

## **Crown Pastoral Land Tenure Review**

**Lease name : MULLER STATION**

**Lease number : PM 021**

### **Conservation Resources Report – Part 2**

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

The report attached is released under the Official Information Act 1982.

**MARCH**

**14**

### 2.5.3 Problem Plants

There are numerous exotic plant species present on the property but relatively few are of conservation concern. Many plants are of agricultural importance or are common pastoral weeds.

#### Hawkweeds

Mouse-ear hawkweed is abundant and occupies most grazed land below 1500 m altitude. It is dominant over parts of the property, particularly on dry sunny faces, and is a major competitor for space and nutrients with native plants. Field hawkweed (*Hieracium caespitosum*) is common on shadier slopes and within tussockland, competing with native plants but apparently not so aggressively.

#### Wilding conifers

The property is virtually free of wilding conifers, but there are some, and they appear to have arrived recently. Two species of pines were noted in tussockland. They were few and far between, but unless eliminated soon will proliferate rapidly.

#### Crack willow

Crack willow trees occur in places along the banks of rivers and streams on the property. Some have historical significance. They are currently kept in check by grazing, but are nevertheless slowly spreading and have the potential to become widespread and dominant in many riparian situations at the expense of native vegetation. In their favour is that in the absence of native forest and trees they are currently supplying valuable habitat for birds such as rifleman and grey warbler.

#### Sweet brier

Sweet brier is very common in shrubland on the lower-altitude portions of the property. It occupies dense shrubland and is also widely scattered in more open situations. It is undoubtedly a competitor with native shrubs for space and nutrients, but appears to be limited where native shrubs are dense and tall.

#### Exotic pasture grasses and herbs

Browntop is present throughout the grazed land and occurs widely elsewhere too. It is probably a major competitor with native plants on open ground. Other exotic grasses and herbs such as sheep's sorrel, St John's wort and mouse-ear chickweed are widespread also.

#### Potential weeds

Broom is common in the region and could become established. It would likely invade many sites, including rock outcrops and scarps. Gorse could also arrive and constitute a similar threat. Male fern is present and could invade lower-altitude sites in future, probably posing more of an irritant than a serious threat.

## 2.6 FAUNA

### 2.6.1 Birds and Lizards

The Balaclava and Dillon ecological districts support low bird abundance and species richness, particularly for native species (Courtney and Arand 1994). Threatened and at-risk bird species recorded from these ecological districts include banded dotterel (nationally vulnerable), black-fronted tern (nationally endangered), eastern falcon (nationally vulnerable), New Zealand pipit (declining), southern crested grebe (nationally vulnerable) and South Island rifleman (declining). Dillon ED is notable for supporting one of the highest concentrations of eastern falcon in New Zealand, which is likely to be due to an abundance of high-quality breeding sites, such as inaccessible bluff systems and rock outcrops (Courtney and Arand 1994). Interestingly, blue duck (nationally vulnerable), buff weka (relict), New Zealand quail (extinct) and rock wren (nationally vulnerable) were observed during early (1850) European exploration of the Acheron River; these species are now either no longer present or extinct (Courtney and Arand 1994).

Threatened and at-risk bird species that have been previously observed on Muller Pastoral Lease are eastern falcon (recorded as breeding in the upper Saxton River catchment), New Zealand pipit and South Island rifleman (Courtney and Arand 1994).

Threatened lizard species recorded from the Balaclava and Dillon ecological districts are long-toed skink (sparse), rough gecko (gradual decline), scree skink (gradual decline) and spotted skink (gradual decline) (Herpetofauna Database; Courtney and Arand 1994). Black-eyed gecko (sparse) is known from a number of sites in the Inward Kaikoura and Seaward Kaikoura ranges. South Marlborough is notable for containing up to five members of the “common gecko” species complex (Hitchmough, 1997; Herpetofauna Database). Members of this complex have yet to be formally described, but are recognized as being distinct species for conservation purposes (Hitchmough *et al.* 2007).

The lizard fauna of Muller Pastoral Lease is largely unknown. Marlborough mini gecko (range restricted) was recorded from rocklands on Murphy (Courtney and Arand 1994). There are two old (1967) records of spotted skink from the Awatere River near the Kennet River bridge (Herpetofauna Database).

Bird and lizard species observed on Muller Pastoral Lease are described for the four geographic areas of the property that were surveyed.

#### Saxton River Catchment

This area contains most of the upper Saxton River catchment and the mountain slopes on the true left of the Saxton River. It is bounded to the north, west and south by the property boundary, and to the east by a prominent ridge that separates the Saxton River catchment from Middle Gully and the Acheron River catchment. The upper Saxton catchment contains extensive rockland (fine screes, rock outcrops, bluffs and outwash fans). Vegetation at high altitudes comprises various alpine plant communities. Tussocklands dominate at mid- to high-altitudes, giving way to depleted short tussocklands and exotic pasture at lower altitudes.

Native bird species recorded from the upper Saxton River catchment were eastern falcon (two sightings: one of a lone bird being harassed by a spur-winged plover and one of a pair of birds), New Zealand pipit, paradise shelduck, spur-winged plover and swamp harrier. Introduced bird species observed were Australian magpie, Canada goose, redpoll, starling, dunnock and blackbird.

Lizards appeared to be scarce in the areas that were surveyed, particularly at higher altitudes. Two Marlborough mini geckos were found under rocks at the base of a bluff system; another two

individuals of this species were found on a spur opposite Team Hut. Six common skinks were seen in the lower Saxton River valley.

### **Middle Gully and Acheron River Catchments**

This large area contains the upper Acheron River catchment, including Middle Gully. It is bounded to the north and south by the property boundary, to the west by a ridge that separates the upper Acheron River catchment from the Saxton River catchment, and to the east by a prominent ridge that runs between Murphy and Shingle Peak. High-altitude areas contain extensive rocklands (fine screes, bluffs and rock outcrops) and associated alpine plant communities. Tussocklands dominate the intermediate altitudes, with limited areas of shrubland also present. The middle reaches of the Acheron River between Junction Hut and Munroe Hut is gorged and flanked by extensive rocklands (rock outcrops, small bluffs, screes and talus). Depleted short tussockland and exotic pasture dominate at low altitudes.

Native bird species recorded from this area were eastern falcon (two sightings of lone birds between Munroe Hut and Junction Hut), grey warbler, New Zealand pipit, paradise shelduck, silvereye, South Island rifleman (in willows by Burnt Yards Hut), southern black-backed gull, swamp harrier and welcome swallow. Introduced bird species observed were Australian magpie, Canada goose, redpoll, starling, dunnoek, blackbird and yellowhammer.

Common skink (9 sightings), Marlborough mini gecko (8 sightings) and Southern Alps gecko (14 sightings) were recorded from a range of altitudes throughout this area. Habitats for these species are rockland (rock outcrops, small bluffs, screes and talus), shrubland and tussockland. Marlborough mini gecko and bluff weta were found occupying separate crevices in a small rock outcrop at approximately 1350 m in Middle Gully. This is of interest because the presence of bluff weta is used as an indicator of the possible presence of the much rarer black-eyed gecko (e.g. Whitaker 1995). Both species spend much of their time inactive within crevices in deeply-fissured bluffs and are often found sharing retreat sites. Searches for black-eyed gecko at this site and elsewhere on the property were unsuccessful.

The gorged section of the Acheron River between Munroe Hut and Junction Hut provides the most substantial rocklands (bluffs, rock outcrops, screes and talus) and shrubland seen in this catchment. This area provides extensive feeding and breeding habitat for an assemblage of non-threatened indigenous species, including common skink, grey warbler, paradise shelduck, silvereye and Southern Alps gecko.

### **Kennet River and Castle River Catchments**

This large area in the northeast of the property consists of numerous sub-catchments that drain into the Castle, Kennet and Awatere rivers. It is bounded to the west by the prominent Shingle Peak ridge, to the north and east by the property boundary, and to the south by a derelict fence that separates the Kennet River catchment from the adjacent Awatere faces. Screes and associated plant communities dominate at high altitudes. Substantial remnants of mountain beech forest occur in the heads of the major sub-catchments, and kanuka treeland and indigenous shrublands are abundant throughout this area.

Native bird species recorded from this area were bellbird, brown creeper, eastern falcon (two sightings of lone birds in different sub-catchments of the Castle River), grey warbler, New Zealand pipit, paradise shelduck, silvereye, South Island fantail, South Island rifleman (recorded from mountain beech forest, kanuka treeland and shrubland throughout this area), swamp harrier and South Island tomtit. In addition, a pair of grey duck × mallard hybrids was seen flying down the Castle River.

Introduced bird species observed were Australian magpie, blackbird, California quail, Canada goose, chaffinch, chukar (a group of eight was seen while driving along the vehicle track above Langridge Stream), dunnoek, goldfinch, greenfinch, redpoll, skylark, starling and yellowhammer.

Common skink (7 sightings), Kaikouras gecko (5 sightings) and Southern Alps gecko (5 sightings) were recorded from a number of mid-altitude sites. Habitats for these species include rockland (rock outcrops, small bluffs and talus), stream and river beds, shrubland and tussockland. The identification of Kaikouras gecko was not fully conclusive because it is difficult to tell this species apart from other members of the “common gecko” complex (including sympatric Marlborough mini gecko and Southern Alps gecko) without detailed morphological examination and genetic verification (Rod Hitchmough, DOC, Wellington, *pers. comm.*).

Indigenous woody vegetation, river flats and rocklands present in this area provide extensive feeding and breeding habitats for at least eight non-threatened bird species (bellbird, brown creeper, grey warbler, paradise shelduck, silvereye, South Island fantail, swamp harrier and South Island tomtit) and two non-threatened lizard species (common skink and Southern Alps gecko). Native and introduced game birds are also present.

### **Awatere Faces**

This area contains the predominantly southeast- to southwest-facing slopes above the Awatere River, between the Kennet River in the east and Murphy in the west. The area is bounded to the north by the Murphy ridge and to the south by the property boundary. Fine screes cover the alpine tops, giving way to tussocklands at mid-altitude and exotic pasture at lower altitudes. Stream gullies contain a mixture of indigenous and exotic shrublands. Survey effort was focused on the lower slopes.

Native bird species recorded from this area were grey warbler, paradise shelduck and silvereye. Introduced bird species observed were Australian magpie, blackbird, Californian quail, Canada goose, chaffinch, chukar, dunnoek, greenfinch, redpoll, skylark, song thrush and yellowhammer.

Two lizard species were recorded from this area: Marlborough mini gecko (5 sightings) and Southern Alps gecko (3 sightings). Habitats for these species were screes and rock outcrops.

### **Bird Species Recorded**

Twenty-nine bird species were recorded on Muller Pastoral Lease during this survey, consisting of 15 native species (Table 3) and 14 introduced species. One of the listed native species, grey duck × mallard is a hybrid between a threatened native species (grey duck) and an introduced species (mallard); however it is not considered to be threatened. Introduced bird species recorded were Australian magpie, California quail, Canada goose, chaffinch, chukar, redpoll, starling, dunnoek, blackbird, skylark, goldfinch, greenfinch, song thrush and yellowhammer.

**Table 3 Indigenous and game bird species recorded from Muller Pastoral Lease, March 2009**

Bird species	Threat status	Distribution on property
<i>Threatened and At Risk species</i>		
eastern falcon	nationally vulnerable	Throughout.
New Zealand pipit	declining	Mid-altitudes throughout.
South Island rifleman	declining	In willows by Burnt Yards Hut and in indigenous woody vegetation in the Castle and Kennet river catchments.
<i>Non-threatened native species</i>		
bellbird		Indigenous woody vegetation in the Castle and Kennet river catchments.
brown creeper		Indigenous woody vegetation in the Castle and Kennet river catchments.
grey duck × mallard*		Castle River
grey warbler		Indigenous woody vegetation throughout.
paradise shelduck*		Streams and pasture throughout.
silveryeye		Indigenous woody vegetation throughout.
South Island fantail		Indigenous woody vegetation in the Castle and Kennet river catchments.
South Island tomtit		Indigenous woody vegetation in the Castle and Kennet river catchments.
southern black-backed gull		Upper Acheron River.
spur-winged plover		Upper Saxton River.
swamp harrier		Throughout
welcome swallow		Upper Acheron River.
<i>Introduced game bird species</i>		
Californian quail		Indigenous woody vegetation in the Awatere catchment
Canada goose		On large waterways throughout
chukar		Indigenous woody vegetation in the Awatere catchment

\* also a game bird species

**Lizard species recorded**

Sixty-six lizards representing four species (Table 4) were recorded from 33 sites on the property. This total represents 22 common skinks, five Kaikouras geckos, 17 Marlborough mini geckos, and 22 Southern Alps geckos. Common skink was found in a variety of habitats (rockland, shrubland, grassland and river bed). The three gecko species were restricted to areas with rocky refuges that offer protection from predators and opportunities for thermoregulation.

**Table 4 Lizard species recorded from Muller Pastoral Lease, March 2009**

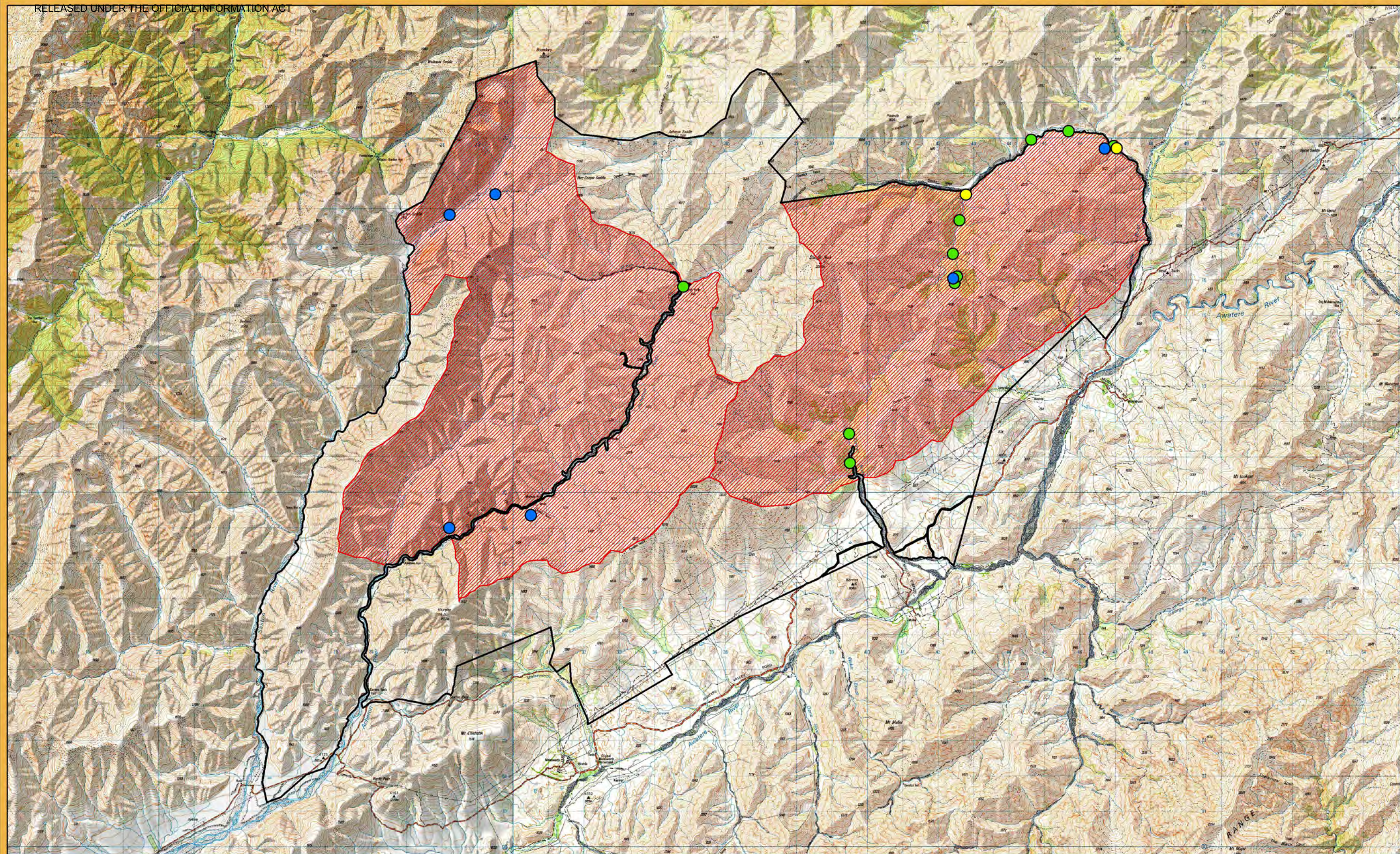
Lizard species	Threat status	Distribution on property
<i>Threatened species</i>		
Kaikouras gecko	range restricted	Castle River catchment, rock outcrops.
<i>Non-threatened native species</i>		
common skink		Range of habitats throughout.
Marlborough mini gecko		Scree and rock outcrops throughout, except the Kennet and Castle river catchments.
Southern Alps gecko		Rock outcrops throughout.

