

Crown Pastoral Land Tenure Review

Lease name : FERINTOSH

Lease number : PT 043

Botanical Report

As part of the process of Tenure Review, advice on significant inherent values within the pastoral lease is provided by Department of Conservation officials in the form of a Conservation Resources Report. This report should be read in conjunction with the Conservation Resources Report.

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

Botanical Report for Ferintosh Station

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A rapid assessment of the botanical values on Ferintosh Station was undertaken over the 15th -18th of November 2011. The property was traversed on foot and plant communities were described using standard approaches for rapid botanical assessments. A helicopter flight and photos were also used to assist with this survey. The results are presented as follows.

Ecological Context

Ferintosh Station occupies the east facing flanks of the Ben Ohau Range, between Lake Pukaki to around 1000m asl, where it borders Ben Ohau Conservation Area. It comprises predominately steep lateral moraine smeared slopes of the Ben Ohau Range. A distinctive feature of the property is a perched terrace of hummocky moraines spanning the length of the property (from ~1000 m in the north descending to 750 m in the south). Alluvial fans, steeply incised gullies, tarns and wetlands are other notable features of the property.

It occurs in the Tekapo Ecological District (McEwen 1987), and within land environments predominately in the E1 and E4 categories (Leathwick et al 2003). Threatened Land Environments of New Zealand (LENZ) classifies most of the property above ~900m as having no threat category, with the lower slopes classified as mostly At Risk and Critically Under -protected (Walker et al 2007). LENZ classifications are shown on Map 1 which is attached at the end of this report.

The original (pre-human) vegetation cover on Ferintosh Station is predicted to have been mountain beech (*Nothofagus cliffortioides*), silver beech (*Nothofagus menziesii*), Hall's tötara (*Podocarpus cunninghamii*) and broadleaf forest, shrubland and tussockland (Leathwick et al 2003). The vegetation above 900m remains largely representative of the original native plant communities, which is characterised by narrow-leaved snow tussock (*Chionochloa rigida*). Below this altitude the vegetation is in varying states of modification, from relatively natural narrow-leaved snow tussock grasslands and shrublands above Jacks Stream and in gullies generally, becoming increasingly modified and weedy toward the southern boundary.

For the purposes of this report, the property can be divided into 3 sections and described accordingly:

- 1 - Northern section above Jacks Stream to Whale Stream;
- 2 - Middle section between Jacks and Boundary Streams;
- 3 - Lower section below Boundary Stream.

1 - Northern section above Jacks Stream to Whale Stream

The majority of the property above Jacks Stream, with the exception of the developed fans around the homestead, contains extensive narrow-leaved snow tussock grasslands that remain relatively natural. Snow tussock cover and consistency tends to vary somewhat from typically above 30% on the upper faces to being more open and patchy

on the lower slopes where it is replaced with fescue (*Festuca novae-zealandiae*) tussock and exotic herbs and grasses especially brown top (*Agrostis capillaris*), sweet vernal (*Anthoxanthum odoratum*) and mouse-ear hawkweed (*Pilosella officinarum*). Pockets of dense shrublands of mainly matagouri (*Discaria toumatou*) and *Coprosma propinqua* occur throughout but especially in gullies and concave slopes. Bracken (*Pteridium esculentum*) and patches of sparse low stature mānuka (*Leptospermum scoparium*) were also locally common throughout. Larch (*Larix dicidua*) and lodge pole pine (*Pinus contorta*) was occasionally present, and sweet briar (*Rosa rubiginosa*) was common especially along the road side.

