill slopes of the Hawkdun Mountains and ranges to west and south-west.

The flats form part of a northwest oriented valley system. The floor consists of toe slopes, outwash fans and low terrace formations. The Hawkdun Range is a dominant and powerful landscape feature that encloses the valley on the north-east flank. The outwash fans and low terrace formations which slope away from the range, face towards the Manuherikia River.

Numerous streams drain across the valley floor forming a significant feature. The more substantial streams such as Hut and Ten Chain Creeks have cut down into the outwash gravels.

The pattern of vegetation cover is relatively similar across the valley floor, although the condition varies from north to south. The vegetation pattern is closely linked to landform. This pattern comprises shrublands associated with channels and drier interfluves, and tussock (both snow tussock and silver tussock) extending down from the range face onto toe slopes fans and terraces. Seepages and flushes are also significant features with associated plant communities which contain snow tussock. The drier fans are covered in mixed tussock and sparse shrubs. Hawkweed and catsear are also a significant component of the land cover.

Ten Chain Creek represents the most intact zone of the valley floor extending across the valley to the Manuherikia River. Intactness and naturalness are diminished towards the south with a greater degree of fragmentation and a higher proportion of short tussock and exotic species including grasses, legumes, and hawkweed. However the patterning of shrubland, tussock, seepages and flushes remain.

Overall, tussock and native vegetation are the dominant land cover over the whole valley floor.

Cultural influences are mainly associated with pastoralism, and include the impact that grazing and burning has had on vegetation cover; the presence of large, fenced grazing blocks and access tracks. The Mount Ida water race is a prominent man made feature which sidles around the base of the Hawkdun Range on the northern boundary of the lease.

Other cultural features include a small number of kiwi backcountry fishing huts grouped on the eastern side of Falls Dam with plantings of willow and poplar.



Other key aspects of the landscape character of the flats above Falls Dam are the openness and expansiveness of the valley along with a remote backcountry feel.

**Landscape Values:**

The flats are part of an inter-montane valley system and contain high visual values derived from a combination of characteristics. These characteristics contribute to a visually impressive and highly scenic landscape. They include:

- The openness and expansiveness of the valley and its montane setting below the Hawkdun and surrounding ranges.
- The legibility and clarity of the landform patterning including numerous watercourses, outwash flats, fans, and terraces.
- The relative naturalness of the vegetation viewed as a whole (in a landscape sense).
- The continuity of tussock cover from range top to valley floor within the Upper Manuherikia catchment including areas within Home Hills pastoral lease.
- The undeveloped, backcountry character.

A further aspect of visual values of the flats is that the flats (along with the Hawkdun Range) form the backdrop view from Falls Dam. The Dam is a popular local recreational area.

Key landscape criteria can be described as follows:

- Intactness: High at northern end (Ten Chain Creek) and on toe slopes to the south but low to medium on drier fans and terraces.
- Legibility: Landform and waterform, patterns and processes highly legible.
- Aesthetic Factors: Very distinctive and memorable backcountry valley which is visually coherent when viewed from a distance. At close range modified zones detract to some extent.
- Historic Factors: Overall of low significance except for the Mt Ida water race.
- Visibility: Generally low- medium, but visible from Falls Dam.
- Significance: Highly significant and forms part of an outstanding landscape area including the Upper Manuherikia and Dunstan Creek catchments.
- Vulnerability: Vulnerable to landscape change from intensification of farming, tree planting, cultivation, oversowing and topdressing, erection of farm buildings or structures, and mining.

**Significance of Landscape:**

The natural landscape pattern and ecological processes have been extensively modified due to a long period of farming on Home Hills pastoral lease.

Three areas are considered to make a positive contribution to the landscape character of the high country. The belt of snow tussock within LU2 is significant, but its value would have been enhanced if it were physically connected to the greater expanses of tall tussock grasslands in the locality. The second significant area (part of LU3) is the lower river gorge which is a special entity, with its natural features differing greatly from the typical Maniototo landscape. The third area is the flats and fans making up LU4. This is a complete altitudinal sequence of various grasslands and shrublands, stretching from the river's flood plain to the

base of the Hawkdun Mountains. Intactness and naturalness diminish towards the south, however, the patterning of shrubland, tussock, seepages and flushes remain.

## 2.2 LANDFORMS & GEOLOGY

The basement rocks of the Central Otago region were derived from sedimentary rocks originally deposited in the New Zealand geosyncline during or before the Jurassic period. In the Rangitata Orogeny these sedimentary rocks were uplifted and metamorphosed to form four textural grades within the so-called 'Haast Schist' Group and low grade metagreywackes of the Torlesse Group, with a predominantly north-west trending fold axis.

Following this uplift there was a long period of relative tectonic stability when the landmass was deeply eroded to form a peneplain. The peneplain surface gradually subsided and was deeply buried under a variety of sediments. Fine grained sediments known as the Manuherikia Group are thought to have been deposited during the Miocene in a lake basin that covered much of Central Otago.

On Home Hills the fans to the north of the property lie at the bottom of the fault scarp of the Hawkdun Range. The valley floor is a down faulted basin filled with Manuherikia Group sediments, which are a mixture of fine grained muds and gravels. Maori Bottom gravels in places overlie the sediments forming low hills. The semi-permeable properties of these gravels lead to runoff from hill slopes into flushes. The fans and terraces are formed from coarse highly permeable greywacke gravels. The fans, as a relatively young landform are still in the process of formation, in contrast to the older terraces whose different levels represent different eras of deposition.

There are two outwash structures in the Upper Manuherikia basin included in the property. The first is a Lacustrine claystone and siltstone with minor sandstone and limestone known as the Bannockburn formation and Waitangi Coal measures. This is a glacial and fluvoglacial deposit from the Miocene. The second is the gravel, sand and silt of low river terraces which is a fluvial structure of the Holocene.

The small hill range known as the Home Hills is comprised mainly of greywacke which was uplifted in the late Miocene early Pliocene period during the same time as the deposition of Maori Bottom gravels. The portion of the Home Hills within Home Hills Pastoral Lease is dissected by deeply eroded v shaped valleys draining to the west.