## **Significance of the Bird and Lizard Fauna**

Muller Pastoral Lease provides feeding and breeding habitat for one threatened bird species: eastern falcon (nationally vulnerable); two at-risk bird species: New Zealand pipit and South Island rifleman (both declining); and one threatened lizard species: Kaikouras gecko (range restricted). The property also provides feeding and breeding habitats for 11 non-threatened indigenous bird species, introduced game birds (Californian quail, Canada goose and chukar) and three non-threatened lizard species (common skink, Marlborough mini gecko and Southern Alps gecko).

Suitable habitat is also present for five threatened lizard species that were not recorded during this survey but have previously been observed in the Balaclava, Dillon and/or adjacent ecological districts: black-eyed gecko (sparse) long-toed skink (sparse), scree skink (gradual decline), spotted skink (gradual decline) and rough gecko (gradual decline). Potential habitats for these species on the property are bluffs (black-eyed gecko) and other rockland habitats (long-toed skink, scree skink and spotted skink), tall tussocklands (spotted skink) and indigenous woody vegetation (rough gecko).





# Muller Pastoral Lease - Bird & lizard values



Department of Conservation  
*Te Papa Atawhai*

New Zealand Government



5  
Kilometres

## Legend

-  Muller Pastoral Lease
-  Eastern falcon
-  Kaikouras gecko
-  South Island rifleman
-  Bird and lizard values



## 2.6.2 Aquatic fauna (fish and invertebrates)

Muller Pastoral Lease is drained by the Saxton, Acheron and Castle rivers, Middle Gully, Orr, Awatere-iti, Kennet and Ward streams and other unnamed tributaries of the Saxton, Acheron, Awatere and Castle rivers. The Saxton and Acheron rivers flow into the Clarence River; Castle River flows into the Awatere River. The Clarence and Awatere rivers are free of the large barriers to fish passage present in some other South Island rivers. This has two important influences on the fish communities within these rivers: fish communities are more likely to have diadromous species present (species with a sea phase in their lifecycle) and fish are able to migrate between streams allowing colonisation of previously dewatered streams.

The Waters of National Importance (WONI) discussion documentation (Chadderton *et al.* 2004) recognises the Clarence River as being of 'Type I' national importance, meaning that all sections of the waterway contain features of national importance. The Clarence River is one of the top ten sites in its biogeographic unit and is significant because it has records of blue duck that are less than 10 years old and has other threatened bird and plant communities. The Awatere River is not highlighted for its importance under the WONI criteria applied by Chadderton *et al.* (2004); however, the river contains high density populations of fast water fish (e.g. bluegill bully and torrentfish) and supports populations of highly threatened riverbed birds (e.g. black-fronted tern (Hallas 2003)). For these reasons it has regional significance (e.g. Department of Conservation 1996).

The New Zealand Freshwater Fish Database (NZFFD) has 149 records from the Clarence River catchment and 118 records from the Awatere River catchment (at 26<sup>th</sup> May 2009). Fish species recorded from the boundary of Muller Pastoral Lease in the Clarence River catchment are dwarf galaxias and northern flathead galaxias<sup>1</sup>. Three fish species recorded from four sites close to the property in the Awatere River catchment are longfin eel, northern flathead galaxias and upland bully. Of these NZFFD records, longfin eel, dwarf galaxias and northern flathead galaxias are considered threatened by Hitchmough *et al.* (2007): longfin eel and dwarf galaxias are ranked 'gradual decline' and northern flathead galaxias is ranked 'range restricted'. It should be noted that at the time of writing, re-rankings of the threat status of native freshwater fish is yet to be published, but may elevate the rankings of several native fish given the general decline in New Zealand freshwater habitats.

The property comprises four main catchments of freshwater habitat. These habitats and the fish and macro-invertebrate species recorded are described below.

### Saxton River

This area covers the western side of the property, comprising the Saxton River catchment. Water bodies in this area are the large Saxton River, the smaller Saxton River tributary streams and small wetlands. The wetlands are palustrine seepages on the hill slopes and in the upper cirque basins, and riverine shallow-water wetlands along the margins of Saxton River. These water bodies lie within areas of extensive tussockland, scree and rockland at higher altitudes and areas of shrubland, rockland and pasture at lower altitudes. The water bodies are accessible to stock and wild animals. Vehicle tracks are present.

The upper part of Saxton River is approximately six metres wide in its upper reaches and more than 15 metres wide in its lower reaches. Tributary streams are mostly up to one and a half metres wide. The tributary streams and upper reaches of Saxton River are approximately 100 mm deep; lower reaches of the river are approximately 300 mm deep, with pools more than one metre deep. The Saxton River has a mainly gravel and cobble substrate in the wider sections, but contains a lot more

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<sup>1</sup> Northern flathead galaxias are a member of the Canterbury galaxias species complex; their status awaits clarification (McDowall and Hewitt 2004; McDowall 2006).

boulder and bedrock in steeper sections. The tributaries tend to have boulder and cobble substrates. The wetlands are of varying sizes. The smaller seepages are up to approximately 100 square metres; the river-side wetlands are up to approximately 1000 square metres. The seepage wetlands have mainly dirt and silt substrates whereas the river-side wetlands often have gravel and cobble substrates.

Four sites were surveyed in the Saxton River catchment. Northern flathead galaxias were found at two Saxton River sites and in one tributary stream. Dwarf galaxias and brown trout were found in the upper part of Saxton River and in a small tributary on the river flat. There are no records for this area from the NZFFD.

Macro-invertebrate fauna assemblages indicate that the main water bodies in this area have very good water quality. Species recorded were: mayflies (*Deleatidium lillii*-group, *Deleatidium myzobranchia*-group and *Nesameletus* sp.); caddisflies (*Aoteapsyche* sp., *Hydrobiosis* sp. and *Pycnocentroides aeris*); two-winged flies (*Austrosimulium* spp. and *Chironominae* sp.); flatworm (*Cura* sp.); and worm (*Oligochaete* sp.). Twenty five taxa were recorded during invertebrate surveys undertaken by Cawthron Institute on behalf of DOC in the Saxton River in 2007 (Olsen and Shearer 2007). The abundance and diversity of 'caddisflies, mayflies and stoneflies taxa' (EPT) with an MCI score of 123, reflect high quality water.

### **Acheron River**

This area covers the parts of Muller Pastoral Lease that drain into the Acheron River catchment, in the central part of the property. The main water bodies of this area are the Acheron River, its large tributary Middle Gully, the upper drainage basin of the Acheron River, the small tributary streams and scattered small wetlands. The upper drainage basin of the Acheron River comprises the area upstream from Burnt Yard Hut and includes Orr Stream and the streams draining Port Cooper Saddle, Blue Mountain and the western drainage basin off Shingle Peak. There are three main wetlands types present: palustrine seepages in the tributary heads; palustrine ephemeral wetlands on the main Acheron valley floor; and palustrine shallow-water wetlands perched on the terraces above the river. These water bodies lie within areas of extensive tussockland, scree and rockland at higher altitudes and areas of shrubland, rockland, tussockland and pasture at lower altitudes. The water bodies are accessible to stock and wild animals. Vehicle tracks are present.

The Acheron River varies in width from three metres in its upper reaches to 20 metres in its middle reaches and then approximately 15 metres at Carters Yards Hut above Isolated Flat. Middle Gully stream is approximately four metres wide in its lower reaches near the confluence of Acheron River. Other tributaries are mostly up to one metre wide, with the exception of the large tributary on the true right of the Acheron River just upstream of Munroe Hut which is approximately two and a half metres wide. The Acheron River is 100 to 300 mm deep, with pools over one and a half metres deep. Middle Gully stream is approximately 200 mm deep, with pools up to half a metre deep. The tributary streams are between 100 and 200 mm deep, with pools up to half a metre deep. The substrate of the Acheron River, Middle Gully stream and the tributary streams are mainly boulders and cobbles with areas of bedrock in some places and sand and gravel in others.

The wetlands vary in size from smaller seepages covering approximately 20 square metres to larger wetlands covering more than 1000 square metres. The wetlands generally had little or no surface water present at the time of survey, except for the shallow water pond below Junction Hut which appears to have permanent water and is over one metre deep. The wetlands all have silt and dirt based substrates.

Eleven sites were surveyed in the Acheron River catchment. Northern flathead galaxias were found at ten sites. Dwarf galaxias were found at three sites, two in the main channel of the middle part of the Acheron River and one in Middle Gully stream. Brown trout were found in two sites, in the middle section of the Acheron River and in Guide Gully. There are also records of dwarf galaxias



and northern flathead galaxias at the vehicle bridge at the bottom of Wards Pass (NZFFD) and brown trout above Burnt Yards Hut (S. Satterthwaite *pers comm.*).

Macro-invertebrate fauna assemblages indicate that the main water bodies in this area have very good water quality. Species recorded were: mayflies (*Deleatidium lillii*-group, *Deleatidium myzobranchia*-group and *Nesameletus* sp.); stoneflies (*Zelandobius* sp. and *Zelandoperla* sp.); caddisflies (*Aoteapsyche* sp., *Beraeoptera roria* and *Pycnocentria* sp.); dobsonfly (*Archichauliodes diversus*); two-winged flies (*Austrosimulium* spp. and *Chironominae* sp.); snail (*Potamopyrgus* sp.); flatworm (*Cura* sp.); and worm (*Oligochaete* sp.). Olsen and Shearer (2007) found twenty six taxa in the Acheron River, including strong representation of EPT groups and an MCI of 129; this indicated water quality was high.

## Awatere Faces

This area covers the southeast part of Muller Pastoral Lease, comprising the area that drains the southeast faces of Shingle Peak-Murphy range in the Awatere River valley. The main water bodies of this area are medium and small streams, the larger Kennet River catchment and occasional wetlands. The wetlands are palustrine seepages and palustrine ephemeral wetlands. These streams flow through extensive scree and herbfield at higher altitudes and tussockland, shrubland, scrub and beech forest in the main valleys. The water bodies are accessible to stock and wild animals. Vehicle tracks are present and there are concrete fords (with approximately one metre drop-offs) at two locations.

The small streams in this area are generally of a similar size, ranging between one and two metres in width. Langridge Stream is about three and a half metres wide and Kennet River is over five metres in average width. All of the waterways are of a similar average depth, between 100 and 200 mm, with pools up to 600 mm deep. Waterways substrates are dominated by cobbles and coarse gravel, although Kennet River does have areas of boulder substrate. The seepage wetlands are all quite small (c. 20 square metres). The ephemeral wetlands are larger (up to half a hectare); though dry at the time of survey. Wetland substrates are mainly silt and dirt, although the ephemeral wetlands often have cobbles scattered across them.

Ten sites were surveyed in the Awatere Faces area. Northern flathead galaxias were found at seven sites and upland bully at four sites from Molesworth Stream in the west to Ward Stream in the east. Of note were the presence of fish downstream and the absence of fish upstream of the two concrete fords. There are four records from the NZFFD which show a similar pattern to the survey results, except for records of longfin eel from Molesworth Stream and from one of the concrete-ford streams. Brown trout have been observed in Kennet River (S. Satterthwaite *pers comm.*).

Macro-invertebrate fauna assemblages indicate that the main water bodies in this area have very good water quality. Species recorded were: mayflies (*Deleatidium lillii*-group, *Deleatidium myzobranchia*-group and *Nesameletus* sp.); stoneflies (*Zelandobius* sp. and *Zelandoperla* sp.); caddisflies (*Aoteapsyche* sp., *Hydrobiosis frater*, *Hydrobiosis* sp., *Olinga feredayi*, *Pycnocentria* sp. and *Pycnocentroides aeris*); dobsonfly (*Archichauliodes diversus*); two-winged flies (*Austrosimulium* spp. and *Chironominae* sp.); flatworm (*Cura* sp.); and worm (*Oligochaete* sp.). Sampling at sites within the Awatere catchment showed a fauna dominated by EPT taxa characteristic of high water quality (Olsen and Shearer 2007).

## Castle River

This area covers the north-eastern part of Muller Pastoral Lease, comprising part of the catchment of Castle River. The main water bodies in this area are Castle River, the Castle River tributaries and occasional wetlands (palustrine seepages). The upper part of Castle River has a large fork, with the right branch draining the range that separates Castle River from Langridge Stream and the left

branch draining Hillersden Corner and the range separating Castle River from the Acheron River. This left branch is the property boundary, so only the tributaries on the true right of Castle River are within Muller Pastoral Lease. The catchment has extensive scree and herbfield at higher altitudes and shrubland, scrub, kanuka and beech forest in the main valleys. The water bodies are accessible to stock and wild animals. A vehicle track traverses the valley floor.

Castle River is between four and six metres in average width from the hut to the Awatere Valley Road. The large tributary on the eastern edge of the pastoral lease is about one and a half metres wide. All of the waterways are of a similar depth: between 200 and 300 mm on average, with pools up to 700 mm deep. The substrates are also quite similar, dominated mainly by boulders and cobbles, but with patches of bedrock and finer substrates in places. The wetlands vary in size, ranging from less than ten square metres to over 300 square metres. Wetland substrates are all silt and dirt based.

Four sites were surveyed in the Castle River catchment. Upland bully was found at all four sites, northern flathead galaxias and longfin eel were found at two sites. Northern flathead galaxias were found in the lowest site on the Castle River and in the large eastern tributary; longfin eels were found in the same large tributary and in the middle section of Castle River. The migratory longfin eels were between 120 and 145 mm long, indicating they were reasonably young and that migration had occurred in recent years. There are no records from the NZFFD for Castle River.

Macro-invertebrate fauna assemblages indicate that the main water bodies in this area have very good water quality. Species recorded were: mayflies (*Deleatidium lillii*-group, *Deleatidium myzobranchia*-group and *Nesameletus* sp.); stonefly (*Zelandobius* sp.); caddisflies (*Aoteapsyche* sp., *Helicopsyche* sp., *Hydrobiosis* sp., *Olinga feredayi* and *Pycnocentrodes aeris*); dobsonfly (*Archichauliodes diversus*); two-winged flies (*Austrosimulium* spp. and *Chironominae* sp.); flatworm (*Cura* sp.); and worm (*Oligochaete* sp.). As shown with extensive sampling by Olsen and Shearer (2007) macro-invertebrate fauna assemblages indicate that the main water bodies in this area have very good water quality.

## Species Recorded

Five fish species were recorded during this survey of Muller Pastoral Lease (Table 5). High quality macro-invertebrate communities were recorded throughout the property.

