

TIMARU DISTRICT
SIGNIFICANT NATURAL AREAS
SURVEY

OPIHI RIVER GORGE



Report prepared for Timaru District Council by Mike Harding
November 2016

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner: Unallocated Crown Land (UCL)
Valuation References: n/a
Address: Land Information New Zealand (LINZ)
Location:..... On southwest side of Opihi River, between Fairlie and Raincliff.
Ecological Districts: Geraldine and Fairlie.
TDC Land Type:..... Hard Rock Hills and Downs.
Land Environments:..... N4.1c (lower slopes); Q2.1b (upper slopes).

ECOLOGICAL CONTEXT:

The property lies on the southwest side of the Opihi River Gorge, at the boundary between Timaru and Mackenzie districts. It comprises steep to very steep northeast-facing slopes along the gorge, at the northwest end of the Brothers Range. The underlying rock is non-schistose to schistose quartzofeldspathic sandstone (greywacke) interbedded with siltstone-mudstone (argillite) (Cox and Barrell, 2007). Exposed rocky slopes and steep rock bluffs are a prominent feature of the gorge.

The original vegetation of this area would have been predominantly podocarp-hardwood forest, with kowhai-dominated hardwood forest on rocky slopes. The indigenous fauna would probably have been significantly more numerous and diverse, with a greater range of birds, lizards and invertebrates than is presently found in the area.

This long land parcel is at the boundary between Fairlie and Geraldine ecological districts, within Pareora Ecological Region (McEwen, 1987). Lower slopes lie in Level IV Land Environment N4.1c and mid-upper slopes are within the Q2.1b land environment (Leathwick *et al*, 2003). Indigenous vegetation within Land Environment N4.1c is critically under-protected; and within Q2.1b is under-protected (Cieraad *et al*, 2015). There are no ‘originally rare ecosystems’ (Williams *et al*, 2007) at the site.

The Opihi River Gorge is listed a Special Site of Wildlife Interest (SSWI) and a Wetland of Ecological and Representative Importance (WERI). The part of the Opihi River Gorge within Mackenzie District is listed as SONS 79 (Opihi River) in Appendix 1 Mackenzie District Plan.

The Opihi River Gorge lies within the range of the South Canterbury population of long-tailed bat (*Chalinolobus tuberculatus* “South Island”) (O’Donnell, 2000). Long-tailed bat have a threat ranking of ‘nationally critical’ (O’Donnell *et al*, 2012). Rock bluffs and possibly the tall crack willow trees within the gorge are likely to provide suitable habitat for long-tailed bat. The extensive rocky slopes provide suitable habitat for lizards.

Indigenous vegetation on the property tends to be most dominant on steeper slopes with a more easterly aspect, where it has presumably been protected from fire. At other locations the vegetation is scrub dominated by introduced broom, or exposed rock. Areas of intact indigenous vegetation represent a dry-habitat forest type that is now extremely uncommon and supports a number of threatened plant species.

SIGNIFICANT AREAS ON THE PROPERTY:

The property was surveyed as part of the District-wide survey of Significant Natural Areas during November 2016. Indigenous woody vegetation is present at three main locations, totalling approximately 100 hectares. These are regarded as Significant Natural Areas (SNAs) when assessed against the District Plan criteria. These SNAs are listed in the table below.

Area No.	Area Name	Central map ref. (NZTM)	Aprox. size (ha)	Vegetation/habitat type
811	Upper Opihi River Gorge	1430904E-5109927N	19	hardwood (podocarp) forest
812	Mid Opihi River Gorge	1432260E-5109126N	63	hardwood (podocarp) forest
813	Lower Opihi River Gorge	1434067E-5108128N	18	hardwood (podocarp) forest

These SNAs are illustrated on the aerial photographs and described in greater detail in this report. Note that the boundaries of the SNAs are indicative, rather than precise. These areas meet the ecological criteria in the Canterbury Regional Policy Statement and Timaru District Plan (criteria i-vi, pages B18-B19) and are considered to be sustainable with appropriate management (criterion vii, page B19). SNAs are subject to confirmation by Council after regarding the matters listed in the District Plan (pages B19-B20). It is expected that SNAs will eventually be listed in the District Plan by way of a notified plan change.

At present, consent is required from Council for clearance of areas of indigenous vegetation or habitat which meet the Interim Definitions in the District Plan. Clearance includes burning, spraying with herbicides and over-planting. SNAs encompass most, but not necessarily all, areas of vegetation and habitat which meet the Interim Definitions.

To assist with the protection and management of any SNA, landowners can apply to Council for financial assistance. Any questions regarding the protection, management and use of SNAs should be directed to the District Planner.



