TIMARU DISTRICT

SIGNIFICANT NATURAL AREAS SURVEY

BEN McLEOD

Report prepared for Timaru District Council by Mike Harding
May 2016

TIMARU DISTRICT SIGNIFICANT NATURAL AREAS SURVEY

PROPERTY REPORT

PROPERTY DETAILS:

Owner: ..... Donald Aubrey
Valuation Reference: ... 24640/010.00
Address: ..... Rangitata Gorge Road, Geraldine 7992
Location:..... Southwest side of upper Rangitata River
Ecological Districts:..... Orari, Hakatere and Two Thumb

ECOLOGICAL CONTEXT:

The property lies on the southwest (true right) side of the upper Rangitata River, inland from Peel Forest in South Canterbury. It covers moderately-steep to very steep hill country rising to an altitude of more than 1990m on the Ben McLeod Range and including the summits of Rawtor and Ben McLeod. It includes lower-altitude river flats and terraces along Forest Creek and adjacent to the Rangitata River, and smaller terraces in the Hewson River valley. The underlying geology of the higher country is sandstone (greywacke) and mudstone (argillite). A small area of andesite/dacite (Mount Somers Volcanics) is present in the Rangitata valley near the homestead. Lower-altitude terraces and valley floors comprise glacial and river deposits (Cox and Barrell, 2007).

The property lies mostly in Orari Ecological District, with small parts in Hakatere and Two Thumb ecological districts (McEwen, 1987). Most low altitude (below 900m) slopes on the property lie within the E1.4c and E1.4d Level IV Land Environments as defined by Leathwick *et al* (2003). Terraces and lower-altitude areas along Forest Creek and the Rangitata River lie within J2.2a, J2.2b and K4.1c land environments. Indigenous vegetation within the J2.2b land environment is regarded as 'acutely threatened'; within J2.2a and K4.1c as 'at risk'; and within E1.4d as 'critically under-protected' (Walker *et al*, 2006).

It is unclear how much of this part of Orari Ecological District was forested in pre-human times. Forested areas were most likely dominated by mountain beech (*Nothofagus solandri*), though mountain totara (*Podocarpus cunninghamii*), kowhai (*Sophora microphylla*), broadleaf (*Griselinia littoralis*) and kanuka (*Kunzea ericoides*) may have been common. Scrub, shrubland, treeland and tussockland would have occupied steeper slopes and disturbed sites. Sedgeland, rushland and reedland (wetland vegetation) would have been present at poorly drained sites.

Today the woody vegetation cover in this part of Orari Ecological District is largely confined to regenerating scrub in gullies or on steep rocky slopes and small patches of kanuka or beech forest. Small areas of wetland vegetation are present and some larger areas at lower altitudes. Likewise, habitats of indigenous fauna have been depleted or modified. However, the property provides habitat for karearea/eastern falcon (*Falco novaeseelandiae*), a species listed as 'at risk' (recovering) by Robertson *et al* (2012), and likely to provide habitat for 'at risk' lizard species listed by Hitchmough *et al* (2012), such as common skink (*Oligosoma polychroma*) (declining).

SIGNIFICANT AREAS ON THE PROPERTY:

This property was not surveyed as part of the District-wide survey of Significant Natural Areas because permission for access was declined by the landowner. However, other properties in Orari Ecological District have been surveyed and there are good recent aerial images of the area. A small part of the property in the Hewson valley has been inspected previously. So it is possible to determine what indigenous vegetation is likely to be present on the property.

Indigenous vegetation below 900m altitude on the property comprises shrubland and fernland, kanuka scrub/low forest, patches of beech and kanuka forest, tussockland on damper slopes, herbfield/mossfield/grassland on low-altitude terraces, and sedgeland/tussockland at valley-floor wetlands. Indigenous plant species will be present on sparsely vegetated rock bluffs: plant communities that are representative of the original vegetation.

Some lower-altitude terraces on the property are developed as farmland. The northeast and northwest property boundaries include areas of open gravel and riparian shrubland associated with the floodplains of the Rangitata River and Forest Creek. These river floodplains provide significant habitats for indigenous birds and are described separately as SNAs 771, 755 and 775.

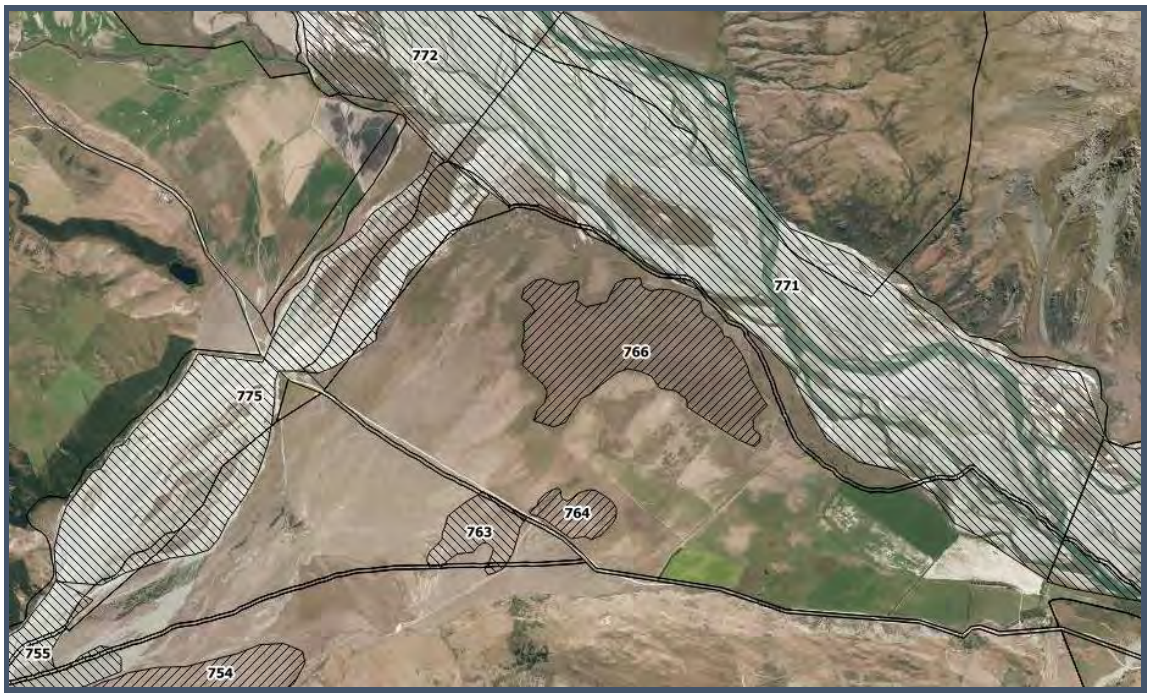
Without the benefit of a field survey it is difficult to accurately determine the extent of significant indigenous vegetation on the property. Aerial images, roadside views and earlier surveys indicate the presence of ten areas of indigenous vegetation that are likely to be Significant Natural Areas (SNAs) when assessed against the Timaru District Plan and/or Canterbury Regional Policy Statement criteria. These areas comprise forest patches in Forest Creek and Butlers Creek, wetlands in the Hewson and Rangitata valleys, and undeveloped terraces in the lower Forest Creek valley. Only areas at altitudes lower than 900m were assessed, as activities at higher-altitude areas are covered by other plan rules.

