

Crown Pastoral Land Tenure Review

Lease name : WINTERSLOW

Lease number : PC 115

Conservation Resources Report

As part of the process of Tenure Review, advice on significant inherent values within the pastoral lease is provided by Department of Conservation officials in the form of a Conservation Resources Report. This report is the result of outdoor survey and inspection. It is a key piece of information for the development of a preliminary consultation document.

They are released under the Official information Act 1982.

March 05

WINTERSLOW PASTORAL LEASE



CONSERVATION RESOURCES REPORT

Department of Conservation
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PART 1 INTRODUCTION

This report describes the significant inherent values present on Winterslow Pastoral Lease. Winterslow Pastoral Lease covers an area of approximately 9535 hectares in the mid-Canterbury foothills, inland from Methven. It covers moderately steep country on the Alford Range, Winterslow Range and southeast slopes of the Old Man Range, and gentler lower-altitude country in the upper reaches of Taylors Stream and the North Branch Ashburton River. The property lies between an altitude of 500 m in the southeast and approximately 1700 m on the Old Man Range in the northwest, and includes the prominent summit of Mt Winterslow at 1700 m in the southern corner. The Mount Hutt Range lies northeast of the property, and Mt Somers lies to the south.

Winterslow Pastoral Lease adjoins Glenrock and Glenariffe Pastoral Leases to the north, Redcliffe Pastoral Lease to the northeast, Mt Alford Pastoral Lease to the southeast. It also adjoins Mt Hutt Forest Conservation Area to the east, Alford Forest (Mt Somers Block) Conservation Area to the south, Conservation Area ex-Clent Hills Pastoral Lease to the west and Conservation Area retired from Winterslow to the north.

The property lies in the Mt Hutt Ecological District, within Heron Ecological Region. Mt Hutt Ecological District was surveyed as part of the Protected Natural Areas Programme (PNAP) in 1988 and 1989 (Arand and Glenny, 1990). A number of areas on Winterslow Pastoral Lease lie within five separate Recommended Areas for Protection (RAPs) that were identified during the PNAP survey. These are RAP 1 Alford Range Wetlands, RAP 5 Grahams Creek, parts of RAP 6 Hutt Forest Remnants, part of RAP 10 Mount Somers and part of RAP 24 Winterslow. These RAPs are listed as Sites of Significant Conservation Value in the Ashburton District Plan.

This report has been compiled from the following field survey reports:

- Winterslow Pastoral Lease Landscape Assessment. Alan Petrie, 2004, 10p + photographs + map.
- Winterslow Station Vegetation Report. Mark Davis, June 2004, 16p + photographs + map.
- Assessment of the Birds and Lizard Values of Winterslow Pastoral Lease, Canterbury. Jane Sedgeley, Department of Conservation, Christchurch, April 2004, 11p + appendices + map.
- Winterslow Station Pastoral Lease, a report on the Aquatic Fauna Surveys. Scott Bowie, Department of Conservation, Christchurch, April 2004, 7p + photographs + map.
- Invertebrate Assessment of Winterslow Pastoral Lease. Simon Morris, April 2004, 13p + photographs + map.

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

2.1 LANDSCAPE

2.1.1 Landscape Context

Winterslow Pastoral Lease is strategically placed, being contiguous with other expansive natural areas already designated as public conservation land, or in the process of being formally protected. The property's compact shape, scale and connectivity make it both ideal and important in the protection of the wider high country landscape that abuts the mid-Canterbury Plains.

In essence, Winterslow Pastoral Lease incorporates three separate landform entities, the most impressive of which is the upland basin (commonly referred to as Taylors Basin) that is encircled by a chain of high mountain ranges and peaks including the Winterslow, Mt Somers and Old Man ranges. A block of dissected low hills through which Taylors Stream takes a torturous route out to the Canterbury Plains dominates the eastern limits to the basin. The third primary landform on the property is the long lateral spur that includes the Alford Range and which stems out from Old Man Peak (2221 m). This elongated landform is directly linked to the North Branch Ashburton River and has been created by the process of continual down-cutting of water along a geological weakness.

Winterslow Pastoral Lease falls within a generic Front Range Landscape that is defined by the major ridgelines of the mountain ranges that rise directly from the edge of the plains (Boffa Miskell and Lucas Associates, 1993). The description of this landscape concludes that *"the often snow-covered rugged peaks provide added contrast to the plains below. This rim to the plains is separated into a series of discrete ranges by the major rivers of the Canterbury Plains"*. The property is highly visible from state highways 77 and 72 and from the network of secondary roads that cross the mid-Canterbury Plains. The flanks of Mt Winterslow are conspicuous from the town of Methven.

2.1.2 Landscape Description

For the purposes of this landscape assessment Winterslow Pastoral Lease is divided into six landscape units, reflecting changes in landform, ground cover and land use. These Landscape Units are shown on the plan on the following page. The criteria used to assess and evaluate the landscape values of each unit are based on the following attributes:

1. Naturalness: an expression of the indigenous content of the vegetative cover and the extent of human intervention.
2. Legibility: an expression of the clarity of the formative processes and how striking these processes are.
3. Aesthetic value: the memorability and naturalness of the area, including factors which can make a landscape vivid, such as simplicity in landform, muted colours and fine-textured ground cover.

Finally, visual values, which are a sub-set of landscape values and relate to the visibility of a particular landscape or natural feature as seen from key viewing points, are also assessed.

Landscape Unit 1

This landscape unit incorporates the part of the property overlooking the North Branch Ashburton River. The lower boundary is at Mt Alford (1171 m), the upper boundary is Boundary Creek, the eastern boundary is the North Branch Ashburton River, and the western boundary is the distinguishable change in physical relief from the relatively steep slopes to the very steep slopes that border the river.

The lower section of the unit is characterised by the deep twisting gorge that entrenches the river. Typically the gorge follows a sequence of craggy rock outcrops alternated by truncated terraces. In places the river has undercut the banks to form long scree faces. The upper and lower sections of the gorge are enclosed and feature a number of short steep side-gullies. The mid section of the gorge is more open in character and features long colluvial slopes that intermittently contain wind-eroded patches. The upper and lower sections of the river are single thread and sinuous in nature and include long reaches of rough riffles separated by deep pools. The mid section of the gorge is tamer with the channel meandering over a wide bed of gravel.

The vegetation is strongly influenced by slope and aspect, with the steeper slopes clad in a mixture of mountain beech, broadleaved shrubland and *Coprosma* shrubland. On gentler slopes, the woody vegetation grades to modified grassland. The mid section of the gorge is generally clad in grassland with *Coprosma* shrubland at the base of the slopes. Occasional wilding pines are present in the open grasslands. A significant feature of this unit is the lack of “built” elements.

Landscape Values

This unit has high inherent landscape values attributable to the clear expression of the dynamic processes that created the gorge. The special landscape elements that make a contribution to the character of this unit include the entrenched channel, sinuous pattern of the river and the craggy rock outcrops. These points of interest are augmented by the relatively high degree of naturalness in the vegetation, especially along the margins of the river. This sense of naturalness is progressively increasing as the *Coprosma* shrubland recolonises the modified grassland. The gorge has a high aesthetic appeal and can be described as spectacular, dramatic and forceful. All of these attributes combine to form a landscape that has high wild and scenic values.

Visual Values

This unit has moderately low visual resource values due to it being only visible at a local level. However the gorge does convey special visual qualities in the form of a strong sense of containment. These values would make the gorge an ideal setting for water-based recreational pursuits.

Potential Vulnerability to Change

Land uses and activities that have the potential to affect this unit include:

- Infestation of river margins by water-dispersed weeds.
- Interruption of the existing regeneration pattern.
- The introduction of “built” elements within the visual corridor of the river that would affect the existing remoteness qualities.

Landscape Unit 2

This landscape unit comprises the dissected uplands and the portion of the Alford Range that form the northern apex to the property. The dissected uplands are dominated by a series of round-crested ridges on the western flanks of Old Man Peak. The ridges feature irregular high points, while just below the ridge crests and across the upper slopes there are areas of both wind and sheet erosion. Separating the ridges are long, curving valleys that characteristically contain small headwater basins. Further south the landform is dominated by the narrow ridge of the Alford Range that forms the watershed between the North Branch Ashburton River and Taylors Stream.

The dissected uplands are clad in good-condition tall tussockland intermittently broken by patches of barren shingle. Below Alford Hut the tussockland becomes more modified with a strong representation of exotic grasses such as browntop and sweet vernal. An extensive sward of red tussockland and large beds of mountain daisies are located on the slopes close to Alford Hut. Ribbonwood Stream is particularly botanically rich, still containing a full altitudinal sequence of native plant communities.

Cultural features are two traditional musterers' huts (Lagoon and Alford) and the L-shaped shelter planting of Lawson's cypress close to Alford Hut.

Landscape Values

This unit has moderately high inherent landscape values owing to the fact that large tracts of the unit convey an overall impression of naturalness, with whole suites of native plant communities still intact. This high degree of intactness is best represented in the Ribbonwood Stream catchment where the whole altitudinal sequence of vegetation is uninterrupted. In aesthetic terms, the unit conveys an overall appearance of coherence, again due to the uninterrupted sequence of native plant communities. In this backcountry context, the traditional musterers' huts are positive elements in the landscape.

Visual Values

The unit has a high visual resource values due to the Alford Range and the ridges that lead off it being visible from many vantage points across the mid-Canterbury Plains.

Potential Vulnerability to Change

Land uses and activities that have the potential to affect this unit include:

- Further subdivision fencing that would fragment the existing intact plant communities.
- Spread of wilding pines.
- Inappropriate siting, design and colour of buildings that would compromise existing backcountry characteristics.