At about 1000m the steep front faces give way to a high terrace of lateral moraines which adjoin the Ben Ohau Range. This area has high natural values characterised by extensive and diverse narrow-leaved snow tussock grasslands with sub-alpine shrubs scattered throughout, such as *Dracophyllum uniflorum*, *D. pronum*, *Hebe odora*, *Gautheria crassa* and *Acrothamnus colensoi*, the latter being especially abundant. Wetlands are also present in valleys between moraines, forming extensive sequences of cushion bogs dominated by comb sedge (*Oreobolus pectinatus*) and sphagnum moss (*Sphagnum cristatum*), red tussock grasslands, bog rush (*Schoenus pauciflorus*) rushlands and *Carex gaudichaudiana* sedgeland. An array of specialist wetland plants occur here including abundant sun dew (*Drosera arcturi*), Māori onion (*Bulbinella gibbsii* var. *balanifera*), buttercup (*Ranunculus gracilipes*), *Oreomyrrhis colensoi* var. *delicatula* (nationally critical), *Epilobium komarovianum*, *Uncinia rubra*, *Lobelia angulata* and *Montia ioantha* (declining). A few plants of the very worrisome exotic grass (*Nardus stricta*) were also present and should be eliminated whilst still in low numbers.

Excellent shrublands occur in the incised gullies in the catchment of Jacks Stream, where they merge with snow tussock communities across open slopes. Common species include mountain ribbonwood (*Hoheria lyallii*), matagouri, *Coprosma propinqua*, *C. dumosa*, *C. rugosa*, *C. cheesemani*, mountain wineberry (*Aristotelia fruticosa*), *Gautheria crassa*, *Dracophyllum uniflorum*, *D. longifolium*, porcupine shrub (*Melicytus alpinus*), tauhinu (*Oxothamnus leptophylla*), *Olearia odorata* (in lower gully), golden Spaniard (*Aciphylla aurea*), giant Spaniard (*A. scott-thomsonii*), native blackberry (*Rubus schmidelioides*), pöhuehue (*Muehlenbeckia complexa*) and shield fern (*Polystichum vestitum*).

Pockets of remnant silver beech and mountain beech occur in Jacks Stream as part of the wider woody shrubland/forest mosaic, with the former species occurring further up Jacks Stream at higher altitude than the latter. Associated with beech forest pockets in addition to shrubland species described above were *Hebe salicifolia*, *Ranunculus foliosus*, *Asplenium richardii*, and *Pittosporum anomalum*. Scattered rowan (*Sorbus aucuparia*), lodge pole pine, sweet briar and larch are present especially in the lower stream margins.

Middle section between Jacks and Boundary Streams

The front faces of the middle section of the property are quite modified and comprise a mosaic of fescue tussock/browntop grassland, matagouri dominant shrublands, patchy low stature mānuka and bracken. Reasonably good and extensive shrublands occur in places, such as in gullies and across the faces immediately south of Jacks Stream, but generally shrublands become less impressive heading south. Sequences of flushes and benched terrace wetlands occur on the lower faces above Boundary Stream. These tend to be dominated by bog rush, *Carex coriacea* and unfortunately *Nardus stricta*.

Above the front faces occurs an elevated terrace of hummocky moraines which adjoin the steep slopes of the Ben Ohau Range. These support good narrow-leaved snow tussock grasslands similar to those on similar landforms in the northern section of the property, although they are somewhat more modified being at lower altitude. Reasonably extensive mānuka also occurs with narrow leaved snow tussock in boundary stream.

These moraines also support an impressive collection of tarns and kettleholes, many of which appear to hold permanent water. Unfortunately their margins were all heavily invaded by *Nardus stricta* which has replaced most of the native turf plants typically associated with similar wetland margins. Native species that persist include *Carex gaudichaudiana*, *C. coriacea*, bog rush, sphagnum moss and sun dew. Slender spike sedge (*Eleocharis acuta*), and pond weeds (*Myriophyllum pedunculatum*, *M. propinquum*) were common aquatic native plants present.

Sweet briar, lodge pole pine larch, gorse (*Ulex europaeus*), rowan and broom (*Cytisus scoparius*) are all present, especially on the lower slopes close to the road but were in low numbers.