Area No.	**Central map ref. (NZTM)**	**Aprox. size(ha)**	**Vegetation/habitat type**
752	1432630E-5158250N	109	herbfield; mossfield; grassland; low shrubs
753	1432360E-5158580N	5	shrubland; grassland; herbfield
754	1433320E-5159070N	95	herbfield; mossfield; grassland; low shrubs
762	1430640E-5157440N	20	kanuka forest
763	1436570E-5160115N	13	shrubland; herbfield
764	1437110E-5160230N	9	shrubland; herbfield
765	1438510E-5153360N	2.5	sedgeland; rushland
766	1437430E-5161150N	72	sedgeland; tussockland?
767	1429240E-5156360N	45	kanuka forest; beech forest
768	1427890E-5154890N	104	beech forest
Adjacent SNAs			
755 & 775	Forest Creek riverbed	303	gravelfield; herbfield; shrubland
771	Rangitata Riverbed	353	gravelfield; herbfield

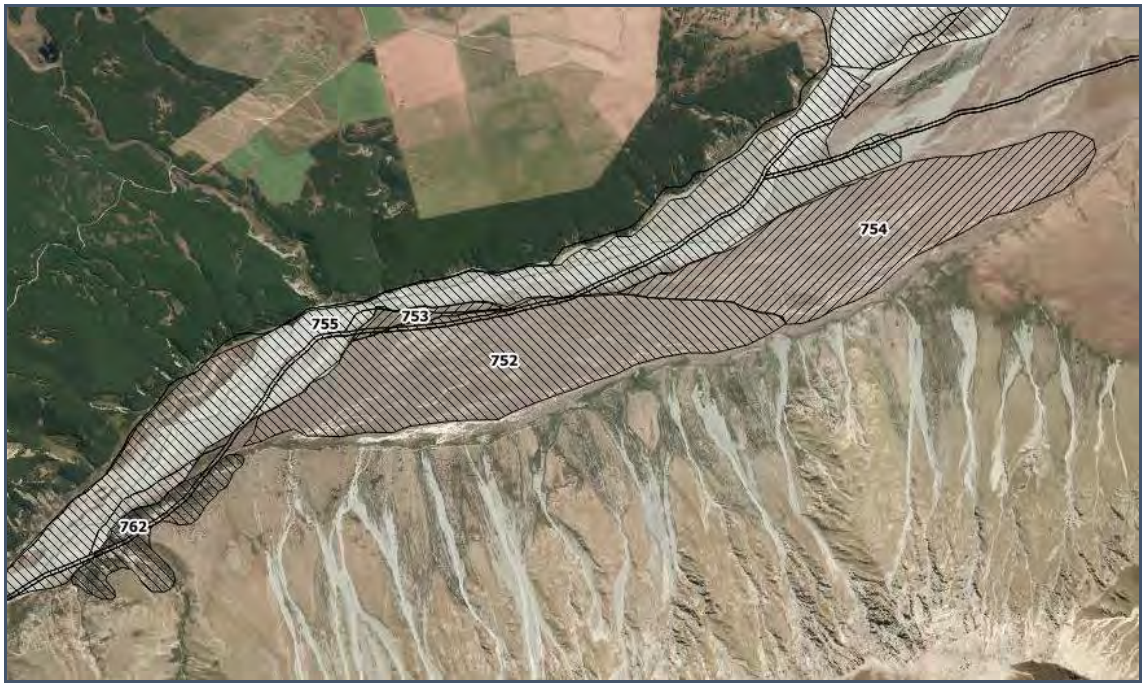
The likely values and boundaries of these areas are described on the SNA Forms in this report. Note that the boundaries of the SNAs are indicative, rather than precise. These areas are likely to meet the ecological criteria in the Timaru District Plan (criteria i-vi, pages B18-B19) and Canterbury Regional Policy Statement, and are considered to be sustainable in the long term, or 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 be listed in the District Plan by way of a plan review.

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, track construction, spraying with herbicides and over-planting. 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.

There may be other areas of significant indigenous vegetation or habitat on the property. This report should not be regarded as a comprehensive assessment; instead, it describes areas that are readily assessed from aerial photography and roadside views. Other possible significant sites include areas of woody vegetation on rocky slopes, kanuka shrubland/scrub, smaller seepages and flushes (wetlands), and habitats of threatened plant or animal species.



Location and likely boundaries of lower Forest Creek SNAs



Location and likely boundaries of mid Forest Creek SNAs

Location and likely boundaries of upper Forest Creek and Butlers Creek SNAs

Location and likely boundaries of Hewson Valley SNA

References Cited

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.

Holdaway, R.J.; Wiser, S.K.; Williams, P.A. 2012. Status assessment of New Zealand's naturally uncommon ecosystems. *Conservation Biology*, 2012.

Leathwick, J; Wilson, G; Rutledge, D; Wardle, P; Morgan, F; Johnston, K; McLeod, M; Kirkpatrick, R. 2003. *Land Environments of New Zealand*. David Bateman Ltd.

McEwen, WM (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.

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.

Walker, S.; Price, R.; Rutledge, D.; Stephens, R.T.T.; Lee, W.G. 2006. Recent loss of indigenous cover in New Zealand. *NZ Journal of Ecology 30*: 169-177.

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.

TIMARU DISTRICT SNA SURVEY SNAs 752, 753, 754, 763, 764

Area Name: Forest Creek terraces
Ecological District: Hakatere
SNA 752: Central map ref. (NZTM): 1432630E-5158250N
SNA 753: Central map ref. (NZTM): 1432360E-5158580N
SNA 754: Central map ref. (NZTM): 1433320E-5159070N
SNA 763: Central map ref. (NZTM): 1436570E-5160115N
SNA 764: Central map ref. (NZTM): 1437110E-5160230N
Surveyors: Mike Harding

Property: Ben McLeod and UCL
Nearest Locality: Peel Forest
Area Size (ha): 109 **Altitude (m):** 530-590
Area Size (ha): 5 **Altitude (m):** 540-570
Area Size (ha): 95 **Altitude (m):** 500-550
Area Size (ha): 13 **Altitude (m):** 470-480
Area Size (ha): 9 **Altitude (m):** 460-470
Survey Time: 5 hours **Survey Date:** 13-04-16

General Description:

These SNAs lie on river terraces adjacent to the mid-lower reaches of Forest Creek, upper Rangitata valley. Only small parts of these areas were surveyed, along the Ben McLeod property boundary beside Forest Creek. The surveyed sites support significant indigenous vegetation. Views through binoculars and inspection of aerial images indicate that vegetation is uniform across these terraces, and therefore most likely to be significant. These terraces adjoin a significant habitat for birds on the open gravel bed of Forest Creek (SNAs 755 & 775).

Plant Communities:

Three main plant communities are present: mossfield-herbfield-grassland on older stable terraces; shrubland-grassland-herbfield on younger terraces; and gravelfield-herbfield on recently-deposited river gravels. These plant communities are described below. Naturalized (exotic) species are indicated with an asterisk*.

Mossfield-herbfield-grassland:

This plant community is variously dominated by mosses, herbs or grasses, depending primarily on soil depth. It is present on older terraces (SNAs 752, 754, 763 and 764), where the dominant components form a mosaic across the terrace surface. Dominant plant species are sheep's sorrel* (*Rumex acetosella*), sweet vernal* (*Anthoxanthum odoratum*), haresfoot trefoil* (*Trifolium arvense*), mouse-ear hawkweed* (*Pilosella officinarum*), creeping pohuehue (*Muehlenbeckia axillaris*) and woolly moss (*Racomitrium pruinosum*). Other species commonly present are catchfly* (*Silene gallica*), field speedwell* (*Veronica arvensis*), *Rytidosperma pumilum*, browntop* (*Agrostis capillaris*), *Raoulia monroi*, scabweed (*Raoulia australis*), patotara (*Leucopogon fraseri*), harebell (*Wahlenbergia albomarginata*), wire moss (*Polytrichum juniperinum*) and a cushion moss (*Ceratodon purpureus*?).

Less commonly present are dandelion* (*Taraxacum officinale*), *Colobanthus* sp., *Scleranthus uniflorus*, *Acaena inermis*, *Leucopogon nanum*, *Carex breviculmis*, silvery hair grass* (*Aira caryophyllea*), *Poa maniototo*, *Lachnagrostis* sp., *Bromus* sp*., mat coprosma (*Coprosma atropurpurea*), red woodrush (*Luzula rufa* var. *albicomans*), *Vittadinia australis*, woolly mullein* (*Verbascum thapsus*) and *Cladia aggregata* (a lichen).