Landscape Unit 3

This landscape unit incorporates all of the Grahams Creek catchment. The unit is defined in the northeast by the Alford Range, in the west by Centre Spur, and in the south by the rocky gorge at the bottom of Grahams Creek. The unit's primary physical components are the constant-grade slopes of the V-shaped Grahams Valley. The floor of the valley is slightly concave with the creek flowing over a deep bed of detritus that is constantly replenished by active gully erosion. Distinctive rock outcrops are a feature just below the summit of the Alford Range.

The vegetation is predominantly modified short tussockland with a high exotic component. Remnants of beech forest still exist in the side gullies and deeper depressions, with some of these remnants supporting a healthy understorey of secondary species, while others,

particularly on the sunny aspects, are more open. Notable features of the Grahams Creek catchment are the random stands of mature broadleaf and kowhai, and the abundance of cabbage trees of varying ages. The precipitous slopes in the lower rocky gorge are clad in mixed broadleaved shrubland and occasional mountain beech trees which are spreading onto the adjoining grasslands.

Landscape Values

This unit has moderate inherent landscape values owing to the extensive conversion of the original cover into grassland. The contemporary landscape character reflects these changes with remnants of both beech and mixed broadleaf forest still surviving in deep-sided gullies and gorges. In places the existing vegetation pattern has resulted in distinctive parkland qualities due to the forest remnants being surrounded by grassland. The striking contrasts in colour and texture between the forest remnants and the surrounding pasture are aesthetically appealing. This is a landscape under transformation, in which inherent values will steadily increase if pastoral use is reduced. This artificial vegetative pattern is becoming less pronounced as regenerating shrublands begin to fill the spaces between the forest remnants.

Visual Values

This is a discrete landscape unit conveying only moderate visual resource values.

Potential Vulnerability to Change

Land uses and activities that have the potential to affect this unit include:

- Interruption to the regeneration of shrublands that are in-filling spaces between forest remnants.
- Spread of wilding pines.
- Introduction of mono-cultural land uses such as plantation forestry.
- Pasture improvement.

Landscape Unit 4

This landscape unit comprises the block of dissected hills and saw-cut gorges located in the central and lower sections of the property. The boundaries of the unit follow the outer edge of the country that overlooks Taylors Stream. The landforms that dominate this landscape unit are the imposing angular hills and rocky gorges that have been created by the down-cutting of Taylors Stream and its main tributaries, such as Diggers, Diamond and Hutt creeks. In the section where Taylors Stream meets Grahams Creek at the Cookshop Hut flats the valley floor widens to form a number of alluvial terraces.

The vegetation is fragmented, with mountain beech forest and mixed broadleaved shrubland along the major streams. The balance of the unit is clad in modified tussockland with a high component of exotic pasture grasses. There are a few patches of gorse and broom, especially along the edges of access tracks.

Landscape Values

This unit contains high inherent landscape values attributable to the distinctive assortment of broken landforms in the centre of an expansive upland basin. The processes that have created this weathered landscape are clearly demonstrated in a range of natural features such as saw-cut gorges, precipitous bluffs and angular hills. Waterfalls are a notable feature within this unit. The disjointed nature of the vegetation reflects the complexity of the landform and previous land management, with the contemporary juxtaposition of various vegetation types creating a vivid high country landscape.

Visual Values

This unit has moderate visual resource values as it is obscured from public viewing points by the Winterslow Range. At a local level the unit conveys a strong sense of place owing to the intimacy of the gorges.

Potential Vulnerability to Change

Land uses and activities that have the potential to affect this unit include:

- Further spread of woody weeds such as gorse and broom.
- Interruption of the natural regeneration of shrubland and beech forest.
- Introduction of large mono-cultural land uses such as plantation forestry.

Landscape Unit 5

This landscape unit encompasses the whole of the upland basin (commonly referred to as Taylors Basin), which is defined by the rangelands that encircle the upper catchment of Taylors Stream. The serrated peaks of the Mt Somers Range form the western boundary, the property boundary forms the northern boundary, the crest of the Winterslow Range forms the southern boundary, and Landscape Unit 4 forms the eastern boundary.

The cross profile of the unit is a wide U-shaped basin featuring a series of long lateral spurs descending to a dished valley floor. Separating the spurs are incised gullies, many of which contain tributaries of Taylors Stream. The channels of these tributaries are deeply etched into the colluvium of the valley floor. The upper slopes of the basin are typified by the severity of both wind and sheet erosion.

Tall tussockland that varies in condition and stature depending on altitude and aspect dominates the ground cover. The shady faces below the Old Man Range are clad in dense tall tussockland, while on the opposite sunnier faces, especially on the flanks of Mt Somers and Winterslow ranges, the tall tussockland becomes more depleted and includes a high component of short tussock and exotic grasses. A notable feature of the unit is the large sward of red tussock that occupies the floor of the basin and the truncated terraces in close proximity to Three Creeks Hut.

Landscape Values

This unit has high inherent landscape values principally due to the imposing scale of Taylors Basin and the surrounding chain of high rangelands. The scale of this enclosed intermontane basin must be viewed as a significant natural feature and landscape within a broader regional context. Natural patterns and processes dominate this unit, and modification is generally confined to the valley floor and the lower sunnier slopes.

Visual Values

This unit forms an integral part of the front rangelands that overlook the mid-Canterbury plains.

Potential Vulnerability to Change

Land uses and activities that have the potential to affect this unit include:

- Intensive grazing on the floor of the basin.
- Further subdivision fencing that would have the potential to create hard edges to the existing natural vegetation patterns.
- Spread of wilding pines.

Landscape Unit 6

This landscape unit includes the wide band of dissected alpine country on the south flank of the Winterslow Range, extending from 1700 m altitude at Mt Winterslow to approximately 1000 m at the timberline in Alford Forest. The unit is characterised by sharp-crested spurs separated by short steep gullies. Deeply etched drainage channels feature across the slopes and small headwater basins. Severe wind and sheet erosion is a common feature, while barren scree faces dominate the upper slopes. Most of the sharp-crested spurs are studded with prominent rock outcrops. Tributaries of Bowyers Stream wind around the base of the short spurs before joining the main stem of the stream which then flows out to the Canterbury Plains. The ground cover is principally tall tussockland and scree. The gullies are occupied by mixed shrubland with a wide scattering of mountain beech.

Landscape Values

This unit has high inherent landscape values, with the unit being dominated by the prominent Winterslow Range. The adjoining dissected alpine country forms a backdrop as well as providing the "middle ground" to the front rangelands that can be observed from many vantage points across the mid-Canterbury Plains. This unit contains an overall sense of naturalness with landscape patterns, natural processes and vegetation fully intact. The severity and fragility of this landscape is clearly expressed in the extent of the natural weathering, especially in the form of long scree faces and chutes. The unit conveys an overall impression of remoteness and wildness due to the lack of "built" elements.

Visual Values

This unit has a high visual resource values forming a significant part of the silhouette of the front rangelands that overlook the mid-Canterbury Plains.

Potential Vulnerability to Change

Land uses and activities that have the potential to affect this unit include:

- Installations and buildings within visually sensitive areas such as along prominent skylines.
- Spread of wilding pines.

SUMMARY

Winterslow Pastoral Lease makes a significant contribution to the recognizable landscape character of the rangelands that overlook the mid-Canterbury Plains. A significant factor is that the property encompasses a large enough area to ensure the integrity of the high country landscape is retained. Furthermore, the property provides an opportunity to help protect a large tract of the mid-Canterbury high country because the property adjoins existing public conservation land and other areas identified for protection. The property's connectivity with similar types of high country is one of its most significant features.

At a local scale the property contains an assemblage of landforms and natural features as well as vegetation associations that provide vividly striking landscapes and a sense of interest, particularly in the North Branch Ashburton River gorge (Landscape Unit 1) where the river winds through a changing landscape with a high degree of naturalness. Similarly, the mid section of Taylors Stream and its major tributaries (Landscape Unit 4) form a memorable high country landscape where the various vegetation types are layered over disjointed hill country.

All areas on the property, except small parts of landscape units 3 and 4, have significant inherent values that warrant protection.

2.2 LANDFORMS AND GEOLOGY

Winterslow Pastoral Lease covers the Winterslow Range, the southern slopes of the Old Man Range, the northern part of the Alford Range, and the intervening valleys of upper Taylors Stream and the North Branch Ashburton River. The property covers relative steep country except for small areas of gentle relief on the main valley floors and upper basins. The main rivers and streams are frequently incised to form small steep-sided gorges. The property lies between approximately 1700 m altitude on the Old Man and Winterslow ranges, and 500 m altitude at the downstream end of the two river systems that drain the area: Taylors Stream and the North Branch Ashburton River.

Basement rocks on the property are predominantly greywacke and argillite of the Torlesse Group rocks, with minor associations of conglomerate, metavolcanics, chert and limestone (Arand and Glenny, 1990). At the southern end of the Alford Range on the property, the Torlesse rocks are overlain by rhyolite and andesite of the Mount Somers Volcanics (Gair, 1967).

Significant listed landforms and geological features on the property are the Isaac Stream reference locality for the Clent Hills Group on the south side of the Old Man Range, and fossil locations for mountain toatoa branches and charcoal in Saddle Creek at the head of Taylors Stream (Arand and Glenny, 1990).

Soils on the lower hill country part of the property are Alford Forest Hill Soils and Hurunui Hill Soils. Soils on the steep hill country are predominantly Puketeraki, Koi Koi and Kaikoura Steepland Soils. Soil fertility is moderate and drainage good throughout the property (Leathwick *et al*, 2003).

