

## Appendix F – Schedule of Sites

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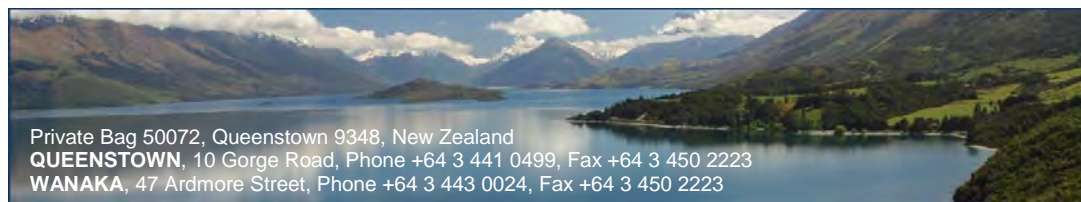
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Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223

Significant Natural Area Assessment			
Project No:  11001/010	Property Name: <i>Mt Earnslaw Station</i>  Site Name: <i>Mount Alfred Faces SNA C</i>	Ecologist: <i>Simon Beale</i>  Date: <i>23 May 2011</i>	
Survey Undertaken By: <i>Simon Beale and Neil Simpson</i>		<u>Waypoint No (mid-point of survey area):</u> <i>E: 214 4000</i> <i>N: 559 5000</i>	
LENZ Unit: <i>Q4.1c, Q2.1a, Q1.1d, P5.1e, Q1.1c, P5.1d</i> Ecological District: <i>Dart</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Hillslope</i>	Slope: <i>(&gt;20°)</i>	Altitude: <i>340 - 1000 m asl</i>	Aspect: <i>E - NE</i>
Threatened Environment Status: <i>Ranges from comparatively safe from clearing (Q1.1d, P5.1d, P5.1e) to critically underprotected (Q2.1a).</i>		Natural Area Size (ha): <i>323.43</i>	
Representativeness: Mixed beech forest, montane and sub-alpine shrubland, subalpine short tussockland. Moderate degree of representativeness.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed.</i>			
Provide onsite description of vegetation:			
Vegetation types: <ul style="list-style-type: none"> <li>• Mature mountain-red beech forest;</li> <li>• Mingimingi (<i>Coprosma propinqua</i>)- matagouri- manuka/bracken shrubland. Sub-dominant shrubs include <i>Corokia cotoneaster</i>, <i>Coprosma rugosa</i> and koromiko (<i>Hebe salicifolia</i>), along with emergent young broadleaved trees such as kohuhu (<i>Pittosporum tenuifolium</i>), <i>Griselinia littoralis</i>, lancewood, red matipo (<i>Myrsine australis</i>) and marbleleaf (<i>Carpodetus serratus</i>).</li> </ul>			
Structural Classes: Forest and shrubland.			
Shrubland Canopy: Mingimingi – matagouri – manuka.			
Shrubland Ground Cover: Prickly shield fern, tussock hawkweed.			
Shrubland Climbers/Vines: <i>Rubus schmidelioides</i> , <i>Muehlenbeckia australis</i> .			

<p>Degree of Modification: The area has experienced historical disturbance (fire), but has not been disturbed for a long period.</p> <p>Degree of Recruitment: Broadleaf species (kohuhu, <i>Griselinia littoralis</i>, lancewood, red matipo and marbleleaf) emergent within shrubland.</p> <p>Overall Health: The more extensive areas of shrubland associated with the lower slopes appear to be intact, impenetrable and have a closed canopy. Largely free of introduced weed species apart from some localised loose groupings of rowan and elderberry trees.</p> <p>Degree of Modification: The area has suffered from previous forest clearances such as fire as evident in the present forest/shrubland vegetation patterns.</p> <p>Overall Health: The shrubland is in good health by virtue of the extensive and relatively closed canopy.</p>
<p>Provide onsite description fauna habitat – species recorded or expected to be present: Beech forest and forest edges provides suitable habitat for nectivorous birds (tui and bellbird), insectivorous birds (South Island robin, rifleman, tomtit, fantail, grey warbler, brown creeper) along with silvereye, yellow crowned parakeet, long tailed cuckoo, morepork and Eastern falcon.</p> <p>Large beech trees provide suitable roosting and nest opportunities for long tailed bat.</p> <p>Shrubland provides suitable habitat for insectivorous birds (tomtit, fantail, grey warbler), Australasian harrier and Eastern falcon.</p> <p>The beech forest margins and shrublands provide high quality feeding habitat for Eastern falcon.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): The area is largely free of woody weeds. Fire is the greatest threat to the integrity of the indigenous vegetation cover.</p>
<p>Rarity: The beech forest and shrubland is not uncommon in the Dart Ecological District. Both vegetation types and terrain likely to provide suitable habitat for threatened avifauna (Eastern falcon, rifleman) and long tailed bat.</p>
<p>Area Shape and Area/Edge Ratio: The large expanses of forest and shrublands ensure self-sustaining/successional processes despite the high area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Beech forest and shrubland occurs over wide altitudinal range. The area contains diverse assemblages of shrubland species. The forest/shrubland mosaics contribute significantly to the vegetation pattern.</p>

<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Highly distinctive in terms of the varied vegetation types associated with hill slopes, bluff systems, lake shore and riparian margins. Old specimens of matagouri exist near Diamond Creek.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>Beech forest and shrubland exhibits high degree of connectivity with beech forest and shrubland on western side of Mt Alfred within existing SNA, and large sedgeland associated with Diamond Creek and Lake Reid.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The forest and shrubland is in good condition. Forest edges generally merge with shrubland cover minimising edge effects. Large size of area and floristic diversity contributes to its resilience. Regeneration and succession is evident throughout area with young broadleaved trees, notably kohuhu emergent in many parts of the shrubland. Expansion of beech forest into shrubland is taking place.</p>
<p>Recommendation (Accept/Decline):</p> <p>We consider this area should be designated as a SNA in view of the following ecological attributes:</p> <ul style="list-style-type: none"> <li>• The diversity of vegetation types and landform features;</li> <li>• The floristic diversity of the shrublands;</li> <li>• The wide altitudinal range and vegetation sequences;</li> <li>• The variety of habitats the area affords to indigenous fauna, providing suitable habitat for three threatened species of native bird and long tailed bat;</li> <li>• The good condition of the vegetation with large areas of forest and shrubland with closed canopies and regeneration and succession processes evident.</li> </ul>



Figure 1a: The area of potential significance – Mt Alfred Faces SNA C – A10C\_1,2.

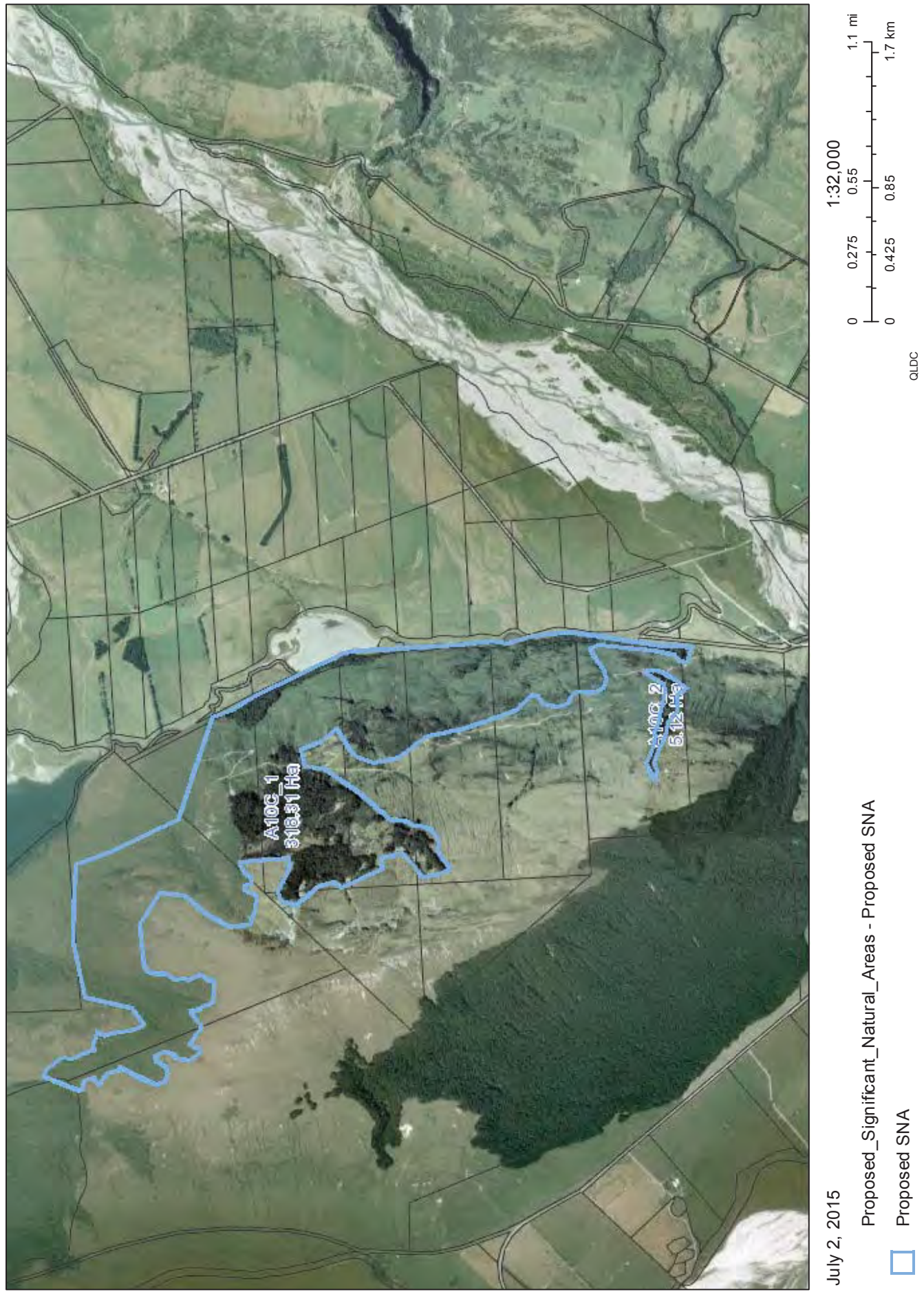




Figure 1b: The area of potential significance – Mt Alfred Faces SNA C – A10C\_2



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





**Figure 2:** Panoramas of Mt Alfred, from near Mt Earnslaw Station (top) and from River Jordan picnic area (middle and bottom).

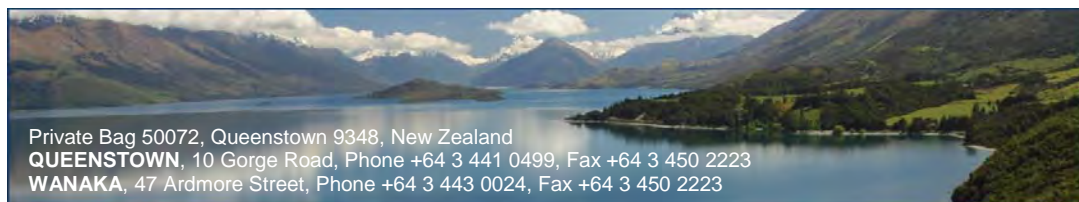


**Figure 3:** View of shrubland from near Diamond Lake outlet. Numerous kohuhu trees evident within shrubland on lower slopes.



**Figure 4:** Close up view of shrubland abutting valley floor between Diamond Lake and Lake Reid.





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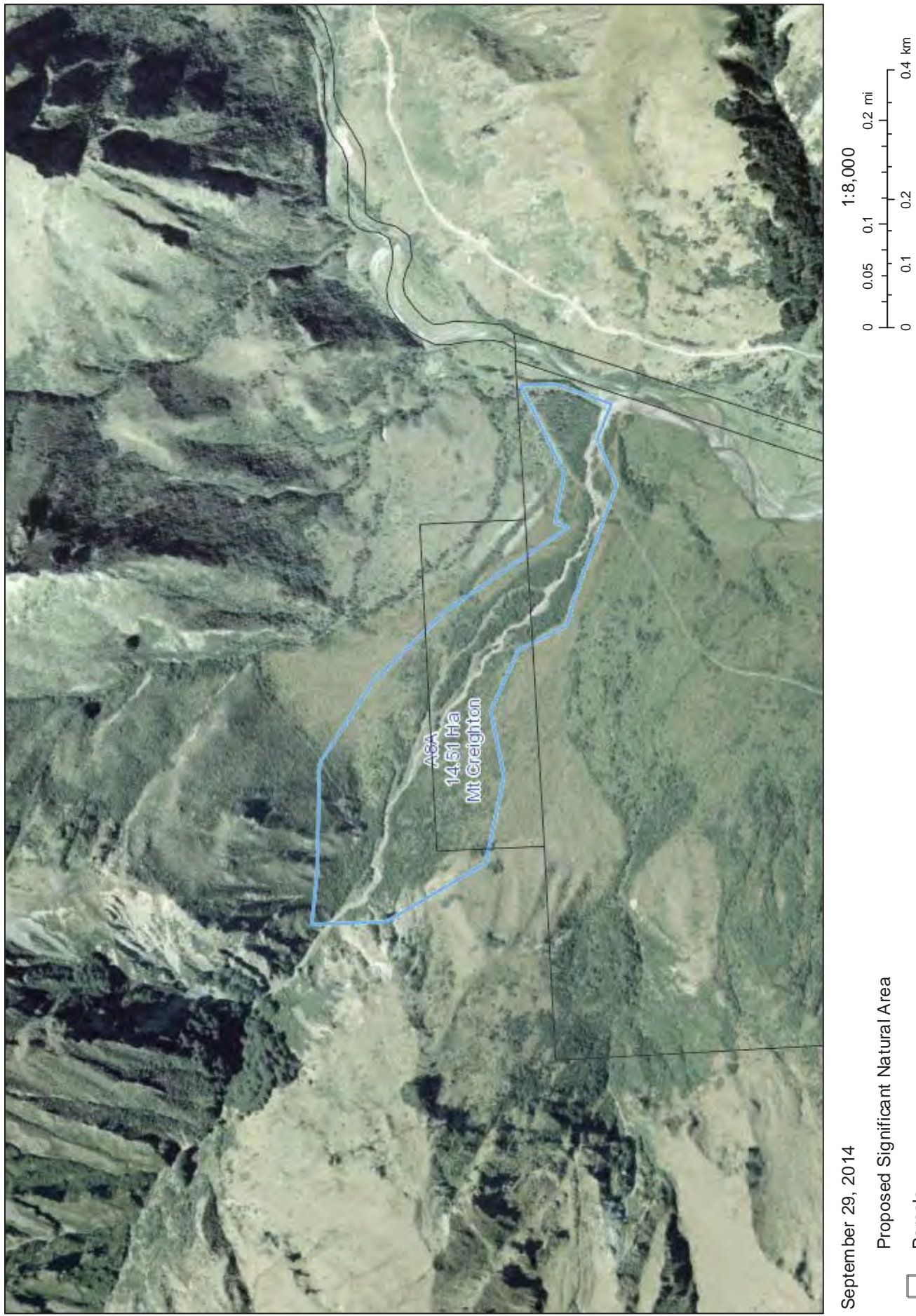
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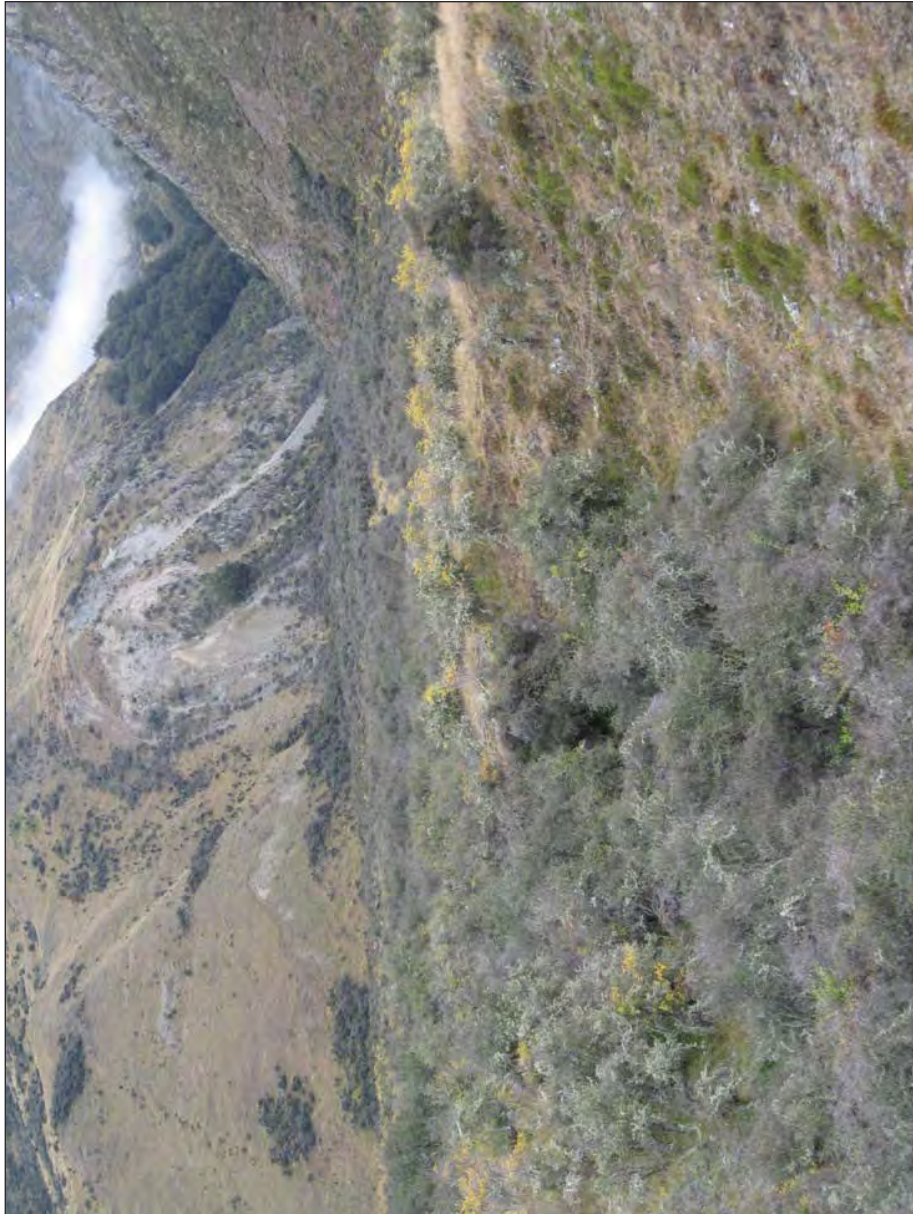
Significant Natural Area Assessment			
Project No:  11001/008	Property Name: <i>Mt. Creighton</i>  Site Name: <i>Fan Creek Shrublands SNA A</i>	Ecologist: <i>N. Simpson</i>  Date: 14/04/11	
Survey Undertaken By: <i>N. Simpson and G. Davis.</i>		Waypoint No (mid-point of survey area): <i>E: 510 Topo50 CB 10</i> <i>N: 098</i>	
LENZ Unit: <i>K3.2a</i>  Ecological District: <i>Shotover</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Toe slope and fan.</i>	Slope: <i>10 – 30 %</i>	Altitude: <i>540 m</i>	Aspect: <i>East</i>
Threatened Environment Status: <i>At Risk (20-30% left)</i>		Natural Area Size (ha): <i>14.51</i>	
Representativeness: Representative of grey shrubland on alluvial fan.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Leonohebe cupressoides</i>		Threatened - Nationally Endangered	
<i>Falco novaeseelandiae</i> "eastern" (eastern NZ falcon)		At Risk - Recovering	
Provide onsite description of vegetation:			
Vegetation type: Grey shrubland. Old matagouri with <i>Olearia odorata</i> , <i>Coprosma propinqua</i> , <i>Aristotelia fruticosa</i> , <i>Carmichaelia petriei</i> , briar. Very little old matagouri left in the district.			
Degree of Modification: Modified by fire and grazing, but good example of this shrubland.			
Degree of Recruitment: Little evidence of regeneration of indigenous species i.e. slow recruitment. Influenced by an understorey of introduced grasses.			
Overall Health: Healthy, still grazed.			
Provide onsite description fauna habitat –species recorded or expected to be present: Fauna typical of open shrubland in grassland. Expect a variety of indigenous bird species such as silvereye, tomtit and fantail, in addition to a range of introduced species. All will support falcon populations. In addition, <i>Olearia</i> is present, which is a host plant to a specific suite of indigenous invertebrates.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Threats include increased grazing pressure, fire and wild conifers.</p>
<p>Rarity:</p> <p>This community with its old, large-trunked matagouri is quite rare. Indigenous vegetation within this LENZ environment covers 20-30% of its original extent and is listed as “at risk” under the threatened environment classification.</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>Fan is connected to good shrubland on steep hill slopes behind with mountain beech nearby.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Typical grey shrubland species. Not particularly diverse.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Distinct because of its age.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>Connected to surrounding shrubland and beech forest.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Sustainable.</p>
<p>Recommendations (Accept/Decline):</p> <p>We consider this area should be considered for designation as an SNA based on the following values:</p> <ul style="list-style-type: none"> <li>• Important passerine habitat that is critical for maintenance of falcon populations.</li> <li>• Contains species that are specific hosts to a range of indigenous invertebrates (e.g. Olearia).</li> <li>• Contains a good population of old mature matagouri.</li> </ul>

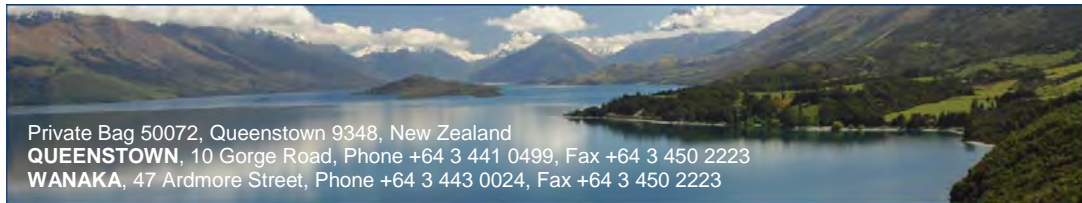
Figure 1: The area of potential significance - Fan Creek Shrublands SNA A - A8A







**Figure 2:** Fan Creek Shrublands.



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Significant Natural Area Assessment			
Project No:  11001/008	Property Name: <i>Mt. Creighton</i>  Site Name: <i>Lake Face Shrublands SNA B</i>	Ecologist: <i>G. Davis.</i>  Date: <i>16/04/11</i>	
Survey Undertaken By: <i>N. Simpson and G. Davis.</i>		Waypoint No (mid-point of survey area): <i>N: 4998569.8</i> <i>E: 1243301.0</i>	
LENZ Unit: <i>Q2.2a, Q2.2b, Q2.1b and P5.1e</i>  Ecological District: <i>Shotover</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Steep mountain faces.</i>	Slope: <i>20 – 30 %</i>	Altitude: <i>400 – 700 m</i>	Aspect: <i>Mainly westerly</i>
Threatened Environment Status: <i>Critically underprotected (Q2.2a, Q2.2b, Q2.1b) and Less reduced &amp; better protected (P5.1e).</i>		Natural Area Size (ha): <i>43.02</i>	
Representativeness: Broadleaf indigenous hardwoods are representative of seral (i.e.mid successional community) vegetation on the lake faces of Lake Wakatipu.			
Are there threatened species expected 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	
Provide onsite description of vegetation:			
Vegetation type: Broadleaf indigenous hardwood community. Common species within this community include: broadleaf, Olearia, cabbage tree, Pseudopanax sp., marble leaf and Coprosma spp..			
Degree of Modification: Thought to be modified from the original beech forest by fires, however there are large areas where the soil depth is skeletal and it is possible that the manuka woodland may be a dominant (i.e. climax) community on these sites.			
Degree of Recruitment: High – strongly regenerating, indicating high levels of recruitment into the community.			
Overall Health: Good health – these communities a regenerating strongly along the lake faces where disturbance from pastoral activities are limited.			

Provide onsite description fauna habitat – species recorded or expected to be present: Expected fauna is that typical of broadleaf indigenous hardwood habitat, which includes a range of native insectivorous and frugivorous birds, as well as the Eastern falcon.
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Threats to the vegetation include: fire, wilding pine spread, and spray from neighboring vegetation clearing operations.
Rarity: The threatened environment classification identifies the Q2.2a, Q2.2b, Q2.1b and P5.1e environments to have 39.92%, 44.68%, 66.39%, and 86.02% indigenous vegetation cover remaining respectively. These four environments have 5.07%, 1.96%, 4.72%, and 32.12% protected respectively.
Area Shape and Area/Edge Ratio: While the edge to area ratio is relatively high, given the advanced stage of regeneration along with a closed canopy, the area is self-sustaining.
Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Broadleaf indigenous hardwood forests are relatively diverse systems and provide excellent habitat for a range of insectivorous and frugivorous birds.
Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?): The indigenous broadleaf hardwood community is a distinctive seral (mid successional community) vegetation of the lake faces of Lake Wakatipu.
Connectivity (how is the site connected to surrounding communities/areas?): Well connected to lakeshore forest/shrubland.
Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): Sustainable as a largely seral plant community that will eventually give way to mountain beech forest.
Recommendations (Accept/Decline): We consider this area should be designated as a Significant Indigenous Vegetation and Fauna Habitat in view of the following ecological attributes: <ul style="list-style-type: none"> <li>• Broadleaf indigenous hardwoods support a diverse range of indigenous bird species, including the 'At Risk' Eastern falcon;</li> <li>• Advanced stage of regeneration with a closed canopy – clear evidence of natural successional processes in place; and,</li> <li>• Contiguous with lakeshore shrublands.</li> </ul>



Figure 1: The area of potential significance - Lake Face Shrublands SNA B - A8B.

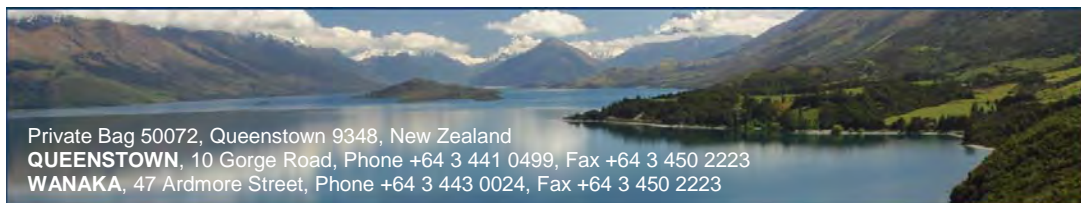


Please note the area shown is indicative and only for discussion purposes.



**Figure 2:** Mt Creighton Lake Faces (looking south toward Rat Point).





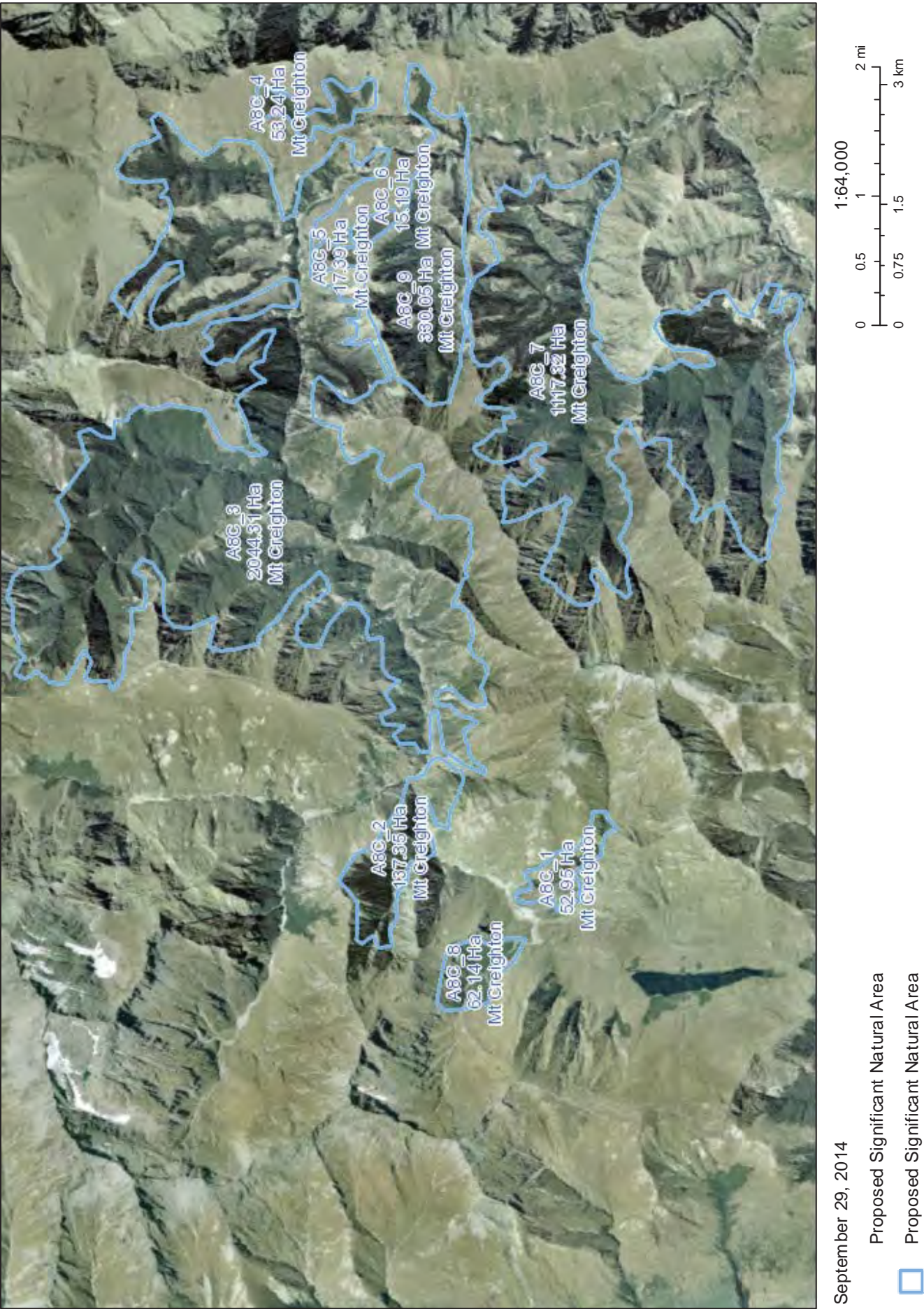
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Significant Natural Area Assessment			
Project No: 11001/008		Property Name: <i>Mt. Creighton</i>  Site Name: <i>Manuka Shrublands SNA C</i>	Ecologist: <i>N. Simpson.</i>  Date: 14/04/11
Survey Undertaken By: <i>N. Simpson and G. Davis.</i>		Waypoint No (mid-point of survey area): <i>See plan attached.</i>	
LENZ Unit: <i>Q1.1c and Q1.2a</i> Ecological District: <i>Shotover and Richardson</i>		Photo No.(s): <i>See photos attached.</i>	
Topography: <i>Steep mountain faces.</i>	Slope: <i>20 – 60 %</i>	Altitude: <i>600 – 900 m</i>	Aspect: <i>Various.</i>
Threatened Environment Status: <i>Underprotected (Q1.1c) and Comparatively safe from clearance (Q1.2a)</i>		Natural Area Size (ha): <i>3829.94</i>	
Representativeness: Extensive shrublands of manuka providing a nursery for a return to the original mixed beech forest with manuka shrubland on outcrops.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Falco novaeseelandiae</i> “eastern” (eastern NZ falcon)		At Risk - Recovering	
<p>Provide onsite description of vegetation:            Please note a ground survey of the sites was not possible given the steepness of the terrain and the large areas of shrubland involved. All information provided herein is based on an assessment from a helicopter and the ecologists understanding of the vegetation communities. This assessment relates to the following areas of shrubland – Butchers, Gills, Deadhorse, Montgomerys, Moonlight Creek, and Lake Luna East Catchments.</p> <p>Vegetation type: Beech Forest, Manuka woodland.</p> <p>Structural Class: Forest, Shrubland.</p> <p>Manuka woodland on generally steep to very steep mountain slopes and adjoining large areas of mountain beech forest which is expected to gradually expand to replace much of the shrubland in time.</p> <p>Degree of Modification: Thought to be modified from the original beech forest by fires, however there are large areas where the soil depth is skeletal and it is possible that the manuka woodland may be a dominant (climax) community on these sites.</p> <p>Degree of Recruitment: High.</p> <p>Overall Health: Closed canopy forest - appears to be in very good health and all ecological processes expected to be functioning.</p>			

Provide onsite description fauna habitat – species recorded or expected to be present: Fauna typical of beech forest and shrubland.
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Fire is the obvious threat to the vegetation. Wilding pines are also a potential threat.
Rarity: Not rare, but the most extensive area of this vegetation community in the Ecological District. The remaining indigenous vegetation cover in the associated LENZ units exceed 90% of its original extent.
Area Shape and Area/Edge Ratio: Large areas, generally surrounded by beech forest and tall tussock grassland at higher elevations.
Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Not particularly diverse but good habitat for insects and birds.
Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?): Present on some very steep, rugged mountain land. Skeletal soils supporting manuka woodlands are a distinctive feature of this area.
Connectivity (how is the site connected to surrounding communities/areas?): Well connected to other indigenous communities.
Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): Sustainable as a largely seral plant community that will eventually give way to mountain beech forest.
Recommendations (Accept/Decline): We consider this area should be designated as a Significant Indigenous Vegetation and Fauna Habitat in view of the following ecological attributes: <ul style="list-style-type: none"> <li>• The manuka woodland covers extensive continuous areas and is considered a healthy functioning ecosystem.</li> <li>• Expected to support strong populations of invertebrates, passerines and falcon.</li> <li>• Closed canopy woodland, all ecological processes functioning such as regeneration recruitment and provision of habitat for invertebrates, lizards and birds.</li> <li>• Very distinctive community often situated on thin skeletal soils.</li> <li>• Integral component of valley floor to alpine environment natural vegetation sequence.</li> </ul>



Figure 1: The area of potential significance - Manuka Shrublands SNA C - A8C\_1-9



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





**Figure 2:** Moonlight Creek Catchment (looking west).



**Figure 3:** Representative photograph of manuka woodland (Dead Horse Creek Catchment).

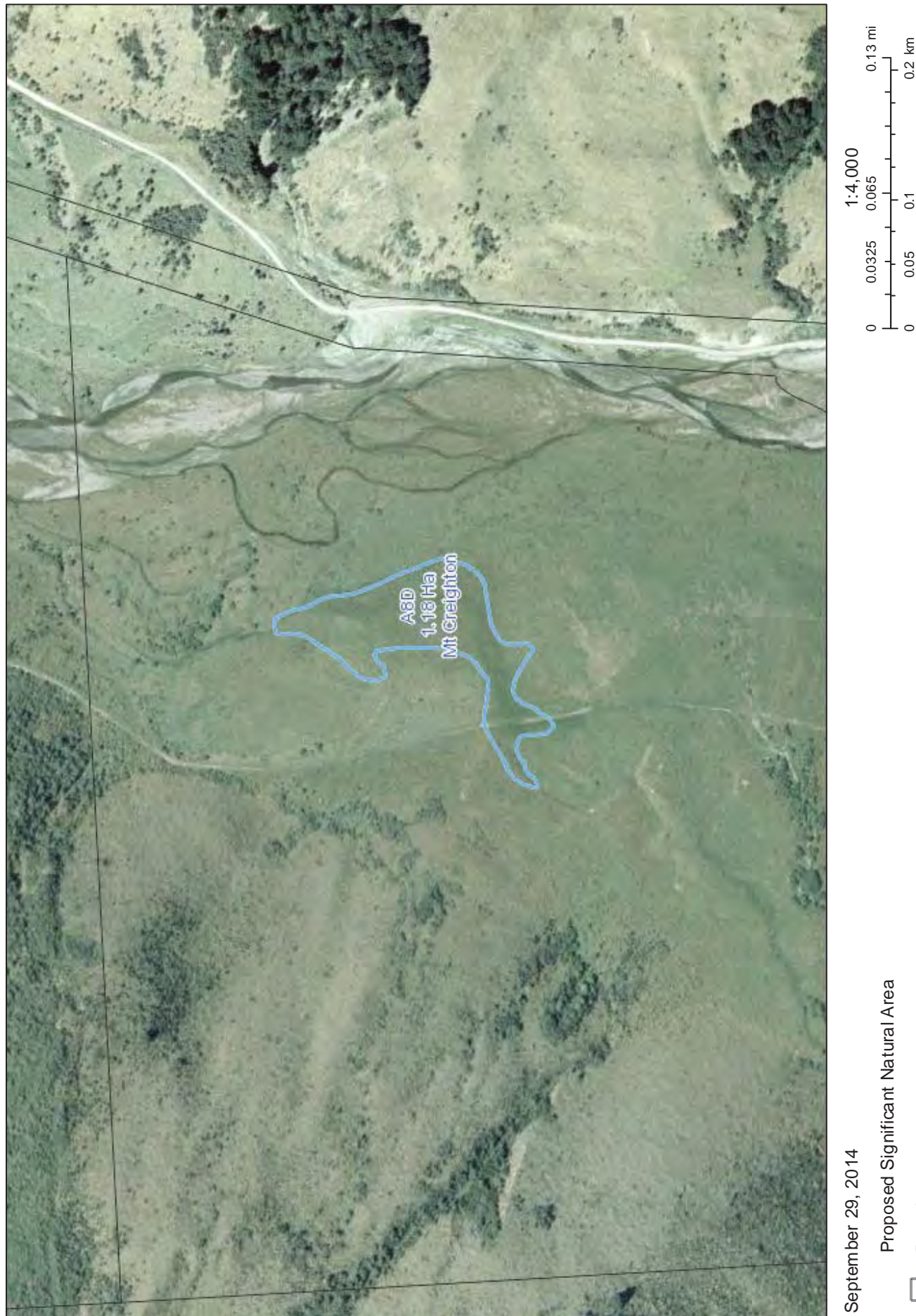
### Significant Natural Area Assessment

Project No:  11001-008	Property Name: <i>Mt Creighton</i>  Site Name: <i>Moke Creek Swamp Wetland SNA D</i>	Ecologist: <i>N. Simpson &amp; G. Davis.</i>  Date: 14/4/11
Survey Undertaken By: <i>N. Simpson &amp; G. Davis.</i>		Waypoint No (mid-point of survey area): <i>E: 2161130 N: 5571000</i>
LENZ Unit: <i>M 2.2b</i> Ecological District: <i>Shotover</i>		Photo No.(s): <i>See below.</i>
Topography: <i>River terrace.</i>	Slope: <i>0.5</i>	Altitude: <i>519 m asl</i> Aspect: <i>Flat</i>
Threatened Environment Status: <i>At Risk</i>		Natural Area Size (ha): <i>1.18</i>
Representativeness: A wetland community is representative of this environment however historical pastoral activities such as drainage and grazing have significantly degraded the condition of the wetland.		
Are there threatened species expected in the survey area? If so, list species and threat status.		
Threatened Species		Threat Status
<i>Carex berggrenii</i>		At Risk - Naturally Uncommon
<i>Myosotis tenericaulis</i>		At Risk - Naturally Uncommon
Provide onsite description of vegetation:		
Vegetation type: Wetland Marsh - Sedgeland/rushland that is largely exotic but with a range of indigenous species especially around the edges that include <i>Carex berggrenii</i> , introduced rushes, some Sphagnum moss, <i>Prunella vulgaris</i> , <i>Gnaphalium laterale</i> , <i>Acaena inermis</i> , <i>Gonocarpus micranthus</i> , <i>Hydrocotyle sulcata</i> , <i>Carex gaudichaudiana</i> and mosses.		
Degree of Modification: Highly modified with numerous introduced species dominating. Grazed and trampled.		
Degree of Recruitment: Low.		
Overall Health: Some drainage has occurred in the past but is no longer effective. Under present management style there is unlikely to be much change in the foreseeable future.		
Provide onsite description fauna habitat – species recorded or expected to be present: Common species of open country birds and insects.		



<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Threats to the site are long grazing history by cattle and further drainage.</p>
<p>Rarity:</p> <p>Wetlands are classed as threatened and rare. The proposed National Policy Statement on Indigenous Biodiversity recognises the importance of protecting our remaining wetlands and proposes that wetland vegetation and habitat is considered significant under regional and territorial authority regulatory documents (e.g. District Plans).</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>The wetland is of a reasonable size and is considered self-sustaining under current hydrological regime.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Low diversity.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Presence of <i>Carex berggrenii</i>, an 'At Risk' species, is a notable feature. It also occurs on the damp river terrace nearby.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>Good connection with surrounding rough pasture.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Providing the current hydrological regime is maintained the condition of the wetland is expected to be maintained.</p>
<p>Recommendation (Accept/Decline):</p> <p>Whilst we recognise the ecological values of Moke Creek wetland are degraded, wetlands are listed under the proposed National Policy Statement as significant and the wetland does have some indigenous values of note (in particular the presence of <i>Carex berggrenii</i>). The combination of the size of the wetland, the threatened nature of the wetland systems and presence of a rare plant species provide support for further consideration of the site as Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Moke Creek Swamp Wetland SNA D - A8D.

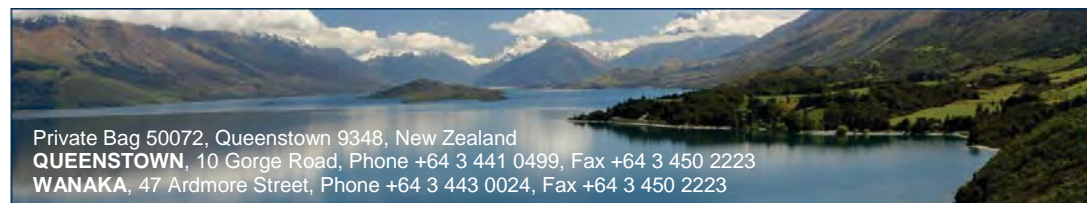


Please note the area shown is indicative and only for discussion purposes.





**Figure 2:** Photo of wetland taken from helicopter.



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Significant Natural Area Assessment									
Project No:  11001/023	Property Name: <i>Closeburn Station</i>  Site Name: <i>Closeburn SNA A</i>	Ecologist: <i>D. Palmer</i>  Date: <i>23 June 2011</i>							
Survey Undertaken By: <i>Dawn Palmer, Ralph Henderson and Neill Simpson.</i>		Waypoint No (mid-point of survey area): <i>1248900E 5001255N</i>							
LENZ Units: <i>Q2.2a</i>  Ecological District: <i>Shotover District.</i>		Photo No.(s) <i>No photos.</i>							
Topography: <i>Strongly rolling slopes</i>	Slope: <i>16-20°</i> <i>Strongly rolling</i>	Altitude: <i>515 m asl</i>	Aspect: <i>East to South-East</i>						
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>32.45</i>							
<p><b>Representativeness:</b>  Historically, the montane areas of the Shotover Ecological District were dominated by mixed beech forest. Pockets of mountain, red, and silver beech remain in the nearby Mount Creighton Scenic Reserve and lake facing reserves, elsewhere beech forest remains as isolated fragments.</p> <p>The large area of shrubland on the south western slopes above Lake Dispute is dominated by manuka and Coprosma, a common seral stage shrubland community where beech forest has been cleared.</p> <p>The regenerating shrubland provides a representative example of seral stage succession from shrubland to beech forest vegetation.</p>									
<p><b>Are there threatened species expected/ identified in the survey area?</b> If so, list species and threat status.</p> <table border="1"> <thead> <tr> <th>Threatened Species</th> <th>Threat Status</th> </tr> </thead> <tbody> <tr> <td><i>Falco novaezealandiae</i> "eastern" (eastern NZ Falcon) (not seen)</td> <td>At Risk - Recovering</td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>				Threatened Species	Threat Status	<i>Falco novaezealandiae</i> "eastern" (eastern NZ Falcon) (not seen)	At Risk - Recovering		
Threatened Species	Threat Status								
<i>Falco novaezealandiae</i> "eastern" (eastern NZ Falcon) (not seen)	At Risk - Recovering								
<p><b>Provide onsite description of vegetation:</b>  The large area of shrubland on the south western slopes above Lake Dispute is dominated by manuka and <i>Coprosma propinqua</i>.</p> <p><b>Degree of Modification:</b>  The area of Manuka-Coprosma shrubland on the slopes southwest of the lake is adjacent to an area of residential development and is contiguous with the Manuka shrubland extending into the Mount Creighton Scenic Reserve.</p> <p>The catchment was retired from grazing following tenure review, and has not been grazed for 4 years.</p>									

**Overall Health:**

While modified by land clearance and pastoral use, the vegetation within the Lake Dispute catchment is regenerating.

**Provide onsite description of fauna habitat:**

The shrubland communities are likely to provide habitat and host plants for a range of indigenous invertebrates. Invertebrates also provide food for indigenous and exotic passerines which are in turn the prey of the New Zealand falcon thought to hold a territory in the surrounding hill country. The vegetation within the catchments of Lake Dispute, Mount Creighton and Moke Lake to the north of the SNA provide for the needs of the falcon with the shrubland considered here making a relatively minor contribution.

The potential habitat of herpetofauna was not investigated during the June survey.

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

The shrubland on the rolling hillside south west of Lake Dispute are classified as Q2.2a, a critically under protected environment (>30% left and <10% protected 39.92 % indigenous cover remaining 5.07% protected).

The Manuka-Coprosma dominated shrubland on the slopes south and west of Lake Dispute straddle the boundary of Closeburn Station (south) and public conservation land.

Where they are on private land they may be vulnerable to progressive clearance as fire breaks are fortified by removal of "fuel" and the replacement of Manuka with lawn or grassland.

**Rarity:**

No rare species are known to occur within the area of shrubland identified for assessment.

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

The shrubland is contiguous with the adjacent regenerating shrubland, which fringe beech forest in the Mount Creighton Scenic Reserve.

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

The Manuka-Coprosma shrubland provides structural and species diversity associated with the processes of natural regeneration, and as previously noted, is contiguous with the shrubland within the adjacent scenic reserve.

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

The shrubland did not contain any known distinctive ecological characteristics other than being on the fringe of a large area of regenerating beech forest protected within the adjacent reserve.

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

Within the catchment of Lake Dispute habitats range from lake margin through regenerating shrubland into tussock grassland on the open tops of Mount Hanley. Indigenous vegetation is discontinuous around the lake and throughout the valley however, the shrubland on the hill slope south-west of Lake Dispute straddles the boundary and is contiguous with the adjacent regenerating shrubland fringing the beech forest in the Mount Creighton Scenic Reserve to the west.

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

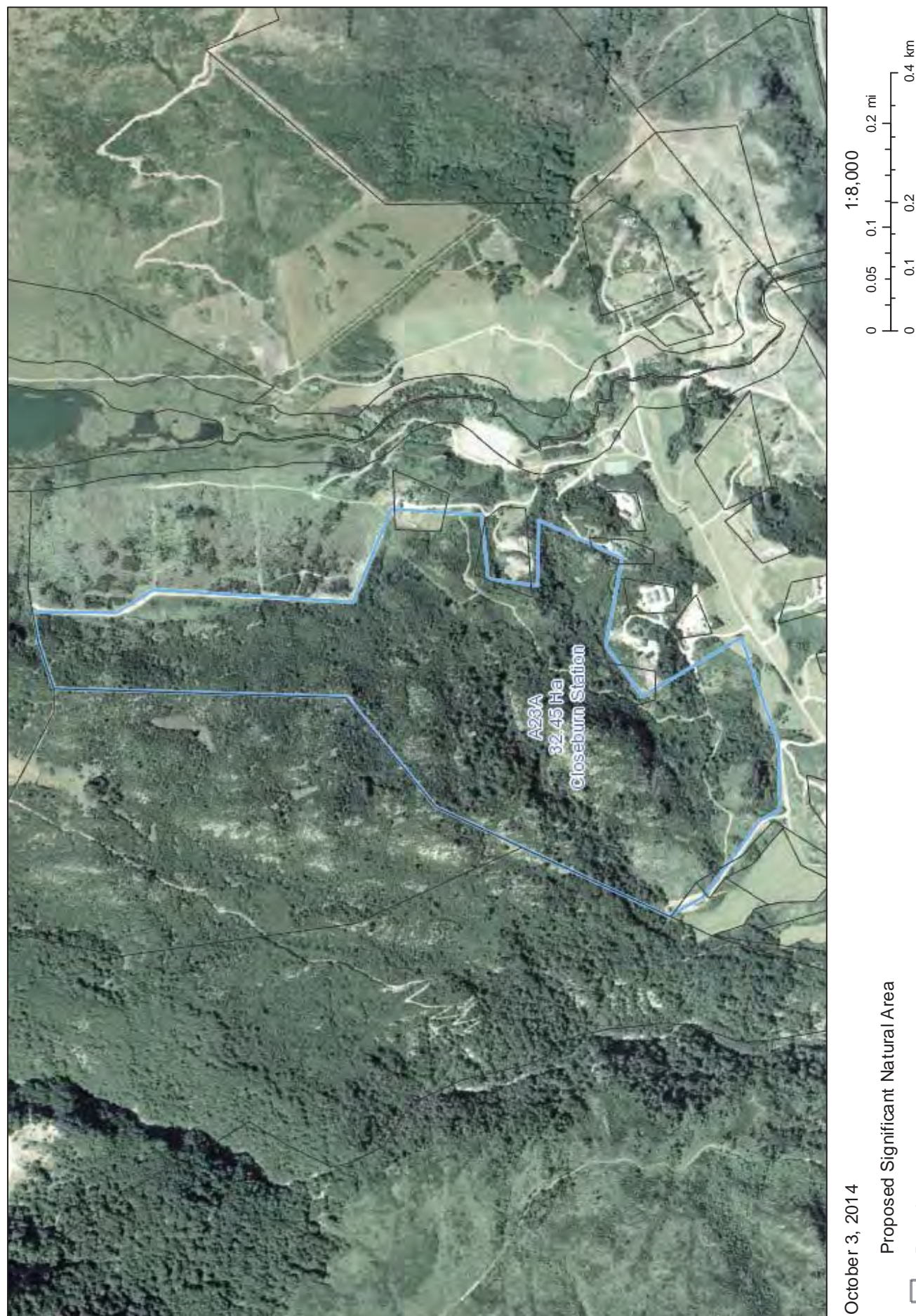
The shrubland vegetation is continuous with a large tract of regenerating manuka dominated shrubland which grades into mature beech forest on public conservation land to the west within the Twelve Mile Creek catchment. In the absence of fire or additional clearance, it poses sufficient integrity to maintain its condition and continue to support the processes of natural regeneration.

**Recommendation (Accept/Decline):**

Accept the shrubland area within the Closeburn Station as an SNA given its contiguous nature with regenerating shrubland and beech forest communities in the adjacent reserve.



Figure 1: The area of potential significance - Closeburn SNA A - A23A.



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

<b>Significant Natural Area Assessment</b>			
Project No: <i>11001/003</i>	Property Name: <i>Mt Burke</i>  Site Name: <i>Mt Burke SNA A</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>2 September 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 220 3222</i> <i>N: 561 7705</i>	
LENZ Unit: <i>N5.1c</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Hillslope</i>	Slope: <i>&gt;25°</i>	Altitude: <i>500 - 760 masl</i>	Aspect: <i>SW</i>
Threatened Environment Status: <i>Acutely threatened.</i>		Area Size (ha): <i>8.7</i>	
Representativeness: Historically kanuka woodland was a dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District, Lakes Ecological Region, and N5.1c environments.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed</i>			
Provide onsite description of vegetation:			
Vegetation type: Shrubland consisting of kanuka ( <i>Kunzea ericoides</i> ), manuka ( <i>Leptospermum scoparium</i> ), matagouri ( <i>Discaria toumatou</i> ), kowhai ( <i>Sophora</i> sp.), briar ( <i>Rosa rubiginosa</i> ).			
Degree of Modification: The area has experienced historical disturbance (fire), but has not been disturbed for a long period. Rabbits are an ongoing presence effecting regeneration and the understorey vegetation.			
Overall Health: The shrubland is largely intact and is dominated by mature indigenous species with a minor introduced component of briar.			
Provide onsite description of fauna habitat: The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon.			
Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): Key threats include grazing of regenerating shrubland and the risk of inadvertent events such as fire given the use of Stevensons Arm for recreation boating.			



<p>Rarity: The threatened environment classification identifies the N5.1c environment to have 2.7% indigenous vegetation cover remaining with 0.8% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The size and shape of the shrubland is dictated by ecological processes rather than pastoral activity and is therefore inherently self-sustaining.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The shrubland contains a diverse range of the grey shrubland species and is notable for the presence of a large number of healthy kowhai.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The shrubland is distinctive within the ecological district for the population of kowhai within the shrubland. Many of these shrublands are dominated by matagouri and briar.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The shrubland is directly connected to regenerating indigenous hardwood shrubland and kanuka woodland situated further upstream in the East Wanaka Creek. The shrubland is also connected to other regenerating kanuka woodland that is situated outside the acutely threatened environment. There is also an ecological connection with Stevensons Island. Stevensons Island is dominated by kanuka woodland and there is likely to be movement of birds, seeds and pollen between the two areas.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The shrubland is currently in good condition with developed stands of mature kanuka woodland, however regeneration will be effected by the presence of rabbits and any other grazing that may occur.</p>
<p>Recommendation (Accept/Decline): The woodland is a good example of vegetation that is representative of this acutely threatened environment. Given the high level of representativeness and rarity of quality indigenous vegetation cover within the N5.1c LENZ environment, we consider the area should be considered for designation as a SNA.</p>

Figure 1: The area of potential significance - Mt Burke SNA A - B3A.



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





**Figure 2:** A representative photograph of the proposed '*Mt Burke SNA A*'.



**Figure 3:** A representative photograph of the proposed '*Mt Burke SNA A*'.



**Figure 4:** A representative photograph of the proposed '*Mt Burke SNA A*'.

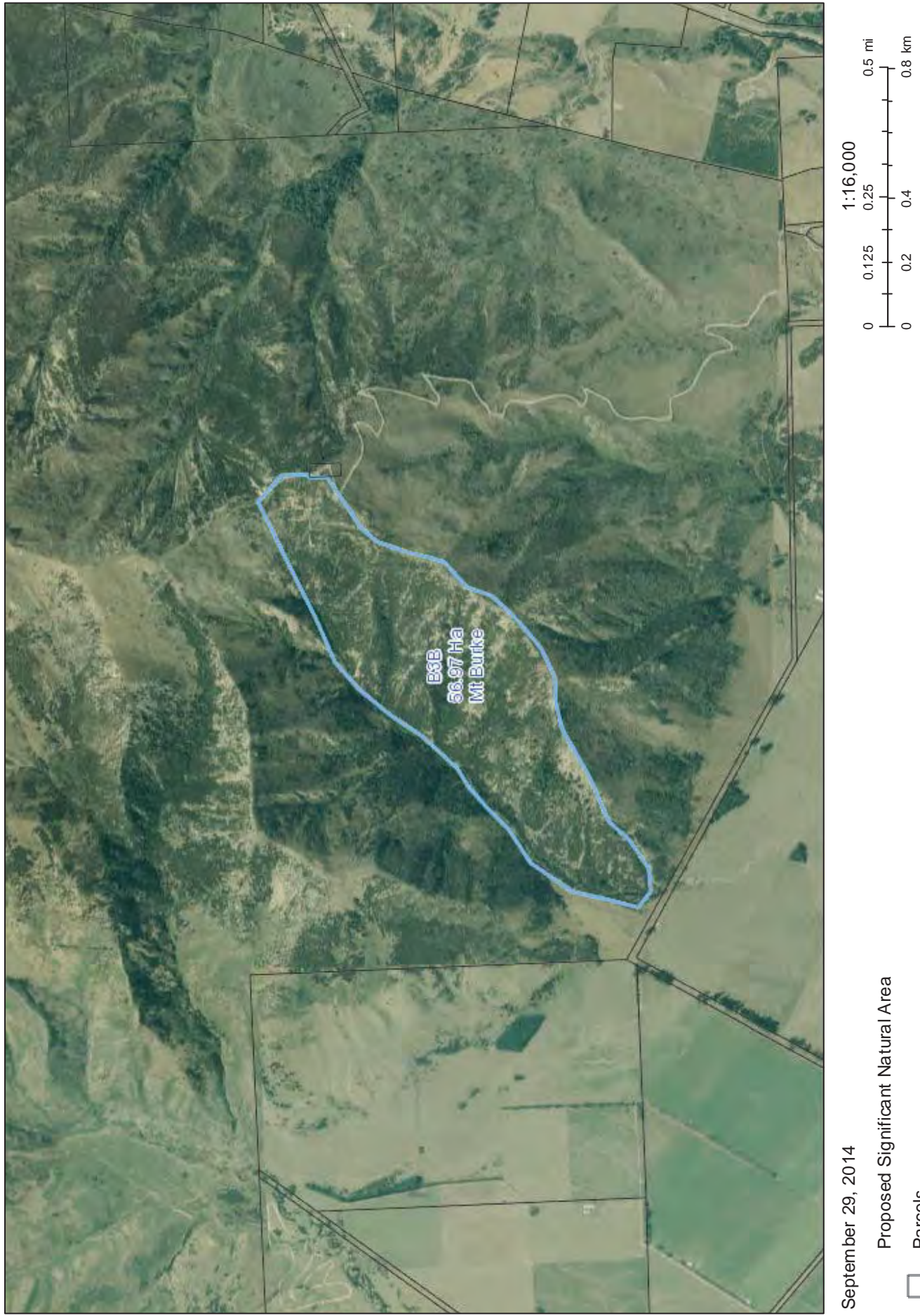


Significant Natural Area Assessment			
Project No: 11001/003	Property Name: <i>Mt Burke</i> Site Name: <i>Mt Burke SNA B</i>	Ecologist: <i>Glenn Davis</i> Date: <i>2 September 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of area): <i>E: 220 9462</i> <i>N: 5613658</i>	
LENZ Unit: <i>Q2.2a</i> Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Hillslope</i>	Slope: <i>20°</i>	Altitude: <i>400 - 800 masl</i>	Aspect: <i>NW</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>56.97</i>	
Representativeness: Historically halls totara, kanuka, kowhai woodland is understood to have been a dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District and Lakes Ecological Region.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed.</i>			
Provide onsite description of vegetation:  Vegetation type: Woodland dominated by kanuka but also contains a stand of halls totara ( <i>Podocarpus cunninghamii</i> ) on rubbly slopes at the head of the catchment and kowhai ( <i>Sophora</i> sp.) in the upper kanuka forest. Other indigenous species recorded include manuka ( <i>Leptospermum scoparium</i> ), native broom ( <i>Carmichaelia petriei</i> ), <i>Coprosma propinqua</i> , <i>Coprosma parviflora</i> , matagouri ( <i>Discaria toumatou</i> ), <i>Olearia nummularifolia</i> and porcupine scrub ( <i>Melicytus alpinus</i> ).			
Provide onsite description of fauna habitat: The kanuka dominated woodland will provide habitat for a range of indigenous forest birds and invertebrates.			
Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): Mature wilding conifers have established within the proposed SNA and appear to be spreading and are a threat to the existing woodlands and shrublands. Additional threats include grazing from rabbits and hares, and possums.			



<p><b>Rarity:</b> The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. Both halls totara and kowhai are rare in the Lakes Ecological Region.</p>
<p><b>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</b> The proposed SNA is a large area consisting of the whole of the south face of the catchment to the west and south of Little Mount Maude.</p>
<p><b>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</b> The proposed SNA contains a range of communities including tall kanuka woodland, halls totara dominated woodland, kanuka/kowhai woodland and shrublands containing matagouri, Coprosma spp., native broom and koromiko.</p>
<p><b>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</b> The shrubland is distinctive within the ecological district for the presence of halls totara and kowhai.</p>
<p><b>Connectivity (how is the site connected to surrounding communities/areas?):</b> The shrubland is directly connected to a large area of dryland forest located to the north and east of Mt Maude.</p>
<p><b>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</b> The proposed SNA is a large area containing a range of vegetation types. The vegetation has prospered over a long period and maintained its ecological integrity and processes.</p>
<p><b>Recommendation (Accept/Decline):</b> The woodland is a good example of vegetation that is representative of this environment. Given the high level of representativeness and rarity of halls totara and kowhai woodland in the Wanaka Ecological District and LENZ unit Q2.2a, we consider the area should be considered for designation as a SNA.</p>

Figure 1: The area of potential significance - Mt Burke SNA B - B3B.



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



**Figure 2:** A photo approximately 1 km from the proposed *Mt Burke SNA B*.





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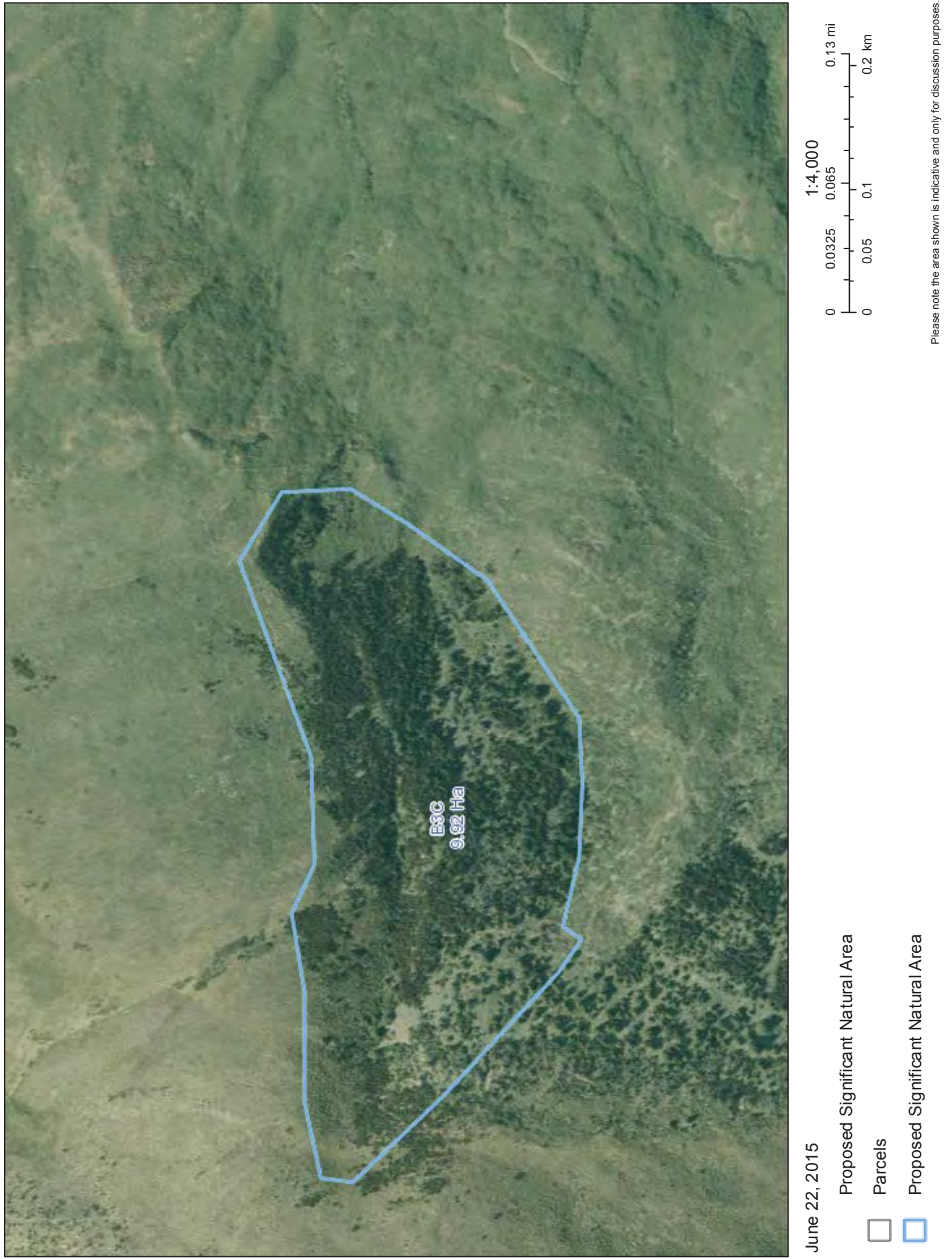


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Significant Natural Area Assessment			
Project No: 11001/003		Property Name: <i>Mt Burke</i>	
		Ecologist: <i>Glenn Davis</i>	
		Site Name: <i>Mt Burke SNA C</i>	
		Date: <i>2 September 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of area): <i>E: 221 1255</i> <i>N: 561 8191</i>	
LENZ Unit: <i>Q2.2a</i>		Photo No.(s): <i>See below.</i>	
Ecological District: <i>Wanaka Ecological District</i>			
Topography: <i>Hillslope</i>	Slope: <i>25°</i>	Altitude: <i>400 - 800 masl</i>	Aspect: <i>East</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>9.92</i>	
Representativeness: Leathwick <i>et al.</i> (2003) indicates this LENZ environment would have been dominated by beech forest of which halls totara would have been a component. In addition it is likely that halls totara may have dominated on some substrates within this LENZ unit, such as the boulder field associated with this community.			
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"		At Risk - Recovering	
Provide onsite description of vegetation:  Vegetation type: Woodland dominated by halls totara ( <i>Podocarpus cunninghamii</i> ) and mountain toatoa ( <i>Phyllocladus alpinus</i> ). This is based on a brief description in the DoC Conservation Resources Report (CRR).			
Provide onsite description of fauna habitat: The woodland habitat will provide for native avifauna, including the New Zealand eastern falcon. This is based on information from the DoC CRR report.			
Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): The area appears to have avoided significant disturbance from Polynesian fires and pastoral activities. The boulder field may have mitigated the spread of fire through the area.			

<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The Halls totara and mountain toatoa community is unusual and very rare within this LENZ environment and the Wanaka Ecological District.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>It is likely that this community has been present for a long period of time suggesting the community is self-sustaining.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The Halls totara and mountain toatoa woodland is the dominant feature of this site, however, the area will also support a range of native invertebrate and avifauna species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The Halls totara and mountain toatoa community is a very unusual and distinctive vegetation assemblage.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The shrubland is surrounded by bracken fern dominated vegetation, although areas of kanuka woodland and regenerating shrubland are located in close proximity.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>It is likely that this community has been present in this boulder field for a long period of time, suggesting the community is self-sustaining and resilient to disturbance.</p>
<p>Recommendation (Accept/Decline):</p> <p>The woodland is an unusual and distinctive example of vegetation that is representative of this environment. Given the high level of representativeness and rarity of this vegetation assemblage, we consider the area should be considered for designation as a SNA.</p>

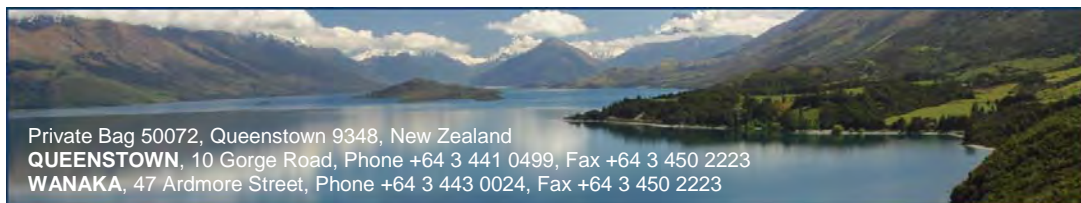
Figure 1: The area of potential significance - Mt Burke SNA C - B3C.







