

Crown Pastoral Land Tenure Review

Lease name : RICHMOND

Lease number : PT 087

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.

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

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

August 05

DOC CONSERVATION RESOURCES REPORT ON TENURE REVIEW OF RICHMOND PASTORAL LEASE

PART 1

INTRODUCTION

The Richmond Pastoral Lease is located about 15km from the township of Tekapo along the Lilybank Road, on the eastern side of Lake Tekapo. The lease covers 9566 hectares and is bounded by Lake Tekapo to the west, Boundary Stream to the south and the Two Thumb and Richmond Ranges to the east. The northern boundary is a straight line from the head of Lake Tekapo up and over a small range into Camp Stream.

To the south of the lease is Mt Hay Pastoral Lease while to the north is Mt Gerald Pastoral Lease. To the east is the Two Thumb Range Conservation Area. A triangular wedge of land protrudes from the Two Thumb Range into the lease. This area and an area to the east of the Richmond Range, are Conservation Areas leased by Tekapo Skifield Ltd.

The lessees of Richmond own a small area of freehold around the homestead. Lilybank Road provides formed access to and through the lease and there is a formed road from Lilybank Road through the lease to the ski field area.

The lower flats of Richmond are in the Tekapo Ecological District of the Mackenzie Ecological Region. The upper slopes of the lease are in the Two Thumb Ecological District of the Heron Ecological Region. The Tekapo Ecological District is characterised by extensive moraines and lakes with tills derived from greywacke and argillite. The Two Thumb Ecological District is characterised by steep greywacke and argillite mountain ranges.

A Protected Natural Areas report on the Mackenzie Ecological Region recognised one area on Richmond as worthy of protection. This was RAP 30 Coal River. A PNA report on the Heron Ecological Region did not recognise any RAPs on Richmond Pastoral Lease.

PART 2

INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

2.1 Landscape

The Richmond Pastoral Lease forms an integral part of a highly recognisable and nationally significant landscape, which is commonly described as the Mackenzie Basin. This expansive geographic area's boundaries are defined generally by the side slopes of

the intermontane rangelands that enclose the glacial outwash basin. Within this broad landscape context, the Mackenzie Basin has a number of distinctive attributes that support its high landscape values. These include the manner in which the physical landscape is clearly reflected in geological processes at both a micro and macro scale and the manner in which natural processes and features, conspicuously, have dominance over cultural patterns.

The dominant physical feature on the lease is the Richmond Range, which is an extension of the Two Thumb Range that protrudes from the Main Divide on a north/south axis. From a visual resource perspective the Richmond Range creates a strong enclosure for the eastern side of the Mackenzie Basin. The Range also forms a visual backdrop for the popular tourist destinations of the Church of the Good Shepherd and Mackenzie's memorial located within the township of Tekapo.

The lease can be divided into 6 landscape units (Map 1) which are described below.

1. Western Facing Slopes, Richmond Range

This landscape unit includes all of the western facing slopes of the Richmond Range, which is a lateral extension of the Two Thumb Range. These rangelands descend towards the south where the terrain is broken by the down-cutting of Boundary Stream.

The physical relief of the Richmond Range can be divided into three finite sections.

- (a) Along the summit (highest point being 2150m. a.s.l.) there is an over-steepened ridgeline which includes extensive craggy outcrops.
- (b) The main surface cover within the mid-section is bare scree, with some scree chutes extending down to the base of the slope at about 1400m. a.s.l. At frequent intervals along the slopes the headwaters of streams cut v-shaped depressions into the surface.
- (c) The lower slopes, which have been formed by a debris layer (colluvium) producing a transitional slope that merges in with the adjoining remnant terrace.

The vegetative pattern is relatively simple with snow tussock being the primary cover and extending up the slopes to a point where the scree becomes unstable due to frost lift and wind erosion. Some of the older scree faces, particularly along the base, are being colonised by grey shrublands.

There are no "built" elements such as access tracking or fence lines within this unit.

This unit creates a fundamental part of a larger high country landscape. It is dominated by landform with natural forces being highly conspicuous in the shape of the large scree faces. The vegetation is in a natural condition showing little intervention from pastoral farming, the result being a cohesive landscape expressed by a simplicity and uniformity in both natural processes (weathered greywacke) and vegetation patterns (dense snow tussock).

The unit has a high visual resource value owing to the fact that the Richmond Range can be viewed from numerous “look-outs” and important stopping points along State Highway 8. Within the township of Tekapo, and from many points around the lakeshore, the rangelands form a prominent backdrop. This unit’s high visibility is due to the lack of foothills and long uninterrupted views across the lake. These traits are a feature of an intermontane basin.

