

## TIMARU DISTRICT SNA SURVEY

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<b>Area Name:</b> Te Ana a Wai River	<b>Property:</b> UCL, DOC, LINZ and ECAN <sup>1</sup> tenure (see Attachment 1 & 2).
<b>Location (NZTM):</b> Upper reference point: 1436879, 5092050; lower reference point: 1450997, 5098921	<b>Nearest Locality:</b> Pleasant Point
<b>Ecological District:</b> Geraldine & Fairlie	<b>Area Size (ha):</b> 340ha
<b>Surveyor(s):</b> Jean Jack	<b>Survey Duration:</b> 1hr
<b>Survey Date:</b> 31.10.2019	<b>Altitude(m):</b> 65m – 150m

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### General Description

This 342ha area covers the Te Ana a Wai River from Cave to the junction with the Opihi River near Pleasant Point. The area covers both the riverbed and river berms including flood protection plantings (see Attachment 1 & 2).

The area spans two ecological districts (Geraldine and Fairlie). It includes extensive vegetated and unvegetated riverbed of the Te Ana a Wai River braid plain and contiguous plant communities across berm areas.

The riverbed provides habitat for threatened river bird species. The contiguous riparian/berm vegetation buffers the river from adjoining land use activities and provides habitat to the threatened long-tailed bat and may facilitate the dispersal and persistence of other indigenous fauna including lizards and forest birds.

The site adjoins two areas previously surveyed by Mike Harding proposed as SNAs (site reference 729a & 469a; see Attachment 2).

Photographs from site visits are provided within Attachment 3.

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<sup>1</sup> Acronyms: UCL: Unallocated Crown Land; LINZ: Land Information New Zealand; DOC: Department of Conservation; ECAN: Environment Canterbury Regional Council; TDC: Timaru District Council.

## Plant Communities

### Floodplain plant communities

Various leading plant species<sup>2</sup> occur within the stonefields, gravelfields and sandfields of the riverbed with more extensive areas of these species forming herbfield, grassland, shrubland and, where more stable, scrub.

#### *Stonefield/gravelfield/sandfield*

The extent of vegetated and un-vegetated bare stones within the riverbed is directly influenced by the flow regimes of the river. Leading plant species observed within these areas include naturalised exotic grasses, brassica (*Brassicca* sp.), monkey musk (*Erythranthe* sp.) and broom (*Cytosis scoparium*).

These species form grassland, herbfield, shrubland and scrub within less recently disturbed areas of the floodplain.

### River-berm plant communities

Three main vegetation structures occur within river berms including planted (flood protection) or naturalised forest and treeland; gorse or broom-scrub and shrubland and naturalised exotic grassland.

#### *Forest & treeland*

Exotic forest & treeland are the most common vegetation structure across the river berms. Canopy species primarily consist of planted (flood protection) and naturalised woody exotic vegetation including crack willow (*Salix fragilis*), poplar species (*Populus* sp.) and sycamore (*Acer pseudoplatanus*).

Sub-canopy species include exotic broom, plum (*Prunus* sp.), elderberry (*Sambucus nigra*) and blackberry (*Rubus fruticosus*) while exotic herbs and grasses dominate the under-storey.

#### *Scrub & shrubland*

Where forest and treeland does not occur, areas of exotic scrub and shrubland are common and dominated by broom and gorse. Scattered trees including crack willow, elderberry, poplar and sycamore occur within these areas.

#### *Grassland*

Exotic grassland plant communities occur at the edge or within spaces unoccupied by the vegetation structures reported above.

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<sup>2</sup> Stonefields, gravelfields and Sandfields as defined by Atkinson 1985 where the area of unconsolidated bare stones (20-200 mm diam.) and/or gravel (2-20 mm diam.) exceeds the area covered by anyone class of plant growth form.

## Birds Observed

From limited survey effort native birds observed within the river-berms included pīwakawaka / South Island fantail (*Rhipidura f. fuliginosa*), silvereye (*Zosterops lateralis*) & grey warbler (*Gerygone igata*). Introduced or naturalised species included chaffinch (*Fringilla coelebs*), Eurasian blackbird (*Turdus merula*) & yellowhammer (*Emberiza citronella*).

## Notable Flora, Fauna and Habitats

### *River bird habitat*

The site includes habitats of specialised river bird species including seeps, shallow & major channels, active shingle bars and flats, small river terraces. While the river bird habitat is not the largest, most intact or representative of those found in the region, as for other smaller hill-fed rivers it contributes to the network of habitats; providing resilience to this network which support an assemblage of river bird species including several threatened species.