**Figure 2:** The photo was taken approximately 400m from the proposed *Mt Burke SNA C*.



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Significant Natural Area Assessment			
Project No: <i>11001-011</i>		Property Name: <i>Minaret Station</i> Site Name: <i>Estuary Burn SNA A</i>	
		Ecologist: <i>Glenn Davis</i> Date: <i>12 May 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): 1. E: 2201070 N: 5633605 2. E: 2200760 N: 5633035	
LENZ Units: <i>E3.2b and N2.1a</i> Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Lake shore and river terrace</i>	Slope: <i>&gt;5°</i>	Altitude: <i>300 masl</i>	Aspect: <i>E</i>
Threatened Environment Status: <i>Acutely threatened</i>		Area Size (ha): <i>12.96</i>	
Representativeness: Historically the vegetation on the Estuary Burn alluvial fan and lakeshore is likely to have comprised a beech-podocarp forest on the more stable areas, broadleaved indigenous hardwoods and manuka/kanuka woodland occupying areas that were exposed to more regular disturbance events (mainly floods). The kanuka woodland is considered to be representative of areas prone to regular disturbance events.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed.</i>			
Provide onsite description of vegetation:  Vegetation type: <i>Kanuka woodland with a minor component of matagouri and mingimingi.</i>  Degree of Modification: <i>The area has experienced extensive disturbance. Jonathan Wallace indicated historical aerial photos show woodland was largely removed 40-50 years ago. The vegetation is moving toward a closed canopy woodland but is interspersed with open areas of pasture grass.</i>			
Provide onsite description of fauna habitat: The closed canopy woodland is allowing the development of a litter layer which supports invertebrate lifecycles. The shrubland is expected to provide habitat for an abundant and diverse invertebrate fauna that supports insectivorous birds such as tomtit, fantail, grey warbler and a range of introduced bird species. The woodland is also expected to provide habitat for skinks and gecko.			

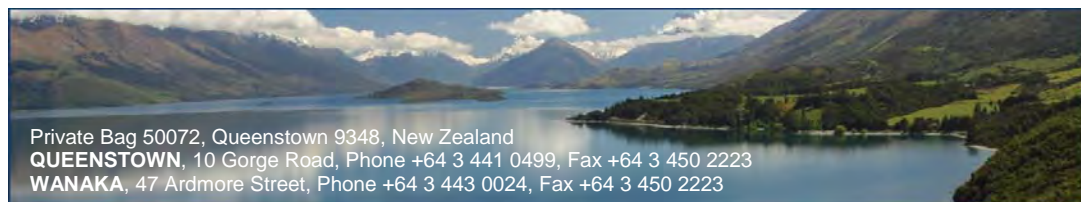
<p>Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include grazing of regenerating shrubland and the risk of inadvertent events such as fire given the proximity to the lakeshore and use by public for boating etc.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N2.1a environment to have 0.3% indigenous vegetation cover remaining with 0.1% protected, and the E3.2b environment consisting of 3.6% indigenous vegetation cover remaining and 0.8% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The kanuka woodland is of sufficient size to be self-sustaining and the vegetation community is expected to develop over time with halls totara, kowhai, pittosporum, broadleaf, wineberry and other broadleaved species expected to establish given populations of these species located in close proximity to the woodland.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Kanuka woodlands at this stage of development tend to have relatively low diversity. However, over time this woodland is expected to provide the conditions for the establishment of podocarps, and indigenous broadleaved species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Kanuka woodland on Minaret Station and the neighbouring Albert Burn is at its western distributional limit.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The woodland is connected to other lakeshore kanuka stands in addition to indigenous broadleaved hardwood stands and beech forest in the Estuary Burn.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The kanuka woodland is of a sufficient size to be self-sustaining and has the potential to develop further with increasing diversity as the canopy opens up over time providing the conditions for podocarps, kowhai and other indigenous broadleaved species to successfully establish.</p>
<p>Recommendation (Accept/Decline):</p> <p>The woodland is a good example of vegetation that is representative of this acutely threatened environment. Given the rarity of indigenous vegetation cover within the N2.1a LENZ environment, we consider the area should be considered for designation as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Estuary Burn SNA A - B11A\_1-2.



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Significant Natural Area Assessment			
Project No: <i>11001/011</i>		Property Name: <i>Minaret Station</i> Site Name: <i>Bay Burn SNA C</i>	
		Ecologist: <i>Glenn Davis</i> Date: <i>12 May 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): 1. E: 2200720 N: 5639300 2. E: 2200400 N: 5638900	
LENZ Units: <i>M2.2b</i> Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Lake shore and river terrace</i>	Slope: <i>&gt;5°</i>	Altitude: <i>300 masl</i>	Aspect: <i>E</i>
Threatened Environment Status: <i>At Risk</i>		Area Size (ha): <i>48.44</i>	
Representativeness: Historically the vegetation on the Bay Burn alluvial fan and lakeshore is likely to have comprised a beech-podocarp forest on the more stable areas, with broadleaved indigenous hardwoods and manuka/kanuka woodland occupying areas that were exposed to more regular disturbance events (mainly floods). The kanuka woodland is considered to be representative of areas prone to regular disturbance events.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed.</i>			
Provide onsite description of vegetation:  Vegetation type: Kanuka dominated woodland with a minor component of matagouri and mingimingi and regenerating broadleaved species.  Degree of Modification: The area has experienced extensive disturbance. Jonathan Wallace indicated historical aerial photos show woodland was largely removed 40-50 years ago. The vegetation is moving toward a closed canopy woodland but is interspersed with open areas of pasture grass.			
Provide onsite description of fauna habitat: The shrubland is expected to provide habitat for an abundant and diverse invertebrate fauna that supports insectivorous birds such as tomtit, fantail, grey warbler and a range of introduced bird species. The woodland is also expected to provide habitat for skinks and gecko.			

<p>Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices) :</p> <p>Key threats include grazing of regenerating shrubland and the risk of inadvertent events such as fire given the proximity to the lakeshore and use by public for boating etc.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the M2.2a environment to be at risk with 22.1% indigenous vegetation cover remaining and 8% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The kanuka woodland is of sufficient size to be self-sustaining and the vegetation community is expected to develop over time with halls totara, kowhai, pittosporum, wineberry and other broadleaved species expected to establish given populations of these species located in close proximity to the woodland.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Kanuka woodlands at this stage of development tend to have relatively low diversity. However, over time this woodland is expected to provide the conditions for the establishment of podocarps, and indigenous broadleaved species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Kanuka woodland on Minaret Station and the neighbouring Albert Burn is at its western distributional limit.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The woodland is connected to other lakeshore kanuka stands in addition to indigenous broadleaved hardwood stands and beech forest in the Albert Burn and Mt Albert Station.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The kanuka woodland has a closed canopy and is of a sufficient size to be self-sustaining and has the potential to develop further with increasing diversity as the canopy opens up over time providing the conditions for podocarps, kowhai and other indigenous broadleaved species to successfully establish.</p>
<p>Recommendation (Accept/Decline):</p> <p>The woodland is a good example of vegetation that is representative of mid successional development of vegetation in this at risk environment. Although this area is not listed to be in an acutely or chronically threatened environment we consider the environment to be very similar to the acutely threatened environments in the Estuary Burn and should be reviewed on this basis. The community is expected to provide the conditions for the establishment of podocarps, kowhai and other hardwood species, therefore the floral and faunal diversity of this community is expected to increase over time.</p> <p>Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1a: The area of potential significance - Bay Burn SNA C - B11C\_1-4.



September 29, 2014

Proposed Significant Natural Area

Parcels

Proposed Significant Natural Area

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

Figure 1b: The area of potential significance - Bay Burn SNA C - B11C\_5-6.



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

Significant Natural Area Assessment			
Project No: <i>11001/011</i>	Property Name: <i>Minaret Station</i> Site Name: <i>Minaret Burn SNA D</i>	Ecologist: <i>Glenn Davis</i> Date: <i>12 May 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>1. E: 2198500 N: 5624500</i>	
LENZ Units: <i>Q2.2b</i> Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Lower hillslope</i>	Slope: <i>30°</i>	Altitude: <i>300 masl</i>	Aspect: <i>E</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>91.4</i>	
Representativeness: Historically the vegetation on the lake faces adjacent to Minaret Burn comprised a beech forest. The communities associated with this assessment are regenerating broadleaved indigenous hardwoods and manuka woodland. These communities are both representative of mid successional vegetation development within this environment.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed.</i>			
Provide onsite description of vegetation:			
Vegetation type: Shrubland mosaic consisting of manuka/kanuka woodland and broadleaved indigenous hardwoods and beech forest. Site only viewed from helicopter.			
Degree of Modification: The area has experienced extensive disturbance (mainly fires), but has had a prolonged spell from clearing activities given the regenerating nature of the vegetation.			
Provide onsite description of fauna habitat: The vegetation is expected to support a range of indigenous invertebrate and bird species.			
Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): Key threats include grazing of regenerating shrubland and the risk of inadvertent events such as fire given the proximity to the lake.			
Rarity: The threatened environment classification identifies indigenous vegetation cover associated with the Q2.2b environment to be at critically underprotected, with 44.68% indigenous vegetation cover remaining and 1.96% formally protected.			



<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The site is regenerating strongly and will continue to develop providing the area is not affected by inadvertent fire or pastoral clearing activities.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The area consists of two vegetation communities including kanuka/manuka woodland and broadleaved indigenous hardwoods and is part of an uninterrupted sequence of indigenous vegetation from the lakeshore to alpine environment.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The area does not contain any known distinctive ecological characteristics.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The shrubland is connected to the lakeshore kanuka woodland and patches of beech forest in the Minaret Burn.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The site is of an area that is sufficient to provide a permanent habitat for a range of indigenous invertebrate and bird species. Ecological processes such as vegetation development and succession, disturbance events and recruitment will all be viable within this site.</p>
<p>Recommendation (Accept/Decline): The vegetation and habitat is a good example of vegetation that is representative of mid successional development of vegetation in this critically underprotected environment. Although the vegetation is mid successional, the site is significant in that it provides the opportunity to maintain a lakeshore to alpine environment vegetation sequence.</p> <p>Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Minaret Burn SNA D - B11D.



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



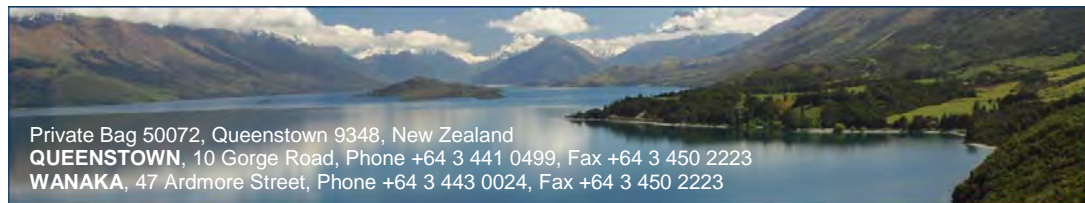


**Figure 2:** Minaret Burn - photo taken from the south side of Minaret Burn within the Minaret Burn valley – shows the vegetation on the lower slopes with beech forest at the toe of the slopes.





**Figure 3:** Photo looking southwest toward Minaret Burn – shows the development of the broadleaved forest.



<b>Significant Natural Area Assessment</b>			
Project No:  11001/011		Property Name: <i>Minaret Station</i>  Site Name: <i>Minaret Bay Riparian Vegetation SNA F</i>	
		Ecologist: <i>Glenn Davis</i>  Date: <i>12 May 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 2200735 N: 5635540</i>	
LENZ Units: <i>Q2.2b</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Lower hillslope, Lake Shore</i>	Slope: <i>20°</i>	Altitude: <i>280 – 340 300 masl</i>	Aspect: <i>SW - S</i>
Threatened Environment Status:  <i>Critically Underprotected</i>		Area Size (ha): <i>7.97</i>	
Representativeness: Historically the vegetation on the lake faces would have comprised a mix of indigenous broadleaved hardwoods and beech forest. The communities associated with this assessment are regenerating and established broadleaved indigenous hardwood communities. This community is highly representative of this environment.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None Observed</i>			
Provide onsite description of vegetation:  Vegetation type: Indigenous broadleaved hardwoods. Only viewed from a distance, however species expected to be present include kohuhu, broadleaf, Olearia species, Coprosma species, <i>Carpodetus serratus</i> , <i>Aristotelia serrata</i> and <i>Pseudopanax</i> species.  Degree of Modification: The area has experienced historic disturbance, but given the established nature of the vegetation the site may have been a natural refuge from fire.			
Provide onsite description of fauna habitat: Expected to support a range of lake shore species, including native birds and invertebrates.			
Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): The greatest risk is probably from inadvertent events such as fire as a result of recreational boat users, given the proximity to the lake.			

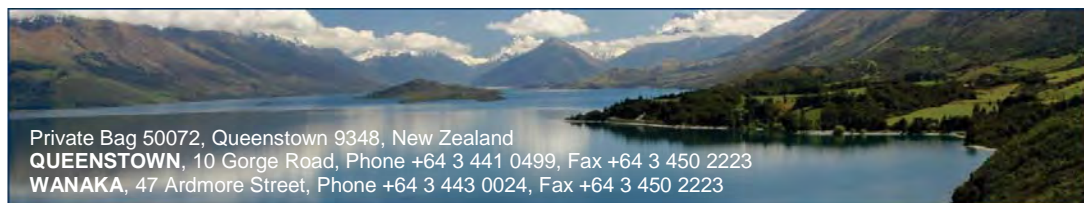
<p>Rarity: The threatened environment classification identifies indigenous vegetation cover associated with the Q2.2b environment to be critically underprotected with 44.68% indigenous vegetation cover remaining and 1.96% formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): Area is of sufficient size to be sustainable.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Broadleaved hardwood forest contains a range of flora and fauna species, and is representative of the original lakeshore ecosystem.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Much of the original lake shore vegetation has been lost, therefore remnant vegetation is distinctive.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): Situated adjacent to the Minaret wetland.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The area is sustainable, due to its size and ecological process present.</p>
<p>Recommendation (Accept/Decline): The vegetation and habitat is a good example of vegetation and habitat that is highly representative of this critically underprotected environment. This area should be taken forward for further consideration as Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Minaret Bay Riparian Vegetation SNA F - B11F.



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Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
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Significant Natural Area Assessment			
Project No:  11001/015	Property Name: <i>Mt Albert Station</i>  Site Name: <i>Mt Albert Burn &amp; Craigie Burn Kanuka Woodlands SNA A</i>	Ecologist: <i>Glenn Davis &amp; Neill Simpson</i>  Date: <i>15 December 2011</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson &amp; Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plans.</i>	
LENZ Unit: <i>M2.2b Lakeshore fans</i>  Ecological District: <i>Arawata Ecological District.</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Lakeside fans</i>	Slope: <i>Flat</i>	Altitude: <i>300 m asl</i>	Aspect: <i>East facing</i>
Threatened Environment Status: <i>At Risk</i>		Natural Area Size (ha): <i>94.25</i>	
Representativeness: Lakeshore fan communities, highly representative of this LENZ environment.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Olearia lineata</i>		At Risk - Declining	
Provide onsite description of vegetation: <i>Lakeshore fan communities</i> - dense kanuka forest on flat river fans where the Craigie Burn and Albert Burn flow into the lake. The wet flats on the north side of the Albert Burn contain an excellent population of <i>Olearia lineata</i> growing along a small stream. Both old, mature trees and young plants are present.			
Degree of Modification: Some modification has occurred, but the kanuka stands are developing strongly.			
Degree of Recruitment: Strong recruitment over much of the land adjacent to the lake.			
Overall Health: Good health overall, regenerating and mature communities.			
Provide onsite description fauna habitat – species recorded or expected to be present: Fauna is typical of shrubland and forest communities (i.e. birds, lizards and invertebrates), as well as many open-land birds and insects.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Threats to the vegetation are fire and possible weed infestation.			

<p>Rarity: Indigenous vegetation cover on the M2.2b environment is 22%, of which 8% is formally protected. In our view, the kanuka forest on lakeshore fans is rare in the Lakes District. <i>Olearia lineata</i> is listed as “At Risk - declining”.</p>
<p>Area Shape and Area/Edge Ratio: The areas have a relatively low edge – area ratio, which indicates the edge effects on the kanuka stands are reduced and provides for a larger area of habitat that is sheltered from external influences such as climatic effects, weeds and pests.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Good range of species present and clear evidence of a functioning ecosystem with regeneration of species in tree gaps and open areas.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The distinctive ecological characteristics are the rare lakeshore kanuka and <i>Olearia lineata</i>, as mentioned above.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The areas are well connected to beech forests in the Craigie Burn and Albert Burn, and are part of a relatively intact sequence of lakeshore to alpine indigenous cover.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The areas are sustainable and likely to return, more or less, to its original state over time if no longer farmed.</p>
<p>Recommendation (Accept/Decline): These stands are highly representative of lakeshore communities, appear to have a full range of ecosystem functions and will provide excellent habitat for birds, lizards and invertebrates. These areas should be taken forward for further consideration as Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1a: Area of potential significance - Craigie Burn Kanuka Woodlands SNA A - B15A\_1-2.



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

Figure 1b: Area of potential significance - Mt Albert Burn Kanuka Woodlands SNA A - B15A\_3



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



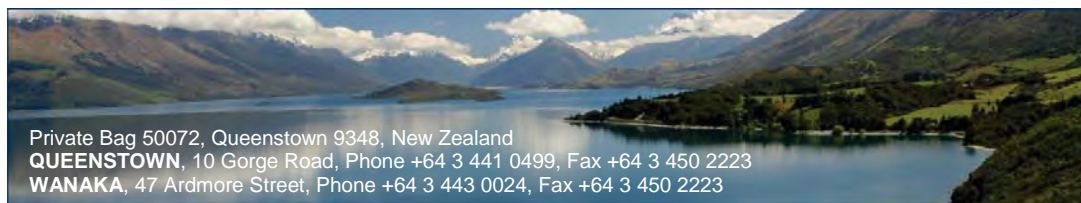


**Figure 2:** The Albert Burn kanuka woodland.



**Figure 3:** The Craigie Burn kanuka woodland.





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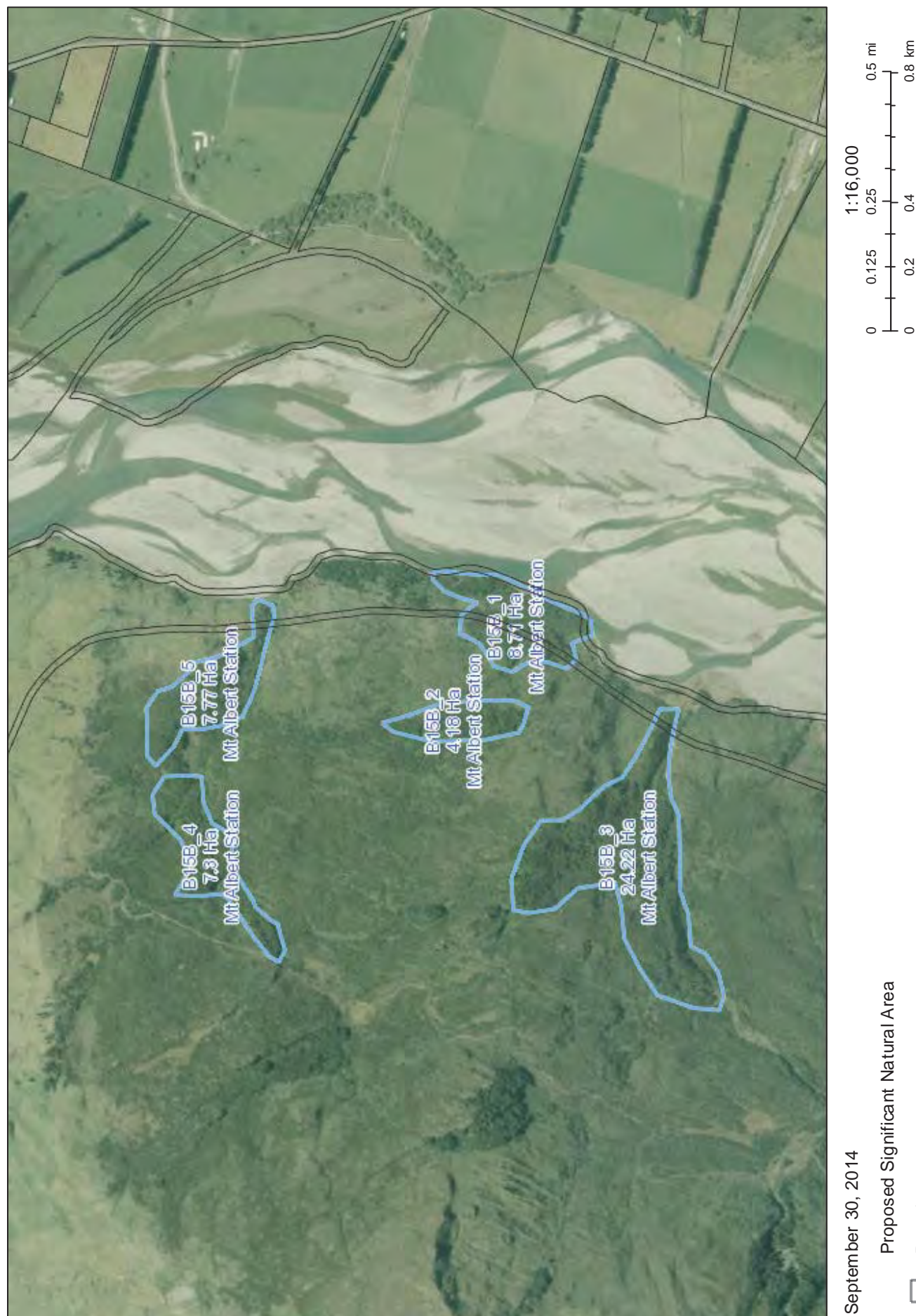
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Significant Natural Area Assessment			
Project No:  11001/015	Property Name: <i>Mt. Albert</i>  Site Name: <i>Lake face shrublands and forest SNA B</i>	Ecologist: <i>Glen Davis &amp; Neill Simpson</i>  Date: <i>15 December 2011</i>	
Survey Undertaken By: <i>Glen Davis, Neill Simpson &amp; Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See plan attached.</i>	
LENZ Unit: <i>P5.1e and P5.2a</i>  Ecological District: <i>Wanaka</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Rolling to steep mountain slopes</i>	Slope: <i>Flat to Variable with some areas in excess of 30°</i>	Altitude: <i>300 – 600 m asl</i>	Aspect: <i>East facing</i>
Threatened Environment Status:  <i>Comparatively safe from clearance.</i>		Area Size (ha): <i>52.18</i>	
Representativeness: Beech forest gullies and broadleaved shrubland and manuka woodland - highly representative of different stages of succession in this environment.			
Are there threatened species expected in the survey area? If so, list species and threat status.  <b>Please note the species listed below are threatened species that are inferred to be present based on the habitats recorded during the site visit.</b>			
Threatened Species		Threat Status	
<i>Alepis flavida</i>		At Risk- Declining	
<i>Peraxilla tetrapetala</i>		At Risk- Declining	
Provide onsite description of vegetation:  Vegetation type: Good beech forest remnants in several gullies and spreading onto some adjacent rolling country and generally surrounded by regenerating manuka shrubland. Some diverse lakeshore communities on steep shoreline scarps.  Degree of Modification: The areas dominated by manuka have clearly been the subject of multiple disturbance events.  Degree of Recruitment: Strong recruitment over much of the land adjacent to the lake.  Overall Health: Good health overall, with regenerating and mature communities.			

Provide onsite description fauna habitat – species recorded or expected to be present: Fauna is typical of shrubland and forest communities.
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The threats to the vegetation include fire, possible weed infestation and proposed property development. The site manager indicated that there was some intention to develop more of the rolling hill slopes presently covered with shrubland, into pasture. It is not planned to remove any beech forest.</p>
<p>Rarity:</p> <p>The threatened environment classification indicates the indigenous vegetation cover exceeds 70% for both LENZ environments (i.e. P5.1e and P5.2a).</p> <p>We consider it is likely that the threatened mistletoes (<i>Peraxilla tetrapetala</i> and <i>Alepis flavida</i>) are present in the beech forest.</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>While the proposed SNA is made up of multiple areas giving it a high edge to area ratio, it is well connected to other areas of native vegetation.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>There is a good diverse range of communities, species and habitats.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The likely presence of the threatened mistletoes are special ecological characteristics of the proposed SNA.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>Well connected to upper slopes of largely natural plant communities and to the Mt. Aspiring National Park.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Sustainable and likely to return, more or less, to its original state over time if no longer farmed.</p>
<p>Recommendation (Accept/Decline):</p> <p>The patches of beech forest and broadleaved indigenous hardwoods that are situated on the lake faces are highly representative of this environment and appear to have a full range of ecosystem functions. These areas should be taken forward for further consideration as Significant Indigenous Vegetation and Fauna Habitat.</p> <p>Please note, the extensive manuka woodland is excluded from the SNA area due to the extensive distribution of this community throughout the wetter parts of the district.</p>

Figure 1: The area of potential significance - Lake face shrublands and forest SNA B - B15B\_1-5



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





**Figure 2:** Photo showing a tongue of beech forest extending to the edge of the Makarora River and grading into thick stands of manuka on the higher slopes.



**Figure 3:** Photo showing beech forest and strongly regenerating shrubland and manuka woodland.





**Figure 4:** Photo showing beech forest grading into broadleaved indigenous hardwood vegetation.



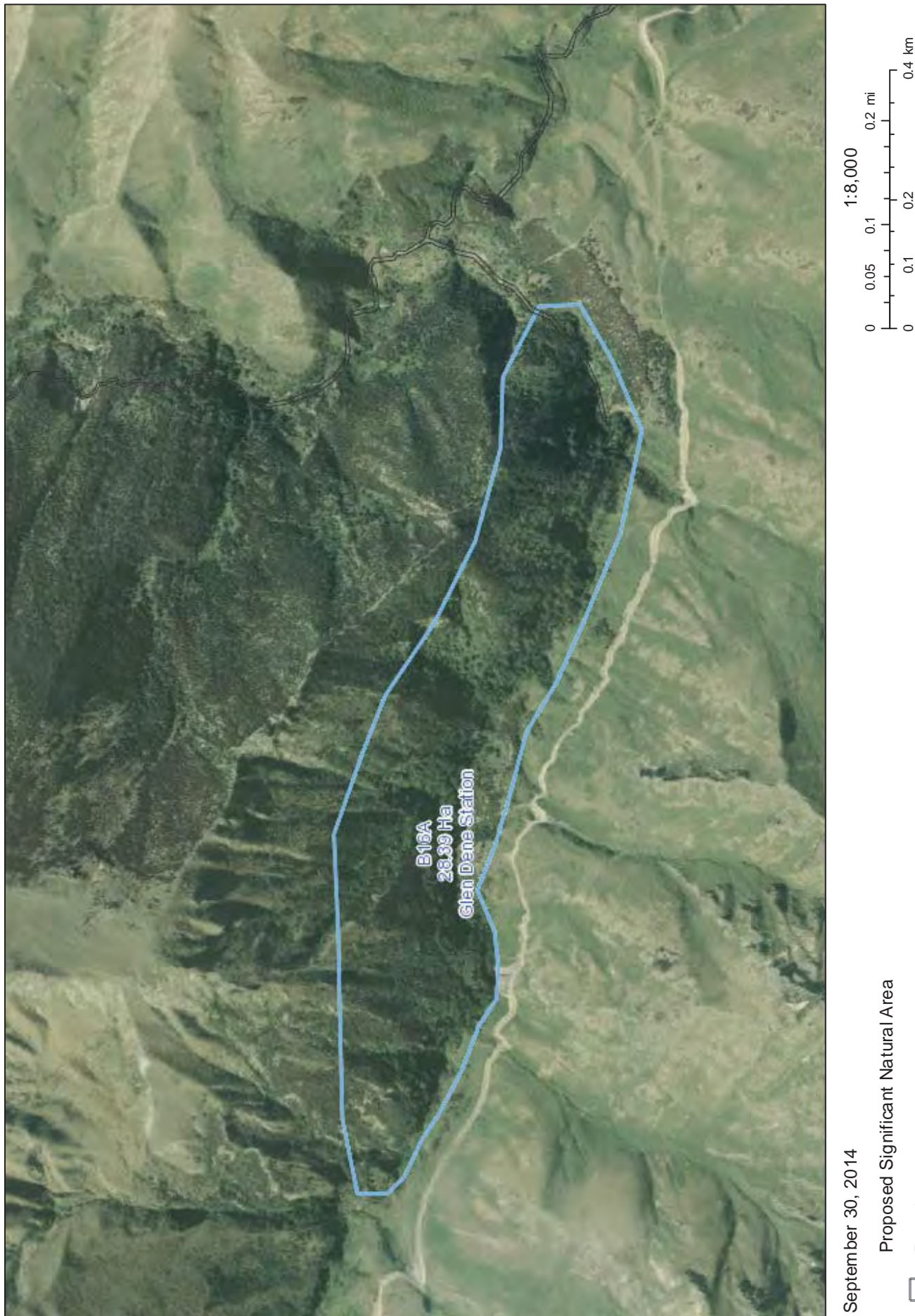
**Figure 5:** Photo showing strong manuka cover (excluded from SNA B).

<b>Significant Natural Area Assessment</b>			
Project No:  11001/016	Property Name: <i>Glen Dene Station</i> Site Name: <i>Long Valley Creek SNA A</i>	Ecologist: <i>Glenn Davis and Neill Simpson</i>  Date: <i>12 May 2011</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 2198500</i> <i>N: 5624500</i>	
LENZ Units: <i>Q2.2b</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Predominantly south facing slopes of Long Gully catchment.</i>	Slope: <i>Steep.</i>	Altitude: <i>500 - 600 m asl</i>	Aspect: <i>South and East.</i>
Threatened Environment Status:  <i>Critically Underprotected</i>		Area Size (ha): <i>28.39</i>	
Representativeness: Historically the vegetation within Long Valley Creek would have been dominated by beech forest. This community is present in patches within the area today. The communities associated with this assessment are regenerating broadleaved indigenous hardwoods, manuka woodland and beech forest. The broadleaved forest and manuka woodland communities are both representative of mid successional vegetation development within this environment.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Falco novaeseelandiae "eastern"</i>		<i>At Risk - Recovering</i>	
Provide onsite description of vegetation:			
Vegetation type: Shrubland mosaic consisting of manuka woodland, broadleaved indigenous hardwoods and beech forest. Note: site only viewed from helicopter.			
Degree of Modification: The area has experienced extensive disturbance (mainly fires) but has had a prolonged spell from clearing activities given the established nature of the vegetation present.			
Overall Health: The area is in good overall health.			



<p>Provide onsite description of fauna habitat – species recorded or expected to be present: The Conservation Resources Report (CRR) prepared for Glen Dene states that fantail, tomtit, bellbird, grey warbler and rifleman are present in the forested areas of the station and can be expected to be found in the subject area. In addition, the Eastern falcon has been recorded in the Craig Burn catchment and may hunt for passerines in the area. Lizard information for the site is limited although the CRR suggests that rock tors adjacent to forested areas and shrubland in the eastern part of the property represent potential habitat for grand and Otago skinks.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Key threats include grazing of regenerating shrubland and the risk of inadvertent events such as fire.</p>
<p>Rarity: The threatened environment classification identifies indigenous vegetation cover associated with the Q2.2b environment to be at critically underprotected, with 44.68% indigenous vegetation cover remaining and 1.96% formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The site is regenerating strongly and will continue to develop providing the area is not affected by inadvertent fire or pastoral clearing activities.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The area consists of two vegetation communities including kanuka/manuka woodland and broadleaved indigenous hardwoods and is part of a contiguous sequence of indigenous vegetation from the shrubland through to the alpine environment.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Rifleman and tomtit are at their eastern distributional limit on Glen Dene Station.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The vegetation is continuous with the tall tussock grassland at higher elevations and the mature beech forests within the Craig Burn Conservation Covenant area.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The site is of a size that is sufficient to provide a permanent habitat for a range of indigenous invertebrate and bird species. Ecological processes such as vegetation development and succession, disturbance events, and recruitment, will all be viable within this site.</p>
<p>Recommendation (Accept/Decline): The vegetation and habitat is a good example of vegetation that is representative of mid and late successional development of vegetation in this critically underprotected environment. Based on the above considerations we recommend this area for further consideration as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: Area of potential significance - Long Valley Creek SNA A - B16A.



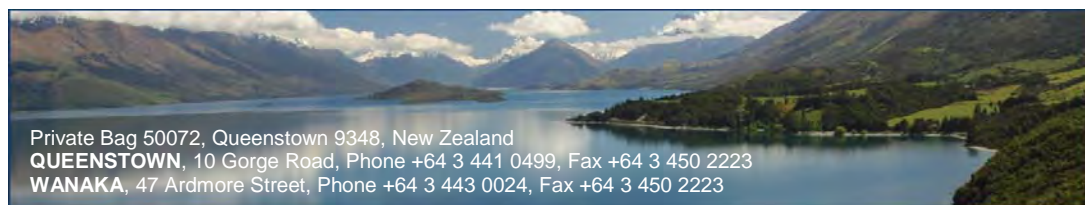
Please note the area shown is indicative and only for discussion purposes.





**Figure 2:** Both photographs show a representative view of SNA A.





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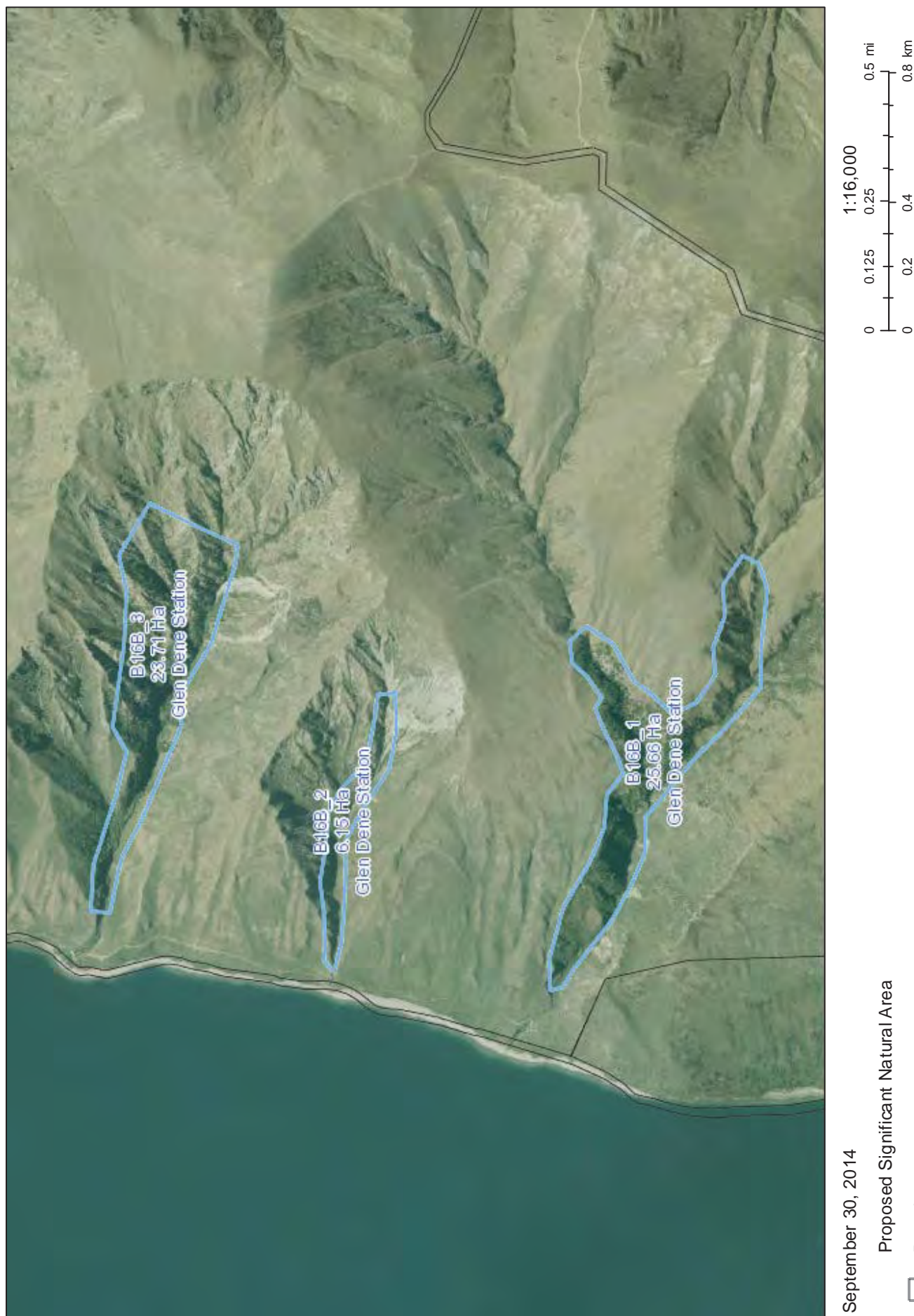


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Significant Natural Area Assessment			
Project No:  11001/016	Property Name: <i>Glen Dene Station</i>  Site Name: <i>Lake Wanaka Shrublands SNA B</i>		Ecologist: <i>Glenn Davis and Neill Simpson</i>  Date: <i>12 May 2011</i>
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson.</i>		Waypoint No (mid-point of survey area): <i>Northern area - E: 2206313 N: 5631753</i> <i>Middle area - E: 2205993 N: 5631194</i> <i>Southern area - E: 2206103 N: 5630225</i>	
LENZ Units: <i>Q2.2b</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Valleys overlooking Lake Wanaka</i>	Slope: <i>30°</i>	Altitude: <i>300 to 1000 masl</i>	Aspect: <i>West</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>55.52</i>	
<p>Representativeness:  Historically the vegetation within the three valleys would have been dominated by Beech Forest. This community is present in patches within the area today, however, the vegetation is now dominated by <i>regenerating broadleaved indigenous hardwoods and manuka woodland</i>. The broadleaved forest and manuka woodland communities are both representative of mid successional vegetation development within this environment.</p>			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Falco novaeseelandiae "eastern"</i>		<i>At Risk - Recovering</i>	
Provide onsite description of vegetation:			
Vegetation type: <i>Shrubland mosaic consisting of manuka woodland, broadleaved indigenous hardwoods and beech forest. Site only viewed from helicopter.</i>			
Degree of Modification: <i>The area has experienced extensive disturbance (mainly fires), but has had a prolonged spell from clearing activities given the established nature of the vegetation present.</i>			
Overall Health: <i>The area is in good overall health.</i>			
Provide onsite description of fauna habitat:			
<i>The Conservation Resources Report prepared for Glen Dene states that fantail, tomtit, bellbird, grey warbler and rifleman are present in the forested areas of the station and may inhabit the subject areas. In addition, the Eastern falcon has been recorded in the gullies to the west of Isthmus Peak and are expected to hunt in the subject areas.</i>			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include grazing of regenerating shrubland and the risk of inadvertent events such as fire.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies indigenous vegetation cover associated with the Q2.2b environment to be critically underprotected, with 44.68% indigenous vegetation cover remaining and 1.96% formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The vegetation within the three valleys is regenerating strongly and will continue to develop providing the area is not affected by inadvertent fire or pastoral clearing activities.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The area consists of two vegetation communities including kanuka/manuka woodland and broadleaved indigenous hardwoods and forms part of a relatively uninterrupted sequence of indigenous vegetation from the lakeshore to alpine environment.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Rifleman and tomtit are at their eastern distributional limit on Glen Dene Station.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The vegetation is continuous with the tall tussock grassland at higher elevations and extends to the lakeshore.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The area is of sufficient size to provide a permanent habitat for a range of indigenous invertebrate and bird species. Ecological processes such as vegetation development and succession, disturbance events and recruitment will all be viable within this site.</p>
<p>Recommendation (Accept/Decline):</p> <p>The vegetation and habitat is a good example of vegetation that is representative of mid successional development of vegetation in this critically underprotected environment.</p> <p>Based on the above considerations we recommend this area is carried forward for further consideration as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: Area of potential significance - Lake Wanaka Shrublands SNA B - B16B\_1-3.



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





**Figure 2:** Photographic representation of the areas of potential significance.





**Figure 3:** Photographic representation of the areas of potential significance.

Significant Natural Area Assessment			
Project No: 11001/014	Property Name: <i>Remarkables Station</i> Site Name: <i>Remarkables Face SNA A</i>	Ecologist: <i>N. Simpson</i> Date: <i>7/07/11</i>	
Survey Undertaken By: <i>N. Simpson</i>		Waypoint No (mid point of survey area): <i>See map attached.</i>	
LENZ Units: <i>N4.1d, Q1.1c, Q2.2a, Q2.2b.</i> Ecological District: <i>Remarkables</i>		Photo No.(s): <i>No Photos.</i>	
Topography: <i>Steep hill slope.</i>	Slope: <i>10 – 50 %</i>	Altitude: <i>380 - 800 masl</i>	Aspect: <i>West</i>
Threatened Environment Status: <i>Chronically Threatened (N4.1d), Underprotected (Q1.1c), and Critically Underprotected (Q2.2a and Q2.2b).</i>		Area Size (ha): <i>326.49</i>	
Representativeness: There is remnant broadleaf forest forming a buffer to Wye Creek and a good representation of subalpine shrubland occurring on several of the south faces of the steep spurs descending from these west faces of the Remarkables, as well as remnant totara logs. Nest sites for NZ Falcon also occur.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Pachycladon cheesemanii</i>		Threatened - Nationally Vulnerable	
<i>Alepis flavida</i>		At Risk - Declining	
<i>Myosotis goyenii</i>		At Risk – Naturally Uncommon	
<i>Anisotome cauticola</i>		At Risk – Naturally Uncommon	
<i>Falco novaezealandiae</i> “eastern”		At Risk – Recovering	
<i>Connorochloa tenuis</i>		At Risk - Declining	
Provide onsite description of vegetation:			
Vegetation type: Remnant broadleaf forest - broadleaf and kohuhu forest with the following native plant species present: wineberry, marbleleaf, Coprosma species, Olearia species, kowhai, tutu, bracken (in patches), and threatened and at risk plants (e.g. <i>Alepis flavida</i> ) although most mainly confined to bluff areas (i.e. <i>Pachycladon cheesemanii</i> , <i>Myosotis goyenii</i> , <i>Anisotome cauticola</i> ).			
Induced subalpine/montane shrubland - a mix of grassland, bracken fernland and shrubland			



with a few patches of mountain beech high up where it has escaped from fire. Shrubland diverse with montane and subalpine species present including *Dracophyllum longifolium*, *Ozothamnus vauvilliersii*, *Coprosma dumosa*, *Olearia cymbifolia* and *Carmichaelia petriei* with *Aciphylla glaucescens* and *Aciphylla* sp. "lomond" common and numerous small herbs and grasses. Hall's totara logs indicate that this was a common component of the original beech forest here.

Degree of Modification: Modified to severely modified by fire and grazing but good regeneration in many places.

Degree of Recruitment: Good recruitment, especially on south facing slopes and fans where not recently burnt. Recruitment is also likely to be high if grazing reduced/stopped in areas currently grazed.

Overall Health: Improving health and areas of good health with most natural ecological processes expected to be functioning.

Provide onsite description of fauna habitat:

Falcon, tui, bellbird, tomtit, grey warbler, fantail, silver eye, brown creeper and introduced birds present from time to time and a diverse invertebrate fauna likely. Eastern falcon nesting sites.

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

Threats to the vegetation include fire, wilding trees and also grazing to some extent.

Rarity:

Threatened plants present and the occurrence of totara logs along these faces is significant. The threatened environment classification identifies the N4.1d, Q1.1c, Q2.2a and Q2.2b environments to have 18.6%, 91.23%, 39.92% and 44.68% indigenous vegetation cover remaining respectively; these threatened environment classifications have 2.3%, 19.26%, 5.07% and 1.96% protected, respectively.

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

The proposed area is large and adjoins good broadleaf forest along Wye Creek with beech forest upstream, as well as being contiguous with the Remarkables Conservation Area above, along its length.

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

There is a good diversity of avifauna species, as well as plant species, including five plant species that are either threatened or at risk.

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

The bluff vegetation is an important and distinctive ecological characteristic. The lower slopes of the Remarkables west face are distinctive and has the opportunity over time to return to beech forest, broadleaved forest and shrubland somewhat similar to the original vegetation.

Connectivity (how is the site connected to surrounding communities/areas?):  
The area is directly connected to broadleaf forest along Wye Creek, which in turn is connected to beech forest upstream, as well as the mountain slopes in the Remarkables Conservation Area above.

Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):  
The site is sustainable, and its capacity to regenerate would be improved further if there was no grazing anywhere within the area proposed.

Recommendation (Accept/Decline):  
We consider this area should be considered a Significant Indigenous Vegetation and Fauna Habitat, in view of the following values:

- Supports both at risk and threatened (*Pachycladon cheesemani*) plant species;
- Good habitat for a diverse range of bird species;
- Provides a buffer to the Wye Creek Conservation Area and Remarkables Conservation Area.

Figure 1a: The area of potential significance - Remarkables Face SNA A - C14A\_1



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



Figure 1b: The area of potential significance - Remarkables Face SNA A - C14A\_1&3

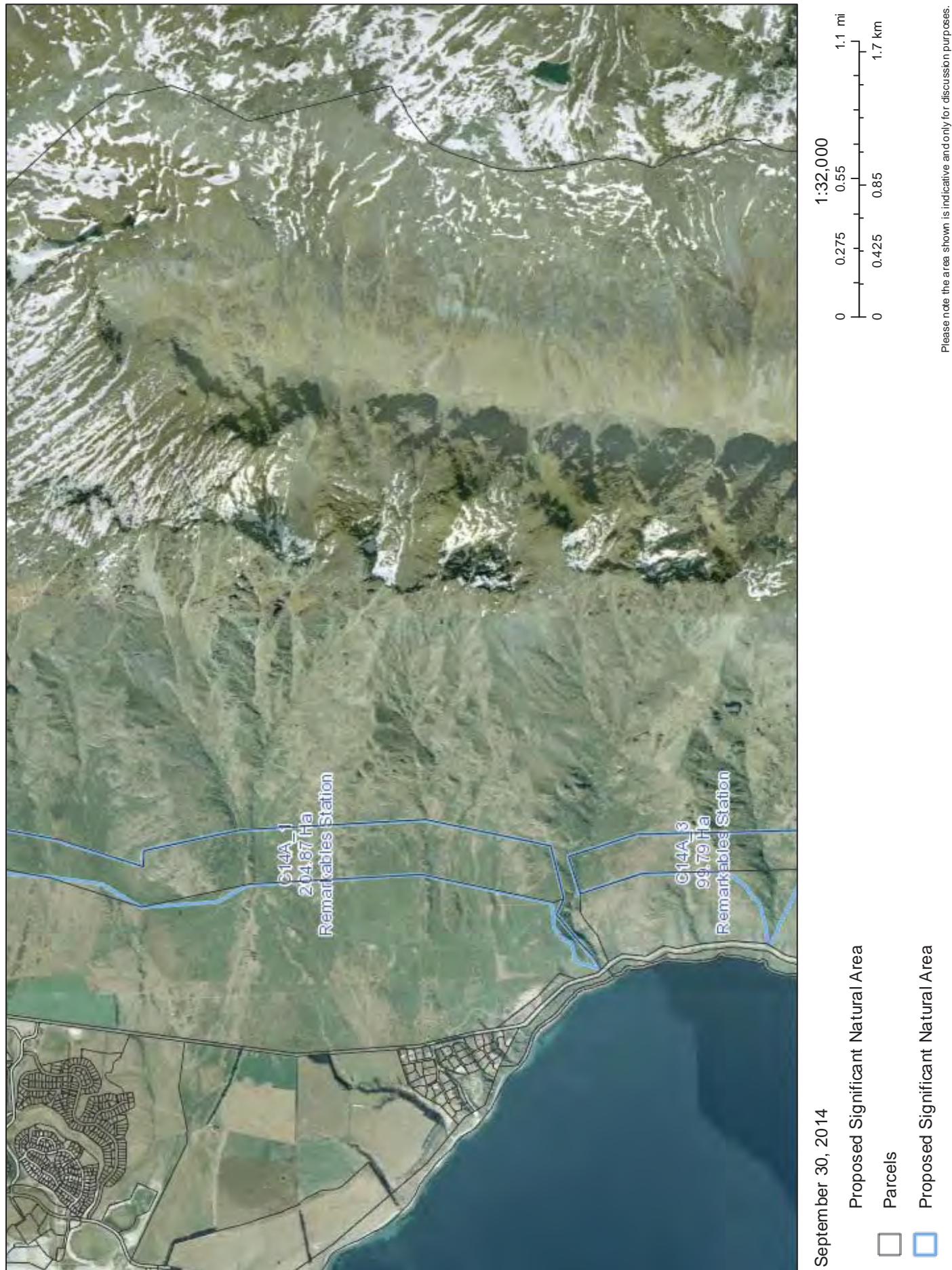
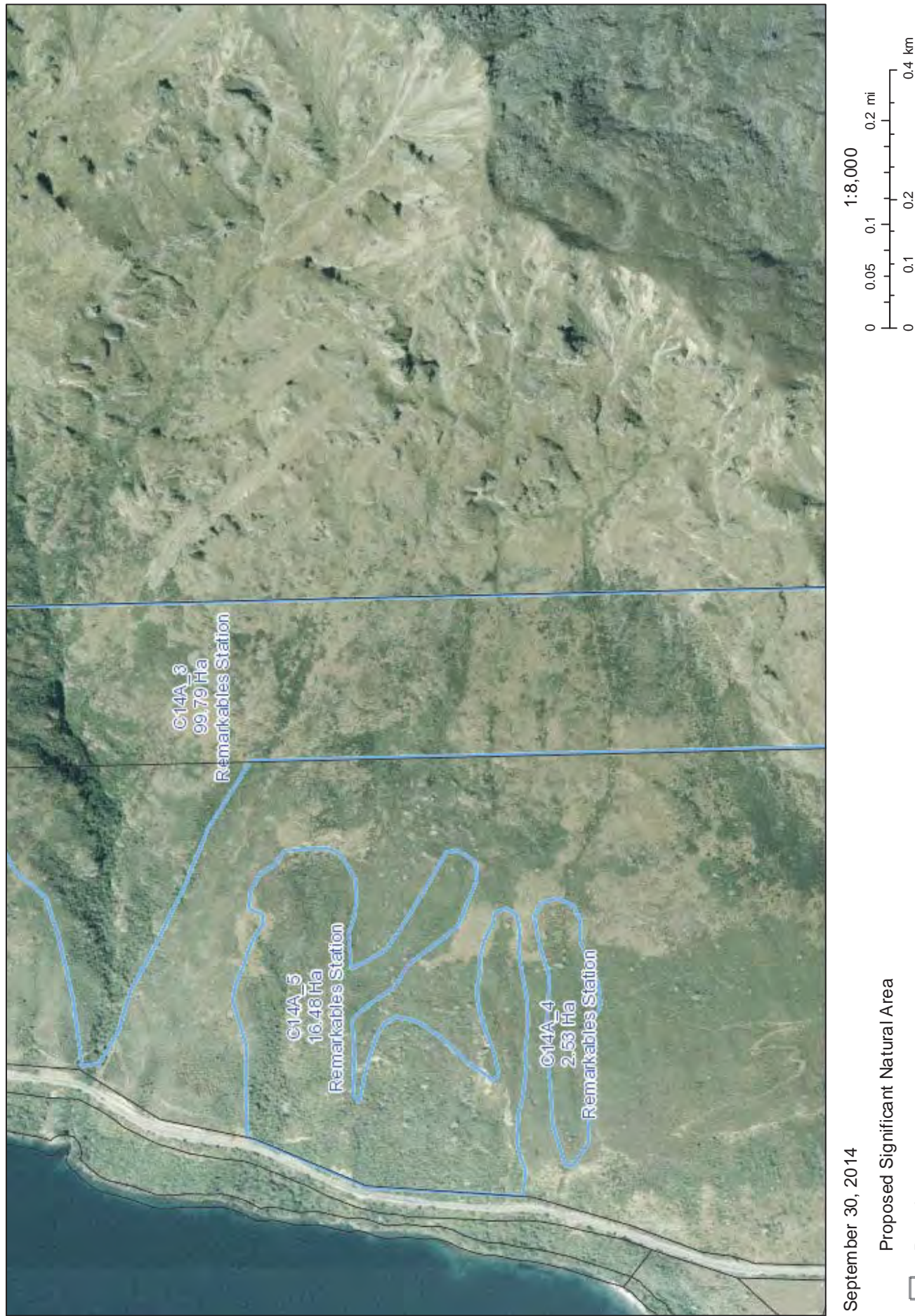




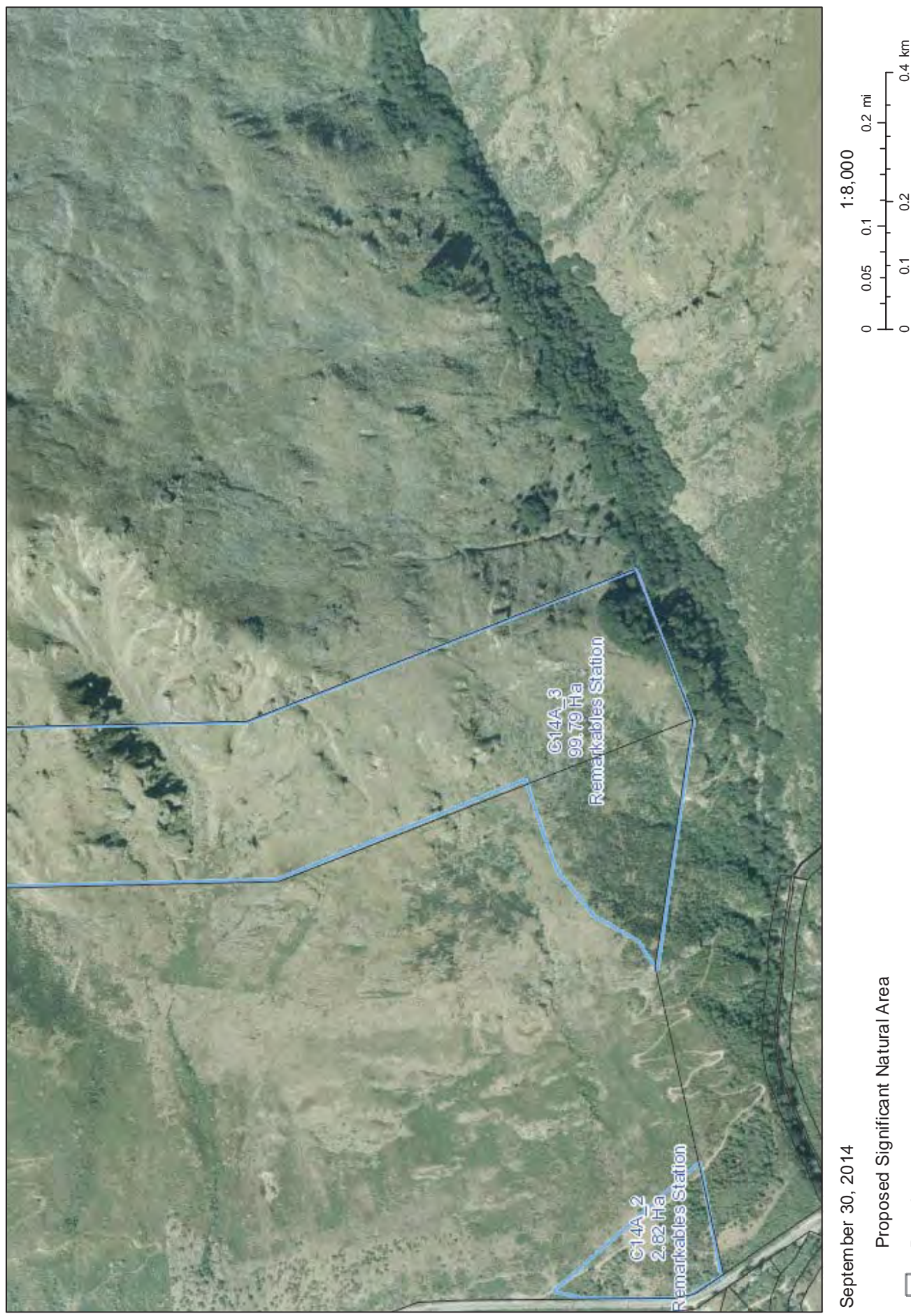
Figure 1c: The area of potential significance - Remarkables Face SNA A - C14A\_3-5



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

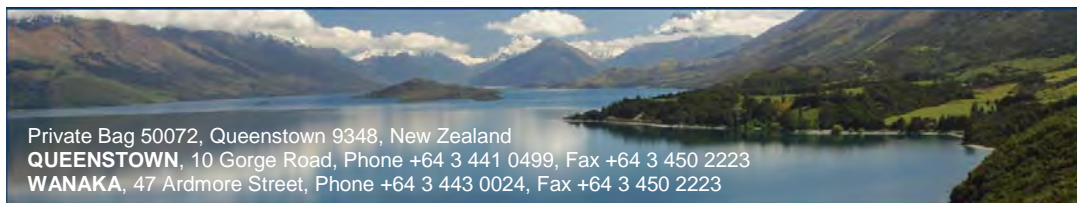


Figure 1d: The area of potential significance - Remarkables Face SNA A - C14A\_2-3



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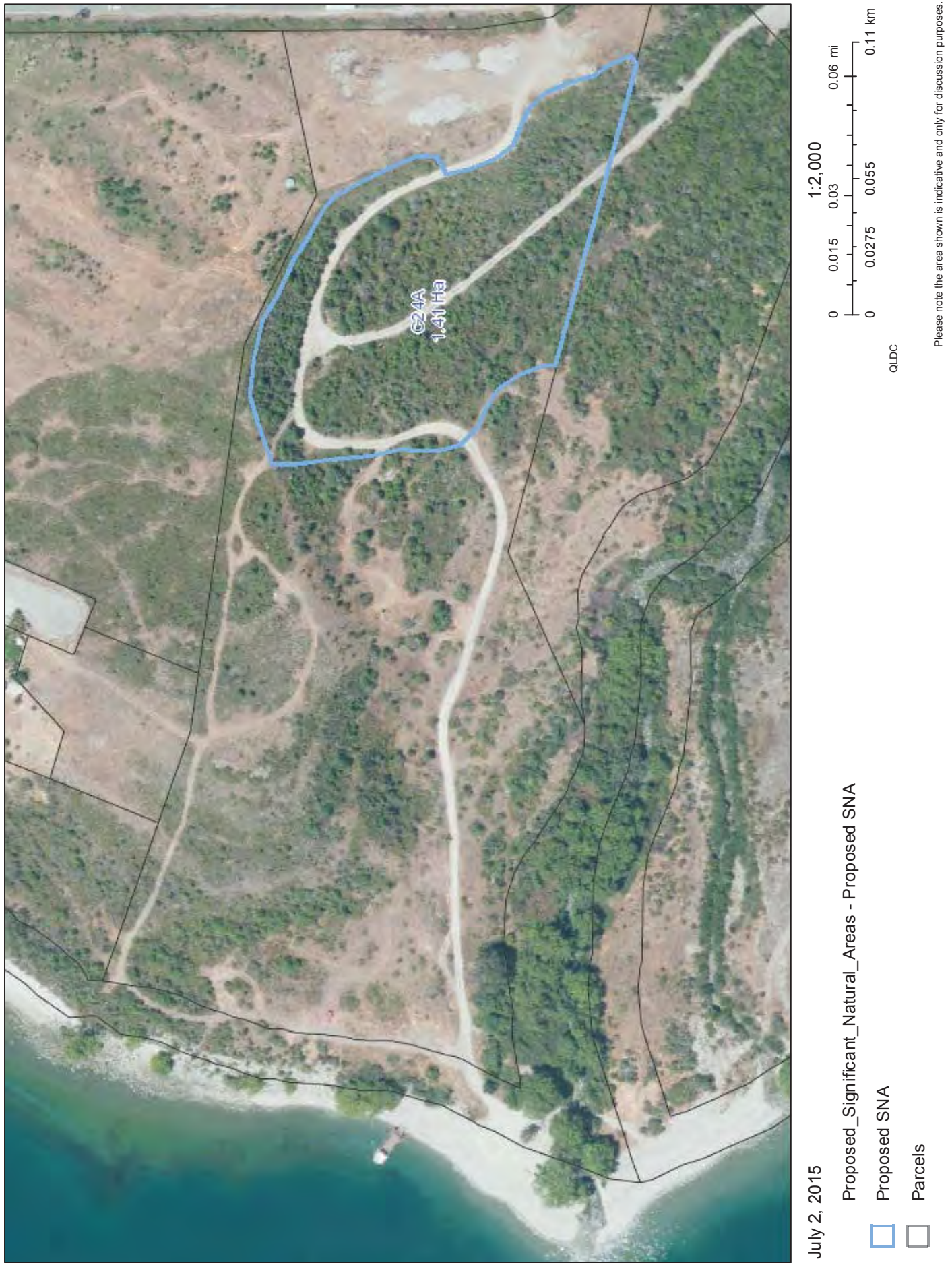


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Significant Natural Area Assessment			
Project No: <i>11001/024</i>	Property Name: <i>Wye Creek</i>  Site Name: <i>Wye Creek SNA A</i>	Ecologist: <i>Rebecca Lawrence</i>  Date: <i>9 August 2012</i>	
Survey Undertaken By: <i>Rebecca Lawrence</i>		<u>Waypoint No (mid-point of survey area):</u> <i>See attached plan for location.</i>	
LENZ Unit: <i>N5.1c &amp; N4.1d</i>  Ecological District: <i>Remarkables Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>slightly sloping terrain</i>	Slope: <i>slight slope to lake.</i>	Altitude: <i>335 masl</i>	Aspect: <i>West</i>
Threatened Environment Status:  <i>Acutely Threatened &amp; Chronically Threatened</i>		Area Size (ha): <i>1.41</i>	
Representativeness: Prior to European arrival, from the lake shore to three quarters of the way up the site there would most likely have been grassland with patches of kanuka, and at the top end of the site there would have been woodland comprised of kowhai, kanuka, matagouri, coprosmas and olearias. Currently, the site's grassland is dominated by exotic grass species and the shrubland is dominated by bracken fern and <i>Pittosporum tenuifolium</i> .			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed.</i>			
Provide onsite description of vegetation:			
Vegetation type: Shrubland dominated by bracken fern and <i>Pittosporum tenuifolium</i> , but also including tutu, <i>Coprosma propinqua</i> , <i>Griselinia littoralis</i> , manuka, <i>Hebe salicifolia</i> , matagouri, mistletoe sp., <i>Carmichaelia</i> sp., and <i>Cordyline australis</i> . There are also areas of grassland, dominated by exotic grass species.			
Degree of Modification: Given the predominance of bracken fern, previous disturbances (e.g. fire) most likely occurred. There are also off-road vehicle tracks throughout the site.			
Overall Health: The shrubland is largely intact, supporting a range of native plant species, which should survive so long as there is no future disturbance. We expect the vegetation to continue to develop with seed sources of later successional species such as beech forest in close proximity to the site.			

<p>Provide onsite description of fauna habitat: The onsite fauna will includes passerine bird species (exotic and native) and invertebrates.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Threats include weeds such as briar, exotic grasses and wilding pines (which are present on site), and disturbance from off-road tracks and their associated activities.</p>
<p>Rarity: The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining with 2.3% protected. The threatened environment classification identifies the N5.1c environment to have 2.7% indigenous vegetation cover remaining with 0.8% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): Without further disturbance, the shrubland will sustain itself, and promote the regeneration of many native plant species, although with time there is the risk of wilding pines dominating.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): There are a range of native shrubland plant species present on site.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The site is distinctive in that the bracken is providing a nursery for the regeneration of multiple native plant species on site.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): To the north is a housing development with native plantings and to the south is grassland which is dominated by exotic grass species, although along Wye Creek there are individual beech trees and some southern rata. To the west is Lake Wakatipu and to the east Wye Creek, which supports an area of beech forest and more shrubland.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The site is sustainable without future disturbance, with a range of native plant species regenerating through the bracken fern. There is a risk of wilding pines dominating the site given time.</p>
<p>Recommendation (Accept/Decline): Given the site contains representative vegetation of a threatened environment and is self-sustaining, as well as providing excellent habitat for a range of bird and invertebrate species, we recommend this area is considered as a Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance – Wye Creek SNA A – C24A







**Figure 2:** Photograph showing the dominant bracken fern and *Pittosporum tenuifolium*.

Significant Natural Area Assessment			
Project No: <i>11001/001</i>	Property Name: <i>Loche Linnhe</i> Site Name: <i>Loche Linnhe SNA A</i>	Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: <i>September 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E:217 6787</i> <i>N:555 1774</i>	
LENZ Unit: <i>Q2.2a</i> Ecological District: <i>Lakes Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Hillslope</i>	Slope: <i>40°</i>	Altitude: <i>715 masl</i>	Aspect: <i>Westerly</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>38.02</i>	
Representativeness: <i>Grey shrubland</i> – whilst the environment is understood to have supported a pre-settlement vegetation dominated beech forest (Leathwick <i>et. al.</i> 2003), grey shrubland is a representative community in the dryland areas of the Lakes District and has extended its distribution where farming practices have allowed this to occur.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Olearia fimbriata</i>		Threatened - Nationally Vulnerable	
<i>Falco novaezealandiae</i> “eastern” (eastern NZ Falcon)		At Risk - Recovering	
Provide onsite description of vegetation:			
Vegetation type: Grey shrubland consisting of <i>Olearia odorata</i> , <i>Olearia fimbriata</i> , <i>Discaria toumatou</i> , <i>Coprosma propinqua</i> , <i>Coprosma rugosa</i> , <i>Melicytus alpinus</i> , <i>Muehlenbeckia complexa</i> , <i>Rubus schmidelioides</i> . The understorey is dominated by introduced grasses.			
Degree of Modification: The area has experienced considerable historical disturbance predominantly through burning and grazing however the area has not been disturbed for some time, possibly not for more than 40 years.			
Overall Health: The shrubland within the proposed area is intact, impenetrable and has a closed canopy.			
Provide onsite description fauna habitat – species recorded or expected to be present: Shrubland provides habitat for both introduced and indigenous passerines which provide a food source for the eastern falcon which has been recorded in the vicinity of the shrubland. The DoC CRR report notes the lake faces support the common skink ( <i>Oligosoma n. polychroma</i> ), McCanns skink ( <i>Oligosoma maccanni</i> ) and common gecko ( <i>Hoplodactylus maculatus</i> ). The			

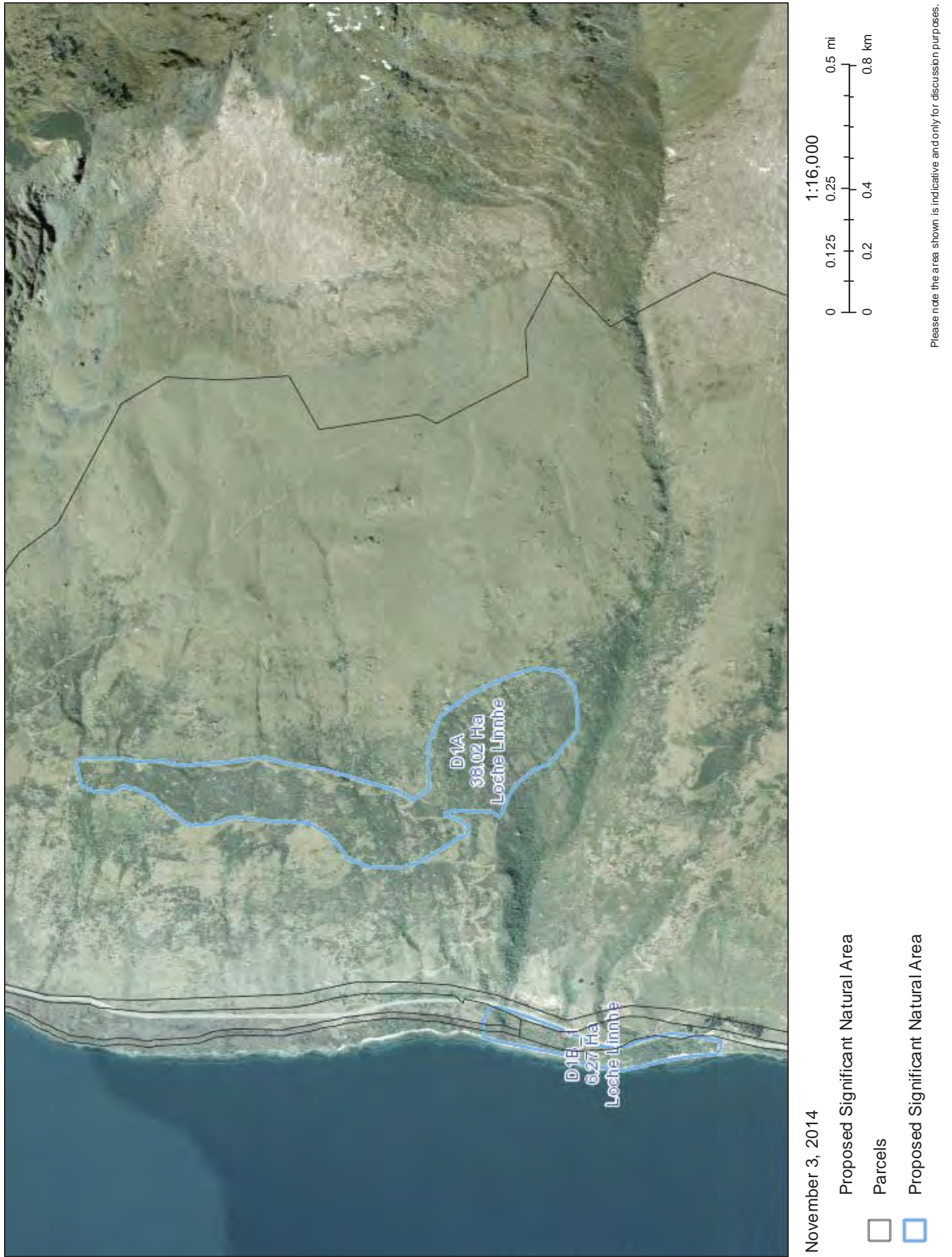
<p>shrubland will also support a range of invertebrate species, with the <i>Olearia</i> species in particular known to be a host specific species for a diverse range of moth species.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The key threat is from pastoral management practices and from inadvertent events associated with the public activity along the Kingston Road. Most of the area has been identified and excluded from disturbance through the vegetation clearing consent process, however, the risk of inadvertent disturbance from burning will be ongoing.</p> <p>Briar is the main weed present but in low numbers.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The remaining cover is considered sufficient to maintain the biodiversity of the indigenous vegetation and habitats. Notwithstanding the above, the level of protection is low, therefore there is a risk of further loss of indigenous vegetation cover.</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>The proposed SNA A is a reasonable area of grey shrubland, with a moderate edge to area ratio.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland contains a good range of shrubland species and covers a range of substrates including rock outcrops, hillslope and drainage lines.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland contains multiple stands of <i>Olearia odorata</i>, with a number of more isolated mature <i>Olearia fimbriata</i> trees. The size of the <i>Olearia</i> populations is a special ecological characteristic of the area.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The proposed area is connected to nearby adjacent shrubland communities and indigenous broadleaved hardwood communities and beech forest in the Wye Creek and the unnamed stream to the south of the area.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland is currently in good ecological condition with a diverse range of mature shrubs and creepers and a predominantly closed canopy. Providing disturbance due to pastoral activities or other sources are minimal the shrubland will continue to persist and improve and provide valuable habitat for native birds, invertebrates and lizards. Regeneration will occur in this stand as the canopy opens up and gaps in the canopy occur providing a dense sward of introduced grasses does not develop.</p>



**Recommendation (Accept/Decline)**

The shrubland is a good example of vegetation that is representative of this environment. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 6% has any formal protection. It is also important as habitat for a diverse and abundant invertebrate fauna and passerines that are critical for the maintenance of the eastern falcon present on the lake faces of Loch Linnhe. Given the high level of representativeness, rarity of quality grey shrubland in these LENZ environments, the presence of threatened tree species and the habitat it provides for falcon, we recommend the area should be considered for designation as a SNA.

