Toitu te whenua
Land Information
New Zealand

Crown Pastoral Land Tenure Review

Lease name : KELVIN GROVE

Lease number : PO 280

Conservation Resources Report - Part 1

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

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

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

December 10

2010 ADDENDUM TO DOC CONSERVATION RESOURCES REPORT ON TENURE REVIEW OF KELVIN GROVE

PASTORAL LEASE

PAL 14-04-280

UNDER PART 2 OF THE CROWN PASTORAL LAND ACT 1998

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Cover photograph shows tarn on summit plateau.

PART 1

INTRODUCTION

1.1 Background

Kelvin Grove was originally inspected in November 1996. Early tenure review surveys were generally not as comprehensive as those that are undertaken today and the use of additional tools (e.g. LENZ and structured SIV's Guidelines) are now available to assist with assessment of ecological patterns and values present. A re-inspection therefore presented the opportunity to both examine the original proposed designations and to consider any major deficiencies in the original proposal.

The re-inspection of the pastoral lease (PL) was undertaken on 3-4 November 2009, for the purpose of determining if changes were required to the initial Conservation Resources Report (CRR), which was based on information derived from the original inspection.

The re-inspection team consisted of Tony Perrett (High Country Tenure Review Manager), John Barkla, Mike Thorsen (Technical Support, Biodiversity Assets - Botanical), and Shar Briden (Technical Support, Historic).

It is important to note that the original assessment and recommendations were done over thirteen years ago. However, all the original proposed designations have been reconfirmed as retaining significant natural heritage. This addendum document is to be read in conjunction with and as an addition to the original CRR.

The original DOC recommendations relating to the 1997 CRR and subsequent Proposed Designations Report (PDR) dated November 1999, recommended protection by way of return to full Crown ownership an area of predominantly tall tussockland interspersed with diverse shrubland, low forest and wetland components. This area extended from above the 800m contour on the upper eastern front faces of the Rock and Pillar Range westwards to the back boundary of the property adjoining the Old Dunstan Road near the Loganburn Reservoir. The area included the upper catchment of McHardies Creek. The Holders subsequently withdrew from tenure review and the property has changed hands. The new lessee has re-entered the tenure review programme.

PART 2

INHERENT VALUES: DESCRIPTION OF CONSERVATION RESOURCES AND ASSESSMENT OF SIGNIFICANCE

The following description and assessment of inherent values is to be read in conjunction with the original CRR.

2.1 Land Environments of New Zealand (LENZ)

There are two databases that have been used to assess biodiversity protection (Walker et al 2003).

1. Environmental distinctiveness has been assessed through the Land Environments of New Zealand (LENZ). This is a classification of New Zealand landscapes using a comprehensive set of climate, landform and soil variables chosen for their roles in driving geographic variation in biological patterns (Leathwick et al 2002 & 2003). It is presented at four levels of detail containing 20, 100, 200 or 500 environments nationally. The most detailed is called LENZ Level IV.

2. The area of unprotected indigenous cover in threatened land environments has been identified in the national land cover database (LCDB).

From the above databases, spatial data depicting indigenous cover and legal protection were overlaid on LENZ Level IV environments to identify biodiversity that is most vulnerable (most likely to be lost). This provides a measure for:

a. percentages legally protected and;
b. percentages of remaining indigenous cover

Based on these two criteria, five categories of threatened environments have been used to identify environments containing indigenous biodiversity at most risk of loss. They are classified as follows:

1. **Acutely threatened:** <10% indigenous cover remaining
2. **Chronically threatened:** 10-20% indigenous cover remaining
3. **At risk:** 20-30% indigenous cover remaining
4. **Critically underprotected:** >30% indigenous cover remaining and <10% protected
5 **Underprotected:** >30% indigenous cover remaining and 10-20% protected
6. **No Threat:** >30% indigenous cover remaining and >20% protected

Table 1: Land Environments of New Zealand (LENZ) Units on Kelvin Grove PL

Threat Category	Level 4 LENZ Unit	% Indigenous vegetation cover remaining nationally	%Protected nationally for conservation purposes	Indigenous Vegetation Cover Change Nationally 1997-2002	Approximate Area on Lease (ha)
Acutely Threatened	L1.3a	4	1	No change	89.7560
	N3.1f	1	1	Decrease	174.5540
Chronically Threatened	N3.1e	13	2	Decrease	3.6440
	Q4.3b	17	3	Decrease	67.3750
At Risk	Q4.3a	23	8	Decrease	52.8750
Critically Underprotected	Q2.2a	40	4	Decrease	103.4570
Underprotected	Q1.1c	91	18	No change	53.7800
	Q3.3c	90	17	Decrease	1659.5400
No Threat Category	Q3.3a	97	26	No change	216.1180

2.1.1 Significance of LENZ

Attributing significance to LENZ units, while a useful exercise must be treated with caution. Work is currently underway to improve the accuracy of underlying spatial data. For example, soils data is being upgraded, as median patch size for polygons sourced from the Land Resource Inventory is currently between 10,000 and 100,000 hectares, while at Level IV resolution, LENZ units cover areas as small as 10 hectares. Also underway, albeit as lesser priority, is ongoing work relating to continuous improvements of the underlying classification process which generates LENZ units.

Kelvin Grove PL has the following land environments that are significant because the indigenous vegetation has largely been removed, and/or little of the environment is represented in lands protected primarily for conservation purposes.

- 11% of the property has Level IV LENZ units that have less than 10% of their land area still in indigenous vegetation cover (whether protected or unprotected). These include two 'Acutely Threatened' Units L1.3a and N3.1f.
- 3% of the property has Level IV LENZ Units that have 10-20% of indigenous vegetation cover (whether protected or unprotected). These include two 'Chronically Threatened' Units N3.1e and Q4.3b.
- 2% of the property has Level IV LENZ Units that have 20-30% of its land area still in indigenous cover. This includes one 'At Risk' Unit Q4.3b.

- 4% of the property has Level IV LENZ Units that have 30% of their land area still in indigenous cover and <10% is protected. This includes one 'Critically Underprotected' Unit Q2.2a.
- 71% of the property has Level IV LENZ Units that have 30% of their land area still in indigenous cover and between10-20% is protected. These include two 'Underprotected' Units Q1.1c and Q3.3c.
- 9% of the property has Level IV LENZ Units that have >30% of its land area still in indigenous cover and >20% protected. This includes one 'No Threat' Unit Q3.3a.

Where indigenous cover remains within these threatened LENZ units, it attains significance for tenure review.

LENZ and plant communities

Acutely and Chronically threatened LENZ
Areas of the acutely threatened LENZ category L 1.3a are present on the cultivated lowland flats. This area is predominantly covered with exotic species, but a young successional shrubland of matagouri and *C. propinqua* is present adjacent to the stream. Areas of the chronically threatened LENZ category Q 4.3a are present in the lower front faces. These are mainly areas of short tussockland and exotic grassland with shrubland in the stream gully.

At risk LENZ
Areas of the at risk LENZ category Q4.3a along the lower elevation front faces and are areas of short tussockland and exotic grassland.

Critically underprotected LENZ
Areas of the critically underprotected LENZ categories Q2.2a occur along the midfront face. These areas contain extensive short tussockland and scattered shrubs, areas of exotic grassland and shrubland in the gullies.

Underprotected LENZ
The majority of the remainder of the property are in the underprotected Q3.3c and Q1.1c LENZ categories. These are primarily mixed short/tall tussockland with extensive seepage wetlands on the ridge top and upper front faces.

LENZ Map and LENZ Units for Kelvin Grove PL are attached as Appendix 2. Please note the areas on the LENZ map and table are approximate only.

2.2 Vegetation

Overview

Kelvin Grove PL was found to have two areas of Significant Inherent Values (SIV's) from a botanical viewpoint. These correspond primarily with high value shrublands centred on gullies on the front faces and the higher altitude vegetation of the property. These contained 14 nationally or

locally uncommon plant species and three rare plant communities (native shrubland, ephemeral wetland, seepage wetland). Diversity of native species is moderate with 151 species recorded during the survey. Exotic species were a minor factor of the vegetation at 13% of the species recorded. Major threats identified were weeds and continued grazing at some sites. Minimal management of the key SIV's would be needed for conservation outcomes.

Survey method

This report is based on information gathered during walk-through field inspections of Kelvin Grove PL by two botanists on 3rd November 2009, and information held in the Department of Conservation BIOWEB database.