Threatened and At Risk-Declining river bird species which have been recorded on the Te Ana a Wai River site include the black-fronted tern (*Sterna albobriata*), black-billed gull (*Larus bulleri*) and South Island pied oystercatcher (*Haematopus unicolor*). The black shag (*Phalacrocorax carbo novaehollandiae*) and black-fronted dotterel (*Charadrius melanops*), Naturally Uncommon species, have been known from the lower reaches of the Te Ana a Wai river. Other species recorded on the river include kingfisher (*Halcyon sancta*), pied stilt (*Himantopus himantopus leucocephalus*), pūkeko (*Porphyrio melanotus*), southern black-backed gull (*Larus dominicanus*), spur-winged plover (*Vanellus miles*) and white-faced heron (*Egretta novaehollandiae*) (Department of Conservation river bird survey data, 1985).

O'Connell (2000) reported that the river had low numbers of typical indigenous braided river species representing 4 guilds and considered the habitat to be of Local significance.

### *Lizard habitat*

Discrete areas within river berms were observed which may provide suitable habitat to two native lizard species including McCann's skink (*Oligosoma maccanni*; Not threatened) and Southern grass skink (*Oligosoma aff. polychroma* Clade 5; At Risk, Declining). A history of disturbance, likely predation pressures and the extensive shading by the riparian forest structure (which reduces basking opportunities, critical for the biology of these lizards) lessens the quality of lizard habitat provided by the berms. While lizards are likely to be in low numbers and the habitat degraded, the river berms do provide some of the last remaining habitat connecting populations which have otherwise become highly isolated across their natural ranges particularly within the lower elevations of the Geraldine ED.

### *Long-tailed bat habitat*

The only known long-tailed bat (*Chalinolobus tuberculatus*; Threatened: Nationally Critical) population on the East Coast of the South Island is known from Peel Forest in the north, southwards through the foothill rivers to Pleasant Point, including the lower reaches of the Te Ana a Wai River. The bats are known to prefer older cavity-bearing trees including

riparian willow & forage over riverbeds (O'Donnell, 2000b). Several roosts in such willow have been located within the proposed SNA area (see Attachment 4).

### **Notable Plant and Animal Pests**

Plant pests occurring within functional river protection plantings which most threaten indigenous biodiversity values are the vines including old man's beard and ivy. Sycamore also poses a significant threat to native forest regeneration on the river berms. Exotic vegetation which may provide a better nursery environment for natural regeneration of indigenous vegetation than other exotic cover includes blackberry, willow and gorse.

Animal pests were not observed but likely include those that threaten indigenous biodiversity values through predation including feral cats (*Felis catus*), hedgehog (*Erinaceus europaeus*), mustelids (*Mustela* sp.) and rodents (Muridae). Wild deer (*Cervus elaphus*) and possum (*Trichosurus vulpecula*), particularly in the upper river site may limit indigenous vegetation regeneration.

### **Boundaries (buffering, fencing, adjoining plant communities and habitats)**

The Te Ana a Wai River site is bounded by land developed for agricultural. Distances between these surrounding land uses, and the active riverbed gravels vary from only a few meters to more than 200 meters. Aerial imagery indicate boundaries with stocked areas are fenced.

### **Condition and Management Issues**

#### Indigenous faunal habitats

##### *River bird habitat*

Pressures common to all river bird habitat in Canterbury threaten the river bird values of the Te Ana a Wai River. These include predation, weed encroachment of open gravels and disturbance of various sources (vehicles, people, dogs etc). Modified flows and hydrology are also linked to ecosystem functions which support river bird species. Climate change also presents challenges as it will exacerbate these pressures<sup>3</sup>.

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<sup>3</sup> Climate change will alter underlying drivers of river morphology and ecosystems; adaptive management approaches will be required to address key issues as they develop. Expected climate change trends within Canterbury (NIWA, 2020) such as increased precipitation (alpine fed rivers), reduced precipitation (foothill rivers), higher temps, more extreme weather events and the interactions of these changes with biotic components (indigenous & exotic) will have wide ranging consequences. Braided rivers are dynamic systems with high flows being part of what shapes their form and contributes to their natural character. Increased flows expected from climate change can reset and restore natural character – braided channels, alter habitat and remove (exotic) vegetation. Such flows however if more frequent and within constrained braid plains, may adversely affect river bird nesting success; heightening the importance of the more stable nesting environments of foothill rivers such as the Te Ana a Wai. The ability of the Orari to provide such surrogate habitat may be limited

Management actions to address these pressures, or the issues they create, will be required if existing river bird habitat is to be maintained and protected.

