



<b>Significant Natural Area Assessment</b>			
Project No: <i>11001/021</i>	Property Name: <i>Hillend Station</i>  Site Name: <i>Hillend SNA A</i>	Ecologist: <i>Dawn Palmer</i>  Date: <i>20 December 2011</i>	
Survey Undertaken By: <i>Dawn Palmer (NSN) and Ralph Henderson (QLDC).</i>		<u>Waypoint No (mid-point of survey area):</u> <i>1289648 E - 5036735N</i>	
LENZ Units: <i>N4.1d and Q2.2a</i>  Ecological District: <i>Wanaka</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Gully dissected hill slope.</i>	Slope: <i>15 to 30°</i>	Altitude: <i>480 to 740 m asl</i>	Aspect: <i>SW</i>
Threatened Environment Status: <i>N4.1d – Category 2 – Chronically threatened</i> <i>Q2.2a – Category 4 – Critically underprotected</i>		Area Size (ha): <i>30.23</i>	
Representativeness: <i>Beech forest</i> The silver beech fragment is one of only a few remaining in this portion of the Upper Clutha catchment. Pre-settlement beech forest would have dominated the cover from low elevations to the treeline at about 1100 masl (Q2.2a Environments). The beech forest remnant in SNA A is a representative fragment of the historically more widespread beech forests. Silver beech is and was associated with mesic, steep gullies and bluffs, the habitat in which it remains at this site.			
<i>Grey Shrubland</i> Bands of shrubland formerly covered mid to lower valley slopes (N4.1d Environments). Matagouri dominated the drier slopes while a more diverse mix of divaricating shrubland containing Coprosmas and Matagouri as well as kanuka and manuka were found in moist gullies and hill slopes. Within this SNA, the remaining shrubland community on the west facing aspects (true left) of the lower slopes is representative of the historical vegetation community. This community extends up slope into the Q2.2a Environment.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Falco novaezealandiae</i> “eastern” (eastern NZ Falcon)		At Risk – Recovering <sup>1</sup>	
<i>Olearia lineata</i> – NOT SEEN		At Risk - Declining <sup>2</sup>	

<sup>1</sup>Robertson HA, Dowding JE, Elliott GP, Hitchmough RA, Miskelly CM, O'Donnell CJF, Powlesland RG, Sagar PM, Scofield RP, Taylor GA. 2013: Conservation status of New Zealand birds, 2012. New Zealand Threat Classification Series 4. 22 p. Department of Conservation, Wellington, New Zealand.

<sup>2</sup> de Lange PJ, Rolfe JR, Champion PD, Courtney SP, Heenan PB, Barkla JW, Cameron EK, Norton DA, Hitchmough RA. 2013: Conservation status of New Zealand indigenous vascular plants, 2012. Department of Conservation, Wellington, New Zealand.

Provide onsite description of vegetation:

Coprosma-matagouri-Olearia shrubland with some elder and briar and a small pocket of silver beech forest at 700 masl.

Diversity is low and regeneration is sparse within the beech forest but there is good new growth within the crown of the trees present. Stock tracks pass under the canopy of the silver beech traversing the steep upper gully slopes.

The silver beech fringes and sub-canopy include *Coprosma dumosa*, *Coriaria sarmentosa*, *Polystichum vestitum*, *Carmichaelia petrei*, *Gaultheria antipoda*, *Coprosma rugosa*, *Coprosma propinqua*, *Leptospermum scoparium*, *Olearia odorata* and elder (*Sambucus nigra*\*). *Hieracium lepidulum* makes a substantial contribution to the ground cover both within the adjacent pasture and under the shade of the beech canopy.

The shrubland on the true right is manuka dominated but has been burnt with little obvious regeneration apart from bracken (viewed from the true left); charred stumps remain.

The shrubland on the true left is more diverse with areas of dense canopy and good ground litter present. Shrubland species include the widespread and common species *Coprosma rugosa*, *C. propinqua*, *Coprosma* species, *Aristotelia fruticosa*, *Olearia odorata*, *Melicytus alpinus*, *Discaria toumatou*. Within the grass sward and gaps *Elymus solandri*, *Muellerbeckia australis*, *Leucopogon fraseri* and *Poa colensoi* are common.

Degree of Modification:

Elder has invaded the beech and shrubland communities.