**Table 5** Fish species recorded from Muller Pastoral Lease, March 2009

Fish species	Threat status	Distribution on property
<i>Threatened species</i>		
dwarf galaxias	gradual decline	Clarence River tributaries
longfin eel	gradual decline	Some Castle River tributaries
northern flathead galaxias	range restricted	Throughout
<i>Non-threatened native species</i>		
upland bully		Some Awatere River tributaries
<i>Introduced sports fish species</i>		
brown trout		Clarence River tributaries (also known from Awatere River tributaries)

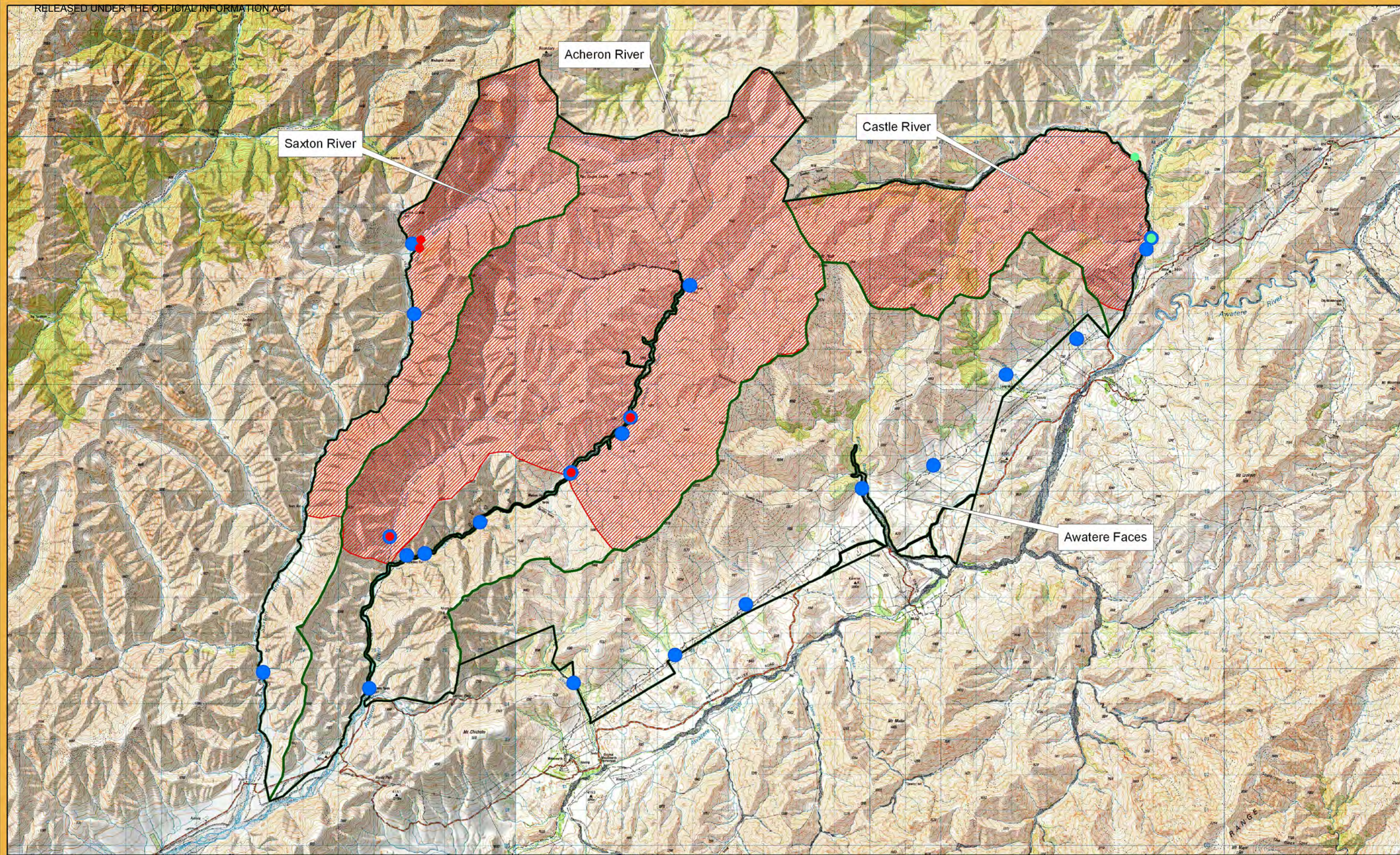
## Significance of Freshwater Fauna

Two chronically-threatened fish species were recorded in freshwater habitats on the property: dwarf galaxias and longfin eel (both 'gradual decline'; Hitchmough *et al.* 2007). One range-restricted species was recorded (northern flathead galaxias). The presence of young longfin eel (elvers) in the Castle River catchment is significant, as this indicates recent recruitment from the sea (note if the fish were 120-145mm depending on growth rates the age could be roughly 2-5 years old (Beentjes &



Jellyman 2003)). The absence of longfin eel from other Awatere valley tributaries on the property is a concern; however, this is unlikely to be related to local factors given the good passage, water quality, macro invertebrate food supplies and habitat conditions present. It most likely reflects the national decline of longfin eel (Jellyman et al 2000). The dwarf galaxias recorded on the property represent an extension of the known range of this species up the Acheron River, previously only known from the Muller Pastoral Lease lower boundary. The Clarence River and its tributaries, including the Saxton and Acheron rivers, are listed as a 'Type I' Waters of National Importance according to the valuation assessment in Chadderton *et al.* 2004. The results of this survey indicate that freshwater habitats, macro invertebrate and native fish communities on Muller Pastoral Lease form an important component of the overall catchment values.





# Muller Pastoral Lease - Aquatic values



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5  
Kilometres

## Legend

- Muller Pastoral Lease
- Aquatic values
- Aquatic unit boundaries
- Dwarf galaxias
- Longfin eel
- Northern flathead galaxias



### 2.6.3 Terrestrial Invertebrates

The upper Awatere valley and central and northern Molesworth has received limited attention from invertebrate zoologists. A few visits were made into the upper Awatere by early collectors. A number of DSIR Entomology Division scientists made forays into this area and the northern Molesworth in the 1960s. The latter also visited the western Molesworth, making use of the then newly constructed road from Tophouse to Hanmer. More recently, this region has received greater attention from scientists.

Much of the information gathered during these forays lies on label data in invertebrate collections, which is effectively inaccessible at present. Published information on the invertebrate fauna of the area is sparse and covers only a limited number of groups. Some distributions can be inferred from information gathered from adjoining areas. Some invertebrate collections were made during the Molesworth PNAP survey but the results were not available for inclusion in the report of that survey (Courtney and Arand 1994).

The survey area lies within a broad range of dry eastern South Island habitats, from Marlborough south of the lower Wairau River to eastern and Central Otago. There appear to be some extensive faunal affiliations, within certain groups, across this range, while other groups show species changes at intermediate or even quite local scales.

Several threatened moth species (e.g. the *Gingidiobora nebulosa* species complex and various species associated with small-leaved *Olearia*) occur or once occurred throughout this range. Other species appear more confined to South Marlborough and North Canterbury. The bluff weta (*Deinacrida elegans*) was known, prior to this survey, from the Kaikoura Ranges, Raglan Range and its mid Canterbury outpost at Mt Somers. A dead specimen had also been collected from a tributary of Team Stream, Saxton River, just west of the survey area. The Marlborough giant weta (*Deinacrida parva*) was once widespread through South Marlborough and North Canterbury, a range broadly similar to that still occupied by the speargrass weevil (*Lyperobius huttoni*), which also still just survives along the Wellington coast. Some beetle groups, such as the carabid genera *Cicindela* (tiger beetles), *Megadromus* and the large darkling beetle genus *Mimopeus* have a majority of their species distributed through these eastern areas. Some of these groups have species with quite confined distributions within South Marlborough/North Canterbury. A small group of *Mimopeus* species, each with very limited distribution, is centred on the Awatere valley.

The expected picture of invertebrate faunal affiliations is therefore of a range of South Island- or New Zealand-wide species; a substantial number of species with greater or lesser distribution through the eastern South Island, some also reaching the North Island east coast; possibly a similar number confined to within the South Marlborough/North Canterbury area; and some chance of species endemic to a limited part of South Marlborough.

A key feature determining the presence/absence of particular invertebrate species and/or their distributions is the nature and composition of vegetation through the area. Areas of primary forest are particularly rare in this dry country and will act as reservoirs of forest species which once occurred more widely through the area. Grey scrub communities with good plant species diversity are a rich habitat for native herbivorous invertebrates, including a number of rare species. In most habitats, wetlands and their associated flora add considerable diversity to invertebrate communities. Even largely plant-free areas, such as screes and bluffs, have their own distinctive invertebrate communities.

Invertebrates of Muller Pastoral Lease are described below for six distinct parts of the property. These areas were the only areas surveyed for invertebrates due to both the large scale of the pastoral lease and time constraints; however, occasional specimens were collected by other specialists during their surveys.

## Orr Stream

The principle invertebrate habitats surveyed were:

- subalpine/alpine bedrock outcrops forming bluffs at various scales
- subalpine/alpine screes, often becoming noticeably coarser downslope
- tussock faces interspersed with rockfaces and screes
- small tarn occupying a talus-covered rocky bench about 30 m below the ridge top
- a small complex of turf wetlands and small tarns on benches and slopes, fed by water coming to the surface from the toe of a scree; the stream from this complex flows down a steep waterfall through continuous wet turfs to a substantially larger area of turf wetland on a flat below
- patches of woody vegetation and speargrass, usually associated with bluffs and steep sites or places where scree penetrates the grassland
- a series of broad, gently sloping grassy basins in the middle part of the catchment
- rocky gorges above and below the basins, the more substantial one being below the basin streams

Invertebrates were relatively sparse on the ridge during our visit, apart from the inevitable numerous grasshoppers and good numbers of scree-dwelling spiders. A cave weta specimen was taken from a crack in a rock outcrop not far below the ridge.

Scree weta (*Deinacrida connections*) were not found at altitude during limited searching, but a pair was found at the toe of a scree surrounded by tussock further down in the valley. This species is widespread in the eastern South Island alpine/subalpine but shows considerable colour pattern and genetic variation across its range, the genetic variation considered to be due to Pleistocene climate cycling. These specimens have a colour pattern more similar to specimens from mid and southern South Island than to those from the Seaward Kaikoura Range or further north in the Awatere Valley at Altmarlock.

Considerable diversity is added by the wetlands near the head of the catchment, in which small flies, bugs, moths and the occasional spider were active, along with large numbers of a small ichneumon wasp with black head and thorax and orange abdomen.

The upper parts of this catchment have good values in holding a range of habitats in good condition, with a likely full complement of invertebrate communities. The presence of scree weta in a moderately impacted landscape is noteworthy despite this species being the most widespread of this group. The animals seen had a very different colour pattern from other nearby populations in South Marlborough/Kaikoura.

## Middle Gully

The principle invertebrate habitats surveyed were:

- subalpine/alpine screes, of predominantly fine fragment size; occasionally showing some grading downslope
- subalpine/alpine bedrock outcrops and bluffs, mostly quite limited in extent, scattered through the screes and grasslands
- subalpine tussock faces; greener vegetation in several hollows at altitude, suggesting flushes
- Extensive wetlands of bog rush and other species, including introduced species in the head of Middle Gully, fed by flushes from surrounding screes and slopes
- areas of woody vegetation, speargrass and/or herbs, etc., sometimes quite extensive in the upper valley, associated with colluvial slopes, small bluff systems, and slopes with more subdued bedrock exposures
- increasingly extensive and increasingly modified grassy slopes, basins and flats downstream, with smaller and fewer patches of woody vegetation
- occasional riparian woody vegetation along side streams

The area of ridgeline examined is generally rounded and scree-covered, punctuated by small, isolated hardrock outcrops with bluffs on the downhill side. The screes are generally fine, with little material to provide cover for larger invertebrates such as scree weta, although occasional patches of larger fragment size occurred around the bases of outcrops. The main invertebrates noted were the ubiquitous grasshoppers and small grey scree spiders (several species/families). A cold breeze and intermittent to extensive cloud cover suppressed much invertebrate activity. The bog rush/tussock wetlands featured moderate levels of invertebrate activity, despite the cool and increasingly cloudy weather.

Five bluff weta (*Deinacrida elegans*) were found jammed into cracks in a small hardrock bluff at stream level. This was one of many small, scattered outcrops in this area, each separated from its neighbours by grasslands, boulder tumbles and screes.

Further down, at a prominent bend in the valley, is an open tussock basin; from here down the values on slopes and faces are substantially more modified, although retaining small pockets of residual values, including occasional patches of grey scrub. Here the valley floor flattens with the stream running through alluvial flats, more than on bedrock. Associated with these flats are small flushes along the toe slopes which add complexity to the habitats present. Some side streams, such as that which marks the upper end of the segment of track shown on the map, have woody vegetation along them. Below this point, values were more depleted. Despite this, a rocky outcrop not far upstream from the Acheron confluence yielded two large leaf-veined slugs lured out by the light rain.

The area of ridge and upper slope habitat traversed above Middle Gully is indicative of other habitats at these altitudes on its enclosing ridges; these have high value overall due to their predominantly natural condition. The upper part of Middle Gully, above the prominent change in direction of the stream, has high overall values with respect to invertebrates, from its relatively high naturalness and habitat diversity. The most noteworthy species found in the Middle Gully area was a small group of bluff weta in cracks within a small rocky bluff at stream level in the upper valley. This represents the northernmost site from which this species is presently known. This species is ranked 'sparse' and fills a gap in the known distribution of this species. The habitat at this site differs from all other known habitats; it consists of scattered small bedrock outcrops instead of a large continuous bluff system. Also noteworthy is the presence of scree weta on the ridge between Acheron Valley and Middle Gully.

### **Acheron Valley: Munroe Hut to Carters Yards**

A mosaic of montane invertebrate habitats is present in this area, in both shaded and exposed sunny situations, including:

- open, partly modified, grassy slopes and faces
- rock bluff communities
- colluvial slope communities, including screes and small boulder tumbles, with grasses and woody vegetation
- diverse woody vegetation on less accessible slopes between rockfaces
- grey scrub, predominantly in open, exposed situations where sweet brier is often a significant component
- largely modified small river flats and terraces with occasional small seepages and wetlands
- a single more extensive valley flat wetland with large pond

The southeast-facing stretch along the true right of Acheron River, from Munroe Hut to Middle Gully, contained the best range of quality habitats on this part of the property. It includes mosaics of bluffs, small rocklands, woody vegetation and tussock basins. Grasslands are generally more extensive towards the ridgetop, but still interspersed in places with rocky bluffs.

On the true left of the river, the northwest- and west-facing slopes feature hot, exposed, sunny faces which show slower recovery from past impacts. Weeds such as sweet brier are more prominent on



the easier slopes. Good invertebrate habitat is patchy. Areas of habitat complexity include some predominantly natural woody vegetation on bluffs and in rocklands, associated with outcrops and incised gullies. Small patches of grey scrub varying between low and moderate species diversity, including *Olearia odorata* (an important host for several rare invertebrate species), are present. A few small toe-slope wetlands are stock-impacted but retain some values. Exposed muddy/clay banks along this stretch provided ample habitat for tiger beetles, cicadas and other sun-seeking species. This section is considered to have moderate values for invertebrate conservation.

The true right of the valley, from Middle Gully confluence to Carters Yards has some residual values for invertebrate conservation, but overall this section is not rated highly.

The most notable species recorded here was a substantial population of the large tiger beetle *Cicindela waiouranesis* on the sunny true right bank of Acheron River. This species was also found at other sites on the property and was the only tiger beetle species seen during the survey. This represents a major extension of range for this species, previously known only from central North Island and from two sites in Marlborough: in the bed of the lower Wairau River and near Lake Chalice in the Richmond Range. Tiger beetles were numerous on open ground in sunny situations through this stretch of the valley, as were their larval holes in clay banks.

### **Awatere Faces**

A full suite of alpine to montane invertebrate habitats is present in this area:

- extensive alpine to montane screes, outcrops and rockfaces
- subalpine mixed grass and herbfield (much of it subject to previous burning), with rock outcrops, screes and boulder tumbles
- stands of mature mountain beech forest
- extensive grey scrub communities
- streams

Sampling results, from a site adjacent to the higher natural value areas within Kennet River, show that there are good populations of a variety of species, inhabiting grasslands, woodlands and banks and screes. The presence of the Marlborough giant weta, identified from remains of a single specimen in Kennet River valley, is noteworthy. A population in Kennet River represents a major northward extension to this species known range. This species has suffered a major contraction in range and is ranked 'gradual decline'.

The endemic little blue butterfly (*Zizina oxleyi*) was recorded in large numbers. Populations of this species are present through most of Marlborough, Nelson, West Coast and the North Island, but have been displaced by the related Australian species *Z. labradus*. It is likely that most or all of the other blue butterfly populations on the property are also *Z. oxleyi*.

The *Gingidium*-feeding looper moth (*Gingidiobora nebulosa*) recorded here, has undergone a major range contraction. It is ranked 'gradual decline'. The geometrid *Pseudocoremia fenerata* is present in small scrub remnants at a number of sites. This species is a member of a distinct community of forest moths which seems to have survived the large-scale loss of forests in the Kaikoura Ranges area.