Maintaining or enhancing the natural character of braided rivers and the biodiversity of these ecosystems might be most effectively achieved by ensuring management allows for their natural processes to respond to climate change (flows and braid plain extent), while also preparing to implement relevant management actions where processes have been put at risk by climate change (i.e. weed management).

#### *Forest bird habitat*

The river berm provides forest bird habitat and could be managed to further support forest bird populations, such as the increased use of suitable native vegetation within river protection plantings and ensuring the extent of the forests are maintained.

#### *Lizard habitat*

Habitat for lizard species occurring within the river berms could be enhanced through provisions within operational river berm management practices. This could entail identifying suitable north-facing refuge strips within berm areas which would remain undisturbed by ongoing berm forest management. Predator control programmes for lizard conservation may also be feasible at discrete prioritised sites and could potentially be aligned with river bird predator control programmes.

#### *Bat habitat*

The riverbed and berm forest vegetation of river has been identified for long-tailed bat habitat (O'Donnell 2000b; see Attachment 4). Provisions within operational river berm management practices, such as the purposeful retention of dead or older trees with suitable resting and breeding cavities, could enhance the provision of habitat to bats. Consultation with Department of Conservation staff implementing DOC's bat (pekapeka) recovery plan for South Canterbury is recommended.

Any allocation of resources towards conservation management initiatives should consider any relevant regional or national conservation priorities.

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however if lower flows from climate change reduce dynamic braid processes (more stable channels) which will facilitate greater extent of vegetated riverbeds – which will have consequences for the ecology on the river – e.g. reducing braided river nesting bird habitat.

## Significance Assessment

<b>Significance Assessment<sup>4</sup>: Te Ana a Wai River Site.</b>				
<i>Where relevant riverbed and river berms have been assessed separately to clarify which habitat the ecological value relates to, or where value between habitats differ. Where unspecified, both habitats are relevant to the assessment criterion. The proposed SNA area comprises of both habitats.</i>				
Criteria Matter	#	Regional Policy Statement Criteria	Rank - High, Mod, Low, Met	Notes
Representativeness	1	<b>Representative, typical or characteristic</b>	<b>L/M</b>	<b>Riverbed:</b> Indigenous river bird habitat. Some guilds of birds typical of present-day braided river ecosystems of the ED, including waders, waterfowl, divers, gulls & terns inc. low numbers of typical species; habitat type represented widely elsewhere (O'Donnell, 2000). Dated data.
			<b>L</b>	<b>River berm:</b> Indigenous bird habitat - low value. Habitat of three widely distributed indigenous forest birds & limited records.
	2	Relatively large example (size)	<b>L</b>	<b>Riverbed:</b> Indigenous river bird habitat - relative to other hill-fed braided river bird habitat within the Ecological Region. Low.
			<b>M</b>	<b>River berm:</b> Bat habitat approx. 5% of that identified by the Department. Moderate.
Rarity/ Distinctiveness	3	Habitat or vegetation that has been reduced to less than 20% of ED	-	<b>Riverbed:</b> Braided river bird habitat of Canterbury has been reduced; a 20% threshold has yet to be determined by the author. Limited historical

<sup>4</sup> Significance criteria from CRPS with reference to guidelines (Wildlands, 2013). Bold type indicates 'Primary' criteria as identified by Timaru District Plan Part B

				imagery. Foothill fed braided river bird habitat of the Te Ana a Wai reduced by river protection works however a 20% threshold is unclear.
			-	<b>River berm:</b> n/a
	4	<b>Supports nationally threatened, at risk or uncommon species (or within ED)</b>	M/H	<b>Riverbed:</b> Two threatened river bird species; black-billed gull, black-fronted tern & the uncommon black-fronted dotterel (1985 records).
			M/H	<b>River berm:</b> Long-tailed bat (Threatened: Nationally Critical) roosts in berm vegetation & forages across riverbed. Highly mobile, though of restricted range.
	5	<b>Distributional limit [TDC criteria iv]</b>	Met - M	<b>Riverbed &amp; berm (considered one area):</b> Southern limit of long-tailed bat habitat area within the ecological region.
	6	<b>Distinctive, restricted occurrence, naturally uncommon ecosystem, result of unusual environmental factor/s [TDC criteria iv]</b>	M	<b>Riverbed:</b> Braided riverbed ecosystem type (O'Donnell 2000) which is 'Naturally Uncommon'.
-			<b>River berm:</b> -	
Diversity and pattern	7	<b>High diversity of habitat types or taxa, or reflects diverse features or ecological gradients or processes [TDC criteria iv]</b>	L	<b>Riverbed &amp; berm (considered one area):</b> Riparian habitats including some discrete springs and backwaters/wetlands. Typical river bird species diversity within guilds, low habitat diversity (O'Donnell 2000). Reduced riverbed habitat extent due to stop banks and vegetation (weed) establishment. Typical braided river terraces creating habitat gradients are not present.