Scattered through this community are plants of matagouri (*Discaria toumatou*), porcupine shrub (*Melicytus alpinus*), sweet brier* (*Rosa rubiginosa*) and blue tussock (*Poa colensoi*). Leafless pohuehue (*Muehlenbeckia ephedroides*) is present at stony sites at the terrace edge.

mossfield-herbfield-grassland (SNA 752)

Shrubland-grassland-herbfield:
This plant community occupies younger river terraces or those areas subject to occasional disturbance (e.g. flooding). It is the main plant community in SNA 753. It is dominated by scattered bushes of matagouri, sweet brier* and occasionally kanuka (*Kunzea ericoides*). Dominant ground-cover species are *Helichrysum depressum*, creeping pohuehue, haresfoot trefoil*, *Vittadinia australis* and, at stable sites, browntop*.

Other species commonly present are scabweed, *Raoulia hookeri*, *Raoulia haastii*, *Raoulia monroi*, *Raoulia apicinigra*, mouse-ear hawkweed*, catsear* (*Hypochaeris radicata*), sheep's sorrel*, viper's bugloss* (*Echium vulgare*), *Epilobium melanocaulon*, *Geranium brevicaule*, pohuehue hybrids (*Muehlenbeckia axillaris* X *ephedroides*), white clover* (*Trifolium repens*), lotus* (*Lotus pedunculatus*), cudweed* (*Logfia minima*), hawksbeard* (*Crepis capillaris*), wire moss, woolly moss, sweet vernal*, silvery hair grass*, Chewings fescue* (*Festuca rubra*) and the native grasses *Rytidosperma clavatum*, *Rytidosperma pumilum*, *Anthosachne falcis*, blue wheat grass (*Anthosachne solandri*), blue tussock, *Poa lindsayi* and *Lachnagrostis* sp.

shrubland-grassland-herbfield (SNA 753) at left; mossfield-herbfield-grassland (SNA 752) at right

Gravelfield-herbfield:
This sparse plant community occupies recently-deposited river gravels. It is present at small parts of SNA 753. Bare stones and gravel are the dominant ground-cover. Scattered across this surface are plants of *Epilobium melanocaulon*, *Helichrysum depressum*, sweet vernal*, browntop*, *Raoulia haastii*, *Raouli tenuicaulis*, scabweed, creeping pohuehue, viper's bugloss*, white clover*, haresfoot trefoil*, lotus*, sheep's sorrel*, woolly mullein*, mouse-ear hawkweed*, Yorkshire fog* (*Holcus lanatus*), occasional seedlings of Douglas fir* (*Pseudotsuga menziesii*) and, at the down-valley part, occasional small bushes of gorse* (*Ulex europaeus*). Leafless pohuehue is present but uncommon.

Notable Flora, Fauna and Habitats:

Populations of four plant species listed 'at risk' by de Lange *et al* (2012) are present at the sites sampled:

Anthosachne falcis (SNA 753) .....naturally uncommon
Leucopogon nanum (SNA 752) .....naturally uncommon
Muehlenbeckia ephedroides (SNAs 752 and 753).....declining
Raoulia monroi (SNAs 752 and 753).....declining

Notable is the abundance of *Raoulia monroi*, which is common at the sampled sites. SNAs 754, 763 and 764 were not sampled, but are likely to support populations of the three 'at risk' plant species recorded at SNA 752.

The lack of access to the main terraces and timing (season) precluded effective survey of indigenous fauna. However, it is likely that the terraces provide seasonal habitat for banded dotterel (*Charadrius bincintus*) and black-fronted tern (*Sterna albostriata*). Banded dotterel is listed as threatened (nationally vulnerable) and black-fronted tern as threatened (nationally endangered) by Robertson *et al* (2012).

The Forest Creek terraces lie within the J2.2a Level IV Land Environment (Leathwick *et al*, 2003), within which indigenous vegetation is listed as 'at risk' (Walker *et al*, 2006).

Raoulia monroi (at risk; declining) is common at SNAs 752 and 753

Notable Plant and Animal Pests:

Three important woody plant pests are present: gorse, sweet brier and Douglas fir. Gorse appears to be confined to areas of younger riverbed (within SNA 753), though most parts of the older terraces (SNAs 752 and 754) could not be properly checked. Gorse poses a significant threat to open riverbeds (and bird habitat) downstream. Sweet brier appears more widespread, though is most common on the younger terrace. Douglas fir was only observed as a few young seedlings (which were removed). However, the older terrace was not checked and there is a substantial seed source at the plantation forest up-wind. Thyme (*Thymus vulgaris*) was observed (and treated) in the riverbed near the road bridge. A number of non-woody naturalized plants are present and often dominant, notably sheep's sorrel, sweet vernal, browntop, mouse-ear hawkweed and haresfoot trefoil. Animal pests were not surveyed.

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

The boundaries of SNAs 752 and 754 are the main landform boundaries, i.e. the separate terrace surfaces. The boundaries of SNAs 763 and 764 are the extent of the remnant low-shrubland. It was not possible, in the absence of full survey, to define these boundaries more precisely.

SNA 752, 754, 763 and 764:

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	**M**	Indigenous vegetation which appears moderately representative of the original vegetation and typical of that remaining in the ecological district.
Rarity	**M/H**	Supports populations of three 'at risk' plant species, including a very strong population of *Raoulia monroi* (declining). Lies within an 'at risk' land environment. Is likely to provide habitat for threatened bird species.
Diversity and pattern	**M**	Species diversity is moderate-high, though likely to be reduced from that originally present.
Distinctiveness/special features		
Other Criteria		
Size/shape	**H**	SNAs 752 and 753 are large and of a suitable shape to provide resilience and buffering. SNAs 763 and 764 are smaller (M/H).
Connectivity	**M/H**	These SNAs adjoin each other and adjacent SNAs 753 and 755.
Long-term Sustainability	**M**	Control of woody weeds and probably animal pests (e.g. rabbits) 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 is moderately representative (though degraded) and is typical/characteristic of the natural diversity of the ecological district. Relatively large examples of its type within the ecological district.
Rarity/Distinctiveness	**Yes**	Indigenous vegetation which is reduced to less than 20% of its former extent in the land environment. The sites support three 'at risk' plant species and likely provide habitat for threatened bird species.
Diversity and Pattern	**Yes**	A moderate diversity of indigenous plant species is present at the sampled sites; diversity across the SNAs is likely to be higher.
Ecological Context	**Likely**	These large areas are likely to provide important habitat for birds, notably banded dotterel and black-fronted tern.

SNA 763, viewed from Rangitata Gorge Road

SNA 753:

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	**M**	Indigenous vegetation which is moderately representative of the original vegetation and typical of that remaining in the ecological district.
Rarity	**M/H**	Supports populations of three 'at risk' plant species. Lies within an 'at risk' land environment. Is likely to provide habitat for threatened bird species.
Diversity and pattern	**M**	Species diversity is moderate-high, though likely to be reduced from that originally present.
Distinctiveness/special features		
Other Criteria		
Size/shape	**M**	A relatively small SNA, though reasonably well buffered.
Connectivity	**M/H**	This SNA lies between SNAs 752 and 755.
Long-term Sustainability	**M**	Control of woody weeds and probably animal pests (e.g. rabbits) 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 is moderately representative and is typical/characteristic of the natural diversity of the ecological district.
Rarity/Distinctiveness	**Yes**	Indigenous vegetation is reduced to less than 20% of its former extent in the land environment. The site supports three at risk plant species. Lies within an 'at risk' land environment. Is likely to provide habitat for threatened bird species.
Diversity and Pattern	**Yes**	A moderate diversity of indigenous plant species is present.
Ecological Context	**Likely**	This area is likely to provide important habitat for birds, notably banded dotterel and black-fronted tern.