Figure 1: The area of potential significance - Loch Linnhe SNAA - D1A







**Figure 2:** Above are representative photos of the vegetation under consideration for the proposed '*Loche Linnhe SNA A*' area.



### Significant Natural Area Assessment

Project No: <i>11001/001</i>	Property Name: <i>Loche Linnhe</i> Site Name: <i>Loche Linnhe SNA B</i>	Ecologist: <i>Glenn Davis and Neill Simpson.</i> Date: <i>7 September 2010</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		<u>Waypoint No (mid point of survey area):</u> <i>Lakeside vegetation, see plans for distribution.</i>	
LENZ Unit: <i>N4.1d</i> Ecological District: <i>Lakes Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Hillslope</i>	Slope: <i>40°</i>	Altitude: <i>300 - 360</i>	Aspect: <i>Westerly</i>
Threatened Environment Status: <i>Chronically threatened (less than 20% remaining)</i>		Area Size (ha): <i>48.13</i>	
Representativeness: <i>Broadleaved indigenous hardwoods</i> – the community has a high degree of representativeness given broadleaved indigenous hardwoods are representative of lakeshore vegetation in the lakes ecological district.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed.</i>			
Provide onsite description of vegetation:			
Vegetation type: <i>Broadleaved indigenous hardwoods</i>			
Structural Class: <i>Forest and shrubland consisting of Griselinia littoralis, Aristotelia serrata, Olearia arborescens, Metrosideros umbellata, Carpodetus serratus, Fuschia excorticata, Sophora microphylla, Pittosporum tenuifolium, Pseudopanax crassifolium and Coriaria arborea</i>			
Degree of Modification: <i>The lakeside vegetation area has experienced historical disturbance, however it continues to regenerate strongly where periodic disturbance has been removed.</i>			
Overall Health: <i>The forest ranges in health from excellent condition to early-mid stages of regeneration.</i>			
Provide onsite description fauna habitat – species recorded or expected to be present: <i>The vegetation will provide habitat for a variety of indigenous birds and invertebrates.</i>			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The key threat is from inadvertent events, predominantly fire as a result of public activity either on the road or from the people using the beach. Gorse and broom is present but the indigenous hardwood species are expected to dominate over time.</p>
<p>Rarity:</p> <p>The threatened environment classification indicates the indigenous vegetation cover remaining in this environment is 18.6%, with 2.3% under formal protection.</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>The area is elongated by its very nature being riparian vegetation adjacent to the lake.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The diversity of the lakeside vegetation ranges through its distribution along the lakeshore, and ranges from areas dominated by broadleaf to areas containing a wide range of tree species such as evidenced at the Devils Staircase.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The lakeside vegetation is a stronghold in the Lakes District of the southern rata and kowhai.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The lakeside vegetation is connected to vegetation on the lake faces by vegetation adjacent to Wye Creek, Staircase Creek and a number of other unnamed streams, in addition to the broadleaved indigenous hardwood communities located above the road near the Devils Staircase.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Providing disturbance due to pastoral activities or other sources are minimal the shrubland will continue to persist and improve and provide valuable habitat for native birds, invertebrates and lizards.</p>
<p>Recommendation (Accept/Decline):</p> <p>The forest/shrubland is a good example of vegetation that is representative of this environment. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 3% has any formal protection. The vegetation includes locally uncommon species southern rata and kowhai, and is an important habitat for indigenous birds and invertebrates. Given the high level of representativeness, rarity indigenous vegetation in these LENZ environments and the habitat it provides, we recommend the lakeshore vegetation should be considered for designation as a SNA.</p>

Figure 1a: The area of potential significance - Loche Linnhe SNA B - D1B\_1.





Figure 1b: The area of potential significance - Loch Linnhe SNA B - D1B\_2.

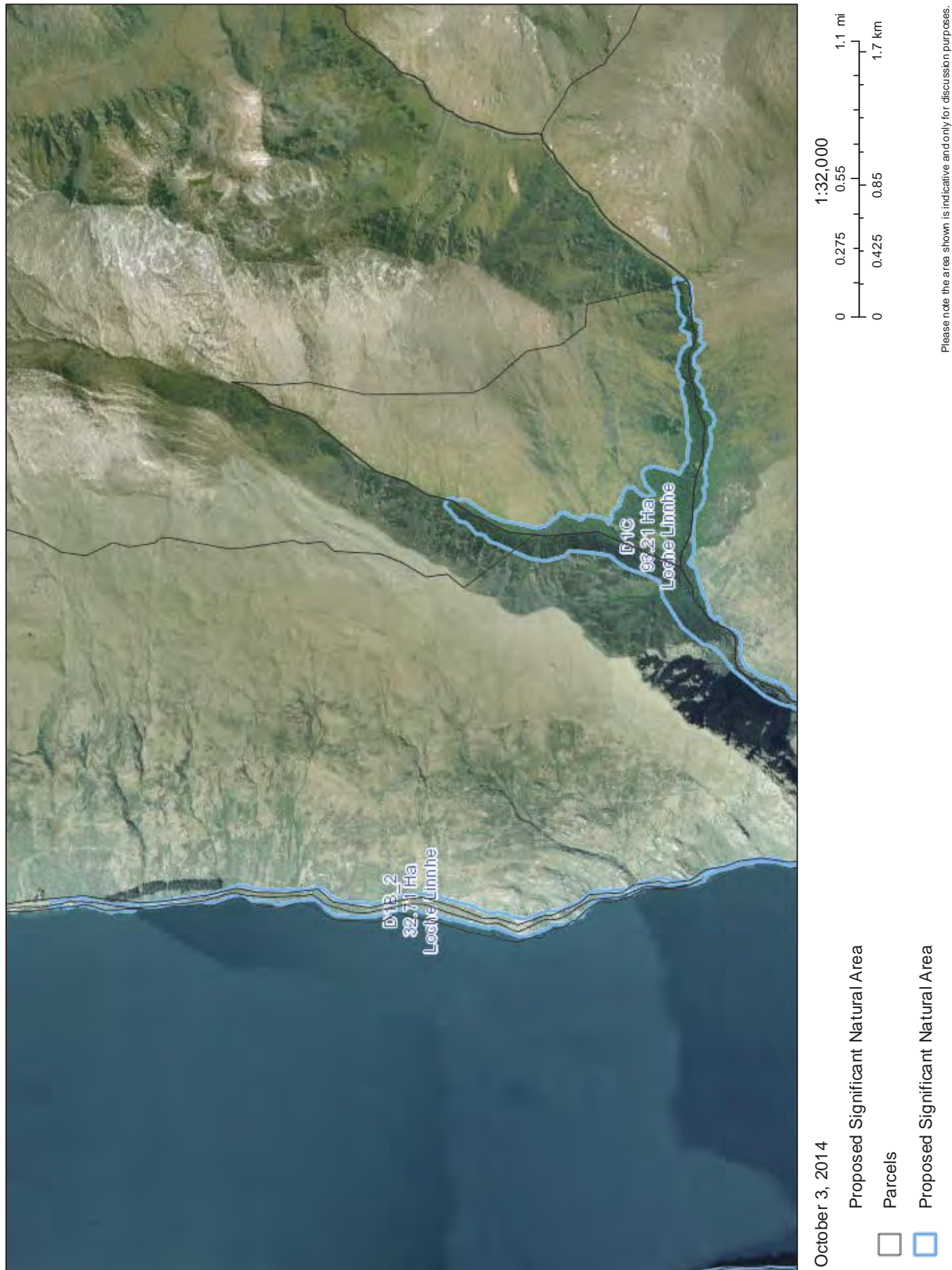


Figure 1c: The area of potential significance - Loch Linnhe SNA B - D1B\_2 cont.



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



Figure 1d: The area of potential significance - Loch Linnhe SNA B - D1B\_3.







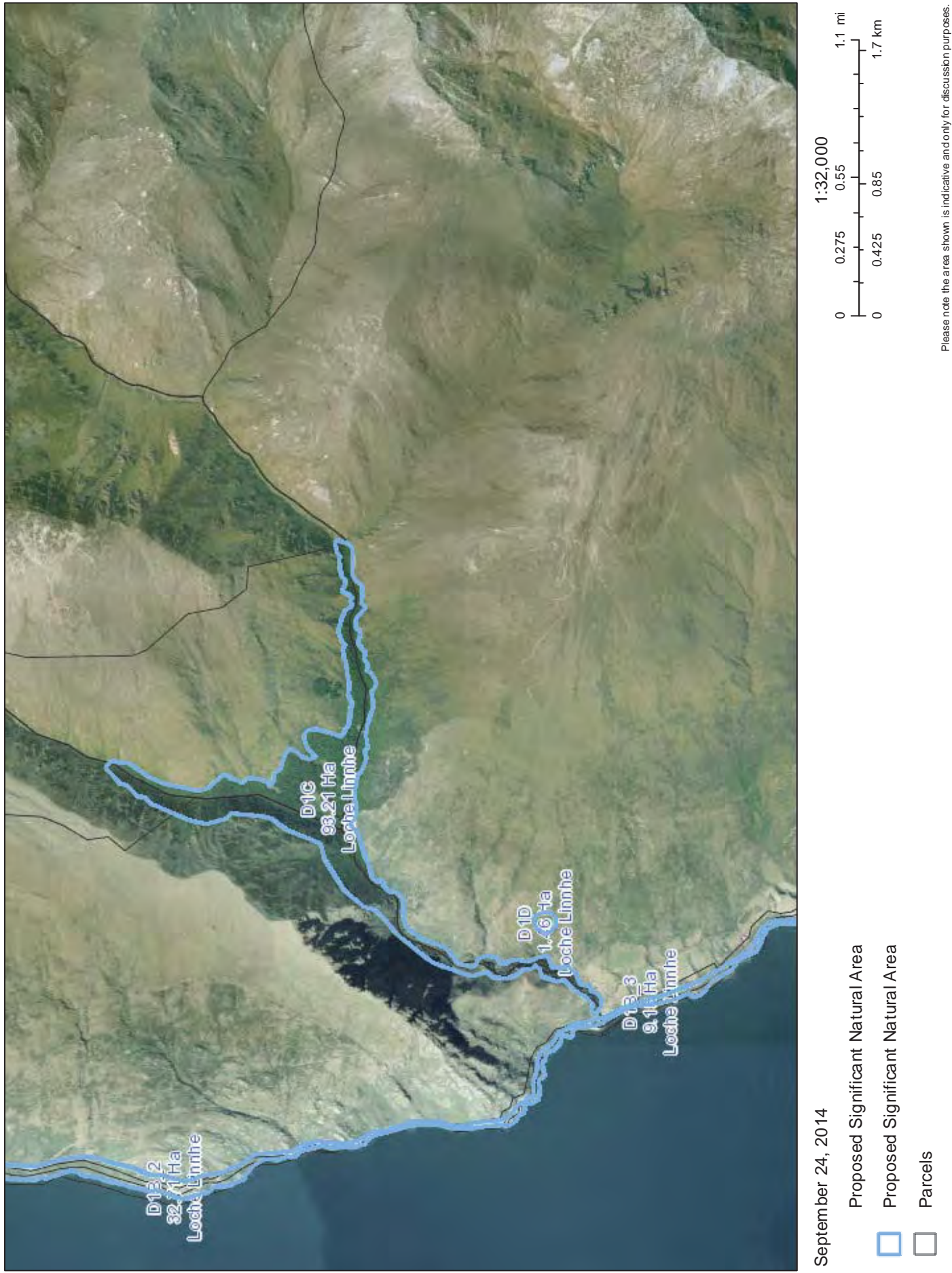
**Figure 2:** Above are representative photos of the lakeside vegetation under consideration for the proposed '*Loche Linnhe SNA B*' area.

<b>Significant Natural Area Assessment</b>			
Project No: <i>11001/001</i>	Property Name: <i>Loche Linnhe</i> Site Name: <i>Loche Linnhe SNA C</i>	Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: <i>7 September 2010</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 217 7713</i> <i>N: 554 3778</i>	
LENZ Unit: <i>Q2.2a</i> Ecological District: <i>Lakes Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Riparian and hillslope.</i>	Slope: <i>Variable.</i>	Altitude: <i>300 - 860</i>	Aspect: <i>Range of aspects.</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>93.21</i>	
Representativeness: <i>Beech Forest</i> – beech forest is highly representative of the environment and would have covered much of the lower slopes of the lake faces of the Remarkables prior to human settlement.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Alepis flavida</i>		<i>At Risk - Declining</i>	
Provide onsite description of vegetation:			
Vegetation type: <i>Beech forest.</i>			
Canopy: <i>Beech forest</i> – dominated by mountain beech ( <i>Nothofagus solandri. cliffortoides</i> ) with occasional mature red beech ( <i>Nothofagus fusca</i> ), located above the highway. Where beech is absent broadleaved forest/shrubland of kohuhu ( <i>Pittosporum tenuifolium</i> ), kowhai ( <i>Sophora microphylla</i> ), cabbage tree ( <i>Cordyline australis</i> ), <i>Coprosma crassifolia</i> , <i>Olearia avicenniaefolia</i> , <i>Corokia cotoneaster</i> , <i>Helichrysum lanceolatum</i> and koromiko ( <i>Hebe salicifolia</i> ) is present.			
Degree of Modification: The extent of the beech forest has been modified and the forest margins are now dominated by shrubland communities. The understorey is understood to be sparse suggesting the forest floor has historically been effected by grazing.			
Provide onsite description fauna habitat – species recorded or expected to be present: Species expected to be present are passerine bird species (exotic and native) and invertebrates.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The threats to the beech forest is considered low, however there is ongoing threats to the vegetation and fauna present from possums and other introduced herbivores such as deer, stoats and ferrets.</p>
<p>Rarity: The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The remaining cover is considered sufficient to maintain the biodiversity of the indigenous vegetation and habitats. Notwithstanding the above, viewed in a local context, beech forest distribution on the western Remarkables is restricted considerably from its previous extent and the Staircase Creek stand is a good example of the vegetation that covered the area prior to human settlement.</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>The forest is a considerable size and will continue to expand into adjacent shrublands if left undisturbed.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The beech forest is critical to the preservation of an indigenous vegetation cover sequence from the lake to the alpine environment.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Whilst the composition of the beech forest is similar in nature to larger areas of beech further to the west of the ecological region, the forest is very distinctive to the Remarkables range.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The beech forest is directly connected to lakeside vegetation, shrubland vegetation on its margins and tall tussock grassland at its altitudinal limit.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The beech stand is an appropriate size to ensure ecological processes such as recruitment and regeneration are maintained into the future.</p>
<p>Recommendation (Accept/Decline)</p> <p>The beech forest is a good example of vegetation that is understood to have dominated the lower slopes of the Remarkables. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 6% has any formal protection. Given the high level of representativeness and rarity of beech forest on the Remarkables Range we recommend the area should be considered for designation as a SNA.</p>



Figure 1: The area of potential significance - Loch Linnhe SNA C - D1C







**Figure 2:** Beech forest in valley floor and lower slopes, looking toward the top of the Remarkables, and under consideration for the proposed 'LL SNA C' area.

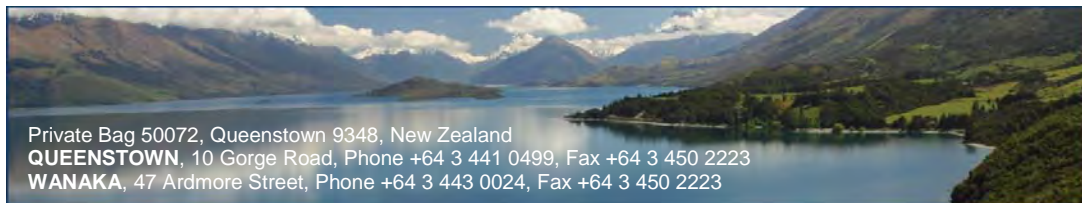


**Figure 3:** Lower reach of Staircase Creek adjacent to Lake Wakatipu, and under consideration for the proposed 'LL SNA C' area.



**Figure 4:** Shrubland regeneration on true right of Staircase Creek adjacent to beech forest, and under consideration for the proposed 'LL SNA C' area.





Private Bag 50072, Queenstown 9348, New Zealand  
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Significant Natural Area Assessment			
Project No: <i>11001/001</i>	Property Name: <i>Loche Linnhe</i> Site Name: <i>Loch Linnhe SNA D</i>	Ecologist: <i>Glenn Davis and Neill Simpson.</i> Date: <i>September 2010</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See plan attached.</i>	
LENZ Unit: <i>Q2.2a</i> Ecological District: <i>Lakes Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Hillslope</i>	Slope: <i>20-30°</i>	Altitude: <i>440 masl</i>	Aspect: <i>Westerly</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>1.46</i>	
Representativeness: <i>Grey Shrubland</i> – whilst the environment is understood to have supported a pre-settlement vegetation dominated beech forest (Leathwick <i>et. al.</i> 2003), grey shrubland is a representative community in the dryer areas of the lakes district and has extended its distribution where farming practices have allowed this to occur.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Olearia fimbriata</i>		Threatened - Nationally Vulnerable	
<i>Falco novaezealandiae</i> “eastern” (eastern NZ Falcon)		At Risk - Recovering	
Provide onsite description of vegetation:  Vegetation type: The area consists of grey shrubland and pasture grassland. Species recorded include tree daisys ( <i>Olearia odorata</i> , <i>Olearia fimbriata</i> ), matagouri, mingimingi ( <i>Coprosma propinqua</i> ), briar ( <i>Rosa rubiginosa</i> ), <i>Melicytus alpinus</i> . Climbers and vines identified include <i>Muehlenbeckia australis</i> and <i>Rubus schmidelioides</i> .  Degree of Modification: The area has experienced considerable historical disturbance predominantly through burning and grazing however the area has not been disturbed for some time, possibly not for more than 40 years.  Overall Health: There are a number of mature trees, however regeneration of the community is low given the lack of safe sites for germination and grazing activity.			

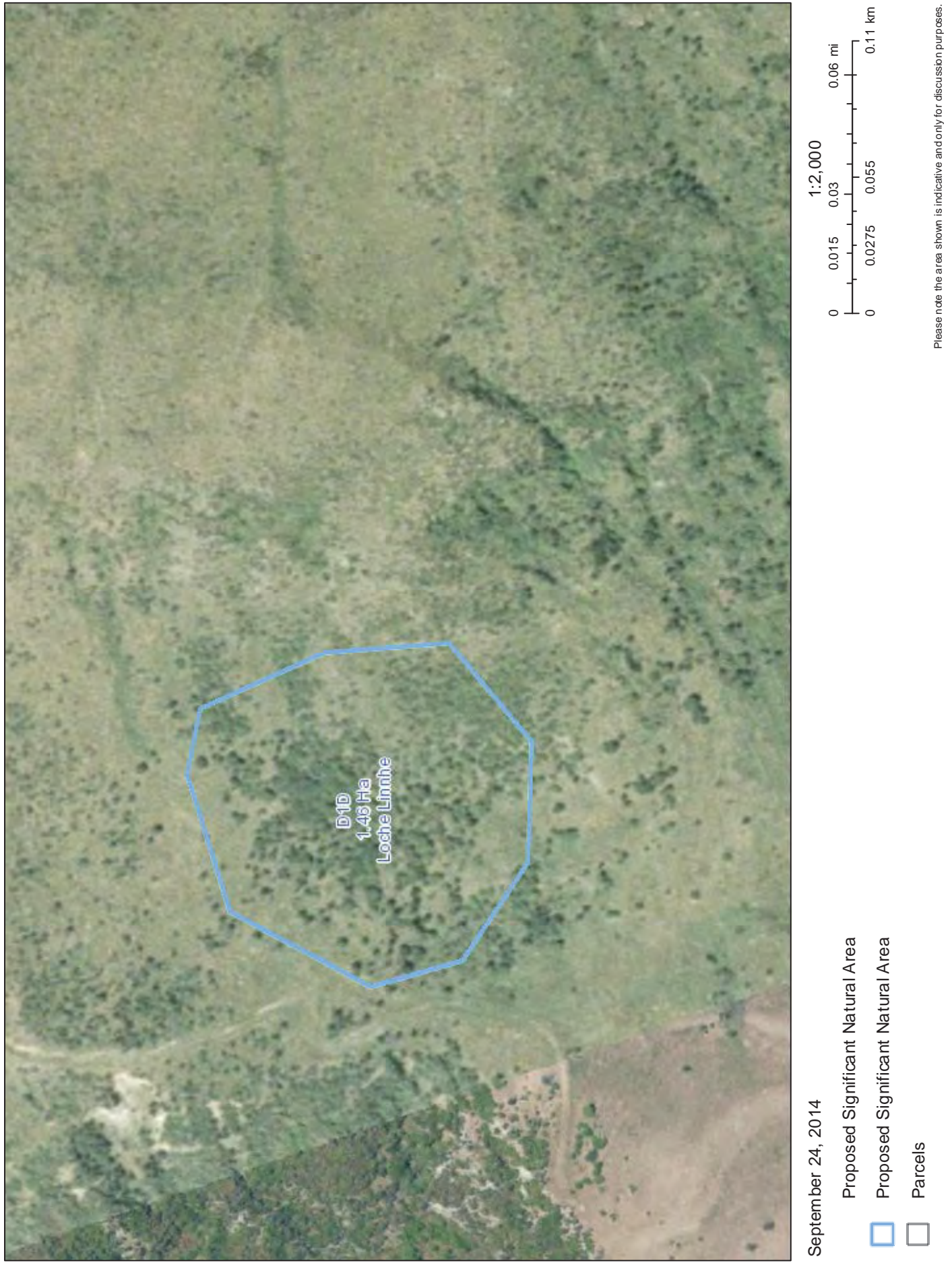
<p>Provide onsite description fauna habitat – species recorded or expected to be present:  Shrubland provides habitat for both introduced and indigenous passerines which provide a food source for the eastern falcon, which has been recorded in the vicinity of the shrubland. The DoC CRR report notes the lake faces support the common skink (<i>Oligosoma n. polychroma</i>), McCanns skink (<i>Oligosoma maccanni</i>) and common gecko (<i>Hoplodactylus maculatus</i>). The shrubland will also support a range of invertebrate species, with the <i>Olearia</i> species in particular known to be a host specific species for a diverse range of moth species.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):  The key threat is from pastoral management practices and from inadvertent events associated with the public activity along the Kingston Road. The area has been identified and excluded from disturbance through the vegetation clearing consent process, however, the risk of inadvertent disturbance from burning will be ongoing.  Briar is the main weed present and the main threat to the longterm maintenance of the community is the lack of recruitment into the community.</p>
<p>Rarity:  The threatened environment classification identifies the environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The remaining cover is considered sufficient to maintain the biodiversity of the indigenous vegetation and habitats. Notwithstanding the above, the level of protection is low, therefore there is a risk of further loss of indigenous vegetation cover.  Threatened species associated with the community are detailed above.</p>
<p>Area Shape and Area/Edge Ratio:  The area is small in size, with a high edge to area ratio.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):  The area is notable for the presence of <i>Olearia fimbriata</i>.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):  The shrubland contains multiple stands of <i>Olearia odorata</i> with a number of more isolated mature <i>Olearia fimbriata</i> trees. The size of the <i>Olearia</i> populations is a special ecological characteristic of the area.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):  The proposed area is connected to nearby adjacent shrubland/pasture grassland and the shrubland and beech forest communities in the Staircase Creek catchment.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):  The existing long term sustainability of the shrubland is unclear given a lack of recruitment and regeneration. The shrubland canopy is largely open and the pasture grassland sward will restrict future recruitment. Grazing exclusion of the area would be required to assist future regeneration.</p>

Recommendation (Accept/Decline):

The shrubland is an example of vegetation that is representative of this environment. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 6% has any formal protection. It is also important as habitat for a diverse and abundant invertebrate fauna and passerines that are critical for the maintenance of the eastern falcon present on the lakes faces of Remarkables Range. Given the high level of representativeness, rarity of quality grey shrubland in these LENZ environments, the presence of threatened tree species and the habitat it provides for falcon, we recommend the area should be considered for designation as a SNA.



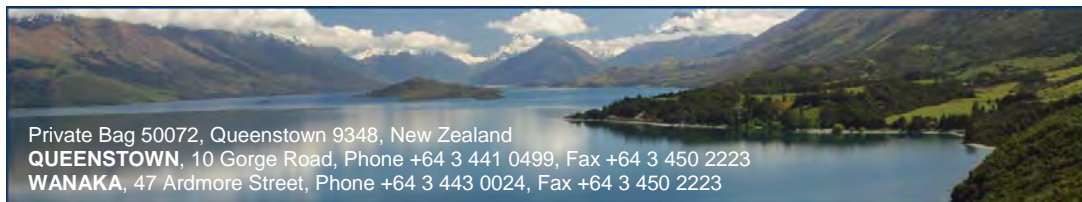
Figure 1: The area of potential significance - Loche Linnhe SNA D - D1D





**Figure 2:** The above photo is representative of the vegetation under consideration for the proposed '*Loche Linnhe SNA D*' area.





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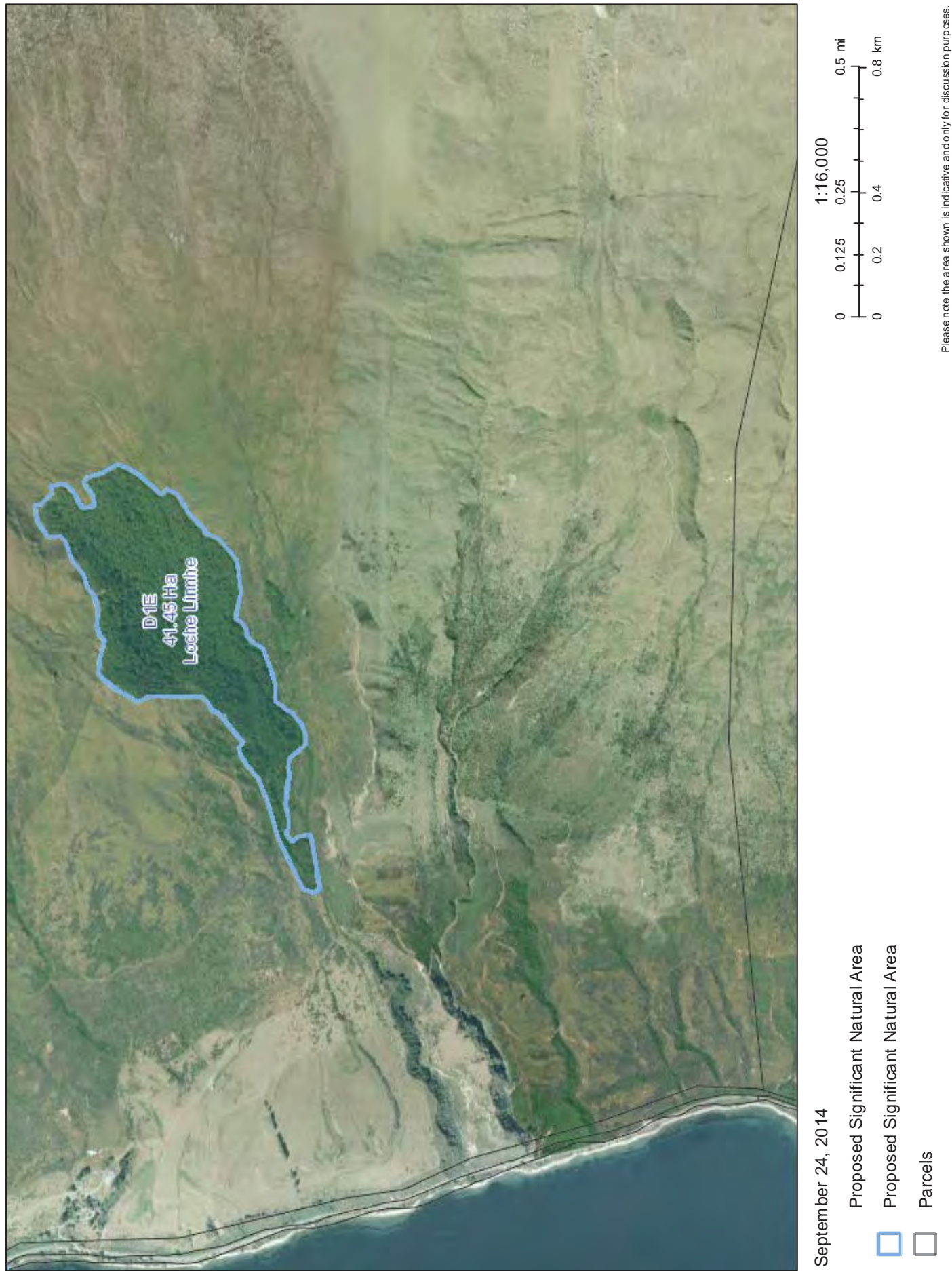
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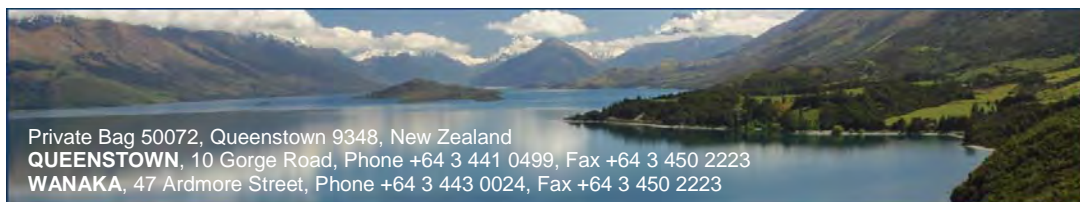
Significant Natural Area Assessment			
Project No: 11001/001		Property Name: <i>Loche Linnhe</i> Site Name: <i>Loche Linnhe SNA E</i>	
		Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: 7 September 2010	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): E: 217 9363 N: 554 0035	
LENZ Unit: Q2.2a  Ecological District: <i>Lakes Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Riparian and hillslope</i>	Slope: <i>Variable</i>	Altitude: 460 - 960	Aspect: <i>Westerly</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): 41.45	
Representativeness: <i>Beech Forest</i> – beech forest is highly representative of the environment and would have covered much of the lower slopes lake faces of the Remarkables prior to human settlement.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Alepis flavida</i>		At Risk - Declining	
Provide onsite description of vegetation:			
Vegetation type: Beech forest dominated by mountain beech ( <i>Nothofagus solandri. cliffortoides</i> ), with occasional mature red beech ( <i>Nothofagus fusca</i> ). Understorey: Halls totara ( <i>Podocarpus hallii</i> ), broadleaf ( <i>Griselinia littoralis</i> ), marbleleaf ( <i>Carpodetus serratus</i> ) mountain ribbonwood ( <i>Hoheria lyallii</i> ) and lancewood ( <i>Pseudopanax crassifolius</i> ). Ferns: <i>Blechnum novae-zelandiae</i> , <i>B. montanum</i> , <i>B. vulcanicum</i> , <i>B. chambersii</i> , <i>B. fluviatile</i> , <i>Asplenium appendiculatum</i> subsp. <i>appendiculatum</i> , hen and chicken fern ( <i>A. bulbiferum</i> ) and <i>Ctenopteris heterophylla</i> .			
Degree of Modification: We understand the understorey has been grazed.			
Provide onsite description fauna habitat – species recorded or expected to be present: A range of native bird species are understood to inhabit the area including grey warbler, tomtit, bellbird, tui and fantail.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): The threat to the beech forest is considered low, however there is ongoing threats to the vegetation and fauna present from possums and other introduced species such as deer, pigs, stoats and ferrets.			



<p><b>Rarity:</b>  The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The remaining cover is considered sufficient to maintain the biodiversity of the indigenous vegetation and habitats. Notwithstanding the above, viewed in a local context, beech forest distribution on the western Remarkables is restricted considerably from its previous extent and this stand is a good example of the vegetation that covered the area prior to human settlement.</p>
<p><b>Area Shape and Area/Edge Ratio:</b>  The forest is a considerable size, with a moderate edge to area ratio.</p>
<p><b>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</b>  The beech forest is critical to the preservation of an indigenous vegetation cover sequence from the lake to the alpine environment.</p>
<p><b>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</b>  Whilst the composition of the beech forest is similar in nature to large areas of beech further to the west of the ecological region, the forest is very distinctive to the Remarkables range.</p>
<p><b>Connectivity (how is the site connected to surrounding communities/areas?):</b>  The beech forest is connected to nearby lakeside vegetation, shrubland vegetation near its margins and tall tussock grassland above.</p>
<p><b>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</b>  The beech stand is an appropriate size to ensure ecological processes such as recruitment and regeneration are maintained into the future.</p>
<p><b>Recommendation (Accept/Decline):</b>  The beech forest is a good example of vegetation that is understood to have dominated the lower slopes of the Remarkables. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 6% has any formal protection. It is also important habitat for indigenous birds and invertebrates. Given the high level of representativeness and rarity of beech forest on the Remarkables Range we recommend the area should be considered for designation as a SNA.</p>

Figure 1: The area of potential significance - Loche Linnhe SNA E - D1E





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Significant Natural Area Assessment			
Project No: 11001/004		Property Name: <i>Halfway Bay</i>  Site Name: <i>Halfway Bay Lakeshore SNA A</i>	
		Ecologist: <i>N. Simpson</i>  Date: 26/04/11	
Survey Undertaken By: <i>N. Simpson and D. Palmer</i>		Waypoint No (mid-point of survey area): <i>E: 630      Topo50 CC11</i> <i>N: 825</i>	
LENZ Unit: <i>N 4.1d, Q2.2a and Q1.1c</i>  Ecological District: <i>Eyre and Remarkables Districts</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Lakeshore Steep mountain side</i>	Slope: <i>5 – 90%</i>	Altitude: <i>310 – 1000 m</i>	Aspect: <i>East</i>
Threatened Environment Status: <i>Ranges from Chronically Threatened (lakeshore N4.1d) to Underprotected (Q1.1c).</i>		Natural Area Size (ha): <i>894.33</i>	
Representativeness: Highly representative of the original shoreline vegetation in places, with good regeneration of broadleaf forest and shrubland along much of the area. Beech forest extends to the shoreline in places. Beech forest would have been the original forest of the steep slopes above the quite diverse broadleaf forest nearer the lakeshore.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Pachycladon cheesemani</i>		Threatened - Nationally Vulnerable	
<i>Alepis flavida</i>		At Risk - Declining	
<i>Pseudopanax ferox</i>		At Risk – Naturally Uncommon	
<i>Hebe fauicicola</i>		At Risk - Naturally Uncommon	
Provide onsite description of vegetation:  Vegetation type: Red and mountain beech forest in gullies, which reaches the lakeshore in places. Broadleaf lakeshore forest of kowhai, broadleaf, kohuhu, mapou, tarata, putaputaweta, wineberry, occasional southern rata, Olearia species, Coprosma species, weeping mapou, corokia, cabbage tree, fierce lancewood, lancewood and matagouri. Regenerating broadleaf forest and shrubland, bracken fernland, occasional gorse and wild conifers. An unusual form of rock hebe ( <i>Hebe fauicicola</i> ) occurs on rock bluffs at lake level. It has not been previously recorded west of the Kawarau River where the typical narrow-leaved form occurs.  Degree of Modification: Modified by fire in places but some original forest still persisting with good to very good regeneration overall.			

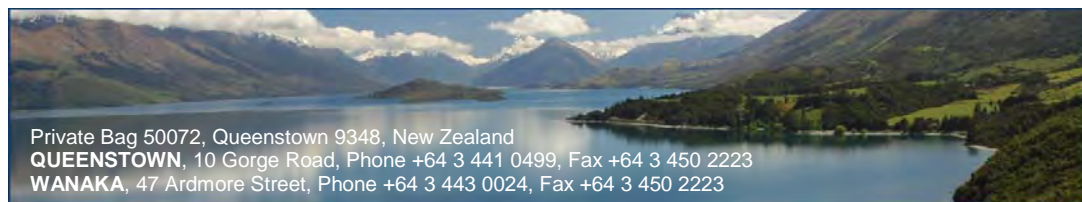


<p>Degree of Recruitment: Excellent recruitment with abundant seed sources adjacent.</p> <p>Overall Health: Very healthy to excellent.</p>
<p>Provide onsite description fauna habitat – species recorded or expected to be present: Fauna is typical of beech forest, shrubland and open country. Falcon in the open country with bellbird, grey warbler, tom tit, fantail, tui, brown creeper, white eye and occasional keruru in the forest and shrublands. Invertebrate fauna likely to be diverse.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): A minor threat from spread of weeds such as gorse (one small area) and greater long term threat from spreading conifer seedlings/trees. There are a few conifers scattered along the shore and on higher slopes.</p>
<p>Rarity: Original shoreline vegetation in places and the very good diverse regeneration as seen here is exceedingly rare in the District.</p>
<p>Area Shape and Area/Edge Ratio: Area adjoins upper montane beech forest and alpine communities above and is protected in places by large bluffs.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): There is very good diversity and range of vegetation patterns.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): As above.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): Connected to the above alpine ecosystem.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The land is generally very steep with numerous bluffs. It is not grazed and should both maintain its ecological integrity and continue to improve provided no burning occurs.</p>
<p>Recommendation: We recommend the area is considered for designation as an SNA based on the following:</p> <ul style="list-style-type: none"> <li>• The community is highly representative of the original lakeshore vegetation;</li> <li>• The area contains endangered and rare plant species;</li> <li>• Part of an intact lake to alpine vegetation sequence; and,</li> <li>• The area is sustainable with evidence of strong regeneration occurring.</li> </ul>

Figure 1: The area of potential significance - Halfway Bay Lakeshore SNA A - D4A



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



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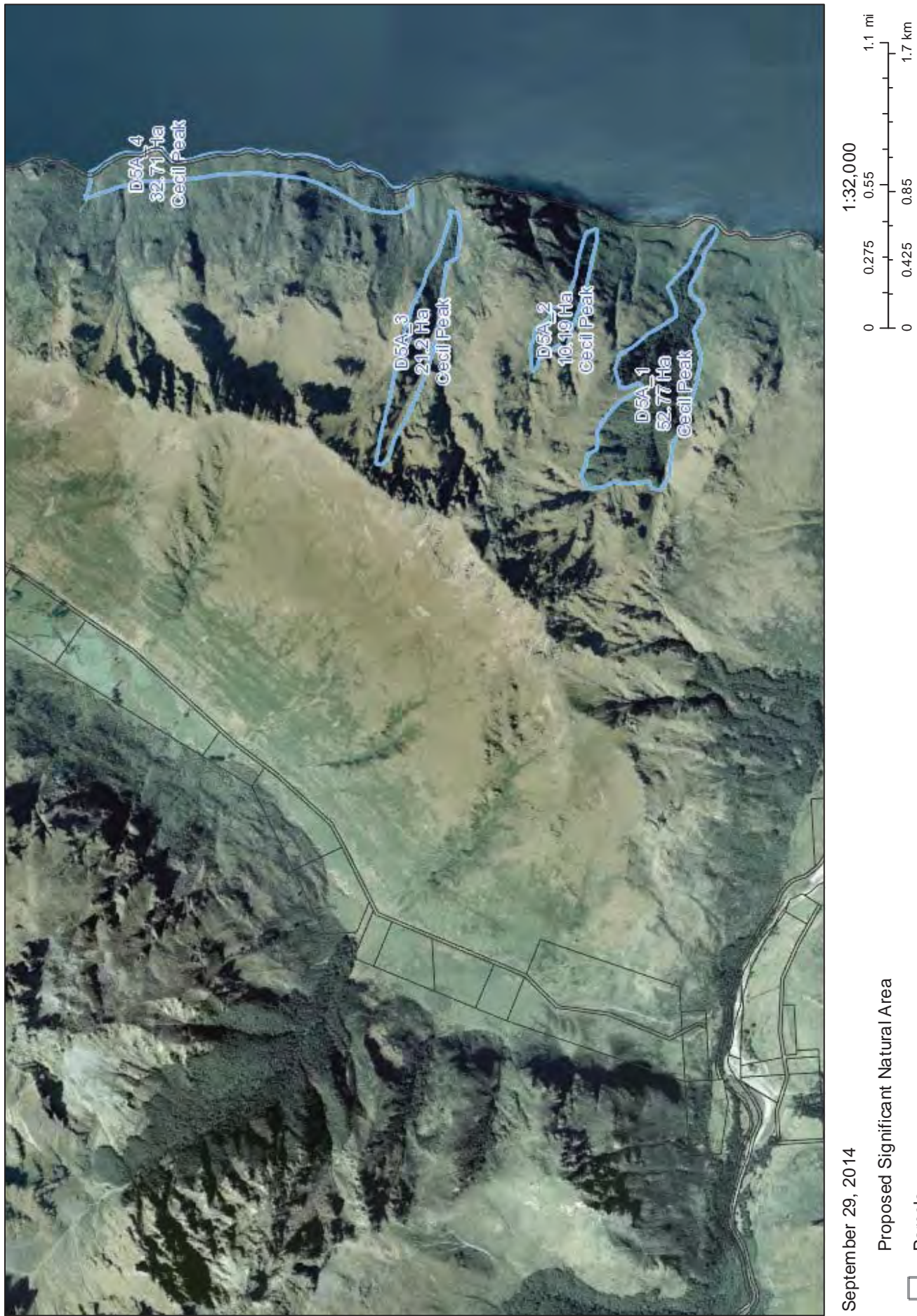
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Significant Natural Area Assessment			
Project No: 11001/005		Property Name: <i>Cecil Peak</i>  Site Name: <i>Lakeshore &amp; Gullies</i> SNA A	
		Ecologist: <i>N. Simpson</i>  Date: 26/04/11	
Survey Undertaken By: <i>N. Simpson, D. Palmer and R. Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 630    Topo50 CC11</i> <i>N: 930</i>	
LENZ Unit: N4.1d, Q2.2a and Q1.1c.  Ecological District: Eyre		Photo No.(s): <i>No photos.</i>	
Topography: <i>Lakeshore.</i>	Slope: 2-90 %	Altitude: 310 – 450 m	Aspect: <i>East.</i>
Threatened Environment Status: <i>Ranges from Chronically threatened (N4.1d) to Critically underprotected (Q2.2a) and Underprotected (Q1.1c)</i>		Natural Area Size (ha): 200.53	
Representativeness: Small remnants of the original beech forest and shrublands exist in sheltered gullies and along the shoreline with good regeneration in places. Occasional old kowhai remain on the edge of the shore where they escaped from fire.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Pseudopanax ferox</i> (Fierce lancewood)		At Risk – Naturally Uncommon	
<i>Alepis flavida</i> (Yellow mistletoe)		At Risk – Declining	
Vegetation type: Beech forest, shrubland, bracken fernland, pasture grasses.  Beech forest in gullies towards Halfway Bay with varied shrubland along the shoreline and around bluff areas with much bracken and pasture towards Cecil Peak Station and beyond, towards Walter Peak. Occasional old kowhai on the shoreline and some patches of diverse and regenerating shrubland particularly in small but deep gullies. Fierce lancewood is present along rocky shoreline and yellow mistletoe may be present in beech forest edges.  Degree of Modification: Highly modified by fire and grazing in places but has the potential to recover slowly from bracken to shrubland similar to that near Sunshine Bay and with probable very slow expansion of the beech forest if no further fire.  Degree of Recruitment: Some recruitment taking place along the shoreline and gullies where a seed source remains and seed dispersal by birds into bracken is occurring in places and will increase slowly.			



<p>Provide onsite description fauna habitat –species recorded or expected to be present: Fauna is typical of shrubland and open country. Falcon in the open country with bellbird, grey warbler, tom tit, fantail, tui, brown creeper, white eye and occasional keruru in the forest and larger shrublands.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Fire is the main threat. Himalayan honeysuckle is common in shrubland and wild conifers are a threat.</p>
<p>Rarity: The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining, with 2.3% protected. The Q2.2a environment has 39.92% indigenous cover remaining, with 5.07% protected. The Q1.1c environment has 91.23% indigenous cover remaining, with 19.26% protected.</p>
<p>Area Shape and Area/Edge Ratio: Long narrow strips, but with likely incursions uphill along gullies where good vegetation is preserved.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Average diversity and range of habitats.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Return of the indigenous vegetation along the shoreline will provide a buffer between the lake and farm management, and the retention of water quality in Lake Wakatipu. Provides habitat for bird, lizard and insect life.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): Connects with the alpine tops in places and this provides a corridor from the lake to the tops. The best sequence is below Bayonet Peaks between Whisky Gully and the peak at 1577 m. Also the Black Spur catchment to the north.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The area will slowly improve if fire is eliminated, weeds contained and farm management remains similar to present.</p>
<p>Recommendation: We believe the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat in view of the following ecological attributes:</p> <ul style="list-style-type: none"> <li>• provides a vegetation corridor from the lake shore to the alpine tops;</li> <li>• presence of remnants of the original beech forest and shrublands in sheltered gullies and along the shoreline; and,</li> <li>• occasional old kowhai on the edge of the lake shore, and the presence of fierce lancewood, an 'at risk' species.</li> </ul>

Figure 1a: The area of potential significance - Lakeshore & Gullies SNA A - D5A\_1-4.



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



Figure 1b: The area of potential significance - Lakeshore & Gullies SNA A - D5A\_5-7



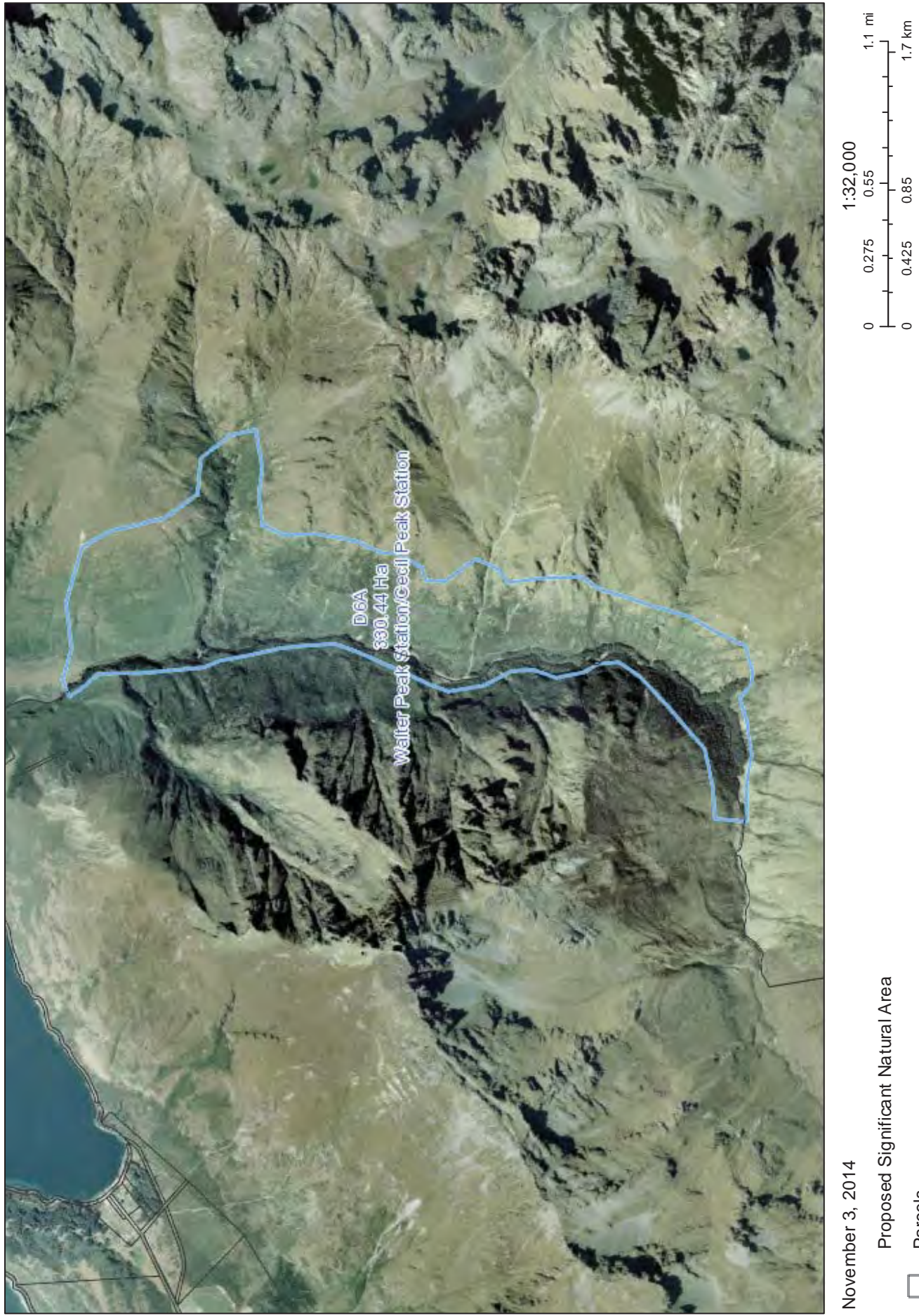
Please note the area shown is indicative and only for discussion purposes.



<b>Significant Natural Area Assessment</b>			
Project No: <i>11001/006</i>	Property Name: <i>Cecil Peak &amp; Walter Peak</i> Site Name: <i>McKinlays Creek SNA A</i>	Ecologist: <i>N. Simpson</i>  Date: <i>26/04/11</i>	
Survey Undertaken By: <i>N. Simpson, D. Palmer and R. Henderson.</i>		Waypoint No (mid-point of survey area): <i>E: 525      Topo50 CC11</i> <i>N: 914</i>	
LENZ Unit: <i>Q2.2b and Q2.2a</i>  Ecological District: <i>Eyre</i>		Photo No.(s): <i>No Photos.</i>	
Topography: <i>River valley and lower hill slopes</i>	Slope: <i>20 %</i>	Altitude: <i>675 m</i>	Aspect: <i>North/South</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Natural Area Size (ha): <i>330.44</i>	
Representativeness: Representative of valley beech forest with a remnant broadleaf component and shrubland containing a threatened plant.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Olearia hectorii</i>		Threatened - Nationally Endangered	
<i>Falco novaeseelandiae</i> "eastern" (eastern NZ falcon)		At Risk - Recovering	
Provide onsite description of vegetation:			
Vegetation type: Mountain beech forest, shrubland, exotic grassland.			
Mountain beech forest along McKinlays Creek but mainly on the true left (Walter Peak side), with remnant and regenerating shrubland on steep, rocky slopes and exotic grassland that follows along a vehicle track. A few <i>Olearia hectorii</i> trees grow along the river terrace edge with <i>Coprosma</i> species and other shrubs including <i>Hoheria glabrata</i> , cabbage tree, broadleaf, kohuhu, manuka, kowhai, matagouri and native broom.			
Degree of Modification: Modified by fire and grazing but good beech forest and regenerating shrubland.			
Degree of Recruitment: No recruitment of <i>Olearia</i> but good recruitment of other species.			
Overall Health: Beech forest good and regenerating shrubland.			

Provide onsite description fauna habitat – species recorded or expected to be present: Fauna typical of open country and beech forest, including native and exotic passerine bird species, as well as the eastern falcon.
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Increased stocking (change of farm management), wilding conifers and fire.
Rarity: Only two sites exist for <i>Olearia hectorii</i> in the Wakatipu with very few plants. This is the only site in the Eyre Ecological District. Populations of kowhai within shrubland ecosystems in the Lakes District are considered to be much reduced from its original extent. The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected, and the Q2.2b environment to have 44.68% indigenous vegetation cover remaining with 1.96% protected.
Area Shape and Area/Edge Ratio: Large overall area, but small site for <i>Olearia hectori</i> .
Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Diverse forest along the river valley.
Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?): This site is highly distinctive, given it is the location of a Nationally Endangered plant.
Connectivity (how is the site connected to surrounding communities/areas?): Connects with the surrounding beech forest, sub alpine shrublands and alpine communities above.
Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The <i>Olearia hectorii</i> is sustainable with management. The beech forest and shrublands are expanding naturally.
Recommendation: We recommend the area is considered for designation as an SNA based on the following: <ul style="list-style-type: none"> <li>• Nationally Endangered plant species <i>Olearia hectorii</i> is present on the valley floor;</li> <li>• The McKinleys Creek catchment consists of a range of vegetation communities including intact sequences of valley floor to alpine communities' representative of pre-settlement vegetation.</li> </ul> <p>Note: Natural recruitment of <i>Olearia hectorii</i> is not occurring. Active management of this population will be required to ensure the maintenance of the species in the McKinlay Creek valley system.</p>

Figure 1: The area of potential significance - McKinlays Creek SNA A - D6A.



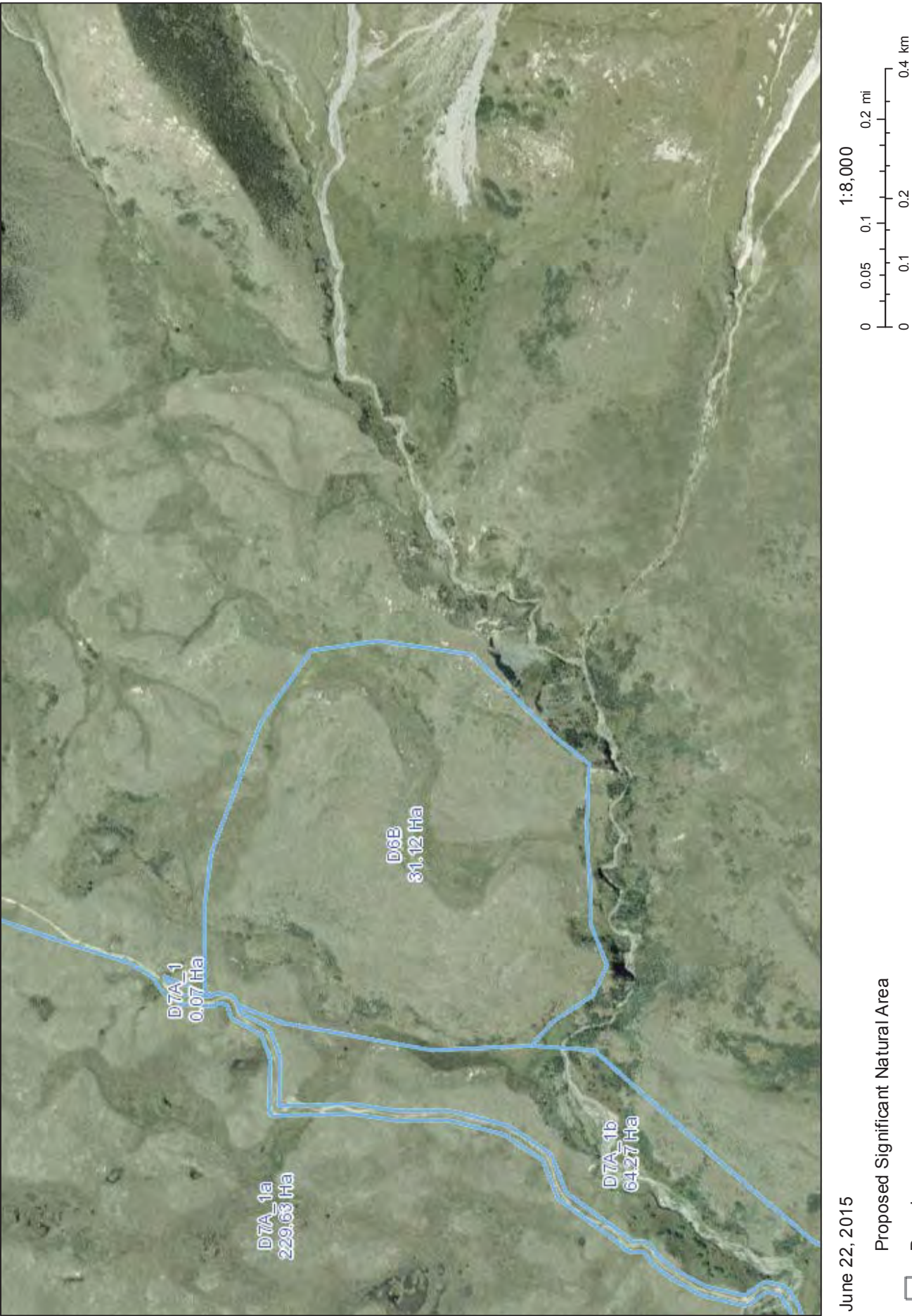
Please note the area shown is indicative and only for discussion purposes.



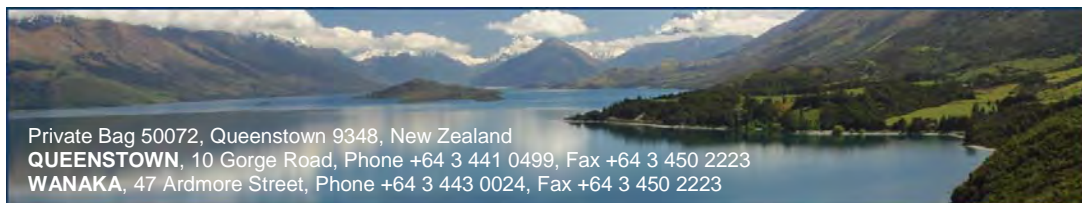
Significant Natural Area Assessment			
Project No: <i>11001/006</i>		Property Name: <i>Walter Peak</i> Site Name: <i>Von-White Burn SNA B</i>	
		Ecologist: <i>N. Simpson</i> Date: <i>26/04/11</i>	
Survey Undertaken By: <i>N. Simpson, D. Palmer and R. Henderson.</i>		Waypoint No (mid point of survey area): <i>E: 345    Topo50 CC10</i> <i>N: 825</i>	
LENZ Unit: <i>O 1.4a, P 5.2</i> Ecological District: <i>Eyre</i>		Photo No.(s): <i>No Photos.</i>	
Topography: <i>Gently rolling.</i>	Slope: <i>5 – 20 %</i>	Altitude: <i>700 m</i>	Aspect: <i>South</i>
Threatened Environment Status: <i>Comparatively safe from clearance.</i>		Natural Area Size (ha): <i>31.12</i>	
Representativeness: Excellent example of high country wetland containing a number of threatened plants and high diversity.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Deschampsia cespitosa</i>		At Risk - Declining	
<i>Carex carsei</i>		At Risk – Naturally Uncommon	
<i>Ranunculus ternatifolius</i>		Threatened – Naturally Vulnerable	
<i>Ranunculus maculatus</i>		At Risk – Naturally Uncommon	
<i>Kirkianella novae-zelandiae</i>		Threatened – Naturally Vulnerable	
Provide onsite description of vegetation:			
Vegetation type: Wetland and hard tussock land.			
Structural Class: Bog.			
A series of extensive ponds and bogs with red tussock merging into dryland hard tussockland. Sphagnum moss, rushes and sedges common with <i>Dracophyllum prostratum</i> and small herbs, mosses and liverworts as well as several threatened plants. Surrounding dryland with hard tussock, <i>Hebe propinqua</i> , <i>Coprosma cheesemani</i> , blue tussock and various small shrubs and herbs. Exotic grasses also present.			
Degree of Modification: Slight modification but exotic species only a minor component generally. Area is grazed.			
Degree of Recruitment: Self-sustaining communities.			
Overall Health: Healthy.			

Provide onsite description fauna habitat –species recorded or expected to be present: Open country and wetland fauna present.
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Grey willow has encroached on the wetland and will continue to increase unless it is removed. Increase stock numbers would also present a threat to the vegetation.
Rarity: Wetland communities are severely restricted nationally from their original extent and distribution. This wetland complex also includes a number of rare plant species.
Area Shape and Area/Edge Ratio: Extensive area melding into the further adjacent wetland and dry tussock land (i.e. proposed <i>North Von, Lower wetlands SNA A</i> ).
Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Very good diversity of plant species and communities.
Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?): This site is distinctive given the presence of a threatened community (i.e. wetlands) and threatened plants.
Connectivity (how is the site connected to surrounding communities/areas?): Well connected to the surrounding wetland and dry tussock land, which adds to its biodiversity.
Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The area is sustainable and would be improved by the removal of grey willow.
Recommendation: We recommend the area is considered for designation as a SNA based on the following: <ul style="list-style-type: none"> <li>• The wetland is highly representative of this environment;</li> <li>• Nationally, the extent and distribution of wetlands is severely restricted, which is supported by the proposed National Policy Statement on Indigenous Biodiversity that includes wetlands in the description of significant vegetation and habitat; and</li> <li>• The wetland contains a number of rare plant species.</li> </ul>

Figure 1: The area of potential significance - Von-White Burn SNA B - D6B.







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**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223

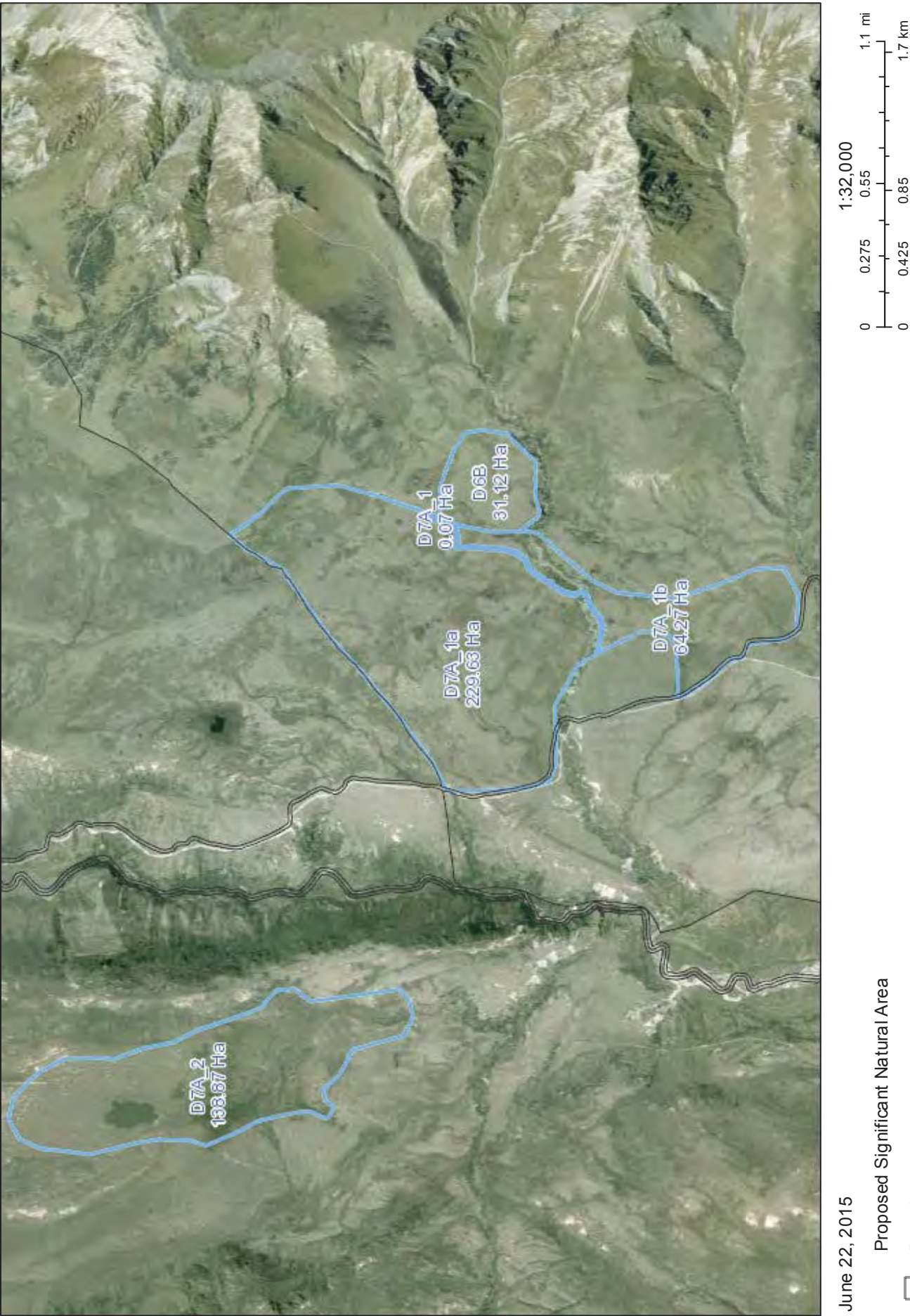


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Significant Natural Area Assessment			
Project No:  11001/007	Property Name: <i>Mt. Nicholas/ Walter Peak.</i> Site Name: <i>North Von, Lower wetlands SNA A</i>	Ecologist: <i>N. Simpson</i>  Date: 26/04/11	
Survey Undertaken By: <i>N. Simpson, D. Palmer and R Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 310    Topo50 CC10 N: 795</i>	
LENZ Unit: <i>Q3.1a &amp; Q3.3a, O1.4a</i>  Ecological District: <i>Livingston</i>		Photo No.(s): <i>No Photos.</i>	
Topography: <i>Valley floor</i>	Slope: <i>5%</i>	Altitude: <i>750 m</i>	Aspect: <i>Open</i>
Threatened Environment Status: <i>Comparatively safe from clearance.</i>		Natural Area Size (ha): <i>432.84</i>	
Representativeness: Highly representative of small lakes with fluctuating lake levels, with few examples present in the Lakes District. Good adjacent wetlands and dry tussockland with deflated hollows containing a threatened plant ( <i>Pseudognaphalium ephemerum</i> ).			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Pseudognaphalium ephemerum</i>		Threatened - Nationally Critical	
<i>Isolepis basilaris</i>		Threatened - Nationally Vulnerable	
<i>Deschampsia cespitosa</i>		At Risk - Declining	
<i>Ranunculus ternatifolius</i>		Threatened – Naturally Vulnerable	
<i>Brachyscome linearis</i>		Threatened - Nationally Critical	
<i>Carex berggrenii</i>		At Risk – Naturally Uncommon	
<i>Carex carsei</i>		At Risk – Naturally Uncommon	
<i>Ranunculus maculatus</i>		At Risk – Naturally Uncommon	
<i>Kirkianella novae- zelandiae</i>		Threatened - Nationally Vulnerable	
Provide onsite description of vegetation:			
Vegetation type: Lacustrine wetland, swamp, marshland, bog.			
Structural Class: Lacustrine wetland, swamp, marshland, bog.			
A small shallow lake with fluctuating water levels and turf community around its edge that contains a diverse plant community with threatened and at risk plants. Nearby rushland and sedgeland with much grey willow, small sphagnum bogs also with threatened plants, and to the north deflation hollows that are wet in winter and dry in summer and that contain the Nationally Critical <i>Pseudognaphalium ephemerum</i> . Snow totara grows on dry land in hard tussockland nearby. Red tussock grows in parts of the wetland.			