Ecological context	8	Important ecological linkages or network or buffering	M	<b>Riverbed:</b> River bird habitat network. Connectivity to and support of Opihi River habitats and ecological processes. Linkage to wider bat feeding habitat of river fairways.
			M	<b>River berm:</b> The site provides contiguous plant communities which provide a corridor of habitat facilitating dispersal of fauna. Riparian vegetation buffers (point source) waterways from land uses; linkage to wider bat roosting habitats.
	9	Wetland with important role in natural functioning of river or coastal system	n/a	The area is not a wetland itself; however discrete areas of riverine wetland likely occur within the river berms and the value of these have been considered under criterion 7.
	10	<b>Provides important habitat for species (including seasonally) [TDC criteria iv]</b>	L/M	<b>Riverbed:</b> Moderate value. Contributes to the resilience of a network of braided river bird habitat including small foothill and large alpine which support threatened and uncommon river bird species. Provides habitat to long-tailed bat.
M			<b>River berm:</b> Moderate value. Provides roosting habitat to long-tailed bat.	



**Assessment summary:**

The Te Ana a Wai River area met criteria of the CRPS for ecological significance under several for both riverbed and river berm habitats. While assessment did not find the area to be highly significant under any one criterion, the area represents an uncommon ecosystem type (braided rivers) and provides important habitat to threatened fauna including braided river bird species and the native long-tailed bat.

The assessment is based on limited field survey information and further survey effort would provide a more robust ecological assessment.

The scheduling of this area as an SNA within the Timaru district plan has the potential to improve the protection of these significant ecological values and with additional management indigenous vegetation and habitats of indigenous fauna could be enhanced.

## **Resources Cited:**

Atkinson, I.A.E. 1985. Derivation of vegetation mapping units for an ecological survey of Tongariro National North Island, New Zealand. *New Zealand Journal of Botany*, Vol. 23: 361-378

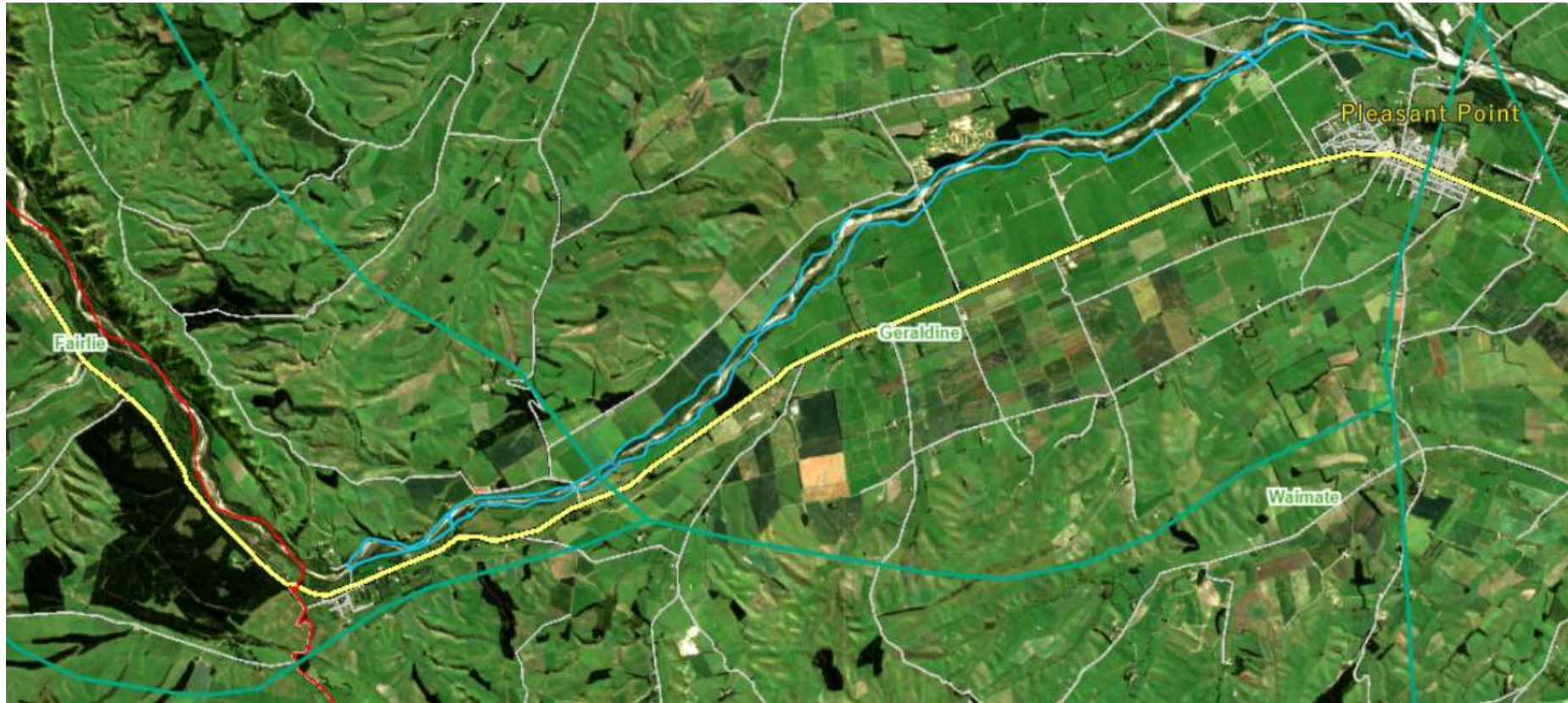
National Institute of Water & Atmospheric Research Ltd (NIWA). 2020. Climate change projections for the Canterbury Region. A report prepared for Environment Canterbury February 2020.