General site description

This property is on the south-eastern end of the Rock and Pillar Ranges.
Climate data is unavailable. Winter would be cold, with snow lying over winter at higher elevations. Altitudinal range is from lowland 360 m to low alpine 1254 m.
Basement geology is poorly foliated quartzo-feldspathic schist and lesser chlorite schist of the Torlesse Terrane Haast Schist Group and recent alluvial soils on flats (Mutch 1963). Topography varies from incised (sometimes deeply so) gullies and bluff/tor complexes on the front faces to rounded tops with shallowly incised streams and tor outcropping. Two main drainage systems are present: the headwaters of McHardies Creek on the ridgetop and an unnamed creek draining the front faces into the Taieri River.

Kelvin Grove PL vegetation descriptions

The vegetation of Kelvin Grove PL has to some degree been altered by grazing and fire. Near-natural examples exist at higher elevations (above ca. 700 m) with remnants below this centred on gullies and rocky sites.
Kelvin Grove PL has a moderately diverse native flora with 151 species recorded during this survey. 22 (13%) exotic species were recorded during the survey, mainly in patches of exotic grassland at lower elevations. This is a relatively low proportion indicating that considerable naturalness remains, particularly at higher altitudes.
Four broad vegetation zones were apparent: 1) lowland grey shrublands/broadleaf-dominated forest centred on gullies and rocky sites on the front faces, 2) widespread tall tussockland on the upper front faces and ridgetop, 3) extensive seepage wetlands in gully heads, 4) exotic grassland on the flats and lower front faces. These communities to some extent intergrade. There is no visible boundary between degraded exotic-dominated lowland country and upland areas with more natural vegetation.

Front face

This area encompasses the property below the snow fence at ca. 1100-1200 m. This area has a matrix of different habitats with extensive areas of shrubland intergrading with patches of induced exotic grassland and transitioning to mixed short/tall tussockland at higher altitudes (above c. 600-700 m).
The shrublands/broadleaf forests are the most notable feature of this area and consist of a moderate diversity of shrub species covering extensive areas. Predominant species within the shrublands are *Coprosma propinqua, Coprosma crassifolia*, matagouri *Discaria toumatou, Corokia cotoneaster, Melicope simplex* and intertwining native vines pohuehue *Muehlenbeckia* spp. and dryland bush lawyer *Rubus schmidelioides* var. *subpauperatus*. Pockets of broadleaf forest with broadleaf *Griselinia littoralis*, putaputäwëtä *Carpodetus serratus* and kowhai *Sophora microphylla* are present centred on rockier gullies in the areas of shrubland. The understory is generally sparse due to the height of the shrubs, but pockets of herbs such as *Acaena juvenca, Chaerophyllum ramosum,* and *Arthropodium candidum* and a high (for the area) diversity of ferns are present.
The mixed short/tall tussock grassland surrounding the shrublands appears to have been induced by regular burning of the area. Tussock density and stature is generally lower than would be expected for this area, probably as a result of this burning and repeated grazing.

Ridgetop

This area encompasses the property above ca. 1100-1200 m. This area has a matrix of tall tussock grassland dominated by short-stature narrow-leaved snow-tussock *Chionochloa rigida*, with intermixed spaniard *Aciphylla aurea*, native herbs and exotic grasses (mainly sweet vernal *Anthoxanthum odoratum*) and hawkweed *Hieracium pilosella*. Around rock outcrops a distinctive shade-dependant community is found. In gully heads extensive areas of a flow bog wetland flora dominated by *Carex gaudichaudiana* and wetland herbs (e.g., *Abrotanella caespitosa, Schizeilema cockaynei, Ranunculus gracilipes, Drosera arcturi, Leptinella* "seep" and *Celmisia* "rhizomatous bog") is present. This wetland community becomes riparian as slope increases and along stream margins shrubs such as *Dracohyllum rosmarinifolium, Hebe anomala, Olearia bullata* and *Hebe rakaiensis* are common. The mapped pond contained species characteristic of ephemeral wetland such as *Crassula peduncularis, Centrolepis ciliata* and pygmy sedge *Isolepis basilaris*.

2.2.1 Significance of Vegetation

Rare and threatened plant species

Nine nationally threatened or at risk species were found during this survey and one Data Deficient species. These are (threat rankings from de Lange et al., 2009):

Threat Division	Threat Category	Species	Location on lease
Threatened	Nationally Critical	stonecrop *Crassula peduncularis*	Small population in ephemeral wetland on ridge top
	Nationally Endangered	pygmy clubrush *Isolepis basilaris*	Small population in ephemeral wetland on ridge top
At Risk	Declining	*Lobelia ionantha*	Extensive population in ephemeral wetland on ridge top
		tree daisy *Olearia lineata*	Small grove beside stream on front face
	Naturally Uncommon	NZ anemone *Anemone tenuicaulis*	Beside McHardies Creek. Several plants
		bidibid *Acaena tesca*	Small populations around base of large rocks on ridge top
		forget-me-not *Myosotis* (ii) (AK 231051; aff. *M. australis*; "small white"	Recorded at one site under an overhang
		buttercup *Ranunculus maculatus*	several sites in seepage wetlands
		grass *Deyeuxia youngii*	One site in McHardies Creek.
Data Deficient		forget-me-not *Myosotis* (s) (CHR 572827; aff. *M. australis*; Lammerlaw)	Two sites on bluffs in McHardies Creek.

In addition, five species that are uncommon in Otago (Regionally Significant) or uncommon in this area but reasonably common in the rest of Otago (Locally Notable species) were found:

Ranunculus (CHR 586029; aff. *R. brevis*; sparsely hairy). This wetland buttercup was found in the ephemeral pond on the ridge top. This is only the second site that this enigmatic buttercup has been found.

Wineberry *Aristotelia serrata*. This shrub is very uncommon in this Ecological District. It is present in the front face shrublands.

Putaputaweta *Carpodetus serratus*. This small tree is very uncommon in this Ecological District. It is present in the front face shrublands.

Broadleaf *Griselinia littoralis*. This small tree is very uncommon in this Ecological District. It is present in the front face shrublands.

Poataniwha *Melicope simplex*. This shrub is very uncommon in this Ecological District. It is present in the front face shrublands.

In addition, populations were found of an unusual form of the buttercup *Ranunculus gracilipes*. These plants had a dark blotch at the base of the petal and an earlier flowering time than plants of the usual form of this species (which were also present). This unusual form was found throughout the seepage wetlands. Its taxonomic standing is unknown.

Rare plant communities

The shrubland/broadleaf forest community on the front face of the property is a rare community in a regional context and also contained several species rare in shrublands in the Central Otago region.

Ephemeral wetland vegetation communities are nationally significant (Johnson and Rogers 2003). The one site on this property appears to be a natural example and is a particularly large example of an ephemeral wetland. As it was inundated at the time of inspection a complete list of species was not possible.

Wetland seepages of the nature recorded on this property are restricted to higher altitude, shallowly sloping gully heads. The vegetation type varies with water content and movement, and on this property is dominated by either sedgeland or mossfield.

2.2.2 Problem Plants

Problem plants are rare on the Pastoral Lease, but extensive areas of broom and scattered gorse are present on the toe slope of the front faces. Other exotic species present are of lesser concern.

2.3 Historic

Introduction

The Kelvin Grove PL, Run 598 (PO 280) is located west of the Taieri River at the southern extent of the Rock and Pillar Range on its eastern face. The range tops within the block stretch back to the old Dunstan Road. The block covers an area of 2442 hectares with the boundaries depicted in Appendix 3 - Figure 1.

The history of the lease is primarily one related to 19th and 20th century pastoral activity. The aims of this report are to present the historical and archaeological data currently available on the lease, and new data gathered during an archaeological field survey of the Kelvin Grove block. The significance of the historic and archaeological sites is then explained with recommendations on historic areas on the lease that may require protection.

Land status
The Kelvin Grove Pastoral lease, Part Run 598 and Section 4 (SO 24760), Strath Taieri and Loganburn Survey Districts (OT A2/1199 Otago Registry), being 2442.5 hectares (LINZ 1999). The block is bounded to the north and south by the Rock and Pillar Conservation Area (H42054) (Appendix 3 - Figure 1).