<p>Degree of Modification: Slightly modified by grazing and probable past fires but largely intact.</p> <p>Degree of Recruitment: A stable system.</p> <p>Overall Health: Good health.</p>
<p>Provide onsite description fauna habitat – species recorded or expected to be present: Fauna typical of high country open country and wetlands.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): The key threats are grey willow and fire, as well as increased stock numbers.</p>
<p>Rarity: A rare system within the Queenstown Lakes District with several rare and threatened plants. Wetland communities are severely restricted nationally from their original extent and distribution.</p>
<p>Area Shape and Area/Edge Ratio: A relatively large homogeneous area contained by small hills on two sides.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): High diversity of plant species and communities (e.g. Lacustrine wetland, swamp, marshland, and bog communities).</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Quite distinctive, given the presence of threatened plant species and the rarity of such wetland systems within the Lakes District.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): Well connected with surrounding tussockland.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): Sustainable - a stable system.</p>
<p>Recommendation: We recommend the area is considered for designation as a Significant Indigenous Vegetation and Fauna Habitat, based on the following:</p> <ul style="list-style-type: none"> <li>• The wetland is highly representative of this environment;</li> <li>• Nationally, the extent and distribution of wetlands is severely restricted, which is supported by the proposed National Policy Statement on Indigenous Biodiversity that includes wetlands in the description of significant vegetation and habitat; and,</li> <li>• The wetland contains a number of rare and endangered plant species.</li> </ul>

Figure 1: The area of potential significance - North Von, Lower wetlands SNA A - D7A\_1-2.



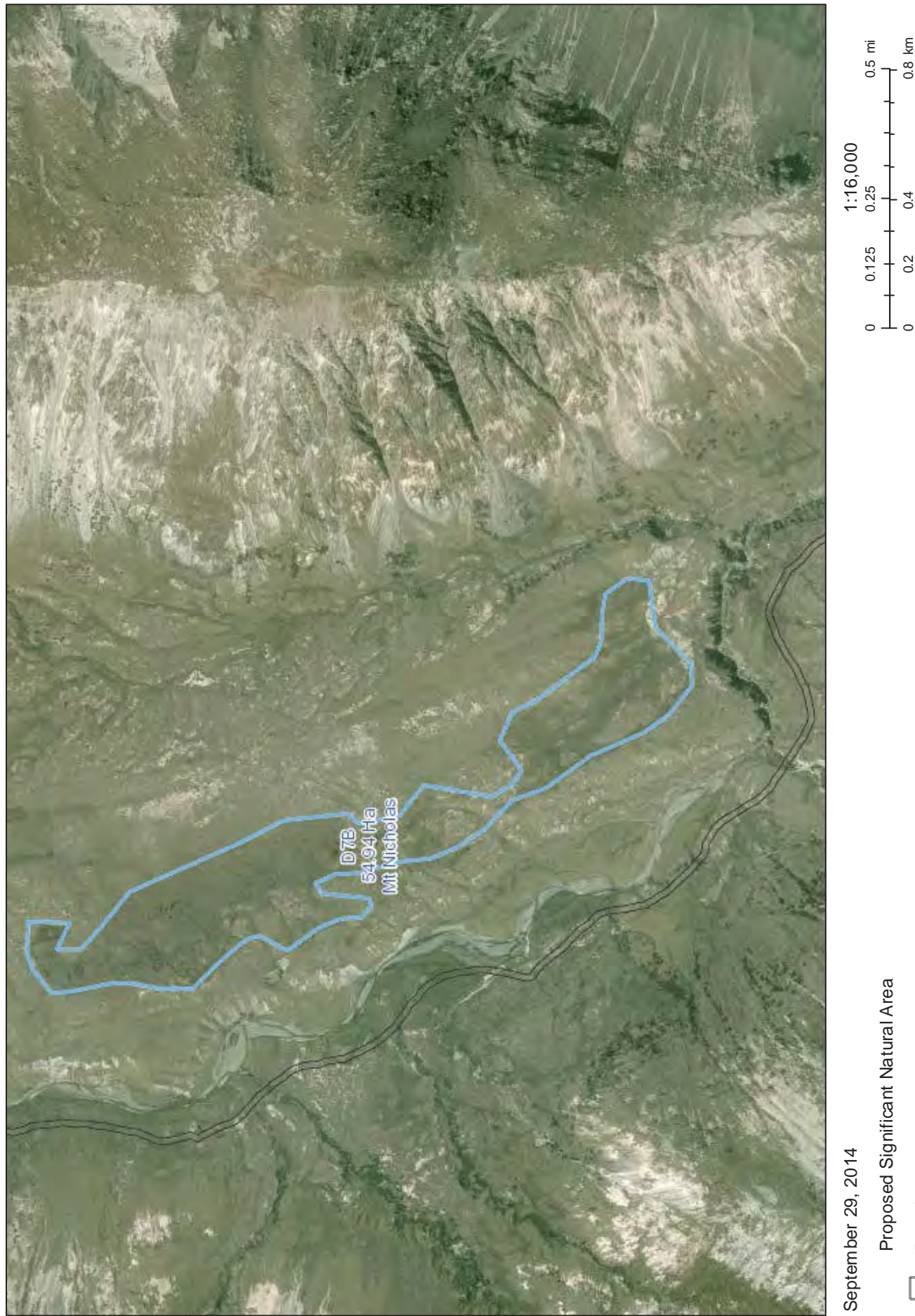
Please note the area shown is indicative and only for discussion purposes.



Significant Natural Area Assessment			
Project No: 11001/007		Property Name: <i>Mt. Nicholas</i>	
		Site Name: <i>North Von, Central Wetlands SNA B</i>	
		Ecologist: <i>N. Simpson</i>	
		Date: 26/04/11	
Survey Undertaken By: <i>N. Simpson and D. Palmer.</i>		Waypoint No (mid-point of survey area): E: 315 Topo50 CC10 N: 840	
LENZ Unit: Q 1.1d & O1.4a		Photo No.(s): <i>No photos.</i>	
Ecological District: <i>Livingston</i>			
Topography: <i>Valley floor.</i>	Slope: <i>Flat</i>	Altitude: <i>800 m</i>	Aspect: <i>South.</i>
Threatened Environment Status: <i>Comparatively safe from clearance</i>		Natural Area Size (ha): <i>54.94</i>	
Representativeness: Representative of mid altitude terrace wetlands, an endangered community.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Not known.</i>			
Provide onsite description of vegetation: Please note – a field survey was not undertaken for this site but was viewed from the air only.  Vegetation type: Palustrine wetlands and sub alpine bogs. Rushland, sedgeland and cushion bog with a typical suite of plants and plant communities.  Degree of Recruitment: A stable wetland system.  Overall Health: Healthy.			
Provide onsite description fauna habitat –species recorded or expected to be present Fauna will be typical of high country open country and wetlands.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Increased stock numbers would present a threat to the vegetation.			
Rarity: Wetlands are a rare and endangered community. They are in the 'National Priorities for Protecting Rare and Threatened Native Biodiversity on Private Land', under National Priority 2 - for the protection of indigenous vegetation associated with sand dunes and wetlands.			

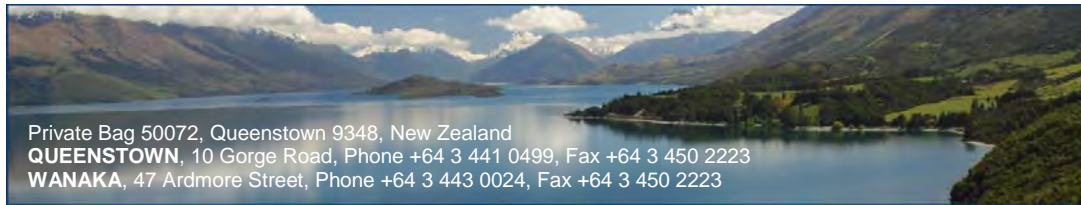
<p>Area Shape and Area/Edge Ratio: This is a large and extensive wetland area.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): A diverse range of species and plant communities will be present, within the wetland and bog habitats.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Part of very extensive terrace wetlands in the upper North Von.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?) The area is connected with the surrounding tussockland.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?) Sustainable, give it is a stable wetland system.</p>
<p>Recommendation: We recommend the area is considered for designation as a Significant Indigenous Vegetation and Fauna Habitat, based on the following:</p> <ul style="list-style-type: none"> <li>• The wetland is highly representative of this environment; and</li> <li>• Nationally, the extent and distribution of wetlands is severely restricted, which is supported by the proposed National Policy Statement on Indigenous Biodiversity that includes wetlands in the description of significant vegetation and habitat.</li> </ul>

Figure 1: The area of potential significance - North Von, Central Wetlands SNA B - D7B.



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





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Significant Natural Area Assessment			
Project No:  11001/007	Property Name: <i>Mt. Nicholas</i>  Site Name: <i>North Von, Upper Wetlands SNA C</i>	Ecologist: <i>N. Simpson</i>  Date: 26/04/11	
Survey Undertaken By: <i>N. Simpson, D. Palmer and R. Henderson</i>		Waypoint No (mid-point of survey area): E: 300 and 900 Topo50 CC10 N: 920 and 295	
LENZ Unit: O1.4a  Ecological District: <i>Livingston</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Valley floor.</i>	Slope: <i>Flat to gently sloping.</i>	Altitude: <i>900 – 950 m</i>	Aspect: <i>NE and SW.</i>
Threatened Environment Status:  <i>Comparatively Safe from Clearance</i>		Natural Area Size (ha): 73.49	
Representativeness: Highly representative with extensive wetlands, small lake, riparian wetlands, flush, bog and large ephemeral wetland.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Carex berggrenii</i>		At Risk – Naturally Uncommon	
Provide onsite description of vegetation:			
Vegetation type: Cushion bog, flush, riparian wetland, Ephemeral wetland, lacustrine wetland.			
Structural Class: Cushion bog, sedgeland, rushland and turf communities containing plants typical of these communities.			
Degree of Modification: Slightly modified by grazing and past fire.			
Degree of Recruitment: A stable system.			
Overall Health: Healthy.			
Provide onsite description fauna habitat – species recorded or expected to be present: Typical high country open land bird species.			

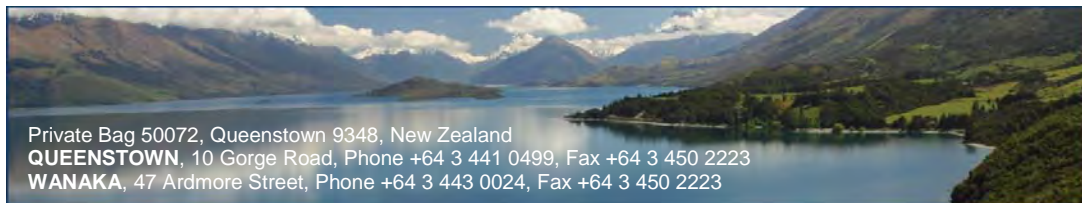
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Increased stock numbers would present a threat to the vegetation.</p>
<p>Rarity:</p> <p>Wetland communities are severely restricted nationally from their original extent and distribution.</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>Large area that is part of the larger montane tussockland of this basin.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Highly diverse plant communities and habitats associated with the wetlands and bog.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Distinctive given it is a highly representative wetland, and the highest of a series of wetland systems in this valley.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>Good connectivity with the surrounding montane landscape and plant communities.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Sustainable given it is a stable wetland system.</p>
<p>Recommendation:</p> <p>We recommend the area is considered for designation as a Significant Indigenous Vegetation and Fauna Habitat, based on the following:</p> <ul style="list-style-type: none"> <li>• The wetland is highly representative of this environment; and</li> <li>• Nationally, the extent and distribution of wetlands is severely restricted, which is supported by the proposed National Policy Statement on Indigenous Biodiversity that includes wetlands in the description of significant vegetation and habitat.</li> </ul>

Figure 1: The area of potential significance - North Von, Upper Wetlands SNA C - D7C\_1-3



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Significant Natural Area Assessment			
Project No:  <i>11001/007</i>	Property Name: <i>Mt. Nicholas</i>  Site Name: <i>Von Lakes SNA D</i>	Ecologist: <i>N. Simpson</i>  Date: <i>26/04/11</i>	
Survey Undertaken By: <i>N. Simpson, D. Palmer and R. Henderson.</i>		Waypoint No (mid-point of survey area): E: 310    Topo50 CC10 N: 715	
LENZ Unit: <i>O1.4a, Q 1.1d</i>  Ecological District: <i>Livingston</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Gently rolling valley floor</i>	Slope: <i>Relatively flat.</i>	Altitude: <i>700 m</i>	Aspect: <i>SE</i>
Threatened Environment Status:  <i>Comparatively safe from clearance</i>		Natural Area Size (ha): <i>101.22</i>	
Representativeness: A kettle lake, kettle holes and adjacent wetlands and ephemeral wetlands are present and are a rare combination. This is the only kettle hole system in the QLDC District. Highly representative.			
Are there threatened species expected in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Myosotis glauca</i>		Threatened - Nationally Vulnerable	
<i>Deschampsia cespitosa</i>		At Risk - Declining	
<i>Carex berggrenii</i>		At Risk – Naturally Uncommon	
Provide onsite description of vegetation:			
Vegetation type: Lake, Palustrine Wetland, Ephemeral Wetland, Swamp, Bog.			
Structural Class: Lakeshore turf community, rushland/sedgeland, cushion bog with sphagnum moss and turf of the ephemeral depression, stream edge. This variety of moisture regimes exhibits a diverse range of plant species and communities and forming the southernmost example of a kettle hole landscape.			
Degree of Modification: Exotic species present and dominant in places on the drier surrounding land although hard tussock is common with numerous indigenous small shrubs and herbs but wetlands largely natural.			
Degree of Recruitment: A stable wetland system that is in good health.			
Overall Health: Good health.			

Provide onsite description fauna habitat – species recorded or expected to be present: Open country and wetland fauna present.
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Grey willow is present and a threat to the integrity of the wetland, as well as increased stock numbers.
Rarity: A number of rare and threatened plants are present and the kettle hole system is rare and the only example in the Queenstown Lakes District.
Area Shape and Area/Edge Ratio: Reasonably sized kettle hole and wetland system, with moderate area/edge ratios.
Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): High diversity of species, within a notable range of plant communities (i.e. lake, palustrine wetland, ephemeral wetland, Swamp and Bog communities).
Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?): A very distinct community being the only kettle hole system known in the Lakes District.
Connectivity (how is the site connected to surrounding communities/areas?): Connects with the wider dryland grassland landscape.
Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): Sustainable under the present management of pastoral grazing.
Recommendation: We recommend the area is considered for designation as a Significant Indigenous Vegetation and Fauna Habitat, based on the following: <ul style="list-style-type: none"> <li>• The wetland is highly representative of this environment and is a very distinct community being the only kettle hole system known in the lakes district;</li> <li>• Nationally, the extent and distribution of wetlands is severely restricted which is supported by the proposed NPS that includes wetlands in the description of significant vegetation and habitat; and,</li> <li>• The wetland contains a number of rare and endangered plant species.</li> </ul>

Figure 1: The area of potential significance - Von Lakes SNA D - D7D.



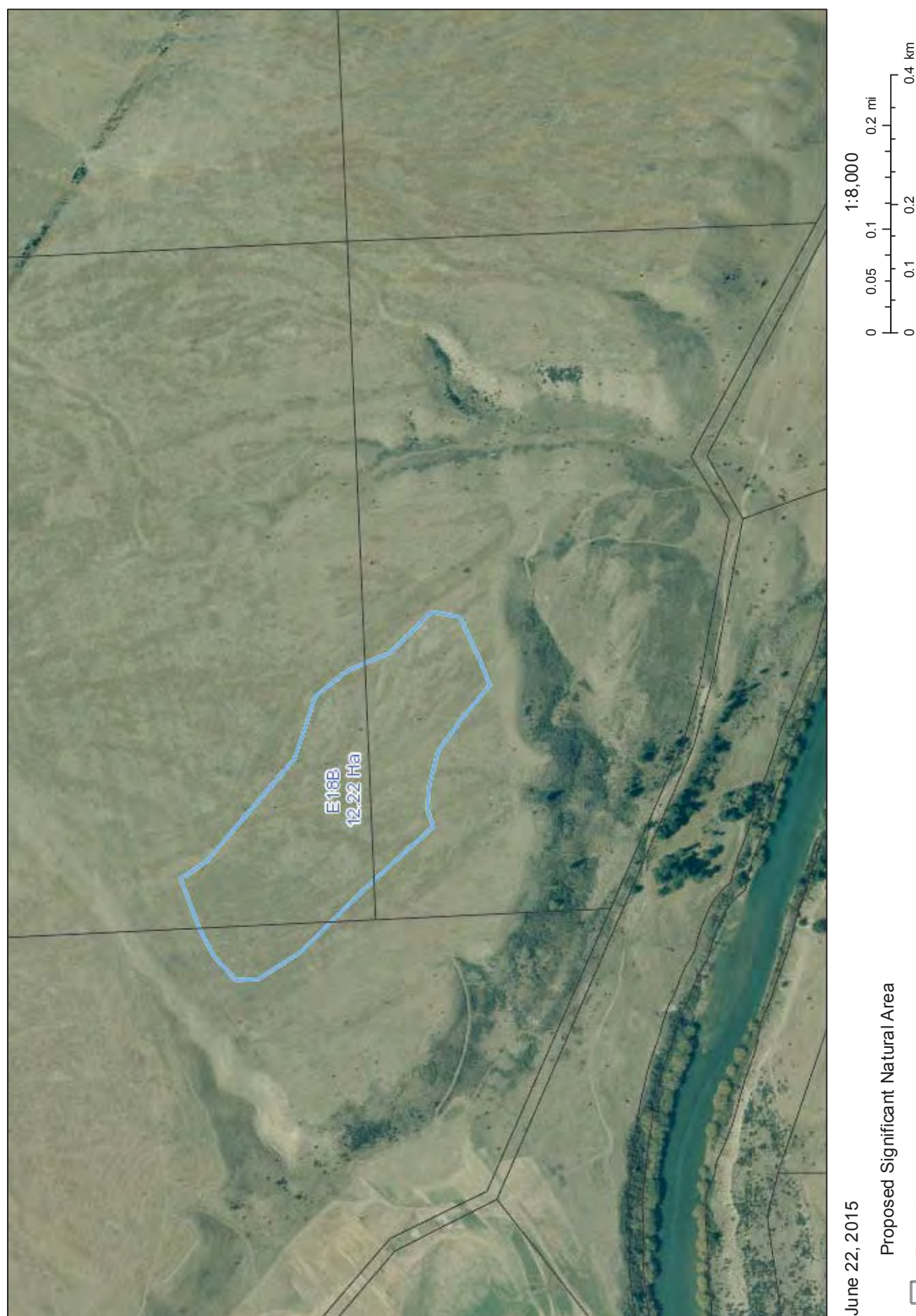
Please note the area shown is indicative and only for discussion purposes.



Significant Natural Area Assessment			
Project No: <i>11001/018</i>	Property Name: <i>Coopers</i> Site Name: <i>Coopers SNA B</i>	Ecologist: <i>Glenn Davis</i> Date: <i>12 May 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See plan below.</i>	
LENZ Units: <i>N5.1c</i> Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Terrace</i>	Slope: <i>Flat</i>	Altitude: <i>340 masl</i>	Aspect: <i>East</i>
Threatened Environment Status: <i>Acutely Threatened</i>		Area Size (ha): <i>12.22</i>	
<p>Representativeness:</p> <p>Ecological modeling undertaken by Walker <i>et. al.</i> (2003) indicates that the Hawea Flat environment would have supported assemblages of shrubland species such as kanuka, kowhai, manuka and coprosma, plus a range of other shrub species. In addition there is some ecological research that suggests the vegetation cover on drier areas in the intermontane basins would also have included short tussock grassland dominated by hard tussock, blue tussock, silver tussock and a range of sub shrubs (pimelia, coprosma, leucopogon) and native herbs.</p>			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Raoulia beauverdii</i>		At Risk - Naturally Uncommon	
<i>Pimelea sericeovillosa subsp. pulvinaris</i>		At Risk - Declining	
Provide onsite description of vegetation:			
<p>The area consists of a mosaic of short tussock grassland and cushionfield communities. Each community is described below.</p> <p>Vegetation types:</p> <p><b>Short tussock grassland</b> dominated by hard tussock (<i>Festuca novaezealandiae</i>), but also including blue tussock (<i>Poa colensoi</i>), <i>Carex breviculmis</i>, browntop, sweet vernal, catsear, <i>Leucopogon fraseri</i>, haresfoot trefoil, sheeps bur (<i>Achena agnipila</i>), tussock hawkweed (<i>Hieracium lepidulum</i>), mouse-ear hawkweed (<i>Pilosella officinarum</i>) and the sub shrubs <i>Coprosma petriei</i>, <i>Pimelia oreophila</i>.</p> <p><b>Cushionfield</b> – areas of cushionfield are dominated by <i>Pimelea sericeovillosa subsp. pulvinaris</i>, <i>Raoulia australis</i>, <i>Raoulia parkii</i> and other <i>Raoulia spp.</i> The cushionfields also include the mouse-ear hawkweed, scattered <i>Poa colensoi</i>, <i>Poa lindsayi</i> and <i>Carex breviculmis</i>. In addition, matagouri and porcupine shrub are present within the site, albeit very scattered individual</p>			

plants.
Degree of Modification: The area has clearly had a long history of fire (accidental and controlled) and pastoral activity including over-sowing, topdressing and grazing. In addition rabbits have historically caused significant disturbance to this environment. In our view, while the area is modified, the communities are in a relatively steady state with low intensity grazing by rabbits and sheep an important component of these modified systems.
Provide onsite description of fauna habitat: The area will support a range of invertebrates, and common lizard species are also expected in the area.
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Threats to the vegetation include invasive weeds and dairy farm development.
Rarity: The threatened environment classification identifies the N5.1c environment to have 2.7% indigenous vegetation cover remaining, with 0.8% protected, and it is listed as an acutely threatened environment.
Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The short tussock grassland/cushionfield community covers an area of approximately 12 ha.
Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The vegetation has a good level of indigenous diversity.
Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?): This area of vegetation is distinctive as short tussock grassland and cushionfield communities on outwash surfaces in the Upper Clutha are acutely threatened according to the threatened environment classification system. Communities associated with outwash surfaces are also listed as “originally rare” terrestrial ecosystems.
Connectivity (how is the site connected to surrounding communities/areas?): Situated in close proximity to the ‘South Hawea Flat Recommended Area for Protection’, which consists of a similar short tussock grassland ecological community.
Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The site is of a suitable size and has the resilience to maintain its ecological integrity providing the existing management regime is maintained.
Recommendation (Accept/Decline): Given that the short tussock grassland and cushionfield present is situated within an acutely threatened environment and supports a large population of an “at risk – declining” species (i.e. <i>Pimelea sericeovillosa subsp. pulvinaris</i> ) we consider the area should be designated as Significant Indigenous Vegetation and Fauna Habitat.

Figure 1: The area of potential significance - Coopers SNA B - E18B



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

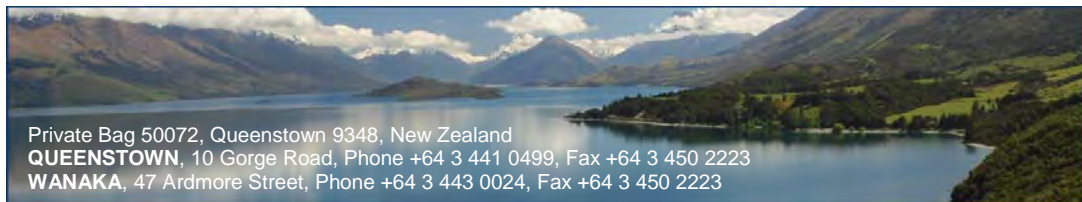




Figure 2: Example of short tussock grassland community.



Figure 3: Cushionfield community.



Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



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Significant Natural Area Assessment			
Project No: <i>11001/018</i>	Property Name: <i>Allenby Farms</i>  Site Name: <i>Mt Iron SNA C</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>17 November 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		<u>Waypoint No (mid-point of survey area):</u> <i>See aerial photograph for site location.</i>	
LENZ Units: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Gentle slope.</i>	Slope: <i>Variable</i>	Altitude: <i>400 masl</i>	Aspect: <i>Various</i>
Threatened Environment Status: <i>Chronically threatened</i>		Area Size (ha): <i>48.08</i>	
Representativeness: Pre-settlement vegetation representative of N4 LENZ environments is understood to have consisted of kanuka, matagouri, coprosmas, olearias, native brooms and kowhai. The vegetation on the Allenby Farms site is dominated by kanuka woodland but lacks the diversity of the original vegetation cover. The existing vegetation remains a degraded form of the original community.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status. No threatened species expected, the eastern falcon may hunt in the Mt Iron area and its threat status is 'At Risk – Recovering'.			
Threatened Species		Threat Status	
<i>None observed</i>			
Provide onsite description of vegetation: Vegetation type: Kanuka woodland. Degree of Modification: The area has experienced extensive historical disturbance with the lack of woodland diversity a clear indication species have been lost through multiple disturbance events. Notwithstanding this point, the kanuka woodland remains a representative example of a community within the N4 LENZ unit.			
Provide onsite description of fauna habitat: The kanuka woodland is expected to provide habitat for the following species: Birds – indigenous insectivorous birds including bellbird, fantail, grey warbler, tomtit and possibly tui. Herpetofauna – Common skink, McCanns skink, Southern Alps Gecko and Cromwell Gorge Gecko. Invertebrates – A kanuka woodland canopy has closed in some places and will provide the conditions for the development of a litter layer which will support a range of invertebrates.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include grazing of regenerating shrubland and the risk of inadvertent events such as fire.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies indigenous vegetation cover associated with the N4.1d environment to be chronically threatened with only 18.6% indigenous vegetation cover remaining and 2.3% formally protected. The 'proposed National Policy Statement on Indigenous Biodiversity' considers indigenous vegetation within this environment should be considered significant under section 6c of the RMA.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The kanuka woodland on the Allenby Farms is directly connected to the kanuka woodland that covers the rest of Mt Iron and is a key component of Mt Iron kanuka woodland community.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The kanuka woodland has a generally low level of botanical diversity.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Mt Iron is a roche moutonnee that is a distinctive geological feature of the Wanaka area.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The woodland is directly connected to other areas of indigenous cover on Mt Iron, including the DOC administered Mt Iron Scenic Reserve.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The kanuka woodland is sustainable and has the ability to keep regenerate even in the event of disturbances such as fire.</p>
<p>Recommendation (Accept/Decline):</p> <p>The vegetation and habitat is a degraded representation of the original vegetation cover of Mt Iron. Notwithstanding this point, the kanuka woodland is representative of this environment and forms part of a relatively extensive area of indigenous vegetation within a chronically threatened environment.</p> <p>Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Mt Iron SNA C - E18C.



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



<b>Significant Natural Area Assessment</b>			
Project No:  <i>11001/018</i>	Property Name: <i>Martin</i>  Site Name: <i>Mt Iron SNA D</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>17 November 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See plans attached for location information</i>	
LENZ Units: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Hill slopes</i>	Slope: <i>Variable</i>	Altitude: <i>400 m asl</i>	Aspect: <i>Various</i>
Threatened Environment Status:  <i>Chronically threatened</i>		Area Size (ha): <i>3.92</i>	
Representativeness: Pre-settlement vegetation representative of N4 LENZ environments is understood to have consisted of kanuka, matagouri, coprosmas, olearias, native brooms and kowhai. The vegetation on the Martin property lacks the diversity of the original vegetation cover but remains moderately representative of this environment.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>None observed</i>			
Provide onsite description of vegetation:  Vegetation type: <i>Kanuka woodland.</i>  Degree of Modification: The area has experienced extensive historical disturbance with the lack of woodland diversity a clear indication species have been lost through multiple disturbance events. Notwithstanding this point, the kanuka woodland remains a representative example of a community within the N4 LENZ unit. In addition to the disturbance history, the east faces of Mt Iron have been infested with the woody weed broom, which further leads to the modification of the vegetation.			
Provide onsite description of fauna habitat: The kanuka woodland may provide habitat for the following species: Birds - indigenous insectivorous birds including bellbird, fantail, grey warbler, tomtit and possibly tui. Herpetofauna – the Common skink, McCanns skink, Southern Alps Gecko and Cromwell Gorge Gecko.			

Invertebrates – The kanuka woodland canopy has closed in some places and will provide the conditions for the development of a litter layer which will support a range of invertebrates.
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include the risk of inadvertent events such as fire and the invasion of woody weeds and wilding conifers.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies indigenous vegetation cover associated with the N4.1d environment to be chronically threatened with only 18.6% indigenous vegetation cover remaining and 2.3% formally protected. The 'proposed National Policy Statement on Indigenous Biodiversity' considers indigenous vegetation within this environment should be considered significant under section 6c of the RMA.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self sustaining):</p> <p>The kanuka woodland on the Martin property is directly connected to the kanuka woodland that is the dominant vegetative cover of Mt Iron and should be viewed in the context of the overall cover of Mt Iron.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The kanuka woodland has a generally low level of botanical diversity.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Mt Iron is a roche moutonee and is a distinctive geological feature of the Wanaka area.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The woodland is directly connected to the vegetation covering of Mt Iron and is also in close proximity to kanuka woodland adjacent to Lake Wanaka.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Within the context of the Mt Iron kanuka woodland, the area associated with the Martin property is considered a sustainable stand with key ecological processes, such as ongoing recruitment and supporting indigenous wildlife.</p>
<p>Recommendation (Accept/Decline):</p> <p>The vegetation and habitat is a degraded representation of the original vegetation cover of Mt Iron. Notwithstanding this point, the kanuka woodland is representative of this environment and forms part of a relatively extensive area of indigenous vegetation within a chronically threatened environment.</p> <p>Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Mt Iron SNA D - E18D\_1&2.



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





**Figure 2:** A portion of the area of potential significance is shown in the background of the photograph on Mt Iron.

Significant Natural Area Assessment			
Project No: <i>11001/018</i>	Property Name: <i>Dunphy</i>  Site Name: <i>Mt Iron SNA H</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>17 November 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See plans attached for location information.</i>	
LENZ Units: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Hill slopes</i>	Slope: <i>Variable</i>	Altitude: <i>400 masl</i>	Aspect: <i>Various</i>
Threatened Environment Status:  <i>Chronically threatened</i>		Area Size (ha): <i>4.87</i>	
Representativeness: Pre-settlement vegetation representative of N4 LENZ environments is understood to have consisted of kanuka, matagouri, coprosmas, olearias, native brooms and kowhai. The vegetation on the Dunphy property lacks the diversity of the original vegetation cover, but is still considered representative of the original vegetation cover.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
None observed.			
Provide onsite description of vegetation:  Vegetation type: Kanuka woodland.  Degree of Modification: The area has experienced extensive historical disturbance with the lack of woodland diversity a clear indication species have been lost through multiple disturbance events. Notwithstanding this point, the kanuka woodland remains a representative example of a community within the N4 LENZ unit. In addition to the disturbance history, east faces of Mt Iron have been infested with the woody weed broom, which further leads to the modification of the vegetation.  Overall health: The area is in good overall health.			
Provide onsite description of fauna habitat: The kanuka woodland is expected to provide habitat for the following species: Birds – indigenous insectivorous birds including bellbird, fantail, grey warbler, tomtit and possibly tui.			



<p>Herpetofauna – the Common skink, McCanns skink, Southern Alps Gecko and Cromwell Gorge Gecko.</p> <p>Invertebrates – the kanuka woodland canopy has closed in some places and will provide the conditions for the development of a litter layer which will support a range of invertebrates.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include the risk of inadvertent events such as fire and the invasion of woody weeds and wilding conifers.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies indigenous vegetation cover associated with the N4.1d environment to be chronically threatened, with only 18.6% indigenous vegetation cover remaining and 2.3% formally protected. The Proposed National Policy Statement on Indigenous Biodiversity considers indigenous vegetation within this environment should be considered significant under section 6c of the Resource Management Act.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The kanuka woodland on the Dunphy property is directly connected to the kanuka woodland that is the dominant vegetative cover of Mt Iron and should be viewed in the context of the overall cover of Mt Iron rather than the coverage on the Dunphy property alone.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The kanuka woodland has a generally low level of botanical diversity.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Mt Iron is a roche moutonee that is a distinctive geological feature of the Wanaka area.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The woodland is directly connected to the vegetation covering of Mt Iron and is also in close proximity to kanuka woodland adjacent to Lake Wanaka.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Within the context of the Mt Iron kanuka woodland, the area associated with the Dunphy property is considered a sustainable stand with key ecological processes, such as ongoing recruitment and the support of indigenous wildlife.</p>
<p>Recommendation (Accept/Decline):</p> <p>The vegetation and habitat is a degraded representation of the original vegetation cover of Mt Iron. Notwithstanding this point, the kanuka woodland is representative of this environment and forms part of a relatively extensive area of indigenous vegetation within a chronically threatened environment.</p> <p>Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Mt Iron SNA H - E18H.



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



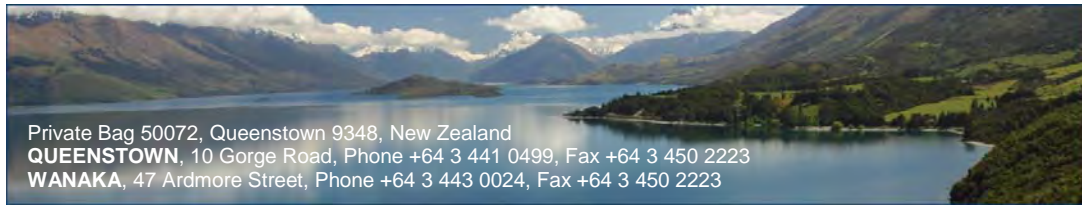


**Figure 2:** The area of potential significance in the background of the photography on the Dunphy property.





**Figure 3:** The area of potential significance in the background of the photography on the Dunphy property.



Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



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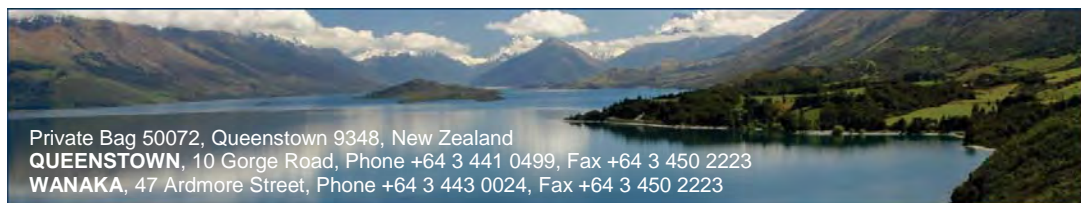
Significant Natural Area Assessment			
Project No:  11001/018	Property Name: <i>Big River Company Ltd</i>  Site Name: <i>Big River Company Ltd SNA G</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>17 November 2011</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See plan attached for location information.</i>	
LENZ Units: <i>N5.1c</i>  Ecological District: <i>Lindis Ecological District &amp; Pisa Ecological District.</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Terrace rise</i>	Slope: <i>Moderate to steep</i>	Altitude: <i>300 to 314 masl</i>	Aspect: <i>East</i>
Threatened Environment Status: <i>Acutely Threatened</i>		Area Size (ha): <i>4.54</i>	
<p>Representativeness:</p> <p>Based on ecological modeling undertaken by Walker <i>et al.</i> (2003) the Clutha Basin is understood to have supported a kanuka-kowhai woodland, which may also have included a range of coprosma, matagouri, shrubby wineberry, native brooms and <i>Muehlenbeckia</i> species. The vegetation cover of the site is dominated by kanuka and is therefore considered highly representative of the pre-settlement vegetation in this environment.</p>			
<p>Are there threatened species expected/identified in the survey area? If so, list species and threat status.</p> <p><i>No threatened species are expected, although the eastern falcon may hunt in the area, which is classified as At Risk.</i></p>			
Threatened Species		Threat Status	
<i>None Observed</i>			
<p>Provide onsite description of vegetation:</p> <p>Vegetation type: Kanuka woodland with some small areas of short tussock grassland dominated by introduced grasses.</p> <p>Degree of Modification: The lack of shrubland diversity suggests the vegetation has been the subject of multiple fire events, which have removed some species including kowhai and a range of coprosma and olearia.</p>			
<p>Provide onsite description of fauna habitat:</p> <p>Kanuka woodland is expected to provide habitat for a range of common native bird and lizard species.</p>			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include inadvertent fire events, germinating seedlings browsed by pests such as rabbits and possums, and the invasion of woody weeds and wilding conifers.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N5.1c environment to have 2.7 % indigenous vegetation cover remaining and 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>Given the kanuka woodland has re-established in the area following multiple historical disturbance events it is very likely that the woodland is sustainable.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The area consists of two vegetation communities: kanuka woodland and short tussock grassland.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Indigenous vegetation adjacent to the Clutha River is distinctive given the lack of indigenous vegetation cover left within this environment.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>It is in close proximity to kanuka stands in the Rekos Point Conservation Area and other kanuka stands adjacent to the Clutha River.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The kanuka woodland is considered sustainable. There is the potential for the community to develop as other native shrubland species associated with kanuka woodland are in close proximity to the proposed SNA.</p>
<p>Recommendation (Accept/Decline):</p> <p>Although the vegetation has lost some of its original diversity, the ecological community is representative of this environment and given the lack of indigenous vegetation cover left adjacent to the Clutha River we recommend the vegetation that remains should have a higher level of protection than currently afforded by the District Plan and taken forward for further consideration as Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Big River Company Ltd SNA G - E18G.





Private Bag 50072, Queenstown 9348, New Zealand  
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**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



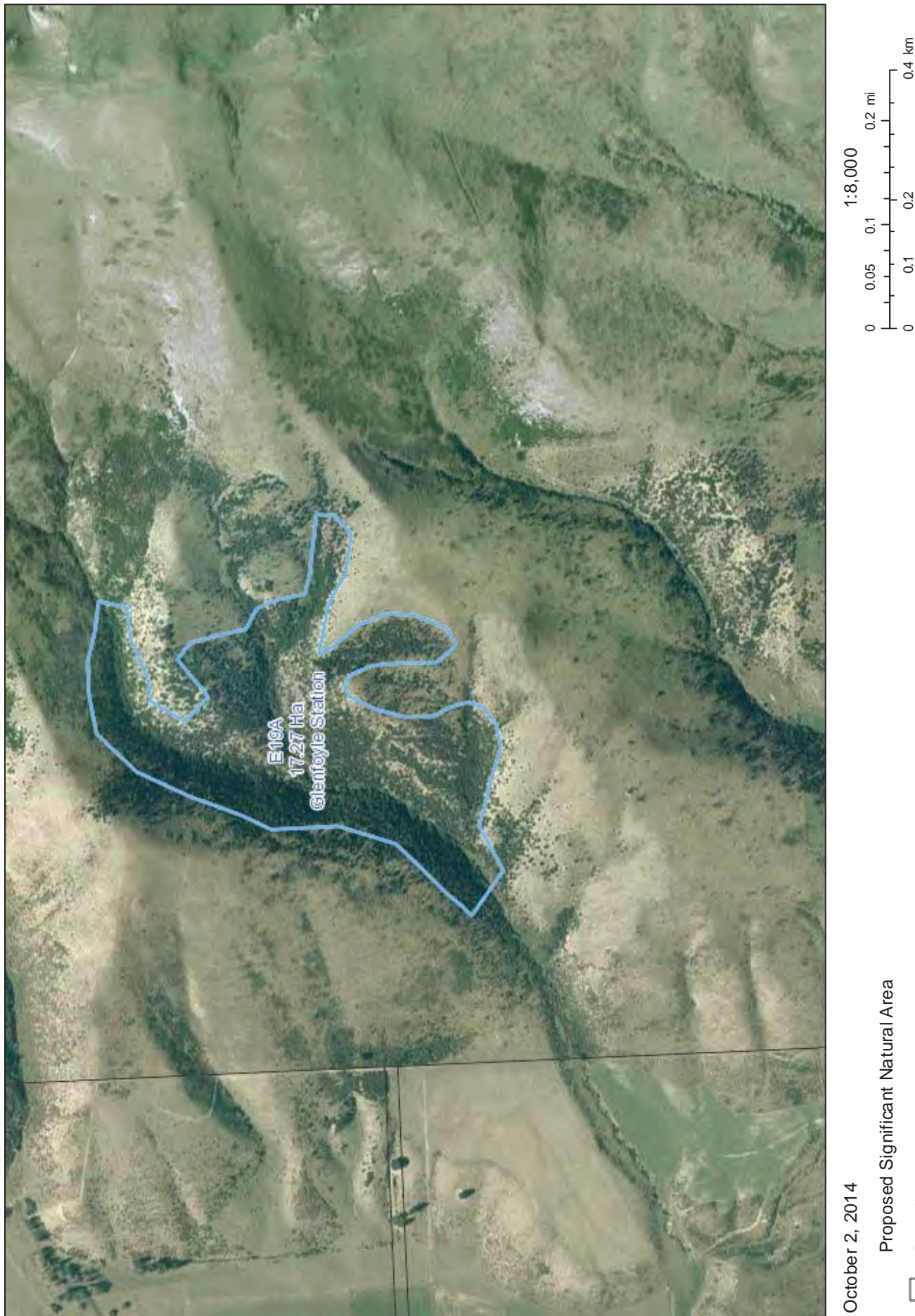
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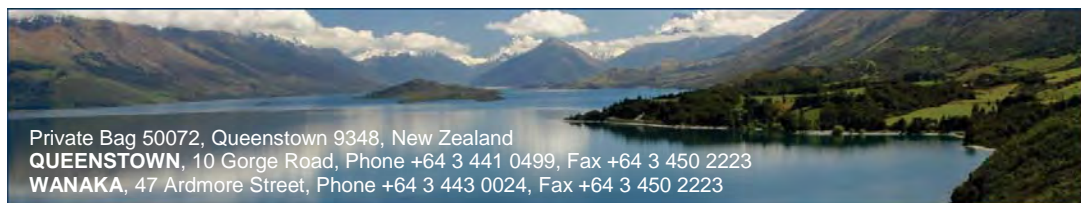
Significant Natural Area Assessment			
Project No: <i>11001/019</i>	Property Name: <i>Glenfoyle Station</i> Site Name: <i>Glenfoyle SNA A</i>	Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: <i>26 Nov 2011</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson.</i>		Waypoint No (mid-point of survey area): <i>2218960 E</i> <i>5605205 N</i>	
LENZ Units: <i>N4.1d and Q2.2a</i> Ecological District: <i>Lindis</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Steep faces and gully bottoms</i>	Slope: <i>20 – 40%</i>	Altitude: <i>440 - 700 m asl</i>	Aspect: <i>West</i>
Threatened Environment Status: <i>Chronically Threatened and Critically Underprotected</i>		Area Size (ha): <i>17.27</i>	
Representativeness: Kanuka shrubland is probably representative of some of the original pre-settlement vegetation cover in the Upper Clutha area.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status. <i>Unknown, but the vegetation is expected to support the eastern falcon which has been recorded on Glenfoyle.</i>			
Threatened Species		Threat Status	
<i>Falco novaezealandiae</i> "eastern" (eastern NZ Falcon)		At Risk - Recovering	
Provide onsite description of vegetation: Vegetation type: the area is predominantly covered in kanuka woodland.			
Degree of Modification: modified by historical burning and grazing, but has been excluded from clearing activities for some time.			
Provide onsite description of fauna habitat: Kanuka shrubland will support a range of invertebrates, insectivorous birds and the eastern falcon.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Current management is sympathetic to the kanuka woodland and grey shrubland on the property and there appears to be a low risk of clearance occurring on this site.			

<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining, with 2.3% protected. The Q2.2a environment has 39.92% indigenous cover remaining, with 5.07% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The size and shape of the area will support an internal core that is not affected by edge effects. There are gaps in the kanuka woodland cover but the vegetation will continue to develop with a closed canopy expected to be achieved over time.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Species diversity is relatively low. This is a typical characteristic of regenerating kanuka woodland.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The kanuka woodland is typical of regenerating stands found on the lower slopes of the Upper Clutha Valley.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The assessed area is part of a mosaic of grassland and shrubland across the lower west facing slopes of the Grandview mountain system. It should be viewed as a core contributor to the ecology of the lower slopes of the mountain range that is supported by multiple smaller stands of kanuka and grey shrubland.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The area appears to be sustainable under the current management regime.</p>
<p>Recommendation (Accept/Decline):</p> <p>Given the kanuka woodland within the catchment is a good example of the vegetation representative of the LENZ unit, and vegetation within this LENZ unit is rare nationally and is expected to support the eastern falcon that has been recorded on Glenfoyle, we believe the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Glenfoyle SNA A - E19A.





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Significant Natural Area Assessment			
Project No:  11001/019	Property Name: <i>Glenfoyle Station</i>  Site Name: <i>Glenfoyle SNA B</i>	Ecologist: <i>G. Davis and N. Simpson</i>  Date: <i>26 November 2011</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>2221958 E</i> <i>5601717 N</i>	
LENZ Units: <i>N4.1d and Q2.2a</i>  Ecological District: <i>Lindis</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Steep faces and gully bottoms</i>	Slope: <i>20 – 40%</i>	Altitude: <i>550 - 650 m asl</i>	Aspect: <i>West</i>
Threatened Environment Status: <i>Chronically Threatened and Critically Underprotected</i>		Area Size (ha): <i>11.63</i>	
Representativeness: Kanuka shrubland on the faces and mixed shrubland in the gully bottom are most likely representative of some of the original pre-settlement vegetation cover.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status. <i>Unknown, but the vegetation is expected to support the eastern falcon which has been recorded on Glenfoyle.</i>			
Threatened Species		Threat Status	
<i>Falco novaezealandiae</i> “eastern” (eastern NZ Falcon)		At Risk - Recovering	
Provide onsite description of vegetation: Kanuka woodland – dominated by kanuka but also including a more diverse plant assemblage in the gully bottoms with matagouri ( <i>Discaria toumatou</i> ), mingimingi ( <i>Coprosma propinqua</i> ), tree daisys ( <i>Olearia</i> sp.) and the lianes: <i>Muehlenbeckia</i> spp., <i>Rubus</i> spp. and <i>Clematis</i> spp.			
Degree of Modification: Modified by historical burning and grazing but has been excluded from clearing activities for some time. Woody weed species such a sweet briar and elderberry are present.			
Provide onsite description of fauna habitat: Kanuka shrubland will support a range of invertebrates, passerines and the eastern falcon.			

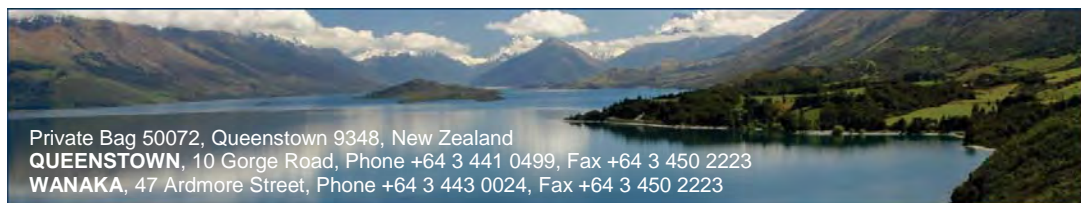
<p>Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Current management is sympathetic to the kanuka and shrubland on the property and there appears to be a low risk of clearance occurring in this site.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining with 2.3% protected. The Q2.2a environment has 39.92% indigenous cover remaining with 5.07% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area has a size and a shape that is expected to have an internal core that is not affected by edge effects. The kanuka woodland cover is patchy in parts with open areas but will continue to develop with a closed canopy expected to be achieved over time.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Two communities are present including kanuka woodland on the steeper slopes and riparian shrubland at the bottom of the gully. Diversity of the kanuka woodland is typically poor with often monocultures forming as the vegetation regenerates. The riparian shrubland will be more diverse with matagouri, coprosma species, tree daisies and lianes such as <i>Muehlenbeckia</i> spp., and <i>Rubus</i> spp. present.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The kanuka woodland is typical of regenerating stands found on the lower slopes of the Upper Clutha Valley.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The assessed area is part of a mosaic of grassland and shrubland across the lower west facing slopes of the Grandview mountain system. It should be viewed as a core contributor to the ecology of the lower slopes of the mountain range that is supported by multiple smaller stands of kanuka and grey shrubland.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The area appears to be sustainable under the current management regime.</p>
<p>Recommendation (Accept/Decline):</p> <p>Given the kanuka woodland and riparian shrubland within the catchment are good examples of the vegetation representative of the LENZ unit, and vegetation within this LENZ unit is rare nationally and expected to support eastern falcon that have been recorded on Glenfoyle, we believe the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Glenfoyle SNA B - E19B.



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Significant Natural Area Assessment			
Project No:  11001/019	Property Name: Glenfoyle Station  Site Name: <i>Glenfoyle SNA C</i>	Ecologist: <i>G. Davis and N. Simpson</i>  Date: 26 November 2011	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>2222045 E</i> <i>5599950 N</i>	
LENZ Units: <i>N4.1d and Q2.2a</i>  Ecological District: <i>Lindis</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Steep faces and gully bottoms</i>	Slope: <i>20 – 40%</i>	Altitude: <i>500 - 600 masl</i>	Aspect: <i>West</i>
Threatened Environment Status: <i>Chronically Threatened and Critically Underprotected</i>		Area Size (ha): <i>5.4</i>	
Representativeness: Kanuka shrubland that is probably representative of some of the original pre-settlement vegetation cover.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status. <i>Unknown, but the vegetation is expected to support the eastern falcon which has been recorded on Glenfoyle.</i>			
Threatened Species		Threat Status	
<i>Falco novaezealandiae</i> “eastern” (eastern NZ Falcon)		At Risk - Recovering	
Provide onsite description of vegetation: Kanuka woodland – regenerating kanuka woodland stands typically have a low plant species diversity.  Degree of Modification: Modified by historical burning and grazing but has been excluded from clearing activities for some time.			
Provide onsite description of fauna habitat: Kanuka shrubland will support a range of invertebrates, passerines and eastern falcon.			
Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): Current management is sympathetic to the kanuka woodland and shrubland on the property and there appears to be a low risk of clearance occurring in this site.			

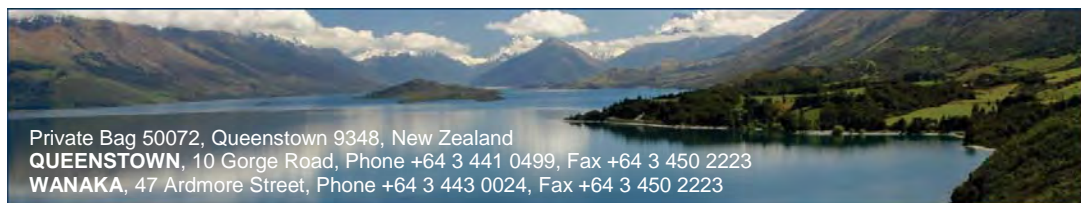
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining with 2.3% protected. The Q2.2a environment has 39.92% indigenous cover remaining with 5.07% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area is of a size and shape that will support an internal core that is not affected by edge effects. A closed canopy of kanuka is largely present throughout the area.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>Species diversity is relatively low, although this is a typical characteristic of regenerating kanuka woodland.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The kanuka woodland is typical of regenerating stands found on the lower slopes of the Upper Clutha Valley.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The assessed area is part of a mosaic of grassland and shrubland across the lower west facing slopes of the Grandview mountain system. It should be viewed as a core contributor to the ecology of the lower slopes of the mountain range that is supported by multiple smaller kanuka and grey shrubland stands.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The area appears to be sustainable under the current management regime.</p>
<p>Recommendation (Accept/Decline):</p> <p>Given the kanuka woodland is a good example of the vegetation representative of the LENZ unit and vegetation within this LENZ unit is rare nationally and expected to support the eastern falcon that has been recorded on Glenfoyle, we believe the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Glenfoyle SNA C - E19C.



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Significant Natural Area Assessment			
Project No:  11011/030	Property Name: <i>Lake McKay Station</i> Site Name: <i>Deadhorse Crk SNA A</i>	Ecologist: <i>Glenn Davis</i> Date: <i>2 February 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson</i>		<u>Waypoint No (mid-point of survey area):</u> <i>See attached plan for location.</i>	
LENZ Unit: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Gully system</i>	Slope: <i>Steep</i>	Altitude: <i>approx. 500 m asl</i>	Aspect: <i>Various</i>
Threatened Environment Status:  <i>Chronically threatened</i>		Area Size (ha): <i>179.96</i>	
Representativeness: Kanuka woodland, which is highly representative of the pre-settlement vegetation.			
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	
<i>Olearea lineata</i>		At Risk – Declining	
Provide onsite description of vegetation:			
Vegetation type: Kanuka woodland – kanuka woodland is dominated by kanuka but also includes a range of other shrubland species such as matagouri, native broom, <i>Coprosma propinqua</i> and the lianes: <i>Rubus</i> spp. and <i>Muehlenbeckia</i> spp. Mature stands of <i>Olearea lineata</i> are also present.			
Degree of Modification: The area will have been disturbed by fire historically, but has not been disturbed for a long period given the presence of a well-developed kanuka cover.			
Overall Health: The area is in excellent overall health.			
Provide onsite description of fauna habitat: A range of passerines will be present such as grey warbler, brown creeper, fantail and tomtit. This vegetation is also expected to provide good habitat for a range of lizard species including the threatened jewelled gecko.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Existing farm management practices are clearly sympathetic to the kanuka woodland, therefore there is a low risk of intentional disturbance to the woodland. There is however a threat of inadvertent fire. Other threats include wilding pines with large mature trees established within the woodland.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18% indigenous vegetation cover remaining and 2% under formal protection. Furthermore, the area supports good populations of <i>Olearea lineata</i> and is expected to support good year round populations of insectivorous birds which are important prey for the eastern falcon.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area is contained on the steep faces of the gully system and is self-sustaining.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The kanuka woodland has a range of shrubland species representative of the area and will also provide habitat for a range of bird and lizard species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The size of the kanuka woodland is distinctive and provides a good representation of the pre-settlement vegetation.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The kanuka is directly connected to grey shrubland on the mid slopes and tall tussock grassland at higher elevations, i.e. &gt;1000 m asl.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The management of the site is clearly sympathetic to the maintenance of the indigenous vegetation and it is of a size that is sustainable.</p>
<p>Recommendation (Accept/Decline):</p> <p>Highly representative vegetation in a chronically threatened environment that is self-sustaining and providing excellent habitat for a range of bird, lizard and invertebrate species. We recommend this area is considered as a Significant Indigenous Vegetation and Fauna Habitat.</p>





Figure 1: The area of potential significance - Deadhorse Crk SNA A - E30A



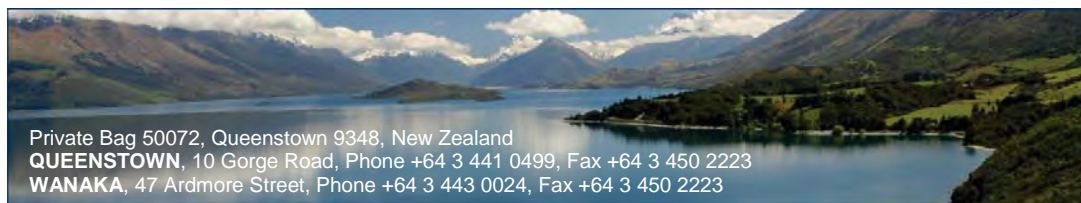
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**Legend**

-  Proposed Significant Natural Area
-  Land Parcels







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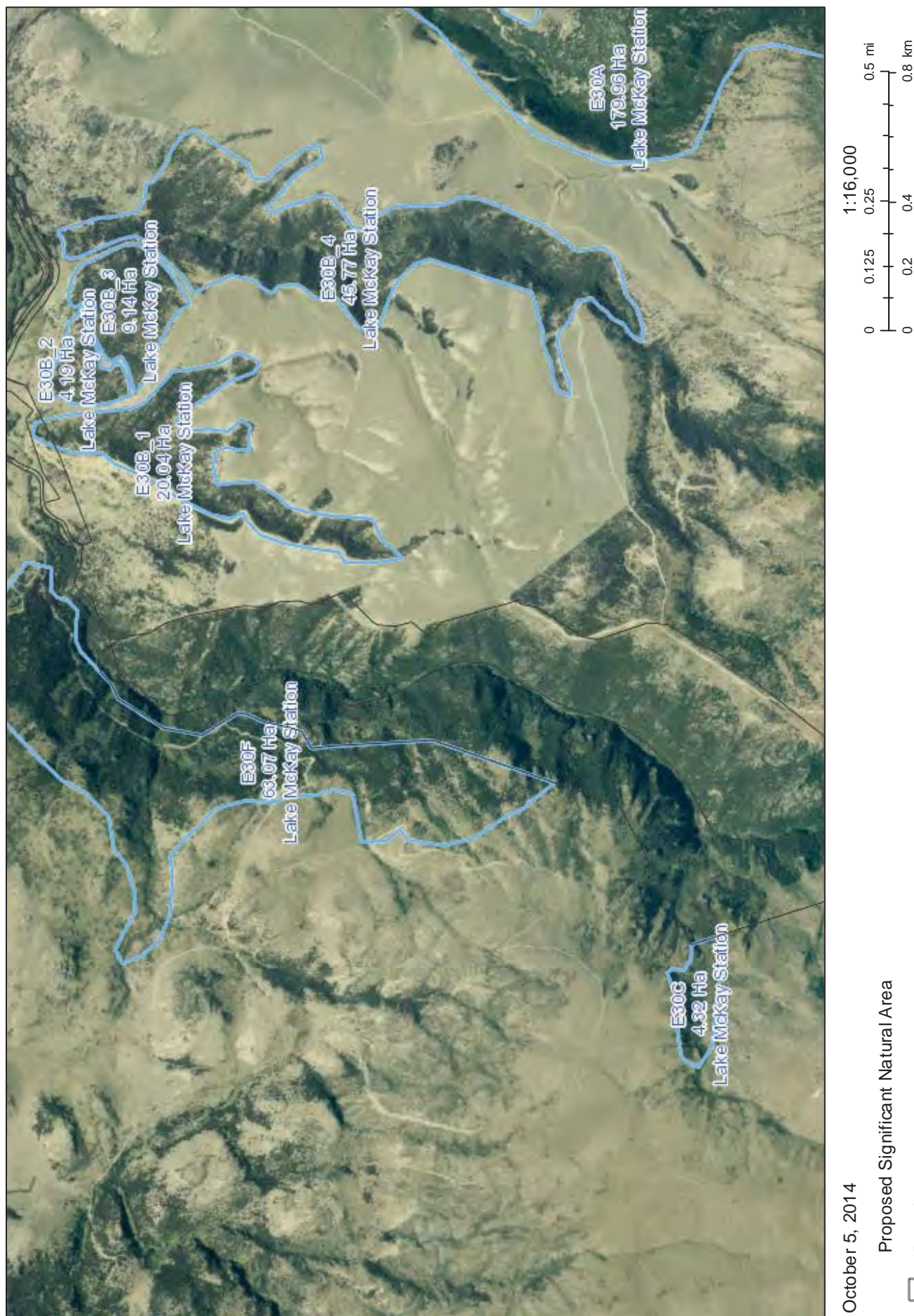
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Significant Natural Area Assessment			
Project No:  11011/030	Property Name: <i>Lake McKay Station</i> Site Name: <i>Tin Tin Hut Crk SNA B</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>2 February 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson</i>		<u>Waypoint No (mid-point of survey area):</u> <i>See attached plan for location</i>	
LENZ Unit: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos</i>	
Topography: <i>Gully system</i>	Slope: <i>Steep</i>	Altitude: <i>approx. 500 m asl</i>	Aspect: <i>Various</i>
Threatened Environment Status: <i>Chronically threatened</i>		Area Size (ha): <i>79.14</i>	
Representativeness: Kanuka woodland, which is highly representative of the pre-settlement vegetation.			
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	
Provide onsite description of vegetation:			
Vegetation type: Kanuka woodland – kanuka woodland is dominated by kanuka but also includes a diverse range of other shrubland species such as matagouri, native broom, <i>Coprosma propinqua</i> and the lianes: <i>Rubus</i> spp. and <i>Muehlenbeckia</i> spp..			
Degree of Modification: The area will have been disturbed by fire historically, but has not been disturbed for a long period given the presence of a well-developed kanuka cover.			
Overall Health: The area is in excellent overall health.			
Provide onsite description of fauna habitat: A range of passerines will be present such as grey warbler, brown creeper, fantail and tomtit. This vegetation is also expected to provide good habitat for a range of lizard species including the threatened jewelled gecko.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Existing farm management practices are clearly sympathetic to the kanuka woodland, therefore there is a low risk of intentional disturbance to the woodland. There is however a threat of inadvertent fire.			

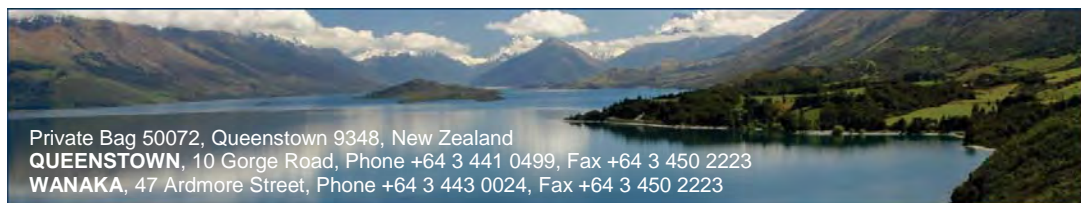
<p>Rarity: The threatened environment classification identifies the N4.1d environment to have 18% indigenous vegetation cover remaining and 2% under formal protection.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The area is contained on the steep faces of the gully system but also includes some areas on the slopes to the south of Luggate Creek.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The kanuka woodland has a range of shrubland species representative of the area and will also provide habitat for a range of bird and lizard species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The size of the kanuka woodland is distinctive and provides a good representation of the pre-settlement vegetation.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The kanuka is directly connected to grey shrubland on the mid slopes and tall tussock grassland at higher elevations, i.e. &gt;1000 m asl.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The management of the site is clearly sympathetic to the maintenance of the indigenous vegetation and it is of a size that is sustainable.</p>
<p>Recommendation (Accept/Decline): Highly representative vegetation in a chronically threatened environment that is self-sustaining and providing excellent habitat for a range of bird, lizard and invertebrate species. We recommend this area is considered as a Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Tin Tin Hut Crk SNA B - E30B\_1-4



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Significant Natural Area Assessment			
Project No:  11001/030	Property Name: <i>Lake McKay Station</i> Site Name: <i>Alice Burn Tributary SNA C</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>2 February 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plans for location</i>	
LENZ Unit: <i>Q2.2a</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Tributary of Alice Burn</i>	Slope: <i>Steep</i>	Altitude: <i>approx. 700 m asl</i>	Aspect: <i>Various</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>4.32</i>	
Representativeness: Grey shrubland is the current indigenous vegetation cover, however, pre-settlement the vegetation cover is most likely to have been beech forest.			
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	
<i>Olearea lineata</i>		At Risk – Declining	
Provide onsite description of vegetation:  Vegetation type: Grey shrubland, which includes significant populations of <i>Olearea lineata</i> .  Degree of Modification: The area will have been disturbed by fire historically, but has not been disturbed for a long period of time.  Overall Health: The area is in excellent overall health.			
Provide onsite description of fauna habitat: A range of passerines will be present such as grey warbler, brown creeper, fantail and tomtit, as well as native lizard and invertebrate species.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Existing farming management practices are clearly sympathetic to the <i>Olearea lineata</i> , therefore there is a low risk of intentional disturbance to the grey shrubland. There is however a threat of inadvertent fire.			

<p><b>Rarity:</b> The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining and 5.07% under formal protection. The better grey shrubland communities in the district that were historically abundant at lower elevations now tend to be found at slightly higher elevations in environments that supported beech forest.</p>
<p><b>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</b> The area is contained in the valley bottom and is self-sustaining.</p>
<p><b>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</b> The grey shrubland will include species representative of the area and will also provide habitat for a range of bird and lizard species.</p>
<p><b>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</b> The presence of significant populations of <i>Olearea lineata</i> is a special ecological characteristic of this proposed SNA.</p>
<p><b>Connectivity (how is the site connected to surrounding communities/areas?):</b> The area of SNA C is adjacent to the DOC administered Fallburn Scientific Reserve.</p>
<p><b>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</b> The management of the site is clearly sympathetic to the maintenance of the indigenous vegetation and the site is adjacent to the Fallburn Scientific Reserve, therefore the area should be sustainable.</p>
<p><b>Recommendation (Accept/Decline):</b> Highly representative vegetation in a critically underprotected area and supports significant populations of the 'at risk' <i>Olearea lineata</i>. The area is self-sustaining and providing excellent habitat for a range of bird, lizard and invertebrate species. We recommend this area is considered as a Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Alice Burn Tributary SNA C - E30C.

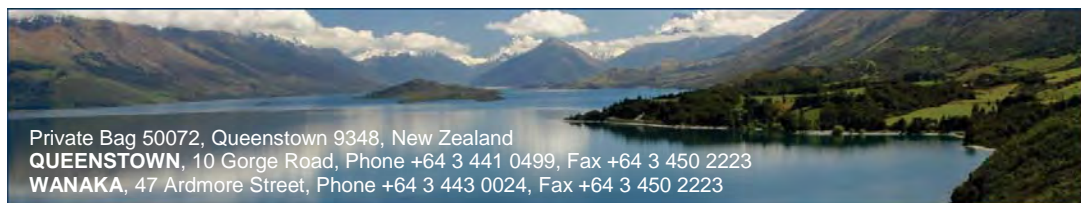


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**Figure 2:** Photograph of the *Olearea lineata* within Alice Burn Tributary SNA C.