Tree daisy (Olearia fragrantissima) at SNA 811

TIMARU DISTRICT SNA SURVEY

SNA 811

Area Name: Upper Opihi River Gorge	Property: Opihi River Gorge (UCL)	
Ecological District: Fairlie	Nearest Locality: Fairlie	
Map ref. (NZTM): 1430904E-5109927N	Area Size (ha): 18.98	Altitude (m): 220-440
Assessor: Mike Harding	Survey Time: 3 hours	Survey Date: 08-11-16

General Description:

This SNA is located in the upper part of the Opihi River Gorge, on steep east-facing slopes. It extends from the gorge crest down to the river, where it adjoins indigenous forest (MDC SONS 79) on the opposite side of the gorge. Exposed rock (small bluffs) are present within and adjacent to the site. Survey of the site was restricted to the upper slopes, due to the steepness of the slope.

Plant Communities:

The main plant community at the site is indigenous hardwood forest with remnant podocarp trees. The forest community is described below; naturalized species are indicated with an asterisk*.

The forest canopy is dominated by lemonwood (*Pittosporum eugenioides*), kowhai (*Sophora microphylla*), broadleaf (*Griselinia littoralis*), narrow-leaved lacebark (*Hoberia angustifolia*), kohuhu (*Pittosporum tenuifolium*), lancewood (*Pseudopanax crassifolius*), five-finger (*Pseudopanax arboreus*) and, at the forest margin, kanuka (*Kunzea ericoides*), native jasmine (*Parsonsia heterophylla*), bush lawyer (*Rubus cissoides*), *Clematis foetida* and pohuehue (*Muehlenbeckia australis*). Large trees of lowland ribbonwood (*Plagianthus regius*), matai (*Prumnopitys taxifolia*) and totara (*Podocarpus totara*) are emergent from the forest canopy at sheltered (gully) sites.

Less commonly present in the forest canopy are wineberry (*Aristotelia serrata*), fuchsia (*Fuchsia excorticata*), elderberry* (*Sambucus nigra*), sycamore* (*Acer pseudoplatanus*) and native bindweed (*Calystegia tuguriorum*). Other canopy species, notably at steeper sites, are fierce lancewood (*Pseudopanax ferox*), tree daisy (*Olearia fragrantissima*), *Coprosma virescens*, weeping mapou (*Myrsine divaricata*), cabbage tree (*Cordyline australis*) and yellowwood (*Coprosma linariifolia*).



SNA 811 (distant slope)

Species present in the forest understorey are mahoe (*Melicytus ramiflorus*), kowhai, *Coprosma virescens*, *Coprosma rotundifolia*, *Coprosma crassifolia*, fierce lancewood, weeping mapou, mapou (*Myrsine australis*), *Helichrysum intermedium*, korokio (*Corokia cotoneaster*), poataniwha (*Melicope simplex*), bush lawyer, leafless lawyer (*Rubus squarrosus*), bittersweet* (*Solanum dulcamara*) and occasional saplings of sycamore*.

Species present on the rocky forest floor are necklace fern (*Asplenium flabellifolium*), hen and chickens fern (*Asplenium gracillimum*), *Asplenium bookerianum*, *Asplenium richardii*, common shield fern (*Polystichum richardii*), button fern (*Pellaea rotundifolia*), hound's tongue fern (*Microsorium pustulatum*), leather-leaf fern (*Pyrrosia eleagnifolia*), male fern* (*Dryopteris filix-mas*), native iris (*Libertia ixioides*), *Chenopodium allanii*, *Dichondra repens* and occasionally hemlock* (*Conium maculatum*). Additional species present at damper sites are pate (*Schefflera digitata*), bush lily (*Astelia fragrans*), *Hydrocotyle heteromeria* and *Cardamine debilis* agg.

Species commonly present at the upper forest margin are mingimingi (*Coprosma propinqua*), matagouri (*Discaria toumatou*), *Coprosma crassifolia*, *Coprosma rigida*, *Helichrysum intermedium*, poataniwha, korokio, elderberry*, porcupine shrub (*Melicytus alpinus* agg.), lawyer (*Rubus schmidelioides*), scrub pohuehue (*Muehlenbeckia complexa*), *Parsonsia capsularis*, dwarf mistletoe (*Korthalsella lindsayi*) (on weeping mapou), gorse* (*Ulex europaeus*), broom* (*Cytisus scoparius*), blackberry* (*Rubus fruticosus*) and a native sedge *Carex breviculmis*.