Lower section below Boundary Stream

This part of the property is highly modified and extensively invaded by lodge pole pine and larch. Notwithstanding these exotic trees, the area is dominated by quite diverse fescue tussock grasslands that also contain a high proportion of exotic grasses, especially brown top and sweet vernal. Narrow-leaved snow tussock occurs across the steeper slopes of the Rhoboro Hills where they adjoin the boundary with the public conservation land above. Shrublands occur in the gullies and depression and along stream margins, including relatively diverse examples (including abundant *Clematis marata*) in Big Rock Creek which is the boundary with Pukaki Downs. Bog rush wetlands were also present between moraines.

Summary of Values

Of high inherent value are the extensive narrow-leaved snow tussock grasslands that dominate the vegetation above 900m, silver and mountain beech remnants, and diverse riparian shrublands, all of which are good representative examples of the typical and commonplace native vegetation that occupied these environments in the Tekapo E.D. For the most part these plant communities were in good condition, healthy and supported the full range of associated vascular plant species expected. Woody weeds were occasionally present and will require control, especially lodge pole pine and larch.

Wetlands are of high value generally throughout New Zealand being nationally rare ecosystems and as a result they are of national priority to protect (MfE 2007). The highest value wetlands on his property occurred on the northern section of the property where they were largely natural. Wetlands elsewhere on the property have been degraded due to heavy infestation by *Nardus stricta*, but they retain high inherent values for their remnant native vegetation, as habitat for fauna, and for their role in supporting the wider hydrological functioning of the catchment.

Threatened and rare plants recorded on the property include *Oreomyrrhis colensoi* var. *delicatula* (nationally critical), mat broom (*Carmichaelia vexillata*) (declining), *Lobelia ioantha* (declining) (de Lange et al 2009). Naturally rare ecosystems present included dry lateral moraines that support narrow-leaved snow tussock and fescue tussock communities,

ephemeral wetlands and lake margins (Williams et al 2007), although the latter is no longer relevant given the lake has been raised. The protection of habitats for rare and threatened plants and the protection of naturally rare ecosystems are both national priorities (MfE 2007).

Of moderate value are the native shrublands that occur across the front faces adjoining the road across the entire property. These shrublands are remnants of a previously widespread native woody community that occupied these environments and have inherent values as a result. This is especially so for the dense and quite old matagouri dominated shrublands which form complete altitude sequences in places across montane and sub-alpine environments. The patchy low stature mānuka shrublands on the other hand are of limited value in themselves, but they do have some inherent value given their potential to regenerate and facilitate ecosystem recovery, as well as provide ecosystem services for their potential for carbon sequestration. The occurrence of shrublands generally on At Risk and Chronically Under-Protected land environment adds to their importance as a 'priority' for protection and enhancement.

Management (Weeds and Pests)

Animal pests include the usual suit of browsers, such as rabbits, hares, possums, red deer, Himalayan tahr and chamois, which may require periodic control.

Ferintosh Station has a major weed problem with large areas invaded by lodge pole pine in particular, and to a lesser extent larch. Rowan, gorse and broom, although currently sparse, also pose a potential problem. *Nardus stricta* has invaded wetlands which has degraded their ecological integrity.

Wilding conifers, despite what appears to be an insurmountable problem, are still controllable if given sufficient resources to undertake sustained effort (pers. com. Neil Bolton, Programme Manager, Twizel Area Office). *Nardus stricta* on the other hand, with the exception of the northern wetlands where it should be eliminated, is probably beyond control and any efforts directed toward this species should be around its containment.