A poorly studied and rarely encountered group whose species seem to feed on plant detritus in turf or plant communities in exposed alpine sites ('*Cnephasia*' *melanophaea*) was recorded. This species is known from alpine rockfields, nearly devoid of plants, from a handful of widely scattered sites in the South Island, at or above 1500 m. Its larvae feed on litter in *Celmisia* mats. This is a substantial northeast extension of range for this little known species.

The diversity of invertebrate habitats in the three major catchments (Kennet River, Langridge Stream and Ward Stream) which support beech forest is extremely high, despite the presence of

wasps which compete with, or prey on, some species. On the faces and smaller gullies outside these catchments, values are patchier but lifted by the presence of grey scrub communities, especially those with mountain ribbonwood as a component. Generally, the upper fencelines along mid- and toe-slopes separate those areas with medium or high invertebrate values (above the fence) from those with lesser value.

## Castle River

A range of invertebrate habitats from alpine to montane is present in this area:

- alpine to montane screes, outcrops and rockfaces below Shingle Peak at the southwest end of the area
- subalpine mixed grass and herbfield, with rock outcrops, screes, boulder tumbles and other colluvial habitats
- stands of mature mountain beech forest on steep faces
- extensive grey scrub communities
- streams

The beech forest remnants in this area support species such as crane flies and other Diptera which were not noticeably present elsewhere, despite the presence of a large wasp population. It also supports a good population of the large carabid beetle (*Mecodema* sp.). No threatened species were found in this area, although it is likely that *Gingidiobora nebulosa* and most of the other species present in Kennet River are also present here. Beech forest in the upper tributary of Castle River was the only stand of beech forest inspected during the survey and it was noticeable that invertebrates found there included species that had not been encountered elsewhere during the survey, e.g. the large carabid beetle.

There is a series of grey scrub sites with variable diversity along flats and terraces on north-facing slopes above Castle River and especially in northeast- and east-facing gullies in the lower part of the catchment, where this community reaches higher altitudes. Some of the faces above the terraces have limited values, with large areas of *Hieracium* evident, reducing the overall value. However, the northeast- and east-facing gullies have bluffs, screes and rockfaces which add habitat variety and connect the grey scrub to subalpine habitats.

A darkling beetle population found in the Castle River valley is of interest. The species is identified as *Mimopeus parvus*, which would represent an extension to the known range. This is one of a group of species with limited distribution centred broadly on the Awatere valley.

## Murphy RAP

This site includes a range of habitats from the alpine/high subalpine top of Murphy (1827m) to upper montane scrubby gullies:

- low alpine to montane screes, bluffs and rockfaces
- subalpine mixed grass and herbfield with scattered woody species
- good grey scrub communities with some emergent mountain ribbonwood, a species with associated invertebrate fauna in Marlborough

This area was not surveyed. However, the grey scrub communities in this area are likely to have high values as invertebrate habitat.

## Species Recorded

The invertebrate fauna observed on the property is typical of the ecological region and reflects the current ecological state of the property. Lower-altitude parts of the property are modified and support few native invertebrate taxa, whereas higher-altitude areas support habitats that are more intact and a richer assemblage of native taxa. Notable species recorded are listed below.

**Table 6** Notable invertebrate species recorded from Muller Pastoral Lease, February 2009.

Species	Threat category or other noteworthy feature	Distribution/comments
<i>Threatened species</i>		
<i>Deinacrida parva</i> (Marlborough giant weta)	Gradual decline: remnant population of a species that has undergone huge range contraction historically; extension of current, and possibly historic, range.	Remains of a specimen found in Kennet River, the northernmost site in which this species has been found in recent times. The only known extant populations are in the central Seaward Kaikoura Range and a small population in mid-upper Tone River, Inland Kaikoura Range.
<i>Gingidiobora nebulosa</i>	Gradual decline: known from scattered localities in Otago and Marlborough.	Kennet River. This species is likely to be scattered through the property wherever shady, damp bluffs hold populations of <i>Gingidium montana</i> , e.g. in lower Orr Stream.
<i>Deinacrida elegans</i> (bluff weta)	Sparse: this site fills a distributional gap between known populations and represents a departure from the type of habitat normally associated with this species.	Found in upper Middle Gully in a small streamside bluff. Normally found in extensive hard-rock bluff systems, but here present in a landscape of small bluffy outcrops, not directly connected to each other.
<i>Other significant species</i>		
<i>Deinacrida connectens</i> (scree weta)	Continued presence in a partly-impacted landscape; different colour pattern from nearby populations; fills a distributional gap between known populations.	Found in upper Orr Stream and the ridge above Acheron River, south from Orr Stream. Also recorded from Dillon ED and an animal that was probably this species has been recorded from near Acheron Saddle (Courtney and Arand 1994).
<i>Cicindela waiouraeensis</i> (tiger beetle)	Significant southern extension of range: previously known only from central North Island, a single site in the lower Wairau riverbed and from Lake Chalice, Richmond Range.	Found in the Acheron Valley, upslope from Burnt Yards Hut at c.1380 m and abundantly along the flats between Munroe Hut and Carters Yards; and in lower Saxton River in flats opposite and downstream from Team Stream.
<i>Zizina oxleyi</i> (little blue butterfly)	Indigenous species near its current northern limit; a formerly widespread species which has been displaced from almost its entire North Island and upper South Island habitat.	Identified in Kennet River, but probably the same species that occurs widely in other valley flats elsewhere on the property.
<i>Pseudocoremia fenerata</i>	Not a rare species but one normally associated with extensive forest habitats; one of a group of forest species that seems to have survived the clearance of substantial tracts in South Marlborough and remain in sub-optimal habitat.	Kennet River. This species is likely to occur in other forest remnants and a few of the more diverse grey scrub stands on the property.
<i>'Cnephasia' melanophaea</i>	Rarely encountered and little-known species of exposed alpine sites; elsewhere, known from rare sightings on The Remarkables, Craigieburn and Mt Owen, usually above 1450 m; a significant northeast extension of range.	Kennet River; and at c.1420 m on ridge between Kennet River and Langridge Stream.



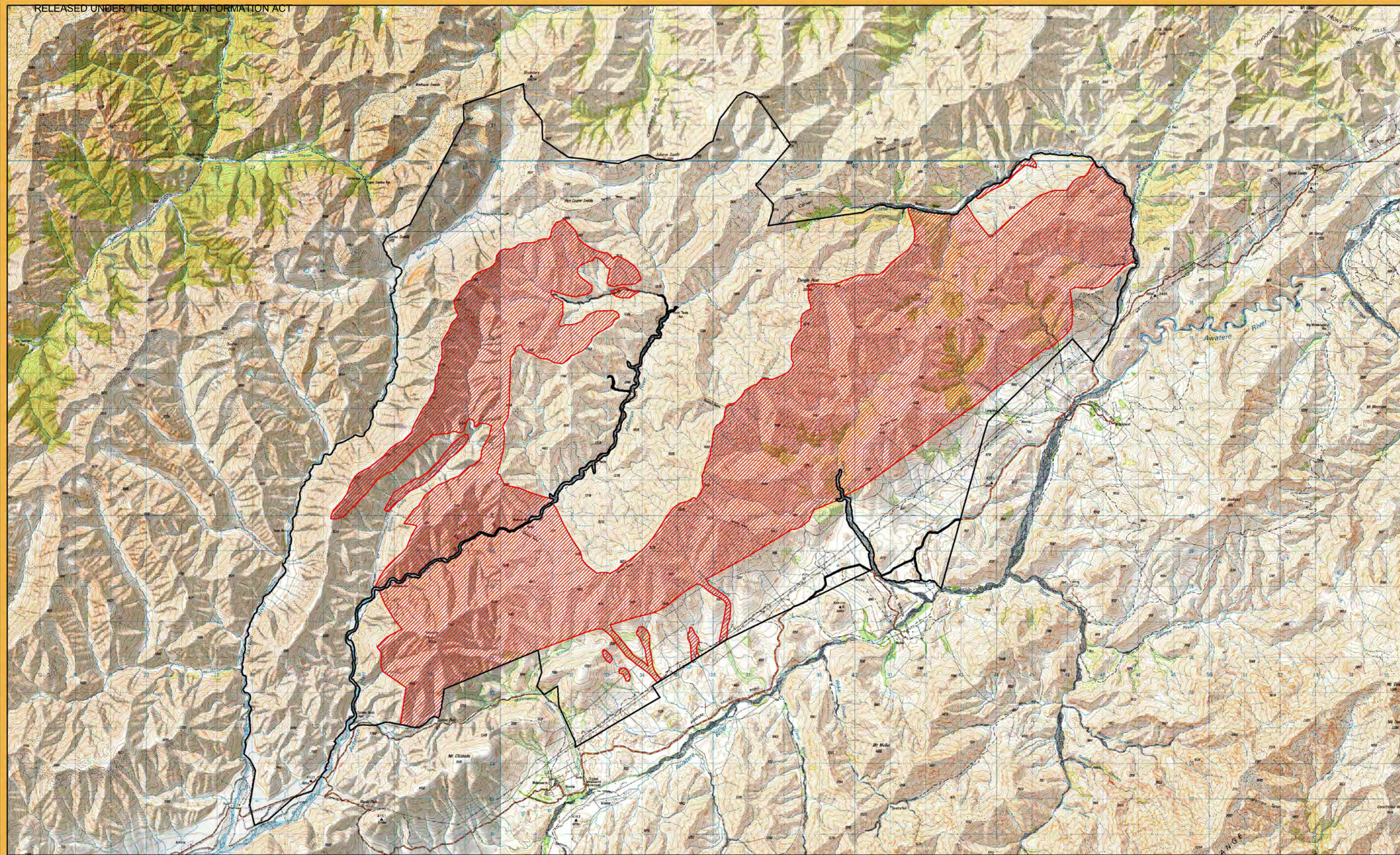
<i>Mecodema</i> sp.	Not a rare species, but primarily a forest-dweller; part of the <i>Mecodema fulgidum</i> species complex, now recognised as separate from that species (I. Townsend, <i>pers. comm.</i> ). Occurs quite widely in the South Marlborough/Kaikoura area.	In beech forest in the unnamed tributary of upper Castle River.
<i>Mimopeus parvus</i>	Not a rare species, a southern extension of range, with limited distribution centred broadly on the Awatere valley.	Castle River valley.

### Significance of the Invertebrate Fauna

The property has a number of examples of good altitudinal sequences of vegetation which are reflected in the associated invertebrate fauna. It has diverse woody vegetation that includes several remnant stands of primary beech forest and some healthy, diverse grey scrub communities, both of which support a diverse invertebrate fauna. It also has wetlands at a range of altitudes which greatly increase invertebrate diversity. In general, the uplands have extensive habitat in a predominantly near-natural condition, the midlands are variable and the valley floors and flats more compromised. In addition, the property supports a number of invertebrate species which are rare, little-known, of interest and/or for which the property represents either the edge of the known range or a significant range extension.

The significance of the invertebrate fauna described above has not been extrapolated to cover habitats that were not visited during the field survey; therefore, the areas of significant invertebrate value indicated on the map, should not be read to necessarily mean that the other areas do not have value, but rather that they may not have been surveyed.





# Muller Pastoral Lease - Invertebrate values



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## Legend

- Muller Pastoral Lease
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## 2.6.4 Problem Animals

Pest mammal species recorded on Muller Pastoral Lease were brown hare (likely to be present throughout), brushtail possum (scat commonly encountered in or near remnants of indigenous woody vegetation, talus and rock outcrops), chamois (three individuals seen in a cirque basin in the upper Saxton River catchment), hedgehog (likely to be present throughout in open habitats), rabbit (likely to be present throughout at lower altitudes), feral cat (two individuals seen in the river bed of the lower Kennet River and a third animal at the hut in Castle valley), feral goat (one carcass seen in the upper Saxton River catchment and live animals observed on scree and in mountain beech forest in the Castle River catchment), feral pig (dead and live animals observed in the Kennet and Castle river catchments), mouse (one individual seen in the lower Kennet River bed and scat observed in several huts on the property) and red deer (several individuals seen along the Awatere faces).

Collectively, introduced herbivores (brushtail possum, chamois, feral goat, feral pig, hare, rabbit and red deer) browse native vegetation, exacerbating damage caused by grazing and limiting vegetation recovery. Browsing impacts were particularly severe on understorey vegetation in mountain beech forest remnants in the Kennet and Castle river catchments. Large wasp populations are also present in mountain beech forest remnants, where they compete with native birds, lizards and invertebrates for nectar, fruit and honeydew. Wasps are also predators of some invertebrates.

Mustelids and rats, although not detected, may also be present on the property. The negative impacts of introduced mammalian predators (hedgehog, feral cat, mustelids and rodents) on native bird and lizard populations are well-documented (e.g. Tocher 2006). Feral cat and mouse sightings were made within 2 km of a site near the Kennet River bridge where spotted skink (gradual decline) was recorded in 1967. It is highly unlikely that spotted skink remain at that site today, given obvious predation pressure and land-use changes that have occurred since. Canada goose and/or their sign were abundant in stream and river beds throughout the property.



## 2.7 HISTORIC

### 2.7.1 European Heritage Values

Muller Pastoral Lease includes the former Richmond Dale Run (Run 107 or 107A; also known as Stronvar), part of the old Molesworth Run (Part Run 119) and all of the leased land of the former Langridge Station (Run 218 formerly Part Run 117). The early (1903) cadastral note that the valleys have “low spurs and flats covered with tussock and snowgrass: good summer feed”; but the tops are either “rough range covered with tussock and snowgrass: not much good”, or worse, “rough rocky range with shingle slips”. (See Lands and Survey 1903a, 1903b, 1945).

Richmond Dale was susceptible to snow and never able to be farmed successfully as a single run. For most of the late nineteenth century it was farmed by Thomas Carter as a back block of the Hillersden Run in the Wairau. Acton-Adams held it briefly in the early 1880s as an adjunct to Tarndale. In general, these remote higher-altitude runs have proven to be not sustainable operations in their own right but have been used as places of relatively light summer cattle grazing for stations based in the Awatere valley floor, such as today’s Muller Station. Richmond Dale seems to have been the victim of an all too common story of marginal land which brought runholders to their knees in the face of occasional catastrophic snows and the rabbit plague.

From 1924 these runs were merged with the Langridge freehold land in the hands of J.W. Shirliff. The first Muller Station (based on the old Muller and Fairfield runs on the southeast side of the Awatere valley) had been purchased by Shirliff in 1896. The old Fairfield Run and the adjacent Muller Run were first owned in 1851-52 by Dr Stephen Lunn Muller, hence the name. In 1965, Muller Station including all the leasehold was sold to the Satterthwaite family who farm it today.

Early maps (SOs and cadastrals) and the NZMS260 series maps indicate the presence of former station homesteads or farmstead complexes on the old Richmond Dale and Langridge runs. Saxton and Acheron saddles were key nineteenth- and early twentieth-century stock routes connecting the Wairau to the main Molesworth thoroughfares of the Acheron and the upper Clarence valleys.

In this assessment, some inferences have been made about the age of features. An important issue relates to the nature and age of fences. Kennington (1978), McIntyre (2007) and Hamel (2001) note that No. 8 wire was imported from the late 1860s and that the reticulation of fences using iron standards was greatly expanded from the 1870s. ‘T’ iron posts which are characteristic of fencing in the timber-depauperate grasslands of South Marlborough also belong to that period. Hence most fences with No. 8 wire, bolt-type tensioners, iron standards and heavy T-iron strainer posts are attributed to the era 1870-1920. Before that era most fences were of the ditch and bank type and were rather restricted in area; the emphasis was on fencing stock out of areas such as homesteads rather than the control of rangelands. The one example of ditch and bank found in this survey (part of Richmond Dale homestead) may therefore date to the period before 1870.

In terms of building construction methods, from about 1910 the use of cob construction seems to have discontinued in favour of timber-frame and corrugated iron construction.

A substantial number of historic sites are recorded from Muller Pastoral Lease. These sites are described separately below for each part of the property. Data for each site is in the following order: NZAA site number; site type and name; a GPS point or grid reference (New Zealand Map Grid); some location details; and a concise description of the site, building or complex.