The Manuherikia River forming much of the western boundary of the property has formed a deeply incised gorge below Falls Dam, with two significant river terraces, the larger known as Fiddlers Flat. This is much higher than the present river level and have been alienated from flooding for a considerable period of time.

The Catchments with their origin on the western faces of the Hawkdun Range are broadly similar in rock type and climate to other stream catchments draining south-west from the ranges that extend from the Hawkdun range to the Mount Ida Range through to Mount Pisgah in the Kakanui Range. These catchments are all on the margin of the Maniototo Basin. All catchments have Torlesse or Haast group rocks that grade from undifferentiated to schistose

(Bishop 1976). Gully erosion and scree erosion is common in these areas. Sediment supplied to streams is often mobilised during intense rainfall events. Catchments are steep and often constrained with frequent occurrence of bedrock as well as areas of accumulated gravels. In contrast, where these streams enter basin floor areas that are lightly dissected with terraces, stream reaches are often shallow, unconfined and sometimes aggradational with extensive deep gravels.

According to Gilkison(1936-37), who reported on the construction of Falls Dam, the gorge marks the junction of the schist downstream and the greywacke upstream. The farther from the junction of the two rocks the better the quality of the greywacke. This is the reason that Falls Dam was located at the upstream end of the gorge. The rock at the dam is intermediate between a hard blue greywacke and the crushed and shattered rock in the vicinity of the junction with the schist.

A small part of Home Hills PL, on the north-western corner, is part of a much larger area which has a lignite coal resource. This area, among others also identified for their mining potential, was in the 1980s known as the 'Hawkdun site'. Studies of the botany, terrestrial fauna, aquatic biology, agricultural productivity, soils and rehabilitation potential, were completed in 1985 by the Liquid Fuels Trust Board (Wilkinson 1985). It was considered that the Hawkdun site had the least ecological values and would suffer the least impact from a mine development of the sites looked at (note that the main area of the site was the other side of the Manuherikia River).

### 2.3 CLIMATE

Home Hills has a continental type climate with hot summers and cold winters. Rainfall is approximately 600mm per annum but this varies widely from year to year. Summers are normally droughty. Winters are severe, with heavy frosts May until late August and occasional snow that can lie for up to two weeks. The property is windy especially in the spring and summer when strong dry north-west winds blow down the Manuherikia Valley.

### 2.4 VEGETATION

Three land units are identified for the purpose of describing the vegetation. These are Fiddlers Flat Terraces, Home Hills, and Manuherikia Flats (land north-east of the top of Falls Dam).

#### Fiddlers Flat Terraces:

This strip of mostly flat land comprises two distinct river terraces separated by a steep, often rocky terrace riser. The lower-most terrace has shallow water channels and would be periodically inundated by floodwaters. These damp areas are dominated by *Carex coriacea* with patches of native dock (*Rumex flexuosus*) and *Carex secta*. Dry stony interfluves are variously dominated by porcupine shrub (*Melicytus alpinus*), hard tussock (*Festuca novae-zelandiae*), *Muehlenbeckia axillaris*, briar (*Rosa rubiginosa*) and *Racomitrium* moss. Other common species include *Carex breviculmis*, *Coprosma propinqua*, blue tussock (*Poa colensoi*), mouse-ear hawkweed (*Hieracium pilosella*), patotara (*Leucopogon fraseri*), and matagouri (*Discaria toumatou*).

The terrace riser is in places heavily vegetated with shrubland. The main species are briar, matagouri, *Olearia odorata* and *Coprosma propinqua*. Other parts are poorly vegetated with steep unstable scree and small rock outcrops. One such area has a rare herbfield/low shrub community comprising several threatened species. Present are a small unnamed button daisy *Leptinella "clutha"*, a cress *Lepidium sisymbrioides* subsp. *kawarau*, *Muehlenbeckia ephedroides*, *Coprosma acerosa* and *Raoulia monroi*.

The higher terrace is dominated by mouse-ear hawkweed, *Myosotis discolor*, and introduced grasses tolerant of arid conditions, but despite this, retains many native species of particular note. These include the dwarf brooms *Carmichaelia vexillata* and *C. nana*, *Pimelea sericeo-villosa*, *Carex muelleri*, and the small orchid *Pterostylis tanypoda*. More common species widespread over the terraces include *Raoulia australis*, *R. parkii*, *Muehlenbeckia axillaris*, *Scleranthus uniflorus*, porcupine shrub, desert broom (*Carmichaelia petriei*), *Stackhousia minima*, and the free living lichen *Chondropsis semiviridis*.

The rocky bluffs of the river gorge itself have occasional plants of the threatened broom *Carmichaelia curta* and cress *Lepidium sisymbrioides* subsp. *kawarau* amongst a generally sparse cover of matagouri, sweet briar and *Coprosma propinqua*.

#### Home Hills:

Moderately steep hill country at the south end of the property is a mosaic of exotic pasture/short tussockland below approximately 800 m, degraded cushion/low shrub communities on dry north-facing slopes, and tall tussockland on south facing or gentle north-facing slopes above 800 m.

Low elevation pasture on better soils has scattered matagouri, porcupine shrub, desert broom and occasional *Olearia odorata*. On eroding dry hillslopes pasture grasses give way to cushions of *Raoulia australis* and *Scleranthus uniflorus*, with much *Geranium sessiliflorum*, *Pimelea orepbila*, *Muehlenbeckia axillaris*, mouse-ear hawkweed and sheep sorrell (*Rumex acetosella*). A dwarf broom *Carmichaelia vexillata* is locally abundant.

Tall tussock grassland (*Chionochloa rigida*), although quite limited in extent and often heavily browsed, is frequently dotted with shrubs of coral broom (*Carmichaelia crassicaule*). Dense concentrations of coral broom (up to 200 shrubs) occur in several localities.