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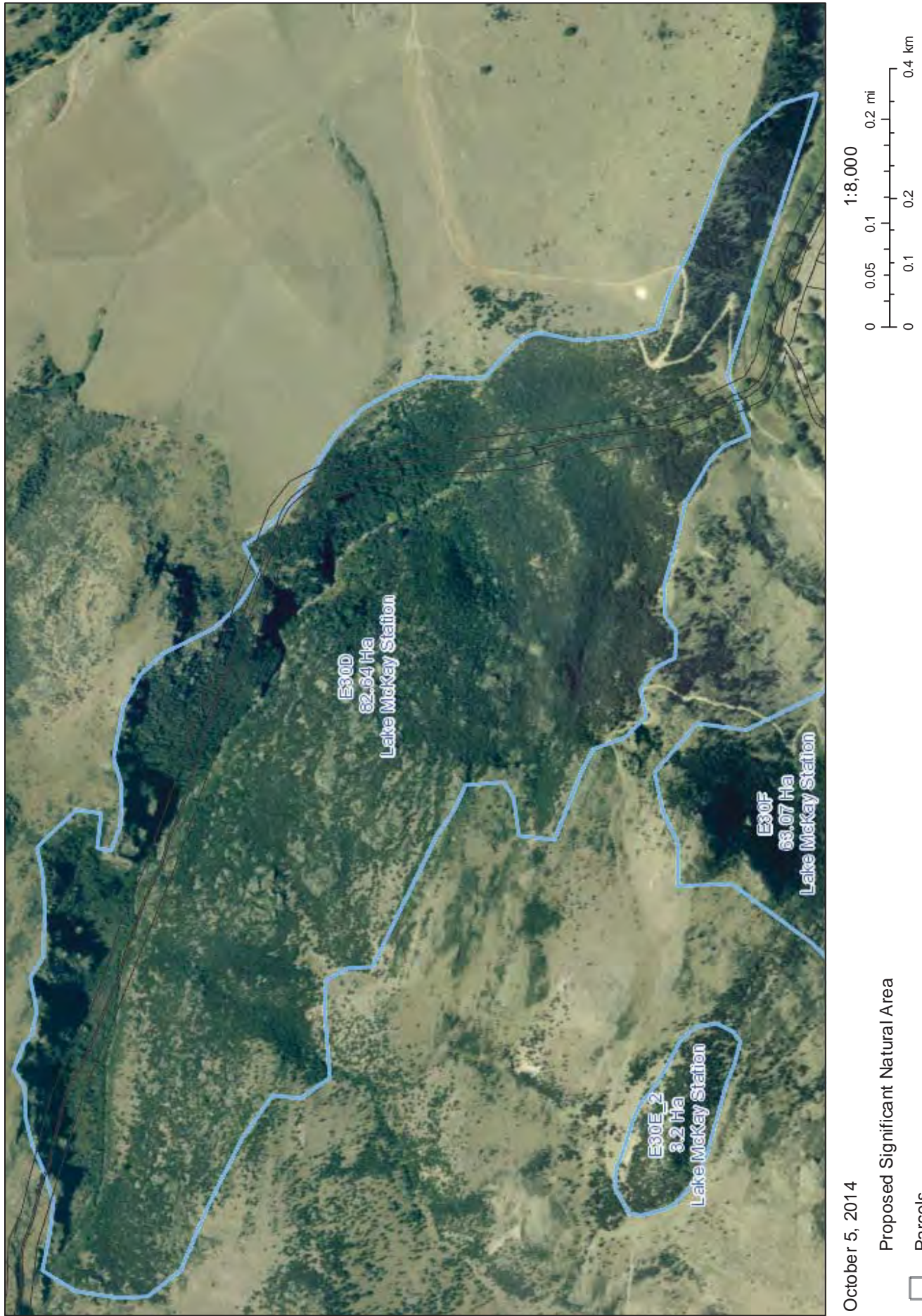
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Significant Natural Area Assessment			
Project No:  11011/030	Property Name: <i>Lake McKay Station</i> Site Name: <i>Luggate Crk SNA D</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>2 February 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location</i>	
LENZ Unit: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Creek gully system</i>	Slope: <i>Moderate to steep</i>	Altitude: <i>approx. 500 m asl</i>	Aspect: <i>Various</i>
Threatened Environment Status: <i>Chronically threatened</i>		Area Size (ha): <i>82.64</i>	
Representativeness: Kanuka woodland, which is highly representative of the pre-settlement vegetation.			
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	
Provide onsite description of vegetation:			
Vegetation type: Kanuka woodland – kanuka woodland is dominated by kanuka but also includes a range of other shrubland species such as matagouri, native broom, <i>Coprosma propinqua</i> and the lianes: <i>Rubus</i> spp and <i>Muehlenbeckia</i> spp..			
Degree of Modification: The area will have been disturbed by fire historically but has not been disturbed for a long period given the presence of a well-developed kanuka cover.			
Overall Health: The area is in excellent overall health.			
Provide onsite description of fauna habitat: A range of passerines will be present such as grey warbler, brown creeper, fantail and tomtit. This vegetation is also expected to provide good habitat for a range of lizard species including the threatened jewelled gecko.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Existing farming management practices are clearly sympathetic to the kanuka woodland, therefore there is a low risk of intentional disturbance to the woodland. There is however a threat of inadvertent fire.			

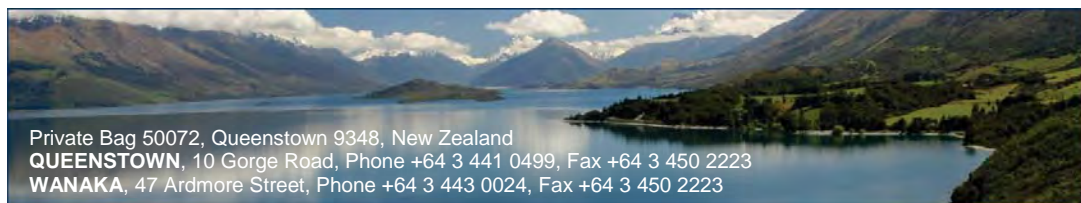


<p>Rarity: The threatened environment classification identifies the N4.1d environment to have 18% indigenous vegetation cover remaining and 2% under formal protection.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The area is situated on the rocky north and south faces of Luggate Creek.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The kanuka woodland has a range of shrubland species representative of the area and will also provide habitat for a range of bird and lizard species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The size of the kanuka woodland is distinctive and is a good representation of the pre-settlement vegetation.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The kanuka is directly connected to kanuka woodland within the Luggate Creek scientific reserve and in close proximity to the woodland in Alice Creek.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The management of the site is clearly sympathetic to the maintenance of the indigenous vegetation and it is of a size that is sustainable.</p>
<p>Recommendation (Accept/Decline): Highly representative vegetation in a chronically threatened environment that is self-sustaining and providing excellent habitat for a range of bird, lizard and invertebrate species. We recommend this area is considered as a Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Luggate Crk SNA D - E30D.



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Significant Natural Area Assessment			
Project No: <i>11011/030</i>		Property Name: <i>Lake McKay Station</i> Site Name: <i>Lake McKay SNA E</i>	
		Ecologist: <i>Glenn Davis</i> Date: <i>2 February 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plans for location.</i>	
LENZ Unit: <i>N4.1d</i> Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Adjacent to or located on rocky outcrops</i>	Slope: <i>Moderate to steep</i>	Altitude: <i>approx. 540 m asl</i>	Aspect: <i>South</i>
Threatened Environment Status: <i>Chronically threatened</i>		Area Size (ha): <i>8.76</i>	
Representativeness: Kanuka woodland, which is highly representative of the pre-settlement vegetation.			
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	
Provide onsite description of vegetation:			
Vegetation type: Kanuka woodland – kanuka woodland is dominated by kanuka but also includes a diverse range of other shrubland species such as matagouri, native broom, <i>Coprosma propinqua</i> and the lianes: <i>Rubus</i> spp and <i>Muehlenbeckia</i> spp.. Other coprosma species are likely to be present including the threatened <i>Coprosma intertexa</i> .			
Degree of Modification: The area will have been disturbed by fire historically but has not been disturbed for a long period given the presence of a well-developed kanuka cover.			
Overall Health: The area is in excellent overall health.			
Provide onsite description of fauna habitat: A range of passerines will be present such as grey warbler, brown creeper, fantail and tomtit. This vegetation is also expected to provide good habitat for a range of lizard species including the threatened jewelled gecko.			

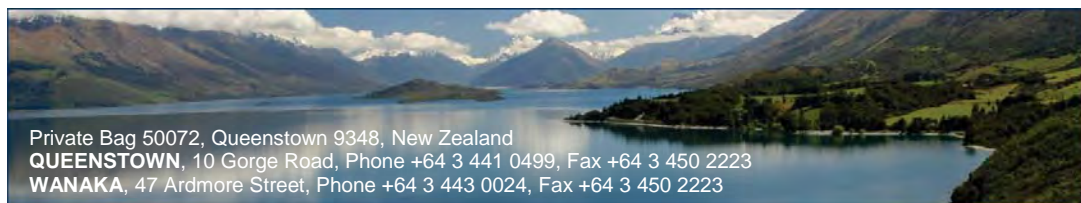


<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Existing farming management practices are clearly sympathetic to the kanuka woodland, therefore there is a low risk of intentional disturbance to the woodland. There is however a threat of inadvertent fire and wilding pine infestation.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18% indigenous vegetation cover remaining and 2% under formal protection.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>SNA E contains smaller areas of woodland compared to other SNAs identified on Lake McKay Station, but are of sufficient size and development to be considered further through the SNA process.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The kanuka woodland has a range of shrubland species representative of the area and will also provide habitat for a range of bird and lizard species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The size of the kanuka woodland is distinctive and provides a good representation of the pre-settlement vegetation.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The kanuka is directly connected to grey shrubland on the mid slopes and tall tussock grassland at higher elevations i.e. &gt;1000 m asl.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>SNA E contains smaller areas of woodland compared to other SNAs identified on Lake McKay Station, but they are of sufficient size and development to provide a good representation of the pre-settlement vegetation.</p>
<p>Recommendation (Accept/Decline):</p> <p>Highly representative vegetation in a chronically threatened environment that is self-sustaining and providing excellent habitat for a range of bird, lizard and invertebrate species. We recommend this area is considered as a Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Lake McKay SNA E - E30E\_1-2.



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Significant Natural Area Assessment			
Project No:  <i>11001/030</i>	Property Name: <i>Lake McKay Station</i>  Site Name: <i>Alice Burn SNA F</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>2 February 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos</i>	
Topography: <i>Lower reaches of Alice Burn</i>	Slope: <i>Steep</i>	Altitude: <i>approx. 570 m asl</i>	Aspect: <i>Various</i>
Threatened Environment Status: <i>Chronically Threatened</i>		Area Size (ha): <i>63.07</i>	
Representativeness: Kanuka woodland. Highly representative of the pre-settlement vegetation.			
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	
<i>Olearea lineata</i>		At Risk – Declining	
Provide onsite description of vegetation:  Vegetation type: Kanuka woodland – kanuka woodland is dominated by kanuka but also includes a range of other shrubland species such as matagouri, native broom, <i>Coprosma propinqua</i> and the lianes: <i>Rubus</i> spp and <i>Muehlenbeckia</i> spp.  Degree of Modification: The area will have been disturbed by fire historically, but has not been disturbed for a long period given the presence of a well-developed kanuka cover.  Overall Health: The area is in good health and is sustainable.			
Provide onsite description of fauna habitat: A range of passerines will be present such as grey warbler, brown creeper, fantail and tomtit. This vegetation is also expected to provide good habitat for a range of lizard species including the threatened jewelled gecko.			



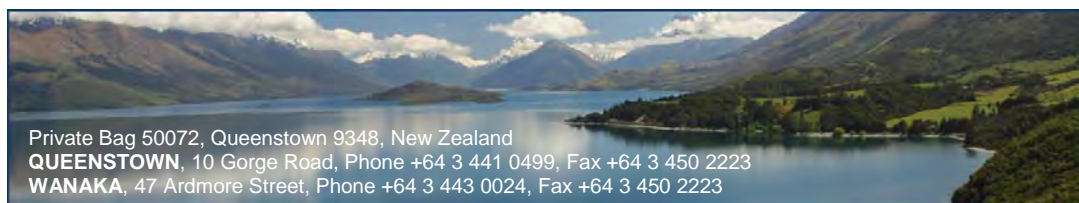
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Existing farming management practices are clearly sympathetic to the kanuka woodland, therefore there is a low risk of intentional disturbance to the woodland. There is however a threat of inadvertent fire.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining and 2.3% under formal protection.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area is contained on the steep faces of the gully system and is self-sustaining.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The kanuka has a range of shrubland species representative of the area and will also provide habitat for a range of bird and lizard species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The size of the kanuka woodland is distinctive and is a good representation of pre-settlement vegetation.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The area of SNA F is adjacent to the DOC administered Fallburn Scientific Reserve. The area is directly connected to shrubland on the lower north faces of the Pisa Range and is also directly connected to kanuka woodland in Luggate Creek.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The management of the site is clearly sympathetic to the maintenance of the indigenous vegetation and the site is adjacent to the Fallburn Scientific Reserve, therefore the area should be sustainable.</p>
<p>Recommendation (Accept/Decline):</p> <p>Highly representative vegetation in a chronically threatened environment that is self-sustaining and providing excellent habitat for a range of bird, lizard and invertebrate species. We recommend this area is considered as a Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Alice Burn SNA F - E30F.



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Significant Natural Area Assessment			
Project No:  11011/035	Property Name: <i>Queensberry Station</i> Site Name: <i>Sheepskin Creek SNA A</i>	Ecologist: <i>Simon Beale</i>  Date: <i>February 2012</i>	
Survey Undertaken By: <i>Simon Beale and Glenn Davis</i>		Waypoint No (mid-point of survey area): <i>G40 - E: 2217000 N:5598800</i>	
LENZ Unit: <i>Predominantly N5.1c and N4.1d. Q2.2a.</i> Ecological District: <i>Pisa</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Hill slopes, undulating land &amp; rocky outcrops and scarps.</i>	Slope: <i>&gt;20°</i>	Altitude: <i>Approx. 260 – 600 m asl</i>	Aspect: <i>NW - NE</i>
Threatened Environment Status: <i>Acutely and Chronically Threatened. Critically Underprotected.</i>		Area Size (ha): <i>110.98</i>	
Representativeness: Diverse scrub/shrubland communities form dominant cover in mid to lower reaches of the Sheepskin Creek catchment with intervening areas of pasture. Vegetation pattern reflects succession towards a scrub/shrubland woodland community dominated by kanuka.			
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	
<i>Naultinus gemmeus</i> (Jewelled gecko)		At Risk – Declining	
<i>Olearia lineata</i>		At Risk – Declining	
Provide onsite description of vegetation:			
Vegetation types: Kanuka scrub and shrubland. Mixed kanuka/mingimingi ( <i>Coprosma propinqua</i> ) –matagouri shrubland. Sub-dominant species include <i>Coprosma crassifolia</i> , <i>Melicope simplex</i> , <i>Olearia lineata</i> , <i>Carmichealia</i> spp.			
Structural Classes: Scrub, shrubland and grassland			
Shrubland Canopy: kanuka/mingimingi – matagouri Shrubland Sub-Dominants: <i>Coprosma crassifolia</i> , <i>Melicope simplex</i> , <i>Corokia cotoneaster</i> . Shrubland Ground Cover: <i>Blechnum penna-marina</i> , short tussock, tussock hawkweed Shrubland Climbers/Vines: <i>Rubus schmidelioides</i> , <i>Meuhlenbeckia australis</i> , <i>Muehlenbeckia complexa</i> .			



<p>Degree of Modification: The area has experienced frequent disturbance events in the past (e.g. fire).</p> <p>Degree of Recruitment: Strong regeneration of kanuka dominated scrub and shrubland communities mainly on gentle to steep sloping hill slopes and within gully systems.</p> <p>Overall Health: The more extensive areas of shrubland at the northern end of the property are intact and have a closed canopy. The majority of the kanuka cover is shrubland with grey shrubs and sweet briar as sub-dominant species. Rabbit population is extreme with browse damage evident on woody plants.</p>
<p>Provide onsite description of fauna habitat – species recorded or expected to be present: The kanuka and kanuka/grey shrubland provides suitable habitat for insectivorous birds (fantail, grey warbler), while the shrubland–open pasture vegetation pattern provides favourable hunting opportunities for eastern falcon and Australasian harrier.</p> <p>Indigenous shrubs such as <i>Coprosma crassifolia</i>, porcupine scrub (<i>Melicactus alpinus</i>) and thickets of bush lawyer growing amongst the rocky outcrops provide high quality habitat for lizards such as Cromwell gecko, while the more extensive areas of kanuka may provide habitat for the nationally threatened jewelled gecko.</p> <p>Many of the divaricating shrubs as noted above are important habitat (refugia and food supply) for a range of invertebrates including various beetle and moth species.</p>
<p>Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The open and somewhat arid expanses of pasture are affected by extensive patches of mouse eared hawkweed. Tussock hawkweed is abundant within and around the shrubland margins. The rabbit infestation is favouring the spread of Hieracium and other exotic plants adapted to dry conditions and adversely affecting young shrubs due to browse pressure. Farm management is currently absent.</p>
<p>Rarity:</p> <p>The shrubland is not uncommon in the Pisa Ecological District but is regionally significant due to its disjunct and limited distribution in Otago. The combination of shrubland and varied landforms provide suitable habitat for 'at risk' avifauna (eastern falcon) and flora (<i>Olearia lineata</i>).</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The areas of shrubland are scattered with the more intact areas in the lower reaches of Sheepskin Creek and on the lower hillslopes between 460-600 m asl. The more open shrubland cover generally encountered on the easier terrain could be described as low woodland with high area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The area contains an assemblage of shrubland species. The variability of species morphology (colour, texture and form) contributes to the vegetation pattern.</p>

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

Distinctive in terms of the varied landform features encountered within a relatively small area such as terraces, hill slopes, rocky bluff systems, rocky outcrops and incised creek bed. Tall kanuka (> 4 m) encountered within the lower reaches of Sheepskin Creek.

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

Good degree of connectivity with extensive kanuka shrubland within Lake McKay Station, the property to the west of Queensberry Hills. Altitudinal sequence of shrubland from near SH 6 (260 m) to 600 m asl on lower hill slopes of Pisa Range merging with modified indigenous/exotic grassland communities.

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

The absence of further human induced disturbances in combination with pest (rabbit) control measures will allow a more expansive shrubland cover to develop across much of the property within a relatively short period of time. Google Earth Images from 2005 and 2007 demonstrate the extent of regeneration of shrubland community that has occurred over the last 5 to 7 years across large parts of the property.

Recommendation (Accept/Decline):

We consider this area should be designated as a Significant Indigenous Vegetation and Fauna Habitat in view of the following ecological attributes:

- The diversity of shrubland vegetation types and landform features;
- The floristic diversity of the shrublands;
- The subtle vegetation patterns;
- The variety of habitats the area affords to indigenous fauna, providing suitable habitat for at risk species, such as the eastern falcon and *Olearia lineata*.

Overview: The area of potential significance - Sheepskin Creek SNA A - E35A



July 16, 2015

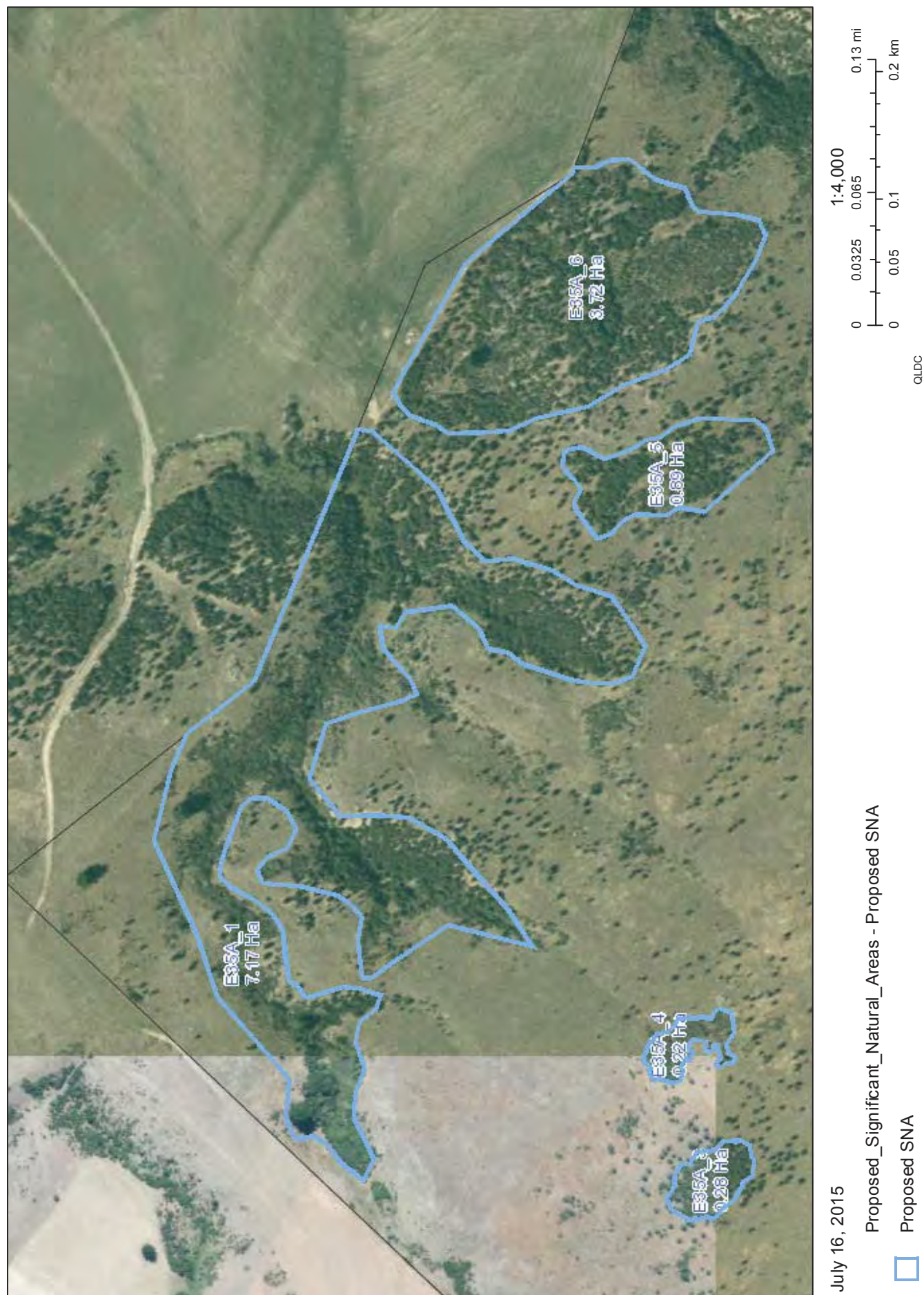
Proposed\_Significant\_Natural\_Areas - Proposed SNA

Proposed SNA

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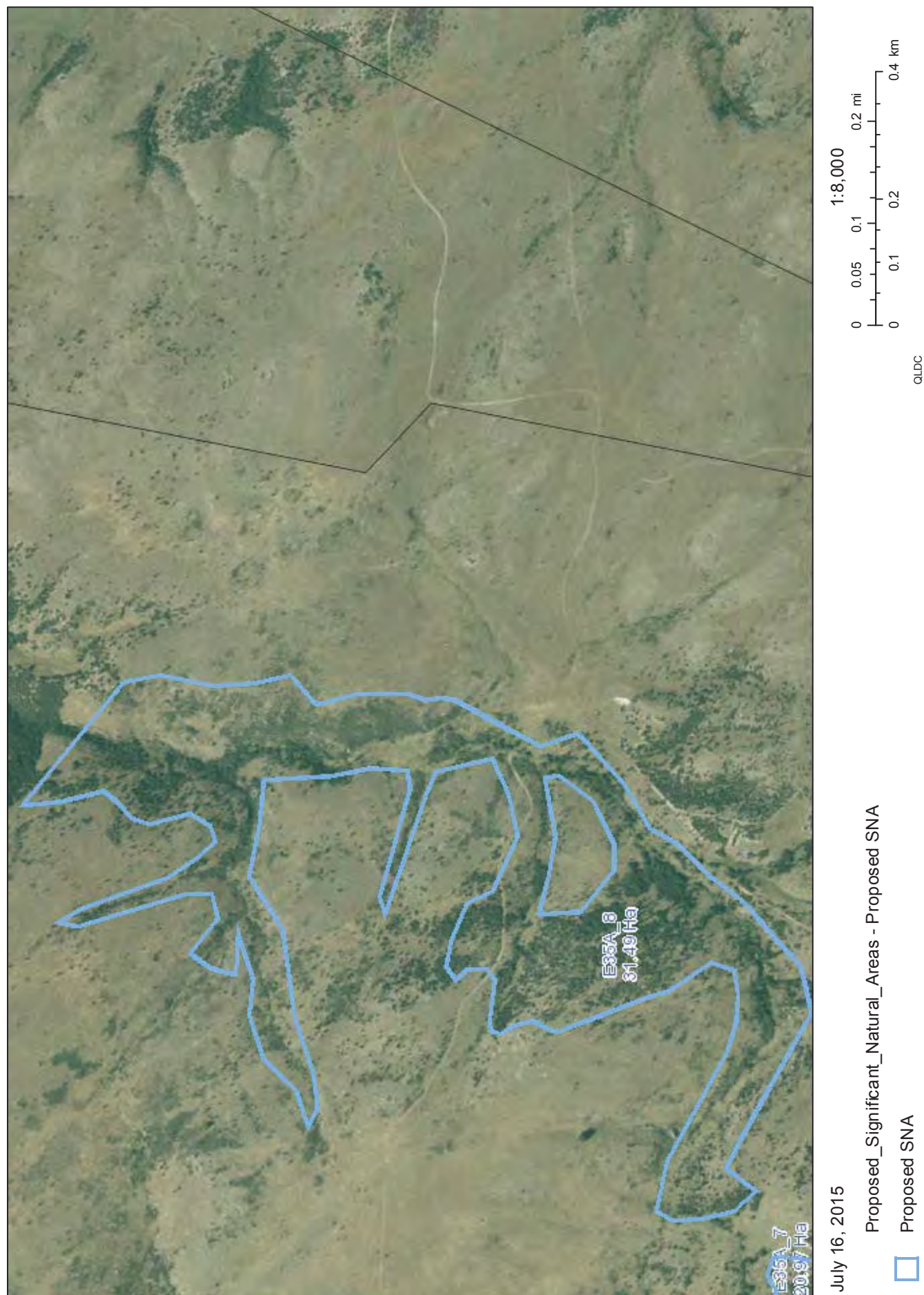
Figure 1a: The area of potential significance - Sheepskin Creek SNA A - E35A\_1,3,4,5,6.



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



Figure 1b: The area of potential significance - Sheepskin Creek SNA A - E35A\_8.



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

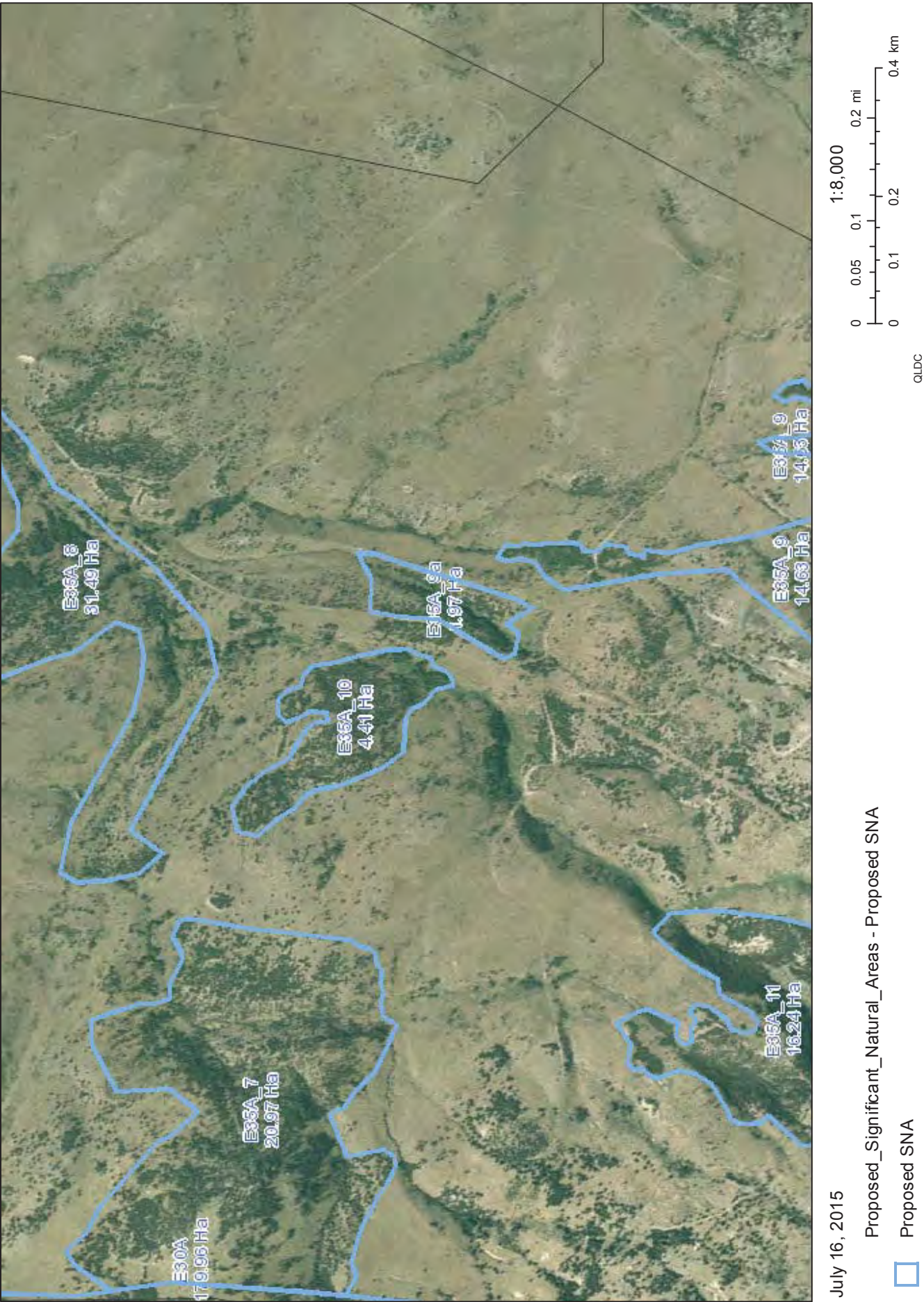


Figure 1c: The area of potential significance - Sheepskin Creek SNA A - E35A\_2.





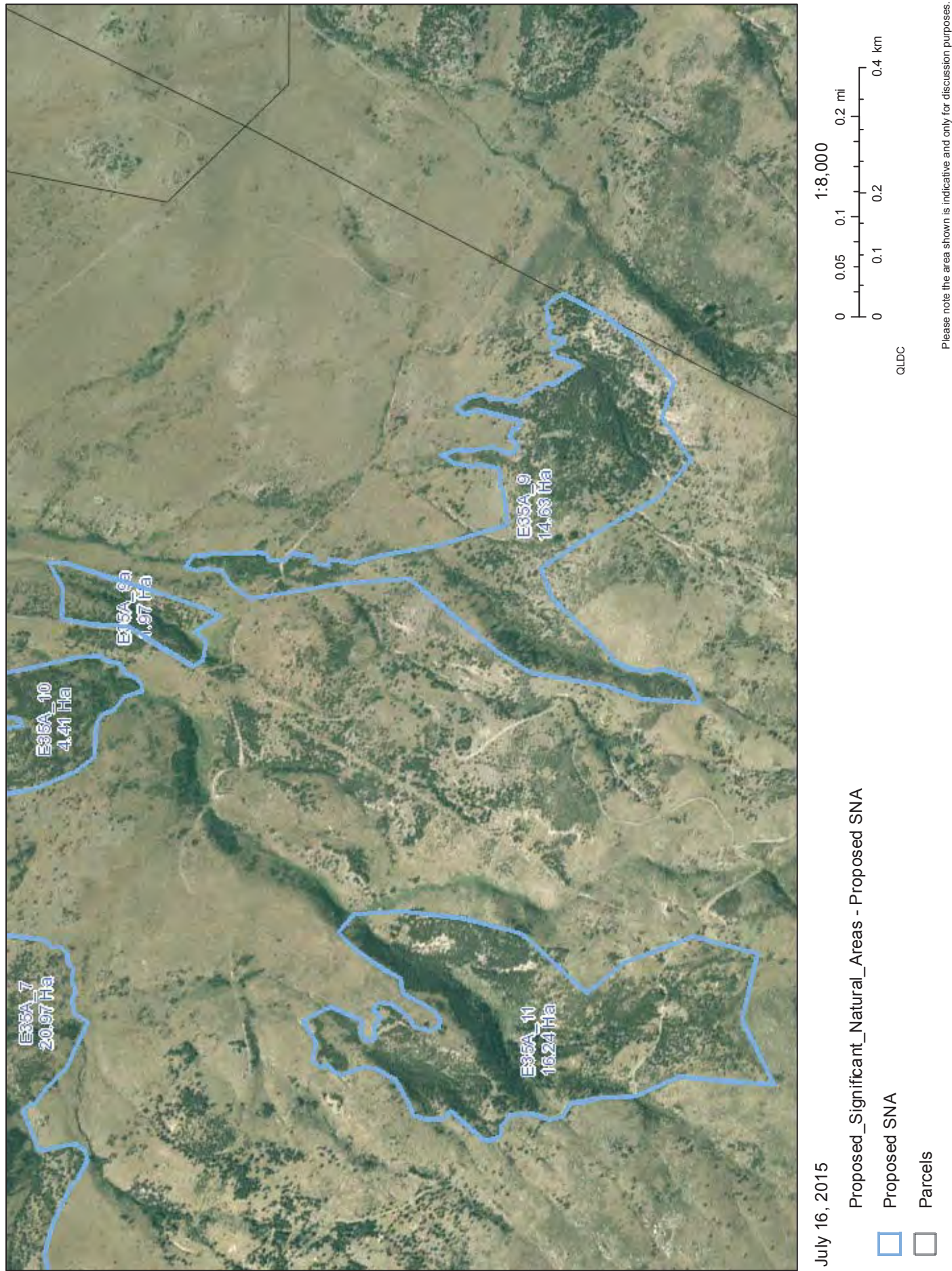
Figure 1d: The area of potential significance - Sheepskin Creek SNA A - E35A\_7,10.



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Figure 1e: The area of potential significance - Sheepskin Creek SNA A - E35A\_9,9a,11.







**Figure 2:** Extensive areas of kanuka shrubland of varying degrees of intactness covering the hillslopes immediately west of Sheepskin Creek.



**Figure 3:** Confined area of mixed kanuka/grey shrubland bordering tributary of Sheepskin Creek. A small group of *Olearia lineata* shrubs evident in foreground. Kanuka woodland in background.





**Figure 4:** Good quality lizard habitat associated with bluff system within kanuka woodland.



**Figure 5:** Scattered bushes of porcupine scrub (*Melicytus alpinus*) on one of the rounded knolls bordering Sheepskin Creek.





**Figure 6:** Extensive kanuka shrubland exhibiting a good degree of canopy closure at northern end of property.



**Figure 7:** Large thicket of bush lawyer (*Rubus schmidelioides*) commonly associated with rock outcrops such as this one located near the edge of kanuka shrubland.



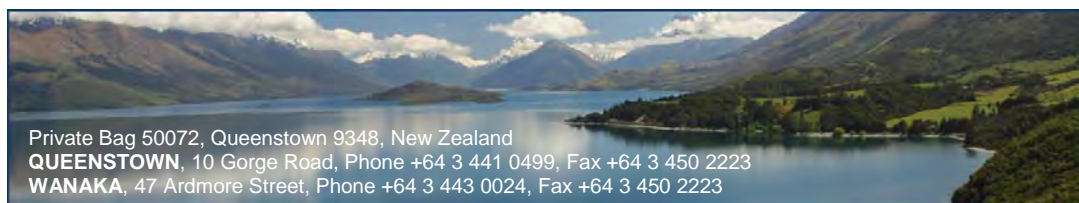


**Figure 8:** View south towards extensive kanuka shrubland on lower hillslopes between 460 to 560 m. Sheepskin Creek is at left of photograph.



**Figure 9:** One of a number of large rock outcrops on the property.





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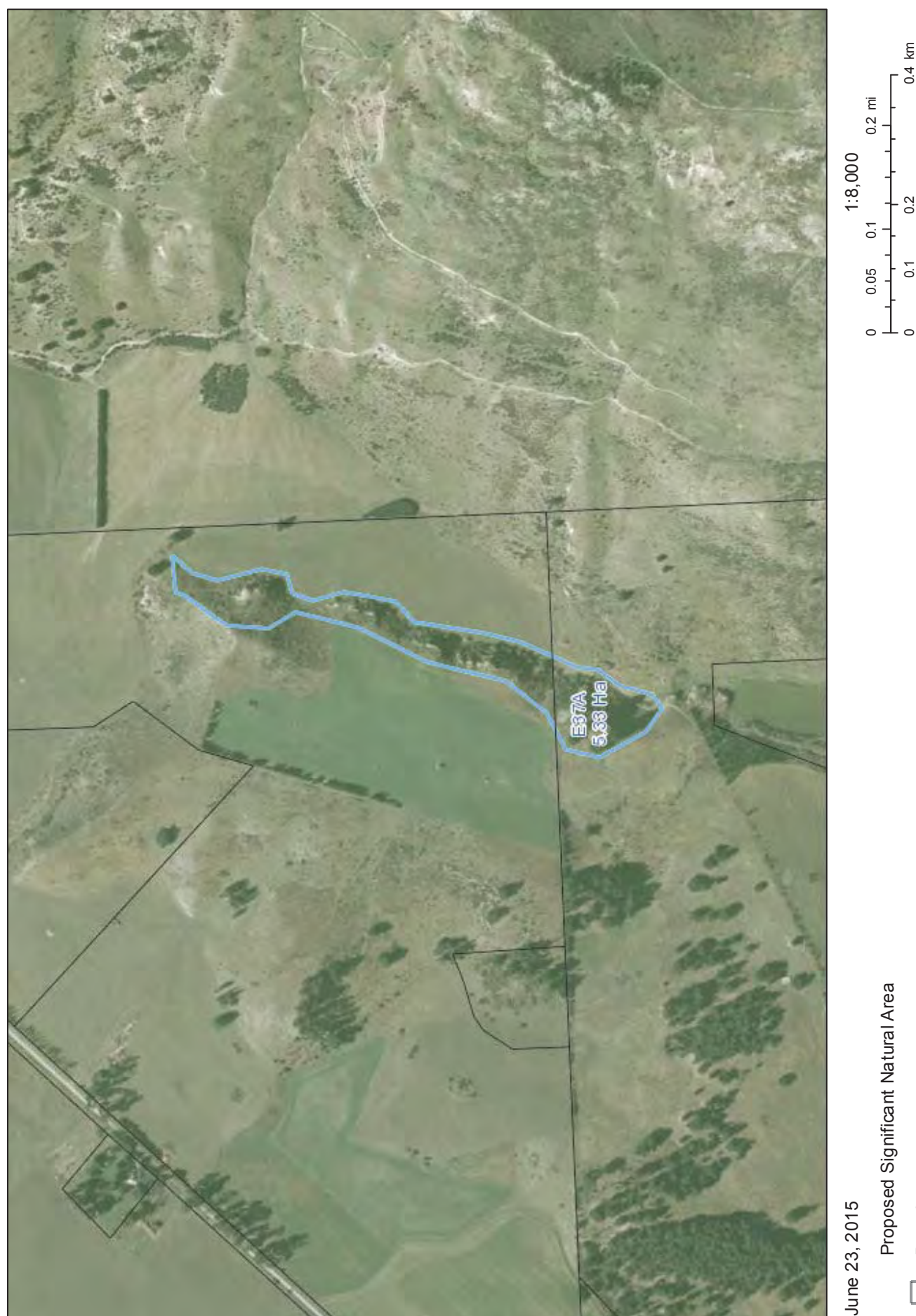


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Significant Natural Area Assessment			
Project No:  11001/037	Property Name: <i>Cochrane &amp; Ashkel Ltd.</i>  Site Name: <i>Cochrane-Ashkel Ltd SNA A</i>	Ecologists: <i>Neill Simpson &amp; Rebecca Lawrence.</i>  Date: 2 <sup>nd</sup> October 2012	
Survey Undertaken By: <i>Neill Simpson &amp; Rebecca Lawrence.</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: K3.3b, N4.1d, N5.1c.  Ecological District: <i>Lindis Ecological District.</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Rocky outcrop.</i>	Slope: <i>Steep.</i>	Altitude: <i>400 masl.</i>	Aspect: <i>South-east.</i>
Threatened Environment Status:  <i>Acutely threatened &amp; chronically threatened.</i>		Area Size (ha): 5.33	
Representativeness: Pre-settlement vegetation representative of K3, N4 and N5 LENZ environments are understood to have consisted of a mixture of groves of matagouri ( <i>Discaria toumatou</i> ), grasslands with kanuka ( <i>Kunzea ericoides</i> ), and woodlands. The shrubland vegetation on the rocky outcrop lacks the diversity of the original vegetation cover but remains moderately representative of this environment.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Coprosma intertexta</i>		At Risk - Declining	
Provide onsite description of vegetation: Vegetation type: Grey shrubland on rocky outcrop, including <i>Coprosma intertexta</i> , <i>Coprosma propinqua</i> , <i>Coprosma tayloriae</i> , <i>Coprosma rigida</i> , <i>Coprosma crassifolius</i> , <i>Carmichaelia petriei</i> , <i>Melicytus alpinus</i> , <i>Discaria toumatou</i> , <i>Pteridium esculentum</i> , <i>Muehlenbeckia complexa</i> , <i>Cordyline australis</i> . The exotic elderberry ( <i>Sambucus nigra</i> ) is prominent along the lower edge of the woodland with hawthorn, gooseberry and sweet brier also present.			
Degree of Modification: The area has experienced historical disturbances with the lack of woodland diversity a clear indication species have been lost over time, likely due to grazing by livestock. Currently, the area is grazed by sheep.			
Overall Health: Despite current and historical disturbance, the vegetation on the rocky outcrop remains a representative example of a community within the LENZ environments.			

<p>Provide onsite description of fauna habitat:  The shrubland on the rocky outcrop may provide habitat for the following species:  Birds – indigenous insectivorous birds, e.g. bellbirds and fantails.  Herpetofauna – southern alps gecko, McCann's skink and the Common skink.  Invertebrates – the grey shrubland (in particular the <i>Coprosma</i> species) will provide ideal habitat for invertebrates.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):  Key threats include grazing of livestock and weed-spraying for gorse/broom.</p>
<p>Rarity:  The threatened environment classification identifies the K3.3b, N4.1d and N5.1c environments to have, respectively, 7.3 %, 18.6 % and 2.7 % indigenous vegetation cover remaining, with 1.3 %, 2.3 % and 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The rocky outcrop on the Cochrane and Ashkel Ltd properties is isolated from other shrubland patches; however, shrubland is present approximately 500 m away in a modified state on the slopes of Grandview Mountain to the east of the area of interest.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): While the diversity of the shrubland is much reduced since pre-settlement time, there are still a range of <i>Coprosma</i> species present, including <i>Coprosma intertexta</i>, <i>Coprosma propinqua</i>, <i>Coprosma tayloriae</i>, <i>Coprosma rigida</i> and <i>Coprosma crassifolia</i>.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):  The rocky outcrop covered in shrubland is one of the few remnants of pre-settlement woodland in the Wanaka-Hawea area, and also contains <i>Coprosma intertexta</i>, which is classified as At Risk (within which the species is classified as 'declining').</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):  The shrubland rocky outcrop is isolated from other shrubland patches, but connected to other patches of relict shrubland on the mountain slopes to the east.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):  The shrubland has maintained a moderate degree of ecological integrity despite livestock grazing. With the exclusion of grazing, the ecological integrity and processes would increase and the area would have long term sustainability.</p>
<p>Recommendation (Accept/Decline):  While the rocky outcrop shrubland is a degraded representation of the original vegetation cover in the Hawea area, given the range of <i>Coprosma</i> species and other grey shrubland species still present and surviving, it provides a sustainable area of indigenous vegetation that is acutely threatened. Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat, and that the fencing of this area be seriously considered.</p>

Figure 1: The area of potential significance - Cochrane-Ashkel Ltd SNA A - E37A



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

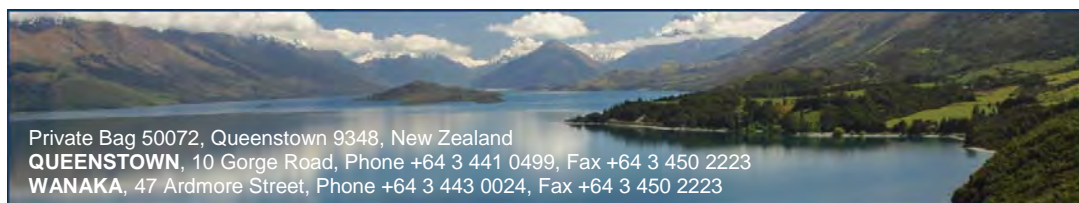




**Figure 2:** Two representative photographs of the rocky outcrop shrubland.



**Figure 3:** A representative photograph of the rocky outcrop shrubland.



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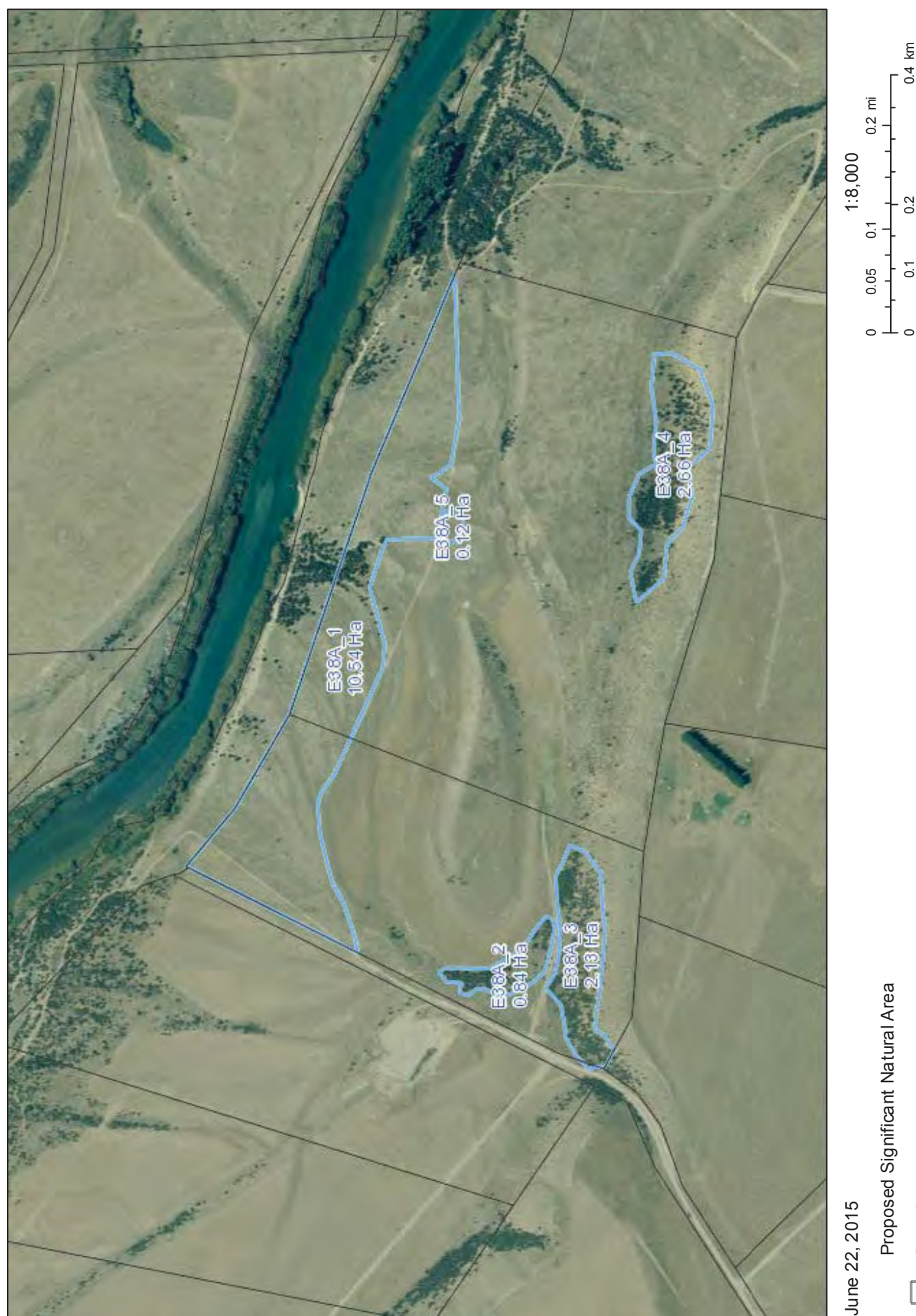
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Significant Natural Area Assessment			
Project No:  11001/038	Property Name: <i>Congreve</i> .  Site Name: <i>Congreve SNA A</i>	Ecologist: <i>Neill Simpson &amp; Rebecca Lawrence</i> . Date: 2 <sup>nd</sup> October 2012 & 18 February 2015	
Survey Undertaken By: <i>Neill Simpson &amp; Rebecca Lawrence</i> .		Waypoint No (midpoint of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N5.1c</i> Ecological District: <i>Lindis Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>River terraces.</i>	Slope: <i>Flat to steep.</i>	Altitude: <i>280 masl.</i>	Aspect: <i>North-east.</i>
Threatened Environment Status: <i>Acutely Threatened</i>		Area Size (ha): <i>16.29</i>	
Representativeness: Pre-European settlement vegetation within the potential area of interest is understood to have consisted of a kanuka and kowhai dominated woodland (Walker <i>et al.</i> , 2003). The vegetation on the site lacks the diversity of the original woodlands, but provides a good representation of native cushion fields with some remaining woodland species, and with native vegetation being the dominant cover.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
Banded dotterel/turiwhatu ( <i>Charadrius bicinctus bicinctus</i> ) (seen nesting adjacent to property)		Threatened - Nationally vulnerable	
<i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i>		At Risk - Declining	
Provide onsite description of vegetation: Vegetation type: Cushion field with <i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i> , <i>Rytidosperma maculata</i> , <i>Luzula ulophylla</i> , <i>Raoulia australis</i> , <i>R. parkii</i> , <i>R. apicinigra</i> , lichen species, <i>Luzula rufa</i> var. <i>rufa</i> , <i>Carex breviculmis</i> , <i>Leucopogon fraseri</i> , <i>Muehlenbeckia axillaris</i> and <i>Melycytus alpinus</i> . There are also kanuka stands ( <i>Kunzea ericoides</i> ). An individual <i>Coprosma propinqua</i> was recorded. Some exotic species are present, however, the native vegetation coverage is dominant. The exotic species include: <i>Anthoxanthum odoratum</i> , <i>Rumex acetosella</i> , <i>Hypericum perforatum</i> , <i>Agrostis capillaris</i> , <i>Verbascum thapsus</i> and <i>Aira caryophyllea</i> subsp. <i>caryophyllea</i> .			
Degree of Modification: The lack of woodland species is a clear indication species have been lost through multiple disturbance events. However, the cushion fields and kanuka stands do provide a good remaining representation, and cover, of native species.			
Overall Health: Despite disturbance events, the vegetation on the alluvial river fan remains one of the few examples of a native cushion field community where the vegetation cover is dominated by native species.			



<p>Provide onsite description of fauna habitat:</p> <p>The cushion fields are likely to provide nesting habitat for the banded dotterel and the New Zealand pied oystercatcher. The kanuka stands, as well as the cushion field, are also likely to provide habitat for the southern alps gecko, McCann's skink and Common skink.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include conversion to dairy, housing developments and the risk of wilding pine establishment.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N5.1c environment to have 2.7 % indigenous vegetation cover remaining, with 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The cushion fields are of a relatively large size for this type of habitat, with good native ground cover.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The presence and abundance of the threatened <i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i> and the potential use of the area for nesting by the banded dotterel, shows that the area of interest has the potential to sustain an ecologically important community. Furthermore, this area of cushion field habitat is one of the few remaining remnants within the Upper Clutha, and distinctive in that native vegetation is dominant, with only a minor exotic component.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>This cushion field is one of the few remaining remnants along the Upper Clutha River, and one of the best examples of <i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i> in terms of size and abundance.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The cushion fields and kanuka stands are connected to similar vegetation communities along the alluvial fans of the Upper Clutha River.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The cushion fields have maintained a moderate degree of ecological integrity with good vegetation cover of native species, in particular <i>Raoulia</i> species, <i>Rytidosperma maculate</i>, <i>Luzula ulophylla</i> and <i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i>.</p>
<p>Recommendation (Accept/Decline):</p> <p>While the cushion fields and kanuka stands lack the diversity of the original vegetation cover along the Upper Clutha River, given the dominant native vegetation cover, the abundance and size of the threatened <i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i>, and the potential use of the area as a nesting ground for the banded dotterel, the area provides a sustainable area of indigenous vegetation that is representative of this acutely threatened environment. Based on the above considerations we recommend the area should be taken forward for further consideration as Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1a: The area of potential significance - 'Congreve SNA A' - E38A\_1-5.



June 22, 2015

Proposed Significant Natural Area

□ Parcels

□ Proposed Significant Natural Area

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



Figure 1b: The area of potential significance - 'Congreve SNA A' - E38A\_5.

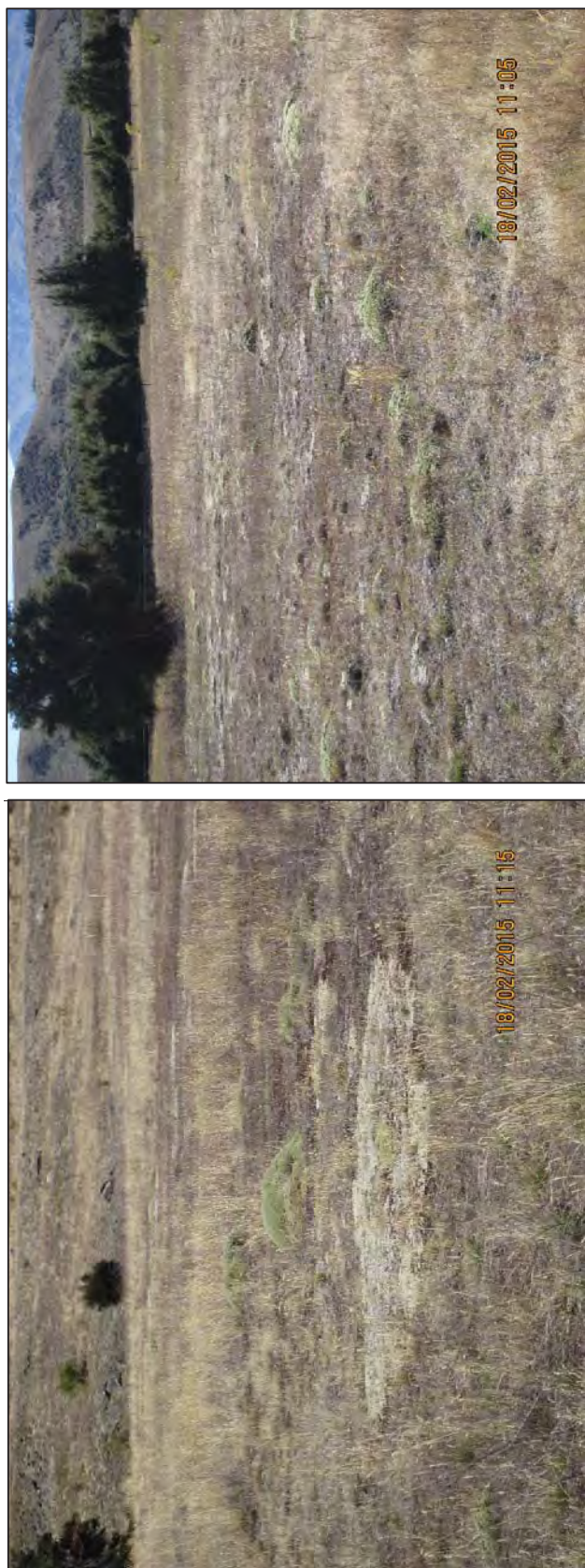


Please note the area shown is indicative and only for discussion purposes.





**Figure 2:** A photographic representation of the cushion fields.



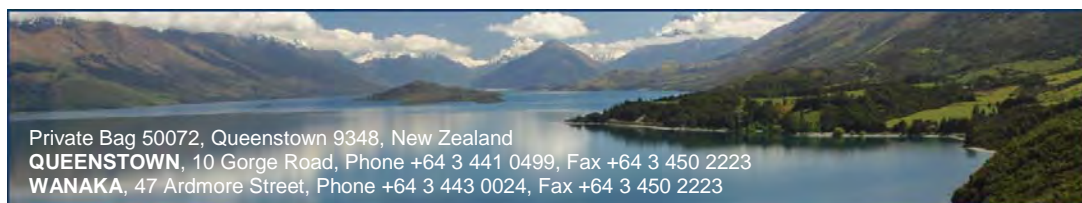
**Figure 3:** A photographic representation of the areas of *Pimelea sericeovillosa* subsp. *pulvinaris* within the cushion fields.





**Figure 4:** A photographic representation of the kanuka stands.





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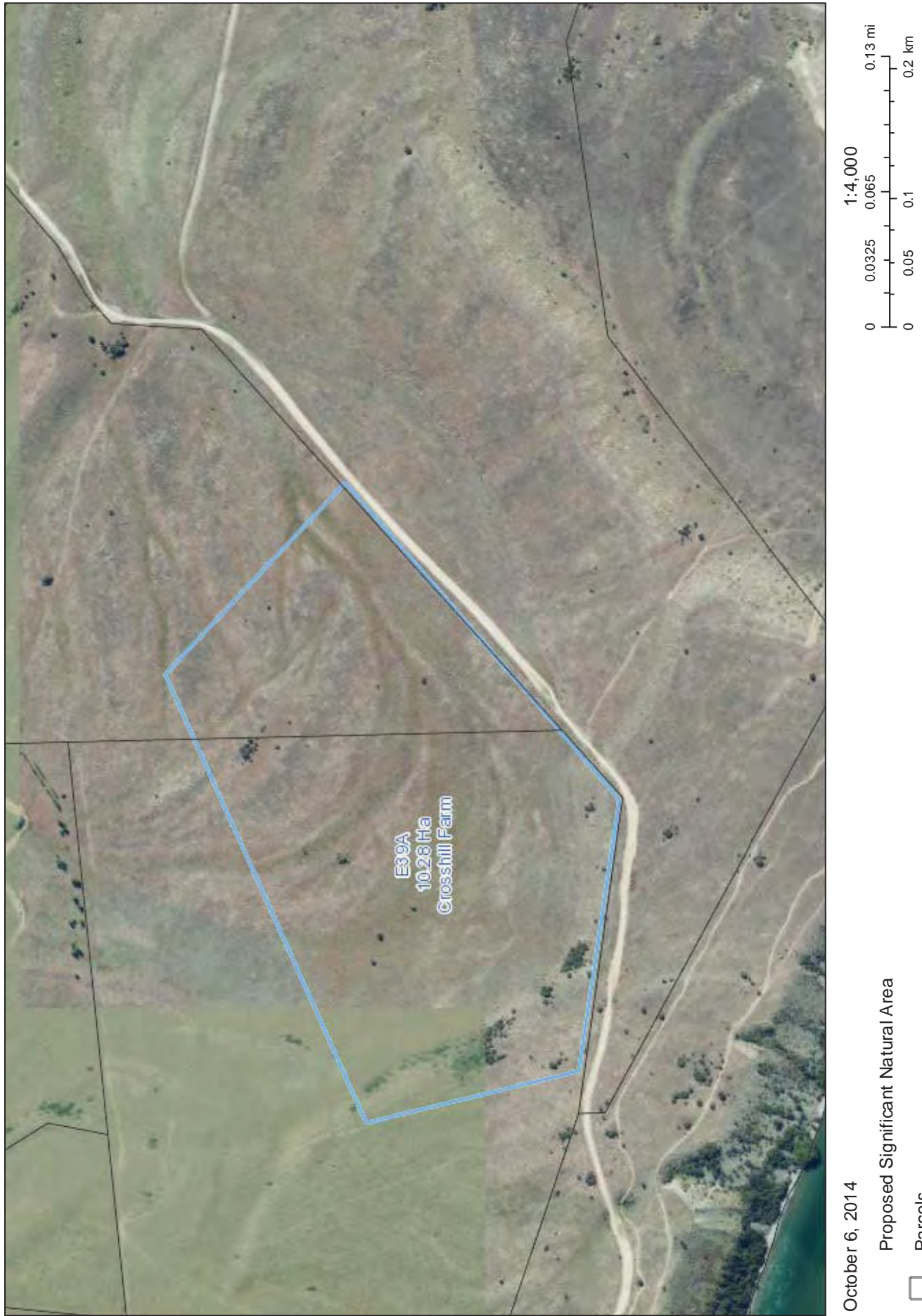
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Significant Natural Area Assessment			
Project No: 11001/039		Property Name: <i>Crosshill Farm</i> Site Name: <i>Crosshill SNA A</i>	
Ecologists: <i>Neill Simpson &amp; Rebecca Lawrence</i> Date: <i>2<sup>nd</sup> October 2012</i>			
Survey Undertaken By: <i>Neill Simpson &amp; Rebecca Lawrence.</i>		<u>Waypoint No (midpoint of survey area):</u> <i>See attached plan for location.</i>	
LENZ Unit: <i>N5.1c</i> Ecological District: <i>Lindis Ecological District.</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Old river terrace.</i>	Slope: <i>Relatively flat.</i>	Altitude: <i>320 masl.</i>	Aspect: <i>South-west.</i>
Threatened Environment Status:  <i>Acutely Threatened.</i>		Area Size (ha): <i>10.28</i>	
Representativeness: Pre-European settlement vegetation representative of the N5 LENZ environments is understood to have consisted of continuous grasslands with kanuka. The vegetation on the Crosshill property lacks the diversity of the original grassland vegetation, but is still considered representative of the original vegetation cover.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
<i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i>		At Risk - Declining	
Provide onsite description of vegetation: Vegetation type: Short tussock grassland and cushion field with the following species present: <i>Festuca novae-zelandiae</i> , <i>Leptospermum ericoides</i> , <i>Melicytus alpinus</i> , <i>Muehlenbeckia axillaris</i> , <i>Raoulia species</i> , <i>Luzula rufa</i> var. <i>rufa</i> , <i>Microtis oligantha</i> , <i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i> , <i>Rytidosperma maculate</i> , <i>Leucopogon fraseri</i> , various lichens and mosses, with occasional shrubs of <i>Ozothamnus leptophylla</i> and <i>Coprosma propinqua</i> .			
Degree of Modification: The area has experienced historical disturbances, with the invasion of exotic grasses and <i>Rosa rubiginosa</i> a clear indication species have been lost through multiple disturbance events, including continued grazing by introduced rabbits. However, the surviving short tussock grassland and cushion fields provide a representative example of a community within the N5 LENZ unit that is fast disappearing.			
Provide onsite description of fauna habitat: The short tussock grassland and cushion field has the potential to sustain lizards and invertebrates, however none were observed during the site visit.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include rabbit grazing and housing development.</p>
<p>Rarity: The threatened environment classification identifies the N5.1c environment to have 2.7 % indigenous vegetation cover remaining, with 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The short tussock grassland and cushion fields on the Crosshill property are connected with the surrounding cushion/herb fields that dominant the vegetative cover along the alluvial fans of the Clutha River.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The continued disturbance is shown in the lack of diversity of plant species, but the presence of the threatened <i>Pimelea sericeovillosa</i> subsp. <i>pulvinaris</i> and the areas of short tussock grassland show that the area of interest has the potential to sustain an ecologically important community.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The remnant short tussock grassland community is one of the few remaining representations of pre-European vegetation along the Clutha Valley.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The short tussock grassland and cushion field is connected to similar vegetation communities along the alluvial fans of the Clutha River.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The short tussock grassland and cushion fields have maintained a moderate degree of ecological integrity despite rabbit grazing. Thus, the area is sustainable even without protection from rabbits; however the ecological integrity and processes would be greater still with decreased pressure from grazing.</p>
<p>Recommendation (Accept/Decline):</p> <p>While the short tussock grassland and cushion fields lack the diversity of the original vegetation cover along the Clutha River, given the size and number of plant species surviving, the area provides a sustainable area of indigenous vegetation that is acutely threatened. Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Crosshill SNA A - E39A

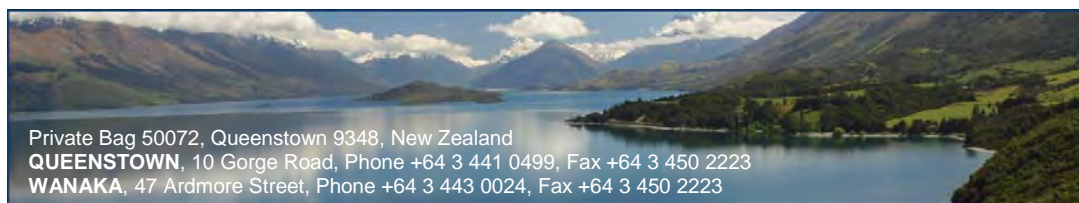


Please note the area shown is indicative and only for discussion purposes.





**Figure 2:** The potential area of significance on the Crosshill Farm property.



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Significant Natural Area Assessment			
Project No:  11001/044	Property Name: <i>Te Awa Road</i>  Site Name: <i>Te Awa Road SNA A</i>	Ecologist: <i>Neill Simpson &amp; Rebecca Lawrence.</i> Date: <i>18 February 2015</i>	
Survey Undertaken By: <i>Neill Simpson &amp; Rebecca Lawrence.</i>		<u>Waypoint No (midpoint of survey area):</u> <i>See attached plan for location.</i>	
LENZ Unit: <i>N5.1c</i>  Ecological District: <i>Lindis Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>River terraces.</i>	Slope: <i>Flat</i>	Altitude: <i>328 masl.</i>	Aspect: <i>South-east.</i>
Threatened Environment Status: <i>Acutely Threatened</i>		Area Size (ha): <i>2.38</i>	
Representativeness: Pre-European settlement vegetation within the potential area of interest is understood to have consisted of kanuka, kowhai and Hall's totara woodlands (Walker <i>et al.</i> , 2003). The vegetation on the site lacks the diversity of the original vegetation, but provides a good representation of native grasslands with some remaining woodland species, and with native vegetation being the dominant cover.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
None observed			
Provide onsite description of vegetation: Vegetation type: Hard tussock ( <i>Festuca novae-zelandiae</i> ) grassland with shrubland species, including <i>Kunzea ericoides</i> (kanuka), <i>Ozothamnus leptophyllus</i> and <i>Discaria toumatou</i> (matagouri). Native species occurring within the tussock include <i>Rytidosperma pumilum</i> , <i>Luzula ulophylla</i> , <i>Raoulia parkii</i> , <i>Carex breviculmis</i> , <i>Leucopogon fraseri</i> , <i>Muehlenbeckia complexa</i> var. <i>complexa</i> , <i>Pimelea oreophila</i> subsp. <i>oreophila</i> , <i>Coprosma propinqua</i> , <i>C. petriei</i> , <i>Stackhousia minima</i> and lichen species. Some exotic species are present, however, the native vegetation coverage is dominant. The exotic species include: <i>Anthoxanthum odoratum</i> , <i>Rumex acetosella</i> , <i>Hieracium</i> species, <i>Agrostis capillaris</i> , <i>Rosa rubiginosa</i> and <i>Pinus contorta</i> .			
Degree of Modification: The lack of native woodland species indicates the site has experienced multiple disturbance events. However, the surviving grassland and shrub species do provide a good remaining representation, and cover, of native species.			
Overall Health: Despite recent and historical disturbances, the vegetation on the river terrace remains a good representative example of a native grassland community with some woodland species, and the vegetation cover is dominated by native species.			