## Saxton Valley

### N30/3; Cairn/stock route; Saxton-Gordon Saddle and cairn; E2526599-N5918118

This cairn is on a low stony hillock on the western side of the saddle, just outside the boundary of Muller Pastoral Lease. It is the only archaeological site on this saddle, one of several historically important crossings from the Acheron River routes into the Wairau, and has been included in this report given its relevance to the lease. The site is marked "Saxton Saddle" on the 1903 cadastral and on the NZMS260 map but is referred to on Muller Station as Gordon Saddle (the name of the river on the northern side), hence the double name used above. The cairn consists of small angular boulders stacked to a height of about 60 cm above the surrounding rocky ground. The cairn is stable and well weathered with a heavy growth of lichen but its age is indeterminate. It is not readily visible from any of the approaches to the pass so its function as a route marker is uncertain. It is more likely to be a survey mark, since the 1903 cadastral map shows a survey line running through a distinct point on the saddle at about this point. If so, it may date to the period before 1880.

The pass itself is all open tussockland and is about 600 m wide with the lowest point to the east. From the north, stock had relatively easy routes west of the stream which falls from the low point in the saddle north into the Gordon with a short steep ascent to the saddle proper. To the south, the descent would have been on an easy gradient to the west of the stream which drains to the flats of the Saxton River.

The Saxton-Gordon saddle is a historically important crossing between Marlborough and North Canterbury. The cairn cannot be aged and its function and significance is difficult to determine. If it is a survey cairn it is a relatively rare site type, especially in this good condition.

### N30/4; Stone fireplaces/camp site; Saxton-Gordon Saddle stockmen's camp; E2527057-N5916986

This site is on a slightly sloping small fan area at the foot and on the true right of the stream which falls from the Saxton-Gordon Saddle and not far above the Saxton flats proper. The Protected Natural Area fence crosses the stream about 20 m below. The site consists of at least three angular stone scatters on an area of nearly level fan about 20 x 6 m in area. There are small lumps of charcoal in the topsoil surrounding the stones of the southernmost scatter. When viewed from a distance out on the Saxton flats there is a sloping line in the shrubland south-west of the flat, which may indicate a stock route or benched track but nothing is distinct when standing on the line itself.

This site is a representative example of camps in easy upper-valley sites near subalpine crossings.

### N30/5; Fence; Team Stream outlet fence; E2524106-N5908560

This fence runs uphill (east) from a promontory on the true left of the Saxton River and about 300 m south of the confluence with the Team Stream. The fence was originally constructed with T-iron strainers and No. 8 wire (i.e. of the period 1870-1920) but has been repaired with new wire and tanalised posts. The fence marks the northern end of easy sloping country about 1000 x 300 m which extends to the south. At the promontory by the river, erosion has revealed the original wired-in stone deadman which held the T-iron strainer post. There is a modern gate and temporary yards made of Hurricane netting about 200 m upslope from the river (site of the GPS point above). The fence continues on to the east and up steep slopes and may continue over to the Junction Hut vicinity in the Acheron valley.

This fence is a much-repaired example of an early fence, representative of the 1870-1920 era.

N30/6: Stone fireplace/camp site; Middle Gully Stockmen's camp; E2529100-N5912830

This fireplace is on a low terrace by a small fan which forms a prominent tight bend on the true right of Middle Gully Stream, opposite a significant tributary which enters Middle Gully stream from the east. The site consists of a fireplace of placed rocks with a bar for hanging billies. The bar is fabricated from three fence standards and No. 8 wire. This is one of several camps found on Muller Station and has presumably been placed here as a base for men working stock in upper Middle Gully. It appears reasonably old and shows no evidence of recent use. This is a representative example of a stockmen's camp.

N30/7: Flood gates/eye bolt; Saxton River flood gates; E2522809-N5904974

These flood gates cross the Saxton River at a narrow point (c.25 m wide) between two bluffs. The modern gates are at the same location and are tied off on the eastern (Muller-side) eyebolt. On the western side the eyebolt is at a lower level and is no longer in use except as an earthing point for a solar cell for an electric fence. The eyebolts are forged from wrought iron bar about  $\frac{3}{4}$  inch diameter. A modern fence runs east from the eyebolt and may be on the line of an earlier one. The SO 1411 map (1917) shows a stock bridge near this location. Despite a thorough search no evidence of this was found.

This is an excellent example of a wide-span flood gate, part of a fence preventing stock moving up and down the valley, and obviously of some antiquity. The eyebolt is heavily engineered reflecting the stresses caused by the wide span of the top wires of the flood gate. Flood gates of this span are unusual.

**Isolated Flat/Acheron River**N30/10: Cob building ruins/small settlement/sheep dip and yards; Richmond Dale homestead and yards; E2523999-N5902269

The most obvious reference point to re-locate these sites is a lone old willow on a low terrace northwest of the fault line on the north side of the Wards Pass-Isolated Saddle Road c. 0.5 km southwest of the Acheron River bridge. The cob building sites are under and immediately northwest (less than 60 m) of the willow. A building is shown here on SO 373 (undated but probably drawn in the 1880s) and marked "Richmond Dale"; a whare and yards are marked here on SO 1411 "Boundary between Past[oral] Runs 107A and 119" surveyed 1917; and a homestead is marked and named "Richmond Dale" on the 1903 cadastral map.

*The Richmond Dale homestead*

The homestead site occupies a narrow (c. 30 m wide) fault terrace above the broad flood plain of the Acheron. There are nine recognisable features:

1. Pit at the south edge of the terrace roughly rectangular and 2.5 m long on the E-W axis.
2. 2.5 x 2.1 m mound on the north edge of the terrace and partly up the backslope. It appears to have been a fireplace with a 1.6 x 1 m base area (fire) with surrounding mound being the eroded cob chimney.
3. 3 x 2.5 m scoop out of the backslope (north side) of the terrace, immediately adjacent to (2) above. This may be a borrow area for soil for the cob.
4. Large rectangular slightly raised platform 18 x 11 m with distinct shallow ditches on all sides. The edges of the mound have occasional exposed stones which may indicate footings or foundations for a substantial wooden hut or large tent and porch yard. The ditches would keep out sheep or pigs.
5. 1 m long line of stones (alignment or paving at the edge of platform 4?).
6. 8.5 x 4.0 m terrace cut into the rise at the toe of the backslope. Also within this area at the upslope (north) side is a 1 x 2 m mound with in situ corrugated iron suggesting a fireplace within a tent or hut.



7. Horse-shoe shaped mound c. 8 x 12.5 m, probably a cob building with a door or opening at one end. There are various fragments of corrugated iron and much wire and other iron fragments in the subsoil. This suggests a substantial cob hut with a corrugated iron roof.
8. A single willow in good health but no regeneration, age 60+ years?
9. A depression about 12 x 4 m in terrace edge above a spring (possible water source).

#### *The yards and dip*

The yards and dip are on the flood plain and adjacent low terrace scarp on the north side of the Wards Pass-Isolated Saddle Road c. 0.5 km southwest of the Acheron River bridge and 100-200 m northwest of the road. They are about 170 m northeast of the homestead. The wire and standing T-irons of the yards are visible from the road.

The yards lead to a concrete dip and small stone drying-yard on the terrace scarp. Water for the dip appears to have come from a spring on the terrace (the reason for putting the dip at this point). The dip bath is 1.2 m wide and 4 m long with a 28-33 cm thick concrete surround. The floor of the dip is about 1.5 m below ground. The dip rises through a stone lined ramp about 2.5 m long to a small stone paved yard with stone walls about 5 m wide and 9.3 m long (internal dimensions). The stone paving drains down slope back into the dip bath. To the west of the dip there is a possible drain or water inlet obscured by a collapsed rock mound and some concrete, possibly part of a water control structure.

The yards are probably of several periods of use. A total area of about 100 x 40 m is marked out by wooden and T-iron posts. There seem to be receiving yards at the road end, holding yards, checking and forcing pens (to get the sheep into single file), drafting races and gates, various other gates, and outlet pens. One of the strainers in the race is a T-iron with bolt-type tensioners. A race leading into the dip is no longer obvious except that there is a single fence on that orientation and perhaps the traces of a gateway by the entry to the dip bath. Many of the interior fences have been lined with chicken mesh so these presumably had a forcing function. More study is needed to make a full interpretation of these yards at their various phases of usage.

The earliest use will have been for the control of scab on Richmond Dale but it is also possible that it could have been used to disinfect Marlborough sheep being driven to Canterbury via the Acheron Saddle or Saxton Pass. The use of stone walls and stone lining (the concrete may have been plastered on later), the use of T-iron posts, bolt-type tensioners, the nearby cob building ruins and the strategic location all suggest a relatively early date for the use of this site, possibly as early as the 1870s. It may have stayed in use up until the late 1920s.

Richmond Dale was an early pastoral lease (formerly Run 107A now Run 220) occupying the country lying east of the Saxton River, taking in the catchment of the Acheron River and running north from Isolated Flat and Guide Stream to Saxton Saddle, Port Cooper Saddle and Acheron Saddle.

This is a highly significant site because of its clear identity with a known station (Richmond Dale) prominent in the founding process of Molesworth Station, its overall completeness, intactness and integrity including the association of the yards, the dip, springs and the cob hut sites, its probable early date, and its location on a major stock route. It could be a very important and accessible place for telling the story of an abandoned station, the scab problem and the movement of sheep from Nelson and the Awatere south to Canterbury.

The homestead is a very significant assemblage of cob ruins, in good condition, and probably of later 19<sup>th</sup>-century age, possibly as early as the 1860s, clearly related to the nearby stone-lined dip and yards. It provides a very good picture of the nature of the homestead areas of such an early run and survives in good condition because the buildings were abandoned when the run was merged with others. This is unlike the situation of the surviving cob building settlement pattern that is still in use at places such as at Tarndale, Molesworth or the Muller. These latter complexes illustrate some

elements of the founding settlement pattern but have been greatly modified and have become much larger in the course of 120 years or more of settlement. In her review of high country pastoral heritage, McIntyre (2007) regards homesteads, clusters of buildings, dips and the use of concrete as “key physical resources” in the 1870s era.

The site is in good conservative cover of tussock and grass and is lightly grazed. The site could be vulnerable to new fencing/fenceline bulldozing and cattle damage. The willow is grazed but is in good health.

N30/11; Rabbit-proof fence/boundary fence; Saxton Saddle and old Richmond Dale/Langridge Run boundary fence; E2528171-N5904170

The alignment of the fence crosses Saxton Saddle and runs up the ridges either side: to the northeast (on the Muller-Molesworth boundary); and to the southwest where it joins the long fence along the subalpine ridge between Ward Pass and Mt Chisholm. To the northeast the fence is in poor condition with only some standards and broken strands of No. 8 wire surviving. The standards have been bent over and the netting moulded to the rounded surface of some rocks by the force of the snow drifts. There is a bulldozed track just below the ridge to the east of the fence. The fence was followed uphill to E2528349-N5904600 where a modern fence commences and where there is a roll of netting. There is a faint stock track/furrow up the hill from where the fence may have been removed.

The fence in the pass is not marked on the NZMS260 map but it clearly follows the ridge north to Mt Murphy. It probably connects to the long run of derelict boundary fence shown on the NZMS260 O30 map which separates the area of Run 220 (Richmond Dale, later Hillersden, and later still Langridge) to the west from the very northern part of the Molesworth (Pt Run 119) and the Langridge Leasehold (Run 218 and Pt Run 117) to the east.

The fence north to Mt Murphy is clearly that referred to in Kennington (1978) describing Awatere valley fencing in the 1860's as follows: *Not all fencing was successful. One early example was a nine mile length built at great cost, in labour and material, on the 6000 feet high ridge separating Langridge and Richmondale. Severe snow storms during the first winter after it was built, completely wrecked this fence.* Kennington refers to sulphur being used to cement the standards to the rock. He may have meant lead used as a kind of grout.

The fence is a good example, though in derelict condition, of the very long runs of rabbit-proof fencing needed to control the pest. Its low position shows the tactical need to control rabbits through the easier passes such as the Saxton Pass.

## **Acheron River**

O29/1; Historic route/Stock or bridle track; Acheron Saddle bridle track; E2534622-N5920017

Acheron Saddle runs east-west with a distinct low point at the GPS point above. To the north there are steep bedrock and scree slopes falling to a small rough-floored valley. Canterbury Spur is visible from the saddle and there is a sidle track which ran from an intermediate point on the spur more or less at the altitudinal limit of the beech forest into the rough-floored valley mentioned. This track is marked on SO 1148 “Plan of Grazing Run 107” (1914). Steve Satterthwaite notes that this route has been used by horse parties in the last few years, although it appears to be formidable, it is able to be traversed. At the saddle, a benched bridle track runs downhill to the southwest at a gentle gradient of about 1:20 or 1:15. Shown on NZMS260 N30, it runs about 200 m down to a prominent spur, crosses the spur then runs down at a steeper gradient (1:10) on the western flank of the spur before finally crossing to easier slopes above the flats and down onto the flats where there is a camp (Record O30/1).

The benched track is about 600 m in total length and is on average 1.2 m wide with a batter of between 20 and 50 cm. The track shows in aerial views and is easily traced on the ground. The steeper part on the western flank of the spur is channelling run-off and is more eroded than the rest. The bridle track is shown on SO 373 as continuing down the Acheron to Burnt Whare or Burnt Yards and from there to Isolated Flat. The route probably follows the existing stock tracks but there is little distinct sign of track formation.

The bridle track is historically important as a route from Marlborough to Canterbury. It is uniquely marked by its lower, steep northern approaches being named, by way of encouragement, Canterbury Spur (not on the property). On the southern side, on the property, the bridle track is well constructed and survives in good condition, superior to the track to Barefells at the head of the Awatere or to the Island Pass track but inferior to the Fowlers Pass pack track on St James Station.

O30/1; Hut foundations; Acheron Saddle stockmens' camp or hut; E2534222-N5919358

These hut foundations are on a small slightly sloping area about 12 x 24 m on the true left of the Acheron River just below the confluence of the river (leading to Port Copper Saddle) and the unnamed stream which comes down from Acheron Saddle. Near the centre of the flat is a substantial ruined fireplace about 1.6 x 0.7 m in plan which forms one end of an outline of stones about 3.5 x 2.8 m which form the foundation of a hut or tent camp site. There is a slight drop from the foundations to the flat on the west side.

The site is a representative example of the camps or huts often found in easier, warmer country with water near sub-alpine saddle crossings. Other examples are known on the approaches to Robinsons Saddle, Barefells Pass, Island Pass, Saxton Pass and the Saxton-Gordon Saddle.

O30/2; Fence/flood gate; Acheron-Port Cooper Saddle fence; E2533886-N5917964

The remains of this fence and flood gate cross Acheron River at some low cliffs just upstream from its confluence with the unnamed stream from Port Cooper Saddle. The 6-strand fence has T-iron strainer posts and bolt-type tensioners and probably dates from 1870-1920. On the west side of the river the fence rises to the northeast and is shown on the NZMS260 map to continue to the hill top just south of Port Cooper Saddle and from there down to the headwaters of the Saxton.

The fence is a representative example, though in derelict condition, of the very long runs of fencing needed to control stock in the upper valleys of the Acheron in the days of Richmond Dale. Flood gates are a key physical resource in the 1870s according to McIntyre's (2007) heritage study.

O30/3; Fence; E2534402-N5917213

This fence runs along a bench cut (the bridle track?) parallel to the Acheron River on its true left bank and about 20 m vertically above the narrow stony flats. The GPS point is a T-iron strainer with 5 bolt-type tensioners still attached and 6 strands of wire. It probably dates to the period 1870 to 1920 and may post-date the formation of the bridle track. The fence (which is derelict) and the bridle track run east from the GPS point for about 300 m to a prominent unnamed stream which joins the Acheron from the northeast and at a point about 600 m upstream from Burnt Whare or Burnt Yards. The unnamed stream may have been a problem to cross in floods so the bridle track may have been taken upstream for an easier crossing.

The fence is a representative example of fences which have been built along rivers just above the stock route and which seem to be designed to confine stock to the valley floor while they are being driven or kept up valley in the summer grazing season.

O30/4: Cob building ruins/old yards; Burnt Whare or Burnt Yards; E2534761-N5915811

This site complex is on a small terrace on the north side of the junction of the Acheron River and the large tributary stream that originates to the south west of Hillersden Corner. Although named Burnt Yards on the NZMS260 N30 map, the area is noted as Burnt Whare on SO 373 and is also known by that name by the Satterthwaites.