The north-facing slopes of the central unnamed stream draining to Falls Dam are almost devoid of a tall tussock cover. Instead the dry hillslopes, which contain much bare soil and rock, support a sparse low vegetation of herbs and shrubs, many of which adopt a cushion habit. Common species are *Carmichaelia nana*, *C. vexillata*, *Raoulia australis*, *R. apice-nigra*, *Oreomyrrhis rigida*, *Stellaria gracilentata*, patotara, *Muehlenbeckia axillaris*, *Carex breviculmis*, and *Poa maniototo*. Taller shrubs of matagouri and desert broom are also present. Common weeds include sheep sorrell and mouse-ear hawkweed.

South-facing slopes at similar elevations have a taller, more dense vegetation cover dominated by narrow-leaved tussock, silver tussock (*Poa cita*), matagouri, desert broom, sweet briar, coral broom and golden speargrass (*Aciphylla aurea*). Groundcover species are similar to that described on north-facing slopes.

Small rock outcrops amongst the tussockland have a distinctive flora not commonly encountered in the tussockland. Common species include *Brachyglottis haastii*, *Anisotome brevistylis*, *Luzula rufa*, and *Asplenium appendiculatum* subsp. *appendiculatum*. Outcrops above Fiddlers Flat Road and on a spur above Johnstones Creek have the rare cress *Lepidium sisymbrioides* subsp. *kawarau* in association with *Pimelea traversii*, *Oreomyrrhis rigida* and *Vittadinia australis*.

Wetlands are not a significant feature of this block, however a few small seepages exist on gently concave slopes. These are dominated by comb sedge (*Oreobolus pectinatus*), *Gaultheria parvula*, *Gonocarpus aggregatus*, *Ranunculus foliosus*, *Bulbinella angustifolia*, *Schoenus pauciflorus*, *Luzula leptophylla* and mouse-ear hawkweed.

Bouldery screes occupy the lower slopes of most of the small valleys, and the slopes adjoining Falls Dam and the Manuherikia terraces below the dam. Where they have been stable long enough to be vegetated, diverse shrublands are present. Dominant species include matagouri, *Aristotelia fruticosa*, *Coprosma ciliata*, desert broom, *C. propinqua*, *Olearia odorata* and golden speargrass. Along streamsides additional shrub species include *Coprosma intertexta* and *Olearia bullata*. Such shrublands are often draped in the lianes *Muehlenbeckia complexa*, *Rubus schmidelioides* and *Clematis marata*.

Although not able to be surveyed, Falls Dam holds an impressive aquatic flora that is revealed during low lake levels. The lake shore gravels, in the vicinity of the boat launching area near the huts, also has a population of *Lepidium sisymbrioides* subsp. *kawarau* within an exotic grasses/native herbfield community.

#### Manuherikia Flats:

This unit comprises the gentle toe slopes of the Hawkdun Range formed by the accumulation of outwash gravels from Ten Chain Creek, Hut Creek and Gate Creek. In general, the intactness of the indigenous plant communities improves along a north-easterly gradient.

The most intact ecological and vegetation gradient occurs along the length of Ten Chain Creek from the property boundary in the north-east, to the north-western boundary near the creeks confluence with the Manuherikia River. At the head of the creek, the valley floor topography comprises a series of channels, wet flushes and drier interfluves. Relatively stable interfluves support a fine shrubland of matagouri, desert broom, *Olearia odorata*, *O. bullata*, *Coprosma intertexta*, *C. propinqua* and occasional *Aristotelia fruticosa* and coral broom. Gaps and clearings amongst the shrubland are frequently occupied by narrow-leaved tussock, copper tussock (*Chionochloa rubra* subsp. *cuprea*), and silver tussock depending on micro-site conditions. Very dry sites have *Raoulia subsericea*, patotara, *Coprosma petriei*, golden speargrass and mouse-ear hawkweed. Recent creek bed gravels have a sparse herbaceous cover of *Muehlenbeckia axillaris*, *Geranium sessiliflorum*, *Acaena inermis*, *Raoulia tenuicaulis*, *Scleranthus uniflorus* and *Anaphalioides bellidioides*.

Away from the creek, at the base of the spur running up on to the Hawkdun Range, are seepages amongst copper tussock. These are dominated by comb sedge (*Oreobolus pectinatus*) but also include *Plantago triandra*, *Celmisia gracilentia*, *Hydrocotyle microphylla*, *Euchiton* spp and *Gonocarpus aggregatus*. Flushes nearby are dominated by *Schoenus pauciflorus*, *Ranunculus foliosus*, *Bulbinella angustifolia*, *Galium perpusillum*, *Microseris scapigera* and native dock.

The drier outwash fan is covered in mixed tussock and sparse shrubs. Narrow-leaved tussock predominates but hard tussock and blue tussock are also common. Taller shrubs present are matagouri, coral broom and desert broom. Low shrubs and sub-shrubs include *Gaultheria parvula*, *G. depressa*, patotara, *Pimelea oreophila*, and *Coprosma cheesemanii*. Native groundcover herbs include *Raoulia subsericea*, *R. parkii*, *Ranunculus multiscapus*, *Celmisia gracilentia*, *Brachyglottis haastii*, golden speargrass and sun orchid (*Thelymitra longifolia*). Mouse-ear hawkweed and catsear (*Hypochoeris radicata*) are pervasive weeds.

Near the bottom of the fan (western extent of property) mouse-ear hawkweed and patotara dominate with *Carex breviculmis*, *Coprosma petriei* and *Scleranthus uniflorus* also common. The gravel banks of Ten Chain Creek are well covered in *Muehlenbeckia axillaris* herbfield.

Fans to the south repeat this broad patterning albeit in a more degraded and interrupted sense. Shrublands and tall tussock areas are smaller and more fragmented, and pasture grasses and weeds constitute a considerably higher proportion of the ground cover. A small wetland at the base of a terrace between Ten Chain Creek and Hut Creek is dominated by *Carex sinclairii* with *C. testacea*, *C. coriacea*, *Eleocharis acuta*, and native dock.