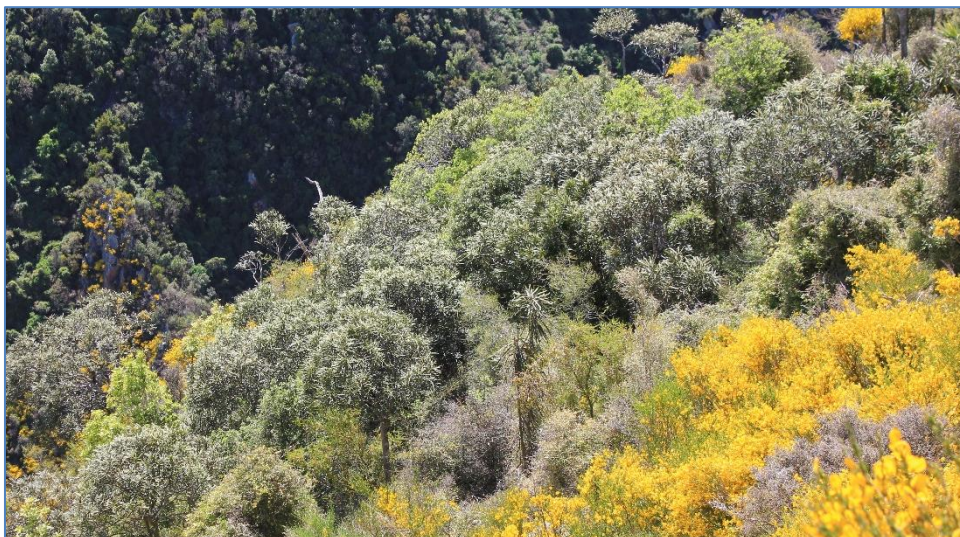
Fauna:

Native birds observed during this brief survey were grey warbler (*Gerygone igata*), fantail (*Rhipidura fuliginosa*), bellbird (*Anthornis melanura*), silvereye (*Zosterops lateralis*), rifleman (*Acanthisitta chloris*) and karearea/falcon (*Falco novaeseelandiae*). Comprehensive survey of other indigenous fauna was not possible. However, it is most likely that the area provides suitable habitat for lizards, including species listed as 'at risk' by Hitchmough *et al* (2013).

Notable Flora, Fauna and Habitats:

Notable features of this SNA are the presence of indigenous vegetation within a 'critically under-protected' land environment and within an ecological district where lowland indigenous vegetation is substantially depleted. Also notable is the presence (and dominance) of plant species listed as 'at risk' by de Lange *et al* (2012):

- *Chenopodium allanii* (naturally uncommon)
- *Coprosma virescens* (declining)
- *Olearia fragrantissima* (tree daisy) (declining)
- *Pseudopanax ferox* (fierce lancewood) (naturally uncommon)



Parts of SNA 811 are dominated by fierce lancewood (Pseudopanax ferox)

The site provides habitat for a bird species list as 'at risk' by Robertson *et al* (2012):

- karearea/falcon (recovering)

Notable Plant and Animal Pests:

Sycamore is the most important plant pest present, as occasional trees in the forest canopy and saplings within the forest. There are dense infestations of sycamore elsewhere in the Opihi River Gorge. Other plant pests, such as broom, gorse and elderberry, do not pose a significant threat to the forest. Animal pests were not surveyed, though wallabies, feral pigs and possums are present.

Boundaries (buffering, fencing, adjoining plant communities and habitats):

The boundaries of this SNA have been drawn to include the main area of taller woody vegetation and adjacent areas of regenerating forest. The site grades at its margins to open rocky slopes dominated by broom. The vegetation is well protected from clearance by its location on very steep rocky slopes. It lies adjacent to an extensive area of indigenous vegetation on the other side of the river.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	H	Indigenous vegetation that is representative the woody vegetation originally present in the ecological district, and typical of that remaining in the ecological district.
Rarity	H	Indigenous vegetation within a 'critically under-protected' land environment. Supports healthy populations of four 'at risk' plant species and provides habitat for an 'at risk' bird species.
Diversity and pattern	H	Plant species diversity is relatively high.
Distinctiveness/special features	M/H	Indigenous forest at dry habitats is a distinctive plant community that is substantially depleted.
Other Criteria		
Size/shape	H	A relatively large area of indigenous vegetation that is very well buffered.
Connectivity	M/H	Adjoins indigenous vegetation across the Opihi River (SONS 79) and lies relatively close to other areas of indigenous forest at Pioneer Park.
Long-term Sustainability	M	Control of sycamore and animal pests (such as wallabies and possums) will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

Criteria	Yes/No	Comments
Representativeness	Yes	Indigenous vegetation that is representative and is typical/characteristic of the natural diversity of the ecological district. A relatively large example of its type within the ecological district.
Rarity/Distinctiveness	Yes	Indigenous vegetation that has been reduced to less than 20% of its former extent in the ecological district; supports populations of four at risk plant species and one at risk bird species.
Diversity and Pattern	Yes	Contains a relatively high diversity of plant species.
Ecological Context	Yes	Buffers the Opihi River; provides an important refuge for indigenous fauna in an otherwise substantially modified area.