2.3 CLIMATE

Winterslow Pastoral Lease has relatively warm dry summers and cold winters. Predominant winds are from the northwest and annual rainfall averages 1200 to 1400 mm (Tomlinson, 1976). Southerly winds affect the property in winter, and snow may lie for several months in some areas. Winterslow is regarded as one of the more snow-prone properties in the area. The property lies in an area that has moderate annual solar radiation and low annual water deficits (Leathwick *et al*, 2003).

2.4 VEGETATION

2.4.1 Ecological Context

The pre-human vegetation of Winterslow Pastoral Lease is likely to have been predominantly mountain beech forest at montane sites, with smaller areas of mountain totara-broadleaf forest, mixed hardwood forest, shrubland, scrub, rockland and scree. Higher-altitude areas are likely to have supported mountain toatoa-inaka scrub, tall tussockland, rockland and scree, with minor areas of cushionfield and herbfield (Arand and Glenny, 1990). Red tussockland was probably present at poorly-drained montane and sub-alpine sites. Montane tall tussockland and short tussockland would have been less extensive than they are now, as many tussocklands have been induced following the removal of forest.

In their analysis of the Level II Land Environments on the property Leathwick *et al* (2003) propose that Land Environment E1, covering lower-altitude areas (22% of the property), originally supported mountain beech forest. Land Environment P1, covering all higher-altitude areas (78% of the property), is described as originally supporting mountain beech forest and then tussockland following burning in pre-European times (Leathwick *et al*, 2003). However, Arand and Glenny (1990) suggest that the natural timberline in the area is approximately 1300 m, so it is unlikely that mountain beech forest was present in higher-altitude parts of Land Environment P1 on the property.

Analysis of the extent to which the Land Environments of the property are represented within existing protected natural areas indicates that approximately 16% of Land Environment E1 and 49% of Land Environment P1 are protected (Department of Conservation, *unpublished data*, August 2003). However these data should be interpreted with caution, as the predicted extent and suggested vegetation types for each land environment have been extrapolated from limited field data.

Five RAPs identified in the Mt Hutt Ecological District lie wholly or partly on the property (Arand and Glenny, 1990). The location and values of the RAPs are summarised below:

RAP 1 Alford Range Wetlands

This RAP is based on red tussock wetlands on the gentle tops of the Alford Range. Red tussock is rare in the ecological district and this is the only RAP where it occurs on mountain-top hollows. The wetlands have a (naturally) low diversity but where grazing has opened the canopy, introduced grasses and clover are present. The two southern wetlands also support comb sedge cushion bogs.

RAP 5 Grahams Creek

This RAP is at the lower end of Grahams Creek and contains 12 Canterbury broom plants at three sites. The threatened shrub daisy *Olearia bullata* also occurs here.

RAP 6 Hutt Forest Remnants

Mountain beech remnants in stream gullies form the basis of this RAP, representing the original forests of the ecological district. Some remnants have an understorey of exotic and indigenous grasses, while others support broadleaf, putaputaweta and *Coprosma* species, or mountain flax and prickly shield fern. Other remnants contain hardwood species and some contain mixed hardwoods and no mountain beech.

RAP 10 Mount Somers

The southern slopes of the Winterslow Range are within this RAP. The RAP is centred on Mount Somers with little mention of the Winterslow Range, except for rock outcrops and planar screes in the headwaters of Morgan Stream.

RAP 24 Winterslow

This RAP covers the southern slopes of the Old Man Range. Slim snow tussock occurs on mid to upper slopes, with mid-ribbed snow tussock and broad-leaved snow tussock at lower altitudes. Three areas of red tussockland near Three Creeks Hut support bog pine.

2.4.2 Plant Communities

The vegetation of Winterslow Pastoral Lease is dominated by tall tussockland on mid and upper slopes, with localised areas of red tussockland in the centre of the property and on the Alford Range. Many lower stream valleys support mountain beech forest and some hardwood forest remnants. Mountain totara is found on some bluffs and rocky slopes, and matagouri-*Coprosma* shrubland is associated with stream gullies, bluff systems and rocky slopes. Scree and its sparse vegetation are found on the Old Man and Winterslow ranges. The vegetation of the property is described below by altitude and community type.

Montane Communities (500-900 m)

Exotic grassland

Exotic grassland is prominent on lower slopes in the Taylor Stream catchment and adjacent to the four-wheel-drive track to Cookshop Hut. It also extends up some slopes in the valley of Grahams Creek. The vegetation is dominated by exotic grasses, especially Yorkshire fog, browntop and sweet vernal. Silver tussock and fescue tussock are prominent but less abundant than the exotic grasses. Above 800 m the vegetation changes to rough pasture with more indigenous plant species. Other species present at lower altitudes include blue wheatgrass, bracken, prickly shield fern, mountain flax, matagouri, cotton daisy and the threatened shrub daisy *Olearia bullata*. The grasslands are grazed by stock and their naturalness is typically low.

Short tussock grassland

Short tussock grassland occurs in this zone, though most are characteristic of the sub-alpine zone. At 840 m between the four-wheel-drive track and Taylors Stream this community is dominated by mouse-ear hawkweed, with fescue tussock, browntop and matagouri also common. Other plants include patotara, harebell, blue tussock, catsear, sweet vernal, *Raoulia subsericea*, cotton daisy and *Carex breviculmis*. Scattered red tussock, mid-ribbed snow tussock and rare *Olearia bullata* are sometimes present. The community is grazed by sheep and its naturalness is low.

Another variant of this community is found on river terraces and the floodplain of upper Taylor Stream below the southeast slopes of the Old Man Range. The stony terraces support species typical of stable surfaces such as scabweed, mouse-ear hawkweed, fescue tussock, browntop, harebell, sweet vernal, *Geranium sessiliflorum*, creeping pohuehue, blue wheatgrass, haresfoot trefoil, mosses and sheep's sorrel. The naturalness of these communities is low or low-medium. Seral riverbed species occur on the floodplain including *Raoulia tenuicaulis*, *Epilobium melanocaulon*, *Epilobium komarovianum*, creeping pohuehue, sweet vernal, browntop, fescue tussock, white clover and tutu. Naturalness is low-medium, again reflecting the presence of exotic plants.

Tall tussockland

Limited areas of broad-leaved snow tussockland and mid-ribbed snow tussockland occur in the montane zone, such as on the lower fans of the Old Man Range above Taylors Stream. Most are in the sub-alpine zone and are described in that section.

Wetland

Areas of red tussockland occur in the centre of the property near Taylors Stream, on lower slopes, terraces and fans. They are of good stature but are typically modified, their small size making them vulnerable to the effects of pastoral use. The best example visited covers an area of approximately 80 m x 20 m at the base of a fan. The tussocks here are up to 1.5 m tall and have a cover of up to 80%. Other prominent plants include browntop, bog rush,

Maori onion, *Viola cunninghamii*, *Carex coriacea*, Yorkshire fog, sweet vernal and cocksfoot. Several plants of *Olearia bullata* are present. Pig rooting was extensive and naturalness is medium. Small seepages occur on lower slopes and support bog rush and sometimes toetoe.

Shrubland

Shrubland is present across gullies, lower slopes and rock outcrops. Matagouri and mingimingi are usually dominant with mountain wineberry, porcupine shrub, *Coprosma rugosa*, korokio and sometimes bush lawyer. Mountain ribbonwood, *Hebe subalpina* and mountain flax are often present near streams or among bluffs, and the threatened shrub daisy *Olearia bullata* occurs locally. The threatened *Coprosma intertexta* and *Clematis marata* were seen in shrubland adjacent to Taylors Stream below Three Creeks Hut.

Two plants of the threatened Canterbury broom were found on the true left of Grahams Creek. The plants were two to three metres high and occurred among *Coprosma rugosa*, mountain wineberry, mingimingi and *Olearia bullata*. Gorse is scattered along this stretch of the creek and a gooseberry plant was also seen. Sheep tracks are common here. Downstream of the junction of Grahams Creek and Taylors Stream, another 14 Canterbury broom were found in regenerating hardwood forest.

Forest

Beech forest and hardwood forest remnants occur in many valleys. Mountain beech is dominant in Diggers Creek, with lesser amounts of broadleaf and scattered mountain ribbonwood, kowhai, kohuhu, mountain akeake, lancewood, putaputaweta, yellowwood, three finger and cabbage tree. Manuka was seen in a rocky area, and mingimingi and prickly shield fern are common on forest margins. Several introduced broom plants were seen on the forest margins immediately south of the road and gooseberry is present along the road.

Hardwood forest occurs adjacent to Cookshop Hut. The forest is a mosaic of broadleaf, kowhai, mountain ribbonwood, tree fuchsia, kohuhu and lancewood. Mingimingi and koromiko are common in the understorey. Further upstream in the Taylors Stream gorge mountain beech is dominant with broadleaf, kanuka, mountain ribbonwood and occasional mountain totara.

The lower west branch of Grahams Creek supports secondary hardwood forest of broadleaf, kowhai and mountain ribbonwood. The understorey is dominated by mingimingi with less common matagouri, kowhai, koromiko, *Hebe subalpina* and rare *Coprosma rigida* and *Coprosma* sp "t". The threatened *Olearia bullata* is quite common on the margins of the forest.

Mountain totara communities are uncommon and are usually associated with rocky slopes and bluffs. In addition to scattered mountain totara, mountain toatoa and kowhai appear to be rare. Patches of mountain totara were also seen through binoculars in the North Branch Ashburton Gorge downstream from Lagoon Hut. Occasional individuals of mountain totara and mountain toatoa were seen in a number of localities across the property.