#### Significance of vegetation:

The Fiddlers Flat terraces, although much modified by the ingress of pasture grasses, clovers and agricultural weeds, have retained a suite of species and vegetation communities now rare nationally. At least nine species are recognised as threatened through the most recent threat ranking evaluation including three species that rank in the highest major division of 'Acutely Threatened'. Such a concentration of threatened species in such a small area is remarkable and highlights the national significance of the site. Apart from the threatened species, several other species present are very uncommon in the context of both the Maniototo Ecological District and the wider Otago Conservancy. Their occurrence at Fiddlers Flat reflects the absence of ploughing and soil cultivation which has no doubt destroyed equivalent habitat in the Manuherikia Valley and elsewhere.

The most upstream flats (below the dam) along with the surrounding hill slopes of the Home Hills block, have previously been recognised as an 'Area of Interest (AOI 2 Falls Dam) in the survey report for the Protected Natural Areas Programme - Maniototo District (Grove 1994). This recognises the diversity of landforms present, ranging from elevated alluvial terraces to boulder slopes, coarse scree, loose scree and rock bluffs, each with a specialised flora. The shrublands are among the most diverse and extensive in the ecological district. A particular feature of them is the relative abundance of the quite localised shrubs *Coprosma intertexta*, *Olearia bullata* and the liane *Clematis marata* (all with a threat ranking of 'Sparse'). Mid slope rock outcrops support the nationally endangered cress *Lepidium sisymbrioides* subsp. *kawarau*. This plant is the subject of a national recovery plan (Allen 2000) which promotes the formal protection of its habitat.

The Manuherikia Flats represent the southern end of the large upper Manuherikia basin. Although modified by over one hundred years of pastoralism this area retains a substantial amount of indigenous vegetation over a wide area of montane valley floor. This includes elements of shrubland, tall tussockland, short tussockland, wetland and herbfield communities. Some of these communities have been much reduced nationally (i.e. montane shrublands, copper tussocklands and wetlands) and include significant populations of the

threatened shrubs coral broom, *Coprosma intertexta* and *Olearia bullata*. Indigenous vegetation on Pleistocene outwash fans and valley bottoms is considered a rare ecosystem. A recent environmental classification of eastern South Island intermontane basins and valleys (Walker *et al.* 2002) recognised Dunstan Creek and upper Manuherikia Valley as a distinct rain-shadow environment of which less than 2% is protected in the Crown conservation estate

### **Problem Plants:**

No weeds were identified as being of immediate conservation concern. Two common hawkweeds (*Hieracium pilosella* and *H. lepidulum*) are present in areas with significant inherent values. Mouse-ear hawkweed in particular is well established on dry gravelly soils. Maintenance and restoration of a tall tussock cover probably provides the best protection against further spread of these now ubiquitous high country weeds.

The property is vulnerable to the spread of wilding conifers although few trees are currently present. Sweet briar is present at low density in shrublands. Willows are present in some tributaries of Falls Dam and appear to have been subject to recent control. Their elimination from areas identified as having significant inherent values is desirable. Their absence from the waterways draining the Manuherikia flats is notable.

## **2.5 FAUNA**

### **2.5.1 Invertebrate Fauna:**

The property was inspected for invertebrate fauna in mild conditions with little wind. Invertebrates were hand collected or collected with an ultraviolet light at night.

In discussing the indigenous invertebrate fauna of the Maniototo ED, B.H. Patrick in Grove (1994) noted key sites for invertebrates. These include:

- Upper Manuherikia flats for grassland invertebrates
- Upper Manuherikia River flats for wetland insects
- Falls Dam bluffs for tor insects
- Falls Dam gorge and bluffs for shrubland insects.

Home Hills PL is situated in the north-east of Central Otago and mainly on greywacke derived rocks and soils of the Torlesse Terrain. Because of this the invertebrate fauna has many elements in common with both the Mackenzie Basin and Central Otago basin floors. The significance of various habitats on the lease for invertebrates is discussed below:

#### Upper Manuherikia Basin (near Falls Dam):

About 700 hectares of flats on the lease span an area between the foot of the Hawkdun Mountains and the true left of the Manuherikia River above Falls Dam. This is the lower part of an extensive valley floor system. There are recent fertile soils along the many streams that spill across the flats, with droughty eroded soils of low nutrient status in between. Areas of wetland have seasonal ponding. Low terraces and terrace risers or gently undulating areas have sparse vegetation cover. With a long history of grazing, native vegetation cover is depleted in places, with browntop and sweet vernal frequently the dominant vegetation

elements. However, a rich and diminutive native flora is matched by the persistence of a resilient invertebrate fauna.

The nationally endangered moth *Orocrambus sophistes* (Hitchmough, R. [compiler] in press), and moth *Asaphodes ida* have a stronghold in this area (they are also present at Fiddlers Flat Road). Females of *O. sophistes* are flightless and thus have poor dispersal ability. *Asaphodes ida* is geographically near its Type Locality (Eweburn Stream) but its habitat in the Upper Manuherikia, being herbs in damp swards, is now the largest area that remains. The moths *Diasemia gramalis* and *Notoreas* new species, are present in short tussock areas with larvae feeding on *Muehlenbeckia axillaris* and *Pimelea oreophila* respectively. A diverse range of moth genera will be present among the sparse grass and herb cover. Some moths noted here (and elsewhere) on the lease include *Aletia moderata* (larvae on *Raoulia*), *Capua semiferana* (larvae in litter of open areas), *Prepalla austrina* (larvae on *Leucopogon fraseri*) and *Tmetolophota acontistis* (larvae on *Poa*, *Festuca* or *Elymus* grasses). Other insects not collected that are characteristic of natural and semi-natural open areas include darkling beetles (*Philoneus* spp.), chafer beetles (*Odontria* species and others) and ground weta (*Hemiandrus* species). Many of these insects will be found in small areas of the flats and are elsewhere facing loss of habitat in the Mackenzie Basin and Otago regions.