The ubiquitous sweet briar is present in the shrubland but does not dominate.

Burning has substantially cleared the native vegetation from the true right.

The entire catchment has been oversown with pasture grasses. *Hieracium lepidulum* is a common component of all communities.

Stock tracks were well defined through the beech forest and shrubland.

Provide onsite description of fauna habitat:

Lizards (*Oligosoma* spp.) were noted in the grassland on shrubland fringes.

Shrubland hosts exotic passerines, grey warbler and tomtits which are the prey of the Eastern NZ Falcon. A falcon was heard calling, before flying low and landing among rock outcrops near the ridge (GR 1289210E 5036820N) on the true left of the catchment. The vicinity of the grid reference provided should be checked more closely for nesting. The availability of shrubland habitat within a 5 kilometre radius of this sighting is limited rendering the shrubland communities present more valuable as habitat for prey species of the falcon.

Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices):

Vegetation clearance, browsing that prevents regeneration within the shrubland and beech forest.

Rarity:

The shrubland and forest provide habitat for the prey species of the Eastern Falcon, an 'at risk' species.

The shrubland lower within the tributary catchment falls within the land environment N4.1d. The threatened environment classification identifies this environment as having 18.6% of the indigenous cover remaining with just 2.3% of that being protected.

There is just one small patch of beech forest remaining within the catchment and it is comprised of silver beech (*Nothofagus menziesii*). The land comprising the mid to upper elevation slopes is classified as land environment Q2.2.a. The threatened environment classification system identifies the Q2.2a environment as having 39.92% of the indigenous vegetation remaining with just 5.07% protected.

Area Size and Shape (degree to which the area may be or is becoming self-sustaining):

The indigenous vegetation is confined to the relatively linear valley catchment and spreads up the true left slope from the riparian zone of the tributary.

Under the current management regime, the process of natural regeneration and spread from the existing patches of vegetation (beech forest or shrubland) may be limited by browsing and competition from pasture grasses (on moist slopes lower within the catchment).

New growth within the beech canopy suggests the trees are in good health, however poor recruitment under and around the canopy will limit the capacity for the patch to be self-sustaining in the long term without relief from browsing.

Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):

The landscape surrounding this SNA has been substantially cleared for the native cover. Small fragments of beech forest are found in the mid to upper reaches of this and other nearby tributary catchments of the Cardrona Valley, most of these forest patches are silver beech. A few also contain mountain beech which has a greater tolerance for cold and dry climates.

Where silver beech forests are found with other beech species, they tend to occupy the more moderately fertile (mesic) sites within catchments near bluffs and gorges<sup>3</sup>.

The tributary catchment has slopes with a predominantly north-west to south-east orientation. The greatest shrubland density is found on convex slopes with a southerly aspect.

Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?):

The presence of small patches of silver beech within this and other nearby gullies provides an indication of the historical distribution and diversity of beech forests. The presence of beech forest fragments are distinctive in this area given the loss of historical distribution.

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<sup>3</sup> Wardle, P (2001): Distribution of native forest in the upper Clutha district, Otago, New Zealand. Journal of Botany, 39:3, 435-446.

Connectivity (how is the site connected to surrounding communities/areas?):

The beech forest patches in this portion of the Lakes Ecological Region are found in just a few of the tributary catchments of the Cardrona River, the Motatapu catchment to the north and Luggate Creek catchment at the eastern end of the Pisa Range. Connectivity between forest patches is therefore very limited.

Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):

There is a small amount of regeneration under the silver beech canopy however this is hindered by browsing. Provided natural regeneration is not further impeded, the site is likely to be able to maintain its current state without intervening management. Winged seeds are heavy limiting the capacity for natural dispersal to the immediately surrounding and downstream slopes.

Shrubland species are predominantly pollinated by invertebrates with wind and birds being the mechanism of seed dispersal. Regeneration within and between pockets of shrubland is therefore possible, but also likely to be hindered by browsing and competition.

The shrubland is likely to possess sufficient resilience to maintain its current state.

Recommendation (Accept/Decline):

Accept silver beech forest patch in the Q2.2a Environment as a significant representative sample of the diversity of the formerly more widespread mixed beech forest community.