O'Donnell. 2000. Environment Canterbury Unpublished Report U00/37 - The significance of river and open water habitats for indigenous birds in Canterbury, New Zealand (June 2000). Report by Dr Colin F. J. O'Donnell, Science & Research Unit, Department of Conservation

O'Donnell. 2000b. Environment Canterbury Unpublished Report U00/38 - Distribution, status and conservation status of long-tailed bat.

Wildland Consultants. 2013. Guidelines for the application of ecological significance criteria for indigenous vegetation and habitats of indigenous fauna and wetlands in Canterbury. Contract Report No. 2289c prepared for Environment Canterbury.

**Attachment 1:** Extent of the Te Ana a Wai River area (blue) shown with ecological district boundaries (green) and the district council boundary (red).



**Attachment 2:** Determination of the extent of the assessed SNA area with contiguous private land and adjacent existing proposed SNAs.

Maps were collated using Arc Map. The proposed Te Ana a Wai River site extent (Attachment 1) was determined by desktop assessment of aerial imagery. Site boundaries were drawn to include the riverbed and river berms where vegetation was contiguous with the river berms. The Land Parcel feature in the Ecan Maps Base Layers was used to identify public land relevant to the proposed site. Unallocated land parcels (the majority of parcels), Ecan, LINZ and District Council were converted to graphics and merged. This graphic was then used ('clipped') to identify the public land for SNA consideration.

**Key**

Green fill: The assessed proposed SNA area. This includes the combined unallocated, Ecan, LINZ and TDC tenure areas.

Yellow fill: Private land captured by initial desktop assessment of apparently contiguous riverbed and berm features. This is shown to explain the boundaries of the proposed SNA boundaries which may appear incongruous with ecological boundaries.

Pink fill: Three areas previously assessed for SNA proposals to the Timaru District Council.



Below: Merged public land parcels associated with the Te Ana a Wai River.



Additional tenure maps for transparency of aerial imagery. Unallocated, Ecan, LINZ and TDC (green hash) within the assessed SNA area, and private tenure (yellow hash) not included in the proposed SNA area but shown here to explain area boundaries. If required, refer to spatial files for greater boundary clarity.



### Attachment 3: Photographs



Above: Typical river berm vegetation of amenity plantings (macrocarpa shelterbelts) and river protection plantings (poplar and willow). Note proximity of agricultural land use adjoining river margins.

Below: Typical riverbed herbfields (*Brassica* sp.) and exotic grasslands occurring within the riverbed. River protection plantings of willow and poplar occur along the berm with an understory of broom and emerging sycamore.

Approximate location of images: NZTM 1439870, 5093102; Cleland road bridge.





Above: Willow tree known to provide bat roosting habitat within the proposed SNA site. The right image shows protective tree collars deployed by the Department of Conservation to reduce predation risk to bats. Signage is also installed to increase public and land manager awareness of bat habitat (Approximate location: NZTM 1449816, 5099043).

**Attachment 4:** Long-tailed bat habitat area (above) and known roosting tree locations (below) of Te Ana a Wai river and surrounds (Source: Department of Conservation. 2019. Known roosting habitats long-tailed bat populations in Canterbury. Accompanies Environment Canterbury Unpublished Report U00/38 & *pers. comm.*).