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

Indigenous vegetation at these areas is degraded and affected by the presence of naturalized (exotic) plant species. However, they still support a diverse range of representative indigenous plant species, including remnant indigenous shrubland and populations of 'at risk' species. These values remain because the terraces appear not to have been cultivated or irrigated, and because invasive woody plant pests have likely been controlled. Identification of these terraces as SNAs does not preclude existing land uses (i.e. extensive grazing), but means (under the existing District Plan rules) that vegetation clearance would require consent.

Discussion:

If the above assessment is accurate, these sites easily meet the District Plan and Regional Policy Statement criteria for significant natural areas (SNAs). Important values are the presence of indigenous vegetation in an 'at risk' land environment, populations of 'at risk' plant species; likely habitat for threatened bird species and the size of the areas.

TIMARU DISTRICT SNA SURVEY SNAs 755 and 775

Area Name: Forest Creek
Ecological Districts: Hakatere
Surveyors: Mike Harding
Property: UCL
Nearest Locality: Peel Forest
Survey Time: 4 hours **Survey Date:** 13-04-16

General Description:

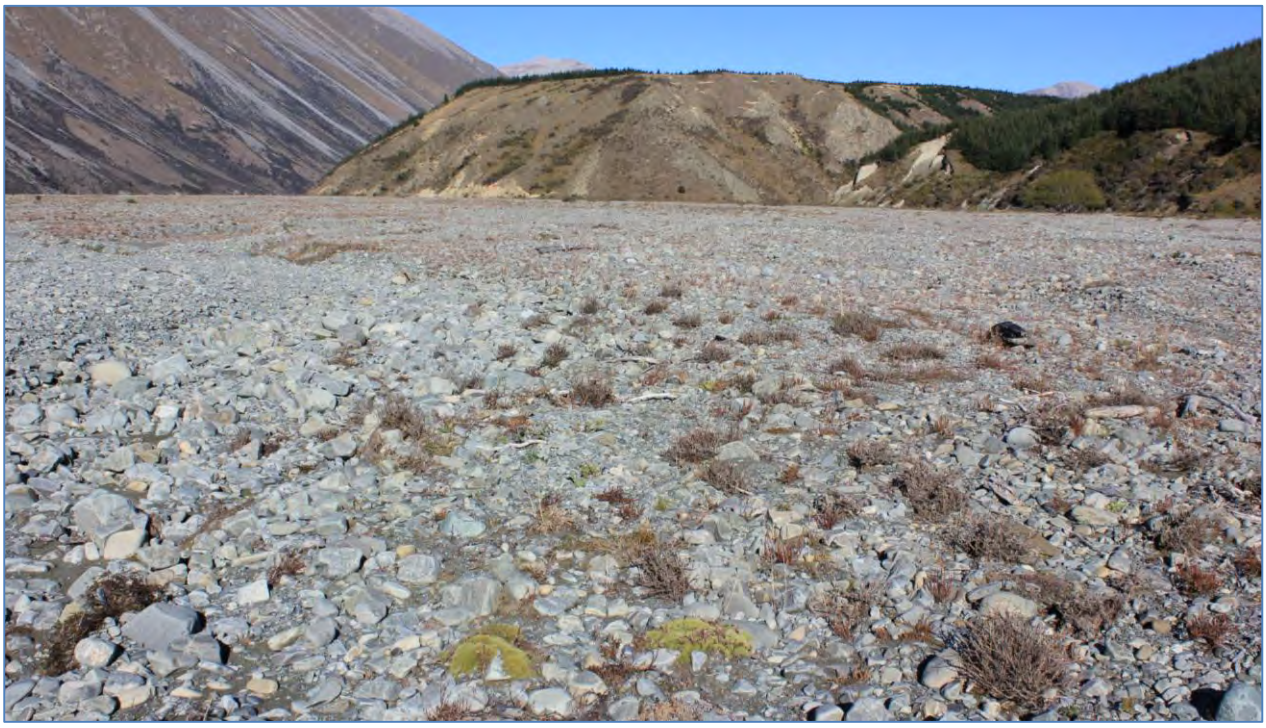
These two SNAs comprise the flood plain of Forest Creek. They lie predominantly on Unallocated Crown Land (UCL). However, small parts of the floodplain lie within adjacent land parcels. Some parts may be covered by Ad Medium Filium (AMF) rights. The key value of these SNAs is the habitat the riverbed provides for indigenous birds, including threatened species. Also, stable parts of the river floodplain support indigenous plant communities, including several at risk species. These SNAs comprise one contiguous area; it is separated into two SNAs only for mapping purposes.

Plant Communities:

Gravelfield, stonefield, herbfield, grassland and shrubland communities are present. These plant communities are described below. Naturalized (exotic) species are indicated with an asterisk.

Gravelfield-herbfield:

This sparse plant community occupies recently-deposited river gravels. It is the most extensive plant community present. Bare stones and gravel are the dominant ground-cover. Scattered across this surface are plants of *Epilobium melanocaulon*, *Helichrysum depressum*, sweet vernal* (*Anthoxanthum odoratum*), browntop* (*Agrostis capillaris*), *Raoulia haastii*, *Raouli tenuicaulis*, scabweed (*Raoulia australis*), creeping pohuehue (*Muehlenbeckia axillaris*), viper's bugloss* (*Echium vulgare*), white clover* (*Trifolium repens*), haresfoot trefoil* (*Trifolium arvense*), lotus* (*Lotus pedunculatus*), sheep's sorrel* (*Rumex acetosella*), woolly mullein* (*Verbascum thapsus*), mouse-ear hawkweed* (*Pilosella officinarum*), Yorkshire fog* (*Holcus lanatus*), occasional seedlings of Douglas fir* (*Pseudotsuga menziesii*), occasional small bushes of gorse* (*Ulex europaeus*) and, at the down-valley part, a small infestation of thyme* (*Thymus vulgaris*). Leafless pohuehue (*Muehlenbeckia ephedroides*) is present but uncommon.



Gravelfield-stonefield-herbfield on the lower floodplain of Forest Creek

Shrubland-grassland-herbfield:

This plant community occupies younger river terraces or those areas subject to only occasional disturbance (e.g. flooding). It is dominated by scattered bushes of matagouri and sweet brier*. Dominant ground-cover species are *Helichrysum depressum*, creeping pohuehue, haresfoot trefoil*, *Vittadinia australis* and, at stable sites, browntop*.

Other species commonly present are scabweed, *Raoulia hookeri*, *Raoulia haastii*, *Raoulia monroi*, *Raoulia apicinigra*, mouse-ear hawkweed*, catsear* (*Hypochaeris radicata*), sheep's sorrel*, viper's bugloss*, *Epilobium melanocaulon*, *Geranium brevicaule*, pohuehue hybrids (*Muehlenbeckia axillaris* X *ephedroides*), white clover*, lotus*, cudweed* (*Logfia minima*), hawksbeard* (*Crepis capillaris*), wire moss, woolly moss (*Racomitrium pruinosum*), sweet vernal*, silvery hair grass* (*Aira caryophyllea*), Chewings fescue* (*Festuca rubra*) and the native grasses *Rytidosperma clavatum*, *Rytidosperma pumilum*, *Anthosachne falcis*, blue wheat grass (*Anthosachne solandri*), blue tussock (*Poa colensoi*), *Poa lindsayi* and *Lachnagrostis* sp. Additional species at the up-valley end of the river floodplain are tutu (*Coriaria sarmentosa*) and kanuka (*Kunzea ericoides*).

Shrubland-grassland-herbfield on the floodplain of Forest Creek

Birds/Fauna Habitat:

The open gravels of the upper Rangitata valley riverbeds (including Forest Creek) provided habitat for at least 20 indigenous bird species during the period 1999 to 2004 (Robertson *et al*, 2007). The riverbeds provide very important breeding habitat for wrybill (*Anarhynchus frontalis*), black-fronted tern (*Sterna albostriata*), banded dotterel (*Charadrius bicintus*) and black-billed gull (*Larus bulleri*). Stable parts of the river berms are likely to provide important habitat for lizards, especially where there is good vegetation cover.