2. Terrace and Entrenched River

This landscape unit incorporates the relic terrace that is located between the Richmond Range and the upper lateral moraine. Typically it covers an altitudinal band of between 1200m. and 1400m. a.s.l. In some places the lower edge of the terrace is difficult to define whereas in other areas it dips abruptly into the undulating moraine. The relief of the terrace is quite even with a slight tilt towards the west, and the ground surface being broken occasionally by depressions containing watercourses.

The vegetation over the terrace is dictated mainly by aspect, with the narrow leafed snow tussock being the dominant ground cover, with an intermingling of golden Spaniard. Within natural depressions and seepage areas there are intact sedge communities.

The terrace is bisected by the entrenched Coal River, which drains out from a large catchment area east of the Two Thumb Range. After continual down-cutting through the moraine debris, the Coal River channel follows an even grade out to Lake Tekapo. The river has several large tributaries etched into the terraces. The largest of these side streams is Camp Stream, which forms a natural eastern boundary to the lease. Matagouri shrublands have colonised the edges of the river as well as old channel beds, while the river’s unstable slopes are covered in a mixture of matagouri, sweet briar and short tussock.

This unit does not express the same natural forces that are so evident within other units. However it makes a positive contribution, particularly with its continuous golden band of snow tussock that reinforces the integrity and original character of the high country. The breaching of the terrace by the Coal River gorge creates a wild and spectacular natural feature that can be viewed along the ski field access road.

In a visual context the terrace is completely dominated by the overpowering scale of the Richmond Range, therefore the terrace only makes a moderate contribution to the high country’s “big picture”, while the river conveys a strong sense of place due to its dramatic and vivid setting.

3. Upper Lateral Moraine.

This unit encompasses the lateral moraine that steps down from the terrace with its lower boundary following a gentle arc at about the 1100m. a.s.l contour.

The terrain is characterised by hummocks separated by long troughs that generally have a north/south axis. The headwaters of small streams cut into the edge of the moraine, with these streams winding their way towards Lake Tekapo across the lower country.

The principal difference between this unit and the lower moraine (LU4) is the vegetative cover, with this unit having a co-dominance of both snow and short tussock. The subtle variations in plant composition generally derive from aspect and possibly the depth of the loess mantle, with good condition snow tussock dominating the southern facing slopes while the primary cover on the gravel ridges and drier slopes is short tussock and hawkweed. Similar to LU2, this unit is bisected by the Coal River gorge.

This unit forms much of the middle ground of the pastoral lease that helps to give the high country its special qualities of spaciousness. Although the hummocky terrain is not as pronounced as in the lower country it is still obvious that this is a depositional area formed by the retreat of a glacier. The vegetative cover follows uniform patterns with no hard edges being present between land uses. This is highlighted by no changes in the vegetation along either side of the back fence line.

This unit is absorbed into the larger surrounding glacial landscape and is visually most accessible from the corresponding side of Lake Tekapo along the Godley Downs Road (6km away). It can also be viewed from most points on Lake Tekapo.

4. Lower Lateral Moraine

This landscape unit extends from the pastoral lease's north boundary to Boundary Creek in the south. The outwash fan and Coal River channel bisect the unit. The run-off from the western slopes of the Richmond Range drains into Lake Tekapo via numerous small streams that have been etched into the surface of the moraine. This landscape unit is characterised by its hummocky topography created by material being randomly deposited during the last glacial retreat. The most pronounced hummocks are close to Boundary Creek where there are kettle tarns distributed amongst the knolls and ridges. Some of the tarns still contain permanent water while others are ephemeral.

There is a general sparseness in vegetation with fescue tussock being the primary native species intermixed with introduced grasses such as sweet vernal, while on the drier ridges the once bare ground has been colonised by hawkweed and several wilding pines. Cushions of *Raoulia* spp are also widely distributed over the barren ridges. A large proportion of the front country has been converted either into extensive grazing blocks, or deer enclosures, which extend a distance up the ski field access road.

This unit forms an integral part of a continuum of a larger glacial high country landscape that, along with LU3, provides the high country with its spacious qualities. The unit contains an assortment of glacial features that are legible due to the sparseness of the vegetative cover.

Generally this unit is visually absorbed into the surrounding landscape and is visually accessible from along the Lilybank Road and from the lake, as well as its margins.