The shallow unconfined streams and floodplains will have mayflies, caddis and other insects in an assemblage able to cope with extremes of temperature and flow variability. The highly natural catchments with unconstrained patterns of flooding create distinctive stream communities despite the presence of trout. The strikingly coloured moth, *Paranotoreas brephosata* is common on the willow herb, *Epilobium melanocaulon*, in the floodplains. There are also patches of open matagouri and *Coprosma propinqua* shrubland on these fertile soils. These areas will be a productive habitat for foliage feeding insects such as the moths *Graphania phricas*, *Meterana oclhistis*, and *Zermizinga indocilisaria* on matagouri and moths *Austrocidaria gobiata*, *A. similata* and *Meterana tartarea* on *Coprosma*.

#### Western foot of the Hawkdun Range:

Here the Mount Ida Water Race winds around spurs and stream filled gullies at the toe of the Hawkdun Range. There are ancient terrace remnants, broad fluvial basins and a complex of wetland, cushion, grassland and shrubland habitats. This area is an important link or ecotone between typical montane grassland dominated flanks of the Hawkdun Range and the flats discussed above. Insects characteristic of both land systems are present. Stoneflies in the genus *Zealandobius*, scorpionfly, *Nannochorista philpotti* and mayfly, *Coloburiscus humeralis* are present along Ten Chain Creek and in wetlands. The moth, *Orocrambus heliotes*, lives in cushion or moss bogs, in seepage areas near Ten Chain Creek. Among the damp grassland areas of copper tussock and sedge, are larvae of tussock butterfly, *Argyrophenga antipodum*, large crane flies (Tipulidae), litter feeding flies, *Dilophus* species and shield bug, *Dictyotus caenosus*. In shrublands a range of insects are present, including *Zorion* species beetles from flowers, a weevil species off *Clematis marata*, the bug *Rhyphodes chinai* and many litter and foliage feeding moths which were also collected elsewhere on the PL. The large carabid beetle *Mecodema sculpturatum* found here is common in Otago and is indicative of less disturbed soils.



Falls Dam Gorge and Home Hills:

Some areas are depleted of soils and vegetation, an extreme example being some sunny northern and western aspects. These areas can retain significant insects, typical of dry habitats of the Maniototo Ecological District. Some streams have permanent flows with associated shrub, sedge and rush vegetation. Some southern facing slopes retain talus, shrub, tussock and litter habitat. Elsewhere most of the soils are droughty and exposed with bare rock and dry herb associations. Above 800 m, grassland cover is typical of areas around Mount Ida or Mount St Bathans.

The fauna of rock faces, rock talus and shrubland are a feature here (and also at Fiddlers Flat Road). Five moths were recorded from rock faces including, *Dichromodes* - new species, on lichens, *D. spaeriata* and another two species on mosses. Talus and toe-slopes are a rich habitat for moths, whose larvae feed on plants such as *Melicytus alpinus*, nettle, *Urtica aspera*, liane, *Muehlenbeckia complexa*, speargrass, *Aciphylla aurea*, and shrub daisy, *Olearia odorata*. In addition a number of moths are present in shrubland generally. Specialists in the shrub litter of droughty areas include moths, *Hieroderus* species and *Gymnobathra parca*. A number of day active moths of the genera *Orocrambus*, *Eudonia*, *Scoparia* and *Arctesthes* are associated with sparse herbs and grasses on dry slopes. The herb dwelling moth, *Eurythecta zelaea* has flightless females and is locally common.

Very small areas of wet flush are present along stream channels and on some lower slopes. For some insects these will be significant islands during water short periods. The moth, *Orocrambus aethonellus* is characteristic of such sites.

Fiddlers Flat Road and associated terraces to the Manuherikia River:

At only 520 m asl, Fiddlers Flat Road crosses an ancient terrace long since alienated from the down-cut river adjacent. The sandy loams over greywacke loess and alluvium have low nutrient status and are significantly eroded and damaged by stock camping. However, a diverse and highly significant range of diminutive grasses, and herbs is matched by a few significant records of insects. The rare nationally endangered moth, *Orocrambus sophistes* (Hitchmough, R. [compiler] in press) has a population here. A small brightly patterned grasshopper *Sigaus* is a threatened species (like *S. minutus*, Gradual decline or *S. childi*, Serious decline, Hitchmough, R. [compiler] in press) is found in areas where loose cushions of broom *Carmichaelia nana* are common. Other feature insects are the day active moth *Notoreas* - new species, on broken cushions of *Pimelea* and *Asaphodes ida* near its Type Locality.

The lower terrace system near the river has areas of thin stony soils with sparse shrub, grass and herb cover and also sumps and wetland with thick swards of grasses and sedges. Boulder butterfly, *Boldenaria* - new species, is typical of such stony localities. Wetter sites are productive for moths which have larvae on *Carex* species, a range of other moths, leaf hoppers, and stem or leaf mining insects. Adults of aquatic insects in the Manuherikia River will at times be abundant across the terrace where it opens out below the gorge.

In summary, a great range of habitats including river/wetland, talus-shrubland, rock bluff, droughty terrace, and hills surround Fiddlers Flat road. These retain many insect species that are representative of natural areas of the Maniototo Ecological District, where areas of natural character are now confined to sparse isolated patches (Grove 1994).

### Significance of Invertebrate Fauna:

The property spans and encapsulates much of the remaining areas of natural character in the Maniototo Ecological District (ED), in terms of the complexity of landforms and soils and the consequent flora and fauna present. The "Areas Of Interest" for conservation (AOIs, Grove 1994), AOI 1 (which extends up the Manuherikia River from the lease) and AOI 2, are collectively the largest remaining natural areas in the ED.

Much of the lease is well below 700 m in altitude. While soils and vegetation cover are in many places severely depleted, there has been little application of fertilizer and little cultivation. In many parts of the lease there are nationally significant assemblages of invertebrate fauna. Compared with similar low elevation areas in the Maniototo Ecological District, areas retaining natural character are larger and better linked to adjacent extensive mountain ecosystems. These areas include small streams, floodplains, wetlands and flats on the upper Manuherikia flats and also the terraces and bluffs bound by the Manuherikia River and Home Hills.