Notable Flora, Fauna and Habitats:

Recent river flood plains are not covered by the Land Environments framework compiled by Leathwick *et al* (2003). However, adjacent Level IV Land Environments at areas of stable riverbed and recent terraces are listed as 'acutely threatened' by Walker *et al* (2006). Braided riverbeds are listed as originally rare ecosystems by Williams *et al* (2007) that are classified as 'nationally endangered' by Holdway *et al* (2012).

Three plant species listed as 'at risk' by de Lange *et al* (2102) were observed on the floodplain of Forest Creek:

Anthosachne falcis.....naturally uncommon
Muehlenbeckia ephedroides.....declining
Raoulia monroi.....declining

Another 'at risk' species, *Luzula celata* (declining), has been previously recorded on the lower river delta.

Eleven native bird species listed as 'threatened' or 'at risk' by Robertson *et al* (2012) have been recorded from the upper Rangitata River in recent years (below). Forest Creek is likely to provide habitat for most of these species.

banded dotterel (*Charadrius bicinctus*)..... nationally vulnerable
black-billed gull (*Larus bulleri*)..... nationally critical
black-fronted tern (*Sterna albostriata*)..... nationally endangered
black shag (*Phalacrocorax carbo*)..... naturally uncommon
Caspian tern (*Sterna caspia*) ..... nationally vulnerable
grey duck (*Anas superciliosa*) ..... nationally critical

little shag (*Phalacrocorax melanoleucos*) ..... naturally uncommon
NZ pipit (*Anthus novaeseelandiae*) ..... declining
pied stilt (*Himantopus himantopus*) ..... declining
South Island pied oystercatcher (*Haematopus ostralegus*) .... declining
wrybill (*Anarhynchus frontalis*) ..... nationally vulnerable

Notable Plant and Animal Pests:

Woody plant pests recorded from Forest Creek during this survey were gorse, Douglas fir, thyme and sweet brier. Crack willow (*Salix fragilis*) and grey willow (*Salix cinerea*) are also present in the river catchment.

A number of non-woody weed species are common, notably haresfoot trefoil (*Trifolium arvense*), viper's bugloss (*Echium vulgare*), mouse-ear hawkweed (*Pilosella officinarum*), sheep's sorrel (*Rumex acetosella*), sweet vernal (*Anthoxanthum odoratum*) and browntop (*Agrostis capillaris*).

Animal pests were not surveyed, though rabbits and hares are present. A number of important introduced predators are also likely to be present, including rats, feral cats, hedgehogs, stoats and ferrets. These predators pose a significant threat to indigenous birds and lizards. The riverbed is grazed by sheep.

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

The boundaries of these areas have been drawn (from aerial photos) to include all areas of open gravel and stable vegetated islands within the main river floodplain. This boundary extends beyond areas of UCL into adjacent land parcels at some locations. Ground survey is required to confirm the accuracy of proposed boundaries at these locations. Proposed boundaries of the Forest Creek SNAs are illustrated elsewhere in this report.

Condition and Management

Most parts of the river floodplain are in good condition. Regular flooding helps maintain the areas of open gravel that are important as nesting habitat for riverbed birds. Landowners in the upper Rangitata valley have undertaken coordinated plant pest control for many years in an attempt to maintain the upper valley (including Forest Creek) and adjacent lands free of the most important plant pests, such as broom, gorse and crack willow. This plant pest control programme has received financial support from Timaru District Council and other agencies. In recent years there has been a coordinated predator control programme in the upper Rangitata valley.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	**Rank**	**Notes**
Representativeness	**H**	Most parts of the river floodplain are highly representative of the original condition and are typical of that remaining in the ecological district.
Rarity	**H**	The riverbed is likely to provide habitat for several 'threatened' and 'at risk' bird species, and four 'at risk' plant species.
Diversity and pattern	**H**	Habitat and species diversity is similar to that originally present.
Distinctiveness/special features	**M/H**	This area provides important breeding habitat for several bird species.
Other Criteria		
Size/shape	**H**	A large area, especially for an alluvial land surface at relatively low altitude.
Connectivity	**M/H**	Riparian vegetation and habitat is modified in places. However, the hydrology of the river system is intact. It provides a link between the almost pristine river headwaters and the Rangitata River.
Long-term Sustainability	**M/H**	Continued plant and animal pest control and protection from water extraction 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 and habitat that is highly representative and is typical/characteristic of the natural diversity of the ecological district. A large example of its type within the ecological district.
Rarity/Distinctiveness	**Yes**	Provides habitat for bird and plant species that are listed as 'threatened' or 'at risk'. The area is an originally rare ecosystem that is listed as 'nationally endangered'.
Diversity and Pattern	**Yes**	Species diversity is typical.
Ecological Context	**Yes**	The area provides a habitat link and is important for the natural hydrological functioning of the river.

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

Most parts of this large SNA are UCL and not automatically available for development. However, some parts are affected by flood protection works and, once stabilized, by pasture development. Otherwise, development of most parts of this area is not practical.

Discussion:

This large area has values that are nationally important. It very easily meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a Significant Natural Area.

References Cited:

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.

Holdaway, R.J.; Wiser, S.K.; Williams, P.A. 2012. Status assessment of New Zealand's naturally uncommon ecosystems. *Conservation Biology*, 2012.

Leathwick, J; Wilson, G; Rutledge, D; Wardle, P; Morgan, F; Johnston, K; McLeod, M; Kirkpatrick, R. 2003. *Land Environments of New Zealand*. David Bateman Ltd.

Robertson, C.J.R.; Hyvönen, P.; Fraser, M.J.; Pickard, C.R. 2007. *Atlas of Bird Distribution in New Zealand 1999-2004*. Ornithological Society of New Zealand, 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.

Walker, S.; Price, R.; Rutledge, D.; Stephens, R.T.T.; Lee, W.G. 2006. Recent loss of indigenous cover in New Zealand. *NZ Journal of Ecology 30*: 169-177.

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.

TIMARU DISTRICT SNA SURVEY SNAs 762, 767, 768

Area Name: Forest Creek kanuka and beech
Ecological Districts: Orari and Two Thumb
SNA 762: Central map ref. (NZTM): 1430640E-5157440N
SNA 767: Central map ref. (NZTM): 1429240E-5156360N
SNA 768: Central map ref. (NZTM): 1427890E-5154890N
Surveyors: Mike Harding

Property: Ben McLeod and UCL
Nearest Locality: Peel Forest
Area Size (ha): 20 **Altitude (m):** 600-700
Area Size (ha): 45 **Altitude (m):** 650-900
Area Size (ha): 105 **Altitude (m):** 700-900
Survey Time: 5 hours **Survey Date:** 01-05-16

General Description:

These SNAs are areas of mountain beech forest and kanuka forest in the mid reaches of Forest Creek and lower reaches of Butlers Creek. Only small parts of these areas were surveyed, along the Ben McLeod property boundary beside Forest Creek. Views through binoculars and inspection of aerial images indicate that similar vegetation extends onto lower slopes, especially at steep sites where it has presumably escaped earlier disturbance such as fire. The lower (eastern) SNA (762) adjoins significant habitat for birds on the open gravel bed of Forest Creek, described separately as SNA 755.

Plant Communities:

Two main plant communities are present: kanuka forest and mountain beech forest. These plant communities are described below. Naturalized (exotic) species are indicated with an asterisk*.

Kanuka Forest:

This plant community is dominated by kanuka (*Kunzea ericoides*), ranging from tall old trees at the centre of larger stands to younger regenerating trees and shrubs at forest edges. No other canopy plant species are present, except mountain beech (*Nothofagus solandri* var. *cliffortioides*) which is present in older stands and Douglas fir* (*Pseudotsuga menziesii*) observed as a single tree in a forest gap. Additional trees present on adjacent terrace scarps or river banks are cabbage tree (*Cordyline australis*), mountain akeake (*Olearia aviceniifolia*), kowhai (*Sophora microphylla*) and (at the riverbed) grey willow* (*Salix cinerea*).