5. Outwash Fan

This unit comprises a shallow outwash fan consisting of a mixture of fine and coarse alluvial material that extends out from the Coal River gorge down to the edge of Lake Tekapo. The Coal River follows an incised channel along the northern border of the fan, while the Round Hill ski field road follows the southern edge. The mixture of debris rock and moraine till has a limited covering of fescue tussock, introduced grasses, matagouri, and sweet briar.

This is a landform that demonstrates one single natural process. The generally curved and finely textured surface of the fan contrasts with the surrounding hummocky moraine deposits, which makes a moderate impression as a landscape feature.

Owing to this unit's low relief and being obscured by the adjacent hummocky terrain, it is of low visual significance.

6. Lake Margins

This unit encompasses all the front country of the pastoral lease, and is characterised by the gentle slopes and ridges that lead down to the lake's edge. The Lilybank Road's alignment follows the upper edge of this unit. The margin at the southern end of the lake is irregular due to the presence of several low ridgelines that create small sheltered bays. In places small cliffs have been created by wave action undermining and exposing the gravel substrata. At the northern end of the property, where there is an even gradient towards the lake, the property has been intensively subdivided into small paddocks managed for silage. Surrounding the homestead small plantations of pines have been established.

Within this unit human influence is more noticeable with inherent values being modified through more progressive farming. Water becomes a noticeable feature within this unit, competing as the dominant element with the lake's margins. The horizontal line that separates water from land and the contrasting colours of the turquoise lake with the tawny land are a vivid and memorable feature.

This unit forms the front country of the pastoral lease making it highly visible from a close distance, particularly around the edges of the lake and the local road network.

2.2 Landforms & Geology

The dominant landforms on the lease are the ranges, the lateral moraines and the outwash alluvial fans. The highest point on the lease is at 2163m on the Two Thumb Range. The Two Thumb Range runs north/south until it turns easterly where the Richmond Range continues as a southerly offshoot. The lateral moraines also run north/south along the foot

of the Ranges and are evidenced by the hummocky landscape of the kame terraces. The kame terraces are formed by the retreating glacier leaving a layered or stacked effect. The outwash fans of Coal River and Boundary Stream provide a stark contrast with the flat terrace formations.

The Ranges are predominantly greywacke and argillite rock from the Torlesse Group. Round Hill is based on weakly schistose non-foliated greywacke and argillite from the Haast Schist Group. The terraces are composed of till from the Otira Glaciation while the outwash fans are alluvium of recent origin. There is a small fault line running through Coal River near the skifield, which could be evidenced by a small displacement of the River.

The Ranges are classified as Class V11 and V111 while the terraces and outwash fans are Class 1V-V1 as per the Land Resource Inventory. Soils are predominantly low fertility yellow-brown earths.

2.3 Climate

The Mackenzie Region, a large central intermontane basin, has features of a sub-continental climate in contrast with the temperate oceanic climate of New Zealand as a whole. Richmond is in the humid and sub-humid zone with 600-800mm of rainfall, an average of 2200 hours of sunshine and temperatures ranging from -10 to 30 degrees. The prevailing winds are from the west and north-west. There is intermittent winter snow cover on the lower terraces with more extensive snow cover at higher altitudes.

2.4 Vegetation

2.4.1 General Description

The vegetation on Richmond station provides an altitudinal sequence. Exotic grasses in deer fenced blocks are found alongside Lake Tekapo. Upslope from this is short tussock grassland on gently sloping moraines. With increasing altitude the fescue tussock (*Festuca novae-zelandiae*) mixes with low *Leucopogon colensoi* shrubland, then taller matagouri (*Discaria toumatou*) / olearia shrubland which then merges into tall tussock (*Chionochloa rigida* and *Chionochloa macra*). The extensive tall tussock grasslands then give way to scree which extends up to the shattered rock ridge of the Two Thumbs / Richmond Range. Coal River, the main waterway, cuts down through the lateral moraines to the rocky and mainly unvegetated shore of Lake Tekapo. As well as the altitudinal change in vegetation there is a rainfall gradient from the relatively moist northern end to the drier southern end of the property. This gradient is reflected in the vegetation with taller shrubs descending down to below 1000m north of Coal River compared with 1200m at the southern end.

The main vegetation communities are described below.