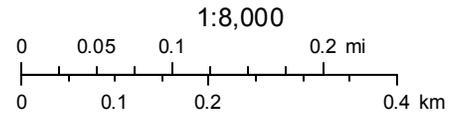
Accept the Coprosma-Matagouri – Olearia shrubland as a modified representative sample of the shrubland formerly more widespread within the N4.1d Environment and more particularly as vegetation hosting the prey species of the 'at risk' Eastern Falcon.

Figure 1: The area of potential significance - Hillend SNA A - F21A.



October 2, 2014

- Proposed Significant Natural Area
- Parcels
- Proposed Significant Natural Area



Please note the area shown is indicative and only for discussion purposes.



**Figure 2:** NZ Falcon sighted at SW end of line on ridge. 5 km radius line shown for scale for habitat considerations.

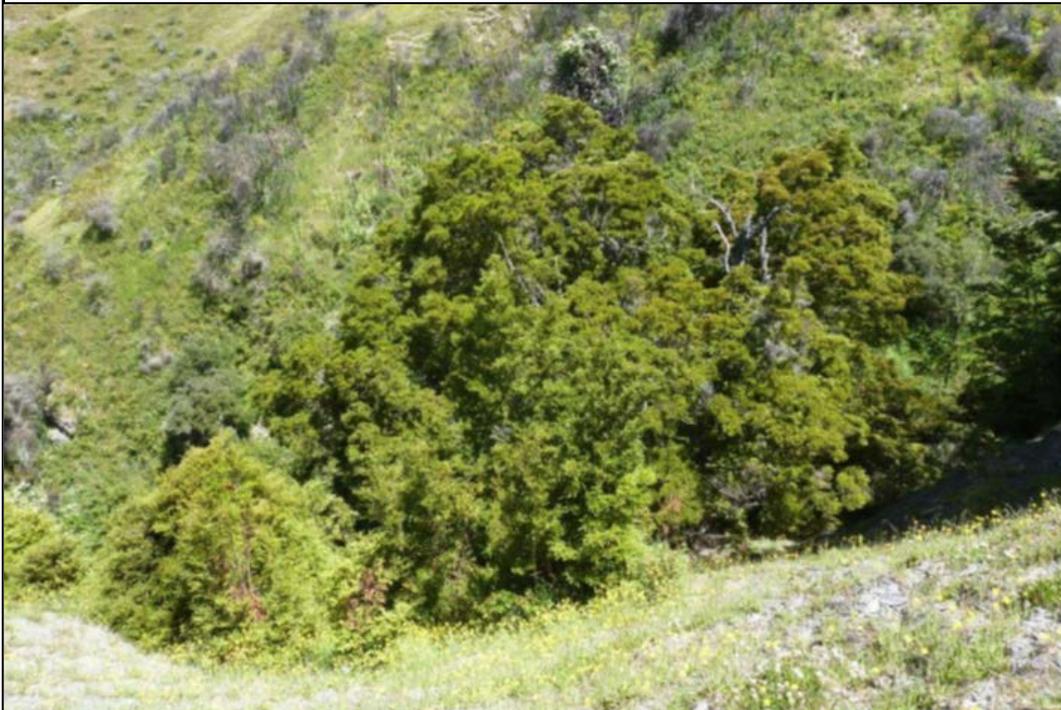


**Figure 3:** Hillend Station SNA A. Shrubland and Silver Beech forest in a tributary valley of the Cardrona River. NZ Falcon seen among rock outcrops left of the beech forest in the distant view. The stream is located between Timber Creek and Spotts Creek. Photographed from waypoint 19 (GR1290077E – 5036248N) view north west. Photograph: Dawn Palmer 20 December, 2011.



**Figure 4:** Above: inside silver beech forest from waypoint 21 (GR 1289345E 5037061N) view south; Photo by D Palmer 20 December 2011.

**Figure 5:** Below: view west to silver beech forest from waypoint 22 (1289386E 5037034N); Photo by D Palmer, 20 December 2011.





**Figure 6:** Above: view down valley south east from waypoint 22; Photos by D Palmer 20 December 2011.

**Figure 7:** Below: view south west towards rock outcrops where falcon seen from waypoint 22.





**Figure 8:** View northwest from waypoint 22 over upper extent of silver beech forest and Coprosma – Olearia shrubland; *Hieracium lepidulum* flowering within the pasture sward in the foreground. Photo by D Palmer 20 December 2011.