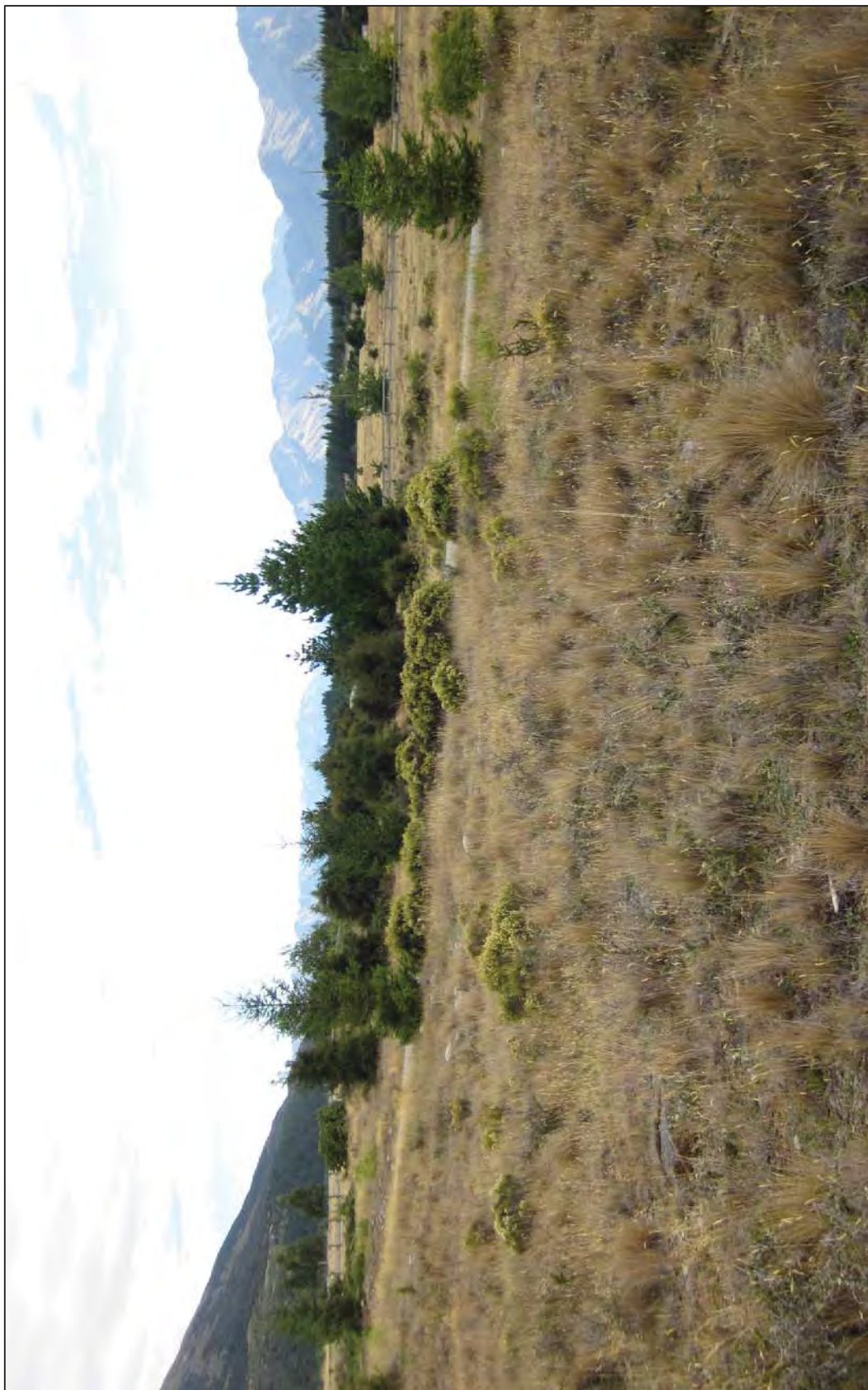
<p>Provide onsite description of fauna habitat: The grassland and shrubland species will likely provide habitat for indigenous invertebrates, lizards and bird species.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Key threats include housing developments and wilding pines; wilding pine control has occurred on site.</p>
<p>Rarity: The threatened environment classification identifies the N5.1c environment to have 2.7 % indigenous vegetation cover remaining, with 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The area of interest is of a moderate size and matagouri and <i>Ozothamnus leptophyllus</i> are naturally regenerating on site.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The continued disturbance is shown in the lack of diversity of plant species, but the dominance of native vegetation cover in comparison to exotic, shows that the area of interest has the potential to sustain an ecologically important community.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): This area of grassland habitat is one of the few remaining remnants within the Upper Clutha, and distinctive in that the native vegetation is dominant, with only a minor exotic component.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The area of interest is connected to the surrounding kanuka woodland and cushion/herb fields along the river terrace on the opposite side of the Hawea River.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The grassland has maintained a moderate degree of ecological integrity with good vegetation cover of <i>Rytidosperma pumilum</i>, <i>Festuca novae-zelandiae</i> and <i>Ozothamnus leptophyllus</i>. However, wilding pines pose a long term risk to the site, and control needs to continue. The natural regeneration of matagouri and <i>Ozothamnus leptophyllus</i> provides evidence of the sites' sustainability.</p>
<p>Recommendation (Accept/Decline): While the area lacks the diversity of the original vegetation cover along the Hawea River, given the dominant native vegetation cover and natural regeneration occurring on site, the area provides a sustainable area of indigenous vegetation that is acutely threatened. Based on the above considerations we recommend the area should be taken forward for further consideration as Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - 'Te Awa Road SNA A' - E44A\_1-2.



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



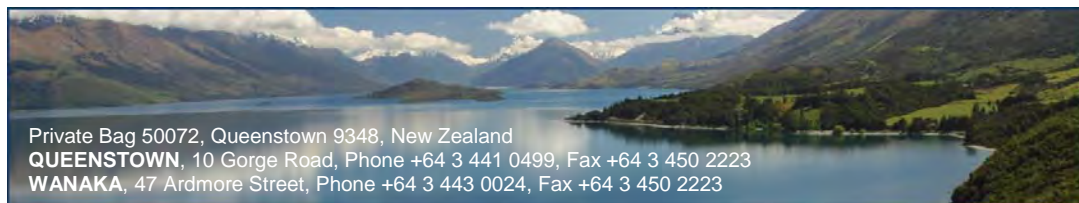
**Figure 2:** A representative photograph of the grassland, with shrub species on *Te Awa Road SNA A*.





**Figure 3:** Matagouri regeneration on *Te Awa Road SNA A*.





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Significant Natural Area Assessment			
Project No:  11001/045	Property Name: <i>Henderson Property</i>  Site Name: <i>Henderson SNA A</i>	Ecologist: <i>Neill Simpson &amp; Rebecca Lawrence.</i>  Date: <i>18 February 2015</i>	
Survey Undertaken By: <i>Neill Simpson &amp; Rebecca Lawrence.</i>		Waypoint No (midpoint of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N5.1c</i>  Ecological District: <i>Lindis Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>River terrace embankment</i>	Slope: <i>Steep</i>	Altitude: <i>320 m asl.</i>	Aspect: <i>South-east.</i>
Threatened Environment Status: <i>Acutely Threatened</i>		Area Size (ha): <i>0.66</i>	
Representativeness: Pre-European settlement vegetation within the potential area of interest is understood to have consisted of kanuka, kowhai and Hall's totara woodlands (Walker <i>et al.</i> , 2003). The vegetation on the site lacks the diversity of the original woodlands, but does provide a representation of pre-settlement vegetation.			
Are there threatened species expected/identified in the survey area? If so, list species and threat status.			
Threatened Species		Threat Status	
None observed			
Provide onsite description of vegetation: Vegetation type: Kanuka stands ( <i>Kunzea ericoides</i> ), with other native species interspersed including <i>Coprosma propinqua</i> , <i>Ozothamnus leptophyllus</i> , <i>Discaria toumatou</i> (matagouri), <i>Rubus schmidelioides</i> var. <i>schmidelioides</i> and stands of <i>Pteridium esculentum</i> (bracken fern). Some exotic species are present and include: <i>Crataegus monogyna</i> (hawthorn) <i>Rosa rubiginosa</i> (briar) and <i>Sorbus aucuparia</i> subsp. <i>Aucuparia</i> (rowan).  Degree of Modification: The area has experienced historical disturbances, with the lack of species diversity with the kanuka stands and patches of bracken fern, a clear indication species have been lost through multiple disturbance events.  Overall Health: Despite current and historical disturbance, the vegetation on the river terrace scarp remains a representative example of the kanuka woodland communities that would have once dominated this area.			
Provide onsite description of fauna habitat: The kanuka stands will likely provide habitat for indigenous invertebrates, lizards and bird species.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Key threats include housing developments and wilding pines.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N5.1c environment to have 2.7 % indigenous vegetation cover remaining, with 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The kanuka stands are small in size, but have good ground cover and areas of bracken fern that could promote further native regeneration.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The continued disturbance is shown in the lack of diversity of plant species, but the dominance of the kanuka stand in terms of ground cover shows that the area has the potential to sustain an ecologically important community.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The kanuka stands are one of the few remnants along the true right of the Hawea River.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The kanuka stands are connected to the surrounding kanuka woodland on the opposite side of the Hawea River along the river terraces.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The kanuka stands have maintained a moderate degree of ecological integrity even with the emergence of exotic species. The areas of bracken fern within the kanuka stands should promote further native regeneration.</p>
<p>Recommendation (Accept/Decline):</p> <p>While the kanuka stands lack the diversity of the original woodland vegetation cover along the Hawea River, given the high native vegetation cover and potential for natural regeneration through the bracken fern on site, the area provides a sustainable area of indigenous vegetation that is acutely threatened. Based on the above considerations we recommend the area should be taken forward for further consideration as Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - 'Henderson SNA A' - E45A\_1-2.



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





**Figure 2:** A representative photograph of the kanuka stands and bracken fern on the *Henderson SNA A*.

### Significant Natural Area Assessment

Project No: 11001/002	Property Name: <i>Branch Creek</i>	Ecologist: <i>Glenn Davis</i>	
	Site Name: <i>Branch Creek SNA A</i>	Date: <i>3 November 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 219 1850</i> <i>N: 559 4000</i>	
LENZ Unit: <i>Q2.2a and Q1.1c</i>		Photo No.(s): <i>See attached.</i>	
Ecological District: <i>Wanaka Ecological District</i>			
Topography: <i>Hillslope</i>	Slope: <i>Very steep (&gt;35°)</i>	Altitude: <i>650 - 1000 masl</i>	Aspect: <i>SW</i>
Threatened Environment Status: <i>Critically underprotected and Underprotected</i>		Area Size (ha): <i>20.05</i>	
Representativeness: <i>Shrubland and Beech Forest</i> – Beech forest is highly representative of the environment and would have been the dominant cover in the area prior to settlement. The shrubland community is rare in the context of the Cardrona Valley with the assemblage more consistent with shrublands to the west of the district.			
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".		At Risk - Recovering	
Provide onsite description of vegetation			
Vegetation type: Dominated by shrubland with a small pocket of silver beech forest. The shrubland is dominated by <i>Dracophyllum longifolium</i> , <i>Dracophyllum uniflorum</i> , <i>Olearia avicennifolia</i> , <i>Olearia arborescens</i> , <i>Olearia nummularifolia</i> , <i>Olearia odorata</i> , mountain ribbonwood ( <i>Hoheria lyallii</i> ), koromiko ( <i>Hebe salicifolia</i> ), <i>Coprosma rugosa</i> , <i>Coprosma propinqua</i> , <i>Carmichaelia petriei</i> , <i>Discaria toumatou</i> , <i>Melicactus alpinus</i> , <i>Aristotelia fruiticosa</i> , <i>Phormium cookianum</i> .			
Understorey - Prickly shield fern ( <i>Polystichum vestitum</i> ), <i>Chionochloa conspicua</i> , blue tussock ( <i>Poa colensoi</i> ), tussock hawkweed ( <i>Hieracium lepidulum</i> ).			
Degree of Modification: The area has experienced historical disturbance (fire) but has not been disturbed for a long period.			
Overall Health: The shrubland within the proposed area is intact, impenetrable, has a closed canopy and is largely free of introduced weedy species.			

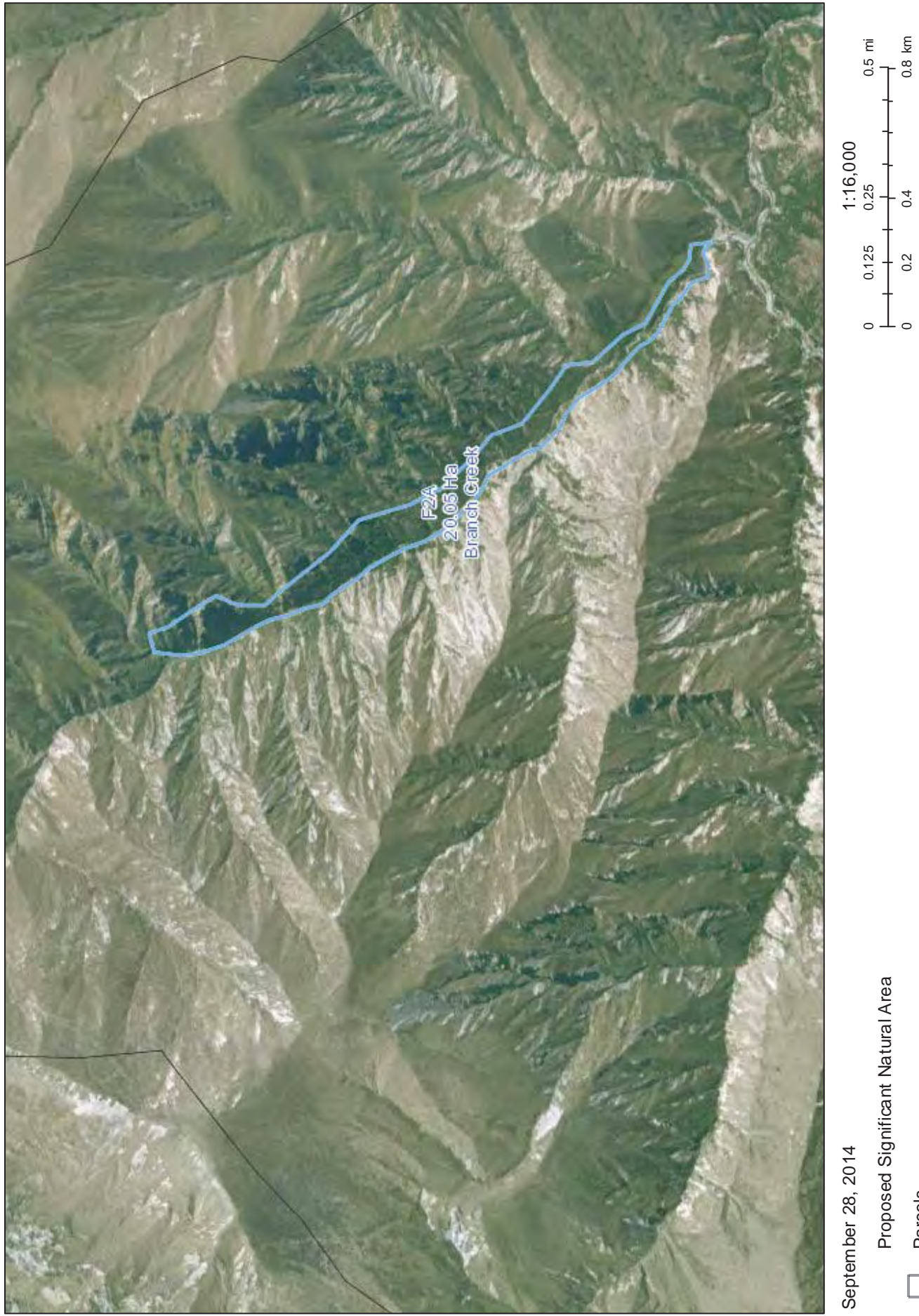
<p>Provide onsite description of fauna habitat – species recorded or expected to be present: The DoC identified the skink <i>Oligosoma polychroma</i> in the vicinity of the shrubland and indicate that this species is nearing its western most limit in the Otago region. The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that is present in the Branch Burn catchment. The DoC has noted that a number of functional invertebrate groups are present in the headwaters of the Branch Burn including herbivorous moths, cicadas and grasshoppers, parasitic flies, predatory carabid beetles and spider hunting wasps.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): The area is largely free of woody weeds. The tussock hawkweed is an abundant groundcover, but is unlikely to affect the function of the shrubland.</p>
<p>Rarity: The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The Q1.1c environment has 91.23% indigenous vegetation cover remaining with 19.26% protected. The remaining indigenous cover associated with these environments is considered sufficient to maintain the biodiversity of the indigenous vegetation and habitats. Notwithstanding the above, whilst the shrubland species and silver beech are not rare within the district, they are uncommon this far east.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The size and shape of the shrubland is determined by the areas geography and ecological processes and is therefore inherently self-sustaining.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): Notable diversity of species and communities e.g. shrubland, beech forest and Dracophyllum shrubland.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): An interesting, diverse assemblage of shrubland species that are more common in environments further to the west of the Lakes District.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): Continuous with lower altitudinal riparian grey shrubland, subalpine shrubland, tall tussock grassland and alpine communities which are adjacent to the Stack Conservation Area.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The shrubland is currently in excellent condition with a diverse range of mature shrubs and creepers and a predominantly closed canopy. Expansion of the beech forest can be expected over time.</p>



**Recommendation (Accept/Decline):**

The shrubland consists of a diverse range of species that are typical of shrublands found further to the west in the Lakes District. The shrubland contains a small area of silver beech which would have dominated this environment prior to human settlement. Given the high level of representativeness, rarity in the Cardrona Valley and special ecological character of this community we consider the area should be designated as a SNA.

Figure 1: The area of potential significance - Branch Creek SNAA - F2A.



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





**Figure 2:** SNA A (Devils Staircase) – looking southeast – shrubland associated with SNA A is on the lower faces on the true left of the Branch Burn tributary.



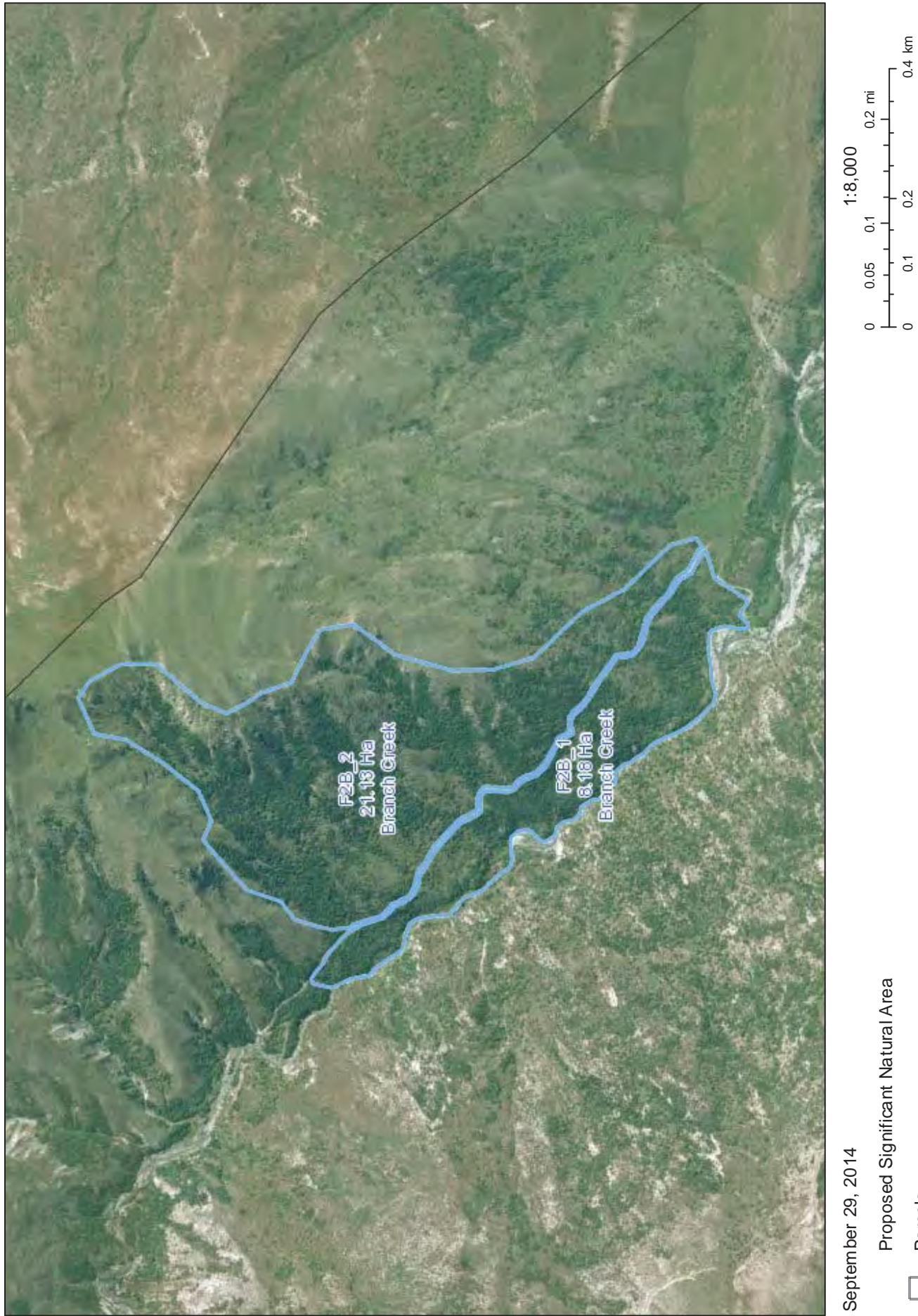
**Figure 3:** SNA A - Devils Staircase shrubland.



<b>Significant Natural Area Assessment</b>			
Project No: <i>11001/002</i>	Property Name: <i>Branch Creek</i>	Ecologist: <i>Glenn Davis</i>	
Site Name: <i>Branch Creek SNA B</i>		Date: <i>3 November 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 219 5266</i> <i>N: 559 1645</i>	
LENZ Unit: <i>N4.1d and Q2.2a</i>		Photo No.(s): <i>See below.</i>	
Ecological District: <i>Wanaka Ecological District</i>			
Topography: <i>Hillslope</i>	Slope: <i>&gt;25°</i>	Altitude: <i>500 - 760 masl</i>	Aspect: <i>SW</i>
Threatened Environment Status: <i>Chronically threatened and critically underprotected</i>		Area Size (ha): <i>29.31</i>	
Representativeness: <i>Grey shrubland – dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District, Lakes Ecological Region, and N4.1d environments.</i>			
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”		At Risk – Recovering	
Provide onsite description of vegetation:			
Vegetation type: Shrubland consisting of matagouri ( <i>Discaria toumatou</i> ), <i>Olearia odorata</i> , <i>Olearia bullata</i> , <i>Aristotelia fruticosa</i> , <i>Coprosma propinqua</i> , <i>Coprosma tayloriae</i> , <i>Carmichaelia petriei</i> , sweet briar ( <i>Rosa rubiginosa</i> ), elderberry ( <i>Sambucus nigra</i> ), <i>Melicytus alpinus</i> , <i>Rubus schmidelioides</i> and <i>Meuhlenbeckia australis</i> .			
Degree of Modification: The area has experienced historical disturbance (fire), but has not been disturbed for a long period.			
Overall Health: The shrubland is largely intact and is dominated by mature indigenous species with a minor introduced component of briar and elderberry.			
Provide onsite description of fauna habitat:			
The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that is present in the Branch Burn. The population of mature <i>Olearia</i> is expected to support a unique, diverse and abundant invertebrate fauna.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The presence of weed species, i.e. elderberry and briar.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected, and the N4.1d environment has 18.6% indigenous vegetation cover remaining with 2.3% protected. The remaining indigenous cover associated with the N4.1d environments is not sufficient to maintain the biodiversity of communities reliant on this environment.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The size and shape of the shrubland is dictated by ecological processes rather than pastoral activity and is therefore inherently self-sustaining.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland contains a diverse range of the grey shrubland species and is notable for the presence of a good population of mature tree daisies.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland is distinctive within the ecological district for the population of Olearia within the shrubland. Many of these shrublands are dominated by matagouri and briar.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The shrubland is connected to shrubland patches that extend throughout the Branch Burn catchment down onto the Branch Burn flood plain.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland is currently in good condition with a diverse range of mature shrubs and creepers and a predominantly closed canopy. The shrubland will continue to develop providing it remains free from inadvertent fire events.</p>
<p>Recommendation (Accept/Decline):</p> <p>The shrubland is a good example of vegetation that is representative of this environment. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 6% has any formal protection. It is also important as habitat for a diverse and abundant invertebrate fauna and passerines that are critical for the maintenance of the eastern falcon population. Given the high level of representativeness and rarity of quality grey shrubland in these LENZ environments we consider the area should be considered for designation as an SNA.</p>

Figure 1: The area of potential significance - Branch Creek SNA B - F2B\_1&2.



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





**Figure 2:** Branch Creek SNA B (lower Branch Burn).



**Figure 3:** Branch Creek SNA B.





**Figure 4:** Branch Creek SNA B (lower Branch Burn).



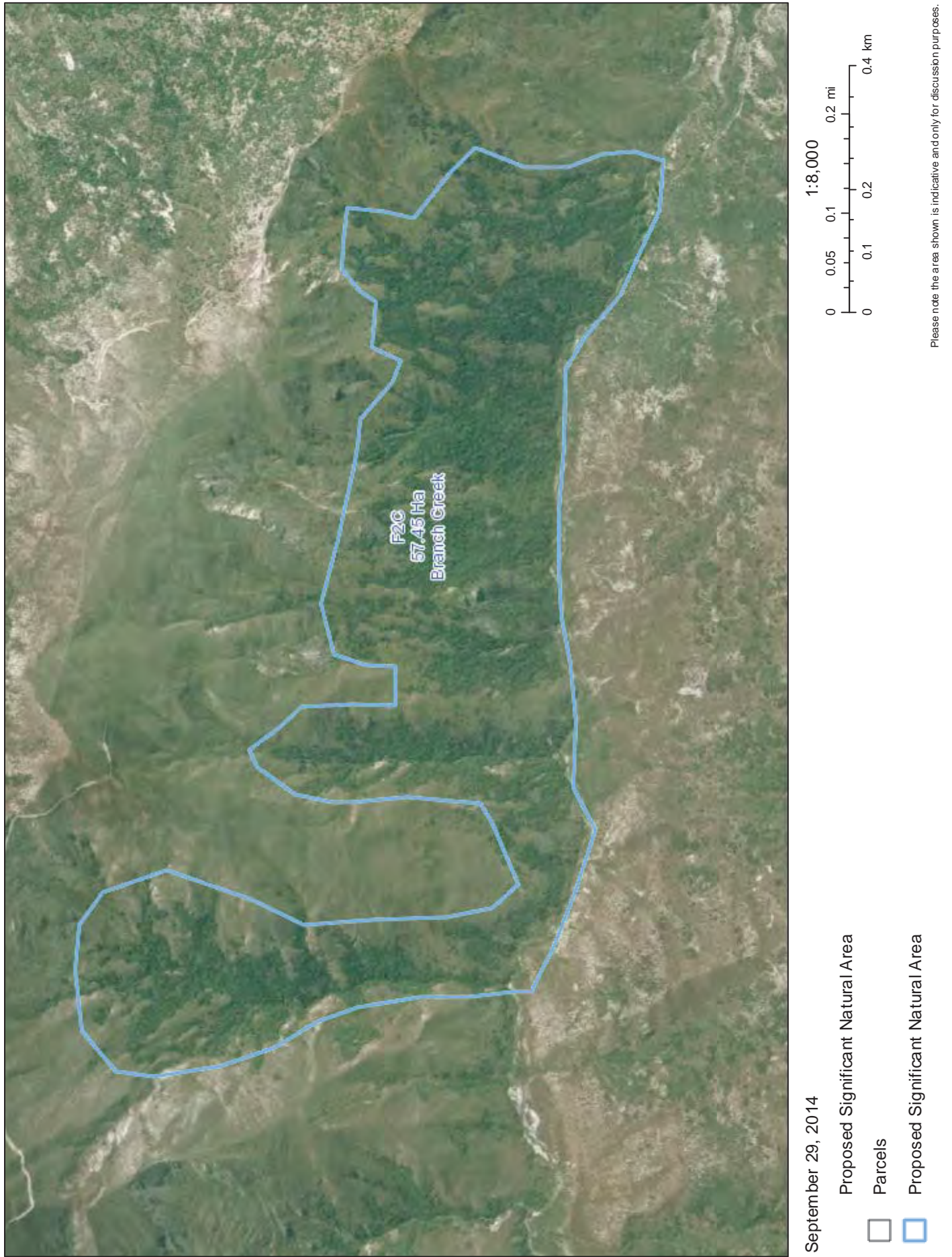
**Figure 5:** Branch Creek SNA B.

Significant Natural Area Assessment			
Project No: 11001/002		Property Name: <i>Branch Creek</i>	
		Ecologist: <i>Glenn Davis</i>	
		Site Name: <i>Branch Creek SNA C</i>	
		Date: <i>3 November 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>E: 219 4470</i> <i>N: 559 0660</i>	
LENZ Unit: <i>N4.1d and Q2.2a</i>		Photo No.(s): <i>See below.</i>	
Ecological District: <i>Wanaka Ecological District</i>			
Topography: <i>Hillslope</i>	Slope: <i>&gt;25°</i>	Altitude: <i>500 - 760 masl</i>	Aspect: <i>SW</i>
Threatened Environment Status: <i>Chronically threatened and critically underprotected.</i>		Area Size (ha): <i>57.45.</i>	
Representativeness: <i>Grey shrubland – dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District, Lakes Ecological Region, and N4.1d environments.</i>			
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"		At Risk – Recovering	
Provide onsite description of vegetation:			
Vegetation type: Shrubland consisting of matagouri ( <i>Discaria toumatou</i> ), <i>Olearia odorata</i> , <i>Olearia bullata</i> , <i>Aristotelia fruticosa</i> , <i>Coprosma propinqua</i> , <i>Coprosma sp (t)</i> , <i>Carmichaelia petriei</i> , sweet briar ( <i>Rosa rubiginosa</i> ), elderberry ( <i>Sambucus nigra</i> ), <i>Melicytus alpinus</i> , <i>Rubus schmidelioides</i> , and <i>Meuhlenbeckia australis</i> .			
Degree of Modification: The area has experienced historical disturbance (fire), but has not been disturbed for a long period.			
Overall Health: The shrubland is fragmented but has large intact areas. The vegetation is dominated by mature indigenous species with a minor component of introduced woody weeds, briar and elderberry.			
Provide onsite description of fauna habitat: The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that is present in the Branch Burn. The population of mature <i>Olearia</i> is expected to support a unique, diverse and abundant invertebrate fauna. <i>Coprosma</i> and <i>Melicytus alpinus</i> will provide a food supply for skinks and geckos.			



<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The presence of weed species, i.e. elderberry and briar.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected, and the N4.1d environment has 18.6% indigenous vegetation cover remaining with 2.3% protected. The remaining indigenous cover associated with the N4.1d environments is not sufficient to maintain the biodiversity of communities reliant on this environment.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The size and shape of the shrubland is largely dictated by geography and ecological processes.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland contains a diverse range of grey shrubland species and is notable for the presence of a large number of mature tree daisies.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland is distinctive within the ecological district for the population of Olearia within the shrubland.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The shrubland is connected to shrubland patches that extend throughout the MacDonalds Creek catchment and down onto the Branch Burn flood plain.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland is in good condition with a diverse range of mature shrubs and creepers and a predominantly closed canopy. The shrubland will continue to develop providing it remains free from inadvertent fire events.</p>
<p>Recommendation (Accept/Decline):</p> <p>The shrubland is a good example of vegetation that is representative of this environment. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 6% has any formal protection. It is also important as habitat for a diverse and abundant invertebrate fauna, and passerines that are critical for the maintenance of the eastern falcon present in the MacDonald Creek catchment. Given the high level of representativeness and rarity of quality grey shrubland in these LENZ environments we recommend the area should be considered for designation as a SNA.</p>

Figure 1: The area of potential significance - Branch Creek SNA C - F2C.





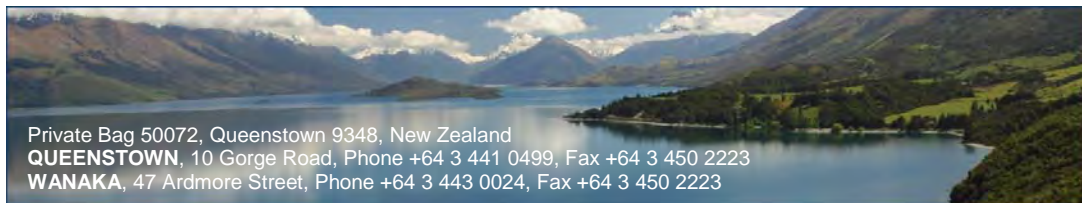


**Figure 2:** Eastern end of *Branch Creek SNA C* (lower MacDonalds Creek), looking east toward Cardrona.





**Figure 3:** Western end of *Branch Creek SNA C*.



Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



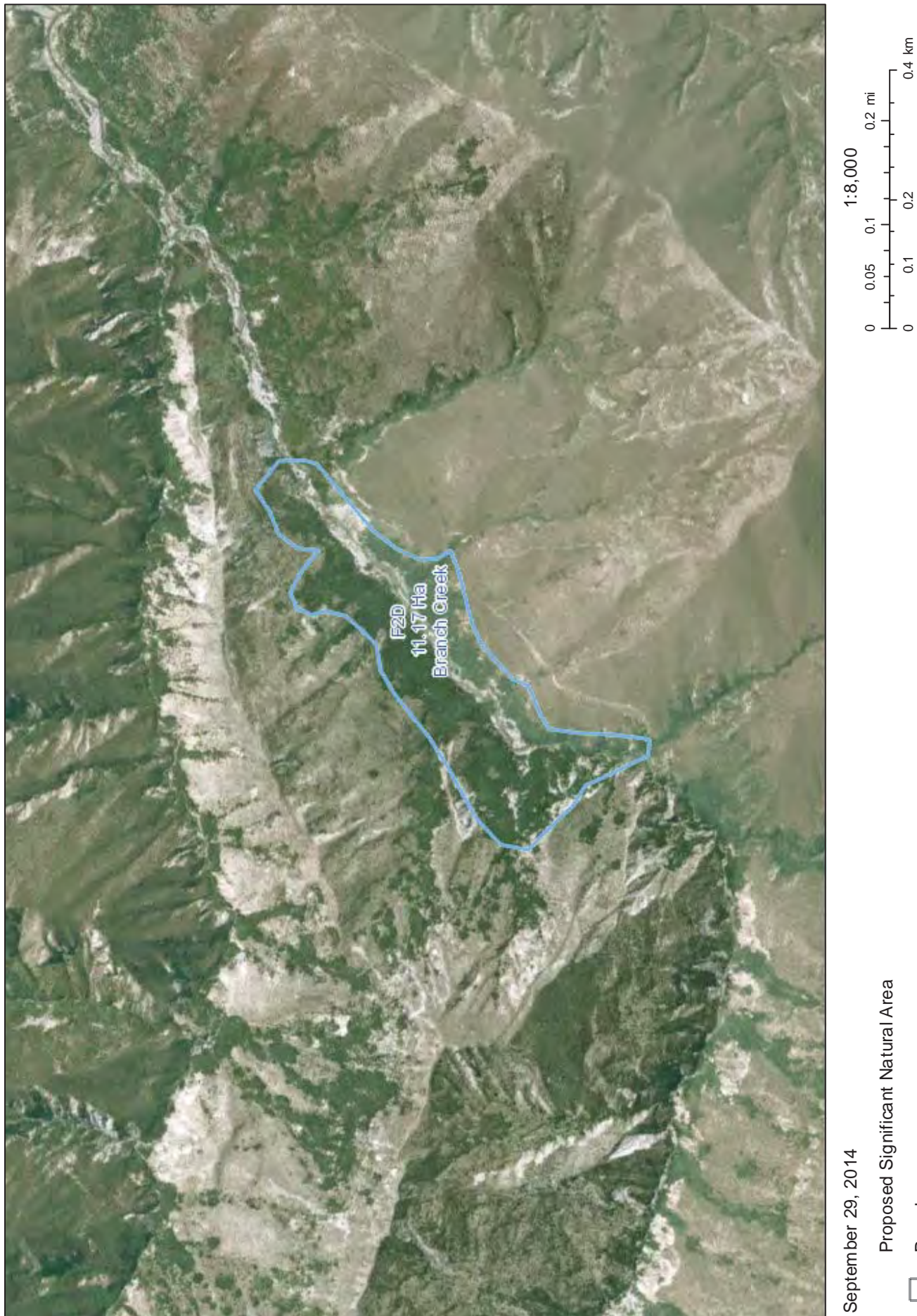
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Significant Natural Area Assessment			
Project No: 11001/002		Property Name: <i>Branch Creek</i>	
		Ecologist: <i>Glenn Davis</i>	
		Site Name: <i>Branch Creek SNA D</i>	
		Date: <i>3 November 2010</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See plan attached.</i>	
LENZ Unit: <i>Q2.2a</i>		Photo No.(s): <i>See below.</i>	
Ecological District: <i>Wanaka Ecological District</i>			
Topography: <i>Valley floor and lower hillslopes</i>	Slope: <i>Various</i>	Altitude: <i>520 - 700 masl</i>	Aspect: <i>Various</i>
Threatened Environment Status: <i>Chronically threatened and critically underprotected.</i>		Area Size (ha): <i>11.17</i>	
Representativeness: <i>Grey shrubland – dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District, Lakes Ecological Region, and N4.1d environments.</i>			
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"		At Risk - Recovering	
Provide onsite description of vegetation:			
Vegetation type: Shrubland consisting of matagouri ( <i>Discaria toumatou</i> ), <i>Olearia odorata</i> , <i>Olearia bullata</i> , <i>Aristotelia fruticosa</i> , <i>Coprosma propinqua</i> , <i>Coprosma tayloriae</i> , <i>Carmichaelia petriei</i> , sweet briar ( <i>Rosa rubiginosa</i> ), elderberry ( <i>Sambucus nigra</i> ), <i>Melicytus alpinus</i> , <i>Rubus schmidelioides</i> and <i>Meuhlenbeckia australis</i>			
Degree of Modification: The area has experienced historical disturbance (fire), but has not been disturbed for a long period.			
Overall Health: The shrubland is largely intact and is dominated by mature indigenous species with a minor component of introduced woody weeds, briar and elderberry.			
Provide onsite description of fauna habitat: The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that is present in the Branch Burn. The population of mature <i>Olearia</i> will support a unique, diverse and abundant invertebrate fauna. The presence of <i>Coprosma</i> and <i>Melicytus alpinus</i> will provide a food supply and habitat for skinks and geckos.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The presence of weed species, i.e. elderberry and briar.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area is elongated and therefore has a high edge to area ratio. Notwithstanding this point the width of the stands is up to 100 meters either side of the creek and is self-sustaining providing no inadvertent disturbance occurs. It is noted that the riparian shrubland has been excluded from any clearing activities under the vegetation clearing consent.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland contains a diverse range of the grey shrubland species and is notable for the presence of a large number of healthy, mature tree daisies.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland is distinctive within the ecological district for the population of Olearia within the shrubland.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The shrubland is connected to shrubland patches that extend through the Branch Burn catchment and down onto the Branch Burn flood plain.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland is currently in good condition with a diverse range of mature shrubs and creepers and a predominantly closed canopy. The shrubland will continue to develop providing it remains free from inadvertent fire events.</p>
<p>Recommendation (Accept/Decline):</p> <p>The shrubland is a good example of vegetation that is representative of this environment. Indigenous vegetation cover in these environments is severely reduced from its original extent and less than 6% has any formal protection. It is also important as habitat for a diverse and abundant invertebrate fauna, and passerines that are critical for the maintenance of the eastern falcon present in the Branch Burn catchment. Given the high level of representativeness, rarity of quality grey shrubland in these LENZ environments, and the habitat it provides for falcon, we recommend the area should be considered for designation as a SNA.</p>



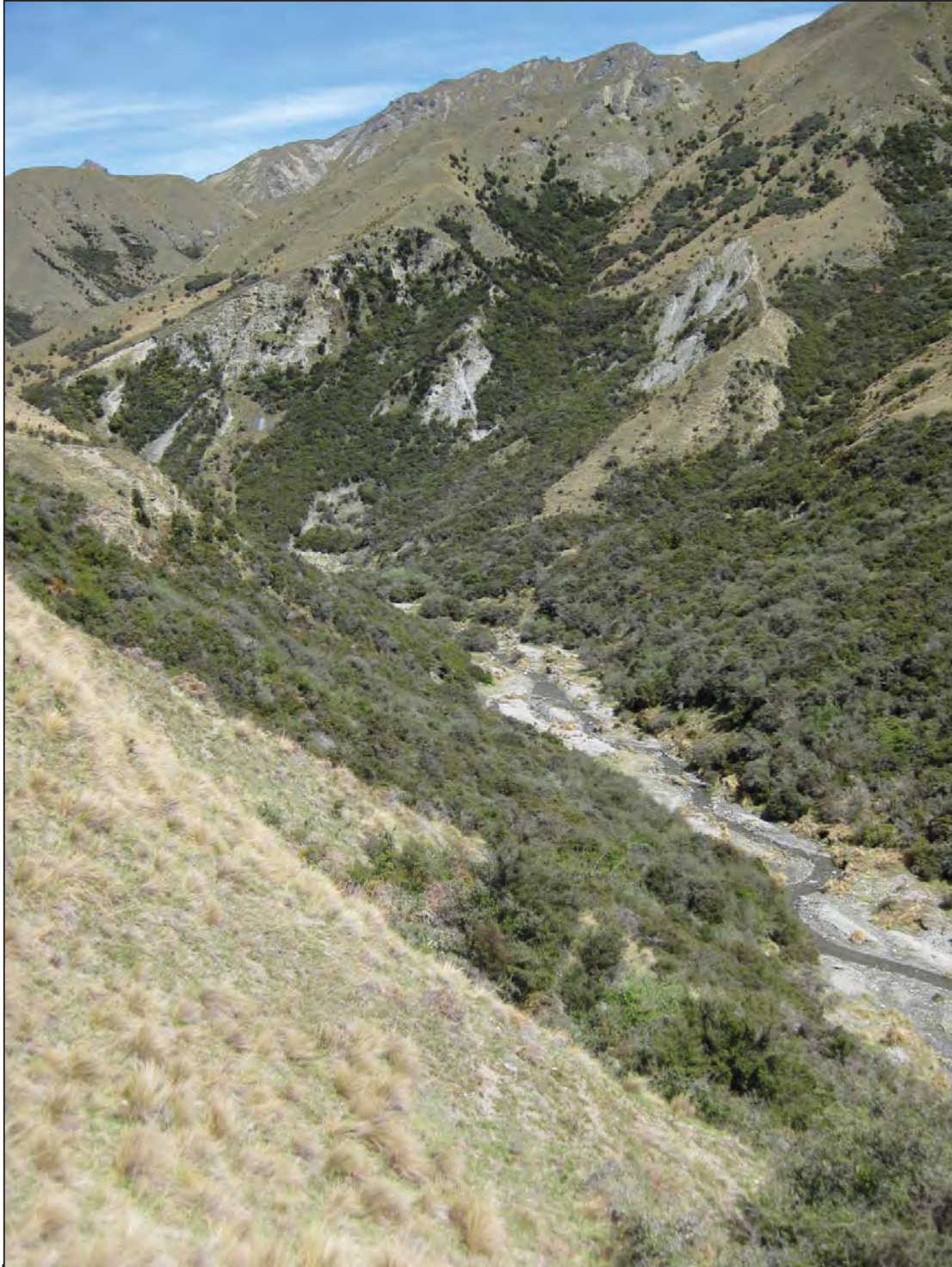
Figure 1: The area of potential significance - Branch Creek SNA D - F2D.





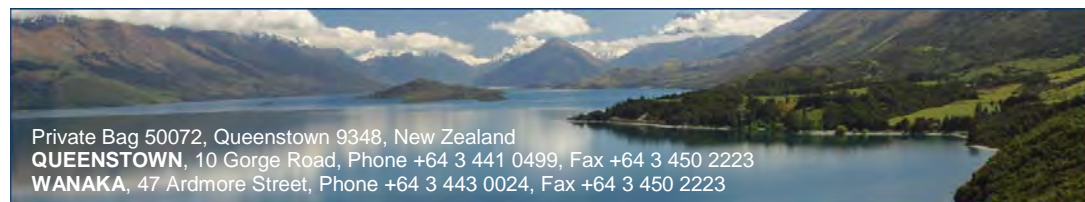
**Figure 2:** Branch Creek SNA D – Branch Burn riparian shrubland, looking north east.





**Figure 3:** Branch Creek SNA D - Riparian shrubland in the upper Branch Burn.





## Significant Natural Area Assessment

Project No:	Property Name: <i>Hillend Station</i>	Ecologist: <i>Dawn Palmer</i>	
<i>11001/021</i>	Site Name: <i>Hillend SNA A</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>		Photo No.(s): <i>See attached.</i>	
Ecological District: <i>Wanaka</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 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.

<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.

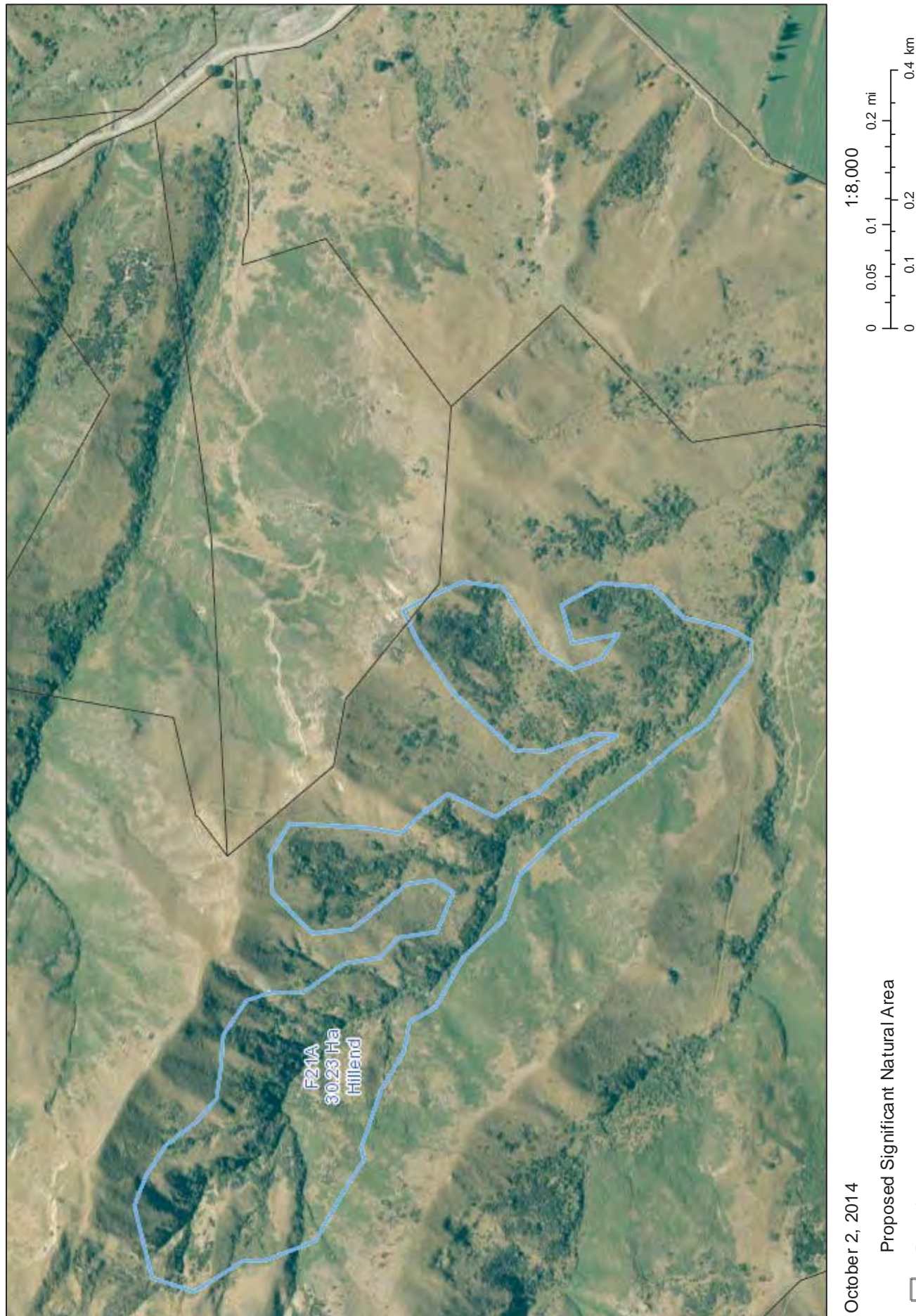
The shrubland is likely to possess sufficient resilience to maintain its current state.

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.



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.

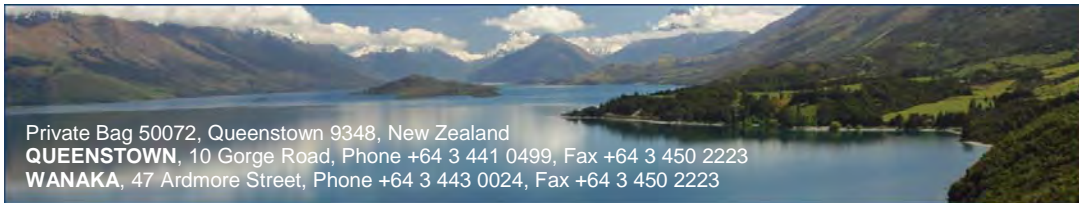
**Figure 7:** Below: view south west towards rock outcrops where falcon seen from waypoint 22.





**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.





Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



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Significant Natural Area Assessment			
Project No:  11001/021		Property Name: <i>Hillend Station</i>  Site Name: <i>Hillend SNA B</i>	
		Ecologist: <i>Dawn Palmer</i>  Date: 20 December 2011	
Survey Undertaken By: <i>Dawn Palmer (NSN) and Ralph Henderson (QLDC).</i>		Waypoint No (mid-point of survey area): <i>1288852E 5035915N</i>  <i>Waypoint 24 view W 3:34 pm</i> <i># Waypoint 25 3:50 pm</i> <i>Waypoint 26 4:05 pm #</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 convex hill slopes.</i>	Slope: <i>Steep (18° in the southern area) to Very steep (&gt;35° in the northern gully).</i>	Altitude: <i>480 to 680 masl</i>	Aspect: <i>Gullies have a SW axis, slopes are north west and south east facing.</i>
Threatened Environment Status: <i>N4.1d – category 2 – Chronically threatened</i> <i>Q2.2a – category 4 – Critically under protected</i>		Area Size (ha): <i>47.67</i>	
Representativeness: <i>Grey Shrubland</i> Bands of shrubland formerly provided the dominant vegetation cover within a band of mid to lower elevation slopes in the drier areas of the Wanaka Ecological District and Lakes Ecological Region. 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 <sup>1</sup> . Within this SNA, the shrubland remaining on the lower slopes of the Spotts Creek catchment provides a representative example of the range of grey shrubland communities remaining.			
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> [http://ourenvironment.scinfo.org.nz/ourenvironment#layers=new\\_water\\_cache\\_nztm,transport\\_cache\\_nztm,text\\_cache\\_nztm,lcr\\_basemap\\_notext\\_cache\\_nztm,bw\\_lcr\\_basemap\\_notext\\_cache\\_nztm,painted\\_relief\\_cache\\_nztm,shaded\\_relief\\_cache\\_nztm,new\\_coastpoly\\_cache\\_nztm,reg\\_councils\\_cache\\_nztm,terr\\_auth\\_cache\\_nztm,wards\\_cache\\_nztm,po\\_grid\\_2193,lenz\\_potnatveg\\_g\\_cache\\_nztm](http://ourenvironment.scinfo.org.nz/ourenvironment#layers=new_water_cache_nztm,transport_cache_nztm,text_cache_nztm,lcr_basemap_notext_cache_nztm,bw_lcr_basemap_notext_cache_nztm,painted_relief_cache_nztm,shaded_relief_cache_nztm,new_coastpoly_cache_nztm,reg_councils_cache_nztm,terr_auth_cache_nztm,wards_cache_nztm,po_grid_2193,lenz_potnatveg_g_cache_nztm)

Provide onsite description of vegetation:

The shrubland of SNA B was viewed from the farm track that traversed the slope uphill of the vegetation. *Discaria toumatou*, *Coprosma propinqua*, kanuka – manuka and less so *Olearia odorata* dominated the vegetation community. It is similar to the shrubland of SNA A but has a lesser proportion of *Olearia* and a higher proportion of the exotic species briar (*Rubus rubiginosa*) and elder (*Sambucus nigra*).

Degree of Modification:

The area was last burnt in about 1995.

Pasture grasses and *Hieracium lepidulum* are well established in the understory while elder and briar form a common component of the shrubland canopy. The vegetation is also browsed by sheep.

Overall Health:

The shrubland is predominantly indigenous but contains an obvious exotic component of briar and elder.

Provide onsite description of fauna habitat:

The shrubland provides habitat for both exotic and native passerines that are the prey of the eastern New Zealand falcon.

A falcon was heard calling, before flying low and landing among rock outcrops near the ridge (GR 1289210E 5036820N). 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 (including this area) 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):

Continued vegetation clearance and infestations of elder pose a threat to the shrubland as it may form groves that hinder natural regeneration. Conifers are also present lower in the catchment as are hawthorn. These may be spread by wind or birds (respectively) into the shrubland adding to the existing weed burden.

Rarity:

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

The shrubland lowest on the hill slope is 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. Following extensive land clearance within the District grey shrubland communities have regenerated into areas that were previously vegetated by beech forests. The shrubland communities in this catchment provide an example of such seral stage regeneration.



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

The grey shrubland community is found within the tributary gully slopes along the true left of Spotts Creek. The shrubland is an irregular shape but occupies a large proportion of the lower valley slopes in the Spotts Creek catchment.

Under the current management regime, the process of natural regeneration within and spread from the existing shrubland may be limited by browsing and competition from pasture grasses.

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

The shrubland contains the dominant species normally associated with grey shrubland communities although it has also sustained a substantial level of infestation by woody weeds (briar and elder).

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

The shrubland contains the dominant species normally associated with grey shrubland communities. It contains no special or distinctive characteristics.

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

Connectivity has been maintained between this area of shrubland and similar areas within the Spotts Creek catchment and nearby Cardrona tributary catchments. Many of the species found within the shrubland community are insect pollinated and wind or bird dispersed. The potential for infilling and genetic exchange between the remnant patches of shrubland is therefore moderately good if unimpeded by land management practices such as clearance.

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

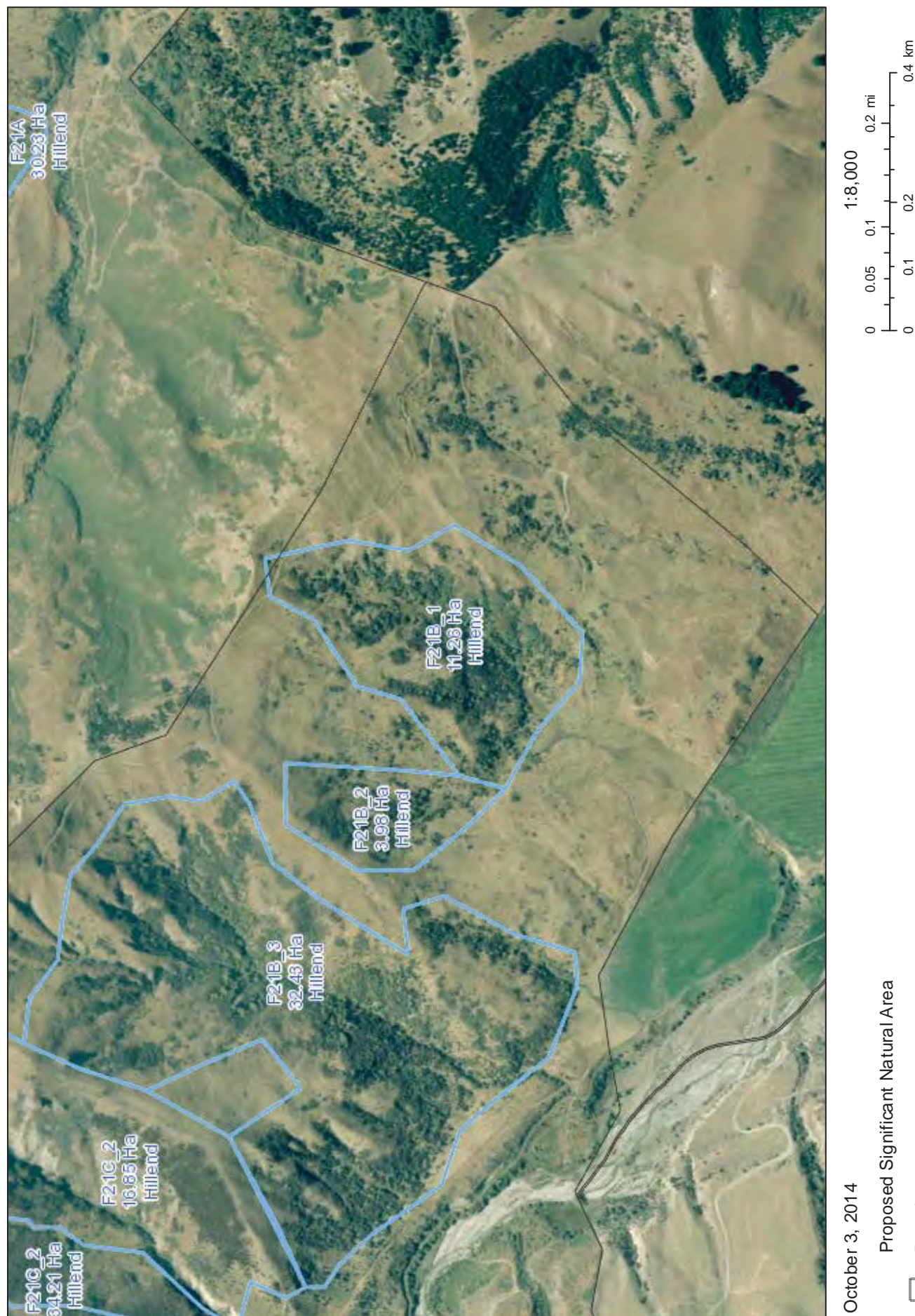
The shrubland has a substantial component of woody weeds and while briar can be over topped by continued maturation of the indigenous shrubland, elder is a hardy, deciduous tree tolerant of the full range of climatic conditions of this site. Dispersal by birds enables this species to form groves that may inhibit natural regeneration.

Recommendation (Accept/~~Decline~~):

The grey shrubland is modified example of the historically more widespread shrubland community that historically formed a band below the beech forests upslope. Within the district communities such as these have been reduced to remnant pockets within farmed landscapes. The shrubland is expected to provide habitat for invertebrate fauna and particularly passerines that are the prey of the eastern NZ falcon.

While the integrity of the vegetation community has been diminished by the weed infestations, the extent of vegetation loss within N4.1d environments **and** its location within what is likely to be a falcon territory warrants a recommendation to accept this shrubland as an SNA.

Figure 1: The area of potential significance - Hillend SNA B - F21B\_1-3.



October 3, 2014

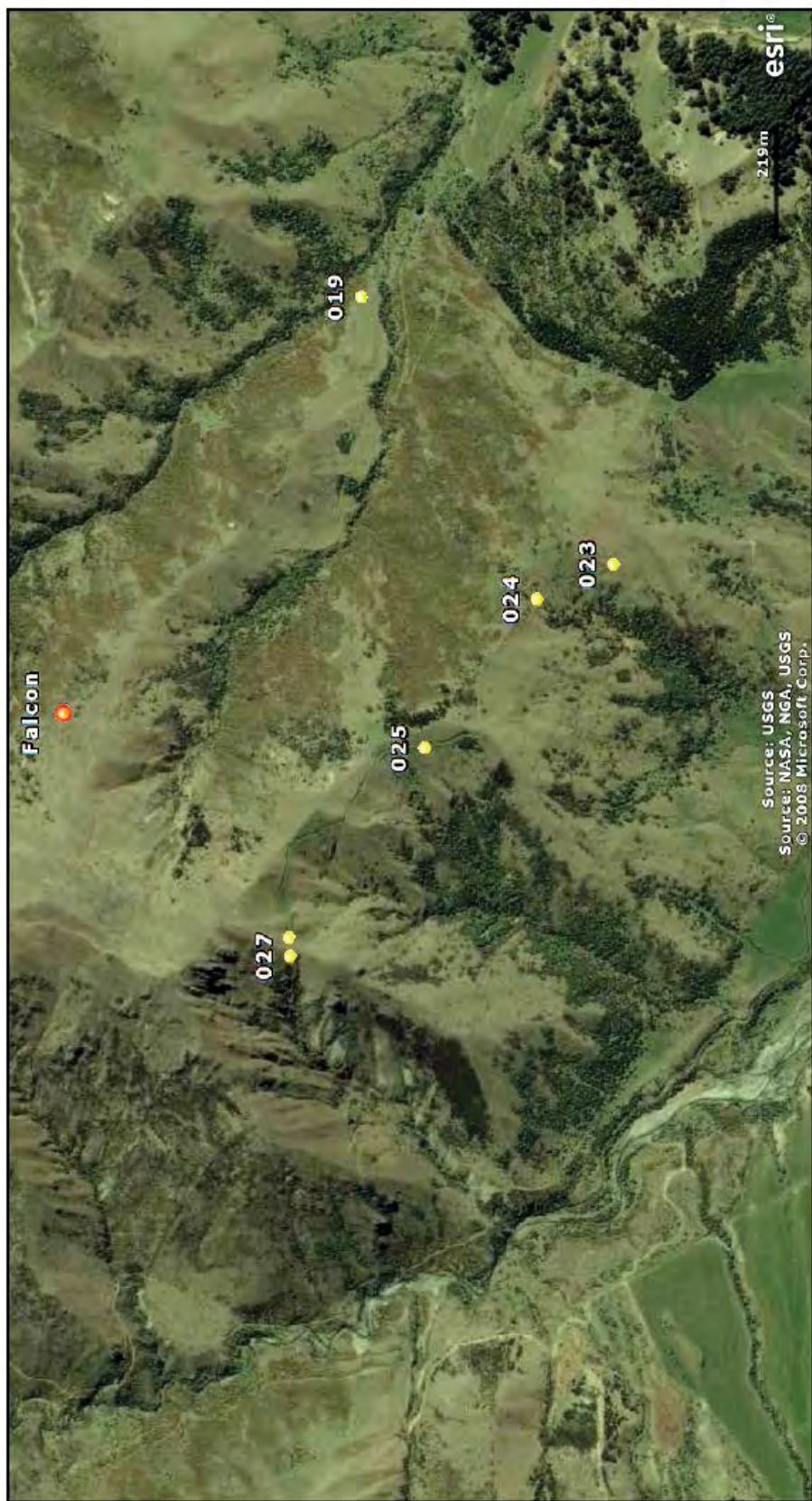
Proposed Significant Natural Area

Parcels

Proposed Significant Natural Area

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





**Figure 2:** Location of falcon sighting in relation to the potential SNA B.



**Figure 3:** above: View west from waypoint 23 (GR 1289565E 5035705N), elder and briar are in flower. Photo by D Palmer 20/12/11.

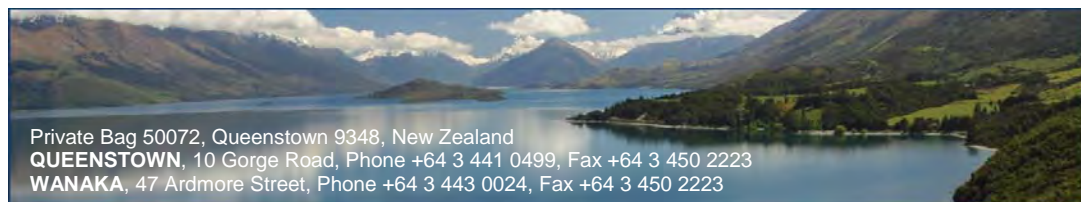
**Figure 4:** view southwest from waypoint 24 (GR1289487E 5035858N). Matagouri - Coprosma and Olearia shrubland with white, flowering elder in the mid slope area. Photo by D Palmer 20/12/11.







**Figure 5:** Matagouri- Coprosma – kanuka/ manuka shrubland in a tributary gully on true left side of lower Spotts Creek. View south from the farm track at waypoint 25 (GR 1289176E 5036074N). Elder and kanuka/ manuka higher on the ridges can be seen in flower. Photo by D Palmer 20/12/11.



Significant Natural Area Assessment			
Project No: <i>11001/021</i>		Property Name: <i>Hillend Station</i> Site Name: <i>Hillend SNA C</i>	
		Ecologist: <i>Dawn Palmer</i> Date: <i>20 December 2011</i>	
Survey Undertaken By: <i>Dawn Palmer (NSN) and Ralph Henderson (QLDC).</i>		Waypoint No (mid-point of survey area): <i>1288360E 5036588N</i> Waypoint 27 – <i>1288742E 5036330N</i>	
LENZ Units: <i>Q2.2a</i> Ecological District: <i>Wanaka</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Steep gully and bluff system</i>	Slope: <i>Steep to Very steep (&gt;35°)</i>	Altitude: <i>500 to 800 masl</i>	Aspect: <i>North-west: southeast and north-south</i>
Threatened Environment Status: <i>Q2.2a – Category 4 – Critically under protected.</i>		Area Size (ha): <i>51.06</i>	
<p>Representativeness:</p> <p><i>Beech Forest</i>            There are only a few beech forest fragments remaining in this portion of the Wanaka Ecological District and Lakes Ecological Region. Pre-settlement beech forest would have dominated the cover from low to mid elevations up to the tree line at about 1100masl. The small fragment of beech forest within SNA C is representative of the historical vegetation.</p> <p><i>Grey Shrubland</i>            Bands of shrubland formerly provided the dominant vegetation cover on mid to lower elevation slopes in the drier areas of the Wanaka Ecological District and Lakes Ecological Region. Matagouri dominated the drier slopes while a more diverse mix of divaricating shrubland containing Coprosma and Matagouri as well as kanuka and manuka were found in moist gullies and hill slopes<sup>1</sup>. Within this proposed SNA, the shrubland communities provide a representative example of the historical shrubland communities. Due to their modified state, they are at the low value end of the spectrum of representativeness.</p>			
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) – a pair was seen between SNA A and SNA C.		At Risk – Recovering.	

<sup>1</sup> [http://ourenvironment.scinfo.org.nz/ourenvironment#layers=new\\_water\\_cache\\_nztm,transport\\_cache\\_nztm,text\\_cache\\_nztm,lcr\\_basemap\\_notext\\_cache\\_nztm,bw\\_lcr\\_basemap\\_notext\\_cache\\_nztm,painted\\_relief\\_cache\\_nztm,shaded\\_relief\\_cache\\_nztm,new\\_coastpoly\\_cache\\_nztm,reg\\_councils\\_cache\\_nztm,terr\\_auth\\_cache\\_nztm,wards\\_cache\\_nztm,po\\_grid\\_2193,lenz\\_potnatveg\\_g\\_cache\\_nztm](http://ourenvironment.scinfo.org.nz/ourenvironment#layers=new_water_cache_nztm,transport_cache_nztm,text_cache_nztm,lcr_basemap_notext_cache_nztm,bw_lcr_basemap_notext_cache_nztm,painted_relief_cache_nztm,shaded_relief_cache_nztm,new_coastpoly_cache_nztm,reg_councils_cache_nztm,terr_auth_cache_nztm,wards_cache_nztm,po_grid_2193,lenz_potnatveg_g_cache_nztm)



Provide onsite description of vegetation:

Beech forest fragments with extensive areas of regenerating shrubland – probably dominated by manuka/kanuka with matagouri-Coprosma and Olearia in the riparian areas.

Degree of Modification:

Areas affected by burning in 1995 have been slow in their progress towards recovery with charred tussocks and manuka/kanuka stems still evident on north facing slopes. Bracken growth and regenerating kanuka/manuka shrubland dominate the cover in these areas.

Southern tributary gullies are comparatively more intact but shrubland is open, fragmented and include infestations of briar (*Rubus rubiginosa*) and elder (*Sambucus nigra*) along with *Hieracium lepidulum*.

Overall Health:

The beech forest and shrubland communities were viewed from a distance therefore recruitment within them could not be ascertained.