2.4.2. Rocky ridge and scree

The upper property boundary traverses part of the Two Thumbs ridge and the Richmond Range. On the shattered rock of the ridge crest the only vegetation is an occasional cluster of *Aciphylla dobsonii*. The Richmond Range is in the Two Thumbs Ecological district, which is at the northern limit for *Aciphylla dobsonii*. Long screes of shattered rocks descend down from the ridge. Here plants typical of Canterbury screes or partly stable rock debris are to be found, including penwiper plant *Notothlaspi rosulatum*, vegetable sheep (*Raoulia eximia*), *Haastia sinclairii*, *Cardamine bilobata*, *Leptinella atrata*, *Hebe epacridea*, *Hebe haastii*, *Epilobium crassum*, *Luzula traversii*, *Poa buchanii*, *Myosotis traversii*, *Stellaria gracilentia*, *Ranunculus haastii*, *Pimelea traversii*.

Patches of vegetation occur in scree where some soil has collected in stabilised rubble. Here *Chionochloa macra* and associated herbs and grasses grow including *Celmisia angustifolia*, *C. laricifolia*, *Raoulia subsericea*, *R. grandiflora*, *Leptinella pectinata*, *Aciphylla monroi*, *Dracophyllum pronum*, bristle tussock (*Rytidosperma setifolium*) and blue tussock (*Poa colensoi*). Below about 1600m scree gives way to tall tussock although scree lobes from the Richmond Range descend down to 1200m and the screes descending from the Two Thumbs ridge north of Round Hill drop nearly 800m down to Coal River.

2.4.3. Tall tussock grasslands

Tall tussock grassland provides the dominant vegetation cover between 1000m to 1600m. *Chionochloa macra* dominates above about 1300m descending lower on colder south facing slopes. *Chionochloa rigida* dominates below 1300m but intermingles with *Chionochloa macra* and ascends higher on the warmer sunny slopes.

Where the scree descends into tall tussock there is a lot of loose rubble between tussocks. The plant cover and diversity increases with blue tussock, *Gaultheria novae-zelandiae*, *Celmisia lyallii*, *Anisotome flexuosa*, *Scleranthus uniflorus*, *Raoulia subsericea*, *Luzula rufa*, *Pentachondra pumila*, *Brachyscome* sp., *Pimelea oreophila*, *Craspedia* sp., and *Wahlenbergia albomarginata* occurring amongst the tall tussock.

Some patches of mouse-ear hawkweed (*Hieracium pilosella*) and scattered plants of king devil (*Hieracium praealtum*) are the only exotic plants. Scattered plants of mouse-ear hawkweed and king devil were recorded up to about 1600m. Although there is a dense cover of mouse-ear hawkweed in the *Chionochloa macra* community near the skifield, generally it is the short tussock grassland at lower altitude that has the greatest mouse-ear hawkweed cover. Generally, mouse-ear hawkweed cover declines with increasing altitude.

On the relatively flat kame terrace that runs along the foot of the steep slopes off the Richmond Range, mouse-ear hawkweed is the dominant inter-tussock species amongst fescue tussock, blue tussock and scattered *Chionochloa rigida*. Growing amongst the mouse-ear hawkweed are large cushions of *Celmisia sessiliflora* (a species usually occurring on short snow tussock herbfield on permanently damp sites). Also growing in

this area are *Pimelea oreophila*, *Leucopogon fraseri*, *Raoulia subsericea*, *Kelleria dieffenbachii*, *Anisotome flexuosa*, *Scleranthus uniflorus*. Although there are only scattered patches of *Chionochloa rigida* throughout the long flat area along the kame terrace, the area provides a linkage between the two areas of tall tussock above and below the kame terrace.

Below the kame terrace is an extensive area of *Chionochloa rigida* extending down moraine slopes to about 1000m and south as far as Washdyke Creek. This tall tussock is in very good condition with a healthy and diverse native inter-tussock flora. Although three species of *Hieracium* were present [mouse-ear hawkweed, tussock hawkweed (*Hieracium caespitosum*) and king devil] the cover they provided was minor compared to the native flora. Of note were the short tussocks fescue and blue tussock, and *Carex muellerei* along with low woody plants *Carmichaelia vexillata*, *Leucopogon colensoi*, *Leucopogon fraseri*, *Pimelea oreophila*, *Charmichaelia crassicaule*. Also comb sedge *Oreobolus pectinatus*, mat daisy *Raoulia subsericea*, the clubmoss *Lycopodium fastigiatum*, the grass *Hierochloe novae-zelandiae* and the bog rush *Schoenus pauciflorus*. Seedling *Chionochloa rigida* plants indicate that the tall tussock is regenerating successfully.