The forest understorey (at the site surveyed) is open. Species present are matagouri (*Discaria toumatou*), mingimingi (*Coprosma propinqua*), korokio (*Corokia cotoneaster*), sweet brier* (*Rosa rubiginosa*) and lawyer (*Rubus schmidelioides*).

Species present on the forest floor are creeping pohuehue (*Muehlenbeckia axillaris*), bidibid (*Acaena* sp.), hairy pennywort (*Hydrocotyle moschata*), cardamine (*Cardamine debilis* agg.), mouse-ear hawkweed* (*Pilosella officinarum*), prickly shield fern (*Polystichum vestitum*), *Blechnum penna-marina*, necklace fern (*Asplenium flabellifolium*), *Asplenium appendiculatum*, *Poa imbecilla* and the moss *Hypnum cupressiforme*.

kanuka forest (with patches of mountain beech) and scrub on steep rubbly slopes at SNA 767

Additional species at forest margins are koromiko (*Hebe salicifolia*), mountain akeake, tutu (*Coriaria sarmentosa*), *Hebe traversii, Olearia odorata*, porcupine shrub (*Melicytus alpinus*), gooseberry* (*Ribes uva-crispa*), scrub pohuehue (*Muehlenbeckia complexa*), pohuehue (*Muehlenbeckia australis*), golden speargrass (*Aciphylla aurea*), silver tussock (*Poa cita*), fescue tussock (*Festuca novae-zelandiae*), mountain kiokio (*Blechnum montanum*), bracken (*Pteridium esculentum*), Californian thistle* (*Cirsium arvense*) and, at damper valley-floor sites, pukio (*Carex secta*).

Mountain Beech Forest:
This plant community was not surveyed on the property, though it is clear that the forest canopy is dominated by mountain beech. Earlier surveys of beech forest in this area indicate that yellow mistletoe (*Alepis flavida*) and red mistletoe (*Peraxilla tetrapetala*) are likely to be present in the forest canopy. Understorey species recorded in nearby stands are mingimingi, *Coprosma dumosa*, celery pine (*Phyllocladus alpinus*), snow totara (*Podocarpus alpinus*) and bush lawyer (*Rubus cissoides*). Ground-cover species likely to be present are prickly shield fern (*Polystichum vestitum*), thousand-leaved fern (*Hypolepis millefolium*), *Blechnum penna-marina*, *Blechnum minus*, mountain kiokio, *Lagenifera strangulata*, wall lettuce* (*Mycelis muralis*), *Chiloglottis cornuta* and moss species.

Mountain beech forest (centre) with surrounding kanuka forest at SNA 767

Native birds observed were rifleman (*Acanthisitta chloris*), grey warbler (*Gerygone igata*), welcome swallow (*Hirundo tahitica*), harrier hawk (*Circus approximans*) and (at SNA 762) two adult falcon (*Falco novaeseelandiae*), presumably a pair. The lack of access to the main areas of forest precluded effective survey of indigenous fauna. The rubbly lower slopes appear to provide favourable habitat for lizards.

Notable Flora, Fauna and Habitats:

Populations of two plant species listed 'at risk' by de Lange *et al* (2012) are likely to be present at beech forest patches:

yellow mistletoe (*Alepis flavida*) .....declining
red mistletoe (*Peraxilla tetrapetala*).....declining

Two NZ falcon/karearea were observed at SNA 762 and are likely to utilize similar habitats throughout the area. Falcon are listed by Robertson *et al* (2012) as an 'at risk' (recovering) species.

Notable Plant and Animal Pests:
Effective survey of plant pests was not possible. The most important plant pest observed was Douglas fir. A single tree is present within kanuka-beech forest at SNA 767, though more trees and seedlings are likely to be present. Woody weeds present at forest margins are sweet brier, gooseberry and grey willow. Animal pests were not surveyed, though possum sign was observed at the forest margin and several Himalayan tahr observed on lower slopes adjacent to SNA 767.

Boundaries (buffering, fencing, adjoining plant communities and habitats):
The boundaries of these three SNAs have been drawn to include the main forest patches and denser areas of regenerating woody vegetation adjacent to the patches. Steep eroding slopes between forest patches in Butlers Creek have been included within SNA 768. It was not possible, in the absence of full survey, to define these boundaries more precisely.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	**H**	Indigenous vegetation which is highly representative of the original vegetation and typical of that remaining in the ecological district.
Rarity	**M/H**	Beech forest (SNAs 767 and 768) is likely to support populations of two 'at risk' plant species. All areas likely to provide habitat for an 'at risk' bird species (falcon). Forest is rare in this part of the ecological district.
Diversity and pattern	**?**	Unclear
Distinctiveness/special features	**M**	Part of a network of forest patches in the Forest Creek area that collectively provide important habitat for indigenous fauna.
Other Criteria		
Size/shape	**M/H**	Moderate-sized SNAs that are well buffered by their locations on steep rocky slopes.
Connectivity	**M**	These SNAs lie close to other forest patches in the area and are linked to each other by shrubland and tussockland.
Long-term Sustainability	**M/H**	Control of Douglas fir and probably animal pests (e.g. 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 highly representative and is typical/characteristic of the natural diversity of the ecological district.
Rarity/Distinctiveness	**Yes**	Indigenous vegetation that is reduced to less than 20% of its former extent in the ecological district. Likely to support two 'at risk' plant species. Provides habitat for an 'at risk' bird species.
Diversity and Pattern	**?**	Unclear
Ecological Context	**Yes**	Part of a network of forest patches in the Forest Creek area that collectively provide important habitat for indigenous fauna.

Final Consideration (of other matters: Section D, page B-19 of Timaru District Plan):
These areas represent remnants of the indigenous vegetation that was once widespread in this area. There is strong regeneration of indigenous woody plants (especially kanuka) at the sites viewed. The older forest patches have presumably escaped earlier disturbance (notably fire) due to their locations in sheltered rocky gullies. These areas have only very limited potential for development.

Discussion:

If the above assessment is accurate, these sites easily meet the District Plan and Regional Policy Statement criteria for significant natural areas (SNAs). Important values are the presence of highly representative indigenous vegetation, likely populations of 'at risk' plant species, and important habitat for an 'at risk' bird species.

TIMARU DISTRICT SNA SURVEY SNAs 765 and 766

Area Name: Ben McLeod wetlands
Ecological Districts: Orari and Hakatere
SNA 765: Central map ref. (NZTM): 1438510E-5153360N
SNA 766: Central map ref. (NZTM): 1437430E-5161150N
Surveyors: Mike Harding

Property: Ben McLeod
Nearest Locality: Peel Forest
Area Size (ha): c.2.5 **Altitude (m):** 720
Area Size (ha): c.72 **Altitude (m):** 450
Survey Time: 5 hours **Survey Dates:** 27-03-15 and 01-05-16

General Description:

These SNAs are areas of sedgeland-rushland-tussockland which form wetland communities at two separate locations on the property. SNA 765 lies on a river terrace in the Hewson River valley just above the confluence of Taffy Creek. This area was surveyed in March 2015 (for the Department of Conservation). SNA 766 lies on the delta of Forest Creek at its confluence with the Rangitata River. This area was not surveyed but viewed (at a distance) through binoculars and on aerial photographs.

Plant Communities:

Plant communities are described below. Naturalized (exotic) species are indicated with an asterisk*.

SNA 765: Hewson valley terrace wetland:
This community is dominated by bog rush (*Schoenus pauciflorus*). Other species present are pukio (*Carex secta*), rautahi (*Carex coriacea*), soft rush* (*Juncus effusus*), *Olearia bullata*, golden speargrass (*Aciphylla aurea*), *Acaena caesiiglauca*, Yorkshire fog* (*Holcus lanatus*), purging flax* (*Linum catharticum*), lotus* (*Lotus pedunculatus*), *Ranunculus laxa* subsp. *caespitosa*, *Blechnum penna-marina*, *Ranunculus repens**, *Sphagnum cristatum*, *Hypnum cupressiforme* and wire moss (*Polytrichum juniperinum*). This plant community grades at the wetland margins to tussockland dominated by narrow-leaved snow-tussock (*Chionochloa rigida*) and red tussock (*Chionochloa rubra*).

rushland-sedgeland with surrounding tussockland at SNA 765

SNA 766: Forest Creek delta wetland:
It was difficult to determine the composition of this plant community as only distant views could be obtained. The area appears to be dominated by red tussock, with scattered bushes of matagouri (*Discaria toumatou*). Other plant species likely to be present are bog rush, rautahi, *Carex geminata* and introduced species such as Yorkshire fog*.