Rockland

Rock bluffs are widespread across the property. They support sparse vegetation. Common species include *Helichrysum intermedium*, korokio, matagouri, porcupine shrub, mingimingi, *Colobanthus acicularis*, golden speargrass, inaka, blue tussock, *Hebe pinguifolia*, mouse-ear hawkweed, *Gaultheria crassa*, patotara, blue wheatgrass, mountain oat grass, harebell, mosses and lichens. Mountain toatoa and the threatened scambler *Clematis marata* are occasionally present.

Sub-alpine Communities (900-1300 m)

Short tussockland

Short tussockland is reasonably common in the sub-alpine zone. Fescue tussock is generally co-dominant with cotton daisy and snowberry. Other prominent plants include lichens, mouse-ear hawkweed, *Acaena caesiiglauca*, wire moss, *Uncinia fuscovaginata*, *Euphrasia zelandica* agg., golden speargrass and *Epilobium glabellum*. The threatened daphne *Pimelea pseudolyallii* was found here. Indigenous species diversity is high and exotic species are common, especially grasses and hawkweeds. Pig rooting is evident and some areas have been burned recently. Naturalness is generally medium.

Modified grassland occurs at 1000 m altitude on the spur southeast of Lagoon Hut. The main species present are mouse-ear hawkweed, fescue tussock, sweet vernal, browntop, cotton daisy, matagouri, patotara, king devil, catsear, *Carex breviculmis*, *Geranium sessiliflorum*, white clover, *Leucopogon colensoi*, *Carex colensoi* and blue wheatgrass. Diversity and naturalness are low.

The daisy *Vittadinia australis* is widespread in open areas, with scattered fescue tussock and herbs in bluff, scree and talus habitats in the gully northeast of Lagoon Hut.

Tall tussockland

Tall tussockland is very common on the Old Man, Winterslow and Mt Somers Ranges. Slim snow tussock is dominant at higher altitudes and other prominent plants include woolly moss, cotton daisy, *Pentachondra pumila*, snowberry, golden speargrass, kopiti, *Raoulia subsericea*, false speargrass, mosses and lichens. Exotic species are a minor component.

Broad-leaved snow tussockland is present on the Winterslow Range. Other common species are cotton daisy, blue tussock, catsear, sweet vernal, browntop and mouse-ear hawkweed.

On the Old Man Range slim, broad-leaved and mid-ribbed snow tussock are all present. On southeast slopes slim snow tussock of good stature occurs in the upper sub-alpine zone. It is relatively dense and has medium-high naturalness values. Mid-ribbed snow tussock also occurs as a mosaic with slim snow tussock, though this is more common on the eastern flanks of the range. At approximately 1200 m slim snow tussockland is less dense with prominent cotton daisy, inaka and more exotic species. Naturalness here is medium to medium-high. In the lower sub-alpine zone, mid-ribbed tussock and broad-leaved snow tussock are common, while slim snow tussock is uncommon. Pig rooting is widespread in all these tussocklands.

Wetland

Red tussockland occurs on the southeast slopes of the Old Man Range, mostly below 1100 m and on gentle slopes west of Isaac Stream and near Three Creeks Hut. Several areas were traversed and while the tussocklands are of good stature (1.5 m or more) and moderately dense in places, browntop is also very common. Their naturalness is generally medium, but is medium-high in locally dense areas. The small red tussockland at about 1000 m on the spur southeast of Lagoon Hut is highly modified. The canopy is quite open and the inter-tussock spaces are dominated by browntop and hawkweeds. Pig rooting is evident and naturalness is low-medium.

Small bog rush seepages are common among the tall tussocklands. Their naturalness is usually medium-high.

Shrubland

Reasonably extensive shrublands are present in the gully immediately northeast of Lagoon Hut. They are dominated by matagouri, mingimingi, korokio, porcupine shrub, *Olearia*

paniculata, mountain ribbonwood, mountain flax, kowhai, broadleaf, bush lawyer, golden speargrass and tutu. Among open patches are fescue tussock, patches of mouse-ear hawkweed, patotara, woolly mullein, scattered broad-leaved snow tussock, *Brachyscome radicata*, cotton daisy, plume grass and *Carmichaelia monroi*. Some kowhai are up to 5 m high and, further down the gully, two mountain totara are approximately 10 m high. The naturalness of these communities was typically medium-high, reflecting the presence of exotics on the ground.

Shrubland on Mt Winterslow is dominated by broadleaf, *Coprosma rugosa*, matagouri, *Hebe pinguifolia* and golden speargrass. Other prominent species include scrub pohuehue, sweet vernal, browntop, cotton daisy, mouse-ear hawkweed, patotara, snowberry and fescue tussock. At other sites on the Winterslow Range inaka is dominant, with *Hebe odora*, *Coprosma cheesemanii*, *Exocarpus bidwillii*, creeping mapou, cotton daisy, *Gaultheria crassa*, slim snow tussock, *Hebe pinguifolia*, fescue tussock, *Racomitrium pruinosum* and lichens. The vegetation here has high naturalness values.

Rockland

On bluffs at 1000 m near Lagoon Hut typical species include *Colobanthus acicularis*, *Exocarpus bidwillii*, harebell, *Hebe pinguifolia*, *Hebe buechananii*, mingimingi, *Myrsine nummularia*, *Rytidosperma pumilum*, *Helichrysum intermedium*, *Carmichaelia robusta*, white fuzzweed, lichens, matagouri, blue tussock, *Scleranthus uniflorus*, bristle tussock, sweet vernal, hawkweeds, porcupine shrub, broad-leaved snow tussock, korokio, *Cardamine debilis* and *Geranium sessiliflorum*. Naturalness is medium-high.

Stonefield

While tongues of scree extend down into this zone, the great majority are in the alpine zone and are described in that section.

Alpine Communities (above 1300 m)

Tall tussockland

Slim snow tussockland is present on the flanks of the Old Man and Winterslow Ranges. Other prominent species are cotton daisy, fescue tussock, *Raoulia subsericea*, *Kelleria dieffenbachii*, red woodrush, blue tussock, false speargrass, *Celmisia viscosa*, mountain clubmoss, wire moss, browntop and *Raoulia grandiflora*. Exotic species are all less than 1% cover and naturalness is medium-high to high.

Broad-leaved snow tussock becomes more dominant down-slope. Other prominent species are cotton daisy, mountain oat grass, mouse-ear hawkweed, blue tussock, fescue tussock, browntop and sheep's sorrel. Naturalness is medium-high.

Stonefield

Scree occurs on the Old Man Range, mostly above the property boundary, and on the southern slopes of the Winterslow Range. Plants noted in a fine argillite scree included *Schizeilema hydrocotyloides*, *Luzula rufa*, blue tussock, *Epilobium pycnostachyum*, *Leptinella pectinata*, *Hebe epacridea*, *Leptinella pyrethrifolia* agg., blue wheatgrass, *Celmisia walkeri* x *Celmisia angustifolia*, *Leptinella* sp., *Cardamine debilis*, *Brachyglottis bellidioides*, *Koeleria cheesemanii* and little hard fern. Snow totara is common on coarse lateral moraine debris nearby. Smaller scree near the summit of Mt Winterslow support *Epilobium pycnostachyum*, *Poa novae-zelandiae*, *P. buechananii*, *Lobelia roughii* and *Lignocarpa carnosula*. The naturalness of all these communities is high.

Small patches of exposed stones and low growing vegetation occur on exposed knolls among slim snow tussockland on the southeast slopes of the Old Man Range. They support *Raoulia grandiflora*, lichens, mosses, red woodrush, sheep's sorrel, *Dracophyllum pronum*,

Kelleria dieffenbachii, *Phyllachne colensoi*, *Anisotome flexuosa*, *Aciphylla montana*, inaka, *Agrostis subulata* and *Hebe lycopodioides*. Rock pavements are common on the upper ridges of Mt Winterslow and are dominated by *Dracophyllum pronum*, with other prominent species being *Kelleria dieffenbachii*, *Anisotome flexuosa*, *Brachyglottis bellidioides*, blue tussock, mosses, *Raoulia hectorii*, *Brachyscome sinclairii* and woolly moss. Vegetable sheep (*Raoulia eximia*) is also found on stone pavements and rocky slopes. The naturalness of these stonefields is typically high.

SUMMARY

- Extensive alpine tall tussockland which is in good or very good condition.
- Some screes supporting primary vegetation in very good condition. The threatened plant *Raoulia petriensis* is found on rock pavement on Mt Winterslow.
- Extensive sub-alpine tall tussockland, generally in good condition. The presence of three tall species of *Chionochloa* on one property is relatively unusual. The threatened *Pimelea pseudolyallii* was seen at two tall tussockland sites.
- Short tussockland is fairly widespread at montane and sub-alpine levels, but is more modified and has lower naturalness values. It does however, support some threatened plants such as *Pimelea pseudolyallii*, *Olearia bullata* and white fuzzweed. These lowland areas are in fact a mosaic of low-medium naturalness surrounded by areas of importance and high naturalness.
- Wetlands largely comprise red tussockland and are present at several localities. They too are considerably modified, their naturalness usually varying from low to medium, though they support a number of species that are rare in the ecological district.
- Shrublands are reasonably widespread across the property and include grey shrubland, regenerating hardwood shrubland and uncommon mountain totara remnants. Several threatened plants are associated with shrublands, notably *Olearia bullata*, *Carmichaelia torulosa*, *Coprosma intertexta* and *Clematis marata*.
- There are important remnants of beech forest and hardwood forest in many stream and river valleys. These represent the original pre-human woody vegetation.