Historic records
Historic records describing the history of people who occupied or worked the land which encompasses the Kelvin Grove Pastoral Lease are concerned primarily with ownership of the run and related pastoral activities. The Kelvin Grove Block, Run 598, corresponds to part of the early Strath Taieri Run 213 that included 60,000 acres covering most of the Strath Taieri Plain to the top of the Rock and Pillar Range (Appendix 3 - Figure 2).

Thompson (1949:32) noted that Run 213 (previously named Gladbrook) played perhaps the most important part in the development of the Strath Taieri district. Gladbrook Station founded the renowned herd of Aberdeen angus cattle imported from Scotland in 1893. The stock and station firm of Murray Roberts, set up by John Roberts in the 1860's, became the second largest exporter of wool in New Zealand by 1900 (Cyclopaedia of New Zealand: cited in Hamel 1993:3). John Roberts became one of the wealthiest and most influential men of Otago by diversifying between pastoralism, agency work, and manufacturing (Thomson 1998:425). Gladbrook was the first in Strath Taieri to purchase a steam powered threshing mill, to lay down rabbit poison, and helped to establish the importance of turnips for winter feed (Thompson 1949:36-37).

Beattie (1979:322) notes the run was applied for in 1859 by Harris and Innes, well known and enterprising South Canterbury run holders. Beattie (1979:322) and Thomson (1949:33) mentions that Campbell Thomson may have unofficially taken possession of Run 213 in 1859. Campbell Thomson lived in the stone house near the present Garthmyl homestead before moving to Rocklands. Campbell went into partnership with his youngest brother A.R.B. Thomson in 1863. Campbell Thomson was appointed a Justice of the Peace in the Province of Otago in 1862 and was responsible for the mail run from Dunedin to Deep Stream. The station was a familiar landmark to hundreds who traversed the Dunstan Road (Hamel 1993, Thompson 1949:30, 81).

The Strath Taieri Run 213 was subdivided in the late 1860's. The northern part of the run (213A) was retained by Thomson and later granted to McFarlane and Humphreys in 1868 (to become the Six Mile and Garthmyl runs). The southern part (213B) was held by William Gordon and Shepherd in 1867 to be later named Gladbrook (Figure 2: Sinclair 2003). The Strath Taieri run was broken up in 1872.

William Murray and John Roberts acquired the pre-emptive right to Run 213B in 1873. Kelvin Grove lay within Run 213B following the subdivision. Murray Roberts and Co. is the company name attached to the application for Section 2 Block 8 Strath Taieri (SO 7197 dated to December 1873). The run was subdivided in January 1882, 213B of 12,190 acres stretching from the Bergen along the eastern slopes of the Rock and Pillar Range, and 213C, 26,440 acres including

the Bergen and Weaner blocks and all the back country. The runs were picked up again by Murray, Roberts and Sanderson, a London member of the firm Sanderson, Murray and Company. They held 213C for ten years when it reverted to John Roberts, James Kirk, P. Spratt and Scott in 1893 (Thompson 1949:37-38).

The run 213B was named Gladbrook following the purchase by John Roberts. John Elliot became manager of Gladbrook and his diaries noted the first reaping machine starting work in 1875 (John Elliot's diaries: cited in Thompson 1949:35). During the winter of 1875, the sheep were fed on turnips on which the breaks were fenced with stakes and nets instead of wire netting or cyclone netting. Tom Potter was in charge of the nets (Thompson 1949:35-36). In 1880, Gladbrook purchased the first steam powered threshing mill in the Strath Taieri and was also the first to lay down rabbit poison in 1882 (Thompson 1949:36). Further historic information on the people associated with the Gladbrook and Kelvin Grove runs is contained in Appendix 5.

Items of interest that could be present on the lease are bullock tracks related to peat cutting and the possibility of sub-fossil deposits. Deeply incised bullock tracks are recorded on Brookdale station leading from the flats to the peat bogs (Hamel 1993:4) that were used from 1866 until the arrival of the railway in 1894. Thompson (1949:87) noted that a bullock team was kept on Gladbrook station for the purpose of sledging peat down from the mountain. The station burnt only matagouri and peat primarily for the purpose of supplying the cooks. Two early drivers were Hughie Ross and Tom Potter. In 1876, Robert Carr was employed at the age of sixteen to drive bullocks to the top of the mountain for loads of peat. The last trip to the peat bog was undertaken by Tom Jenkins and his team in 1894. Charred logs of totara or cedar were found halfway up the Rock and Pillar Mountain and were sledged to the various stations for posts or firewood (Bettie 1947:14, Thompson 1949:87).

A large deposit of bone in peat, including Moa, the eagle *(Harpagornis),* extinct goose *(Cnemiornis),* other small birds, reptile bones, and one rat jaw was recorded by Booth (1874:cited in SRF H42/104) at the Hamilton's gold working field. The Cornish Gold Mining Company discovered the first moa bones in 1870 while opening up a pit for cutting peat.

Previous Archaeological Surveys (Appendix 3 - Figure 1)

A survey was undertaken during 1993-1994 to identify Department of Conservation interests on pastoral leases along the eastern face of the Rock and Pillar Range. Jill Hamel reported on the heritage values with Dave Gage and Peter Petchey conducting the field work. Due to time constraints only partial traverses were made about the 400m, 500m, 600m and 900m contour. This survey included the neighbouring run, Brookdale, and the leases further north but did not include the Kelvin Grove PL.

A stable and a hut are recorded on the lease (H43/63: NZAA database) 2km east of the old Dunstan road and 2.5km south of McPhees Rock. The hut is constructed of schist with a corrugated roof and a concrete floor. The hut was built around 1917 to shelter men working on the old telephone line across the Rock and Pillar Range. The telephone line runs alongside the north boundary of the run parallel with the bullock track (H43/52). The hut site was reported to be in good condition when recorded in the NZAA database in 2001 (Antony Hamel SRF

H43/63). The site was not visited during the inspection although the existing site record (H43/63) was noted in the original Conservation Resources Report.

Methods
In order to provide value judgements on the historic heritage within the Kelvin Grove PL more data on the archaeological evidence remaining in the landscape was required. Historic records provided little information on the identification of areas of archaeological/historic interest.

The lease was partially surveyed by field archaeologist Shar Briden, Technical Support Officer Historic Heritage, Department of Conservation, Otago Conservancy, accompanied by Matthew Schmidt, Regional Archaeologist Otago/Southland, NZ Historic Places Trust, and Brian Allingham, Archaeologist on behalf of Ngai Tahu. The site visit was conducted on the 3rd November 2009. A hand held Garmin GPX60CSx was used to locate waypoint coordinates of historic features. A list of GPS waypoints will be held in the Historic database at Otago Conservancy, Department of Conservation.

Newly Recorded Archaeological Site (Appendix 3 - Figure 1)
One previously recorded and one previously unrecorded archaeological site of probable European origin was recorded during the field survey. The only previously recorded site on the lease is the Telegraph stone huts (H43/63). The previously unrecorded site (H43/116) consists of wood and schist post, wire, and flat standard fence lines related to the break up of the early pastoral run. A miscellaneous artefact was also recorded on the lease, a metal billy.

Pre-contact Maori Sites
There was no evidence of pre-contact Maori sites noted within the boundaries of the Kelvin Grove leasehold block under consideration although sub-surface archaeological features or artefacts may exist. The dark eastern faces of the Rock and Pillar Range may have been an excellent source for weka and other bush birds. Maori informants told Chapman (1891: cited in Hamel 1993:1) that parties travelled from coastal settlements into the interior to catch weka's, eels, and other food. Lamprey was sourced from the Taieri River as far up as Hyde or Waipiata.

No moa hunting sites have been recorded on the Rock and Pillar Range although Jill Hamel (1993, 1994) has provided information on recorded Maori artefact finds from the area and the surrounding country. Hamel (1994:3) noted large silcrete boulders evident on the flats east below the Emerald Hills and Rockvale leases although some of these may have been shifted by farm operations. Hamel noted 'in situ' outcrops in three places, one located in a gully ca.2kms south of Hyde close to the railway line, two locations of boulders outcropping to the east of the main highway, and a fourth location where large boulders are in their natural position on level ground on the Rockvale lease. There was no evidence of outcropping orthoquartzite (silcrete) or porcellanite within the bounds of the Kelvin Grove PL.