SNA 811

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):

This area has been set aside from any particular land use (as Unallocated Crown Land). The steepness and rockiness of the site mean it has very limited potential for development. There are substantial plant pest infestations (notably broom) adjacent to the site, though most of these plant pests do not pose a threat to indigenous vegetation at the site. Ongoing animal pest control (notably wallaby and possum) and plant pest control (sycamore) will be necessary to maintain ecological values in the long term. An appropriate alternative for protection of the site would be administration by the Department of Conservation as reserve.

Discussion:

This site easily meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a significant natural area. Important values are that it is a remnant of dry-habitat forest, it supports populations of at risk plant species and provides important habitat for forest birds and falcon.

TIMARU DISTRICT SNA SURVEY

SNA 812

Area Name: Mid Opihi River Gorge	Property: Opihi River Gorge (UCL)	
Ecological District: Fairlie	Nearest Locality: Fairlie	
Map ref. (NZTM): 1432260E-5109126N	Area Size (ha): 63.57	Altitude (m): 200-400
Assessor: Mike Harding	Survey Time: 4 hours	Survey Date: 28-11-16

General Description:

This SNA is located in the middle part of the Opihi River Gorge, on steep north- and east-facing slopes. It extends from the river upslope to the extent of the remnant and regenerating indigenous forest, in places extending to the gorge crest. It adjoins indigenous forest (MDC SONS 79) on the opposite side of the gorge. Exposed rock (small bluffs) are present within and adjacent to the site. Survey of the site was restricted to the upper slopes at the southeast part of the site, due to limited time and the steepness of the slope. Other parts were viewed through binoculars.

Plant Communities:

The main plant community at the site is indigenous hardwood forest with remnant podocarp trees and extensive areas of scrub and regenerating indigenous forest. The forest community is described below; naturalized species are indicated with an asterisk*.

Taller forest is generally confined to damper east-facing slopes within the site. Here it is dominated by kohuhu (*Pittosporum tenuifolium*), lemonwood (*Pittosporum eugenioides*) and pohuehue (*Muehlenbeckia axillaris*). Other common canopy species are broadleaf (*Griselinia littoralis*), narrow-leaved lacebark (*Hoberia angustifolia*), lancewood (*Pseudopanax crassifolius*), fierce lancewood (*Pseudopanax ferox*), kowhai (*Sophora microphylla*), cabbage tree (*Cordyline australis*), totara (*Podocarpus totara*) and the climbers: native jasmine (*Parsonsia heterophylla*), *Clematis foetida* and bush lawyer (*Rubus cissoides*). Less common are matai (*Prumnopitys taxifolia*), marbleleaf (*Carpodetus serratus*), five-finger (*Pseudopanax arboreus*), fuchsia (*Fuchsia excorticata*), wineberry (*Aristotelia serrata*), elderberry* (*Sambucus nigra*), sycamore* (*Acer pseudoplatanus*) and Himalayan honeysuckle* (*Leycesteria formosa*).



SNA 812 (centre: foreground and distant)

At rocky sites and on drier slopes, kowhai and fierce lancewood are more common. Other important canopy species at those sites are mapou (*Myrsine australis*), weeping mapou (*Myrsine divaricata*), matipo, *Coprosma virescens* and occasionally kanuka (*Kunzea ericoides*).

The understorey of the taller forest is open, largely due to wallaby browse and the rocky substrate. Important plant species present are *Coprosma virescens* and *Coprosma crassifolia*. Other species are mingimingi (*Coprosma propinqua*), weeping mapou, korokio (*Corokia cotoneaster*), Darwin's barberry* (*Berberis darwinii*), pate (*Schefflera digitata*), native bindweed (*Calystegia tuguriorum*) and bush lily (*Astelia fragrans*).

Plant species commonly present on the forest floor are common shield fern (*Polystichum richardii*), button fern (*Pellaea rotundifolia*), hound's tongue fern (*Microsorium pustulatum*), necklace fern (*Asplenium flabellifolium*), hen and chickens fern (*Asplenium gracillimum*) and *Asplenium bookerianum*. Other species are *Blechnum procerum*, *Blechnum montanum*, leather-leaf fern (*Pyrrhosia eleagnifolia*), *Poa imbecila*, star lily (*Arthropodium candidum*) and *Cardamine debilis* agg.