2.4.3 Notable Flora

Notable plant species recorded from the property are listed in Table 1 below. Threat categories are those proposed by Hitchmough (2002)

Table 1 Threatened plant species recorded from Winterslow Pastoral Lease.

Plant Species	Known Distribution on Property
Gradual Decline	
<i>Carmichaelia crassicaule</i>	RAP 24. Rare in ED.
Sparse	
<i>Clematis marata</i>	In shrubland in upper Taylors Stream below Three Creeks Hut.
<i>Coprosma intertexta</i>	Upper Taylors Stream below Three Creeks Hut. Apparent hybrids with <i>Coprosma rugosa</i> were also seen in the west branch of Grahams Creek. Not recorded during PNAP survey.
<i>Olearia bullata</i>	Scattered individual plants or groups of plants, often close to streams or associated with bluff shrublands. Quite widespread.
<i>Pimelea pseudolyallii</i>	RAP 24. Recorded during tenure review on slopes of Old Man Range and near Lagoon Hut.
Range Restricted	
<i>Carmichaelia torulosa</i>	Lower Grahams Creek and lower Taylors Stream.
<i>Epilobium forbesii</i>	RAP 24 in scree.
<i>Hebe buechananii</i>	In bluffs in gully northeast of Lagoon Hut.
<i>Raoulia petriensis</i>	Common on the summit ridge of Mt Winterslow. Recorded rarely during PNAP survey.
Data Deficient	
<i>Vittadinia australis</i>	Widespread in bluffs, talus, scree and rocky slopes east of Lagoon Hut. Also recorded from bluffs in upper Taylors Stream below Three Creeks Hut.
Rare in Mt Hutt Ecological District	
<i>Carex diandra</i>	RAP 5 and RAP 24.
<i>Carex wakatipu</i>	RAP 24.
<i>Celmisia glandulosa</i>	RAP 1.
<i>Celmisia viscosa</i>	RAP 24 and during tenure review survey on Mt Winterslow and southeast slopes of Old Man Range.
<i>Centrolepis ciliata</i>	RAP 1.
<i>Drosera arcturi</i>	RAP 1.
<i>Eleocharis gracilis</i>	RAP 1.
<i>Epilobium pubens</i>	RAP 6 and RAP 24.
<i>Euchiton traversii</i>	RAP 24.
<i>Halocarpus bidwillii</i>	RAP 24 near Three Creeks Hut.
<i>Leptinella pyrethrifolia</i> agg.	RAP 24 and during tenure review survey in argillite scree on southeast slopes of Old Man Range.
<i>Leucopogon colensoi</i>	RAP 10 and during tenure review survey on Mt Winterslow, bluffs in upper Taylors Steam and near Lagoon Hut.
<i>Luzula banksiana</i>	RAP 6.
<i>Plantago lanigera</i>	Recorded from the summit ridge of Mt Winterslow. Not recorded during PNAP survey.
<i>Raoulia haastii</i>	RAP 24.
<i>Raoulia hectorii</i>	Recorded during the PNAP survey and on Mt Winterslow during the tenure review survey. Northern limit for the species.
<i>Sphagnum falcatum</i>	RAP 1.
<i>Uncinia rubra</i>	RAP 1.
Species much reduced from their original extent	
<i>Podocarpus hallii</i>	Scattered on rock bluffs in several localities.
<i>Phyllocladus alpinus</i>	Scattered on rock bluffs in several localities.

2.4.4 Problem Plants

Introduced plants that may have an important effect on indigenous plant communities on the property, and that can be controlled or contained, are listed and discussed below. Other ubiquitous naturalised species for which containment or control are probably impractical, such as mouse-ear hawkweed and pasture grasses, are not discussed here but are listed in the vegetation descriptions.

Broom

The main broom infestations occur where the four-wheel-drive access track first enters the property near Alford Forest. Broom is common near the access track and is widespread on the western slopes of the Alford Range in this area. Small scattered infestations are present between Cookshop Hut and Three Creeks Hut, both in Taylors Stream and along the vehicle track. Broom may be present elsewhere on the property. Small scattered infestations should be removed and larger infestations in the southeast of the property removed or contained.

Gorse

The main area of gorse observed is in lower Grahams Creek, though it is likely to be present elsewhere on the property. Small scattered infestations should be removed and larger infestations contained.

Grey willow

A low patch of grey willow (1.5 m in diameter) was seen at around 1370 m on the southeast slopes of the Old Man Range (E2349496-N5740678), on the edge of a steep rubbly stream bed. This infestation should be removed promptly.

Larch

Larches have been planted adjacent to Three Creeks Hut. These trees should be removed before they spread.

Wilding conifers

Low numbers of wilding conifers were seen on the property. These should be removed, especially from areas where de-stocking is proposed. Planted conifers (presumably Lawson's cypress) are present at Lagoon Hut and Alford Hut. These should be removed to prevent spread.

2.5 FAUNA

2.5.1 Birds

Twenty-four indigenous bird species have been recorded in Mt Hutt Ecological District (Arand and Glenny, 1990). Banded dotterel (threat status: gradual decline), wrybill (nationally vulnerable) and black-fronted tern (serious decline) breed on the braided riverbeds of the Rakaia and Ashburton rivers. New Zealand scaup, paradise shelduck, South Island pied oystercatcher, white-faced heron, southern black-backed gull and black shag (sparse) have also been recorded in the ecological district. Blue duck (nationally endangered) has been recorded in the upper reaches of some streams in the district, but there are no recent reports (McEwen, 1987; Arand and Glenny, 1990). The beech forests of nearby Mt Hutt and Alford forests provide habitat for rifleman, South Island tomtit, bellbird, brown creeper, New Zealand pigeon, long-tailed cuckoo, morepork, silvereve and South Island fantail (Arand and Glenny, 1990). Yellow-crowned parakeet (gradual decline) has also been recorded in the ecological district (McEwen, 1987). Kea (nationally endangered) and New Zealand falcon (gradual decline) are frequently seen in the ecological district at high elevations (Arand and Glenny, 1990).

Birds observed on Winterslow Pastoral Lease are described below for the three main habitats surveyed and listed in Table 2 (indigenous species) and Table 3 (introduced species).

High-altitude rockland and tussockland

High-altitude habitats were examined around Lagoon Hut and the lower east-facing slopes of Old Man Peak. The rockland habitat in the environs of Lagoon Hut comprises mainly rock outcrops. The slopes of Old Man Peak offer diverse habitats, from fine scree to boulder field and talus. Surrounding vegetation is dominated by tall tussockland.

New Zealand falcon were heard on several occasions flying over Lagoon Hut and heard on the northern slopes of the Winterslow Range. Other indigenous birds representative of upland habitats were present including southern black-backed gull, Australasian harrier, paradise shelduck, black shag and large flocks of New Zealand pipit. Introduced yellowhammer was common, and chukor was recorded at high altitude on Old Man Peak.

Lower-altitude rockland and tussockland

Lower-altitude sites were examined around Alford Hut and between Grahams Creek and Three Creeks Hut, including sections of Taylors Stream, Grahams Creek and Saddle Creek. New Zealand falcon was recorded at Grahams Stream and approximately one kilometre west of Cookshop Hut. Other indigenous birds representative of tussockland and rockland were present including southern black-backed gull, Australasian harrier, paradise shelduck and large numbers of New Zealand pipit. Black shag and spur-winged plover were recorded on Taylors Stream.

Mountain beech forest and shrubland

Beech forest remnants were examined in three main areas: Taylors Stream, Diggers Creek and close to the large swing-gate across the track near the main entry onto the property. Shrublands in the same general locations were also investigated as well as shrublands in the vicinity of Three Creeks Hut. Grey warbler and silvereve were recorded in all shrubland and forest patches. Bellbird was recorded in some of the larger shrublands and in all forest patches. South Island tomtit and New Zealand pigeon were recorded in beech forest near

the swing-gate. Introduced chaffinch was numerous throughout, and several other introduced passerines were present.

Table 2 Indigenous bird species recorded from Winterslow Pastoral Lease, March 2004.

Bird species		Known Distribution on Property
Common name	Scientific name	
Australasian harrier /kahu	<i>Circus approximans</i>	throughout
bellbird	<i>Anthornis melanura melanura</i>	beech forest and shrubland throughout
black shag/koau	<i>Phalacrocorax carbo novaehollandiae</i>	Lagoon Hut and Three Creeks Hut areas
grey warbler/riroriro	<i>Gerygone igata</i>	beech forest and shrubland throughout
New Zealand falcon/karearea	<i>Falco novaeseelandiae "eastern"</i>	Lagoon Hut, Grahams Creek, Diggers Creek
New Zealand pigeon/kereru	<i>Hemiphaga novaeseelandiae novaeseelandiae</i>	beech forest near boundary at swing- gate
New Zealand pipit /pihoihoi	<i>Anthus novaeseelandiae novaeseelandiae</i>	throughout
paradise shelduck /putakitaki	<i>Tadorna variegata</i>	throughout
silveryeye	<i>Zosterops lateralis lateralis</i>	shrubland and forest remnants throughout
South Island tomtit	<i>Petroica macrocephala macrocephala</i>	beech remnant near boundary at swing-gate
southern black-backed gull/karoro	<i>Larus dominicanus dominicanus</i>	throughout
spur-winged plover	<i>Vanellus miles novaehollandiae</i>	Taylor's Stream
welcome swallow	<i>Hirundo tahitica neoxena</i>	Taylor's Stream Cookshop Hut

Table 3 Introduced bird species recorded from Winterslow Pastoral Lease, March 2004.