The moth fauna comprises 113 species of which at least 60 dwell in open areas. Of note is *Orocrosambus sophistes* (threat ranking -nationally endangered) and *Eurythecta zelaea* which have flightless females and limited dispersal ability. A number of the moths recorded have larvae specialising on plant genera or groups. These include 12 species on grasses, 14 species on shrubs, 14 species on herbs and many on lianes, moss, lichen and litter. Even though few wetland insects were recorded during inspection, the wetlands and streams of the terraces and flats are a significant natural habitat in the region.

Grasshopper *Sigaus minutus/childi* (threat ranking- in decline) is known from few lowland areas where there is significant uncultivated bare ground. The population at Fiddlers Flat Road is isolated with populations near Alexandra being perhaps the nearest.

### 2.5.2 Herpetofauna:

Home Hills has good lizard habitat at a number of locations, especially the slopes to the southeast of Falls Dam, the lower reaches of the streams flowing into the lake above Falls Dam, and the gorge, flats and hillsides for about 0.5 km below Falls Dam.

The property was unusual in that five lizard species were found during the tenure review inspection. The Southern Alps gecko, *Hoplodactylus* "Southern Alps", and McCann's skink, *Oligosoma maccanni* are widespread, but green skinks, *Oligosoma chloronoton*, common skink, *Oligosoma nigreplantare polychroma* and cryptic skink, *Oligosoma inconspicuum* were also found.

Threats to green skinks at Falls Dam at the present time include effects of habitat modification through past burning and browsing, predation by cats and mustelids, ongoing browsing by sheep and possums and destabilisation of screes by sheep. Poaching must also be included because the site is well known and easily accessible. Removal of cover for lizards through fragmentation of shrublands increases the risk of predation and poaching.

**Significance of Herpetofauna:**

Due to the presence of the green skink the area is ranked as high as a site of special wildlife interest, for the following reasons:

Green skinks have declined significantly as a result of human influence (i.e. through introduction of mammalian predators and habitat destruction).

Home Hill contains extensive areas of good habitat for green skinks, a species that is uncommon and discontinuously distributed. The patchy distribution is undoubtedly due to habitat destruction which is an on-going result of pastoral farming activities and other developments.

Green skinks are an endemic species found only in Southland and Otago (although taxonomic resolution is uncertain) and although they may be locally abundant at some sites, habitat is generally not well protected and is at risk from human activities. (Note that since the inspection the site where green skinks were found was heavily grazed and trampled, which substantially degraded this habitat and put any lizards there at greater risk of predation through reduced vegetative cover).

Green skinks are found only in Southland and Otago and considered to be in gradual decline (Molloy *et al.* 2001). The taxonomy of green skinks is not clear (Whitaker *et al.* 2002). Although only one species is currently recognised in Otago and Southland there is likely to be a complex of more than two species, some of which are seriously threatened (R. Hitchmough, *pers. comm.*).

The distribution of green skinks is patchy, and the Falls Dam population is near the north-western limit of their range. The only other known population in this area is found in Rocks Creek and Dunstan Creek, Mt St Bathans, 11-13 km away (Whitaker and Loh 1990). The size of the Falls Dam population is not known but given the ease of discovery, repeated sightings over a period of a decade and extent of suitable habitat, it is likely to be large.

**2.5.3 Avifauna:**

Sky lark, pipit, chaffinch, canada goose, spur winged plover, starling, blackbird, harrier hawk, pied stilt, banded dotterel and grey warbler were seen during the survey.

All of these species are either common in Otago, or do not have their main habitat on Home Hills (e.g. banded dotterel use shingle riverbeds for breeding and are also found on alpine fellfield). The shrublands downstream of Falls Dam and in the lower reaches of the streams flowing into the lake would be important habitat for the grey warbler, which may be locally uncommon.

Australasian bittern are present in the upper Manuherikia River and can be expected to use the low lying swampy lands between Hut Creek and Ten Chain Creek on a regular basis. The matrix of flat wet backwaters high swamp vegetation is typical bittern habitat.

**Significance of Avifauna:**

Australasian bittern are a threatened species in New Zealand. They are classified (Molloy *et al.* 2001) as nationally endangered.

**2.5.4 Aquatic Fauna:**

All the streams on this property flow into the Manuherikia River, a tributary of the Clutha River. The Manuherikia River is dammed by Falls Dam midway along that section of the river that forms the western boundary of this property. Falls Dam stores water to augment the river flow downstream for irrigation purposes. It has been in place since 1935. This dam creates an upstream and downstream barrier to the passage of all fish.

During the tenure review inspection, 13 sites were fished using a backpack electric fishing machine. Existing data sets were also searched for records of freshwater fauna. Two species of introduced fish were found. Brown trout (*Salmo trutta*) was found at all the 11 sites that produced fish. Brook Char (*Salvelinus fontinalis*) was found at two sites.

The native freshwater fish records for this property are limited to one species, the upland bully. The upland bully is probably the most common and widespread bully in the South Island (McDowall 1990). It is also found in the lower North Island. It occupies a wide variety of habitats from lakes to swiftly flowing streams from sea level to high altitudes and it is not considered threatened (McDowall 1990).

**Significance of Aquatic Fauna:**

The streams on the upper Manuherikia Flats have a basin floor character. These include Ten Chain Creek, Hut Creek and Gate Creek all spilling out from the Hawkdun Mountains behind. The physical environment for aquatic fauna where streams flow across the flats is unlike that of hill slopes. Stream-bed movement during floods is a more frequent and severe disturbance for plants, insects and fish. A few studies done in the nearby Kyeburn area have compared hill stream invertebrate communities with communities downstream on the flats (Townsend *et al.* 1997, Olsen *et al.* 2001). The assemblage and abundance of stream insects is different (Townsend *et al.* 1997) and also the assemblage of insects within the gravels (Hyporheic communities) is different between hill streams and their reaches on the basin floor (Olsen *et al.* 2001). Communities of this character are often modified in the Maniototo Basin and threats to such streams include willow invasion, water harvesting and flood protection works. However, the streams of the Upper Manuherikia flats retain significant natural physical character and natural invertebrate assemblages.