The forest patches grade to low forest and scrub on adjacent slopes. Some areas (mostly excluded from the SNA) are dominated by broom* (*Cytisus scoparius*). Other species commonly present at forest margins and in the scrub community are mingimingi, weeping mapou, matagouri (*Discaria toumatou*), *Coprosma virescens*, *Coprosma crassifolia*, korokio, porcupine shrub (*Melicactus alpinus* agg.), gorse* (*Ulex europaeus*), bracken (*Pteridium esculentum*), *Hypolepis ambigua*, flax (*Phormium tenax*), leafless lawyer (*Rubus squarrosus*), lawyer (*Rubus schmidelioides*) and scrub pohuehue (*Muehlenbeckia complexa*). Patches of Khasia berry* (*Cotoneaster simonsii*) are present on adjacent slopes.

Additional herbaceous species at the forest margin are *Dichondra repens*, *Oxalis exilis*, toatoa (*Haloragis erecta*), *Chenopodium allanii*, bidbid (*Acaena anserinifolia*), hairy pennywort (*Hydrocotyle moschata*), blue tussock (*Poa colensoi*) and a single narrow-leaved snow-tussock (*Chionochloa rigida*).

Fauna:

Native birds observed during this brief survey were grey warbler (*Gerygone igata*), fantail (*Rhipidura fuliginosa*), bellbird (*Anthornis melanura*), silvereye (*Zosterops lateralis*) and brown creeper (*Moboua novaeseelandiae*). Karearea/falcon (*Falco novaeseelandiae*) was observed nearby. Comprehensive survey of indigenous fauna was not possible. However, it is most likely that the area provides suitable habitat for lizards, including species listed as 'at risk' by Hitchmough *et al* (2013).

Notable Flora, Fauna and Habitats:

Notable features of this SNA are the presence of indigenous vegetation within a 'critically under-protected' land environment and within an ecological district where lowland indigenous vegetation is substantially depleted. Also notable is the presence (and dominance) of plant species listed as 'at risk' by de Lange *et al* (2012):

- *Chenopodium allanii* (naturally uncommon)
- *Coprosma virescens* (declining)
- *Pseudopanax ferox* (fierce lancewood) (naturally uncommon)

Also likely to be present is:

- *Olearia fragrantissima* (tree daisy) (declining)

Chenopodium allanii



Notable Plant and Animal Pests:

Sycamore is the most important plant pest present, as occasional trees in the forest canopy and saplings within the forest. There are dense infestations of sycamore elsewhere in the Opihi River Gorge. Darwin's barberry and Khasia berry also pose a significant threat to regenerating plant communities. Other plant pests, such as broom, gorse and elderberry, do not pose a significant threat to the forest. Animal pests were not surveyed, though wallabies, feral pigs and possums are present.

Boundaries (buffering, fencing, adjoining plant communities and habitats):

The boundaries of this SNA have been drawn to include the main area of taller woody vegetation and adjacent areas of regenerating forest and scrub. The site grades at its margins to open rocky slopes dominated by broom. The vegetation is well protected from clearance by its location on very steep rocky slopes. It lies adjacent to an extensive area of indigenous vegetation on the other side of the river.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	H	Indigenous vegetation that is representative the woody vegetation originally present in the ecological district, and typical of that remaining in the ecological district.
Rarity	H	Indigenous vegetation within a 'critically under-protected' land environment. Supports healthy populations of three 'at risk' plant species and likely provides habitat for an 'at risk' bird species.
Diversity and pattern	H	Plant species diversity is relatively high.
Distinctiveness/special features	M/H	Indigenous forest at dry habitats is a distinctive plant community that is substantially depleted.
Other Criteria		
Size/shape	H	A relatively large area of indigenous vegetation that is very well buffered.
Connectivity	M/H	Adjoins indigenous vegetation across the Opihi River (SONS 79) and lies relatively close to other areas of indigenous forest at Pioneer Park.
Long-term Sustainability	M	Control of sycamore and animal pests (such as wallabies and possums) will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

Criteria	Yes/No	Comments
Representativeness	Yes	Indigenous vegetation that is representative and is typical/characteristic of the natural diversity of the ecological district. A relatively large example of its type within the ecological district.
Rarity/Distinctiveness	Yes	Indigenous vegetation that has been reduced to less than 20% of its former extent in the ecological district; supports populations of three at risk plant species and one at risk bird species.
Diversity and Pattern	Yes	Contains a relatively high diversity of plant species.
Ecological Context	Yes	Buffers the Opihi River; provides an important refuge for indigenous fauna in an otherwise substantially modified area.