There is a site record (I42/4) of a Mr Mathewson (Hamilton 1896: cited in Hamel 1994:2) finding a kete in 1894 containing soft white tapa cloth, 2 hanks of cord, lace bark, woven matting, a belt of soft grass, and a small mat made of two strips, in a small rock shelter near a waterfall four and a half miles from Hyde. The exact location is not known although it could be

from one of the more northern pastoral leases along this eastern face of the Rock and Pillar Range.

Pastoral

Fence lines (H43/ 116)

The southern boundary of the run and some of the internal fence lines were recorded during the inspection (H43/116). The fence lines are typically late 19th century that have undergone re-use of some of the stone schist uprights, wood posts, and flat metal standards of the original fences. The schist uprights are embedded in the ground, standing around 1.2m above the ground surface. Wire is wrapped around some of the schist uprights. The wood posts may be totara or cedar (Appendix 4 - Plate 1). Thompson (1949:87) had noted charred logs of totara and cedar sourced from halfway up the mountain being used for posts and firewood. Both new and older wire has been re-strung along the fence lines and modern tanalised posts have also been added.

Hayes strainers were recorded re-strung on fence lines in four places, (Appendix 4 -Plate 2 and 3). 'Hayes Templeton' was stamped into one of the strainers. On the lower internal fence line, ca.570m contour, there are two types of ratchet cogs on the strainers with replacement galvanised frames. The fence is a schist post and flat standard warratah fence line (Appendix 4 - Plate 4).

The internal fence line striking north/south on the 1050m contour runs along the flat top through wetland areas (Appendix 4 - Plate 5). Survey Office Plans SO 911 and 913 (QuickMap: Land Information New Zealand) indicate fence alignments corresponding to recorded fence lines on the lease. The plan notes that the fences had been removed since the survey was undertaken in September 1918 although restoration of these original fences is clearly evident.

Concrete posts have been used in the restoration of the lower internal fence line. Schist uprights were evident on internal fence lines on the flat lower slopes.

Rock shelters

Two rock outcrops in close association with the internal fence line provided shelter with flat grassed areas but no overhead cover. One outcrop contained two spaces ca.5m square and the second outcrop an area 5 x 1.5m.

The rock outcrop known as 'The Castle' was inspected by Brian Allingham who commented that the outcrop appeared to have many rooms hence the name of the Castle. No cultural material was noted around rock outcrops visited during the survey.

Miscellaneous find spot

A round metal tin or billy, 105mm in diameter and 215mm high, ca.3m east of the internal fence line. The tin had a separate riveted base and originally may have had a carry handle attached.

Other

No water races or gold mining areas were identified on the lease. There were no survey trig stations recorded during the inspection although one trig station, 'F', is shown on SO 913 (dated to September 1918) close to the southern boundary below the internal fence line. This Survey Office Plan was not noted prior to the field inspection and the location was not checked on the

ground. The maintenance record for Trig 'F' describes the mark as a rock cairn (A1UN: LINZ geodetic database).

There is no clear evidence that peat cutting was undertaken in the wetter areas on the Kevin Grove lease although there is historical evidence that peat cutting occurred on the early Gladbrook run until 1894. Areas possibly suitable for peat cutting are present along the internal fence line that bisects the lease ca.1050m contour (Appendix 4 - Plate 5). The vehicle track running parallel north/south with the fence line may be a bullock track although this is not confirmed.

It is not confirmed whether any significant trees are located within the Kelvin Grove lease. Significant trees were planted at Gladbrook Station from as early as 1872 (Baird: 2005:71) although Thompson (1949:36) notes the first consignment of 16,000 forest trees arriving in August 1877. The trees were primarily pinus insignis and Corsican pine with lesser amounts of spruce, oak, Douglas fir, Lombardy poplars, and larch. When the estate was later subdivided, the plantations (estimated in 1897 to cover 120 acres), were sold in 1941 to A. Stewart, a sawmiller.

Plantations of up to 100 trees consisting of oaks, pines, poplars, ashes and elms, were planted either side of Gladbrook Road, known locally as 'The Avenue'. The plantations were around 10 rows of trees deep (Baird: 2005:71). The plantation rows bordering the access road to the Kelvin Grove Homestead appear to be excluded from the pastoral lease boundaries (SO 911 dated to June 1918) (QuickMap: Land Information New Zealand).

2.3.1 Historic Significance

The Kelvin Grove PL retains direct evidence of pastoral activity primarily related to the early pastoral runs. Of most historic significance on the lease is evidence of restored late 19th and/or early 20th century fence lines using original elements retained in the landscape. The relatively intact fence lines are constructed of schist uprights and metal flat standards and/or metal flat standards and wood post.

2.4 Legal access

Marginal Strips
As the pastoral lease was renewed on 1 July 1995, any waterway 3m or greater will be subject to Part IVA of the Conservation Act 1987.

PART 3

OTHER RELEVANT MATTERS & PLANS

3.1 Consultation

The following comments were made at the meetings with NGO's in Alexandra on 10 September 2009 and 27 April 2010. These comments are in addition to those included in the original CRR.

- A covenant should be created on front faces to protect woody vegetation and landscape.
- Front faces are highly significant for their visual and recreation value.
- Full crown ownership of plateau which contains extensive tall tussock.
- Full crown ownership of top of eastern face which includes impressive tor rocks, woody and alpine vegetation.
- Outcome should reflect boundaries on adjoining completed tenure review deals.
- Walking and mountain bike access to covenant and top of range through property would be ideal for day trips to The Window and The Castle. Initial access to farm track could be marked by poles along boundary fence between Kelvin Grove and Stonehurst.
- Access for recreational pig hunting desired.

A copy of all comments and reports is attached as Appendix 6.

3.2 District Plan

The PL is located within the Rural General zone of the fully operative Dunedin City Council District Plan (District Plan). The entire lease is within the Visually Prominent Area of the Highcountry Outstanding Landscape Area. Forestry is therefore a restricted discretionary activity as are earthworks which exceed 2m in depth and 200m3 in any 12 month period and also the erection of buildings and structures, should they breach specified thresholds. The clearance or modification of indigenous vegetation is a discretionary activity should specified thresholds be breached. The thresholds include the clearance of areas of indigenous vegetation greater than 5ha on the lower portion of the PL and areas greater than 9ha on the upper portion.

There are no registered archaeological sites, or areas of significant indigenous vegetation and habitat of significant indigenous fauna identified either within the District Plan or the accompanying maps.

Within the Otago Regional Council Regional Plan: Water there are no significant wetlands identified on the PL. McHardies Creek, due to fisheries values, is identified however as being a water body that is sensitive to suction dredging and so in this water body, suction dredging requires resource consent.

Protection is therefore limited to the controls set out above.

3.3 Conservation Management Strategy & Plans

The Otago Conservancy of DOC has prepared a Conservation Management Strategy (CMS) which was approved by the New Zealand Conservation Authority in August 1998. The CMS identifies 41 special places of conservation interest in Otago Conservancy. Kelvin Grove Pastoral Lease is incorporated in the Rock and Pillar Special Place.

The CMS objectives for the Rock and Pillar Special Place relevant to Kelvin Grove Pastoral Lease includes:

To nurture and encourage study of the natural processes to allow healing of the vegetation after grazing and fire and to improve landscape values. To continue to document the values and permit research where it will lead to conservation benefits. In the case of the Rock and Pillar Range, to extend the protected area along the summit and to take in altitudinal sequences and secure access where opportunities arise.

The key implementation methods relevant to Kelvin Grove PL are:

- Pastoral lease tenure review on properties on the Rock and Pillar Range will provide opportunities to achieve protection of areas of significant landscape, scientific, natural and historic resource and recreational value. Overall management of these new areas with the existing reserve will confer net conservation and management benefits (eg, fencing efficiencies), and will provide extensive recreational opportunities. Management of contiguous areas will be integrated and public awareness developed through the concept of a Rock and Pillar Conservation Park.

- Research will be encouraged where it provides conservation benefits. All associated structures will be removed at project end.

- Fire risks will be minimised using a range of methods including fire breaks where appropriate, education, liaison and cooperation with neighbours.

- The streams will be surveyed for freshwater fisheries resources as a low priority.

- Legal access to land administered by the department will be negotiated and vehicular access and parking secured at key access points.

- To advocate for the protection of significant natural and historic resources through the Resource Management Act and other relevant legislation.

- Recreation and tourism concessions may be allowed where the proposed activity will not result in any adverse effects on natural, cultural and historic values including remote experience recreation, or where conditions can be attached to a concession to adequately or reasonably avoid, remedy or mitigate any potential adverse effects.