References

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Appendix 1: Plant species recorded**Scientific name**

* = exotic spp

*Acaena caesiiglauca**Acaena dumicola**Acaena profundeincisa***Achillea millefolium**Aciphylla aurea**Aciphylla scott-thomsonii**Acrothamnus colensoi***Agrostis capillaris***Agrostis stolonifera**Anaphaloides bellidioides**Anisotome flexuosa**Anisotome imbricate var prostrata**Anisotome aromatica***Anthoxanthum odoratum**Aristotelia fruticosa**Asplenium flabellifolium**Asplenium richardii**Blechnum penna-marina**Brachyglottis bellidioides**Brachyglottis cassinioides**Brachyglottis haastii**Brachyscome longiscapa**Bulbinella gibbsii var. balanifera**Cardamine debilis**Carex coriacea**Carex petriei**Carex gaudichaudiana**Carmichaelia australis**Carmichaelia petriei**Carmichaelia vexillata**Celmisia densiflora**Celmisia gracilentata**Celmisia lyallii***Cerastium fontanum* subsp. *vulgare**Chionochloa rigida**Chionochloa rigida x rubra**Chionochloa rubra**Clematis marata**Coprosma cheesemanii**Coprosma dumosa***Common name**

bidibid

bidibid

bidibid

yarrow

golden Spaniard

giant Spaniard

mountain heath

browntop

creeping bent

ever-lasting daisy

kopoti

sweet vernal

mountain wineberry

necklace fern

Richard's spleenwort

little hard-fern

groundsel

yellow tree daisy

Haast's groundsel

daisy

swamp lily

bittercress

sedge

sedge

grassy sedge

native broom

native broom

mat broom

cotton daisy

grassland daisy

false Spaniard

mouse-ear chickweed

narrow-leaved snow tussock

red tussock

clematis

<i>Coprosma propinqua</i>	mingimingi
<i>Coprosma petriei</i>	mat coprosma
<i>Coprosma rugosa</i>	
<i>Coriaria plumosa</i>	feathery tutu
<i>Coriaria sarmentosa</i>	tutu
<i>Corokia cotoneaster</i>	corokia
<i>Craspedia lanata</i>	woolly head
* <i>Crepis capillaris</i>	hawksbeard
* <i>Cuscuta epithymum</i>	clover dodder
* <i>Cytisus scoparius</i>	broom
* <i>Dactylis glomerata</i>	cocks foot
<i>Deyeuxia avenoides</i>	grass
* <i>Digitalis purpurea</i>	fox glove
<i>Discaria toumatou</i>	matagouri
<i>Dracophyllum kirkii</i>	dwarf turpentine
<i>Dracophyllum longifolium</i>	inaka
<i>Dracophyllum pronum</i>	dwarf turpentine
<i>Dracophyllum uniflorum</i>	turpentine scrub
<i>Drosera arcturi</i>	sun dew
* <i>Dryopteris filix-mas</i>	male fern
<i>Eleocharis acuta</i>	slender spike sedge
<i>Epilobium komarovianum</i>	willowherb
<i>Epilobium spp</i>	willowherb
<i>Euchiton audax</i>	cudweed
<i>Euchiton mackayii</i>	cudweed
<i>Festuca novae-zealandiae</i>	fescue tussock
* <i>Festuca rubra subsp. communtata</i>	Chewings fescue
* <i>Galium aparine</i>	
<i>Gautheria depressa</i>	snow berry
<i>Gautheria parvula</i>	
<i>Gautheria crassa</i>	lily of the valley shrub
<i>Gentianella corymbifera</i>	snow gentian
<i>Geranium sessiliflorum</i>	cranesbill
<i>Gingidia decipiens</i>	aniseed
<i>Gonocarpus micranthus</i>	
<i>Hebe pimelioides</i>	
<i>Hebe pinguifolia</i>	
<i>Hebe odora</i>	
<i>Hebe salicifolia</i>	koromiko
<i>Helichrysum filicaule</i>	slender everlasting daisy
<i>Hieracium lepidulum</i>	tussock hawkweed
<i>Hoheria lyallii</i>	mountain ribbonwood
* <i>Hypericum perforatum</i>	St John's wort