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):

This area has been set aside from any particular land use (as Unallocated Crown Land). The steepness and rockiness of the site mean it has very limited potential for further development. There are substantial plant pest infestations (notably broom and Khasia berry) adjacent to the site, though most of these plant pests do not pose a threat to indigenous vegetation at the site. Ongoing animal pest control (notably wallaby and possum) and probably plant pest control (sycamore) will be necessary to maintain ecological values in the long term. An appropriate alternative for protection of the site would be administration by the Department of Conservation as reserve.

Discussion:

This site easily meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a significant natural area. Important values are that it supports remnant and regenerating dry-habitat forest, it supports populations of at risk plant species and provides important habitat for forest birds and falcon.



SNA 812

Area Name: Lower Opihi River Gorge	Property: Opihi River Gorge (UCL)	
Ecological District: Geraldine	Nearest Locality: Raincliff	
Map ref. (NZTM): 1434067E-5108128N	Area Size (ha): 18.19	Altitude (m): 180-300
Assessor: Mike Harding	Survey Time: 4 hours	Survey Date: 28-11-16

General Description:

This SNA is located in the lower part of the Opihi River Gorge, on steep north-facing slopes. It extends from the river upslope to the extent of the remnant and regenerating indigenous forest, in places extending to the gorge crest. It adjoins indigenous forest in two adjacent gullies (SNAs 353 and 354 on the Stromness property) and on the opposite side of the gorge (MDC SONS 79). Exposed rock (small bluffs) are present within and adjacent to the site. Survey of up-valley parts of the site was restricted to views from above due to the steepness of the slope.

Plant Communities:

The main plant communities at the site are indigenous hardwood forest with remnant podocarp trees, kanuka forest and extensive areas of scrub and regenerating indigenous forest. These communities are described below; naturalized species are indicated with an asterisk*.

Hardwood forest:

This forest is present on lower slopes adjacent to the river and in gentler gullies. The forest canopy is dominated by kohuhu (*Pittosporum tenuifolium*), lancewood (*Pseudopanax crassifolius*), five-finger (*Pseudopanax arboreus*), kowhai (*Sophora microphylla*), native jasmine (*Parsonsia heterophylla*), pohuehue (*Muehlenbeckia australis*), bush lawyer (*Rubus cissoides*) and, along the river margin, crack willow* (*Salix fragilis*) and occasionally grey willow* (*Salix cinerea*) and poplar* (*Populus nigra*). Other canopy species are sycamore* (*Acer pseudoplatanus*), flowering cherry* (*Prunus* sp.), kanuka (*Kunzea ericoides*), cabbage tree (*Cordyline australis*), narrow-leaved lacebark (*Hoheria angustifolia*), lowland ribbonwood (*Plagianthus regius*), fierce lancewood (*Pseudopanax ferox*), broadleaf (*Griselinia littoralis*), elderberry* (*Sambucus nigra*), Himalayan honeysuckle* (*Leycesteria formosa*), fuchsia (*Fuchsia excorticata*), wineberry (*Aristotelia serrata*), emergent trees of totara (*Podocarpus totara*) and at some locations emergent radiata pine* trees (*Pinus radiata*).

Important understorey species are Darwins' barberry* (*Berberis darwinii*), mahoe (*Melicocarpus ramiflorus*), mapou (*Myrsine australis*), *Coprosma crassifolia* and poataniwha (*Melicope simplex*). Other species less commonly present are *Coprosma rhamnoides*, *Coprosma linariifolia*, mingimingi (*Coprosma propinqua*), weeping mapou (*Myrsine divaricata*) and saplings of canopy trees, including totara.

The forest floor is mostly rocky and sparsely vegetated. Species commonly present are common shield fern (*Polystichum richardii*), hen and chickens fern (*Asplenium gracillimum*), *Asplenium bookerianum*, button fern (*Pellaea rotundifolia*) and hound's tongue fern (*Microsorium pustulatum*). Other species are male fern* (*Dryopteris filix-mas*), leather-leaf fern (*Pyrrosia eleagnifolia*), hanging spleenwort (*Asplenium flaccidum*), necklace fern (*Asplenium flabellifolium*), *Asplenium richardii* and *Libertia ixioides*.