- Kai Tahu involvement in management and sustainable use of customary resources will be facilitated.

Priorities for the Special Place are:

Negotiation, principally through pastoral lease tenure review, of an extended protected area along the crest of the Rock and Pillar Range will be a priority in this Special Place.

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 which is a blueprint for managing the country's diversity of species and habits and sets a number of goals to achieve this aim. Of particular relevance to tenure review, is goal three which states:

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

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

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

3.5 Protecting Our Places

In April 2007 the Ministry for the Environment produced a new policy document titled 'Protecting Our Places' which was jointly launched by the Minister of Conservation and the Minister for the Environment. This publication introduces four national priorities for protecting rare and threatened native biodiversity on private land. The national priorities identify the types of ecosystems and habitats most in need of protection.

The policy statement supports the government's pledge to maintain and preserve New Zealand's natural heritage. This began in 1992 when New Zealand signed the United Nations Convention on Biodiversity; followed in 2000 with the release of the New Zealand Biodiversity Strategy.

The four national priorities for biodiversity protection are listed below. They are based on the most up to date scientific research available.

National Priority 1:
To protect indigenous vegetation associated with land environments, (defined by Land Environments of New Zealand at Level IV), that have 20 percent or less remaining in indigenous cover.

National Priority 2:
To protect indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity.

National Priority 3:
To protect indigenous vegetation associated with 'originally rare' terrestrial ecosystem types not already covered by priorities 1 and 2.

National Priority 4:
To protect habitats of acutely and chronically threatened indigenous species.

These national priorities have relevance beyond conservation initiatives on private land. For example they are used to help assess applications for grants under the government funded Community Conservation Fund which funds conservation projects on public land by community groups.

The national priorities also provide a useful measure for assessing tenure review recommendations and outcomes.

3.6 Ecological Sustainability and Carbon Storage

Sustainability

Kelvin Grove contributes to a number of "ecosystem services." Costanza et al (1997) define ecosystem services as flows of materials, energy, and information from natural capital stocks which combine with manufactured and human capital services to produce human welfare." They identify 17 "services". This pastoral lease clearly contributes to seven of these services excluding those of a recreation and cultural nature which are described elsewhere within this addendum and in the original CRR.

1. Gas Regulation:

One hectare of mixed grassland/shrubland stores about 42 tonnes of carbon versus approximately 2t for unimproved grassland.

2. Climate Regulation:

Carbon storage in expanding shrublands, forest and tall tussock grasslands makes a modest contribution to ameliorating the current anthropogenic induced rise in atmospheric carbon dioxide levels.

3. Disturbance Regulation:

Wetland and upland bogs comprise approximately 10% of the upland catchment areas and have an important role in flood runoff. These same wetland areas also store water which helps to maintain summer flows, as does storage of water in the shallow unconfined ground water on the colluvium mantled slopes. These values contribute to "disturbance regulation" by damping out environmental fluctuation such as floods and droughts.

4. Water Regulation/Regulation of hydrological flows:

Kelvin Grove forms part of the tributary water catchment for McHardies Creek that flows into the Loganburn Reservoir and Great Moss Swamp region. Tussocklands and wetlands on the upper parts of the property serve a vital role in regulating water flows.

5. Water Supply Storage and Retention of Water:
Snow tussock catchments as found in the upper parts of Kelvin Grove have less variable flows than degraded (burnt) tussock, oversown tussock or improved pasture.

6. Erosion Control and Sediment Retention:
Snow tussock catchments monitored for sediment yield have been shown to have very low sediment yields by New Zealand standards.

7. Nutrient cycling, Storage, Internal Cycling, Processing and Acquisition of Nutrients:
(nitrogen fixation,N,P and other elemental or nutrient cycles):

The results of monitoring in comparable situations have shown that tussock covered catchments yield very good water quality.

PART 4

ATTACHMENTS

4.1 Additional Information

4.1.1 References

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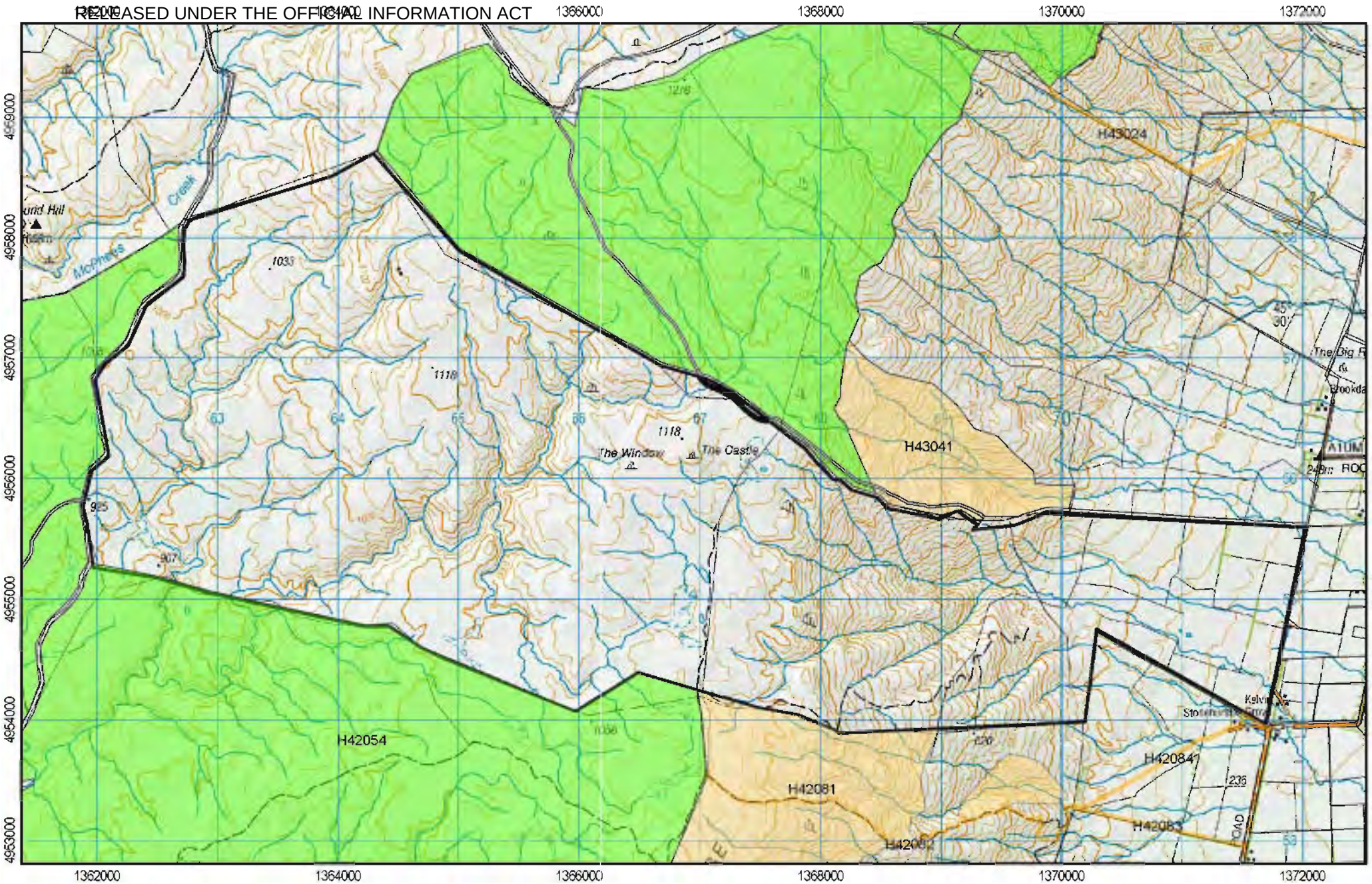
4.2 Maps