The modern yards are on a small high (15 m elevation above the river) triangular area that is exposed to northwest winds. Inside the area of the modern yards there is an area of older yards made from T-iron strainer posts and wire and netting. Some of the T-irons and other netting are crushed and bulldozed on the southern point of the high terrace not far from a pipe survey mark set in a ring of stones (E2534761-N5915811). There is also a short length of wing fence above and parallel to the upper fence of the yards made with T-irons and standards; it is 5-wire with 2-inch netting. This was probably a part of the old yards.

The main area of interest is a long narrow terrace (8 m x 80 m) lying east of the upper terrace and about 4 m above the flood plain of the unnamed northeast stream. Sheltered from the northwest by the high terrace, it has an old willow at its centre and a number of old willows at the foot of the terrace at the flood plain. A bulldozed track rises from the northeast flood plain, crosses this low terrace and then climbs to the high terrace. On the low terrace are a number of important cob ruin sites and a corrugated iron musterers' hut, which shows on the 1943 topographical maps. From west to east the main archaeological features are:

- A stone alignment running down the toe of the slope where the road crosses.
- A cement-mortared stone shed with a collapsed gabled truss roof. This may be a reconstruction of an older stone or cob hut since there is a cob and stone fireplace with fire bars just to the east.
- At this point halfway along the terrace there are a number of free-running springs.
- The springs are drained through several small areas of elevated cob ruins with a total area about 3 m across and 15 m along the terrace. Although the nature of the original building(s) is not easily interpreted, these are the oldest recognizable structures on the terrace. There is also a well.

At the eastern end of the terrace is a corrugated iron musterers' hut similar in style to Munroe (Record O30/6) and Junction huts (Record N30/13) but shorter and wider and of probably somewhat earlier (1940s?) construction. Accommodation has been increased post-WWII by the addition of two army huts either side of the northwest end of the hut. The main hut is 6.4 m x 2.44 m in plan with a gable height of 3 m, eaves 2.2 m and a bush chimney estimated to be 3.7 m (from which the other measurements are derived from photographs of the elevations). The two army huts are also gabled (long axis at right angles to the long axis of the gable of the main hut) and have a plan area of 3.3 x 3.6 m. A porch-type roof which creates a fully enclosed area straddles the space between the two huts. The huts also open to the interior; the effect is one interior space with two separate bunkrooms off each side at the northwest end. The huts have boarded up windows at the ends. The interior of the main hut has lined walls and ceiling and has a drop sash window on the southwest elevation plus one sash window near the chimney with a "kitchen door" on the northeast side. The fireplace and bush chimney are at the southeast end.

The Burnt Whare or Burnt Yards is a significant assemblage of yards, buildings and sites, the origins of which go back to the first use of the Acheron Saddle for stock droving, the era of Richmond Dale, and the management of Hillersden and Langridge (Shirtliff era). The most significant sites are the cob ruins lying on the low long terrace with the springs; these are almost certainly of late 19<sup>th</sup> century age and probably date from the era of the bridle track and stock droving. The old yards (now only a fragment) also date from this era. The 1940s corrugated iron musterers' hut will be of the late Shirtliff era (1924-1953) and is full of character with many vernacular touches including the re-use of the army huts.



O30/5: Yards; E2532717-N5911492

These yards are on the true left of the Acheron River between the 4WD track and the toe of the slope. They are about 2 km upstream from Munroe Hut and are shown on the NZMS260 O30 map. There are two adjacent yards end on end at the foot of the slope. The southwest yard (28 x 11 m in plan) is the older one with T-irons and standards, probably dating from the period 1870-1920. The northeast yard (28 x 18 m in plan) has a common fence and is made of railway sleeper strainer posts and netting (probably erected in the 1960s). Both yards are representative examples of yards used for short term holding of stock.

O30/6: Hut/kennels/hut ruins; Munroe Hut; E2530854-N5909815

The hut lies on an elevated terrace near the foot of the hill and on the true left of the Acheron River just south of a large unnamed eastern tributary. At the foot of the hill is a remarkable assemblage of 44-gallon drum kennels part-buried in two long narrow terraces, about 36 in total (implying, as does the number of bunks, about 4 fully kitted-out musterers). The drums are labeled "Australian Petroleum Lidcombe NSW Australia", date uncertain but possibly early 1950s.

The hut is 9.2 x 2.8 m in plan (30 x 9 feet) with roof-line height 3.4 m and the eaves 1.97 m above ground. The huts have a distinctive tall appearance caused by the narrow aspect, steep roofing angle and the height of the floor above ground (40 cm). This height and roof slope is partly an impression but may also have been a precaution against snow. There are two doors on the southeast elevation (facing the 4WD track), one into the 4-berth bunkroom and one into the kitchen. The hut is of untreated 4 x 2 inch radiata pine with treated floor joists and treated T and G floorboards on concrete piles. The lining of the bunkroom and partition to the kitchen is Pinex "softboard". The hut cladding is corrugated iron trademark "Lysaght Orb" (this is an old and enduring trademark of Scotland, Australia and New Zealand going back to the 1890s, so it is not necessarily a good guide to the age of the hut unless the particular format of the trademark can be traced). There is a meat safe on the exterior wall next to the kitchen door and accessible from inside. There are louver windows into the kitchen opposite the door and another louver window at the northeast in the bunkroom.

There is a bush-type corrugated iron chimney 3.7 m high on the southwest elevation (kitchen end). One of the uprights has been broken. Some of the louver panels of the windows have been broken. Otherwise the hut is in good condition.

On the terrace to the northeast of and about 20 m from the hut and between the track and the terrace edge falling to the Acheron River are some piles of stones: one is about 3 x 1.5 m in plan and has some white-painted standards driven in on three sides. Just to the north is another standard and a stone filled depression with small fragments of flattened corrugated iron. This may be the site of an earlier corrugated iron hut (painted white) or canvas tent with permanent fire place and a corrugated iron bush chimney tied down to the standards.

This is one of three very similar huts in the Acheron, possibly dating to the reign of Shirtliff on the Muller Station (late 1930s or 1940s) and/or the wool boom of the 1950s. The Munroe and Junction huts would have been to a standard design and pre-cut for transport to the site. The huts are representative examples of musterers' huts built in the 1950s and are in remarkably good original condition.

O30/7: Yards/cob hut sites; Munroe Yards; E2530582-N5909624

These yards are still extant, marked on the NZMS260 O30 map, and are on the uphill side of the 4WD track and about 300 m southwest of Munroe Hut. The yards (30 x 33 m in plan) are on an older yard's site but have been re-made with the old iron standards and upgraded with tanalised wooden post strainers in the last few decades. Uphill from the yards is a 16 m length of old yard fence with T-iron strainers running parallel to the corresponding side of the modern yard and

connecting to an old fence which runs southeast up the hill (shown as derelict on the NZMS260 map).

There is a shallow gully and stream just southwest of the yards. Between the gully and the yards there are earth mounds at the south corner and 4 m from the west corner there is a stone fireplace with two standards spliced together at one side, probably the site of the chimney of a canvas tent. On the northwest (Acheron) side of the track overlooking the gully is a cob hut ruin 3 x 5 m in plan with many stones clumped at its southwest end, probably a fireplace. Just to the northeast of that is another low bank with some bundles of old wire.

Although the yards today look like a small isolated special-purpose yards, in the earlier period of use they were associated with at least two hut or tent sites used by musterers or rabbiters from about 1870 to the period when the Munroe Hut was erected. The hut sites and the old yards are representative examples of their kind.

#### N30/12; Hut foundations or tent camp site; The Big Fireplace; E2529995-N5909584

This site is on a 150 x 50 m flat on the true left of the Acheron and just east of the 4WD track and towards a boulder-scrub at the foot of the main hillslope. The site is the outline of the stone foundations of a hut or tent camp with a substantial pile of stones (a fireplace) at the eastern end. The foundations or tent edges are about 3 x 3.2 m in plan. There are fragments of flattened corrugated iron sheet inside the foundation and under the stones of the fireplace and a pressed steel frypan (14-inch with riveted handle fitting but no handle) also under the chimney stones. In the pile of scree towards the foot of the hill are some tin cans and a flattened 9-inch billy with rolled seams. The tins have crimped lids (not soldered or hole-in-lid) so they will post-date 1900.

The site is a representative example of a hut site or tent camp ruin of a type probably occupied in the period 1920 to 1940 before the construction of the Junction and Munroe huts.

#### N30/13; Musterers' hut/kennels; Junction Hut; E2526941-N5908120

This is another major hut on the Acheron River, on the true left just upstream from the junction with Middle Gully (hence the name). The hut is identical to Munroe Hut in every particular except that it is orientated with the kitchen and chimney to the north so that the standard two doors open to the 4WD track to the east. The Junction Hut chimney timber frame and internal iron cladding has been recently reconstructed to a good standard.

To the northeast at the foot of the hill and south of a low bluff are two long narrow terraces with 44-gallon drums dug in as dog kennels. Just below the kennels is a low gabled-roof hut with corrugated iron roofing and stone walls some of which have had concrete poured behind them to increase their strength. It is 4.8 x 3 m in plan, earth-floored, substantially open to the north and not weatherproof. It may be the site of an earlier hut that has been reconstructed to act as a base during the construction of the main hut.

This is one of three very similar huts in the Acheron. The hut is a representative example of musterers' huts built in the 1950s and is in remarkably good original condition.

#### N30/14; Yards; Carters Yards; E2525800-N5904300

This is a large area of yards on flats on the true left of Acheron River and just upstream from Guide Stream and the road to Saxton Pass. The yards have earlier and later phases of construction and reconstruction. Carter was an early owner of Hillersden who owned and ran both Richmond Dale and St Helens from that station.

The yards were recorded off a near-vertical aerial photograph. The photograph was calibrated by measuring length and compass bearing of lengths of fence showing in the photograph. The outer fence of the modern yards is a parallelogram about 70 x 100 m in plan. The more recent work (1960s?), including remaking of old lengths of fence, is marked by the use of railway sleepers. This outer fence incorporates some of the old fence which is marked by round hardwood strainers with a distinct chamfered top particularly prevalent to the north and east. In the open holding pen north of the races there are the remains of wooden posts (split totara? standing and fallen) which appear to mark out the smaller, older holding pens. The distinctive chamfered strainer posts also appear at points around the modern races and some small pens to the south of them, suggesting that the form of the races today is similar to the earlier races. To the south of these pens and races is a level, slightly elevated area about 11 x 3 m in plan. This may be the outline of the foundations of a shearing shed.

In the earlier period of use, there will have been receiving yards for stock from Guide Gully and the Acheron, probably in the east and northeast sides. The checking and forcing pens (to get the sheep into single file), drafting races and gates were at the centre of these early yards and very probably on the site of the current 1960s facilities. The old shearing shed (?) itself still leaves a slight footprint. The outlet pens will have been to the west of the yards possibly covering a smaller area than that covered by the yards at present. The hut recorded as rabbiters' hut no. 2 (N30/15) may well have been a shearers' or general use hut associated with the yards.

Carters Yards is a historically significant set of yards probably first constructed in the last quarter of the nineteenth century, from the era when the upper Acheron was run from Hillersden. Like the yards on the Guide River, Tarndale, Molesworth Station and at Blairich Station (Watson 2008), they have been built over by modern yards which incorporate some materials and the overall layout of the old yards. Carters Yards, unlike these others, has had relatively little use in the last few decades and it is possible to trace much of the general layout of the old yards including what may be the location of the shearing shed. It is nevertheless difficult to interpret its function in its earliest form in detail. This is also the case for other yards abandoned by the early twentieth century such as the Richmond Dale yards nearby, the Lake McRae yards, or the yards at Lake Guyon on St James Station.

N30/15; Rabbiters' hut ruins, old willows; Carters Yards Rabbiters' Huts No. 1 and No. 2; E2525900-N5904525

#### *Hut no. 1*

These hut ruins are approximately 200 m north of the enclosures of Carters Yards on the edge of the high terrace and west of the 4WD track. There is a 20 m long row of nine approximately 80 yr old willows planted for shelter or as a fence along the face of the terrace by the hut site. The age of the willows suggests the hut or tent site dates from the 1920s. The site is in the shelter of the willows and there is a piece of corrugated iron between two of them suggesting a fence or kennel? The hut site is distinguished by a scatter of rocks (a chimney or fireplace?) in the topsoil along the edge of a low mound about 7 m long and extending east from the southernmost willow. Otherwise the outline of the hut is unclear. In some sweet brier bushes nearby is a cyanide can and some rabbit netting.

#### *Hut No. 2*

These hut ruins are approximately 20 m north of the enclosures of Carters Yards at the toe of the hillslope rising to the east (E2525954-N5904301). The ruins were bulldozed flat after the record was made in late 2007 so little shows now. This site consisted of two elongated mounds of soil and stones, centres about 5 m apart with a gap between. There were vertical panels of corrugated iron and some posts sticking out of the mounds. The posts appeared to be native beech poles and one had a nail sticking out of the top, probably fragments of the original studs and cladding of the hut or the fireplace/chimney(s). There were fragments of ABC brown beer bottles scattered about and piles of wire and a rabbit trap on the south side of the southern pile. To judge from the earth mounds the overall plan of the hut would have been about 3.4 x 6.7 m (long axis more or less north-south) and the door may have faced west. There may have been cob fireplaces at either end or the hut was a

composite mud and stud type structure, to account for the soil mounds. The hut must have been burnt (no zinc left on the corrugated iron) and may have been run over by a bulldozer well before date of recording.

These sites are now just traces of simple shelters with fireplaces. No. 1 may have been a tent camp while No. 2 was corrugated iron. There may be sub-surface remains. They are representative of rabbiters' camps. It is possible that No. 2 was also a musterers' and shearers' hut. The sites are vulnerable to bulldozing, extension of the road and further activity in the vicinity of the road. The willows at No. 1 will become vulnerable to windthrow as they age.

#### N30/16; Derelict swing bridge; Carters Yards Swing Bridge; E2525900-N5904370

This bridge crossed the Acheron River about 100 m north of Carters Yards. Access to the eastern side is just above the river level north of the bridge and well down below the edge of the high terrace on which Carters Yards are sited. There is a small broken down yard south of the bridge on the western side. It is a swing bridge for sheep, giving access between the yards and the true right of the Acheron River. The eastern side has two 3 m-tall concrete towers spaced 1.1 m apart on a concrete abutment set into the river bank at the foot of a steep eroding face of a high terrace. It is being eroded out by the river. Stock got access to/from the bridge deck by a track along the river bank on the lower ground to the north. Across the river (28 m) is a second pair of concrete towers set on a subterranean foundation of some sort. There is a short causeway from these western towers to an abutment of concrete some 4.8 m out into the stony river flats. The abutments would have been the points of attachment for decking long swept away. Extending west from the western towers is a short length of race to force the sheep into a single lane. The towers consist of five lengths of 30 cm OD concrete pipe placed end on end with reinforcing wire down the centre and progressively filled with concrete. There is a wheel on top to take the suspension wires. No trace remains of the deck or decking wires; only the southern suspension cable is still in place and a flood gate has been hung from it. The bridge is probably of 1950s vintage (late Shirtliff era; 1924-1953).

The bridge is a good example of 1950s vernacular concrete work (especially the concrete-filled pipes forming the towers) designed to cater for continued stocking with sheep in the 1950s (unlike Molesworth). The river is slowly cutting into the eastern abutment. There will be long term breakdown of the fabric.

### **Langridge and Castle River**

#### O30/9; Cob station buildings complex; Langridge Station buildings; E2544457-N5912759

The Langridge Station buildings are on the valley floor on the true right of the Langridge Stream about 2 km upstream from Awatere Valley Road. This complex is just off the pastoral lease boundary, but given its proximity, and the context it provides to sites nearby, it has been included in this report. Record O30/11 details the water race, which runs at the toe of the slope southwest of the buildings area, and O30/10 details the sledge track which is on the true left of the valley 1 to 2.5 km upstream from the buildings. The buildings and yards are scattered over an area about 700 x 80 m on the valley floor. The road runs through the site about midway between the southwest foot of the hill and the terrace scarp to the northeast. Most of the trees are willows but there are also prominent rows of pines and poplars.