Plant species present at the forest margin and in surrounding regenerating vegetation are gorse* (*Ulex europaeus*), broom* (*Cytisus scoparius*), Darwin's barberry*, kohuhu, *Coprosma crassifolia*, *Coprosma virescens*, korokio (*Corokia cotoneaster*), mingimingi, weeping mapou, fierce lancewood, matagouri (*Discaria toumatou*), sweet brier* (*Rosa rubiginosa*), scrambling fuchsia (*Fuchsia perscandens*), blackberry* (*Rubus fruticosus*), native bindweed (*Calyptegia tuguriorum*), *Clematis foetida*, leafless lawyer (*Rubus squarrosus*), lawyer (*Rubus schmidelioides*), scrub pohuehue (*Muehlenbeckia complexa*), *Parsonsia capsularis*, *Hypolepis ambigua*, woolly mullein* (*Verbascum thapsus*) and, at rocky sites, rock fern (*Cheilanthes humilis*).



Coprosma virescens shrubs at the upper margin of SNA 813

Fierce lancewood and *Coprosma virescens* are common along the upper forest margin, below the scarp edge.

Kanuka forest:

This forest community is present at the forest margin in the northern gully, adjacent to SNA 354. Kanuka is the dominant canopy species. Other species present in the canopy or sub-canopy are fierce lancewood, lancewood, kohuhu, pohuehue and native jasmine.

Dominant species in the forest understorey are korokio, *Coprosma crassifolia*, *Coprosma virescens*, *Coprosma rhamnoides*, fierce lancewood and *Helichrysum intermedium*. Also present are mingimingi, *Coprosma rigida*, porcupine shrub (*Melicytus alpinus* agg.), Darwin's barberry*, elderberry*, *Clematis marata* and scrub pohuehue.



kanuka forest at the edge of SNA 813 (and adjacent to SNA 354)

The forest floor is dominated by pasture grasses at open sites. Plant species common at other sites are necklace fern, button fern and *Chenopodium allanii*. Less commonly present are foxglove* (*Digitalis purpurea*), hemlock* (*Conium maculatum*), black nightshade* (*Solanum nigrum*), *Dichondra repens*, hairy pennywort (*Hydrocotyle moschata*) and *Cardamine debilis* agg.

Fauna:

Native birds observed during this brief survey were shining cuckoo (*Chrysococcyx lucidus*), grey warbler (*Gerygone igata*), bellbird (*Anthornis melanura*), silvereye (*Zosterops lateralis*), fantail (*Rhipidura fuliginosa*), welcome swallow (*Hirundo tabitica*), Australasian harrier (*Circus approximans*) and paradise shelduck (*Tadorna variegata*). Comprehensive survey of indigenous fauna was not possible. However, it is most likely that the area provides suitable habitat for lizards, including species listed as 'at risk' by Hitchmough *et al* (2013).

Notable Flora, Fauna and Habitats:

Notable features of this SNA are the presence of indigenous vegetation within a 'critically under-protected' land environment and within an ecological district where lowland indigenous vegetation is substantially depleted. Also notable is the presence (and dominance) of plant species listed as 'at risk' by de Lange *et al* (2012):

- *Chenopodium allanii* (naturally uncommon)
- *Coprosma virescens* (declining)
- *Pseudopanax ferox* (fierce lancewood) (naturally uncommon)



Chenopodium allanii on the kanuka forest floor

Notable Plant and Animal Pests:

Sycamore and flowering cherry are the most important plant pests present, as occasional trees in the forest canopy and saplings within the forest. There are dense infestations of sycamore elsewhere in the Opihi River Gorge. Darwin's barberry also poses a significant threat, especially to regenerating plant communities. Other plant pests, such as broom, gorse and elderberry, do not pose a significant threat to the forest. Animal pests were not surveyed, though wallabies, feral pigs and possums are present.

Boundaries (buffering, fencing, adjoining plant communities and habitats):

The boundaries of this SNA have been drawn to include the main area of taller woody vegetation and adjacent areas of regenerating forest and scrub. The site grades at its margins to open rocky slopes dominated by broom. The vegetation is well protected from clearance by its location on very steep rocky slopes. It lies adjacent to an extensive areas of indigenous vegetation on the other side of the river.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	H	Indigenous vegetation that, for most of the site, is representative the woody vegetation originally present in the ecological district, and typical of that remaining in the ecological district.
Rarity	H	Indigenous vegetation within a 'critically under-protected' land environment. Supports healthy populations of three 'at risk' plant species and likely provides habitat for an 'at risk' bird species.
Diversity and pattern	H	Plant species diversity is relatively high.
Distinctiveness/special features	M/H	Indigenous forest at dry habitats is a distinctive plant community that is substantially depleted.
Other Criteria		
Size/shape	H	A relatively large area of indigenous vegetation that is very well buffered.
Connectivity	M/H	Adjoins indigenous vegetation in SNAs 353 and 354 and forest across the Opihi River (SONS 79), and lies relatively close to other areas of indigenous forest at Pioneer Park.
Long-term Sustainability	M	Control of sycamore, flowering cherry and animal pests (such as wallabies and possums) will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