In addition to the streams, there are associated floodplain areas, permanent wetlands and seasonal wetland systems. Few invertebrates were documented in such sites. However, it is likely all of these contain significant invertebrate communities. Equivalent habitats are frequently alienated and affected by farming development elsewhere.

The habitat these streams provide probably once supported the threatened native galaxiids. This is based on known distributions of these fish in Central Otago (refer freshwater fish

database and DOC survey records) and the inability of these fish to co-exist with introduced salmonids (Allibone 1997).

The freshwater fish fauna recorded in the streams on this property is typical of many of Central Otago streams that have been colonised by brown trout. This is a common and widely distributed exotic fish, which was abundant throughout the waterways on this property.

The general health of the streams was good with high water quality, low temperatures and the major invertebrate groups were present in all of the streams fished. Streams of this quality are not uncommon locally but are declining as land development continues.

### **2.5.5 Problem Animals:**

Rabbits, possums and hares are common on the property, with the occasional pig and red deer. Rabbits are at low numbers, due possibly to the impact of Rabbit Hemorrhagic Disease. Historically rabbits have been at high numbers and will always pose a potential threat.

## **2.6 HISTORIC**

Falls Dam, its eastern end being within the lease area, was constructed between 1931 – 35. It is of rock fill construction, this method chosen to maximise the labour requirements during the depression. Other historic features include a collection of four concrete chimneys below Falls Dam, which are the remains of two houses, which used to accommodate the manager and engineer during the construction of the dam wall. Another identifiable site was probably the cookhouse, used by the workers, who resided in tents nearby (Gilkison 1936-37).

There is evidence of water races along the face of the hills above Fiddlers Flat and of numerous prospecting pits along the foot of the hill. Interestingly the pits still have protruding galvanised pipes on their sides. There appear to have been used as anchors for bucketing out the earth as the pits were dug.

The Mt Ida Race is an historic feature that traverses through the property at the foot of the Hawkdun Mountains. The race was hand dug in the 1870s and is approximately 120 km long. It was quite an undertaking at the time. However the race has since been extensively modified by mechanical means and a vehicle track has been formed along its bank.

### **Significance of Historic:**

Falls Dam and the remnants of buildings from its construction are interesting, but do not warrant protection, mainly due to their relatively young age. The line of the Mt Ida water race is historically important but due to the mechanical modification and the fact that it is still a functioning race, no protection is required.

## 2.7 PUBLIC RECREATION

### 2.7.1 Physical Characteristics

Home Hills provides a gateway to the upper Manuherikia Valley. Access is via the metalled Home Hills Runs Road. A round trip is available on roads maintained by the Central Otago District Council on a route which returns via the Hawkdun Runs Road. Leading off the Home Hills Runs Road is a four wheel drive route, mainly over private farm tracks, through to the Waitaki Valley.

Running along the terrace above the Manuherikia River, on the western side of the property, is the metalled Fiddlers Flat Road. It is maintained by the Central Otago District Council as far as Falls Dam. From the dam wall a farm track traverses the side of Falls Dam and although private and subject to a locked gate, has at times been available for use by the public. This track has ongoing maintenance requirements at the numerous fords, but is generally well constructed.

The Mt Ida Water Race traverses the bottom of the Hawkdun face on the north eastern side of the property. There is good (private) vehicle access along the race that is contiguous with neighboring properties.

### 2.7.2 Legal Access

The formed Home Hills Runs Road is in places some considerable distance from the legal road alignment. It appears to follow the legal line over that part of it which is adjacent to the Manuherikia River.

There is no formed legal access to the face of the Hawkdun Mountains.

Fiddlers Flat Road appears to follow the legal line for only part of its length. Part of the legal road line from the Falls Dam wall northwards has been inundated by water.

Although Home Hills Runs Road and Fiddlers Flat Road are in places not on the surveyed line, the roads are likely to be public roadway due to the longstanding use by the public and the expenditure of public money their on formation and maintenance.

While the Mt Ida Water Race does provide vehicle access, this currently is not available to the public as of right. The race is subject to an easement to the irrigation company who maintain the race.

### 2.7.3 Activities

Home Hills provides key access for recreational activities at Falls Dam and the upper Manuherikia Valley.

Falls Dam is popular for fishing and game bird shooting. A collection of huts at the north-western end are mainly owned by fishermen, with most being in family ownership for many years. The huts and their rights of occupation are, at the time of writing, subject to considerable public controversy.

Falls Dam and the upper reaches of the Manuherikia River provide sport fishing opportunities as they contain both brown trout and brook char. The river provides modest numbers of large fish providing recreation for dedicated back country anglers.

The dam and the surrounding flats provide hunting and shooting of canada geese, paradise shelduck and mallard duck.

The Hawkdun Range is accessed through the property by skiers, walkers and the occasional deer/pig hunter.

The formed Hawkdun Runs Road is used by four-wheel drive enthusiasts, mountain bikers and sightseers.

The water race is sometimes used by the public for vehicle access due to its flat nature and smooth surface. The race has been used by the Otago Cavalcade as a horse riding route.