Beginning from the fence and pine shelter belt at the southeast end of the complex, the features are as follows:

1. Just southeast of the gate and fence: a two-horse whim and other industrial implements and a stone-faced terrace fenced by willow poles now grown.
2. Inside (west of) the fence and about 30 m southwest of the entry gate a cob homestead (10.2 x 7 m in plan) with an outlying weatherboard store shed and the foundations of a scullery outbuilding with concrete housing for a copper. The homestead has had the roof partially



removed and is in an advanced stage of dereliction. The homestead will date from the period 1890 (to judge from Japonism wallpaper fragments) to about 1924 when the station was taken into the Muller). Note: Steve and Mary Satterthwaite report that they have a note found in a bottle from the foundations of this building identifying the builder, owner (Thompson?) and date of building (1896?). SO 389 (1896) shows a whare and homestead on the station here.

3. Fencing to take in sheep for the yards commences about 30 m from the gate and occupies most of the flat for the next 120 m. Fences are stone in part but mostly post and wire with areas of netting. The yards include many pens, forcing races, a drafting gate and a corrugated iron and weatherboard 3-stand woolshed (6.1 x 4.8 m in plan).
4. On the southwest of the flats from about 160 to 200 m from the entry gate is an orchard with mostly surviving plum trees but also cherry, apple and pear trees.
5. 300 m north of the gate, an old willow fence and ditch and bank fence cross the flat. Together with a similar willow fence about 150 m further up, it forms a most important station enclosure for horses and worker's buildings (the willows of course are now massive trees). These include a dry-stone walled horse yard, with rubble core and irregular well laid facing stones (rectangular 11.5 x 16 m in plan, wall about 1.6 m high); a nearby barn or stable in cob still with extant corrugated iron roof and T and G lined ceiling in good condition (6.1 x 7.5 m in plan); a cob oven (1.8 x 1.8 m) roofed over with temporary corrugated iron and in good condition; a workers' accommodation and cookhouse (11 x 7.8 m) with gabled and skillion roof lying intact on and giving some weather protection to largely collapsed, massive cob walls; and southwest of the last a cob building foundation (6 x 4 m in plan).

We did not attempt to re-locate the dray track that ran cross-country from Langridge to the Muller Homestead area.

The Langridge Station complex is highly significant because of its complete range of features in a readily interpreted layout, moderately-good to good condition including standing buildings and recently derelict buildings, relatively early abandonment and subsequent very conservative and protective land use. The overall complex may date to a period well before the construction of the cob homestead (age no earlier than about 1890). It is unusual for workers' quarters and the homestead to be separated by yards, although this may have been dictated by the long narrow site sheltered in the floor of the Langridge Stream gully. It is quite possible that the upper workers' area was the site of an earlier homestead, although it is customary to have the homestead at the entry to a property.

The 3-stand shearing shed seems small for the size of the property and it is thought by Steve Satterthwaite to be for crutching only, in which case it would appear that Langridge sheep were driven elsewhere for shearing. In the 1860s a parcel of land in Marlborough's Awatere valley was set aside as a shearing reserve, where runholders brought their sheep to be shorn in the open. Under Monro ownership (1859-1890s), Langridge sheep were driven out to the Wairau for shearing until the road reached the run in 1883 (Kennington, 1978). The dry-stone walled yard which is reported by the Satterthwaite's to be a horse yard would appear to be a type known only from one other example in the Shag River valley, Otago, and regarded by Hamel (2001) as rare. This site is located on the freehold part of Muller Station.

#### O30/10; Benched sledge track; Langridge Station sledge track; E2543113-N5913772

This benched track must commence on the bottom true left of Langridge Stream about 1 km upstream from the station complex and inside the pastoral lease boundary. We picked it up by walking about 250 m up an open spur on the true left below bluffs with some beech trees which are close in to the stream and about 1.5 km up from the homestead. Here the track formation is about 1.6 m wide with a batter up to 40 cm high. The track follows an easy grade up to this point and then takes a zig up the line of the ridge and then zigzags to the north-east into the first fairly intact areas of mountain beech forest. The age of the track will be between 1890 and 1920. The forest in the

valley has long been heavily damaged by fire. The sledge track is clearly marked at this location on SO 389 (1896).

This site is a very good example of an easily distinguished road line whose function as a sledge track for hauling beech firewood and timber poles is well established. The rafters of the cob store or stables at the station are made of beech poles. The sledge track is not especially like a dray road, being too narrow and having a relatively steep grade in places. Its form is more like that of a well made wide pack track. Although tracks in general are a common archaeological site type, this particular sledge track is a key part of the Langridge Station complex.

O30/11; Water race; Langridge Station water race; E2543941-N5913128

This water race is within the pastoral lease boundary. It is most easily distinguished where it crosses the 4WD track about 150 m northwest of the belt of willows marking the north end of the Langridge Station complex. From its inferred intake about 200 m upstream the race sidles around the hill slopes to the west of the station and is perched about 6 m above the flat. Its total length would be about 700 m. Water could have been taken off to the various buildings or the orchard by pipe or bucket or by wild flooding. The prominent belt of poplars on the foot of the hill is actually growing in the bank of the race. Down past the homestead the race appears to have been brought steeply downhill to an area where a range of farm servicing activities was carried out. Its water does not seem to have been a source of power since there is a very good cast iron "horse power" or whim lying in this area. The age of the race will be between 1880 and 1920.

Like the rest of the station and homestead, the race survives in unusually good condition and is likely to be of late nineteenth-century age. Water races are not uncommon in the Awatere: Steve Satterthwaite reports that there is one at Muller Station and also one that brought water to the Molesworth yards. Although a common archaeological site type, especially in Central Otago, this particular race is a key part of the Langridge Station complex.

O30/12; Hut/hut ruins; Boyce's Hut/Castle River Hut ruins; E2544659-N5919917

Marked on the current NZMS260 map, this hut was built in 1994. It is on the true right of Castle River about 7 km upstream from the Awatere Valley Road.

Immediately west of the current hut are the few remains of an earlier hut. A large hole (4 x 2 m x 60 cm deep) sits next to a mound of earth which has a concrete fire place hanging on one side as well as a scatter of small pieces of corrugated iron. Evidence suggests this can only be the site of an old hut. The hole was possibly dug to bury the demolished hut but eventually the remains were instead buried in the mound. The size of the hut (judging from the hole) was about 5 x 3 m. The concrete fireplace base suggests construction in the 1920s, so its users would have been musterers and rabbiters.

The site is of low archaeological significance. Information about the old hut could be gained by investigation of the mound, but old photographs would be more useful to form an understanding of the hut.

The modern hut was built by private persons and has no particular historical significance. It is distinguished in having an array of home-grown technology and comforts including generators, hot running water (woodstove wetback) and bach-type interior décor and chattels.

O30/13; Yards; Upper Castle River yards; E2542707-N5918355

These yards are about 2.5 km upstream from Boyce's Hut on the sheltered outwash fan on the true left of an unnamed southern tributary of Castle River. They are about 150 m from the river. The yards (rectangular 23 x 27 m in plan) are made of T-iron standards, 6-wire all round with a new

strand of barbed wire on top and with old sheep netting all round. There is a Taranaki gate (folded back) at the northwest corner and a wing fenceline with a few surviving standards running north from that to a sheltering bluff by the river. The netting had an unusual pressed iron medallion zined over when the netting was dipped with the serif numerals "16" (presumably the gauge of the wire or size of holes).

This is a representative set of yards in stable condition that has had little modern use or modification. There are many similar yards on Muller Station but few in as complete original condition.

### **Significance of Historic Resources**

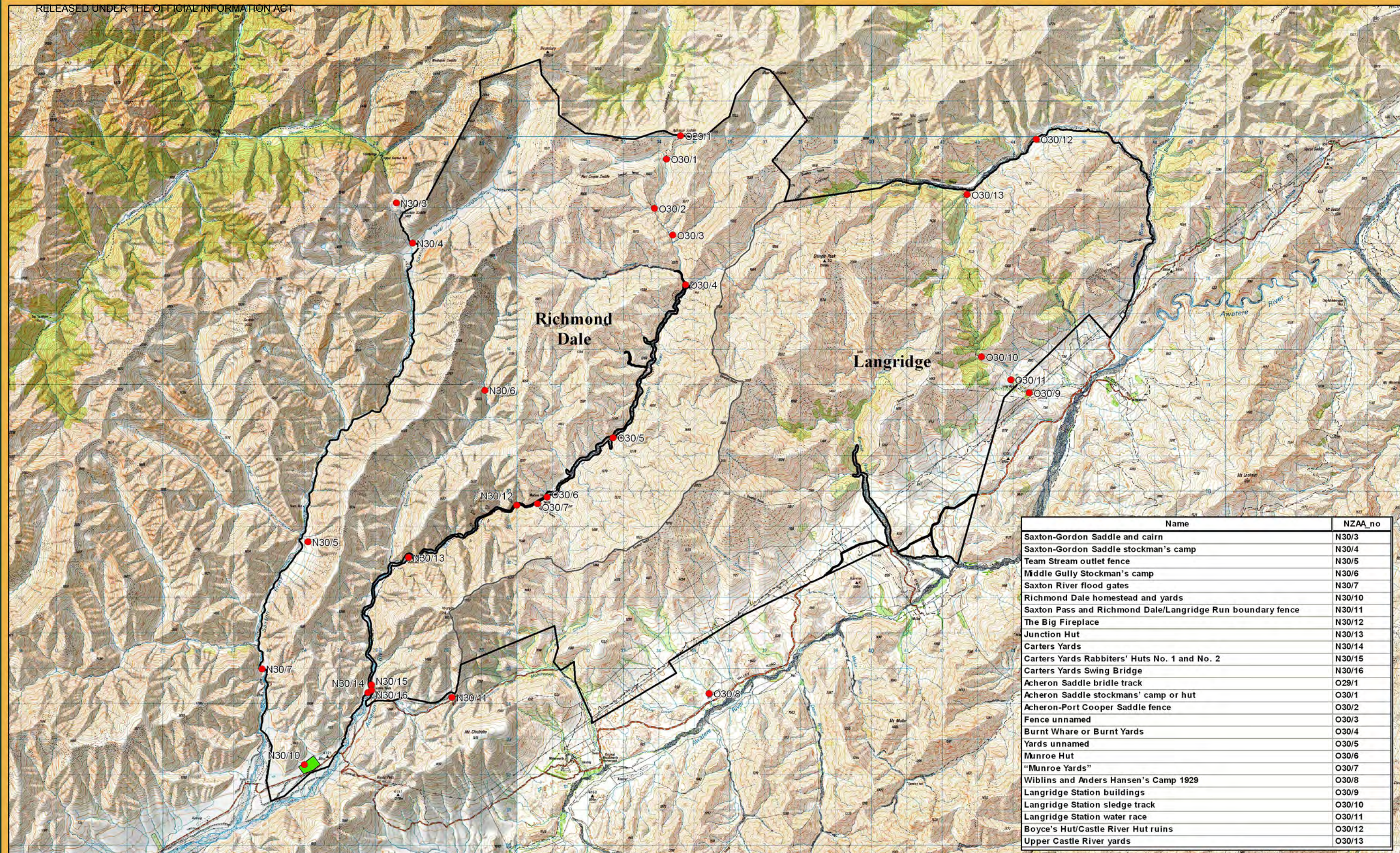
The historic sites of greatest significant inherent value on Muller Pastoral Lease are:

- The southern approaches of the Acheron Saddle bridle track (O29/1)
- The cob building ruins at Burnt Yards or Burnt Whare (O30/4)
- The Burnt Yards or Burnt Whare, Munroe and Junction huts (O30/4, O30/6, N30/13)
- Carters Yards, including the swing bridge ruins (N30/14, N30/16)
- Richmond Dale homestead and yards (N30/10)
- Langridge Station water race (upper part) and sledge track (O30/10, O30/11) (the yards and building complex O30/9 are on Muller Station freehold).

Of moderate significant inherent value are:

- Numerous hut or tent camp sites particularly the Big Fireplace and the cob ruins at the "Munroe Yards"
- Various sections of fence with T-iron strainers and bolt-type wire tensioners (some very long runs of fence were built from the upper Acheron to Port Cooper Saddle, from Saxton Pass north to Burnt Whare (Yards) and the Kennet River).





# Muller Pastoral Lease - Historic values



Department of Conservation  
*Te Papa Atawhai*

New Zealand Government



5  
Kilometres

## Legend

- Muller Pastoral Lease
- Historic sites of inherent value
- Richmond Dale Homestead historic site



## **2.8 PUBLIC RECREATION**

### **2.8.1 Physical Characteristics**

The property comprises extensive high mountain ranges with moderate to steep slopes and relatively gentle valleys. Most of the property could be easily traversed on foot and the main valleys traversed by vehicle, mountain-bike or horse. The country is typical of the mountains of South Marlborough and is contiguous with the large protected Molesworth Recreation Reserve and protected areas to the north, Leatham Conservation Area and Glazebrook Conservation Area.

### **2.8.2 Legal Access**

#### **Roads**

The main legal road access to the property is via Awatere Valley Road from State Highway 1 north of Seddon. Legal roads also adjoin the property boundary at Saxton Pass, in the Acheron valley near Isolated Flat and up the lower section of Castle River. An alternative route to the property is via the Molesworth - Hanmer Springs Road from Hanmer Springs. Formed 4WD vehicle tracks also traverse the main valleys and some of the lower ridges on the property.

#### **Adjoining Public Conservation Land**

The property adjoins the Crown-owned and DOC-administered Molesworth Recreation Reserve to the south and west, Leatham Conservation Area to the northwest and Glazebrook Conservation Area to the north. Muller Pastoral Lease is strategically important in that it connects the above mentioned areas, providing opportunities for longer journeys from the Wairau tributaries to Molesworth and North Canterbury.

#### **Marginal Strips**

Marginal strips are present within or adjacent to the property along the Saxton, Acheron, Kennet and Castle rivers; along parts of Ward and Langridge streams; an unnamed stream south west of Awatere-iti Stream; and on some tributaries of these above mentioned rivers.

### **2.8.3 Activities**

Likely existing recreational activities include four-wheel-driving, hunting, horse-riding and tramping. Higher-altitude parts of the property provide good opportunities for tramping, walking, hunting, nature study, scenery appreciation and, in winter months, may provide opportunities for skiing. Lower-altitude parts of the property provide good opportunities for horse-riding, mountain-biking, four-wheel-driving, picnicking, historic resource appreciation and nature study.

#### **Significance of Recreation**

Significant recreational features of Muller Pastoral Lease are the highly-natural recreation setting, especially in back-country and higher-altitude parts of the property, the semi-natural tussocklands on the mid- to upper-slopes and the scenic backdrop it provides for travellers through the Awatere valley and Molesworth Station. The property has excellent potential for recreational use as part of longer journeys from the Wairau tributaries to Molesworth and North Canterbury or through the South Marlborough mountainlands. The historic stock-droving routes provide great potential for relatively easy and interesting public foot access, mountain biking and horse trekking. Parts of the property that adjoin the road through Molesworth Station provide good opportunities for roadside recreational facilities and interpretation of historic resources.



## PART 3 OTHER RELEVANT MATTERS AND PLANS

### 3.1 CONSULTATION

A request for interested party comment was sent out on the 2/7/2009. Interested party consultation comments were received from the Royal Forest and Bird Society Incorporated and from the New Zealand Historic Places Trust. The comments are listed below.

- Muller Station is strongly representative of the landscapes of South Marlborough. Secure land tenure to ensure preservation and protection of natural features, landscapes and visual amenities, and take action taken to ensure that any areas not transferred into public conservation estate will not degrade from this environment. The following areas are sought for protection through retention in public ownership:
  - Glacial and periglacial geomorphologies
  - Tussock and shrublands
  - Rivers, streams, wetlands and their margins
  - Rocky outcrops and scree slopes
  - Faulting morphologies
- The biodiversity values in South Marlborough have been degraded extensively over a long period of time due to human farming practices, and the aggressive invasion of pests and weeds. All remaining important environments must be preserved and opportunities taken through tenure review to ensure long-term opportunities for habitat restoration can be realised.
- Ensure no further degradation of any threatened LENZ environments present within Muller Station. The following is sought:
  - Protect all areas identified within the report as representing the LENZ threat categories of Chronically Threatened, At Risk, Critically Underprotected, and Underprotected through retention in public ownership.
- Ensure all the Recommended Areas for Protection (RAP's) within the Muller Pastoral Lease are retained in public ownership and appropriately preserved, protected (and where needed) restored.
  - Retain all RAP's, with appropriate buffer zones
  - Utilise all capacity to provide linked corridors where appropriate for the retention or improvement of biodiversity values
  - Ensure high biodiversity areas are not 'isolated'
- Improve the knowledge database of the presence of all indigenous species within the Muller Pastoral Lease
  - Ensure the habitats of all indigenous species are protected to halt further biodiversity decline
- Ensure any farming practices are consistent with the sustainability, natural features, and biodiversity within South Marlborough.
  - Ensure that land is protected from activity that derogates from the values of the natural environment.