Criteria	Yes/No	Comments
Representativeness	Yes	Indigenous vegetation that is representative and is typical/characteristic of the natural diversity of the ecological district. A relatively large example of its type within the ecological district.
Rarity/Distinctiveness	Yes	Indigenous vegetation that has been reduced to less than 20% of its former extent in the ecological district; supports populations of three at risk plant species and probably one at risk bird species.
Diversity and Pattern	Yes	Contains a relatively high diversity of plant species.
Ecological Context	Yes	Buffers the Opihi River; provides an important refuge for indigenous fauna in an otherwise substantially modified area.



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Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):

This area has been set aside from any particular land use (as Unallocated Crown Land). The steepness and rockiness of the site mean it has very limited potential for further development. There are substantial plant pest infestations (notably broom) adjacent to the site, though most of these plant pests do not pose a threat to indigenous vegetation at the site. Ongoing plant pest control (sycamore and flowering cherry) and animal pest control (notably wallaby and possum) will be necessary to maintain ecological values in the long term. An appropriate alternative for protection of the site would be administration by the Department of Conservation as reserve.

Discussion:

This site easily meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a significant natural area. Important values are that it supports remnant and regenerating dry-habitat forest, it supports populations of at risk plant species and provides important habitat for forest birds and falcon.

REFERENCES CITED:

- Atkinson, I.E.A. 1985. Derivation of mapping units for an ecological survey of Tongariro National Park, North Island, New Zealand. *NZ Journal of Botany* 23: 361-378.
- Cieraad, E.; Walker, S.; Price, R.; Barringer, J. 2015. An updated assessment of indigenous cover remaining and legal protection in New Zealand's land environments. *NZ Journal of Ecology* 39: 309-315.
- Cox, S.C; Barrell, D.J.A (compilers). 2007. Geology of the Aoraki area. *Institute of Geological and Nuclear Sciences 1:250,000 geological map 15*. Institute of Geological and Nuclear Sciences Limited, Lower Hutt.
- de Lange, P.J; Rolfe, J.R; Champion, P.D; Courtney, S.P; Heenan, P.B; Barkla, J.W; Cameron, E.K; Norton, D.A; Hitchmough, R.A. 2012. *Conservation status of New Zealand indigenous vascular plants, 2012*. Department of Conservation, Wellington, New Zealand. 70p.
- Hitchmough, R.; Anderson, P.; Barr, B.; Monks, J.; Lettink, M.; Reardon, J.; Tocher, M.; Whitaker, T. 2013. Conservation status of New Zealand reptiles, 2012. *New Zealand Threat Classification Series 2*. Department of Conservation, Wellington. 16p.
- Leathwick, J.; Wilson, G.; Rutledge, D.; Wardle, P.; Morgan, F.; Johnston, K.; McLeod, M.; Kirkpatrick, R. 2003. *Land Environments of New Zealand*. David Bateman, Auckland. 184p.
- McEwen, W.M. (editor) 1987. Ecological regions and districts of New Zealand, third revised edition (Sheet 4). *New Zealand Biological Resources Centre Publication No.5*. Department of Conservation, Wellington, 1987.
- O'Donnell, C.F.J. 2000. Distribution, status and conservation of long-tailed bat (*Chalinolobus tuberculatus*) communities in Canterbury, New Zealand. *Unpublished Report U00/38*. Environment Canterbury, Christchurch.
- O'Donnell, C.F.J.; Christie, J.E.; Lloyd, B.; Parsons, S.; Hitchmough, R.A. 2012. Conservation status of New Zealand bats 2012. *New Zealand Threat Classification Series 6*. Department of Conservation, Wellington.
- Robertson, HA; Dowding, JE; Elliot, GP; Hitchmough, RA; Miskelly, CM; O'Donnell, CFJ; Powlesland, RG; Sagar, PM; Scofield, RP; Taylor, GA. 2012. Conservation status of New Zealand birds, 2012. *New Zealand Threat Classification Series 4*. Department of Conservation, Wellington.
- Williams, P.A.; Wiser, S.; Clarkson, B.; Stanley, M.C. 2007. New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *NZ Journal of Ecology* 31: 119-128.