Dense *Chionochloa macra* / *Celmisia lyallii* grassland covers the west facing slopes of Round Hill merging into *Chionochloa rigida* lower down. The tall tussock grassland is in good condition with a good diversity of inter-tussock species including *Celmisia lyallii*, blue tussock, *Aciphylla aurea*, *Raoulia subsericea*, *Celmisia gracilentia*, *Pimelea oreophila*, *Craspedia* sp., and snowberry *Gaultheria novae-zelandiae*. Mouse-ear hawkweed is present but not as dense as closer to the skifield (and in the Conservation Area).

On the true right of Coal River excellent tall tussock covers the moraine slopes from shrubland at about 1000m, up to the kame terrace and over into Camp Stream. In the grassland near Camp Stream larger plants or shrubs of *Podocarpus nivalis*, *Dracophyllum pronum*, *Carmichaelia crassicaule* and the speargrass *Aciphylla scott-thompsonii* are visible above the tall tussock near the stream. Again mouse-ear hawkweed is present throughout but only a minor component in the tall tussock grassland.

Just below 1200m on the tall tussock slopes on the true right of Coal River are a series of ephemeral tarns which tend to dry out in the summer. The vegetation in each tarn is different possibly due to water table variation within each tarn. One tarn looks distinctly red when viewed from high up on the Richmond Range. This is due to the entire depression being covered in reddish *Eleocharis acuta*. Another tarn contains an area of wire rush (*Empodisma minus*) which is rare in Canterbury. This species was not recorded in the Heron Ecological Region (which it borders) during the PNA survey. Another tarn has mounds of *Oreobolus pectinatus*, with *Gnaphalium laterale* and sundew (*Drosera arcturi*). Yet another has mainly rushes and sedges.

Some red tussock is growing in wetter areas amongst the snow tussock on the true right of Coal River. A remnant group of six red tussocks grows beside the track at about 830m at the drier southern end of the property. There are no other tall tussocks in the vicinity.

2.4.4. Shrublands

The most extensive area of shrubland on Richmond Station occurs from about 800m to 1100m on the true right of Coal River. This modified but predominantly natural shrubland would have been burnt and possibly fertilised in the past. Although the exotic sweet vernal, browntop (*Agrostis capillaris*) and hawkweeds are common there is high diversity of native species where low native shrubs, fescue tussock and herbs still provide the dominant cover. Shrubs and associated species include *Leucopogon colensoi*, matagouri, *Gaultheria parvula*, fescue tussock, *Carmichelia vexillata*, *Gaultheria novae-zelandiae*, *Raoulia subsericea*, *Gentiana corymbifera*. Upslope matagouri forms dense thickets with fescue tussock, *Celmisia gracilentia*, *Leucopogon colensoi*. Silver tussock (*Poa cita*) is occasionally present in short tussock clearings where stock camp on dry rises. From about 1000m snow tussock intermingles with matagouri, *Coprosma cheesemaniae*, and *Dracophyllum pronum*.

At 800m a track crosses a natural dam which blocks a small stream, forming a small shallow pond which becomes smaller due to evaporation during dry periods. On the bank above the pond is mainly sweet vernal with tall shrubs of *Olearia cymbifolia* and matagouri. Around the shoreline is *Eleocharis acuta*, *Carex* spp, bladderworts, *Oreobolus pectinatus*, *Pratia perpusilla* and gentians.

At the foot of a scree that descends 600 m from the top of the Richmond Range, is a boulder field supporting robust shrubs of *Phyllocladus alpinus*, *Brachyglottis cassinioides*, *Olearia odorata*, *O. cymbifolia*, *Melicytus alpinus*, *Leucopogon colensoi*. The large boulders would have provided a refuge from past fires. These tall shrubs / small trees indicate that a taller vegetation could have once been more extensive. Also amongst the boulders were *Blechnum penna-marina*, *Aciphylla aurea*, *Wahlenbergia albomarginata*, and the native grass *Elymus solandri*.

Along the kame terrace below the Richmond Range and above where Washdyke Stream turns and cuts down through the moraines there is a tall shrubland of matagouri, olearia, coprosma and an occasional briar (*Rosa rubiginosa*) on the rocky fan above the kame terrace. As there are no forest remnants, these shrublands at the base of the Richmond Range, provide the tallest native vegetation cover on the property.