Notable Flora, Fauna and Habitats:

The Hewson River valley wetland (SNA 765) lies within the E4.2b Level IV Land Environment and the Forest Creek wetland (SNA 766) lies with the J2.2b Level IV Land Environment (Leathwick *et al*, 2003). Indigenous vegetation within E4.2b is listed as 'at risk' and within J2.2b as 'acutely threatened' by Walker *et al* (2006). Seepages and flushes (wetlands) are considered 'originally rare' ecosystems (Williams *et al*, 2007) that are listed as 'endangered' by Holdaway *et al* (2012).

Notable Plant and Animal Pests:

The Hewson valley wetland (SNA 765) is free of woody plant pests. Other typical naturalized species are present, such as soft rush, lotus and Yorkshire fog. Effective survey of the Forest Creek wetland (SNA 766) was not possible. Animal pests were not surveyed.

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

The boundaries of these three SNAs have been drawn to include the extent of wetland vegetation, as determined from aerial photographs. It was not possible, in the absence of full survey, to define these boundaries more precisely.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	**M/H**	Indigenous vegetation which is moderately representative of the original vegetation and typical of that remaining in the ecological district.
Rarity	**M/H**	Wetlands are endangered ecosystems.
Diversity and pattern	**M**	Moderate species diversity at SNA 765; unclear at SNA 766.
Distinctiveness/special features		
Other Criteria		
Size/shape	**M-H**	SNA 765 is moderate-sized (M); SNA 766 is large (H).
Connectivity	**M**	Both wetlands are linked to other indigenous vegetation or habitats: SNA 765 to tussockland; SNA 766 to extensive riverbed habitat.
Long-term Sustainability	**M/H**	Control of plant and animal pests (e.g. possums) is probably 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. SNA 766 is a relatively large example.
Rarity/Distinctiveness	**Yes**	Indigenous vegetation that is reduced to less than 20% of its former extent in the land environment. Seepage wetlands are endangered ecosystems.
Diversity and Pattern	**?**	
Ecological Context	**Yes**	Both wetlands, and especially SNA 766, play an important hydrological role in the natural functioning of the river systems.

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

These areas represent remnants of indigenous wetland vegetation that was formerly more widespread in this area. It is difficult to determine the composition and condition of the Forest Creek wetland, though it is a large area that appears relatively intact from aerial photos. Both areas have potential for development, though the Hewson valley site is very isolated and the Forest creek site would probably require extensive drainage.

Discussion:

If the above assessment is accurate, these sites easily meet the District Plan and Regional Policy Statement criteria for significant natural areas (SNAs). Important values are the presence of representative indigenous wetland vegetation in land environments within which indigenous vegetation is substantially depleted.

TIMARU DISTRICT SNA SURVEY SNAs 769-774

Area Name: Upper Rangitata River
Property: UCL and AMF
Ecological Districts: Hakatere and Orari
Nearest Locality: Peel Forest
Surveyors: Mike Harding
Survey Time: n/a **Survey Date:** n/a

General Description:

These SNAs comprise the flood plain of the upper Rangitata River, above Rangitata Gorge. They lie predominantly on Unallocated Crown Land (UCL). However, small parts of the floodplain lie within adjacent privately-owned or leasehold land parcels. Some parts may be covered by Ad Medium Filium (AMF) rights. The key value of these SNAs is the habitat the riverbed provides for indigenous birds, including threatened species. Also, stable parts of the river floodplain support indigenous plant communities, including several at risk species. These SNAs comprise one contiguous area; it is separated into different SNAs only for mapping purposes.

Plant Communities:

Gravelfield, stonefield, herbfield, grassland, shrubland and sedgeland-rushland (wetland) plant communities are present. Most parts of the riverbed comprise recently-deposited river gravels with scattered herbs and grasses, which are frequently swept away by floods before more stable plant communities can become established. At stable sites, indigenous mat plants become established, along with a range of indigenous and exotic herbs and grasses. If a site remains stable, a grassland-herbfield becomes established and eventually the site is colonised by shrubs. Small areas of sedgeland-rushland (wetland) vegetation are present at damp stable sites.

Birds/Fauna Habitat:

The open gravels of the riverbed provided habitat for at least 20 indigenous bird species during the period 1999 to 2004 (Robertson *et al*, 2007). The riverbed provides very important breeding habitat for wrybill (*Anarhynchus frontalis*), black-fronted tern (*Sterna albostriata*), banded dotterel (*Charadrius bicintus*) and black-billed gull (*Larus bulleri*). Stable parts of the river berms are likely to provide important habitat for lizards, especially where there is good vegetation cover.

Notable Flora, Fauna and Habitats:

The bed of the upper Rangitata River was recommended for protection as Priority Natural Area 21 by the Protected Natural Areas report for Heron Ecological Region (Harrington *et al*, 1986). The upper Rangitata River was also listed as a Site of Special Wildlife Interest by the (former) New Zealand Wildlife Service and as a Wetland of Ecological and Representative Importance by the Department of Conservation.

Recent river flood plains are not covered by the Land Environments framework compiled by Leathwick *et al* (2003). However, adjacent Level IV Land Environments at areas of stable riverbed and recent terraces are listed as 'acutely threatened' by Walker *et al* (2006). Braided riverbeds are listed as originally rare ecosystems by Williams *et al* (2007) that are classified as 'nationally endangered' by Holdway *et al* (2012).

A number of plants listed as 'at risk' by de Lange *et al* (2102) are present on the floodplain of the upper Rangitata River, including:

Anthosachne falcis.....naturally uncommon
Carmichaelia appressa.....naturally uncommon
Craspedia "Havelock River".....naturally uncommon
Luzula celata.....declining
Muehlenbeckia ephedroides.....declining
Raoulia monroi.....declining

Eleven native bird species listed as 'threatened' or 'at risk' by Robertson *et al* (2012) have been recorded from the upper Rangitata River in recent years:

banded dotterel (*Charadrius bicinctus*)..... nationally vulnerable
black-billed gull (*Larus bulleri*)..... nationally critical
black-fronted tern (*Sterna albostriata*)..... nationally endangered
black shag (*Phalacrocorax carbo*)..... naturally uncommon
Caspian tern (*Sterna caspia*) ..... nationally vulnerable
grey duck (*Anas superciliosa*) ..... nationally critical
little shag (*Phalacrocorax melanoleucos*) ..... naturally uncommon
NZ pipit (*Anthus novaeseelandiae*) ..... declining

pied stilt (*Himantopus himantopus*) ..... declining
South Island pied oystercatcher (*Haematopus ostralegus*) .... declining
wrybill (*Anarhynchus frontalis*) ..... nationally vulnerable

Notable Plant and Animal Pests:
Open river gravels are especially vulnerable to invasion by plant pests. Important plant pests recorded from or near the bed of the upper Rangitata River (Harding, 2002) and on more recent surveys, or that pose a significant threat, are:

broom (*Cytisus scoparius*)
cotoneaster (*Cotoneaster microphylla*)
crack willow (*Salix fragilis*)
Douglas fir (*Pseudotsuga menziesii*)
false tamarisk (*Myricaria germanica*)
grey willow (*Salix cinerea*)
gorse (*Ulex europaeus*)
Russell lupin (*Lupinus polyphyllus*)
sweet brier (*Rosa rubiginosa*)
thyme (*Thymus vulgaris*)
wilding pines (*Pinus* species)

A number of non-woody weed species are common, notably St John's wort (*Hypericum perforatum*), haresfoot trefoil (*Trifolium arvense*), Californian thistle (*Cirsium arvense*), viper's bugloss (*Echium vulgare*), mouse-ear hawkweed (*Pilosella officinarum*), sheep's sorrel (*Rumex acetosella*), sweet vernal (*Anthoxanthum odoratum*) and browntop (*Agrostis capillaris*).