Bird species	
Common name	Scientific name
Australian magpie	<i>Gymnorhina tibicen</i>
blackbird	<i>Turdus merula</i>
chaffinch	<i>Fringilla coelebs</i>
chukor	<i>Alectoris chukar</i>
dunnock	<i>Prunella modularis</i>
house sparrow	<i>Passer domesticus</i>
redpoll	<i>Carduelis flammea</i>
skylark	<i>Alauda arvensis</i>
song thrush	<i>Turdus philomelos</i>
starling	<i>Sturnus vulgaris</i>
yellowhammer	<i>Emberiza cintrarella</i>

SUMMARY

A total of 24 bird species were recorded on Winterslow Pastoral Lease during this survey: 13 indigenous species (seven endemic species or sub-species and six native) (Table 2) and 11 introduced species (Table 3). Two bird species listed as threatened by Hitchmough (2002) were recorded: New Zealand falcon (gradual decline) and black shag (sparse). Areas of mountain beech forest on the property provide habitat for native forest birds, and provide an important habitat link for birds moving between Alford Forest and Mt Hutt Forest conservation areas.

2.5.2 Lizards

Common skink, McCann’s skink and Southern Alps gecko have been recorded in the Mt Hutt Ecological District. Jewelled gecko (threat status: gradual decline), scree skink (gradual decline), long-toed skink (sparse), spotted skink (gradual decline) and an un-described new species of skink have been recorded over the last two years within 20 km of the property (Lake Heron Basin, Hakatere, Mt Potts, Mt Arrowsmith, Rangitata Gorge) (Department of Conservation records; Herpetofauna Database). There are 14 lizard records for Winterslow Pastoral Lease in the Department of Conservation Herpetofauna Database. These records are sightings of common skink, McCann’s skink and Southern Alps gecko. Two main habitats on the property were surveyed for lizards.

High-altitude rockland and tussockland

Lizards were abundant in this habitat and were present in all areas searched. Southern Alps geckos were numerous in rock outcrops: 12 were found in 20 minutes search time close to the track southwest of Lagoon Hut. Three species of lizards (Southern Alps gecko, McCann’s skink and common skink) were found under tin sheets and timber close to Lagoon Hut. Skinks appeared more abundant in scree and boulderfield habitats. For example, 13 common or McCann’s skinks were found in 20 minutes search time on the lower slopes of Old Man Peak. Southern Alps geckos were also present in scree and boulderfield, but not in such high numbers as the skinks.

Lower-altitude rockland and tussockland

Lower-altitude sites were examined around Alford Hut and between Grahams Creek and Three Creeks Hut. Numerous sites were sampled from the main track. Habitats comprise rock outcrops among tussockland and a small boulderfield near the stockyards at Cookshop Hut. Lizards were abundant in rockland habitats. Southern Alps gecko, common skink and McCann’s skink were present at all sites searched.

Table 4 Lizard species recorded from Winterslow Pastoral Lease, March 2004.

Lizard species		Known Distribution on Property
Common name	Scientific name	
common skink	<i>Oligosoma nigriplantare polychroma</i>	rockland habitats throughout
McCann’s skink	<i>Oligosoma maccanni</i>	rockland habitats throughout
Southern Alps gecko	<i>Hoplodactylus</i> aff. <i>macculatus</i> “Southern Alps”	rockland habitats throughout

SUMMARY

Lizard habitats on the property are diverse and abundant. Rockland habitats include rock outcrop, scree, boulderfield and talus. Three species of lizards (Southern Alps gecko, common skink, McCann's skink) were numerous throughout. The diverse habitats are likely to support other lizard species which were not found during this relatively brief survey.

2.5.3 Fish

Winterslow Pastoral Lease lies in the catchment of the Ashburton River in mid-Canterbury. The property covers the headwaters of Taylors Stream (a tributary of the South Branch Ashburton River) and part of the upper catchment of the North Branch Ashburton River. One of the distinguishing features of the Ashburton River is the absence of dams. This has two effects on the fish communities. The first is that the fish communities are more likely to have diadromous species present (species with a sea phase in their lifecycle). The second effect is that fish are able to migrate between streams, allowing colonisation of previously dewatered streams.

The New Zealand Freshwater Fish Database contains 51 records (at the 2nd April 2004) from the Ashburton River catchment (McDowall and Richardson, 1983). Species recorded from rivers near Winterslow Pastoral Lease are Canterbury galaxias, upland bully, longfin eel, brown trout and Chinook salmon. One of these species is listed as threatened by Hitchmough (2002): longfin eel (gradual decline).

Four different freshwater habitats were surveyed on the property. These are classified by water source and surrounding vegetation type. These habitats and the fish species observed are described below.

Tarns

This habitat type occurs at several locations on the property. The largest tarn surveyed was near Lagoon Hut; other tarns are along Taylors Stream, often within 100 metres of the stream. The tarns generally have muddy substrates, though boulders and cobbles are occasionally present. Surrounding vegetation is tussockland or pasture. All are accessible to stock and wild animals, though there appears to be little stock pressure at the tarn near Lagoon Hut. The tarns are generally less than 200 m² in total area and range in average depth from one metre to over two and a half metres. This habitat was not surveyed and is not expected to support fish as the tarns are isolated from other water sources and are likely to occasionally dry out.

Rivers

The only river habitat on the property is the section of Taylors Stream between Three Creeks Hut and the southeast boundary of the property. Vegetation along Taylors Stream is pasture, tussockland, shrubland and mountain beech forest. All parts of this habitat type are accessible to stock, except where access is restricted by steep topography. Taylors Stream varies in average width and depth along its length, from approximately eight metres wide and 400 mm deep near Three Creeks Hut to more than 25 metres wide and 800 mm deep near Cookshop Hut. The total length of the river habitat is about 15 kilometres. Two sites were surveyed for fish. Canterbury galaxias were found at one site and brown trout at the other.

Large Streams

This habitat is present near the valley floors, and comprises the larger tributaries of Taylors Stream and the North Branch Ashburton River. Large streams are surrounded by tussockland, pasture, scrub, broadleaf, mountain ribbonwood and mountain beech forest. The stream substrates are mostly boulders and cobbles, although finer material is present in small quantities. All streams are accessible to stock and several are traversed by vehicle tracks. Streams are on average three to five metres wide and 300 to 500 mm deep. Five sites were surveyed for fish. Brown trout and Canterbury galaxias were found at two sites, Canterbury galaxias at one site and no fish at the other two sites.

Small Streams

This habitat is present throughout the river catchments, either as tributaries of the large streams or direct tributaries of the rivers. These small streams are often steep with large waterfalls in their lower reaches. Substrates are boulders and cobbles with areas of mud and silt. The streams flow through tussockland at higher altitudes and areas of pasture, scrub and forest at lower altitudes. All are accessible to stock. The streams vary in width from one to three metres, and in depth from 100 to 500 mm. Five sites were surveyed for fish. Canterbury galaxias was found at one site.

SUMMARY

Freshwater fauna communities of four different habitats were surveyed at 12 sites on Winterslow Pastoral Lease. Two fish species, brown trout and Canterbury galaxias, were caught during the survey, occurring at three and five sites respectively. The limited occurrence of fish on the property is not unexpected. The waterfalls in the lower parts of some streams are likely to prevent brown trout and Canterbury galaxias from migrating into upstream habitats.

2.5.4 Invertebrates

Invertebrate communities of Winterslow Pastoral Lease are described for the three main habitats surveyed.

Sub-alpine habitats

A diverse native invertebrate fauna is present on sub-alpine parts of the property. Three grasshopper species were found: *Brachaspis nivalis*, *Paprides nitidus* and the common lowland grasshopper. All grasshopper species observed are well within their known distribution ranges. A small number of diurnal moths were observed flying during the warmer parts of the day. They were *Paranotoreas brephosata*, a common alpine species which feeds on *Epilobium*, and *Dasyuris austrina*, which feeds on *Anisotome*. The moth *Epichorista siriana* (Tortricidae) is widespread in wet tussockland and *Asterivora marmarea* (Choreutidae) is found in damp herbfield on *Celmisia*.

Large rock outcrops along and immediately below the ridges provide habitat for flies, wasps, cockroaches and the black cicada. Insects observed include ants, flies (brown blowfly, crane, hover and robber flies), wasps (ichneumon and spider wasps), bees (solitary and ground nesting sub-social bees), beetles (weevils, ground and tiger beetles), crickets, spiders (wolf and jumping spiders), longhorn beetles, grasshoppers and cockroaches.

Tussockland habitats support ground beetles, blue blowfly, brown blowfly, spiders, cicada, boulder copper butterfly, copper butterfly, cockroaches, weevils, southern blue butterfly, centipedes, millipedes, shield bugs and ants. Tiger beetle larvae burrows were abundant on almost all clay banks and sandy areas on the property.

Forest Invertebrates

One forest remnant near Taylors Stream was inspected. The ground cover within the forest was in good condition, providing deep leaf litter and suitable habitat for ground-dwelling invertebrates. Cockroaches, ground beetles, darkling beetles, weevils, springtails, centipedes and millipedes were common under stones, logs or in the leaf litter. Numerous spiders, ichneumon wasps and long-footed flies were observed on the foliage. Weevils and beetle larvae were present in dead and rotting wood on the forest floor. This diversity of invertebrate fauna indicates a high-quality functioning invertebrate community dominated by native species.

Aquatic Invertebrates

Streams on the property appear to be in good condition and provide a variety of habitats (runs, pools and riffles) and substrates (sand, bedrock and stones). A diverse range of aquatic invertebrates were present, including species of caddisfly, mayfly and stonefly. Identification of all caddisflies collected from the property has yet to be completed.

2.5.5 Notable Fauna

Notable animal species recorded from the property are listed in Table 5 below. Threat categories are those proposed by Hitchmough (2002).