<i>*Hypochoeris radicata</i>	catsear
<i>*Juncus articulatus</i>	jointed rush
<i>*Juncus effusus</i>	soft rush
<i>*Juncus tenuis</i>	track rush
<i>Kelleria dieffenbachia</i>	
<i>Lachnagrostis sp</i>	wind grass
<i>*Larix dicidua</i>	larch
<i>Leptospermum scoparium</i>	mänuka
<i>Leucopogon fraseri</i>	dwarf heath
<i>Lobelia angulata</i>	
<i>Luzula migrata</i>	woodrush
<i>Luzula rufa</i>	Red woodrush
<i>Lycopodium fastigiatum</i>	alpine clubmoss
<i>Melicytus alpinus</i>	porcupine shrub
<i>Microseris scapigera</i>	native dandelion
<i>*Mimulus guttatus</i>	monkey musk
<i>Montia ioantha</i>	
<i>Muehlenbeckia axillaris</i>	creeping pöhuehue
<i>Muehlenbeckia complexa</i>	scrub pöhuehue
<i>Myriophyllum pedunculatum</i>	water milfoil
<i>Myriophyllum propinquum</i>	common water milfoil
<i>*Nardus stricta</i>	mat grass
<i>Nothofagus cliffortioides</i>	mountain beech
<i>Nothofagus menziesii</i>	silver beech
<i>Olearia bullata</i>	Shrub daisy
<i>Olearia cymbifolia</i>	shrub daisy
<i>Olearia odorata</i>	scented shrub daisy
<i>Oreobolus pectinatus</i>	comb sedge
<i>Oreomyrrhis colensoi var. delicatula</i>	mountain myrrh
<i>Ozothamnus leptophylla</i>	tauhinu
<i>Parsonsia capsularis var. tenuis</i>	native jasmine
<i>Pentachondra pumila</i>	dwarf heath
<i>*Pilosella officinarum</i>	mouse-ear hawkweed
<i>*Pilosella piloselloides subsp. praealta</i>	king devil hawkweed
<i>Pimelea oreophila</i>	daphne
<i>Pimelea prostrate</i>	daphne
<i>*Pinus contorta</i>	lodge pole pine
<i>Pittosporum anomalum</i>	
<i>Plantago spathulata</i>	
<i>Poa colensoi</i>	Blue tussock
<i>Polystichum vestitum</i>	shield fern
<i>Polytrichum juniperinum</i>	wire moss
<i>Prasophyllum colensoi</i>	onion orchid

<i>Pteridium esculentum</i>	bracken
<i>Racomitrium pruinosum</i>	woolly moss
<i>Ranunculus foliosus</i>	buttercup
<i>Ranunculus gracilipes</i>	hairy buttercup
<i>Ranunculus multiscapus</i>	grassland buttercup
<i>Raoulia australis</i>	scab weed
<i>Raoulia hookerii</i>	mat daisy
<i>Raoulia subsericea</i>	mat daisy
* <i>Rosa rubiginosa</i>	sweet briar
<i>Rubus schmidelioides</i>	native blackberry
* <i>Rumex acetosella</i>	sheep sorrel
<i>Rytidosperma pumilum</i>	danthonia
<i>Schoenus pauciflorus</i>	bog rush
<i>Scleranthus uniflorus</i>	
* <i>Sorbus aucuparia</i>	rowan
<i>Sphagnum cristatum</i>	sphagnum moss
* <i>Taraxicum officinale</i>	dandelion
<i>Thelymitra sp</i>	Sun orchid
* <i>Trifolium arvense</i>	hares foot trefoil
* <i>Trifolium dubium</i>	suckling clover
* <i>Trifolium repens</i>	white clover
* <i>Trifolium pratense</i>	red clover
* <i>Ulex europaeus</i>	gorse
<i>Uncinia rubra</i>	Hook grass
* <i>Verbascum thapsus</i>	woolly mullein
<i>Viola cunninghamii</i>	white violet