Animal pests were not surveyed, though rabbits and hares are present. A number of important introduced predators are also likely to be present, including rats, feral cats, hedgehogs, stoats and ferrets. These predators pose a significant threat to indigenous birds and lizards.

Boundaries (buffering, fencing, adjoining plant communities and habitats):
The boundaries of these areas have been drawn (from aerial photos) to include all areas of open gravel and stable vegetated islands within the main river floodplain. This boundary extends beyond areas of UCL into adjacent land parcels at some locations. Ground survey is required to confirm the accuracy of proposed boundaries at these locations.

Upper Rangitata River SNA, downstream from the confluence of Potts River (at left)

Condition and Management

Most parts of the river floodplain are in good condition. Regular flooding helps maintain the areas of open gravel that are important as nesting habitat for riverbed birds. Landowners in the upper Rangitata valley have undertaken coordinated plant pest control for many years in an attempt to maintain the riverbed and adjacent lands free of the most important plant pests, such as broom, gorse and crack willow. This plant pest control programme has received financial support from Timaru District Council and other agencies. In recent years there has been a coordinated predator control programme in the upper Rangitata valley.

ASSESSMENT AGAINST DISTRICT PLAN CRITERIA:

Primary Criteria	Rank	Notes
Representativeness	**H**	Most parts of the river floodplain are highly representative of the original condition and are typical of that remaining in the ecological district.
Rarity	**H**	The riverbed provides habitat for six 'threatened' and five 'at risk' bird species, and at least six 'at risk' plant species.
Diversity and pattern	**H**	Habitat and species diversity is similar to that originally present.
Distinctiveness/special features	**H**	This area provides nationally important breeding habitat for several bird species.
Other Criteria		
Size/shape	**H**	A very large area, especially for an alluvial land surface at relatively low altitude.
Connectivity	**M/H**	Riparian vegetation and habitat is modified in many places. However, the hydrology of the river system is intact. It provides a link between the almost pristine river headwaters and habitats in the lower reaches of the river.
Long-term Sustainability	**M/H**	Continued plant and animal pest control and protection from water extraction will be required to maintain ecological values in the long term.

ASSESSMENT AGAINST REGIONAL POLICY STATEMENT CRITERIA:

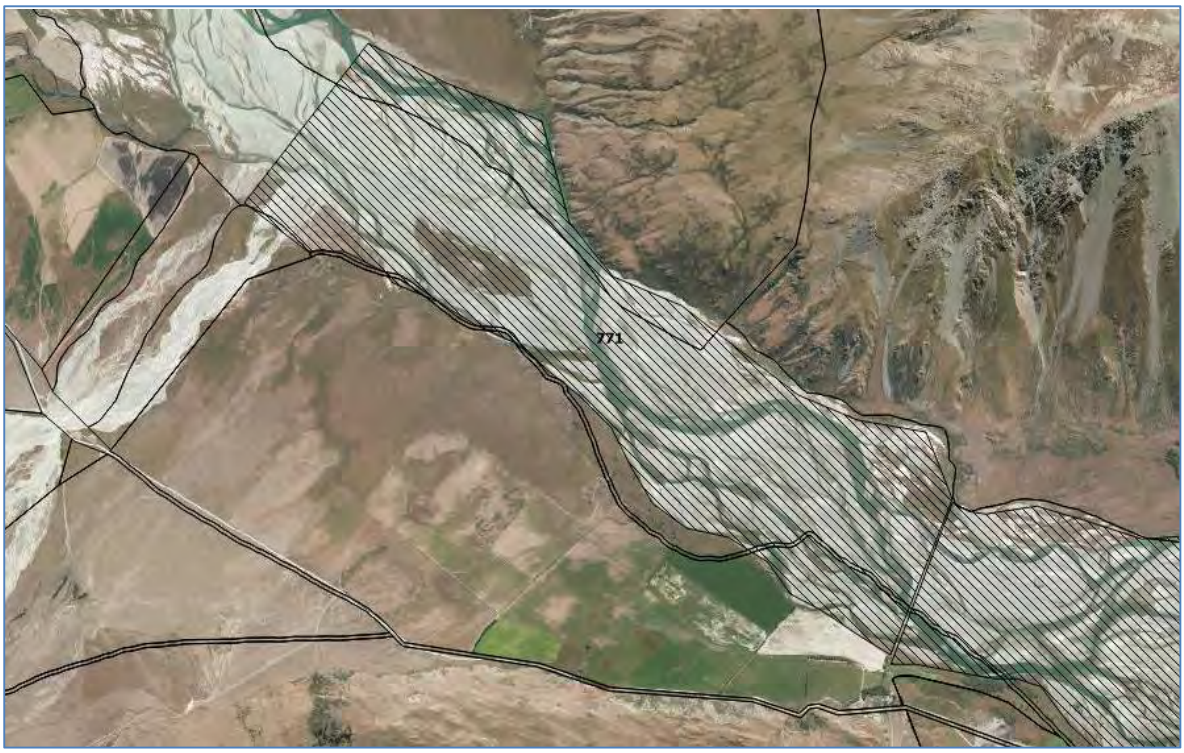
Criteria	Yes/No	Comments
Representativeness	**Yes**	Indigenous vegetation and habitat that is highly representative and is typical/characteristic of the natural diversity of the ecological district. A very large example of its type within the ecological district.
Rarity/Distinctiveness	**Yes**	Provides habitat for at least eleven bird and six plant species that are listed as 'threatened' or 'at risk'. The area is an originally rare ecosystem that is listed as 'nationally endangered'.
Diversity and Pattern	**Yes**	Bird species diversity is high.
Ecological Context	**Yes**	The area provides an important habitat link and is critical for the natural hydrological functioning of the Rangitata River.

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

Most parts of this large SNA are UCL and not automatically available for development. However, some parts are affected by flood protection works and, once stabilized, by pasture development. Otherwise, development of most parts of this area is not practical.

Discussion:

This large area has values that are nationally important. It very easily meets the Timaru District Plan and Canterbury Regional Policy Statement criteria for a Significant Natural Area.



Part of Upper Rangitata River (SNA 771)

References Cited:

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.

Harding, M.A. 2002. Upper Rangitata River: weed infestations on unoccupied Crown land and AMF land in the upper catchment of the Rangitata River, Canterbury. *Unpublished Contract Report.* Department of Conservation, Raukapuka Area, Geraldine.

Harrington, W.M.A.; Cooper, P.J.; Davis, C.M.; Higham, T.D.; Mason, C.R. 1986. Heron Ecological Region: survey report for the Protected Natural Areas Programme. *New Zealand Protected Natural Areas Programme No.4*. Department of Lands and Survey, Wellington.

Holdaway, R.J.; Wiser, S.K.; Williams, P.A. 2012. Status assessment of New Zealand's naturally uncommon ecosystems. *Conservation Biology*, 2012.

Leathwick, J; Wilson, G; Rutledge, D; Wardle, P; Morgan, F; Johnston, K; McLeod, M; Kirkpatrick, R. 2003. *Land Environments of New Zealand.* David Bateman Ltd.

Robertson, C.J.R.; Hyvönen, P.; Fraser, M.J.; Pickard, C.R. 2007. *Atlas of Bird Distribution in New Zealand 1999-2004*. Ornithological Society of New Zealand, 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.

Walker, S.; Price, R.; Rutledge, D.; Stephens, R.T.T.; Lee, W.G. 2006. Recent loss of indigenous cover in New Zealand. *NZ Journal of Ecology 30*: 169-177.

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.