2.4.5. Short tussock grasslands

The best area of fescue tussock lies between Lake Tekapo, Coal River and the skifield road. Although there is a high component of mouse-ear hawkweed and sweet vernal, the fescue tussock is in good condition with a reasonable diversity of intertussock species including *Leucopogon colensoi*, *L. fraseri*, *Pimelea oreophila*, *Carmichelia vexillata*,

Prasophyllum colensoi, *Brachyglottis haastii*, *Hebe pimelioides*, *Elymus solandri*, *Dichelachne crinita* and blue tussock.

The boulderfield, which is an old dry riverbed of Coal River, has a high rock/bare ground component with little or no fescue tussock. Viewed from higher up, this dramatic change in vegetation from fescue tussock / sweet vernal to boulderfield is very visible as a grey area which extends from Coal River down to the lake. Mouse-ear hawkweed is the dominant vegetation but there are a number of native grasses and herbs present that are adapted to the extremely dry environment. These include *Poa maniototo*, *Elymus solandri*, *Dichelachne crinita*, *Poa colensoi*, *Raoulia australis*, *Raoulia hookeri*, *Pimelea sericeo-villosa*, and *Stellaria gracilentia*. This younger fan surface, with earlier successional vegetation typical of river floodplains, is uncommon in this area.

2.4.6. Coal River

Coal River is a deeply incised stream that has cut down through the lateral moraines to enter Lake Tekapo at the north-western corner of the property. Camp Stream forms part of the north-eastern boundary and joins Coal River north of Round Hill. In the lower reaches Coal River is an open gravelly riverbed. Higher up on the moraines the river has cut down to a depth of over 100m through the tall tussock terraces to form steep banks that are still actively eroding. The stream sides and valley floor are covered in mixed matagouri / olearia scrub and sweet vernal / fescue tussock. Some St. Johns wort (*Hypericum perforatum*) occurs on the valley floor and an occasional sweet briar on drier slopes.

Higher up, towards the Camp Stream confluence, there are some interesting mosaics of *Celmisia angustifolia*, *Dracophyllum pronum* and *Chionochloa macra*. This vegetation type is site specific and occurs only on some steep south-west facing slopes above Coal River.

In Camp Stream pockets of tall shrubs including *Hebe odora*, *Olearia bullata*, *Brachyglottis cassinioides*, *Aciphylla scott-thomsonii* and matagouri occur on gravel terraces lining the stream.

2.4.6 Introduced Pasture and Plants

Depleted short tussock grasslands, sweet vernal and mouse-ear hawkweed cover the rest of the property. A large proportion of this land is fenced for deer farming.

Sweet briar, broom and wilding pines occur on the property but are being controlled.

2.5 Fauna

2.5.1 Birds

A total of forty-one species of birds have been recorded on Richmond. This includes nine endemic, sixteen native and sixteen introduced species. Of particular note is the presence of kaki (black stilt) which sometimes use the lower Coal River for feeding and nesting.

The endemic species are: kaki, black billed gull, black fronted tern, banded dotterel, paradise shelduck, grey warbler, New Zealand falcon, New Zealand scaup and wrybill. Native species recorded are Australasian harrier, spur winged plover, white faced heron, welcome swallow, pied stilt, grey teal, Australasian shoveler, grey duck, black shag, little shag, marsh crake, black backed gull, pied fantail, silvereye, pipit and pied oystercatcher.

Black billed gull, black fronted tern, wrybill and white faced heron all feed in the lower part of the Coal River and the wetland at the mouth of the river. New Zealand scaup and marsh crake feed and nest in the pond near the homestead while banded dotterel and spur wing plover nest and feed on dry stony ground and depleted grasslands on the property.

2.5.2 Reptiles

Two species have been found on Richmond. They are the common gecko and the common skink. Both are found throughout the property with the gecko found mainly on rock outcrops and in stony areas, including scree, while the skink is found in most habitats. The presence of a larger species, either spotted or scree skink, is indicated by droppings along scree cliffs immediately above Lake Tekapo and their presence on the adjacent property, Mt Hay.

2.5.3 Invertebrates

There are three main notable invertebrate communities on the lease. They are the lower Coal River and washout, Camp Stream and the mid-Coal River and Richmond Range.

Lower Coal River and Washout: The lower Coal River and washout is located on the very northwest corner of the pastoral lease. The washout area of Coal River was formed when the river had a previously more direct route to the lake. This open washout terrace supports a rich native flora of lichens, mosses, cushion plants and grasses.

Diurnal Lepidoptera (butterflies and moths) are abundant, especially in the rocky areas and bare ground. The moth *Arctesthes catapyrrha* is commonly found sunbathing on bare areas. The rare grasshopper *Sigaus minutus* is found only on the two open and very rocky river channels which run through the middle of the washout. The habitat within these channels is very suitable for New Zealand's rarest grasshopper *Brachaspis robustus*.