4.2.1 Topographic and Cadastral
4.2.2 Values – Ecological and historic



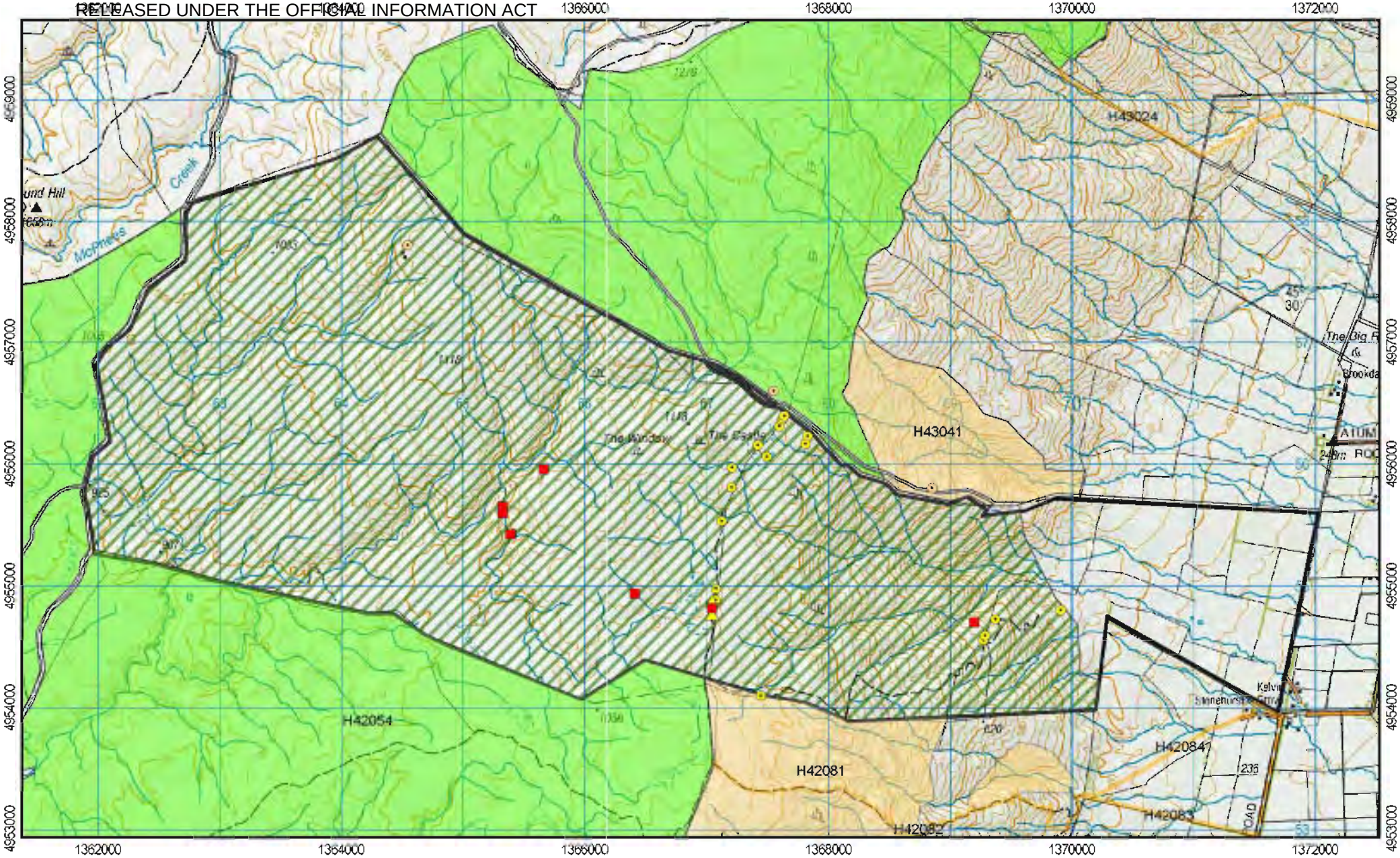
Legend

- RAPs
- Stewardship Areas
- Marginal Strips
- Protected Land Agreements

4.2.1 Topographical and Cadastral Kelvin Grove Pastoral Lease

0 1.25 2.5 Kilometres

N



Legend

- At Risk species
- Acutely Threatened Species
- Historic points
- Historic-NZAA
- Significant Vegetation Values
- Stewardship Areas
- Marginal Strips
- Protected Land Agreements

4.2.2 Values - Ecological and Historic
Kelvin Grove Pastoral Lease

0 1.25 2.5 Kilometres

N

Department of Conservation
Te Papa Atawhai

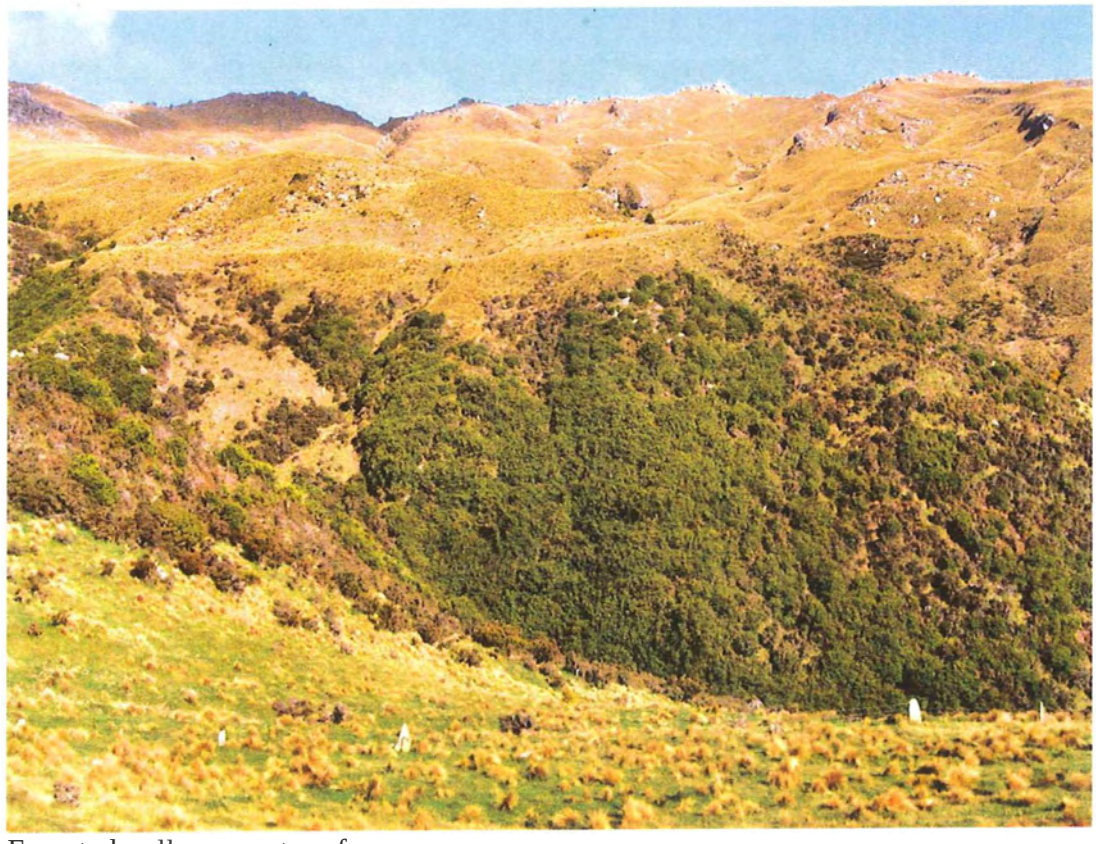
New Zealand Government

4.3 Photographs

4.3 Photographs

Broad expanse of summit plateau.

Tors in tributary of Loganburn.



Forested gully on eastern faces.