**PART 3**

**OTHER RELEVANT MATTERS & PLANS**

**3.1 CONSULTATION**

An NGO early warning meeting was held on the 8/10/01 with interested groups. The following views were expressed:

- The Crown land water race needs to be added to the review. This would provide the public with the opportunity to use this for access and to walk to the top of the Hawkduns.*
- Public access to the top of the Home Hills with the possibility of a round trip was seen as a useful outcome.*
- The public need the right to use the area around Falls Dam and have rights to access the upper Manuherikia River. The access to the fishing huts needs to be sorted out.*
- Vegetation includes silver and red tussock on the outwashes. An area in the gorge has vegetation of interest that may include lepidium.*

A written submission from Allan Mark was received on 18/12/2001. The following comments were provided:

- The northern catchment of this property, Ten Chain Creek, was seen as a valuable area.*
- A small area of red tussock – snow tussock grassland on the north slope of Hut Creek is seen as a rare cover type in the area today.*

Federated Mountain Clubs completed a substantial submission in February 2002. They advocated:

- *Extensive public access including a round trip to Trig F.*
- *Nature conservation interests were advocated with recommendations on the Crown retaining the land above the Mt Ida Water Race, as well as imposing extensive areas of conservation covenants over proposed freehold land.*

A submission from the Upper Clutha Branch of Forest and Bird was received on the 7/6/2001. It identified various areas of potential interest including:

- Vegetation on the hill block.*
- Johnstones Creek*
- Above the Mt Ida Water Race.*
- It identified areas considered to have significant inherent values as follows:*
- Above the water race.*
- The landscape – which should be protected by a covenant.*

The following access routes were recommended:

- Walking access to Trig F.*
- A marginal strip on the Manuherikia River and Falls Dam.*
- 4WD access on the road above Falls Dam.*
- *4WD access too and around the water race. The access to be legal road.*



### 3.2 REGIONAL POLICY STATEMENTS AND PLANS

Home Hills is in the Otago Regional Council area.  
Under the Otago Regional Plan: Water suction dredge mining of Spring Creek requires resource consent.

The Regional Plan: Water, notes in its inventory of 'other' wetlands the 'Hut Creek Swamp Complex' GR 674/922.

### 3.3 DISTRICT PLANS

The property is located within the Rural Resource zone of the Central Otago District Plan, with the part of the property in the Falls Dam being zoned water Surface and Margin Resource Area. A small part of the property above the water race is in an Area of Outstanding landscape. The Falls Dam and Fiddlers Flat gravel pit are scheduled activities in the Plan. In general, the proposed Central Otago District Plan (amended to incorporate Council decisions) does not act as a trigger for the protection of tussock grasslands and smaller wetlands and forest areas. Resource consent is required for excavations or tree planting within specified distances of a water race or irrigation pipeline, and for development work within 10m of any water body. Resource consent is also required for tree planting of evergreen species with wilding spread capabilities. Development and tree planting requires resource consent in the area of Outstanding Landscape, but not clearance of vegetation.

There are no registered historic sites, or areas of significant indigenous vegetation and habitats of significant indigenous fauna and wetlands as set out in the schedules of the plan. Protection is limited to the controls set out above.

### 3.4 CONSERVATION MANAGEMENT STRATEGIES AND PLANS

The Otago Conservation Management Strategy has a general objective regarding Central Otago ecosystems.

This is to recognise the distinctive contribution the ecosystems of Central Otago make to the diversity of New Zealand's flora, fauna and ecological communities and processes and to retain representative examples through protection at lower altitudes and more extensive protected areas at higher altitudes.

This objective is to be implemented by the following:

*- The protection of representative examples of ecosystems including aquatic ecosystems on privately occupied land will be negotiated using a range of options including acquisition through tenure review, covenants, management agreements and land purchases or exchanges. Attempts to secure buffer zones and ecological linkages between areas will be included in this exercise.*

*- Survey of areas for the PNA Programme will be completed as access and resources become available and efforts will be made to negotiate formal protection for areas identified as a priority for protection.*

*- The value of tussock grasslands as a contributor to the character of New Zealand and its landscape and biodiversity will be promoted and retention of tussock grasslands advocated.*

The St Bathans-Hawkdun- Ida Ranges have been identified as one of Otagos special places. Home hills is on the edge of this special place with that part at the foot of the Hawkdun Mountains within this area. The objective is:

*To protect, on an extensive scale, the high altitude landscape, nature conservation and historic resources of the area, principally by acquiring adjoining lands of high natural, historic and recreational value, through pastoral lease or occupation licence tenure reviews, to link existing areas of land administered by the department thus providing for more recreational opportunities, better protection of values and efficient integrated management of those values.*

The Falls Dam, Upper Manuherikia is noted in the CMS as an example of an intact valley floor short tussock grassland, examples of which are now rare in New Zealand, let alone Otago. It is one of the best remaining examples.

The objectives for ecosystem conservation are as follows:  
*Ensure that intact, viable and well buffered examples of all indigenous ecosystems in Otago are thriving under appropriate conservation management.*

Priorities for ecosystem conservation are as follows:  
*Remaining relatively intact valley floor grasslands are a priority for protection action, while the linking and buffering of protected indigenous ecosystems of all kinds is still a priority in the Otago landscape.*

## **NEW ZEALAND BIODIVERSITY STRATEGY**

The New Zealand Government is a signatory to the Convention on Biological Diversity. In February 2000, Government released the New Zealand Biodiversity Strategy which is a blueprint for managing the country's diversity of species and habits and sets a number of goals to achieve this aim. Of particular relevance to tenure review, is goal three which states:

*-Maintain and restore a full range of remaining natural habitats and ecosystems to a healthy functioning state, enhance critically scarce habitats, and sustain the more modified ecosystems in production and urban environments, and do what is necessary to:-*

*-Maintain and restore viable populations of all indigenous species across their natural range and maintain their genetic diversity.*

The strategy outlines action plans to achieve this goal covering terrestrial and freshwater habitat and ecosystem protection, sympathetic management, pest management, terrestrial and freshwater habitat restoration, threatened terrestrial and freshwater species management, etc.

**PART 4****MAPS ETC.****4.1 Additional information****References:**

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**4.2 ILLUSTRATIVE MAPS**

**Topo/Cadastral  
Landscape Units and Significant Features  
Areas of significant natural value**

### **4.3 APPENDICIES**

<b>Appendix 1</b>	<b>Federated Mountain Clubs Submission</b>
<b>Appendix 2</b>	<b>Allan Mark Submission</b>
<b>Appendix 3</b>	<b>Upper Clutha Branch of Forest and Bird Submission</b>
<b>Appendix 4</b>	<b>PNAP Report – AOI 1</b>
<b>Appendix 5</b>	<b>PNAP Report – AOI 2</b>
<b>Appendix 6</b>	<b>Photos</b>