The invertebrate communities on this washout prefer low, open vegetation. The invertebrates are specialised to survive these conditions. Many of these washout areas

throughout the Mackenzie Country and Otago area have been systematically converted to farmland.

Camp Stream and Mid Coal River. Four species of grasshoppers are located within the area. Both species of *Phaulacridium* are found. *P. otagoense* is found on the dry area with *P. marginale* being located on the more wetter area. The other two grasshoppers are *Paprides nitidus* and *Sigauss campestris*. They are both only found in this area and not in any of the other areas on the pastoral lease and are uncommon in the Mackenzie Basin.

Four species of butterflies have been observed: boulder, copper, black mountain ringlet and tussock ringlet butterflies. Cicadas are also present.

Many groups of aquatic insects are found in the river and stream in this area. Damselflies, stoneflies, caddisflies, mayflies, dobsonfly are all recorded.

Richmond Range: This area has a good representation of the alpine invertebrate communities found in the Mackenzie Country and South Canterbury region. High alpine species like the grasshopper *Sigauss villosus* and the black mountain ringlet (*Percnodaimon pluto*) are found above 1,600 m. The grasshopper *Sigauss villosus* is found only between 2,000 and 2,100 m and is on its southern boundary. This is only the third time in 30 years it has been recorded outside its known distribution range. Two other grasshoppers are also recorded *Brachaspis nivalis* and *Sigauss australis*.

Eight moth species are recorded above 1,300m (*Notoreas* n. sp., *Eudonia deltoptophora*, *Orocrambus athenellw*, *Aletia cuneata*, *Aponotoreas insignis*, *Tawhitia pentadactyla*, *Orocrambus melampetrus*, *Aponotoreas anthracias*). A new species of *Notoreas* has been recorded at its new northern limit. The larvae of this moth feed on the native daphne *Pimelea*.

General: An extremely rich grasshopper fauna with eight species of grasshoppers has been recorded on the lease. On the lowland the grasshopper *Phaulacridium marginale* is common throughout the lease with *P. otagoense* preferring the dryer area. Both *Paprides nitidus* and *S. campestris* have been only found north of Coal River. The grasshopper *S. minutus* has been found on the Coal River washout and three alpine species have been recorded from the Richmond Range, *Brachaspis nivalis*, *S. australis* and *S. villosus*.

2.5.4 Freshwater Fish

Four species of freshwater fish have been found on the property. Three of the species are endemic and one is introduced. Endemic species include:

- Koaro – found in Coal River and Washdyke Stream.
- Common bully – commonly found in Coal River
- Upland bully – only found in the pond by the homestead but probably in Coal River as well.

The introduced species is the brown trout found in both Coal River and in Washdyke Stream where it is more common.

2.5.5 Introduced Fauna

Red deer (*Cervus elaphus scoticus*)

Several red deer have been observed at mid altitude sites on the property (above the deer-fenced areas).

Bennett's wallaby (*Macropus rufogriseus rufogriseus*)

Wallaby have been observed on the property. They are part of a population that extends from the Hunters Hills.

Thar and Chamois

Small numbers of thar and chamois are present but the mobs are migratory.

Rabbits

Rabbits are present throughout the country below an altitude of 1000m a.s.l. At present the population is very low due to the presence of RHD.

2.6 Historic

Richmond Station was originally run in conjunction with Mt Gerald Station. The land was taken up in 1858 by Thomas Purnell who later died while snow raking. In 1888 Arthur Hope, the owner at that time, reported that he had lost 10,000 sheep out of 18,000 in the snows of that year.

Richmond was separated out from Mt Gerald in 1911 and was managed, principally, by the Pringle family until 1954 when it was sold to Donald Waters. In 1973 the station passed to the Burtscher family and in 1998 the present lessees, Oskar and Karoline Reider, took over the property.

There is little of historic value on the Station. An old ski club hut is close to, or in, the Conservation Area leased by Tekapo Ski Field Ltd. An old pack track to Mesopotamia traverses the lease to Camp Stream and beyond.