Provide onsite description of fauna habitat:

The beech forest and shrubland areas provide habitat for both exotic and native passerines that are the prey of the eastern New Zealand falcon.

A falcon was heard calling, before flying low and landing among rock outcrops near the ridge (GR 1289210E 5036820N). 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):

Continued vegetation clearance (e.g. an escaped fire) and continued spread of *Hieracium*, elder, hawthorn and briar within the shrubland on moist and/ or south facing slopes poses a continuing threat to the integrity of the communities.

Rarity:

The shrubland provides habitat for the prey species of the Eastern Falcon, a 'At Risk' species.

The beech forest and shrubland in SNA C are within land environment Q2.2a. The threatened environment classification system identifies the Q2.2a environment as having 39.92% of the indigenous vegetation remaining with just 5.07% protected.

Following extensive land clearance within the District beech forest communities have been substantially lost east of the Divide and areas that were previously vegetated by beech forest, are now regenerating grey shrubland communities, where these have not also been cleared.

The beech forest fragment is therefore considered rare within this eastern catchment of the Lakes Ecological Region.

<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The beech forest fragments are confined to the base of the steep sided tributary gullies.</p> <p>The shrublands are open and fragmented although mature and large.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The vegetation of SNA C was not closely inspected, but is likely that beech forests are comprised of silver beech.</p> <p>The grey shrubland contains the species normally associated with grey shrubland communities although it has also sustained a substantial level of infestation by woody weeds (e.g. briar and elder).</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The presence of small patches of silver beech (and possibly mountain beech) within the tributary gullies of this proposed SNA provides an indication of the historical distribution and diversity of beech forests. The presence of beech forest is distinctive in this area given the loss within the area of their historical distribution.</p> <p>The shrubland contains no special or distinctive characteristics.</p>
<p>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 at the eastern end of the Pisa Range. Connectivity between forest patches is therefore very limited.</p> <p>By comparison, connectivity between shrubland within the Spotts Creek catchment and nearby Cardrona tributary catchments is more likely to exist. Many of the species found within the shrubland community are insect pollinated and wind or bird dispersed. The potential for infilling and genetic exchange between the remnant patches of shrubland is therefore reasonably good if unimpeded by land management practices such as clearance.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): Regeneration within the beech forest was not assessed, but browsing is likely to inhibit substantial spread and regeneration from the existing stands. Winged seeds are most likely to be dispersed onto the immediately adjacent slopes and downstream within the confined catchments.</p> <p>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 with pasture grasses.</p>

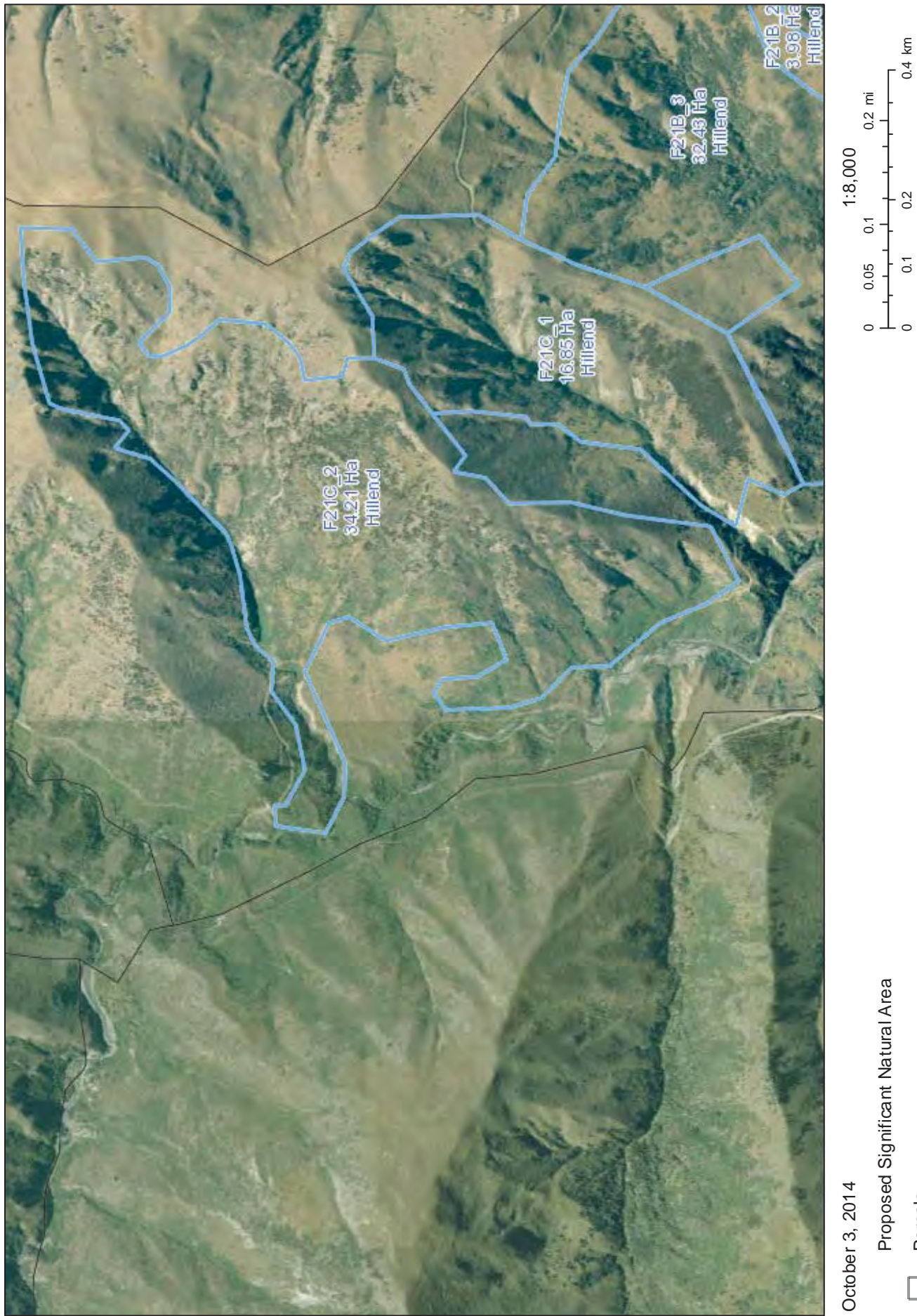


**Recommendation (Accept/Decline):**

Accept the SNA C area, given:

- The silver/mountain beech patch within the Q2.2a environments as a significant representative sample of the formerly more widespread mixed beech forest community.
- The grey shrubland is modified example of the historically more widespread shrubland community that formed a band below the beech forests upslope. Within the district, communities such as these have been reduced to remnant pockets within farmed landscapes.
- While the integrity of the matagouri- Coprosma – Olearia shrubland community was considered to be diminished by the infestation of briar and elder and is open and fragmented in condition, it is likely to provide habitat for invertebrate fauna and particularly passerines that are the prey of the eastern NZ falcon.

Figure 1: The area of potential significance - Hillend SNA C - F21C\_1-2.



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





**Figure 2:** Above: kanuka – Matagouri – Coprosma – Olearia shrubland with beech forest - view west from waypoint 27 (GR 1288742E 5036330N). Photograph taken by Dawn Palmer 20 December, 2011.



**Figure 3:** Photograph of beech forest – Olearia and briar – zoom view from waypoint 27; 20/12/2011.

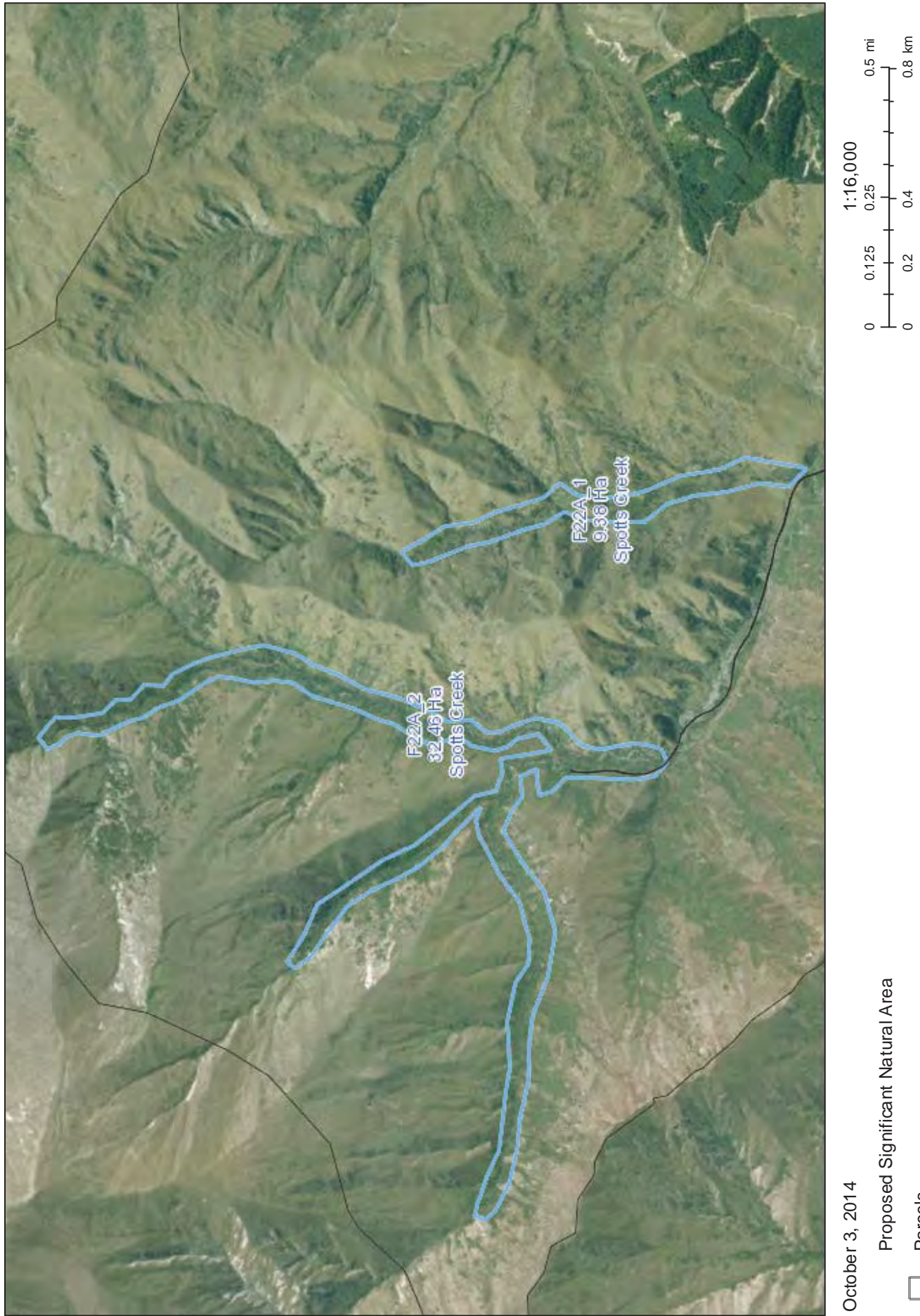
### Significant Natural Area Assessment

Project No: 11001/022	Property Name: <i>Spotburn</i> Site Name: <i>Back Creek SNA A</i>	Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: 30 Jan 2012
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>
LENZ Unit: Q2.2a Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>
Topography: <i>Valley bottom</i>	Slope: <i>Valley bottom</i>	Altitude: <i>600 - 740 masl</i> Aspect: <i>Various</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>41.84</i>
Representativeness: <i>Grey shrubland</i> – dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District and Lakes Ecological Region. Pre-settlement the vegetation cover would have been beech forest with relict trees still present in the Back Creek catchment.		
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
Provide onsite description of vegetation:		
Vegetation type: The vegetation was only viewed from the air, but the vegetation composition is dominated by good populations of <i>Olearia odorata</i> , <i>Coprosma propinqua</i> and <i>matagouri</i> , with the following species also expected to be present: <i>Carmichaelia petriei</i> , <i>Melicytus alpinus</i> , <i>Rubus schmidelioides</i> , <i>Meuhlenbeckia australis</i> , in addition to other <i>coprosma</i> species.		
Degree of Modification: The area has experienced historical disturbance (i.e. fire), but has not been disturbed for a long time period.		
Overall Health: The shrubland is largely intact and dominated by mature indigenous species.		
Provide onsite description of fauna habitat: The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that was seen in the area during the flight. The population of mature <i>olearia</i> is expected to support a unique, diverse and abundant invertebrate fauna.		



<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The woody weed population appeared to be relatively low in the Back Creek catchment, but briar and other woody weed weeds such as elder may be a threat. Changes to management may also affect the stand such as changing stocking rates.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The better grey shrubland communities in the district that were historically abundant at lower elevations now tend to be found at slightly higher elevations in environments that supported beech forest.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The size and shape of the vegetation is elongated, being situated along the length of a number of branches of Back Creek.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland contains a diverse range of grey shrubland species and is notable for the presence of a good population of mature tree daisys.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland is distinctive within the ecological district for the population of olearia, as many other shrublands are dominated by matagouri and briar.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The site consists of riparian communities adjacent to a number of branches of Back Creek. The vegetation is connected to some manuka and kanuka woodland on adjacent slopes in addition to higher altitude tussock grassland communities in the upper reaches of the Back Creek.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland appears to be in good condition with a diverse range of mature shrubs and creepers and a predominantly closed canopy. The shrubland is expected to be sustainable providing it remains free from inadvertent fire events.</p>
<p>Recommendation (Accept/Decline):</p> <p>The riparian shrubland is a good example of vegetation that is representative of this environment and has become rare, particularly within the drier areas of the Lakes District. It is also important as habitat for a diverse and abundant invertebrate fauna and passerines that are critical for the maintenance of the eastern falcon population. Given the high level of representativeness and rarity of quality grey shrubland in these LENZ environments we consider the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Back Creek SNA A - F22A\_1-2.

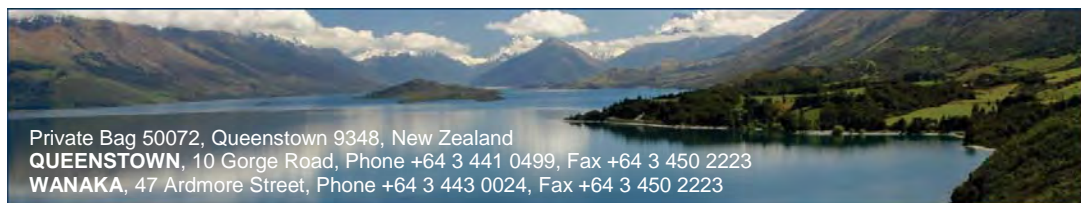


Please note the area shown is indicative and only for discussion purposes.





**Figure 2:** Photographs of sections of the area of potential significance.



Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



**QUEENSTOWN  
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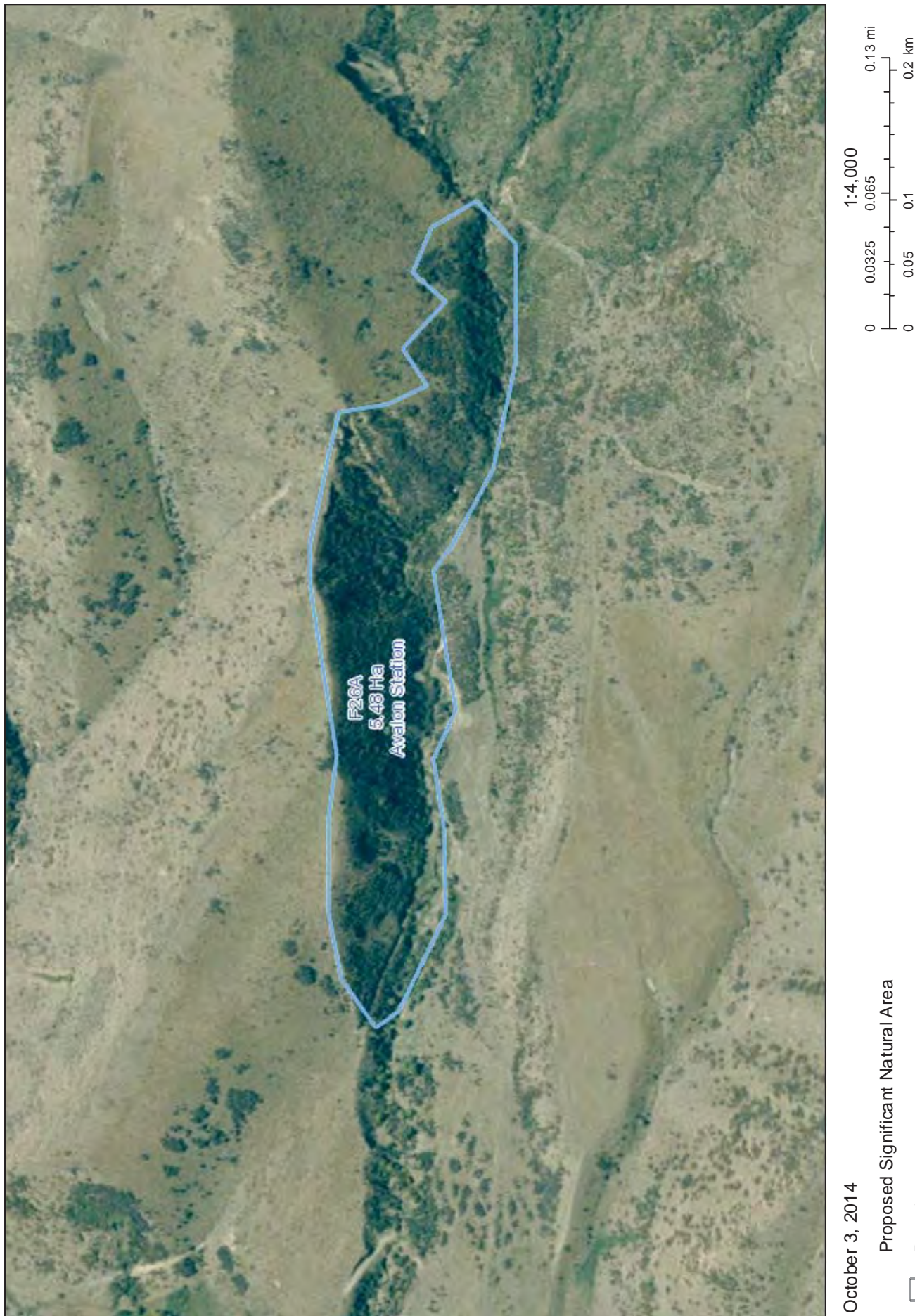
www.qldc.govt.nz

Significant Natural Area Assessment			
Project No:  11001/026		Property Name: <i>Avalon Station</i>  Site Name: <i>Avalon Station SNA A</i>	
		Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: <i>29 March 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>No photos.</i>	
Topography: <i>Steep stream terrace scarp.</i>	Slope: <i>Steep</i>	Altitude: <i>approx. 490 masl</i>	Aspect: <i>South</i>
Threatened Environment Status: <i>Chronically threatened</i>		Area Size (ha): <i>5.48</i>	
Representativeness: <i>Grey shrubland</i> – dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District and Lakes Ecological Region.			
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	
Provide onsite description of vegetation:			
Vegetation type: The vegetation was only viewed from the air but the vegetation composition consists of <i>Coprosma propinqua</i> , matagouri, <i>Olearia odorata</i> and briar.			
Degree of Modification: The area has experienced historical disturbance and lacks the diversity that this vegetation would originally have had. The area has a long history of modification, particularly fires, but has not been disturbed for some time.			
Overall Health: The shrubland is largely intact and is dominated by mature indigenous species.			
Provide onsite description of fauna habitat: The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that was seen in the area during the flight. The population of mature olearia may support a unique invertebrate fauna.			
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Changes to management or inadvertent fire are the key threats to the vegetation.			



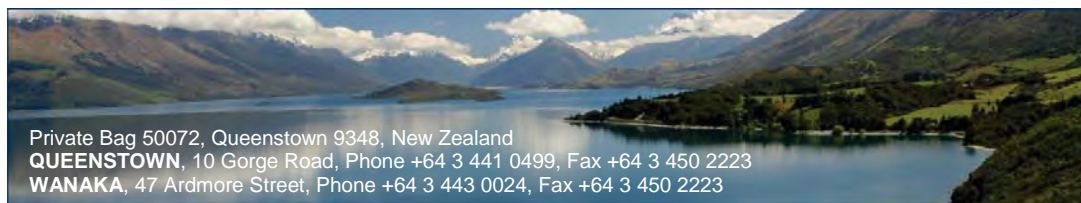
<p>Rarity: The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining, with 2.3% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining) : It is unlikely the area has the ability to naturally regenerate.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The shrubland contains a range of grey shrubland species and is notable for the presence of tree daisys.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The population of tree daisys is a distinctive feature within this lowland environment.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The site is isolated from shrublands in neighbouring catchments, although is connected to briar and matagouri dominated shrubland at a higher elevation. We do note that the site is part of a mosaic of grassland/shrubland that extends through the lower to mid hillslopes in the Cardrona Valley which can be viewed as a unit particularly important for insectivorous birds and eastern falcon.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): While the area is stocked it is unlikely the area has the ability to naturally regenerate. It is therefore likely that there are key ecological processes lacking to ensure the long-term sustainability of the stand.</p>
<p>Recommendation (Accept/Decline): The area is moderately representative of grey shrubland within this environment and is a part of the wider habitat for eastern falcon in the Cardrona Valley. It is also good habitat for a unique invertebrate fauna associated with the tree daisy's and passerines that are critical for the maintenance of the eastern falcon population. Limiting the significance of the vegetation is that the stand may lack important ecological processes to support the regenerative ability and therefore long term sustainability of the stand. Given the vegetation is moderately representative of this lowland environment we consider the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Avalon Station SNA A - F26A.



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





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Significant Natural Area Assessment			
Project No:  11001/026	Property Name: <i>Avalon Station</i>  Site Name: <i>Avalon Station SNA B</i>	Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: <i>29 March 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location</i>	
LENZ Unit: <i>N4.1d</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Steep valley slope.</i>	Slope: <i>Steep</i>	Altitude: <i>approx.490 masl</i>	Aspect: <i>West</i>
Threatened Environment Status: <i>Chronically threatened</i>		Area Size (ha): <i>11.59</i>	
Representativeness: <i>Grey shrubland</i> – dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District and Lakes Ecological Region.			
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	
Provide onsite description of vegetation:			
<p>Vegetation type: The vegetation was only viewed from the air, but the vegetation composition is dominated by good populations of <i>Olearia</i> spp., <i>Coprosma propinqua</i>, matagouri and <i>Corokia cotoneaster</i>, in addition to the native lianes <i>Rubus schmidelioides</i> and <i>Meuhlenbeckia australis</i>.</p> <p>Degree of Modification: The area has experienced historical disturbance (e.g. fire) and is fragmented. Given the age and development of the mature vegetation it appears the site hasn't been disturbed by any extensive fire, or other means, for a prolonged period in excess of 10-15 years.</p> <p>Overall Health: A closed canopy stand has developed in parts although the subject area is also fragmented and is part of a working pastoral operation.</p>			
Provide onsite description of fauna habitat:			
The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that is expected to hunt in the area. The population of mature olearia is expected to support a unique, diverse and abundant invertebrate fauna.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The woody weed population appeared to be relatively low in the subject site, although the briar cover is high on the hillslopes adjacent to the site. Current management is sympathetic to this vegetation.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining, with 2.3% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The size and shape of the vegetation is elongated being situated adjacent to a creek line.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland contains a range of grey shrubland species and is notable for the presence of a good population of mature tree daisys.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland is distinctive within the ecological district for the population of olearia. Many of these shrublands are dominated by matagouri and briar.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The site is directly connected to vegetation and habitats on neighbouring hillslopes that are dominated by bracken fern and briar.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>While the area is stocked, the area will lack the ability to naturally regenerate. Key ecological processes are therefore lacking to ensure the long-term sustainability of the stand.</p>
<p>Recommendation (Accept/Decline):</p> <p>The riparian shrubland is a good example of vegetation that is representative of this environment and has become rare, particularly within the drier areas of the Lakes District. It is also important as habitat for a diverse and abundant invertebrate fauna, and passerines that are critical for the maintenance of the eastern falcon population. Given the high level of representativeness and rarity of quality grey shrubland in these LENZ environments we consider the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Avalon Station SNA B - F26B.



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



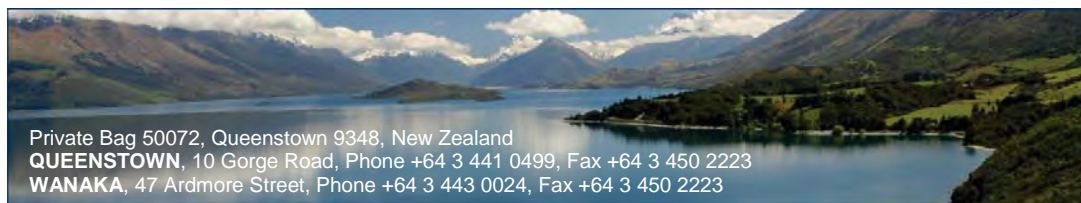


**Figure 2:** Photographic representation of the SNA B site.



**Figure 3:** Photographic representation of the SNA B site.





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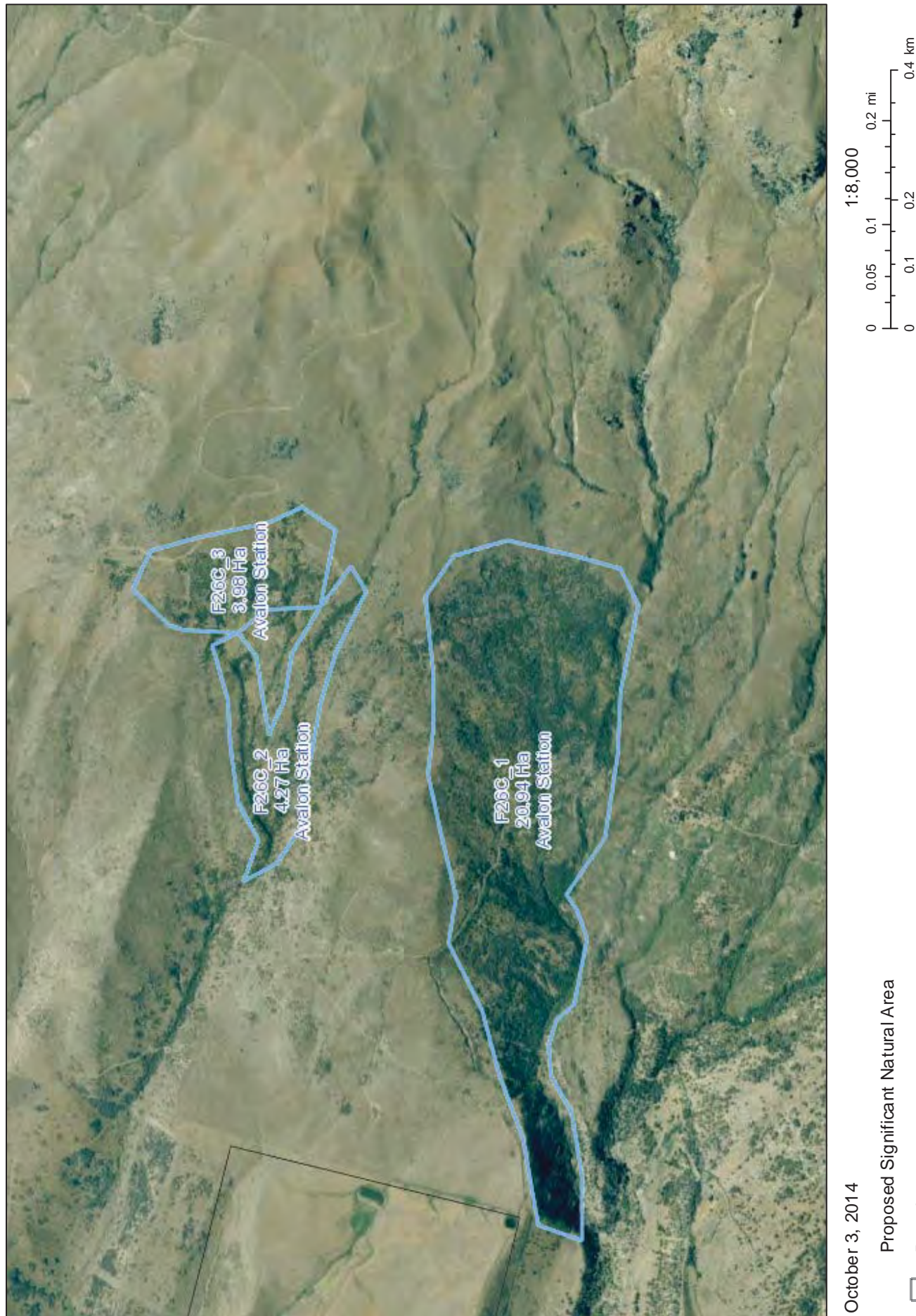
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Significant Natural Area Assessment			
Project No:  11001/026	Property Name: <i>Avalon Station</i>  Site Name: <i>Avalon Station SNA C</i>	Ecologist: <i>Glenn Davis and Neill Simpson</i> Date: <i>29 March 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Neill Simpson and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plans for location.</i>	
LENZ Unit: <i>Q2.2a</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Mid hill slope of the Criffel Range</i>	Slope: <i>Varies</i>	Altitude: <i>approx. 630 masl</i>	Aspect: <i>South</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>29.19</i>	
Representativeness: <i>Grey shrubland – dominant indigenous vegetation cover in the drier areas of the Wanaka Ecological District and Lakes Ecological Region.</i>			
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	
<i>Olearia lineata</i> (Tree Daisy)		At risk - Declining	
<i>Carmichaelia kirkii</i>		Threatened - Nationally Vulnerable	
Provide onsite description of vegetation:			
<p>Vegetation type: The vegetation was only viewed from the air, but the vegetation composition is dominated by the good populations of <i>Olearia lineata</i>, <i>Coprosma propinqua</i>, <i>matagouri</i>, <i>Hebe salicifolia</i> and <i>Carmichaelia kirkii</i>, with the following species also expected to be present: <i>Carmichaelia petriei</i>, <i>Melicytus alpinus</i>, <i>Rubus schmidelioides</i>, <i>Meuhlenbeckia australis</i> in addition to other coprosma species</p> <p>Degree of Modification: The area has experienced historical disturbance (e.g. fire), but has not been disturbed for a long period. Briar is also present but does not dominant the vegetation cover compared to the neighbouring slopes.</p> <p>Overall Health: The shrubland is largely intact and is dominated by mature indigenous species.</p>			
Provide onsite description of fauna habitat:			
The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that was seen in the area during the flight. The population of mature olearia is expected to support a unique, diverse and abundant invertebrate fauna.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Inadvertent fire events.</p>
<p>Rarity: The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected. The better grey shrubland communities in the district that were historically abundant at lower elevations now tend to be found at slightly higher elevations in environments that supported beech forest.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): The vegetation has been regenerating in this area for some time indicating it is self-sustaining providing it does not affect the management of pastoral activities.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The shrubland contains a diverse range of grey shrubland species and is notable for the presence of a good population of mature tree daisys.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): The shrubland is distinctive within the ecological district for the population of olearia. Many of these shrublands are dominated by matagouri and briar.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The site is part of a mosaic of grassland/shrubland that extends through the lower to mid hill slopes in the Cardrona Valley.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The shrubland is to be in good condition with a diverse range of mature shrubs and creepers and is developing a closed canopy. The shrubland is expected to be sustainable providing it remains free from inadvertent fire events.</p>
<p>Recommendation (Accept/Decline): The shrubland is a good example of vegetation that is representative of this LENZ unit and has become rare, particularly within the drier areas of the Lakes District. It is also important as habitat for a diverse and abundant invertebrate fauna, and passerines that are critical for the maintenance of the eastern falcon population. Given the high level of representativeness and rarity of quality grey shrubland in these LENZ environments we consider the area should be considered further through the SIV process.</p>



Figure 1: The area of potential significance - Avalon Station SNA C - F26C\_1-3.

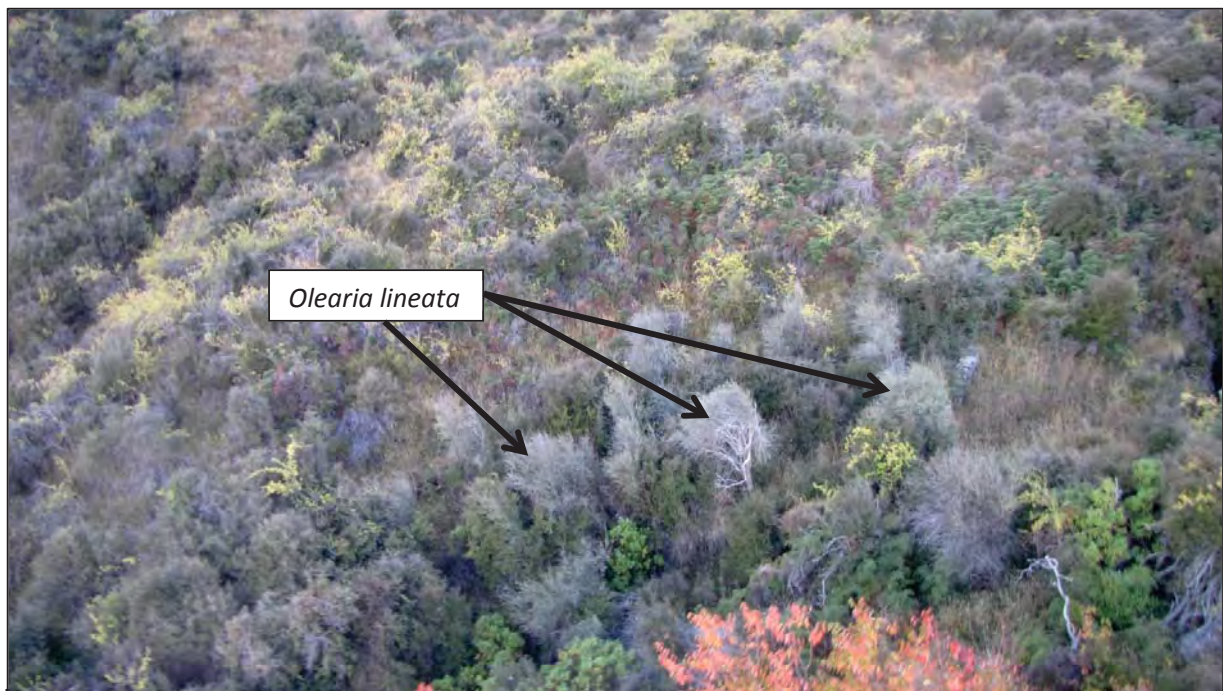


Please note the area shown is indicative and only for discussion purposes.





**Figure 2:** Photo showing strong indigenous shrubland cover in SNA C including *Hebe salicifolia*, matagouri, mingimingi, *Olearia lineata* and *Muehlenbeckia australis*. Woody weeds, such as briar, are also present.



**Figure 3:** Photo showing the presence of *Olearia lineata* in SNA C.





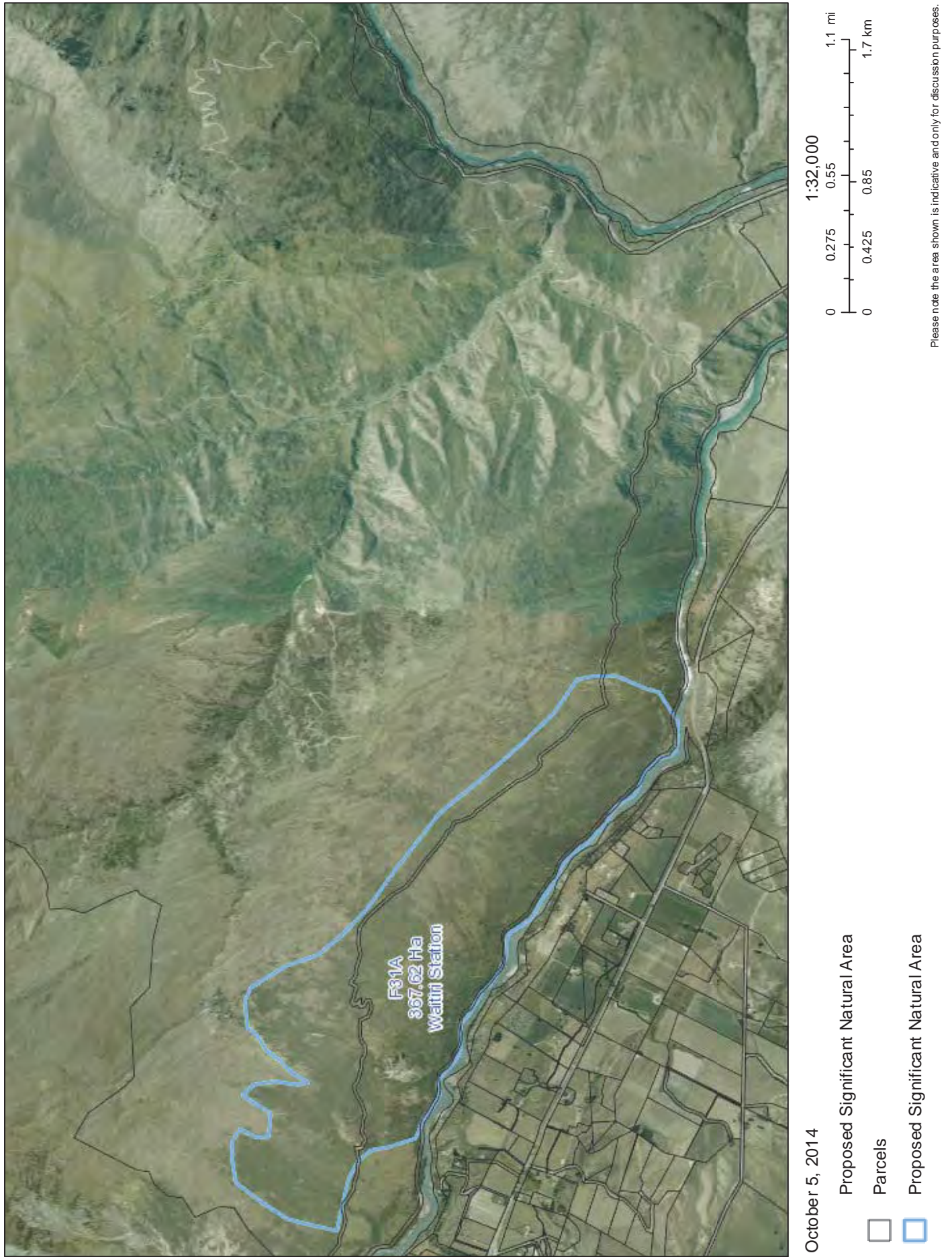
**Figure 4:** Photo showing a representation of the vegetation present in SNA C.

<b>Significant Natural Area Assessment</b>			
Project No:  <i>11001/031</i>	Property Name: <i>Waitiri Station</i>  Site Name: <i>Kawarau Faces SNA A (Muddy Crk to Nevis Bluff)</i>	Ecologist: <i>Glenn Davis</i>  Date: <i>28 March 2012</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N4.1d</i>  Ecological District: <i>Pisa Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Lower hill slopes.</i>	Slope: <i>Steep</i>	Altitude: <i>approx. 300 to 680 masl</i>	Aspect: <i>South</i>
Threatened Environment Status:  <i>Chronically threatened</i>		Area Size (ha): <i>367.62</i>	
Representativeness: LENZ unit N4.1d is understood to have originally supported shrubland communities. The indigenous plant assemblage found on the site is representative of the environment albeit the area does have a significant woody weed component including briar and sycamore.			
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	
Provide onsite description of vegetation:  Vegetation type: Shrubland heavily dominated by matagouri and sweet briar but also includes <i>Coprosma propinqua</i> and to a lesser degree <i>Olearia odorata</i> .  Degree of Modification: The area is modified particularly given the populations of briar present but the native cover particularly of matagouri and mingmingi is just as significant and the dominant cover in some areas.			
Provide onsite description of fauna habitat: The shrubland will provide significant habitat for a variety of passerines which support the eastern falcon. The shrubland is also expected to support common species of lizards and will also attract a range of indigenous invertebrates given the presence of <i>Olearia</i> species.			



<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Changes to land management and/or accidental fire are the greatest threats to the vegetation. Wilding pines are also a potential issue.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining, with 2.3% protected. Notwithstanding this point the area is largely dominated by briar.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area is self-sustaining although some areas could be assisted with the control of sycamore.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The vegetation is a good example of indigenous shrubland communities situated adjacent to the Kowarau River and is an extension of the Kowarau River Faces within the DOC administered Pisa Conservation Area. Much of the vegetation on the lower slopes of the Kowarau Gorge is now dominated by briar or thyme, therefore indigenous cover within this area is quite locally distinctive.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>Directly connected to the Pisa Conservation Area.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The vegetation has developed along these slopes following past clearing events. This clearly shows the vegetation has the ability continue to regenerate and is sustainable.</p>
<p>Recommendation (Accept/Decline):</p> <p>Given the above information, we recommend the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>

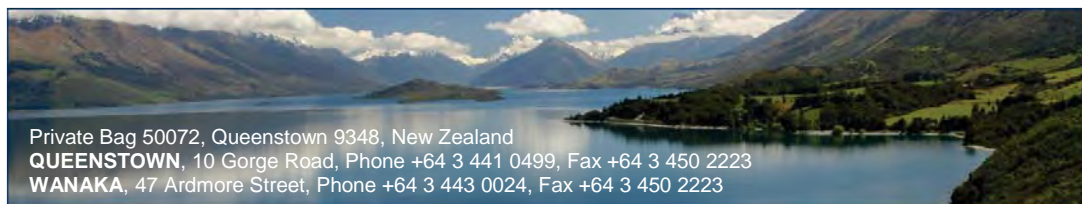
Figure 1: The area of potential significance - Kawarau Faces SNAA - F31A.







**Figure 2:** Photo of vegetation opposite the Nevis Bluff.



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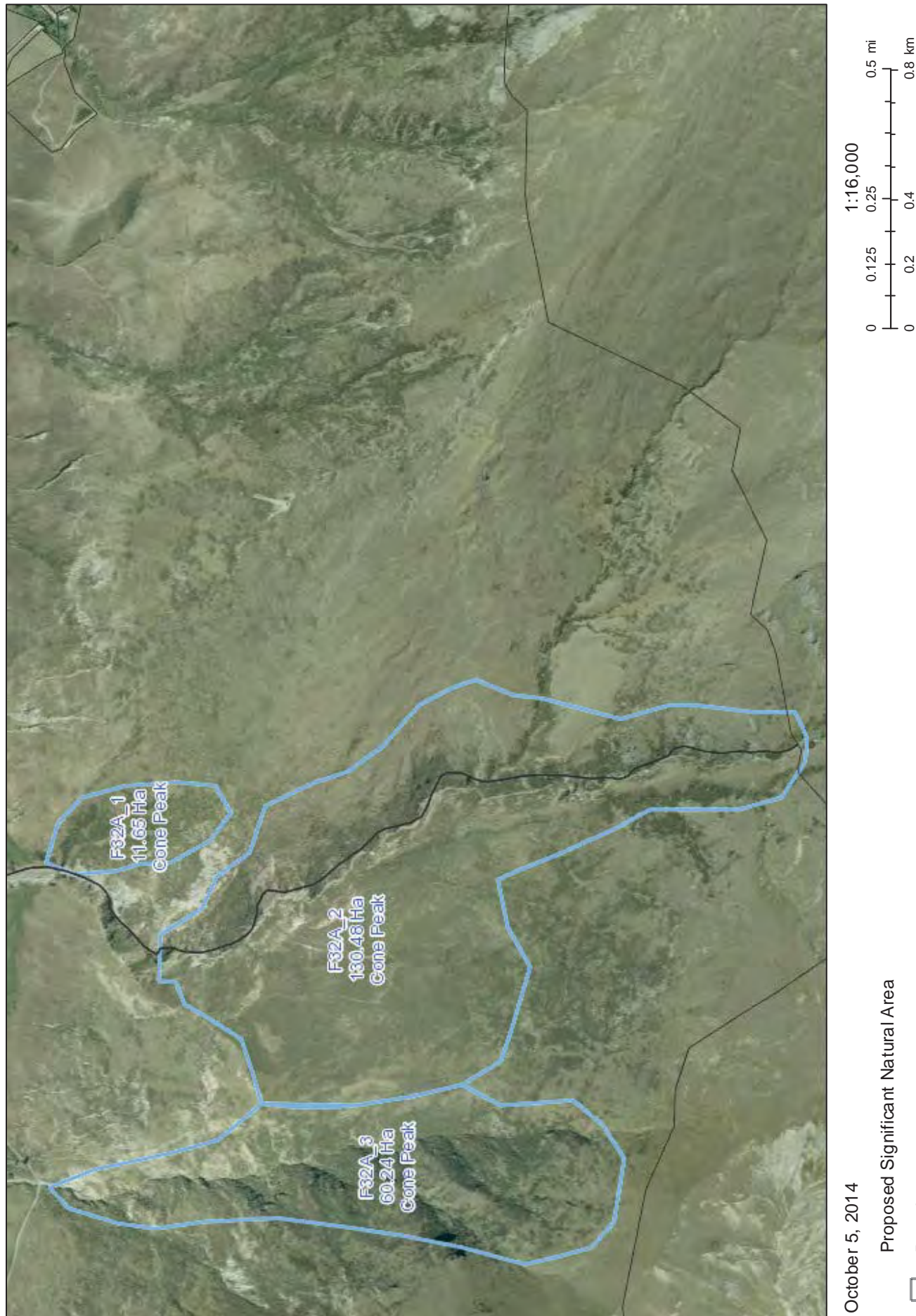
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Significant Natural Area Assessment			
Project No: <i>11001/032</i>	Property Name: <i>Cone Peak</i> Site Name: <i>Owen Creek SNA A</i>	Ecologist: <i>Glenn Davis</i> Date: <i>28 March 2012</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N4.1d and Q2.2a</i> Ecological District: <i>Remarkables Ecological District</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Owen Creek and adjoining hill slopes.</i>	Slope: <i>Steep</i>	Altitude: <i>600 - 740 m asl</i>	Aspect: <i>North</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>202.37</i>	
Representativeness: Grey shrubland is the dominant indigenous vegetation cover in the drier areas of the Remarkables Ecological District. Pre-settlement, the vegetation cover is most likely to have been beech forest.			
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	
Provide onsite description of vegetation:			
Vegetation type: The vegetation was only viewed from the air, but the vegetation composition is of shrubland dominated by Olearia species, <i>Coprosma propinqua</i> , <i>Discaria toumatou</i> , <i>Carmichaelia petriei</i> , <i>Melicytus alpinus</i> , <i>Rubus schmidelioides</i> and <i>Meuhlenbeckia</i> species. The introduced woody weed sweet briar is present in addition to willow in the riparian margin of Owen Creek.			
Degree of Modification: The area has experienced historical disturbance (i.e. fire), but has not been disturbed for a long period.			
Overall Health: The shrubland is in good health, with relatively large areas of closed canopy.			
Provide onsite description of fauna habitat: The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that is known to be present in Owen Creek. The shrubland provides significant cover and food supply for skinks and geckos, and the mature Olearia species are expected to support a unique, diverse and abundant invertebrate fauna.			



<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Changes to land management and/or accidental fire are the greatest threats to the shrubland in Owen Creek.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining, and only 2.3% protected. The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining, with 5.07% protected. The better grey shrubland communities in the district that were historically abundant at lower elevations now tend to be found at slightly higher elevations in environments that supported beech forest.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area contains relatively large areas of closed canopy shrubland. It is likely that the vegetation has been expanding its distribution due to a lack of clearing practices associated with the land management. The shrubland is self-sustaining and will continue to develop.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland will contain a diverse range of grey shrubland species and includes both riparian and drier hillside communities.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland is distinctive within the ecological district given the size of the shrubland and the population of Olearia. Many similar shrublands in the district are much smaller in size and often dominated by matagouri and briar.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The shrubland is part of a relatively uninterrupted sequence of the indigenous communities from the valley floor through to the tall tussock and alpine communities situated at higher elevations in the neighbouring DOC administered Remarkables Conservation Area.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>It is likely that the shrubland has been expanding its distribution in recent years as a result of the current land management regime i.e. limited vegetation clearing activities. Under current management practices the shrubland is sustainable and expected to continue development.</p>
<p>Recommendation (Accept/Decline):</p> <p>The shrubland is an excellent example of vegetation that is representative of this environment and has become rare, particularly within the drier areas of the Lakes District. It is also important as habitat for a diverse and abundant invertebrate fauna and passerines that are critical for the maintenance of the eastern falcon population. Given the high level of representativeness and rarity of quality grey shrubland in these LENZ environments we consider the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p>

Figure 1: The area of potential significance - Owen Creek SNA A - F32A\_1-3



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





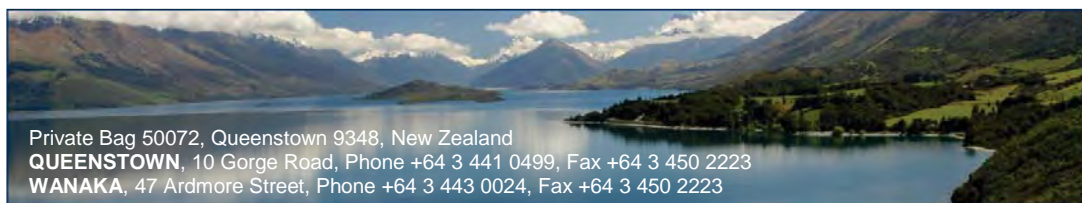
**Figure 2:** Vegetation within the Owen Creek area.





**Figure 3:** Vegetation within the Owen Creek area.





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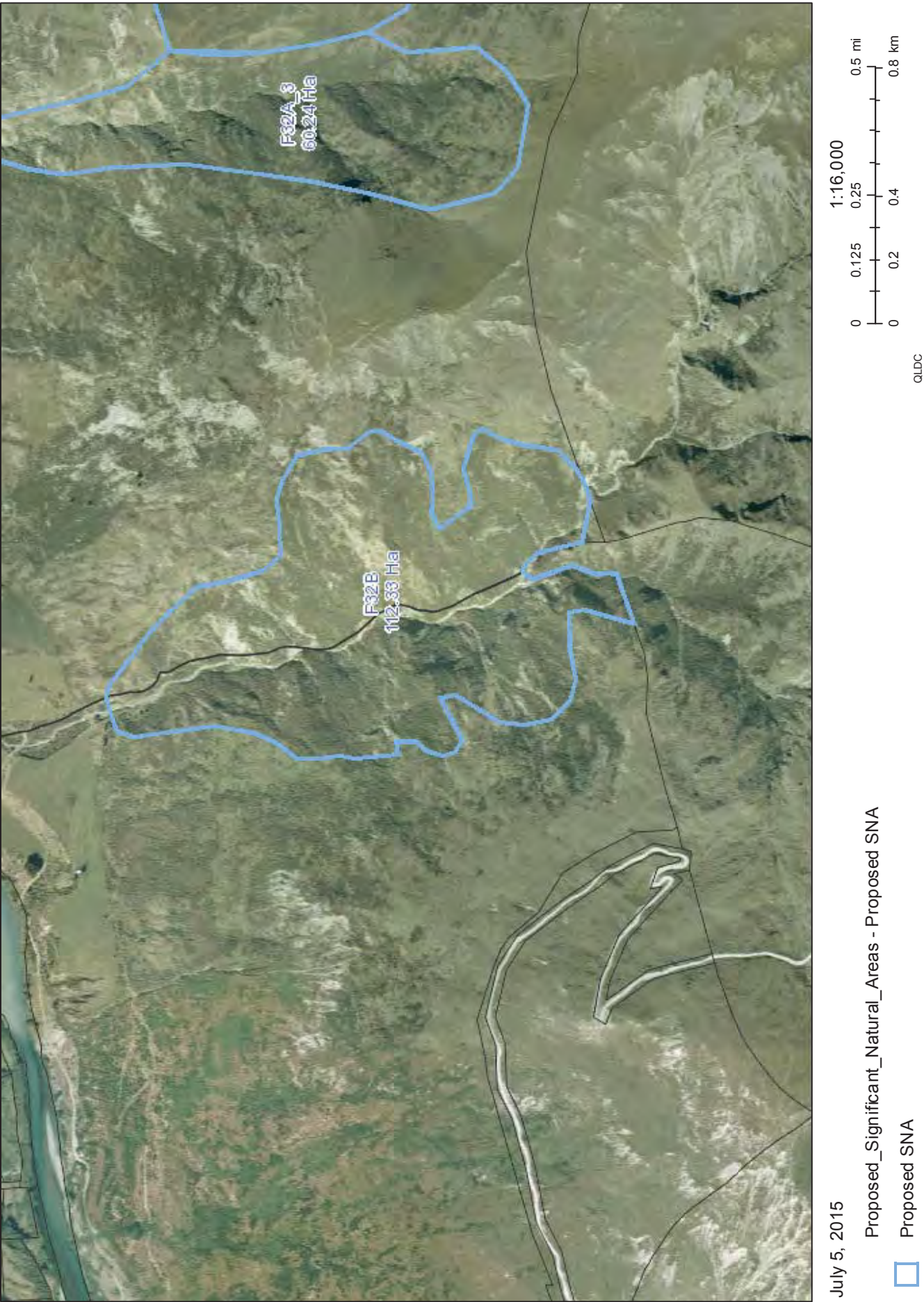
Significant Natural Area Assessment			
Project No: <i>11001/032</i>		Property Name: <i>Cone Peak</i> Site Name: <i>Rastus Burn SNA B</i>	
		Ecologist: <i>Glenn Davis</i> Date: <i>28 March 2012</i>	
Survey Undertaken By: <i>Glenn Davis and Ralph Henderson</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N4.1d and Q2.2a</i> Ecological District: <i>Remarkables Ecological District</i>		Photo No.(s): <i>see attached.</i>	
Topography: <i>Rastus Burn and adjoining hill slopes</i>	Slope: <i>Steep</i>	Altitude: <i>approx. 480 to 860 m asl</i>	Aspect: <i>North</i>
Threatened Environment Status: <i>Chronically threatened and Critically underprotected</i>		Area Size (ha): <i>112.33</i>	
Representativeness: Grey shrubland is the dominant indigenous vegetation cover in the drier areas of the Remarkables Ecological District. Pre-settlement the vegetation cover is most likely to have been beech forest.			
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	
Provide onsite description of vegetation: Vegetation type: The vegetation was only viewed from the air, but the vegetation composition is dominated by olearia species, <i>Coprosma propinqua</i> , <i>Discaria toumatou</i> , <i>Carmichaelia petriei</i> , <i>Melicytus alpinus</i> , <i>Rubus schmidelioides</i> , and <i>meuhlenbeckia</i> species. The introduced woody weed sweet briar is present in addition to willow in the riparian margin of the Rastus Burn.  Degree of Modification: The area has experienced historical disturbance (i.e. fire), but has not been disturbed for a long period.  Overall Health: The shrubland is in good health with relatively large areas of closed canopy shrubland present.			
Provide onsite description of fauna habitat: The shrubland provides habitat for a variety of passerines that are prey for the eastern falcon that is known to be present in the Rastus Burn. The shrubland provides significant cover and food supply for skinks and geckos and the mature Olearia is expected to support a unique, diverse and abundant invertebrate fauna.			

Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Changes to land management and/or accidental fire are the greatest threats to the shrubland in the Rastus Burn.
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d environment to have 18.6% indigenous vegetation cover remaining and only 2.3% protected. The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining, with 5.07% protected. The better grey shrubland communities in the district that were historically abundant at lower elevations now tend to be found at slightly higher elevations in environments that supported beech forest.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area contains relatively large areas of closed canopy shrubland. It is likely that the vegetation has been expanding its distribution due to a lack of clearing practices associated with the land management. The shrubland is self-sustaining and will continue to develop.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland will contain a diverse range of grey shrubland species and includes both riparian and drier hillside communities.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland is distinctive within the ecological district given the size of the shrubland and the population of olearia. Many similar shrublands in the district are much smaller in size and often dominated by matagouri and briar.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The shrubland is part of a relatively uninterrupted sequence of indigenous communities from the valley floor through to the tall tussock and alpine communities situated at higher elevations in the neighbouring DOC administered Rastus Burn Recreation Area and Remarkables Conservation Area.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>It is likely that the shrubland has been expanding its distribution in recent years as a result of the current land management regime i.e. limited vegetation clearing activities. Under current management practices the shrubland is sustainable and expected to continue development.</p>
<p>Recommendation (Accept/Decline):</p> <p>The shrubland is an excellent example of vegetation that is representative of this environment and has become rare, particularly within the drier areas of the lakes district. It is also important as habitat for a diverse and abundant invertebrate fauna and passerines that are critical for the maintenance of the eastern falcon population. Given the high level of representativeness and rarity of quality grey shrubland in these LENZ environments we consider the area should be considered for designation as a Significant Indigenous Vegetation and Fauna Habitat.</p> <p>We note that there are areas within the Rastus Burn SNA that are dominated by pasture grass</p>



and/or have a limited cover of shrubland species. In isolation these areas would not be considered significant however it is difficult to identify and exclude these areas from the designated area given the aerial photography available.

Figure 1: The area of potential significance - Rastus Burn SNA B - F32B.







**Figure 2:** Vegetation within the Rastus Burn area.





**Figure 3:** Vegetation within the Rastus Burn area.



Significant Natural Area Assessment			
Project No: 11001/040		Property Name: <i>Gibbston Valley Station</i>	
		Ecologists: <i>Glenn Davis &amp; Rebecca Lawrence</i>	
		Site Name: <i>Gibbston Valley SNA A</i>	
		Date: <i>12<sup>th</sup> October 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson &amp; Rebecca Lawrence.</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>N4.1d and N5.1c</i>		Photo No.(s): <i>See attached.</i>	
Ecological District: <i>Remarkables</i>			
Topography: <i>Gully slope and valley bottom.</i>	Slope: <i>Steep</i>	Altitude: <i>380 masl</i>	Aspect: <i>South</i>
Threatened Environment Status: <i>Chronically Threatened &amp; Acutely Threatened</i>		Area Size (ha): <i>4.71</i>	
Representativeness: LENZ unit N4.1d is understood to have originally supported shrubland communities and unit N5.1c is thought to have originally supported grassland. The indigenous plant assemblage found on the site is representative of the original environment albeit the area does have a woody weed component including briar.			
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	
Provide onsite description of vegetation Vegetation type: the grey shrubland is largely dominated by matagouri ( <i>Discaria toumatou</i> ) and <i>Coprosma propinqua</i> , but also includes populations of <i>Olearia</i> spp. and <i>Muehlenbeckia complexa</i> . Briar ( <i>Rosa rubiginosa</i> ) is also present to a varying degree within the shrubland community.			
Degree of Modification: The area is modified given the population of briar and some individual wilding pine specimens, but the native cover particularly of matagouri and <i>Coprosma propinqua</i> is just as significant and the dominant cover.			
Provide onsite description of fauna habitat: The shrubland will provide significant habitat for a variety of passerines, which support the eastern falcon. The shrubland is also expected to support common species of lizards (e.g. McCann's skink and Common skink), as well as possibly the Cromwell gecko, Otago/Southland large gecko (Western Otago form) and the Southern mini gecko. The shrubland will also attract a range of indigenous invertebrates given the presence of <i>Olearia</i> spp.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The greatest risk to this vegetation and habitat are inadvertent fires and the invasion of exotic weeds, in particular, briar and wilding pines.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d and N5.1c environments to have, respectively, 18.6 % and 2.7 % indigenous vegetation cover remaining, and 2.3 % and 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The area is self-sustaining but could be assisted by the control of briar and wilding pines.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland will contain a diverse range of grey shrubland species including plant and invertebrate species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The vegetation is a good example of indigenous shrubland communities situated adjacent to the Kowarau River. Much of the vegetation on the lower slopes of the Kowarau Gorge is now dominated by briar or thyme, therefore indigenous cover within this area is locally distinctive.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>This SNA A area is connected to shrubland and grassland further up the slope towards Coal Pit Saddle, Mt Rosa and Mt Edward, and tussock grassland at higher elevations.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Under the current management the shrubland is expected to be self-sustaining, although weed control, especially for briar, would be greatly beneficial to this SNA area.</p>
<p>Recommendation (Accept/Decline):</p> <p>While the grey shrubland lacks the diversity of the original vegetation cover along the Kowarau River, given the size and number of plant species surviving, despite the presence of exotic weeds, the area provides a sustainable area of indigenous vegetation that is chronically threatened.</p> <p>Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Gibbston Valley SNA A - F40A



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



**Figure 2:** A photographic representation of the potential area of significance, i.e. *Gibbston Valley SNA A*, on the Gibbston Valley Station property.



Significant Natural Area Assessment			
Project No: 11001/040		Property Name: <i>Gibbston Valley Station</i>	
		Ecologists: <i>Glenn Davis &amp; Rebecca Lawrence</i>	
		Site Name: <i>Gibbston Valley SNA B</i>	
		Date: 12 <sup>th</sup> October 2012	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson &amp; Rebecca Lawrence.</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: Q2.2a Ecological District: <i>Remarkables</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Upper valley slope</i>	Slope: <i>Moderate</i>	Altitude: <i>700 masl</i>	Aspect: <i>North</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>3.94</i>	
<p>Representativeness:</p> <p>Whilst the LENZ unit Q2.2a environment is understood to have supported a pre-settlement vegetation dominated by forest species (e.g. beech forest), the grey shrubland present in SNA B is a representative community within the Wakatipu Lakes District dryland areas, with extended distribution due to historic farming practices.</p>			
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	
<i>Olearia lineata</i>		At Risk - Declining	
<p>Provide onsite description of vegetation:</p> <p>Vegetation type:</p> <p>The grey shrubland includes <i>Olearia odorata</i>, <i>Olearia lineata</i>, <i>Discaria toumatou</i>, <i>Coprosma propinqua</i>, <i>Melicytus alpinus</i>, <i>Muehlenbeckia complexa</i>, <i>Rubus schmidelioides</i>, <i>Carmichaelia petriei</i>, <i>Clematis quadribracteolata</i> and <i>Hebe salicifolia</i>. Briar and elder, both introduced weed species, are also present.</p> <p>Degree of Modification: The area is thought to have experienced historical disturbance through burning and grazing, however, no burning or livestock grazing appears to have occurred recently.</p>			
<p>Provide onsite description of fauna habitat:</p> <p>This grey shrubland area (i.e. SNA B) provides habitat for both introduced and indigenous passerines, which provide a food source for the eastern falcon which has been recorded in the vicinity of the SNA area. At least two grey warblers (<i>Gerygone igata</i>) were seen during the site visit. The shrubland is also expected to support common species of lizards (e.g. McCann's skink and Common skink), as well as possibly the Cromwell gecko, Otago/Southland large gecko (Western Otago form) and the Southern mini gecko. The shrubland will also attract a range of indigenous invertebrates given the presence of <i>Olearia</i> species.</p>			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The key threats to this area of grey shrubland are inadvertent fire events and the invasion of briar (a woody weed).</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a environment to have 39.92 % indigenous vegetation cover remaining, with 5.07 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>This grey shrubland area is self-sustaining with areas of closed canopy. However, the size of the self-sustaining area could be improved with the control of briar.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland will contain a diverse range of shrubland specific plant and invertebrate species and the area covers both stream edge and hill slope substrates.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland contains multiple stands of <i>Olearia lineata</i> and <i>Olearia odorata</i>. The size of the <i>Olearia</i> populations is a special ecological characteristic of the area.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The proposed area is connected to nearby shrubland communities along the side of the hill slope.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland is currently in good ecological condition with a diverse range of mature shrubs and a predominantly closed canopy. Providing disturbance activities such as fire do not occur, the shrubland will continue to persist and improve, and provide valuable habitat for native birds, invertebrates and lizards.</p>
<p>Recommendation (Accept/Decline):</p> <p>This area is a good example of grey shrubland vegetation and is an important habitat for supporting a diverse and abundant invertebrate fauna, along with passerines that are critical for the maintenance of the eastern falcon population. Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Gibbston Valley SNA B - F40B.



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



**Figure 2:** A photographic representation of the potential area of significance, i.e. '*Gibbston Valley SNA B*', on the Gibbston Valley Station property.



Significant Natural Area Assessment			
Project No: 11001/040		Property Name: <i>Gibbston Valley Station</i>	
		Ecologists: <i>Glenn Davis &amp; Rebecca Lawrence</i>	
		Site Name: <i>Gibbston Valley SNA C</i>	
		Date: <i>12<sup>th</sup> October 2012</i>	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson &amp; Rebecca Lawrence</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: <i>Q2.2a</i>		Photo No.(s): <i>See attached.</i>	
Ecological District: <i>Remarkables</i>			
Topography: <i>Upper valley slope</i>	Slope: <i>Moderate</i>	Altitude: <i>820 masl</i>	Aspect: <i>North</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>3.14</i>	
Representativeness: Whilst the LENZ unit Q2.2a environment is understood to have supported a pre-settlement vegetation dominated by forest species (e.g. beech forest), the grey shrubland present in the SNA C area is a representative community within the Wakatipu Lakes District dryland areas with extended distribution due to historic farming practices.			
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	
Provide onsite description of vegetation Vegetation type: The grey shrubland will include <i>Olearia</i> species, <i>Discaria toumatou</i> , <i>Coprosma propinqua</i> , <i>Melicytus alpinus</i> , <i>Muehlenbeckia complexa</i> and <i>Rubus schmidelioides</i> . Briar, an introduced weed species, is most likely present.  Degree of Modification: The area is thought to have experienced historical disturbance via burning and grazing, however, no burning or livestock grazing appears to have occurred recently.			
Provide onsite description of fauna habitat: This grey shrubland area (i.e. SNA C) provides habitat for both introduced and indigenous passerines, which provide a food source for the eastern falcon which has been recorded in the vicinity of the SNA area. The shrubland is also expected to support common species of lizards (e.g. McCann's skink and Common skink), as well as possibly the Cromwell gecko, Otago/Southland large gecko (Western Otago form) and the Southern mini gecko. The shrubland will also attract a range of indigenous invertebrates with the presence of <i>Olearia</i> species.			

<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The key threats to this grey shrubland area are inadvertent fire events and the invasion of briar (a woody weed).</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a environment to have 39.92 % indigenous vegetation cover remaining, with 5.07 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>This grey shrubland area is self-sustaining. However, the size of the self-sustaining area might be improved with the control of briar.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland will contain a diverse range of shrubland specific plant and invertebrate species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The shrubland will contain stands of <i>Olearia</i> species, which is a special ecological characteristic of the area.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The proposed area is connected to nearby shrubland communities along the side of the hill slope, including the Gibbston Valley SNA B area.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland is currently in good ecological condition. Providing disturbance activities such as fire do not occur, the shrubland will continue to persist and improve, and provide valuable habitat for native birds, invertebrates and lizards.</p>
<p>Recommendation (Accept/Decline):</p> <p>This area is a good example of grey shrubland vegetation and is an important habitat for supporting a diverse and abundant invertebrate fauna, along with passerines that are critical for the maintenance of the eastern falcon. Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Gibbston Valley SNA C - F40C.

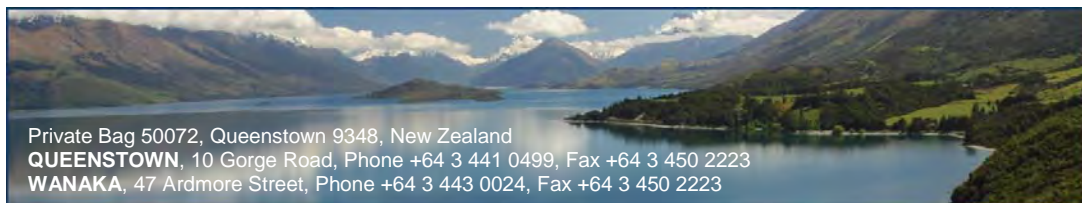


Please note the area shown is indicative and only for discussion purposes.



**Figure 2:** A photographic representation of the potential area of significance, i.e. '*Gibbston Valley SNA C*', on the Gibbston Valley Station property.





Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



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Significant Natural Area Assessment			
Project No: 11001/040		Property Name: <i>Gibbston Valley Station</i>	
		Ecologists: <i>Glenn Davis &amp; Rebecca Lawrence</i>	
		Site Name: <i>Gibbston Valley SNA D</i>	
		Date: 12 <sup>th</sup> October 2012	
Survey Undertaken By: <i>Glenn Davis, Ralph Henderson &amp; Rebecca Lawrence.</i>		Waypoint No (mid-point of survey area): <i>See attached plan for location.</i>	
LENZ Unit: N4.1d and N5.1c		Photo No.(s): <i>See attached.</i>	
Ecological District: <i>Remarkables</i>			
Topography: <i>Rocky outcrop</i>	Slope: <i>Steep</i>	Altitude: <i>350 masl</i>	Aspect: <i>North</i>
Threatened Environment Status: <i>Chronically Threatened &amp; Acutely Threatened</i>		Area Size (ha): 2.16	
Representativeness: LENZ unit N4.1d is understood to have originally supported shrubland communities and unit N5.1c is thought to have originally supported grassland. The indigenous plant assemblage found on the site is representative of the original environment including a stand of kowhai. The area does have a woody weed component including briar and exotic grasses.			
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	
<i>Pimelea aridula</i>		At Risk - Declining	
<i>Olearia lineata</i>		At Risk - Declining	
<i>Hebe pimeleoides</i> subsp. <i>faucicola</i>		At Risk - Naturally Uncommon	
Provide onsite description of vegetation: Vegetation type: the SNA D area of grey shrubland is largely dominated by matagouri ( <i>Discaria toumatou</i> ) and kowhai ( <i>Sophora microphylla</i> ), but also includes <i>Coprosma propinqua</i> , <i>Melycitus alpinus</i> , <i>Coprosma crassifolia</i> and <i>Muehlenbeckia complexa</i> . Briar ( <i>Rosa rubiginosa</i> ), a woody weed species, is also present within the shrubland community. Other plant species known to be present from previous reports completed on the area of interest include <i>Olearia lineata</i> , <i>Asplenium flabellifolium</i> , <i>Pimelea aridula</i> , <i>Poa colensoi</i> , <i>P. cita</i> , <i>Elymus</i> species, <i>Raoulia australis</i> , <i>R. hookerii</i> and <i>Hebe pimeleoides</i> subsp. <i>faucicola</i> .			
Degree of Modification: The SNA D area has been modified given the presence of the briar and exotic grasses, but the stand of kowhai provides a significant representation of the indigenous flora of the Wakatipu Lakes District.			

<p>Provide onsite description of fauna habitat:</p> <p>The shrubland will provide habitat for a variety of passerines, which support the eastern falcon, and the kowhai provide a food source for native birds such as the tui (<i>Prosthemadera novaeseelandiae</i>). The shrubland is also expected to support common species of lizards (e.g. McCann's skink and Common skink), as well as possibly the Cromwell gecko, Otago/Southland large gecko (Western Otago form) and the Southern mini gecko.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>The greatest risk to this vegetation and habitat are inadvertent fires and the invasion of exotic weeds, in particular briar and exotic grasses.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the N4.1d and N5.1c environments to have, respectively, 18.6 % and 2.7 % indigenous vegetation cover remaining, with 2.3 % and 0.8 % formally protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining):</p> <p>The SNA D area is self-sustaining but the size of the self-sustaining area could be improved with the control of briar.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The grey shrubland contains a diverse range of shrubland specific plant and invertebrate species.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>The vegetation is a good example of indigenous grey shrubland communities situated adjacent to the Kawarau River and is one of the few stands of kowhai present in the Gibbston Valley area. Much of the vegetation on the lower slopes of the Kawarau Gorge is now dominated by briar or thyme, therefore indigenous cover within this area is locally distinctive.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The SNA D area is connected to other areas of grey shrubland throughout the Gibbston Valley.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>Under the current management the shrubland is expected to be self-sustaining. However, weed control for briar would be beneficial to maintaining even greater ecological integrity and processes in the SNA D area.</p>
<p>Recommendation (Accept/Decline):</p> <p>Given the size and number of grey shrubland plant species surviving in the SNA D area, in particular the number of mature kowhai, despite the presence of exotic weeds means the area provides a sustainable area of indigenous vegetation that is chronically threatened. Based on the above considerations we recommend this area for inclusion as an area of Significant Indigenous Vegetation and Fauna Habitat.</p>



Figure 1: The area of potential significance - Gibbston Valley SNA D - F40D.



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

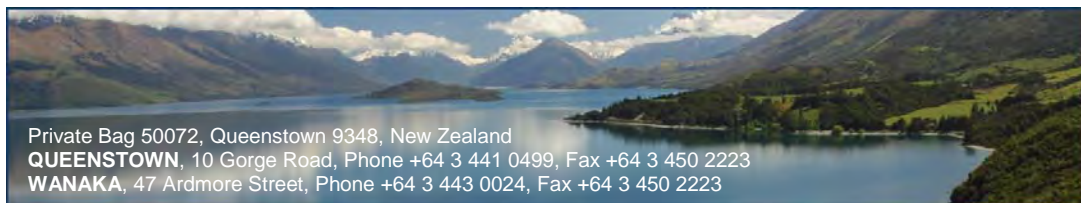


**Figure 2:** A photographic representation of the potential area of significance, i.e. '*Gibbston Valley SNA D*', on the Gibbston Valley Station property.





**Figure 3:** A photograph of the some of the kowhai present in the '*Gibbston Valley SNA D*' area, on the Gibbston Valley Station property.



Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223



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Significant Natural Area Assessment			
Project No:  11001/028	Property Name: <i>Coronet Peak Station/QLDC</i> <b>NOTE: The proposed SNA's on Coronet Peak Station are now within QEII covenant and will not be taken forward. However, two areas within G28A_6 &amp; 7 are on QLDC owned land and are proposed for inclusion as SNAs.</b> Site Name: <i>Beech Forest Remnants SNA A</i> <i>(Station Creek, McMillan Creek, Bush Creek, Sawpit Gully, Foxes Gully/Arrow River)</i>		Ecologist: <i>Simon Beale</i>  Date: 15 May 2012
Survey Undertaken By: <i>Simon Beale and Glenn Davis</i>		Waypoint No (mid point of survey area): <i>F41</i> <i>Station Creek - E: 2173500 N:5576700</i> <i>Bush Creek - E: 2176600 N:5578700</i> <i>Sawpit Gully - E: 2180600 N:5580000</i>	
LENZ Unit: <i>Q2.2a, Q1.1c, N4.1d.</i>		Photo No.(s): <i>See attached.</i>	
Ecological District: <i>Shotover Ecological District</i>			
Topography: <i>Steep to very steep forest clad hill slopes and incised gullies with rocky outcrops and scarps within headwaters.</i>	Slope: <i>&gt;20°</i>	Altitude: <i>500 – 1000 m asl</i>	Aspect: <i>South east to south</i>
Threatened Environment Status:  <i>Critically Underprotected, Underprotected &amp; Chronically Threatened.</i>		Natural Area Size (ha): <i>12.74</i>	
Representativeness: Mountain beech forest remnants exhibiting high degree of representativeness. Only remaining areas of beech forest on Coronet Peak Station and within the Shotover Ecological District surviving Polynesian and European fires.			
Are there threatened species expected 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	
<i>Acanthisitta chloris</i> (Rifleman)		At Risk - Declining	
Provide onsite description of vegetation:			
Vegetation types: Mountain beech forest and valley floor <i>Olearia odorata</i> –matagouri shrubland towards headwaters of Bush Creek. Structural Classes: Forest and shrubland  Forest canopy: Mountain beech, red beech. Forest understory: Wineberry, marbleleaf, broadleaf ( <i>Griselinea littoralis</i> ), kohuhu, fuchsia, pepperwood, <i>Olearia arborescens</i> , <i>Helichrysum aggregatum</i> , <i>Gaultheria antipoda</i> , <i>Coprosma ciliate</i> .			



<p>Forest ground cover: Prickly shield fern, <i>Blechnum fluvatile</i>, <i>Blechnum penna-marina</i>, <i>Microsorium pustulatum</i>.</p> <p>Forest Climbers/Vines: <i>Rubus schmidelioides</i>.</p> <p>Shrubland canopy: <i>Olearia odorata</i>, <i>Discaria toumatou</i> (matagouri).</p> <p>Shrubland sub-dominants: <i>Coprosma propinqua</i>, <i>Coprosma rugosa</i>.</p> <p>Shrubland Ground Cover: <i>Blechnum penna-marina</i>, mountain kiokio, <i>Coraria sarmentosa</i>, bracken, short tussock, tussock hawkweed.</p> <p>Shrubland Climbers/Vines: <i>Rubus schmidelioides</i>, <i>Meuhlenbeckia australis</i>, <i>Muehlenbeckia complexa</i></p>
<p>Degree of Modification: The surrounding areas have experienced frequent disturbance events in the past (e.g. fire).</p>
<p>Degree of Recruitment: Regeneration of mountain beech seedlings evident around forest edges and forest gaps created by wind throw and snow damage.</p>
<p>Overall Health: The beech forests are of variable health with range of age classes represented. Areas dominated by older age trees showing signs of die back and prone to localised wind and snow damage.</p>
<p>Provide onsite description fauna habitat – species recorded or expected to be present: The forest provides suitable habitat for insectivorous birds (rifleman, fantail, grey warbler, tomtit), while the forest edges provide favorable hunting opportunities for Eastern falcon and Australasian harrier.</p> <p>Areas of shrubland in Bush Creek provide high quality habitat for lizards such as Cromwell gecko and are important habitat (refugia and food supply) for a range of invertebrates including various beetle and moth species.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Extensive areas of Douglas fir plantings on front faces of Mt Dewar, Coronet Peak and Mt Magazine. Wilding spread evident across lower slopes of Coronet Peak and parts of the Bush Creek catchment. Cattle grazing in head of Bush Creek causing damage to forest margins.</p>
<p>Rarity: The beech forest is uncommon in the Shotover Ecological District but is regionally significant due to its disjunct and limited distribution in Otago away from the Main Divide. The combination of forest and shrubland and varied landforms provide suitable habitat for 'at risk' avifauna (e.g. the eastern falcon).</p>
<p>Area Shape and Area/Edge Ratio: The forest remnants are typically convoluted in shape and have low area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The diversity of plants within the forest remnants is low. The forests generally occupy an area of variable terrain and aspect within headwater systems over an altitudinal range of approximately 500 metres.</p>

<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Distinctive in terms of the discrete nature of the beech forests within a landscape dominated by exotic and indigenous grassland communities. Occasional small trees of Hall's totara present within forest interior.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>Low degree of connectivity between forest communities due to disjunct nature of their locations. Moderate degree of connectivity between valley floor shrubland communities and sub-alpine <i>Dracophyllum</i>/snow tussock grassland communities especially in Bush Creek.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The absence of further human induced disturbances such as fire and cattle grazing in combination with control of wilding conifers will allow a more expansive forest and shrubland cover to develop within these catchments.</p>
<p>Recommendation (Accept/Decline):</p> <p>We consider these areas should be designated as a Significant Indigenous Vegetation and Fauna Habitat in view of the following ecological attributes:</p> <ul style="list-style-type: none"> <li>• The high degree of representatives of the forest remnants attributed to their rarity in the Shotover Ecological District;</li> <li>• The subtle vegetation patterns;</li> <li>• The variety of habitats the area affords to indigenous fauna, providing suitable habitat for 'at risk' species, e.g. NZ Falcon and rifleman.</li> </ul>
<p>Further Comments:</p> <p>Definition of the forest remnants and Bush Creek shrubland required on the ground in conjunction with Coronet Peak Station Limited.</p> <p>Recommendation: To liaise with the Coronet Peak Station Limited to determine the effects of the Significant Indigenous Vegetation and Fauna Habitat from a financial/farming perspective.</p>



Figure 1: The area of potential significance - Beech Forest Remnants SNA A - G28A\_6-7.



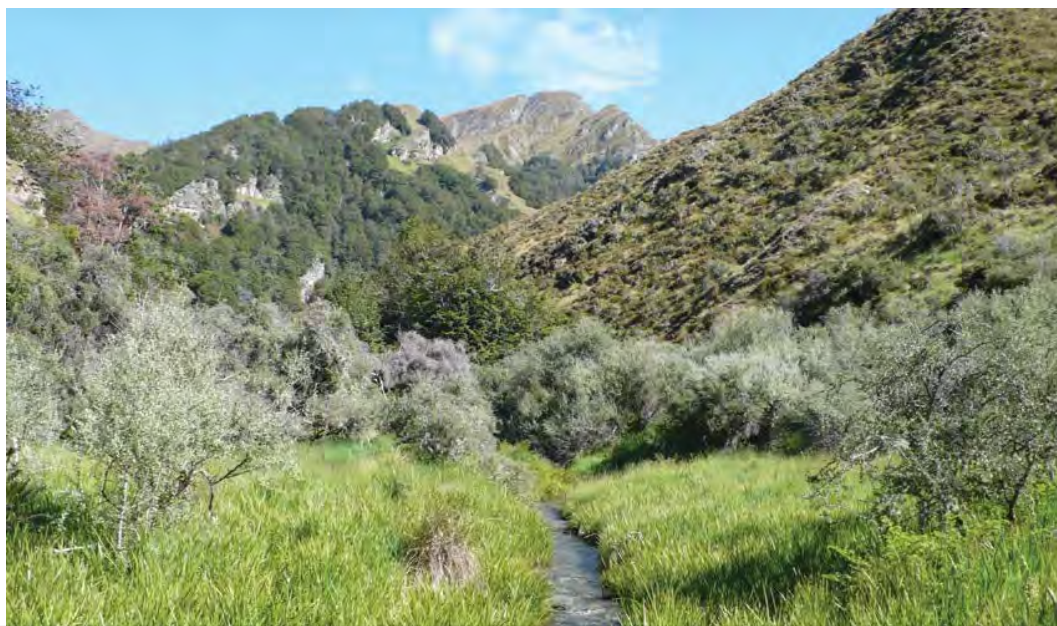
Please note the area shown is indicative and only for discussion purposes.





**Figure 2.** Mountain beech forest within gully of Station Creek below Coronet Peak ski field.





**Figure 3.** Extensive *Olearia odorata* shrubland and mountain beech forest towards head of Bush Creek.



Significant Natural Area Assessment			
Project No:  11001/033	Property Name: <i>Ben Lomond Station</i> Site Name: <i>Shotover River SNA A and B</i>	Ecologist: <i>Simon Beale</i>  Date: <i>12 April 2013</i>	
Survey Undertaken By: <i>Simon Beale and Glenn Davis</i>		<u>Waypoint No (mid-point between SNA A and B):</u> <i>E41 - E: 2168000, N:5581500</i>	
LENZ Units: Q2.2a Ecological District: <i>Shotover</i>		Photo No.(s): <i>See attached.</i>	
Topography: <i>Steep hillslopes above the Shotover River opposite Pinchers Bluff and Devils Elbow.</i>	Slope: ( $>20^{\circ}$ )	Altitude: <i>450 – 700 m asl</i>	Aspect: : <i>E - SE</i>
Threatened Environment Status: <i>Critically Underprotected</i>		Area Size (ha): <i>SNA A: 14.59; SNA B: 26.95.</i>	
Representativeness: Scrub/shrubland communities form dominant cover on steep hillslopes and prominent gullies and terrace faces. Vegetation pattern reflects succession towards a scrub/shrubland dominated by matagouri, mingimingi and <i>Olearia</i> spp.			
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.	
Provide onsite description of vegetation:			
Vegetation types:			
<ul style="list-style-type: none"> <li>Mixed mingimingi (<i>Coprosma propinqua</i>)–matagouri–<i>Olearia</i> spp. shrubland.</li> </ul>			
Structural Classes: Scrub, shrubland and mixed pasture/short tussock grassland			
Shrubland Canopy: mingimingi–matagouri– <i>Olearia</i> spp. ( <i>Olearia odorata</i> & <i>Olearia bullata</i> ).			
Degree of Modification: The area has experienced disturbance events in the past (e.g. fire).			



<p>Degree of Recruitment: Regeneration of shrubland communities evident on these steeper areas and close to the Shotover River.</p> <p>Overall Health: Some of the patches of shrubland with a closed canopy. Sweet briar and hawthorn present as a sub-dominant component of shrubland.</p>
<p>Provide onsite description of fauna habitat: The grey shrubland provides quality habitat for insectivorous birds (fantail and grey warbler), while the mix of terrain and shrubland-grassland and creek bed margins provides favourable hunting opportunities for NZ falcon and Australasian harrier.</p> <p>The scrub and shrubland vegetation cover in combination with rocky terrain provides potentially high quality habitat for lizards such as the Common Skink, Common Gecko and McCann's Skink.</p> <p>The shrubland is likely to provide important habitat (refugia and food supply) for a range of invertebrates including various beetle and moth species.</p>
<p>Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): The threats to the shrubland are moderate with wilding coniferous and broadleaved weed species (i.e. briar and sycamore) present in the wider area on both sides of the Shotover River.</p>
<p>Rarity: The threatened environment classification identifies the Q2.2a environment to have 39.92% indigenous vegetation cover remaining with 5.07% protected.</p> <p>The threatened plant species <i>Leonohebe cupressoides</i> and at risk plant species <i>Coprosma intertexta</i> have been recorded in the nearby lower Deep Creek catchment, and may be present within the proposed Shotover River SNA A and B.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): Area of shrubland of variable canopy cover. Low to moderate area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The area contains an assemblage of shrubland and grassland species. The variability of species morphology (colour, texture and form) contribute to the vegetation pattern.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Distinctive in terms of the extensiveness of the shrubland cover on steep terrain and within the gullies situated within both areas.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): SNA A and B are isolated from other extensive areas of shrubland within this reach of the Shotover River.</p>

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

The absence of further human induced disturbances (e.g. fire) will allow a more diverse shrubland cover to develop in these discrete areas.

Recommendation (Accept/Decline):

We consider areas SNA A and B should be designated as SNA's in view of the following ecological attributes:

- Extensive shrubland vegetation with a good degree of diversity and canopy closure;
- Likely to provide high quality habitat for lizards such as the Common Skink, Common Gecko and McCann's Skink;
- The variety of habitats the area affords to indigenous fauna, providing suitable habitat for 'at risk' species, e.g. the eastern NZ Falcon.



Figure 1a: The area of potential significance - 'Shotover River SNA A' - G33A.

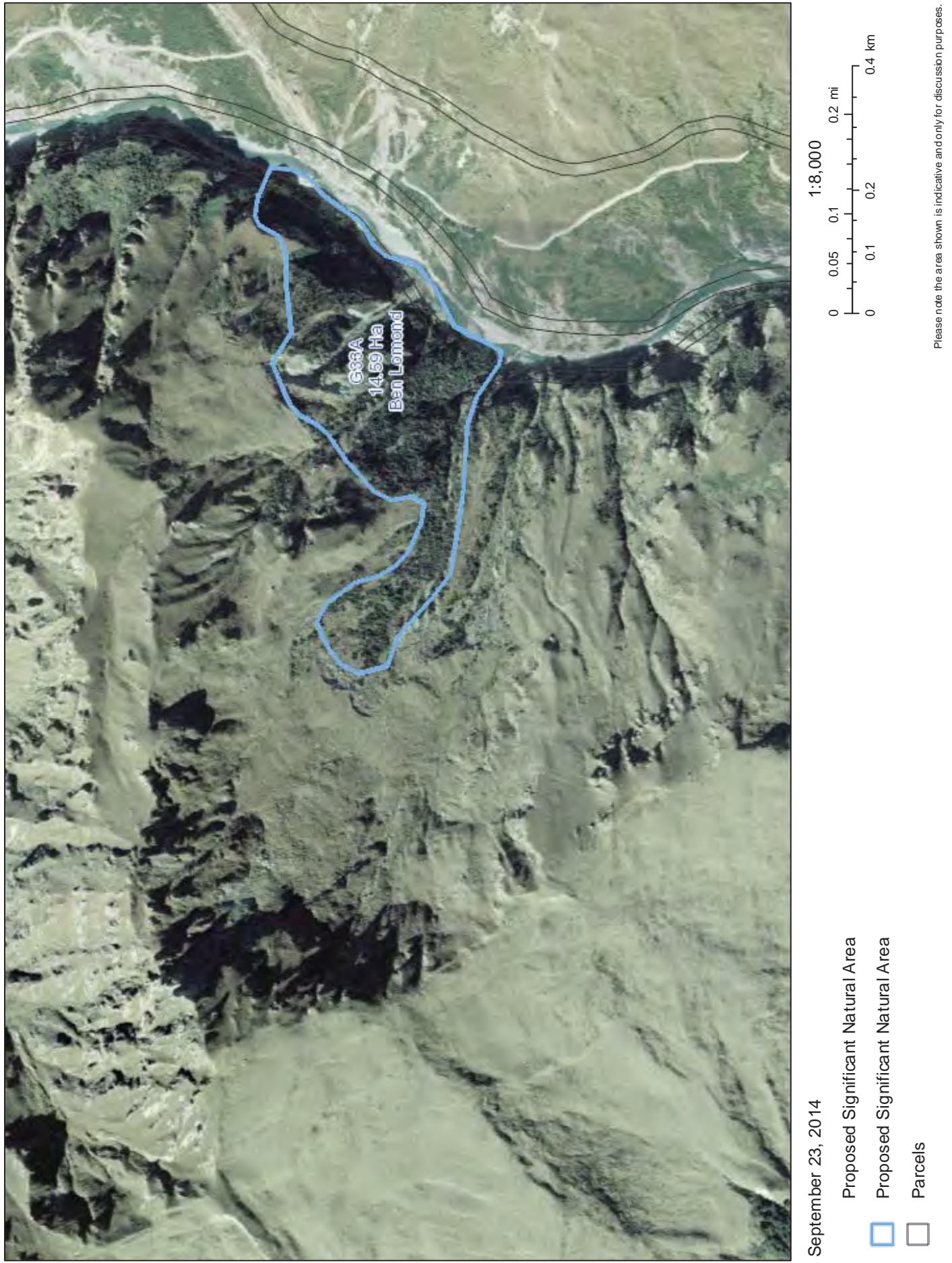
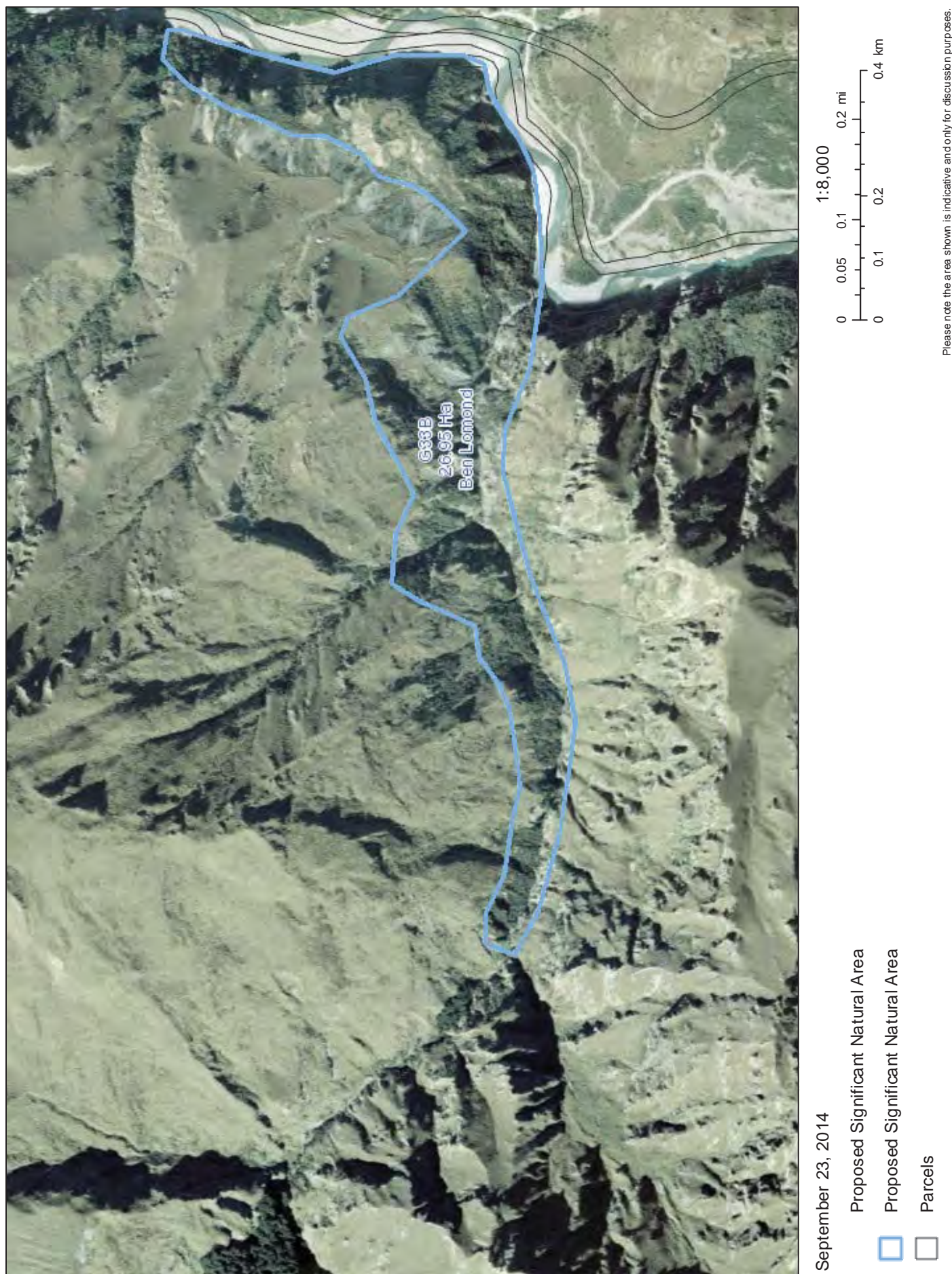
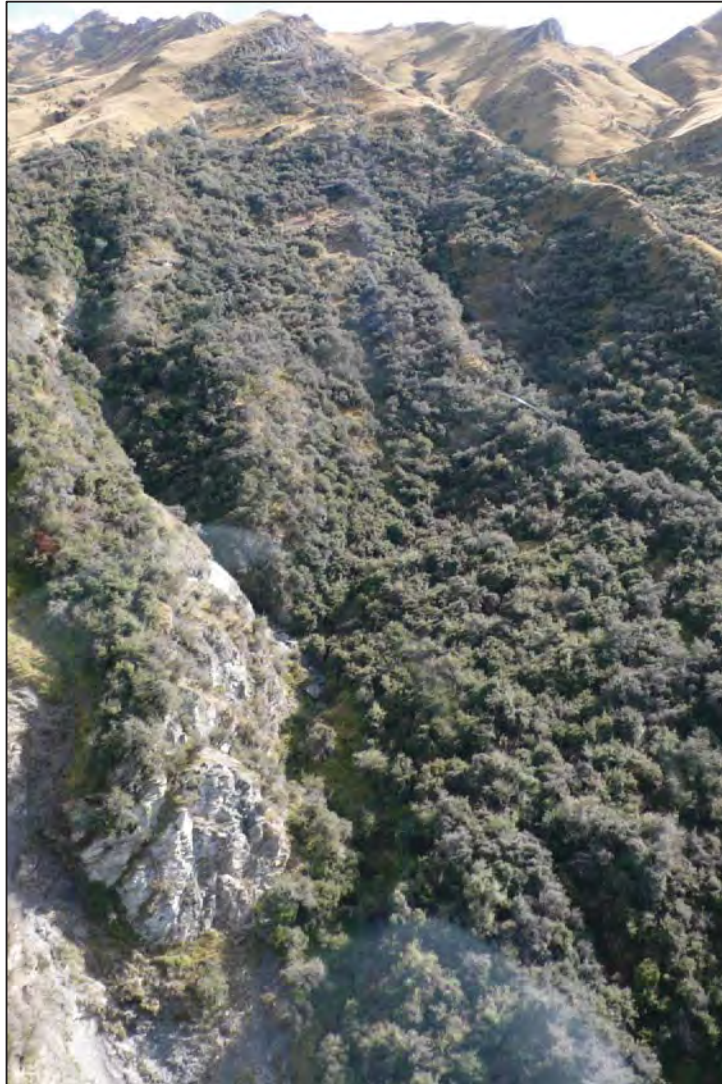




Figure 1b: The area of potential significance - 'Shotover River SNA B' - G33B.







**Figure 2:** Aerial view of mingimingi dominated shrubland within SNA A.

Significant Natural Area Assessment			
Project No: <i>11001/033</i>	Property Name: <i>Ben Lomond Station.</i> Site Name: <i>Stoney Creek SNA C</i>	Ecologist: <i>Simon Beale.</i> Date: <i>12 April 2013</i>	
Survey Undertaken By: <i>Simon Beale and Glenn Davis.</i>		Waypoint No (mid-point of survey area): <i>E41</i> <i>E: 2162000</i> <i>N:5584500</i>	
LENZ Units: <i>Predominately Q1.1c, small area in P5.1e.</i>		Photo No.(s): <i>See attached.</i>	
Ecological District: <i>Shotover</i>			
Topography: <i>Steep to very steep hillslopes above Stoney Creek. Numerous rocky spurs, slabs, bluffs and outcrops.</i>	Slope: <i>(&gt;30°)</i>	Altitude: <i>600 – 1000 m asl</i>	Aspect: <i>N - NNE</i>
Threatened Environment Status: <i>Underprotected and Less Reduced &amp; Better Protected.</i>		Area Size (ha): <i>83.06</i>	
Representativeness: <i>Extensive manuka scrub &amp; shrubland community and mountain beech forest in mid reaches of Stoney Creek. Vegetation pattern reflects succession towards mountain beech forest.</i>			
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	
<i>Nestor notabilis</i> (Kea)		Threatened - Nationally Endangered	
Provide onsite description of vegetation:			
Vegetation types: <ul style="list-style-type: none"> <li>Manuka shrubland</li> <li>Mountain beech forest</li> <li>Short tussock grassland</li> </ul>			
Structural Classes: Forest, scrub, shrubland and grassland Shrubland Canopy: Manuka. Shrubland sub-dominants: Minigmingi ( <i>Coprosma propinqua</i> ), <i>Hebe salicifolia</i> , <i>Olearia avicennifolia</i> , <i>Carmichealia</i> spp., <i>Hebe odora</i> , Inaka ( <i>Dracophyllum longifolium</i> ), Mountain flax ( <i>Phormium cookianum</i> ).			



<p>Degree of Modification: The area has experienced disturbance events in the past (e.g. fire).</p> <p>Degree of Recruitment: Extensive regeneration of forest and shrubland communities evident across the slopes above Stoney Creek.</p> <p>Overall Health: Some of the larger patches of mountain beech forest and manuka shrubland have a closed canopy.</p>
<p>Provide onsite description of fauna habitat: The manuka shrubland and mixed forest-shrubland-grassland mosaic provides quality habitat for insectivorous birds (fantail, grey warbler, tomtit) and favourable hunting opportunities for NZ falcon and Australasian harrier.</p> <p>The diversity of vegetation cover and rocky terrain and northerly aspect provides potentially high quality habitat for lizards such the Common Skink, Common Gecko and McCann's Skink.</p> <p>The shrubland is likely to provide important habitat (refugia and food supply) for a range of invertebrates including various beetle and moth species.</p>
<p>Threats/Risks to vegetation and flora/fauna species? (Weeds, predators, current management practices): The threats to the shrubland and forest are low. Invasive coniferous species are absent.</p>
<p>Rarity: The threatened environment classification identifies the Q1.1c environment to have 91.23% indigenous vegetation cover remaining with 19.26% protected.</p>
<p>Area Size and Shape (degree to which the area may be or is becoming self-sustaining): Relatively large area of open forest and shrubland of variable canopy cover. Low to moderate area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The area contains an assemblage of shrubland species that are sub-dominant to the manuka cover. Intervening areas of mountain beech forest, short tussock and rocky terrain vegetation contribute to the vegetation pattern.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Distinctive in terms of the extensiveness of the shrubland cover on steep rocky terrain.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): Good degree of connectivity with adjacent areas of forest and shrublands within the mid reaches of the Stoney Creek catchment.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The absence of further human induced disturbances (fire) will allow a more expansive forest</p>

and shrubland cover to develop across the lower northern slopes of Mount Gilbert through successional processes.

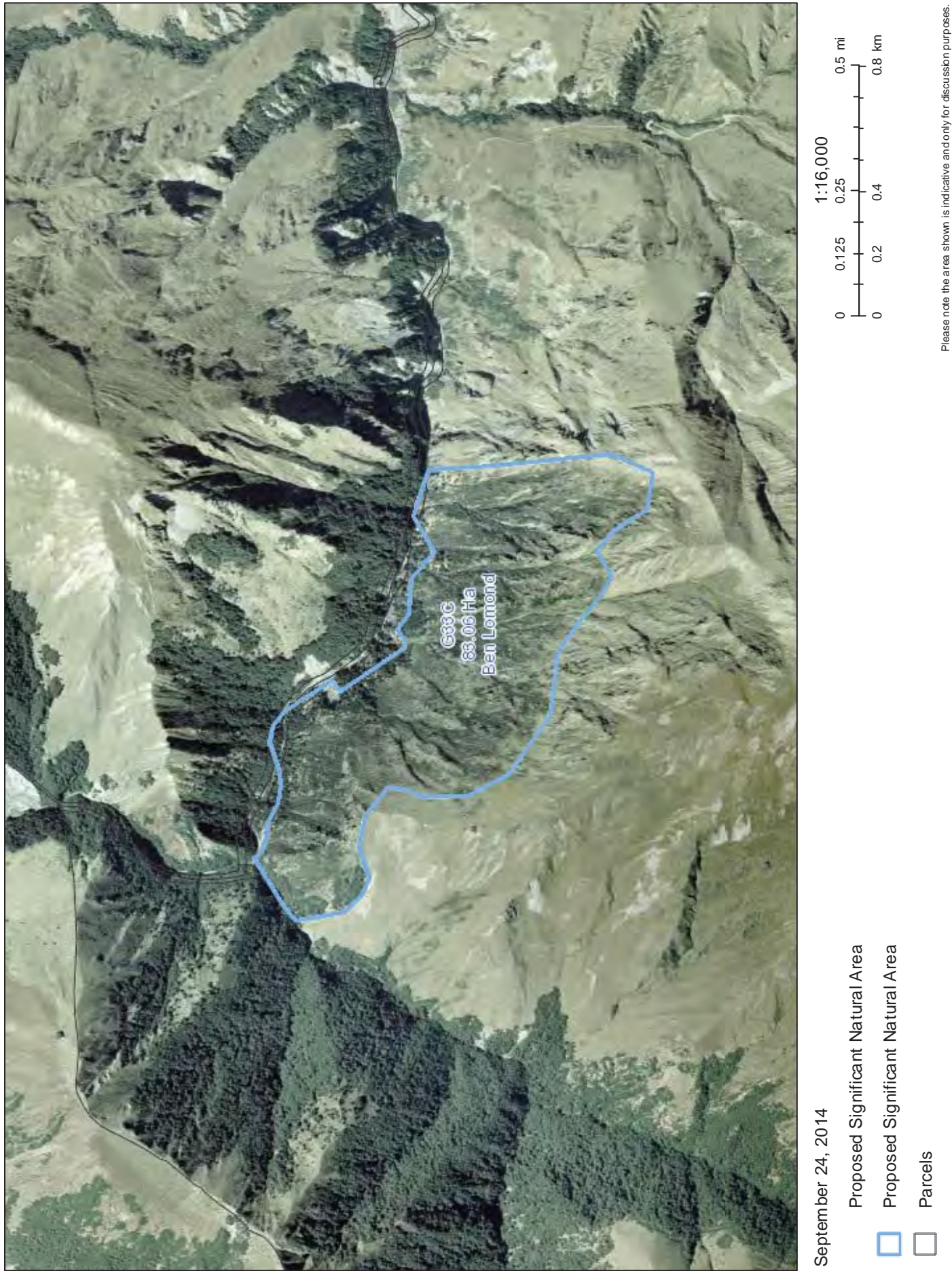
Recommendation (Accept/Decline):

We consider this area should be designated as a SNA in view of the following ecological attributes:

- Extensive shrubland vegetation on steep rocky terrain;
- Likely to provide high quality habitat for lizards such as the Common Skink, Common Gecko and McCann's Skink;
- The variety of habitats the area affords to indigenous fauna, providing suitable habitat for 'at risk' and threatened species, e.g. the NZ Falcon and Kea respectively.



Figure 1: The area of potential significance - Stoney Creek SNA C - G33C







**Figure 2:** Aerial view of shrubland looking in a westward direction towards Mount Butement

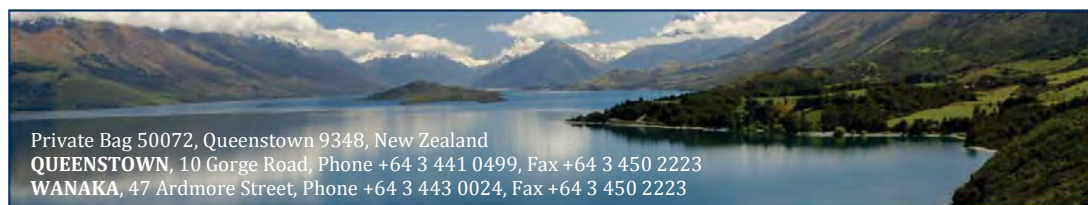


**Figure 3:** Aerial view showing variable manuka cover across rocky spurs and bluffs with patch of mountain beech forest in upper centre of photo.





**Figure 4:** Downstream view of shrubland showing the prominence of the rocky spurs on the higher slopes and overall steepness of the terrain.



Private Bag 50072, Queenstown 9348, New Zealand  
**QUEENSTOWN**, 10 Gorge Road, Phone +64 3 441 0499, Fax +64 3 450 2223  
**WANAKA**, 47 Ardmore Street, Phone +64 3 443 0024, Fax +64 3 450 2223

Significant Natural Area Assessment			
Project No:  11001/034	Property Name: <i>Alphaburn Station</i>  Site Name: <i>Alphaburn SNA A</i>	Ecologist: <i>Simon Beale</i> Date: <i>9 May 2015</i>	
Survey Undertaken By: <i>Simon Beale and Rebecca Teele.</i> Survey undertaken by helicopter.		Waypoint No (mid-point of survey area): <i>NZTM: 1285700E 5045125N</i>	
LENZ Unit: <i>Q2.2a, Q2.2b</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Steep sided confined gully that drains directly into Lake Wanaka.</i>	Slope: <i>(Generally &gt;20°)</i>	Altitude: <i>400 – 800 m asl</i>	Aspect: <i>Variable</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>47.68</i>	
Representativeness: Montane and sub-alpine shrubland, subalpine short tussockland - moderate degree of representativeness.			
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	
Provide onsite description of vegetation: Vegetation type: Kanuka ( <i>Kunzea erocoides</i> ), mingimingi ( <i>Coprosma propinqua</i> )-matagouri-kohuhu-broadleaf-manuka/bracken shrubland. Sub-dominant shrubs likely to include <i>Coprosma rugosa</i> , <i>Olearia odorata</i> , karamu ( <i>Coprosma lucida</i> ) and koromiko ( <i>Hebe salicifolia</i> ) along with varying cover of broadleaved trees of varying age such as kohuhu ( <i>Pittosporum tenuifolium</i> ), broadleaf ( <i>Griselinia littoralis</i> ), lancewood ( <i>Pseudopanax crassifolius</i> ) and mountain ribbonwood ( <i>Hoheria lyalli</i> ).			
Structural Classes: Shrubland. Shrubland Canopy: Kanuka/mingimingi-matagouri-manuka & kohuhu-broadleaf-mingimingi-matagouri-manuka.			
Degree of Modification: The area would have experienced historical disturbance (fire) but does not appear to have not been disturbed in recent times due to presence of advanced successional shrubland vegetation.			



<p>Degree of Recruitment: Broadleaf species (kohuhu, broadleaf and lancewood) evident within shrubland.</p> <p>Overall Health: The shrubland appears to be in good health by virtue of the relatively dense nature of the cover and closed canopies in many areas.</p>
<p>Provide onsite description fauna habitat – species recorded or expected to be present: Shrubland provides suitable habitat for fructivorous birds (tui, bellbird) and insectivorous birds (tomtit, fantail, grey warbler) and predatory Australasian harrier and Eastern falcon.</p> <p>The shrublands provide high quality feeding habitat for NZ (Eastern) falcon.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices):</p> <p>Fire is the greatest threat to the integrity of the indigenous vegetation cover.</p>
<p>Rarity:</p> <p>The threatened environment classification identifies the Q2.2a and Q2.2b environments to have 39.92% and 44.68% indigenous vegetation cover remaining with 5.07% and 1.96% protected, respectively.</p> <p>The shrubland is not uncommon in the Wanaka Ecological District. The vegetation and steep terrain likely to provide suitable habitat for threatened avifauna (NZ Falcon).</p>
<p>Area Shape and Area/Edge Ratio:</p> <p>The location of the shrublands within confined a confined steep sided gully ensures self-sustaining/successional processes despite the high area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?):</p> <p>The shrubland occurs over wide altitudinal range with varying aspects and moisture gradients. The area contains diverse assemblages of shrubland mosaics that contribute to the vegetation pattern.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?):</p> <p>Highly distinctive in terms of the varied vegetation types associated with gully, steep hill slopes and numerous bluffs and rocky outcrops.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?):</p> <p>The shrubland exhibits low to moderate degree of connectivity with other gully systems due to intervening areas of semi-improved pasture and bracken. There is a high degree of connectivity with the conservation estate that encompasses the upper part of the catchment.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?):</p> <p>The shrubland appears to be in good condition. Regeneration and succession is evident in the shrublands with broadleaved trees such mature kohuhu and broadleaf occurring in the gully and across adjacent hill slopes amongst the bluffs.</p>

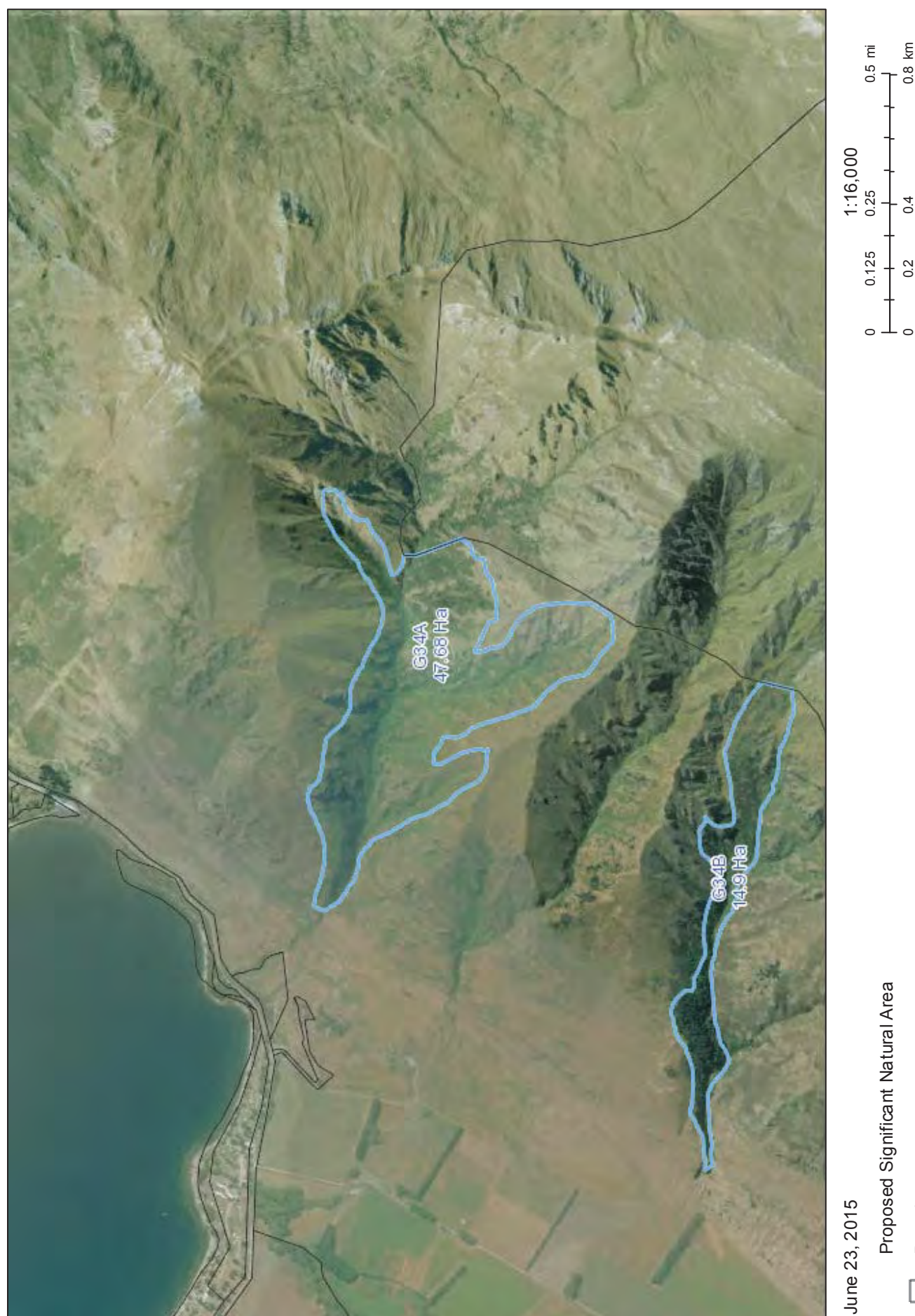
Recommendation (Accept/~~Decline~~):

We consider these areas should be designated as SNAs in view of the following ecological attributes:

- The diversity of vegetation types and landform features;
- The floristic diversity of the shrublands;
- The altitudinal range and vegetation sequences;
- The variety of habitats the area affords to indigenous fauna, providing suitable habitat for one threatened species of native bird;
- The good condition of the shrubland vegetation with closed canopies and regeneration and succession processes evident.



Figure 1: The area of potential significance - Alphaburn SNA A - G34A

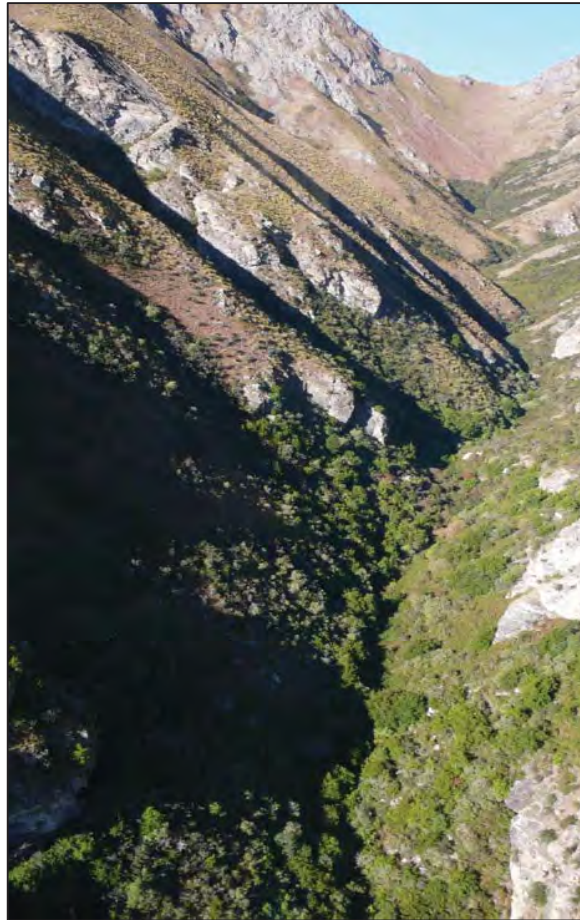


Please note the area shown is indicative and only for discussion purposes.



**Figure 2:** Extensive shrubland cover within the gully and across steep hill slopes amongst numerous bluffs.





**Figure 3:** View of shrubland cover within the gully.

Significant Natural Area Assessment			
Project No:  <i>11001/034</i>	Property Name: <i>Alphaburn Station</i>  Site Name: <i>Alphaburn SNA B</i>	Ecologist: <i>Simon Beale</i> Date: <i>11 May 2015</i>	
Survey Undertaken By: <i>Simon Beale and Rebecca Teele</i> Survey undertaken by helicopter.		Waypoint No (mid-point of survey area): <i>NZTM: 1285240E 5044590N</i>	
LENZ Unit: <i>Q2.2a, Q2.2b</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Gully that forms part of Alpha Burn catchment.</i>	Slope: <i>(Generally &gt;10°)</i>	Altitude: <i>600 – 800 m asl</i>	Aspect: <i>Variable</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>14.9</i>	
Representativeness: <i>Montane shrubland - high degree of representativeness.</i>			
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	
<p>Provide onsite description of vegetation:  Vegetation types:  Kohuhu (<i>Pittosporum tenuifolium</i>)-broadleaf (<i>Griselinia littoralis</i>) shrubland merging with mingimingi (<i>Coprosma propinqua</i>)-matagouri/bracken shrubland higher up the gully.  Sub-dominant shrubs in the kohuhu-broadleaf shrubland are likely to include wineberry (<i>Aristotelia serrata</i>), lancewood (<i>Pseudopanax crassifolius</i>), karamu (<i>Coprosma lucida</i>), koromiko (<i>Hebe salicifolia</i>) and mountain ribbonwood (<i>Hoheria lyallii</i>).  Sub-dominant shrubs in the mingimingi shrubland are likely to include <i>Coprosma rugosa</i>, <i>Olearia odorata</i>, and koromiko (<i>Hebe salicifolia</i>).</p> <p>Structural Classes: Shrubland.  Shrubland Canopy: Kohuhu-broadleaf &amp; mingimingi-matagouri.</p> <p>Degree of Modification: The area would have experienced historical disturbance (fire) but does not appear to have not been disturbed in recent times due to presence of advanced successional shrubland vegetation.</p>			



<p>Degree of Recruitment: Broadleaf species (kohuhu, broadleaf and lancewood) dominant shrubland at lower elevations.</p> <p>Overall Health: The shrubland appears to be in good health by virtue of the relatively dense nature of the cover and closed canopies especially within the gully proper.</p>
<p>Provide onsite description fauna habitat – species recorded or expected to be present: Shrubland provides suitable habitat for fructivorous birds (tui, bellbird) and insectivorous birds (tomtit, fantail, grey warbler) and predatory Australasian harrier and Eastern falcon.</p> <p>The shrublands provide high quality feeding habitat for NZ (Eastern) falcon.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Fire is the greatest threat to the integrity of the indigenous vegetation cover.</p>
<p>Rarity: The threatened environment classification identifies the Q2.2a and Q2.2b environments to have 39.92% and 44.68% indigenous vegetation cover remaining with 5.07% and 1.96% protected, respectively.</p> <p>The shrubland is not uncommon in the Wanaka Ecological District. The vegetation and steep terrain likely to provide suitable habitat for threatened avifauna (NZ Falcon).</p>
<p>Area Shape and Area/Edge Ratio: The location of the shrublands within a confined gully ensures self-sustaining/successional processes despite the high area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The shrubland occurs over wide altitudinal range and contains a diversity of species and shrubland mosaics that contribute to the vegetation pattern.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Highly distinctive in terms of the varied vegetation types associated with gully system encompassing a gully and some bluffs and rocky outcrops.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The shrubland exhibits low to moderate degree of connectivity with other gully systems due to intervening areas of semi-improved pasture and bracken. There is a high degree of connectivity with the conservation estate that encompasses the upper part of the catchment.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The shrubland appears to be in good condition. Regeneration and succession is evident in the shrublands with broadleaved trees such mature kohuhu and broadleaf prevalent in the gully.</p>

Recommendation (Accept/~~Decline~~):

We consider these areas should be designated as SNAs in view of the following ecological attributes:

- The diversity of vegetation types and landform features;
- The floristic diversity of the shrublands;
- The altitudinal range and vegetation sequences;
- The variety of habitats the area affords to indigenous fauna, providing suitable habitat for one threatened species of native bird;
- The good condition of the shrubland vegetation with closed canopies and regeneration and succession processes evident.



Figure 1: The area of potential significance - Alphaburn SNA B - G34B



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



**Figure 2:** Extensive shrubland cover within broad gully and amongst bordering bluffs.



<b>Significant Natural Area Assessment</b>			
Project No:  <i>11001/034</i>	Property Name: <i>Alphaburn Station</i>  Site Name: <i>Alphaburn SNA C</i>	Ecologist: <i>Simon Beale</i> Date: <i>11 May 2015</i>	
Survey Undertaken By: <i>Simon Beale and Rebecca Teele</i> Survey undertaken by helicopter.		Waypoint No (mid-point of survey area): <i>NZTM: 1284870E 5044070N</i>	
LENZ Unit: <i>Q2.2a, Q2.2b</i>  Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Partially incised, steep sided gully in the mid reaches of the Alpha Burn.</i>	Slope: <i>(Generally &gt;20°)</i>	Altitude: <i>450 – 800 m asl</i>	Aspect: <i>Variable</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>10.15</i>	
Representativeness: <i>Montane shrubland - high degree of representativeness.</i>			
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	
<p>Provide onsite description of vegetation:  Vegetation types:  Mixed broadleaf (<i>Griselinia littoralis</i>)–kohuhu (<i>Pittosporum tenuifolium</i>)–mingimingi (<i>Coprosma propinqua</i>)–matagouri–bracken shrubland. Sub-dominant shrubs likely to include wineberry (<i>Aristotelia serrata</i>), lancewood (<i>Pseudopanax crassifolius</i>), mountain ribbonwood (<i>Hoheria lyalli</i>), <i>Coprosma rugosa</i>, <i>Olearia odorata</i>, karamu (<i>Coprosma lucida</i>) and koromiko (<i>Hebe salicifolia</i>).</p> <p>Structural Classes: Shrubland.  Shrubland Canopy: Broadleaf–kohuhu–mingimingi–matagouri/bracken shrubland</p> <p>Degree of Modification: The area would have experienced historical disturbance (fire) but does not appear to have not been disturbed in recent times due to presence of advanced successional shrubland vegetation.</p> <p>Degree of Recruitment: Broadleaf species (kohuhu and broadleaf) are a major component of the shrubland.</p>			



Overall Health: The shrubland appears to be in good health by virtue of the relatively dense nature of the cover and closed canopies in many areas.
<p>Provide onsite description fauna habitat – species recorded or expected to be present: Shrubland provides suitable habitat for fructivorous birds (tui, bellbird) and insectivorous birds (tomtit, fantail, grey warbler) and predatory Australasian harrier and Eastern falcon.</p> <p>The shrublands provide high quality feeding habitat for NZ (Eastern) falcon.</p>
<p>Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Fire is the greatest threat to the integrity of the indigenous vegetation cover.</p>
<p>Rarity: The threatened environment classification identifies the Q2.2a and Q2.2b environments to have 39.92% and 44.68% indigenous vegetation cover remaining with 5.07% and 1.96% protected, respectively.</p> <p>The shrubland is not uncommon in the Wanaka Ecological District. The vegetation and steep terrain likely to provide suitable habitat for threatened avifauna (NZ Falcon).</p>
<p>Area Shape and Area/Edge Ratio: The location of the shrublands within confined a confined steep sided gully ensures self-sustaining/successional processes despite the high area/edge ratios.</p>
<p>Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The shrubland occurs over wide altitudinal range with varying aspects and moisture gradients. The area contains diverse assemblages of shrubland mosaics that contribute to the vegetation pattern.</p>
<p>Distinctiveness/special ecological characteristics (unusual veg. &amp; landform features, distribution limits?): Highly distinctive in terms of the varied vegetation types associated with gully system encompassing incised main gully, steep hill slopes and numerous bluffs and rocky outcrops.</p>
<p>Connectivity (how is the site connected to surrounding communities/areas?): The shrubland exhibits low to moderate degree of connectivity with other gully systems due to intervening areas of semi-improved pasture and bracken. There is a high degree of connectivity with the conservation estate that encompasses the upper part of the Alpha Burn catchment.</p>
<p>Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The shrubland appears to be in good condition. Regeneration and succession is evident in the shrublands with broadleaved trees such mature kohuhu and broadleaf occurring in the gully proper and across adjacent bluffs and hillslopes.</p>

Recommendation (Accept/~~Decline~~):

We consider these areas should be designated as SNAs in view of the following ecological attributes:

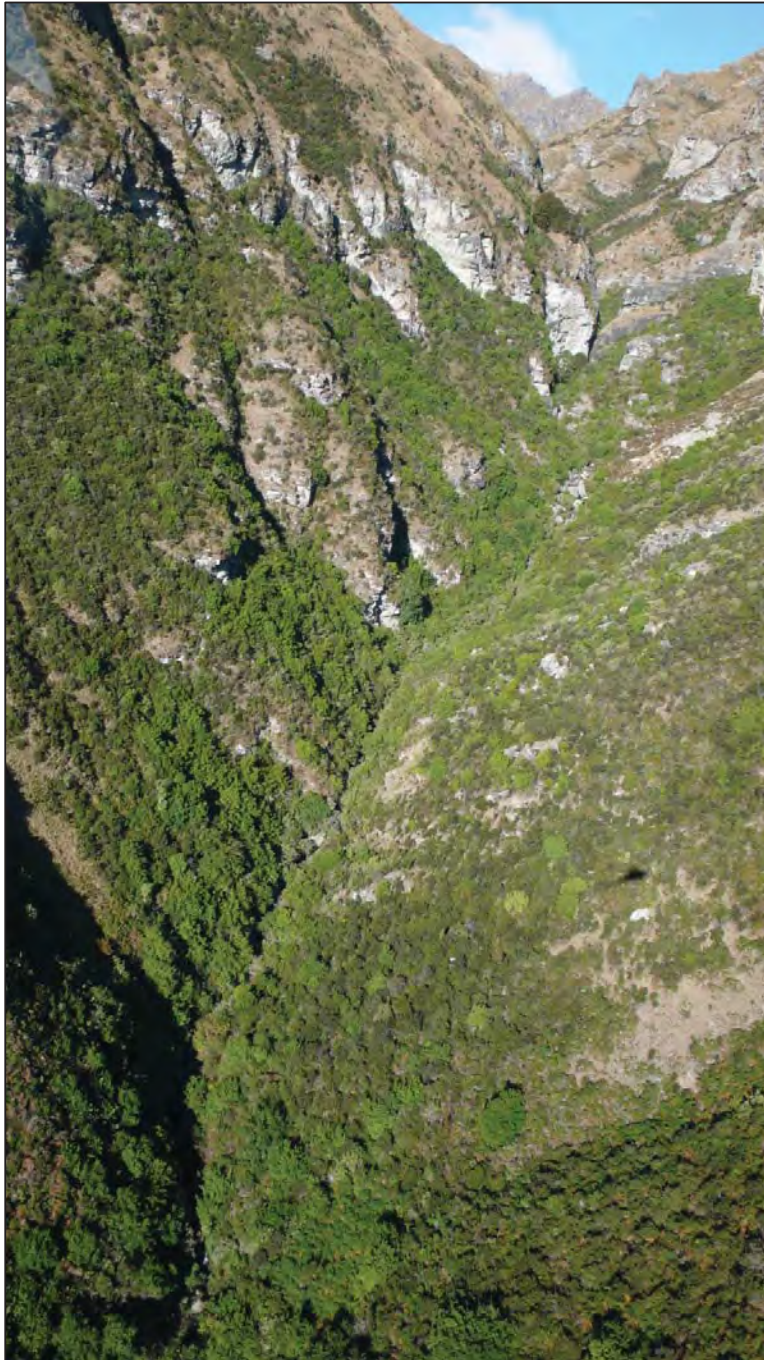
- The diversity of vegetation types and landform features;
- The floristic diversity of the shrublands;
- The altitudinal range and vegetation sequences;
- The variety of habitats the area affords to indigenous fauna, providing suitable habitat for one threatened species of native bird;
- The good condition of the shrubland vegetation with closed canopies and regeneration and succession processes evident.

Figure 1: The area of potential significance - Alphaburn SNA C - G34C



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





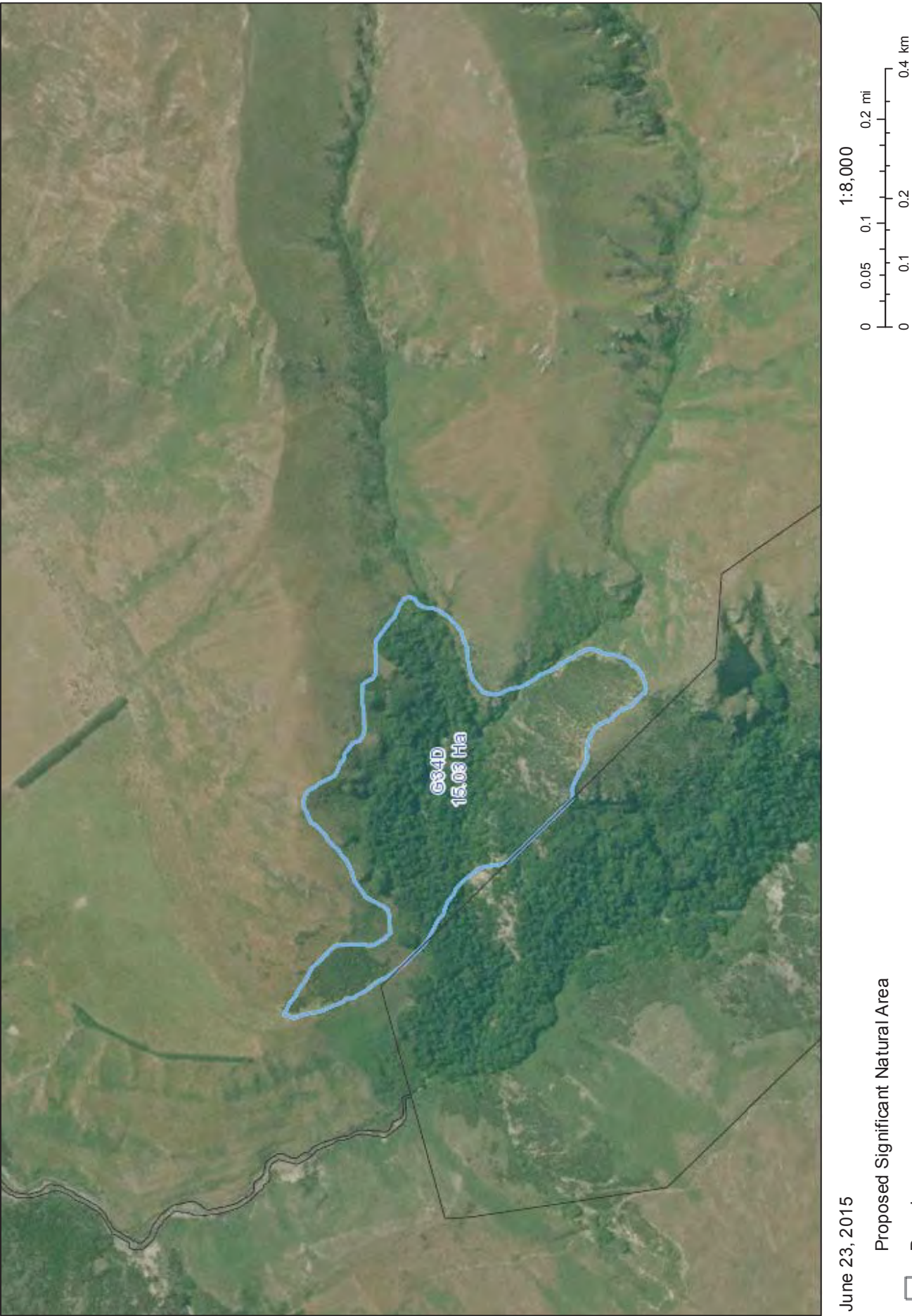
**Figure 2:** Extensive mixed shrubland cover within the gully and across adjacent moderate to steeply sloping hill slopes featuring numerous bluffs and rocky outcrops.

Significant Natural Area Assessment			
Project No: <i>11001/034</i>	Property Name: <i>Alphaburn Station</i> Site Name: <i>Alphaburn SNA D</i>	Ecologist: <i>Simon Beale</i> Date: <i>9 May 2015</i>	
Survey Undertaken By: <i>Simon Beale and Rebecca Teele</i> Survey undertaken by helicopter.		Waypoint No (mid-point of survey area): <i>NZTM: 1282160E 5041280N</i>	
LENZ Unit: <i>Q2.2a, Q2.2b</i> Ecological District: <i>Wanaka Ecological District</i>		Photo No.(s): <i>See below.</i>	
Topography: <i>Steep sided gullies and adjacent terrace.</i>	Slope: <i>(Generally &gt;20°)</i>	Altitude: <i>450 – 650 m asl</i>	Aspect: <i>Variable</i>
Threatened Environment Status: <i>Critically underprotected</i>		Area Size (ha): <i>15.03</i>	
Representativeness: Mixed beech forest, manuka forest, montane shrubland – moderate degree of representativeness.			
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	
Provide onsite description of vegetation: Vegetation types: <ul style="list-style-type: none"> <li>• Mature mountain-silver-red beech forest;</li> <li>• Manuka forest, scrub and shrubland;</li> <li>• Manuka–mingimingi (<i>Coprosma propinqua</i>) shrubland.</li> </ul> Structural Classes: Forest and shrubland. Forest Canopy: Mountain-silver-red beech Shrubbyland Canopy: Manuka/mingimingi–matagouri or mingimingi–matagouri  Degree of Modification: The remnant forest appears to be a refuge from the Polynesian fires while the adjacent slopes have been modified by pastoral practices including fire and grazing.  Degree of Recruitment: Regeneration of the forest evident around the margins where younger trees exist. Manuka dominated shrubland appears to be re-colonising hill slopes beyond the forest margins.			

Overall Health: The forest appears to be in good health by virtue of the degree of canopy closure.
Provide onsite description fauna habitat – species recorded or expected to be present: Beech forest and edges provide suitable habitat for insectivorous birds (rifleman, tomtit, fantail, grey warbler) along with long tailed cuckoo, morepork, Australasian harrier and Eastern falcon.
Threats to vegetation and flora/fauna species? (Weeds, predators, current management practices): Fire is the greatest threat to the integrity of the indigenous vegetation cover.
Rarity: The threatened environment classification identifies the Q2.2a and Q2.2b environments to have 39.92% and 44.68% indigenous vegetation cover remaining with 5.07% and 1.96% protected, respectively. The beech forest and shrubland is not uncommon in the Wanaka Ecological District. Both vegetation types and terrain likely to provide suitable habitat for threatened avifauna (NZ Falcon).
Area Shape and Area/Edge Ratio: The location of forest and shrublands within confined gullies ensure self-sustaining/successional processes despite the high area/edge ratios. The shrubland provides a degree of buffering to the margins of the beech forest remnant.
Diversity and Pattern (is there a notable range of species and habitats, aspects, sequences?): The forest/shrubland cover contributes to the vegetation pattern of the gullies.
Distinctiveness/special ecological characteristics (unusual veg. & landform features, distribution limits?): Distinctive in terms of the beech forest remnant and bordering manuka and grey shrubland.
Connectivity (how is the site connected to surrounding communities/areas?): The remnant area of beech forest and shrubland exhibits a high degree of connectivity with the beech forest in the Fern Burn, the latter lies within the conservation estate.
Sustainability (does the site possess the resilience to maintain its ecological integrity and processes?): The forest appears to be in good condition due to canopy closure and existence of younger age classes around the margins. Expansion of beech forest into shrubland is taking place.
Recommendation (Accept/ <del>Decline</del> ): We consider this area should be designated as a SNA in view of the following ecological attributes: <ul style="list-style-type: none"> <li>• The habitat the area affords to indigenous fauna, providing suitable habitat for two threatened species of native bird;</li> <li>• The good condition of the forest vegetation with closed canopy and regeneration processes evident.</li> </ul>



Figure 1: The area of potential significance - Alphaburn SNA D - G34D



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



**Figure 2:** Mature beech forest remnant occupying gully of Fern Burn tributary and manuka forest covering part of an adjacent terrace and hillslopes.