- Seek provision of a report to show that any farming practice that might take place on free-hold land will not derogate from the natural values as outlined above
  - Ensure provision for fencing is both necessary and sufficient to protect the biodiversity and other natural values
- Provide integrated opportunities with neighbouring public conservation land, so long as the recreational activity is consistent with ensuring the protection of biodiversity values and natural features.
    - Provide for appropriate low-level impact recreational use
    - Restrict the use of vehicles near sensitive areas
    - Strengthen links with other public conservation land, e.g. through old stock routes
  - Allow for appropriate access provided it does not compromise conservation values relating to the preservation, protection and restoration of biodiversity and natural features.
    - Provide access to all waterways
    - Establish an integrated track system (non-motorised)
    - Tracks could be related to the historic stock routes
    - Provide *appropriate* access to sites of biodiversity interest whilst ensuring the natural values are protected
    - Provide access to historic sites of interest
    - Provide access to sites of recreational interest, e.g. peaks
    - Provide access that does not rely upon the seeking of permission, i.e. to ensure corridors are maintained
  - The Wairau and Awatere valleys and associated passes were important routes for Maori from the coast into the interior for trade, communication and migration.
  - Muller Station is an amalgamation of two former stations, Langridge (sometimes recorded as 'Longridge') and Richmond Dale.
  - The current Muller Pastoral Lease and adjoining freehold forms part of a larger historic landscape that tells the stories of pastoral farming from its inception to the present.
  - The old Langridge complex includes a number of NZHPT Registered Category II Historic Places that are located on freehold land known as Part Section 9 Langridge Run Awatere District which adjoins the pastoral lease. These structures are within an area previously identified by the NZHPT as having heritage values worthy of consideration for registration as a Historic Area (NZHPT record number: 7044).
  - The Langridge Station structures are listed on the Wairau/Awatere Resource Management Plan and are archaeological sites that are subject to the archaeological provisions of the Historic Places Act 1993:
    - Langridge Station Dry Stone Enclosure (NZHPT record number: 1490);
    - Langridge Station Men's Hut (NZHPT record number: 1488);
    - Langridge Station Oven (NZHPT record number: 1489);
    - Langridge Station Cobb Cottage (NZHPT record number: 1487).
  - The registration of the Langridge Station Historic Area was not properly completed at the time it was identified for registration, and no valid Board minute was produced. This deficiency is a matter of legal process and does not call into question the underlying heritage values of the Langridge Station Historic Area, or affect the status of the listed structures on the Wairau/Awatere Resource Management Plan.

## 3.2 DISTRICT PLANS

Muller Pastoral Lease lies within Marlborough District. The relevant district plan forms part of the Wairau Awatere Resource Management (RM) plan. The Wairau Awatere RM plan is a combined district, regional coastal and regional plan prepared by a unitary council. This plan applies to that part of the district located south of the Wairau River catchment, including the Awatere Valley where this property is located. The Wairau Awatere RM plan became operative on 8 February 2008.

The property is zoned Rural 4 under the Wairau Awatere Resource Management Plan. Under this zoning farming, commercial forestry and protection and conservation forestry are permitted activities. The zoning also allows for home occupations, homestays and one dwelling house per certificate of title as permitted activities. Subdivision is a controlled activity in the Rural 4 zone to a minimum lot size of 20 hectares net site area (excluding access).

The plan has an indigenous forest clearance rule which would require resource consent for clearance of an area of more than 0.1 ha of indigenous forest from any certificate of title, in any twelve month period. It also requires a resource consent for the removal of any indigenous vegetation from a natural wetland which has an area of larger than 200 m<sup>2</sup>. Other indigenous vegetation types are not subject to any plan rule which would prevent their destruction or removal.

The plan requires resource consent for:

- clearance of any woody vegetation;
- cultivation on all slopes greater than 20°;
- excavation and tracking, and filling of land within 8 metres of any permanently flowing river, or the margin of any wetland.

The permitted activity rules are subject to a number of specific conditions. Non-compliance with these conditions makes an activity a limited discretionary activity.

The plan includes a chapter on landscape values. This chapter has a focus on visual amenity, in particular on the identification of outstanding landscape values in accordance with 6 b of the RMA, "the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development". This chapter identifies the property as being part of a landscape type classified as "high inland hills" which features river gorges and contains medium high and high visual qualities for the river gorges. The area is identified as having outstanding values with medium low landscape sensitivity generally and medium sensitivity within the river gorges. The identification of the area as having outstanding landscape value does not change the activity status of activities and structures. Council would be required to take this matter into consideration when assessing applications for discretionary and non-complying resource consents.

The Council has recently commissioned and received a landscape study that encompasses all of Marlborough including Muller Station. The study was circulated to various organisations for comment. The document (Marlborough Landscape Study 2009 Landscape characterisation First Draft Boffa Miskell May 2009) was prepared to assist in the review of the Marlborough Resource Management Plans. It has no legal or statutory weight.

A register of significant heritage resources is included in the plan as Appendix A. There do not appear to be any heritage trees or buildings identified within the property.

## 3.3 CONSERVATION MANAGEMENT STRATEGIES

Muller Pastoral Lease lies within the South Marlborough part of Nelson-Marlborough Conservancy. Relevant priority objectives for this unit listed in the CMS (Department of Conservation, 1996) are:



- Identify and protect traditional falcon nesting sites in Inland Marlborough.
- Control goats to protect endemic plants at Inland Marlborough.
- Exclude cattle and control Canada geese and plant pests, including pasture grasses, in sensitive areas such as Sedgemere tarns.
- Ensure maintenance of historic buildings and provide appropriate interpretation.
- Survey for freshwater fish throughout.
- Investigate the effect of hares and control where required.
- Survey and provide interpretation in conjunction with facilities at historic sites.
- Negotiate access and provide for remote tussockland tramping in Inland Marlborough.
- Maintain facilities and seek opportunities to improve access for recreational hunting, particularly in the Branch and Leatham catchments but also elsewhere in South Marlborough.
- Provide services for visitors on Molesworth Road, including interpretation, in cooperation with the managers of Molesworth.
- Seek controls on land clearance and prevent fire in Inland Marlborough.
- Protect freshwater fish habitat through statutory advocacy.

The Nelson/Marlborough Conservation Management Strategy remains in effect.

### **3.4 NEW ZEALAND BIODIVERSITY STRATEGY**

The New Zealand Government is a signatory to the Convention on Biological Diversity. In February 2000, Government released the New Zealand Biodiversity Strategy. This strategy is a blueprint for managing the country's diversity of species and habitats. It sets a number of goals to achieve this aim. Of particular relevance to tenure review is Goal 3, which states:

- *Maintain and restore a full range of remaining natural habitats and ecosystems to a healthy functioning state, enhance critically scarce habitats, and sustain the more modified systems in production and urban environments, and do what is necessary to:*
- *Maintain and restore viable populations of all indigenous species across their natural range and maintain their genetic diversity.*

## PART 4 ATTACHMENTS

### 4.1 ADDITIONAL INFORMATION

#### 4.1.1 Scientific Names of Species

##### Plant Species

Species names follow those in the published volumes of New Zealand Flora and the name changes listed in A Checklist of Indigenous Vascular Plants of New Zealand, 10<sup>th</sup> Revision (*Unpublished Document*, S. Courtney, Department of Conservation, Nelson). 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>
bidibid .....	<i>Acaena</i> sp.
blue tussock.....	<i>Poa colensoi</i>
bog rush.....	<i>Schoenus pauciflorus</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>
carpet grass.....	<i>Chionochloa australis</i>
Chewings fescue*.....	<i>Festuca rubra</i>
cocksfoot* .....	<i>Dactylis glomerata</i>
comb sedge.....	<i>Oreobolus pectinatus</i>
cotton daisy/tikumu .....	<i>Celmisia spectabilis</i>
crack willow* .....	<i>Salix fragilis</i>
creeping bent* .....	<i>Agrostis stolonifera</i>
creeping pohuehue.....	<i>Muehlenbeckia axillaris</i>
duckweed.....	<i>Lemna minor</i>
fescue tussock.....	<i>Festuca novae-zelandiae</i>
giant speargrass/taramea .....	<i>Aciphylla glaucescens</i>
golden speargrass/taramea.....	<i>Aciphylla aurea</i>
gorse* .....	<i>Ulex europaeus</i>
inaka .....	<i>Dracophyllum longifolium</i>
kanuka .....	<i>Kunzea ericoides</i>
kohuhu.....	<i>Pittosporum tenuifolium</i>
lotus* .....	<i>Lotus pedunculatus</i>
male fern*.....	<i>Dryopteris filix-mas</i>
manuka .....	<i>Leptospermum scoparium</i>
Maori onion.....	<i>Bulbinella angustifolia</i>
Marlborough rock daisy .....	<i>Pachystegia</i> sp.
matagouri.....	<i>Discaria toumatou</i>
midribbed snow-tussock.....	<i>Chionochloa pallens</i>
mountain beech .....	<i>Nothofagus solandri</i> var. <i>cliffortioides</i>
mountain flax/wharariki .....	<i>Phormium cookianum</i>
mountain ribbonwood/houhi .....	<i>Hoheria lyallii</i>

mountain shield fern.....	<i>Polystichum cystostegia</i>
mountain totara.....	<i>Podocarpus hallii</i>
mountain tree fern .....	<i>Cyathea colensoi</i>
mountain wineberry.....	<i>Aristotelia fruticosa</i>
mouse-ear chickweed* .....	<i>Cerastium fontanum</i>
mouse-ear hawkweed* .....	<i>Hieracium pilosella</i>
native broom.....	<i>Carmichaelia australis</i>
patotara .....	<i>Leucopogon fraseri</i>
penwiper .....	<i>Notothlaspi rosulatum</i>
porcupine shrub .....	<i>Melicetyus alpinus</i>
quillwort .....	<i>Isoetes kirkii</i>
red tussock.....	<i>Chionochloa rubra</i>
scabweed .....	<i>Raoulia australis</i>
scrub pohuehue.....	<i>Muehlenbeckia complexa</i>
silver tussock/wi.....	<i>Poa cita</i>
snow marguerite .....	<i>Dolichoglottis lyallii</i>
snow totara .....	<i>Podocarpus nivalis</i>
snow tussock .....	<i>Chionochloa sp.</i>
soft rush* .....	<i>Juncus effusus</i>
spike sedge .....	<i>Eleocharis acuta</i>
St John's wort* .....	<i>Hypericum perforatum</i>
sweet brier* .....	<i>Rosa rubiginosa</i>
sweet vernal* .....	<i>Anthoxanthum odoratum</i>
tall fescue* .....	<i>Schedonorus phoenix</i>
tutu.....	<i>Coriaria sarmentosa</i>
vegetable sheep .....	<i>Haastia pulvinaris var. minor</i>
vegetable sheep .....	<i>Raoulia bryoides</i>
viper's bugloss* .....	<i>Echium vulgare</i>
white clover* .....	<i>Trifolium repens</i>
woolly mullein* .....	<i>Verbascum thapsus</i>
yellow tree daisy.....	<i>Brachyglottis cassinioides</i>
yellowwood .....	<i>Coprosma linariifolia</i>
Yorkshire fog* .....	<i>Holcus lanatus</i>

## Animal Species

Species names follow King (1990) for mammals, Miskelly *et al* 2009 for recent bird name changes and 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 the other bird names, 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>
Australian magpie* .....	<i>Gymnorhina tibicen</i>
banded dotterel .....	<i>Charadrius bicinctus bicinctus</i>
banded kokopu .....	<i>Galaxias fasciatus</i>
bellbird/korimako .....	<i>Anthornis melanura melanura</i>
blackbird* .....	<i>Turdus merula</i>
black-eyed gecko.....	<i>Hoplodactylus kahutarae</i>
black-fronted tern .....	<i>Sterna albostrata</i>
blue duck/kowhiowhio .....	<i>Hymenolaimus malacorhynchus</i>
bluegill bully .....	<i>Gobiomorphus hubbsi</i>
bluff weta .....	<i>Deinacrida elegans</i>
brown creeper.....	<i>Mohoua novaeseelandiae</i>



brown trout*	<i>Salmo trutta</i>
brush-tail possum*	<i>Trichosurus vulpecula</i>
California quail*	<i>Callipepla californica brunnescens</i>
Canada goose*	<i>Branta Canadensis maxima</i>
Canterbury galaxias	<i>Galaxias vulgaris</i>
chaffinch*	<i>Fringilla coelebs</i>
chamois*	<i>Rupicapra rupicapra rupicapra</i>
chukar*	<i>Alectoris chukar</i>
common skink	<i>Oligosoma nigriplantare polychroma</i>
dwarf galaxias	<i>Galaxias divergens</i>
dunnock*	<i>Prunella modularis</i>
eastern falcon/karearea	<i>Falco novaeseelandiae</i>
feral cat* (house cat)	<i>Felis catus</i>
feral goat*	<i>Capra hircus</i>
feral pig*	<i>Sus scrofa</i>
goldfinch*	<i>Carduelis carduelis</i>
greenfinch*	<i>Carduelis chloris</i>
grey duck/parera	<i>Anas superciliosa superciliosa</i>
grey warbler/riroriro	<i>Gerygone igata</i>
hare*	<i>Lepus europaeus occidentalis</i>
hedgehog*	<i>Erinaceus europaeus occidentalis</i>
Kaikouras gecko	<i>Hoplodactylus</i> aff. <i>maculatus</i> "Kaikouras"
longfin eel/tuna	<i>Anguilla dieffenbachii</i>
long-toed skink	<i>Oligosoma longipes</i>
mallard*	<i>Anas platyrhynchos platyrhynchos</i>
Marlborough giant weta	<i>Deinacrida parva</i>
Marlborough mini gecko	<i>Hoplodactylus</i> aff. <i>maculatus</i> "Marlborough mini"
mouse*	<i>Mus musculus</i>
New Zealand pipit/pihoihoi	<i>Anthus novaeseelandiae novaeseelandiae</i>
northern flathead galaxias	<i>Galaxias</i> "northern"
paradise shelduck/putakitaki	<i>Tadorna variegata</i>
pig*	see feral pig
possum*	see brush-tail possum
rabbit*	<i>Oryctolagus cuniculus cuniculus</i>
red deer*	<i>Cervus elaphus scoticus</i>
redpoll*	<i>Carduelis flammea</i>
rock wren	<i>Xenicus gilviventris</i>
rough gecko	<i>Heteropholis rudis</i>
scree skink	<i>Oligosoma waimatense</i>
scree weta	<i>Deinacrida connectens</i>
silvereye	<i>Zosterops lateralis lateralis</i>
skylark*	<i>Alauda arvensis</i>
song thrush*	<i>Turdus philomelos</i>
Southern Alps gecko	<i>Hoplodactylus</i> aff. <i>maculatus</i> "Southern Alps"
Southern Island fantail/piwakawaka	<i>Rhipidura fuliginosa fuliginosa</i>
South Island rifleman/titipounamu	<i>Acanthisitta chloris chloris</i>
South Island tomtit/miromiro	<i>Petroica macrocephala macrocephala</i>
spotted skink	<i>Oligosoma lineoocellatum</i>
spur-winged plover	<i>Vanellus miles novaehollandiae</i>
starling*	<i>Sturnus vulgaris</i>
swamp harrier/kahu	<i>Circus approximans</i>
torrentfish	<i>Cheimarrichthys fosteri</i>
upland bully	<i>Gobiomorphus breviceps</i>
welcome swallow	<i>Hirundo tahitica neoxena</i>
yellowhammer*	<i>Emberiza cintrina</i>

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