2.7 Public Recreation

2.7.1 Physical Characteristics

Richmond Station encompasses a strong altitudinal sequence of landforms – from the lake through rolling, hummocky terraces to the steep, eroded mountain ranges. Most of

the lease would be classified as “Open Space” (FMC classification) being semi-natural grasslands with extensive grazing and low to moderate use. Because of the easy access along the Lilybank and skifield roads the lease would be classified as “Back Country Drive In” under the Recreation Opportunity Spectrum. The roads through the lease create a cultural setting with high and intense use particularly when the skifield is operating.

2.7.2 Legal Access

Lilybank Road from Tekapo provides legal access to the lease. This road is gravel from where it turns off the main highway close to Tekapo. The skifield road does not follow a legal road line but there is an unformed legal roadline that does extend into the skifield area. Legal roadlines also extend from the Lilybank Road through the lease to Camp Creek and beyond and from Lilybank Road to the Richmond Range. A legal roadline follows the lake edge and there are two unformed legal roadlines connecting the lake edge road with Lilybank Road.

No marginal strips are noted on the property title but there will be some laid off on disposition. There is an operating easement around Lake Tekapo held by Meridian Energy.

2.7.3 Activities

Recreation has been part of Richmond Station for many years. With the Mt Gerald and Two Thumbs Conservation Areas adjacent to the lease and the Tekapo Skifield virtually within the lease, the Station has seen extensive use by both commercial operators and private people. The principle use has been by skiers either gaining access to the skifield or using the wide variety of terrain on and adjacent to the lease for cross-country skiing.

Other recreational uses include tramping and hunting (both also in conjunction with adjoining Conservation Areas). There is some scope for mountainbiking and horseriding in conjunction with the skifield road and the road provides excellent access for people undertaking passive recreation pursuits such as photography, painting and botany.

PART 3

OTHER RELEVANT MATTERS & PLANS

3.1 Consultation

At early warning NGO meetings in Christchurch on the 12th December 2000 and in Timaru on the 13th December 2000, NGO's were asked for comment on Richmond. Points noted included a desire to: provide legal access up the skifield road, Coal Creek, Boundary Creek and to the Lake; provide access to the Two Thumbs Range for hunting; and protection of the old bridal track to Mesopotamia. Also recommended was protection

of the Richmond Range and all land at a similar altitude to that protected on Mt Gerald and protection of Coal River as a spawning area for trout.

3.2 District Plans

Richmond lies in the Mackenzie District. The Mackenzie District proposed plan was amended by council decisions in September 1999. Under this plan Richmond is zoned RUR (rural) and the general rural objectives in the District Plan apply.

An area encompassing both sides of Coal River above the 800m contour level is recognised as a Site of Natural Significance in the District Plan. As such erection of buildings is not permitted unless exempted by provision in a management plan or as a consent through the Crown Pastoral Land Act. Earthworks are controlled activities on land with a slope angle greater than 25⁰ and the planting of trees is not permitted unless exempted by provision in a management plan or as a consent through the Crown Pastoral Land Act. Clearance of indigenous vegetation shall not exceed 100m² per hectare in any continuous 5 year period within any Site of Natural Significance unless exempted as above.

Much of the area on the lease between the Lilybank Road and Lake Tekapo is designated as a Lakeside Protection Area. This designation prohibits the erection or extension of buildings, other than stock fencing.

The 900m contour line is recognised on the lease and there are specific rules that apply to land above this contour. They include: no earthworks or tracking shall be located on slopes with an angle greater than 25 degrees; no trees shall be planted above 900m above sea level; and clearance of indigenous vegetation shall not exceed 100m² per hectare in any continuous 5 year period.

3.3 Conservation Management Strategies & Plans

Richmond occurs in the Waitaki Unit of the Canterbury CMS. Key priorities recognised in the Waitaki Unit include:

- To identify, maintain and seek to enhance the natural landscapes and natural landscape values of the Waitaki Unit. To implement this objective the Conservancy will seek, through appropriate methods such as tenure review and district plans, to protect, maintain and enhance the heritage landscape and heritage landscape values of the unit.
- To identify the significant indigenous vegetation and threatened species of the unit.
- To use a range of effective methods to protect the indigenous biodiversity of the unit.
- To protect and enhance the viability of priority threatened species' populations and their habitats in the unit.

PART 4

MAPS ETC.

4.1 Illustrative Maps

- Landscape Units (attached)
- Topo/Cadastral (attached)
- Values (attached)

4.2 Acknowledgements

I would like to thank Oskar and Karoline Rieder (lessees) for assistance with this survey. Thanks also to the members of the survey team – Alan Petrie (landscape), Carol Mason (botanical), Simon Morris (invertebrates) and Simon Elkington and Dave Massam (Area Office).