Table 5 Notable fauna recorded from Winterslow Pastoral Lease, March 2004.

Animal Species		Known Distribution on Property
Common name	Scientific name	
Gradual Decline		
New Zealand falcon	<i>Falco novaeseelandiae</i> "eastern"	Lagoon Hut, Grahams Creek, Diggers Creek
Sparse		
black shag	<i>Phalacrocorax carbo</i> <i>novaeollandiae</i>	Lagoon Hut and Three Creeks Hut areas

2.5.6 Problem Animals

Introduced animals that may have an important effect on indigenous plant or animal communities on the property, and that can be controlled or contained, are listed and discussed below. Other ubiquitous naturalised species for which containment or control are probably impractical (such as rodents and mustelids), or domesticated animals that are grazed on the property, are not discussed here.

Rabbit

All parts of the property, and particularly lower-altitude sites, could be prone to rabbit infestations. Numbers appeared low at the time of the field survey, though rabbits could become a significant problem if the population were to increase. Control of rabbits may be required to protect conservation values in some lower-altitude areas set aside for protection.

Feral pig

Feral pigs appear to be widespread on the property and are causing substantial damage at some locations. Control of feral pig populations will be required to protect conservation values on the property.

2.6 HISTORIC

The area covered by Winterslow Pastoral Lease was first taken up for grazing by Bryan Walker Taylor in 1861. In 1866 the property was sold to I.R.C.C. Graham and it later passed as 'Winterslow' to Tanks, Archer and Dove, and then again in 1893 to Donald Cameron. The property changed hands a number of times between 1903 and 1944 when it was abandoned. R.W. Wightman took up the lease in 1944 and the property has remained in the Wightman family since that time (Acland, 1951).

Historic Sites

There are four huts on the property, at least two of which have historic value: Alford Hut on the Alford Range at the head of Grahams Creek, and Three Creeks Hut in the headwaters of Taylors Stream. The ages of these two huts is unclear, though they may date from the 1880s (The Press, Friday May 23rd 2003). An early woolshed located near Cookshop Hut was lost after it was undermined by Taylors Stream in 1944 (*ibid*).

Alford Hut is a small two-roomed hut constructed from beech saplings and clad with corrugated iron. It has a wooden tongue-and-groove floor, eight bunks and a table. The hut is in relatively good condition but needs a spruce-up and a new toilet.

Three Creeks Hut has a concrete floor, eight bunks, a table, and a good sink and bench. It has a fireplace, two clearlite windows and a clearlite panel in the roof. There is also a wood shed and an old hitching rail. The walls appear to be the 'intentions book' for the hut, as there are a number of names stencilled on the wall. A copy of the Daily Mirror attached to the inside wall is dated Friday July 1922. The hut is well situated for recreational activities, especially for ascents of the Old Man, Mt Somers and Winterslow ranges.

Lagoon Hut, on the lower eastern slopes of Old Man Peak, does not appear to have historic value, though has potential for recreational use. Cookshop Hut, near the confluence of Taylors Stream and Grahams Creek, is the largest hut on the property. It was locked at the time of the survey, though appears in good condition and well used.

2.7 PUBLIC RECREATION

2.7.1 Physical Characteristics

Winterslow Pastoral Lease lies within the 'pastoral' recreation opportunity class in the Recreation Strategy for Canterbury Conservancy (Department of Conservation, 1994). The property can be divided into two main recreation settings.

Front Country Hills and Valleys

This recreation setting covers the lower-altitude country in lower Taylors Stream and along the Alford Range that is relatively accessible from existing four-wheel-drive tracks. It is characterised by gentle to moderately-steep hill country, the broad mid-section of Taylors

Stream around Cookshop Hut, and the incised valley of the North Branch Ashburton River. Vegetation is dominated by depleted tussockland and pasture with scattered shrubs, and areas of scrub and forest on steeper slopes and gullies and along streams. Cookshop Hut and Alford Hut lie within this recreation setting. Both huts are readily accessible along four-wheel-drive tracks in dry conditions.

Back Country Mountain Ranges

This recreation setting covers the more remote higher-altitude parts of the property on the Winterslow, Mt Somers and Old Man Ranges. It is characterised by moderately-steep to steep mountain slopes and summits. Vegetation is dominated by tall tussockland, rockland and scree, with some areas of shrubland at lower altitudes. Lagoon Hut and Three Creeks Hut lie at the lower edge of this recreation setting. Both huts are accessible from four-wheel-drive tracks in dry conditions.

2.7.2 Legal Access

Legal roads are present through parts of the property, but none appear to provide practical access. Public foot access is available from Mt Hutt Forest Conservation Area to the northeast and Alford Forest Conservation Area to the south. Public foot access is also likely to be available from land to the north and west that has been set aside as public conservation land.

2.7.3 Activities

Existing recreational use of the property is low, as vehicle and mountain bike access to the property is restricted by a locked gate at the property boundary. There is some use by trampers gaining access to Mt Winterslow and by outdoor groups based at Cookshop Hut. Scenery appreciation from public roads on the Canterbury Plains is likely to be the most important recreational use at present.

However, the property offers great potential for a range of active recreational activities, including walking, tramping, hunting, fishing, mountain-biking and horse-riding. If vehicle access was readily available, parts of the property would provide excellent opportunities for picnicking, swimming, camping and nature study. There is also some potential for cross-country skiing or ski-mountaineering, notably the route along the Alford Range and upper North Branch Ashburton River to the Rakaia Valley. The protection of additional areas on adjoining properties (such as Clent Hills) will offer opportunities for longer tramping trips through the property and linking Alford and Mt Hutt Forests with the Lake Heron Basin.

PART 3 OTHER RELEVANT MATTERS AND PLANS

3.1 CONSULTATION

Early-warning consultation meetings were held in Christchurch on 28th October 2003 and in Timaru on 29th October 2003. Issues raised at those meetings are listed below.

- An important lease with four RAPs identified on the property.
- Would like to see links between the RAPs, adjoining Conservation Areas and the Old Man Range.
- High recreation values.
- High landscape values: would like to see these protected.
- Significant forest remnants.
- Need a marginal strip wider than 20 metres on some streams.
- Current access to the Winterslow Range is up farm track adjacent to Hutt Creek and then up the ridge. Access also via Dukes Knob (Alford Forest), providing an alternative route through bush and a possible round trip.
- South side of the Winterslow Range adjoins public conservation land and is accessible from Alford Forest and the Mt Somers Walkway.
- It is an easy area to reach from Christchurch, so offers a mountain experience close to the city.
- Access to Lagoon Hut and Three Creeks Hut has once been denied.
- It is a good area for minerals (agates) but these are usually found in areas which are also good for grazing.
- The property looks great for mountain-bikers.
- Most of the high country on this property has high landscape value.
- The North Branch Ashburton River is ecologically diverse and provides access for fishing.
- Mt Winterslow is a good climb but the main access is through another property.

3.2 DISTRICT PLANS

Winterslow Pastoral Lease lies within the Ashburton District. The Ashburton District Plan was approved in September 2001. In this plan the property is zoned Rural C. The schedule of Areas of Significant Conservation Value in the Plan lists three sites located completely or partly on the property:

- Site 14 (Alford Range) covering RAP 1 Alford Range Wetlands, RAP 5 Grahams Creek and RAP 6 Hutt Forest Remnants.
- Site 16 (Winterslow) covering RAP 24 Winterslow.
- Site 17 (Mt Somers) covering RAP 10 Mount Somers.

The Ashburton District Plan prohibits a number of land use activities within sites of natural significance and in high-altitude areas (i.e. areas above 900 m):

- Earthworks exceeding 30 m³ (volume) or/and 50 m² (area) in any one hectare in any continuous period of five years, or earthworks located on slopes steeper than 20°.

- Clearance of indigenous vegetation exceeding 100 m² in any one hectare in any continuous period of 5 years.
- Clearance of indigenous vegetation and earthworks in or within 20 m of a naturally occurring wetland which exceeds 1000 m².
- Exotic tree planting.
- Erection of buildings.
- Dumping of rubbish.
- Tree planting, except that limited to shelterbelts located within “shelterbelt areas” shown on planning maps.

3.3 CONSERVATION MANAGEMENT STRATEGIES AND PLANS

Winterslow Pastoral Lease is within the Rangitata Unit of the Canterbury Conservation Management Strategy (CMS). Key priorities for this unit are listed as:

- To identify the significant indigenous vegetation and threatened plant and animal species.
- To use a range of effective methods to protect the indigenous biodiversity.
- To protect and enhance the viability of priority threatened species populations and their habitats.
- To promote appropriate land tenure, reserve status and RMA protection to protect natural character values and provide for appropriate recreation.
- To reduce the impact of wild animals, particularly tahr, on indigenous plant communities by managing them at specific density levels.
- To identify, protect and manage the natural and historic resources of the Mt Somers area.
- To encourage community participation in the management of the natural and historic resources and recreational values of the area.

PART 4 ATTACHMENTS

4.1 ADDITIONAL INFORMATION

4.1.1 Scientific Names of Species

Plant Species

Species names follow the published volumes of New Zealand Flora (Allan, 1961; Moore and Edgar, 1976; Webb, Sykes and Garnock-Jones, 1988; and Edgar and Connor, 1999), Brownsey and Smith-Dodsworth (1989) for ferns, Allison and Child (1971) for mosses, the name changes listed in Connor and Edgar (1987) and recent names (for shrubs) listed in Wilson and Galloway (1993). Maori names are included for taonga species listed in Schedule 97 of the Ngai Tahu Claims Settlement Act 1998. Naturalised species are indicated by an asterisk (*).