4.4 NGOs Comments

Written submissions were received from

- Federated Mountain Clubs
- Dunedin Branch of Royal Forest and Bird Protection Society
- Central Otago Lakes Branch of Royal Forest and Bird Protection Society
- New Zealand Deerstalkers Association

4.5 Appendices

1 Kelvin Grove Pastoral Lease – Plant Species List
2 LENZ Map and LENZ Units for Kelvin Grove PL
3 Historic Map and Run plan
Figure 1 - Historic Resources Map
Figure 2 – Strath Taieri Plain Run 213 (Sinclair 2003)
4 Historic photos
Plates 1-5
5 Historic records continued
6 NGO Reports

APPENDIX 1

Kelvin Grove Pastoral Lease – Plant Species List

Current name	Group 1	Family (Tribe)	Threat ranking (2009)
Abrotanella caespitosa	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Brachyglottis bellidioides var.	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Brachyscome sinclairii	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Celmisia (g) (CHR 274779; "rhizomatous")	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Celmisia argentea	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Celmisia glandulosa var. *glandulosa*	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Celmisia gracilenta agg.	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Celmisia lyallii	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Craspedia sp.	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Euchiton lateralis	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Helichrysum filicaule	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Hieracium pilosella subsp.	DICOTYLEDONOUS HERBS	Asteraceae	Exotic
Hypochoeris radicata	DICOTYLEDONOUS HERBS	Asteraceae	Exotic
Lagenifera pumila	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Leptinella (f) (; "seep")	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Leptinella pusilla	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Raoulia subsericea	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Taraxacum magellanicum	DICOTYLEDONOUS HERBS	Asteraceae	Not threatened
Acaena anserinifolia	DICOTYLEDONOUS HERBS	Rosaceae	Not threatened
Acaena juvenca	DICOTYLEDONOUS HERBS	Rosaceae	Not threatened
Acaena tesca	DICOTYLEDONOUS HERBS	Rosaceae	Naturally Uncommon
Aciphylla aurea	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Aciphylla scott-thomsonii	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Anemone tenuicaulis	DICOTYLEDONOUS HERBS	Ranunculaceae	Naturally Uncommon
Anisotome aromatica	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Cardamine sp.	DICOTYLEDONOUS HERBS	Brassicaceae	Not threatened
Cerastium fontanum subsp*. vulgare*	DICOTYLEDONOUS HERBS	Caryophyllaceae	Exotic
Chaerophyllum ramosum	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Crassula peduncularis	DICOTYLEDONOUS HERBS	Crassulaceae	Nationally Critical
Drosera arcturi	DICOTYLEDONOUS HERBS	Droseraceae	Not threatened

Epilobium komarovianum	DICOTYLEDONOUS HERBS	Onagraceae	Not threatened
Epilobium pubens	DICOTYLEDONOUS HERBS	Onagraceae	Not threatened
Galium (b) (CHR 469914; aff. *G. perpusillum*; "lacustrine")	DICOTYLEDONOUS HERBS	Rubiaceae	Not threatened
Galium aparine	DICOTYLEDONOUS HERBS	Rubiaceae	Exotic
Geranium (d) (aff. *G. microphyllum*; "mainland")	DICOTYLEDONOUS HERBS	Geraniaceae	Not threatened
Geum leiospermum	DICOTYLEDONOUS HERBS	Rosaceae	Not threatened
Glossostigma diandrum	DICOTYLEDONOUS HERBS	Phrymaceae	Not threatened
Hebejeebie densifolia	DICOTYLEDONOUS HERBS	Plantaginaceae	Not threatened
Hydrocotyle (a) (*H. novae-zeelandiae* var. *montana*)	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Hydrocotyle hydrophila	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Kelleria dieffenbachii	DICOTYLEDONOUS HERBS	Thymelaeaceae	Not threatened
Kelleria paludosa	DICOTYLEDONOUS HERBS	Thymelaeaceae	Not threatened
Lobelia angulata	DICOTYLEDONOUS HERBS	Lobeliaceae	Not threatened
Lobelia ionantha	DICOTYLEDONOUS HERBS	Lobeliaceae	Declining
Marrubium vulgare	DICOTYLEDONOUS HERBS	Lamiaceae	Exotic
Montia fontana subsp. *montana*	DICOTYLEDONOUS HERBS	Portulacaceae	Not threatened
Myosotis (ii) (AK 231051; aff. *M. australis*; "small white")	DICOTYLEDONOUS HERBS	Boraginaceae	Naturally Uncommon
Myosotis (s) (CHR 572827; aff. *M. australis*; Lammerlaw)	DICOTYLEDONOUS HERBS	Boraginaceae	Data Deficient
Myosotis laxa	DICOTYLEDONOUS HERBS	Boraginaceae	Exotic
Myriophyllum pedunculatum subsp. *novaezelandiae*	DICOTYLEDONOUS HERBS	Haloragaceae	Not threatened
Myriophyllum triphyllum	DICOTYLEDONOUS HERBS	Haloragaceae	Not threatened
Oreostylidium subulatum	DICOTYLEDONOUS HERBS	Stylidiaceae	Not threatened
Ourisia caespitosa	DICOTYLEDONOUS HERBS	Plantaginaceae	Not threatened
Oxalis exilis	DICOTYLEDONOUS HERBS	Oxalidaceae	Not threatened
Plantago lanigera	DICOTYLEDONOUS HERBS	Plantaginaceae	Not threatened
Plantago raoulii	DICOTYLEDONOUS HERBS	Plantaginaceae	Not threatened
Ranunculus (CHR 586029; aff. *R. brevis*; sparsely hairy)	DICOTYLEDONOUS HERBS	Ranunculaceae	Regionally Significant
Ranunculus enysii	DICOTYLEDONOUS HERBS	Ranunculaceae	Not threatened
Ranunculus glabrifolius	DICOTYLEDONOUS HERBS	Ranunculaceae	Not threatened
Ranunculus gracilipes	DICOTYLEDONOUS HERBS	Ranunculaceae	Not threatened
Ranunculus gracilipes ("dark eye", petal base blotched, earlier flowering)	DICOTYLEDONOUS HERBS	Ranunculaceae	Not threatened

Ranunculus maculatus	DICOTYLEDONOUS HERBS	Ranunculaceae	Naturally Uncommon
Ranunculus repens	DICOTYLEDONOUS HERBS	Ranunculaceae	Exotic
Ranunculus royi	DICOTYLEDONOUS HERBS	Ranunculaceae	Not threatened
Rumex acetosella	DICOTYLEDONOUS HERBS	Polygonaceae	Exotic
Sagina procumbens	DICOTYLEDONOUS HERBS	Caryophyllaceae	Exotic
Schizeilema cockaynei	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Schizeilema haastii	DICOTYLEDONOUS HERBS	Apiaceae	Not threatened
Scleranthus brockiei	DICOTYLEDONOUS HERBS	Caryophyllaceae	Not threatened
Scleranthus uniflorus	DICOTYLEDONOUS HERBS	Caryophyllaceae	Not threatened
Stellaria alsine	DICOTYLEDONOUS HERBS	Caryophyllaceae	Exotic
Stellaria gracilenta	DICOTYLEDONOUS HERBS	Caryophyllaceae	Not threatened
Trifolium repens	DICOTYLEDONOUS HERBS	Fabaceae	Exotic
Veronica serpyllifolia	DICOTYLEDONOUS HERBS	Scrophulariaceae	Exotic
Viola cunninghamii	DICOTYLEDONOUS HERBS	Violaceae	Not threatened
Wahlenbergia albomarginata subsp. *albomarginata*	DICOTYLEDONOUS HERBS	Campanulaceae	Not threatened
Calystegia tuguriorum	DICOTYLEDONOUS LIANES & RELATED TRAILING PLANTS	Convolvulaceae	Not threatened
Clematis marata/*C. quadribracteolata*	DICOTYLEDONOUS LIANES & RELATED TRAILING PLANTS	Ranunculaceae	Not threatened
Muehlenbeckia australis	DICOTYLEDONOUS LIANES & RELATED TRAILING PLANTS	Polygonaceae	Not threatened
Muehlenbeckia complexa agg.	DICOTYLEDONOUS LIANES & RELATED TRAILING PLANTS	Polygonaceae	Not threatened
Rubus schmidelioides var. *subpauperatus*	DICOTYLEDONOUS LIANES & RELATED TRAILING PLANTS	Rosaceae	Not threatened
Solanum dulcamara	DICOTYLEDONOUS LIANES & RELATED TRAILING PLANTS	Solanaceae	Exotic
Acrothamnus colensoi	DICOTYLEDONOUS TREES AND SHRUBS	Ericaceae	Not threatened
Aristotelia serrata	DICOTYLEDONOUS TREES AND SHRUBS	Elaeocarpaceae	Locally Notable
Carmichaelia petriei	DICOTYLEDONOUS TREES AND SHRUBS	Fabaceae	Not threatened
Carpodetus serratus	DICOTYLEDONOUS TREES AND SHRUBS	Carpodetaceae	Locally Notable
Coprosma cheesemanii	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened
Coprosma crassifolia	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened

Coprosma depressa	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened
Coprosma dumosa	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened
Coprosma propinqua var. *propinqua*	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened
Coprosma rigida	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened
Coprosma rugosa	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened
Coprosma tayloriae	DICOTYLEDONOUS TREES AND SHRUBS	Rubiaceae	Not threatened
Corokia cotoneaster	DICOTYLEDONOUS TREES AND SHRUBS	Escalloniaceae	Not threatened
Discaria toumatou	DICOTYLEDONOUS TREES AND SHRUBS	Rhamnaceae	Not threatened
Dracophyllum muscoides	DICOTYLEDONOUS TREES AND SHRUBS	Epacridaceae	Not threatened
Dracophyllum rosmarinifolium	DICOTYLEDONOUS TREES AND SHRUBS	Epacridaceae	Not threatened
Gaultheria (a) (*G. depressa* var. *novae-zelandiae*)	DICOTYLEDONOUS TREES AND SHRUBS	Ericaceae	Not threatened
Gaultheria depressa s.s.	DICOTYLEDONOUS TREES AND SHRUBS	Ericaceae	Not threatened
Gaultheria macrostigma	DICOTYLEDONOUS TREES AND SHRUBS	Ericaceae	Not threatened
Griselinia littoralis	DICOTYLEDONOUS TREES AND SHRUBS	Griseliniaceae	Locally Notable
Hebe anomala	DICOTYLEDONOUS TREES AND SHRUBS	Plantaginaceae	Not threatened
Hebe rakaiensis	DICOTYLEDONOUS TREES AND SHRUBS	Plantaginaceae	Not threatened
Hebe salicifolia	DICOTYLEDONOUS TREES AND SHRUBS	Plantaginaceae	Not threatened
Leucopogon fraseri complex (mountain ecotype)	DICOTYLEDONOUS TREES AND SHRUBS	Ericaceae	Not threatened
Melicope simplex	DICOTYLEDONOUS TREES AND SHRUBS	Rutaceae	Locally Notable
Melicytus aff. *alpinus* (erect)	DICOTYLEDONOUS TREES AND SHRUBS	Violaceae	Not threatened

Melicytus aff. *alpinus* (normal Otago form)	DICOTYLEDONOUS TREES AND SHRUBS	Violaceae	Not threatened
Olearia bullata	DICOTYLEDONOUS TREES AND SHRUBS	Asteraceae	Not threatened
Olearia bullata X *O. lineata*	DICOTYLEDONOUS TREES AND SHRUBS	Asteraceae	Not threatened
Olearia lineata	DICOTYLEDONOUS TREES AND SHRUBS	Asteraceae	Declining
Ozothamnus vauvilliersii	DICOTYLEDONOUS TREES AND SHRUBS	Asteraceae	Not threatened
Pentachondra pumila	DICOTYLEDONOUS TREES AND SHRUBS	Epacridaceae	Not threatened
Pimelea oreophila (*P. prostrata*-like but fruit orange)	DICOTYLEDONOUS TREES AND SHRUBS	Thymeleaceae	Not threatened
Ribes uva-crispa	DICOTYLEDONOUS TREES AND SHRUBS	Grossulariaceae	Exotic
Asplenium flabellifolium agg.	FERNS	Aspleniaceae	Not threatened
Asplenium hookerianum	FERNS	Aspleniaceae	Not threatened
Asplenium richardii	FERNS	Aspleniaceae	Not threatened
Blechnum chambersii	FERNS	Blechnaceae	Not threatened
Blechnum fluviatile agg.	FERNS	Blechnaceae	Not threatened
Blechnum montanum	FERNS	Blechnaceae	Not threatened
Blechnum penna-marina subsp. *alpina*	FERNS	Blechnaceae	Not threatened
Blechnum vulcanicum	FERNS	Blechnaceae	Not threatened
Microsorum pustulatum	FERNS	Polypodiaceae	Not threatened
Polystichum neozelandicum subsp. *zerophyllum*	FERNS	Dryopteridaceae	Not threatened
Polystichum silvaticum	FERNS	Dryopteridaceae	Not threatened
Polystichum vestitum	FERNS	Dryopteridaceae	Not threatened
Pteridium esculentum	FERNS	Dennstaedtiaceae	Not threatened
Agrostis capillaris	MONOCOTYLEDONOUS HERBS	Agrostidinae	Exotic
Agrostis stolonifera	MONOCOTYLEDONOUS HERBS	Agrostidinae	Exotic
Anthoxanthum odoratum	MONOCOTYLEDONOUS HERBS	Phalaridinae	Exotic
Chionochloa rigida subsp. *rigida*	MONOCOTYLEDONOUS HERBS	Gramineae (Danthonieae)	Not threatened
Chionochloa rubra subsp. *cuprea*	MONOCOTYLEDONOUS HERBS	Gramineae (Danthonieae)	Not threatened
Cortaderia richardii	MONOCOTYLEDONOUS HERBS	Gramineae (Cortaderiinae)	Not threatened

Dactylis glomerata	MONOCOTYLEDONOUS HERBS	Poeae	Exotic
Deyeuxia avenoides	MONOCOTYLEDONOUS HERBS	Gramineae (Agrostidinae)	Not threatened
Deyeuxia youngii	MONOCOTYLEDONOUS HERBS	Gramineae (Agrostidinae)	Naturally Uncommon
Dichelachne crinita	MONOCOTYLEDONOUS HERBS	Gramineae (Agrostidinae)	Not threatened
Digitalis purpurea	MONOCOTYLEDONOUS HERBS	Scrophulariaceae	Exotic
Elymus solandri	MONOCOTYLEDONOUS HERBS	Gramineae (Hordeeae)	Not threatened
Festuca novae-zelandiae	MONOCOTYLEDONOUS HERBS	Gramineae (Poeae)	Not threatened
Glyceria fluitans	MONOCOTYLEDONOUS HERBS	Meliceae	Exotic
Poa colensoi (small tussock)	MONOCOTYLEDONOUS HERBS	Gramineae (Poeae)	Not threatened
Poa matthewsii	MONOCOTYLEDONOUS HERBS	Gramineae (Poeae)	Not threatened
Rytidosperma corinum	MONOCOTYLEDONOUS HERBS	Gramineae (Danthonieae)	Not threatened
Rytidosperma gracile	MONOCOTYLEDONOUS HERBS	Gramineae (Danthonieae)	Not threatened
Rytidosperma nigricans	MONOCOTYLEDONOUS HERBS	Gramineae (Danthonieae)	Not threatened
Rytidosperma pumilum	MONOCOTYLEDONOUS HERBS	Gramineae (Danthonieae)	Not threatened
Rytidosperma pumilum	MONOCOTYLEDONOUS HERBS	Gramineae (Danthonieae)	Not threatened
Trisetum youngii	MONOCOTYLEDONOUS HERBS	Gramineae (Aveninae)	Not threatened
Nematoceras longipetala	MONOCOTYLEDONOUS HERBS	Orchidaceae	Not threatened
Arthropodium candidum	MONOCOTYLEDONOUS HERBS	Liliaceae	Not threatened
Astelia nervosa	MONOCOTYLEDONOUS HERBS	Liliaceae	Not threatened
Bulbinella angustifolia	MONOCOTYLEDONOUS HERBS	Liliaceae	Not threatened
Centrolepis ciliata	MONOCOTYLEDONOUS HERBS	Centrolepidaceae	Not threatened
Juncus articulatus	MONOCOTYLEDONOUS HERBS	Juncaceae	Exotic
Juncus effusus	MONOCOTYLEDONOUS HERBS	Juncaceae	Exotic
Lemna (a) (; aff. *L. minor*; New Zealand)	MONOCOTYLEDONOUS HERBS	Lemnaceae	Not threatened
Libertia ixioides	MONOCOTYLEDONOUS HERBS	Iridaceae	Not threatened
Luzula banksiana var. *rhadina*	MONOCOTYLEDONOUS HERBS	Juncaceae	Not threatened
Luzula pumila	MONOCOTYLEDONOUS HERBS	Juncaceae	Not threatened
Luzula rufa	MONOCOTYLEDONOUS HERBS	Juncaceae	Not threatened
Phormium cookianum	MONOCOTYLEDONOUS HERBS	Hemerocallidaceae	Not threatened

Carex breviculmis	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Carex comans	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Carex coriacea	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Carex gaudichaudiana	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Carex sinclairii	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Carex wakatipu agg.	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Carpha alpina	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Isolepis aucklandica	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Isolepis basilaris	MONOCOTYLEDONOUS HERBS	Cyperaceae	Nationally Endangered
Oreobolus pectinatus	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened
Uncinia rubra	MONOCOTYLEDONOUS HERBS	Cyperaceae	Not threatened