<u>Common name</u>	<u>Scientific name</u>
blue tussock	<i>Poa colensoi</i>
blue wheatgrass	<i>Elymus solandri</i>
bog pine	<i>Halocarpus bidwillii</i>
bog rush	<i>Schoenus pauciflorus</i>
bracken	<i>Pteridium esculentum</i>
bristle tussock	<i>Rytidosperma setifolium</i>
broadleaf/kapuka	<i>Griselinia littoralis</i>
broad-leaved snow tussock.....	<i>Chionochloa flavescens</i>
broom*.....	<i>Cytisus scoparius</i>
browntop*.....	<i>Agrostis capillaris</i>
bush lawyer.....	<i>Rubus schmidelioides</i>
cabbage tree/ti rakau.....	<i>Cordyline australis</i>
Canterbury broom.....	<i>Carmichaelia torulosa</i>
catsear*	<i>Hypochoeris radicata</i>
cocksfoot*.....	<i>Dactylis glomerata</i>
comb sedge	<i>Oreobolus pectinatus</i>
cotton daisy.....	<i>Celmisia spectabilis</i>
creeping pohuehue.....	<i>Muehlenbeckia axillaris</i>
false speargrass/taramea	<i>Celmisia lyallii</i>
fescue tussock.....	<i>Festuca novae-zelandiae</i>
golden speargrass/taramea.....	<i>Aciphylla aurea</i>
gooseberry*	<i>Ribes uva-crispa</i>
gorse*	<i>Ulex europaeus</i>
harebell	<i>Wahlenbergia albomarginata</i>
haresfoot trefoil*	<i>Trifolium arvense</i>
inaka	<i>Dracophyllum uniflorum/D. longifolium</i>
kanuka.....	<i>Kunzea ericoides</i>
king devil*	<i>Hieracium praealtum</i>
kohuhu	<i>Pittosporum tenuifolium</i>
kopiti.....	<i>Anisotome aromatica</i>
korokio.....	<i>Corokia cotoneaster</i>

koromiko.....	<i>Hebe salicifolia</i>
kowhai	<i>Sophora microphylla</i>
lancewood.....	<i>Pseudopanax crassifolium</i>
little hard fern	<i>Blechnum penna-marina</i>
Lawson’s cypress*.....	<i>Chamaecyparis lawsoniana</i>
manuka	<i>Leptospermum scoparium</i>
Maori onion.....	<i>Bulbinella</i> sp.
matagouri.....	<i>Discaria toumatou</i>
mid-ribbed snow tussock.....	<i>Chionochloa pallens</i>
mingimingi	<i>Coprosma propinqua</i>
mountain akeake.....	<i>Olearia avicenniifolia</i>
mountain beech.....	<i>Nothofagus solandri</i> var. <i>cliffortioides</i>
mountain clubmoss.....	<i>Lycopodium fastigiatum</i>
mountain flax/wharariki	<i>Phormium cookianum</i>
mountain oat grass.....	<i>Deyeuxia avenoides</i>
mountain ribbonwood/houhi.....	<i>Hoheria lyallii</i>
mountain toatoa	<i>Phyllocladus alpinus</i>
mountain totara.....	<i>Podocarpus hallii</i>
mountain wineberry.....	<i>Aristotelia fruticosa</i>
mouse-ear chickweed*	<i>Cerastium fontanum</i>
mouse-ear hawkweed*	<i>Hieracium pilosella</i>
patotara	<i>Leucopogon fraseri</i>
plume grass.....	<i>Dichelachne crinita</i>
porcupine shrub	<i>Melicytus alpinus</i>
prickly shield fern.....	<i>Polystichum vestitum</i>
putaputaweta.....	<i>Carpodetus serratus</i>
red tussock.....	<i>Chionochloa rubra</i> ssp. <i>cuprea</i>
red woodrush	<i>Luzula rufa</i>
scabweed.....	<i>Raoulia australis</i>
Scotch thistle*	<i>Cirsium vulgare</i>
scrub pohuehue	<i>Muehlenbeckia complexa</i>
sheep’s sorrel*	<i>Rumex acetosella</i>
short tussock	<i>Fescue</i> sp.
silver tussock/wi.....	<i>Poa cita</i>
slim snow tussock.....	<i>Chionochloa macra</i>
snowberry	<i>Gaultheria depressa</i> var. <i>novae-zelandiae</i>
snow totara.....	<i>Podocarpus nivalis</i>
snow tussock.....	<i>Chionochloa</i> sp.
sweet vernal*	<i>Anthoxanthum odoratum</i>
tall tussock.....	<i>Chionochloa</i> sp.
three finger.....	<i>Pseudopanax colensoi</i>
toetoe	<i>Cortaderia richardii</i>
tree fuchsia/kotukutuku	<i>Fuchsia excorticata</i>
tutu.....	<i>Coriaria sarmentosa</i>
white clover*	<i>Trifolium repens</i>
white fuzzweed.....	<i>Vittadinia australis</i>
wire moss.....	<i>Polytrichum juniperinum</i>
woolly moss.....	<i>Racomitrium pruinosum</i>
woolly mullein*	<i>Verbascum thapsus</i>
yellowwood	<i>Coprosma linariifolia</i>
Yorkshire fog*	<i>Holcus lanatus</i>

Animal Species

Species names follow King (1990) for mammals, the June 2003 version of the New Zealand Recognized Bird Names list (compiled by C.J.R. Robertson and D.G. Medway for the Ornithological Society of New Zealand Inc.) for birds, Whitaker (1998) for lizards and McDowall (2000) for fish. Maori names are included for taonga species listed in Schedule 97 of the Ngai Tahu Claims Settlement Act 1998. Naturalised species are indicated by an asterisk (*).

<u>Common name</u>	<u>Scientific name</u>
Australasian harrier/kahu.....	<i>Circus approximans</i>
banded dotterel	<i>Charadrius bicinctus bicinctus</i>
bellbird/korimako	<i>Anthornis melanura melanura</i>
black-fronted tern	<i>Sterna albobriata</i>
black shag/koau	<i>Phalacrocorax carbo novaehollandiae</i>
blue blowfly.....	<i>Calliphora quadrimaculata</i>
blue duck/kowhiowhio	<i>Hymenolaimus malacorhynchos</i>
boulder copper butterfly	<i>Lycaena boldenarum</i>
brown blowfly	<i>Calliphora stygia</i>
brown creeper	<i>Mohoua novaeseelandiae</i>
brown trout*	<i>Salmo trutta</i>
Canterbury galaxias.....	<i>Galaxias vulgaris</i>
chaffinch*	<i>Fringilla coelebs</i>
Chinook salmon*	<i>Oncorhynchus tshawytscha</i>
chukor*	<i>Alectoris chukar</i>
common skink	<i>Oligosoma nigriplantare polychroma</i>
European rabbit*	<i>Oryctolagus cuniculus cuniculus</i>
feral pig*.....	<i>Sus scrofa</i>
grey warbler/riroriro	<i>Gerygone igata</i>
jewelled gecko	<i>Naultinus gemmeus</i>
kea.....	<i>Nestor notabilis</i>
longfin eel.....	<i>Anguilla dieffenbachii</i>
long-tailed cuckoo/koekoea	<i>Eudynamys taitensis</i>
long-toed skink	<i>Oligosoma longipes</i>
McCann's skink.....	<i>Oligosoma maccanni</i>
morepork/ruru koukou.....	<i>Ninox novaeseelandiae novaeseelandiae</i>
New Zealand falcon/karearea	<i>Falco novaeseelandiae</i>
New Zealand pigeon/kereru.....	<i>Hemiphaga novaeseelandiae novaeseelandiae</i>
New Zealand pipit/pihoihoi	<i>Anthus novaeseelandiae novaeseelandiae</i>
New Zealand scaup.....	<i>Aythya novaeseelandiae</i>
paradise shelduck/putakitaki.....	<i>Tadorna variegata</i>
rabbit*.....	see European rabbit
scree skink	<i>Oligosoma waimatense</i>
silvereye.....	<i>Zosterops lateralis lateralis</i>
Southern Alps gecko.....	<i>Hoplodactylus</i> aff. <i>maculatus</i> "Southern Alps"
southern black-backed gull/karoro	<i>Larus dominicanus dominicanus</i>
South Island fantail/piwakawaka.....	<i>Rhipidura fuliginosa fuliginosa</i>
South Island kaka	<i>Nestor meridionalis meridionalis</i>
South Island long-tailed bat.....	<i>Chalinolobus tuberculatus</i>
South Island pied oystercatcher	<i>Haematopus ostralegus finschi</i>
South Island rifleman/titipounamu	<i>Acanthisitta chloris chloris</i>
South Island robin/kakaruai.....	<i>Petroica australis australis</i>
South Island tomtit/miromiro	<i>Petroica macrocephala macrocephala</i>
spotted skink.....	<i>Oligosoma lineocellatum</i>

spur-winged plover	<i>Vanellus miles novaehollandiae</i>
upland bully	<i>Gobiomorphus breviceps</i>
white-faced heron	<i>Ardea novaehollandiae novaehollandiae</i>
wrybill.....	<i>Anarhynchus frontalis</i>
yellow-crowned parakeet/kakariki	<i>Cyanoramphus auriceps auriceps</i>
yellowhammer*	<i>Emberiza cintrenella</i>

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4.2 MAPS

4.2.1 Topographical and Cadastral

4.2.2 Landscape Units (at page 5)

4.2.3 Landscape Values

4.2.4 RAP/Botanical Values

4.2.5 Fauna Values I – Aquatic/Invertebrate

4.2.6 Fauna Values II – Birds/Lizards