Part A: WETLAND RECORD SHEET

Wetland name: Styx River mouth
Region: Canterbury Plains ER, Low Plains ED
Altitude: <5 m

Date: March 2009
GPS/Grid Ref.:
No. of plots sampled: Overview only

Classification: I System	IA Subsystem	II Wetland Class	IIA Wetland Form
Estuarine	Tidal	Saltmarsh	Estuary
Palustrine	Permanent	Swamp	Floodplain
Palustrine	Temporary	Shallow water and marsh	Floodplain
Riverine	Seasonal	Marsh	River margin

Of the *c.* 60 ha wetland area, about two-thirds % is tidal saltmarsh. Other main wetland habitats are palustrine swamp, riverine marsh and 'relict' saltmarsh. Wetland extent and hydrology has been affected by drains and river engineering works.

Field team: Philip Grove, Mark Parker

Indicator	Indicator components	Specify and Comment	Score 0– 5[1]	Mean score
Change in hydrological integrity	Impact of manmade structures	Stopbanks; floodgate; drains affect 50-75% of wetland	2	3
	Water table depth	Structures have lowered water table over parts of the remaining wetland area.	3	
	Dryland plant invasion	Some gorse invasion of wetland vegetation	4	
Change in physico-chemical parameters	Fire damage	Occasional localised fires	4	3
	Degree of sedimentation/erosion	High sediment levels over much of the tidal saltmarsh and inflowing drains	2	
	Nutrient levels	Elevated as result of catchment land use.	3	
	Von Post index	Not assessed.		
Change in ecosystem intactness	Loss in area of original wetland	Estimated 50-75% of original wetland extent lost since European settlement	2	2
	Connectivity barriers	Styx River floodgate	2	
Change in browsing, predation & harvesting regimes	Damage by domestic or feral animals	Not grazed. Has recovered from past damage.	5	3.7
	Introduced predator impacts on wildlife	Usual suite of mammalian predators likely to be present plus domestic cats and dogs. However some pest control in recent years.	3	
	Harvesting levels	Eel, flounder, whitebait fishing; duck and goose shooting.	3	
Change in dominance of native plants	Introduced plant canopy cover	Exotic grass, gorse	4	3.5
	Introduced plant understorey cover	Exotic grass and herbs	3	
Total wetland condition index /25				15.2

[1] Assign degree of modification as follows: 5=v. low/ none, 4=low, 3=medium, 2=high, 1=v. high, 0=extreme

Main wetland vegetation types:

	Area
• Marsh ribbonwood shrubland	19 ha
• Oioi restiad rushland	18 ha
• Sea rush rushland	8 ha
• *Juncus edgariae – J. sarophorus* rushland and wet pasture	6 ha
• Raupo reedland	3 ha
• Three square – *Bolboschoenus caldwellii* reedland	2 ha

Native fauna:
There have been several recorded sightings of secretive and threatened Australasian bittern from the Styx River mouth wetland complex in recent years. While bittern utilise the wider saltmarsh, feeding along the margins of rivers and creeks, the large stands of raupo in the centre of the survey area are their critical breeding habitat. Marsh crake are the other, even more secretive, threatened swamp bird species recorded from the Styx Mouth wetlands (Crossland 2008). Pukeko are common throughout the Styx Mouth wetlands and surrounding area.

Little shag and black shag roost in trees along the tidal section of the Styx River (between floodgates and Brooklands Lagoon). White-faced heron are resident and breeding in the area and commonly seen feeding along the eastern lagoon margin. White heron and royal spoonbill are regular visitors.

Mallard, NZ shoveler, NZ scaup, grey teal and paradise shelduck are common, particularly around the mouth of the Styx River and along the eastern edge of the area towards the Waimakariri River. Threatened grey duck have also been recorded. The complex of dense wetland vegetation, creeks and ephemeral ponds provide good waterfowl breeding habitat.

There are resident breeding populations of South Island pied oystercatcher, pied stilt and banded dotterel. The eastern margin of the area adjoining Brooklands Lagoon provides valuable feeding and high tide roosting habitat for these species as well as migratory wrybill and godwits in season. Black-backed gull and red billed gull are resident in the area, with threatened black-billed gull, black-fronted tern, white-fronted tern and Caspian tern all regular visitors.

Fish
Eels, brown trout, yellow-eyed mullet and inanga all move through the lower Styx River. The upper raupo-lined reaches of several small tributary creeks contained within the survey area are considered to be good potential inanga spawning sites (M. Taylor pers. comm. 2009).

Pressure	**Score**[2]	**Specify and Comment**
Modifications to catchment hydrology	4	Clearance of native vegetation, drainage, urban development, flood control structures and river engineering.
Water quality within the catchment	2	Possible mild pollution.
Animal access	2	Stock excluded from area. Control of some pest species.
Key undesirable species	2	18/43 listed species thought to be present.
% catchment in introduced vegetation	4	Over 75% of catchment in introduced vegetation.
Other pressures	3	Further urban development in catchment.
Total wetland pressure index /30	18	

[2]Assign pressure scores as follows: 5=extreme, 4=very high, 3=high, 2=moderate, 1=low, 0=none

Part B: Ecological significance assessment

The site is assessed against criteria developed for the Proposed Canterbury Regional Policy Statement (Wildland Consultants Limited, 2011)

Criteria	Rank	Notes
Representativeness	High	Estuary hydrological processes modified but ecological functioning still intact. Extensive areas of native saltmarsh vegetation and freshwater wetland habitats. Good wildlife habitat.
Rarity / Distinctiveness	High	Indigenous wetland vegetation and habitats in coastal land environment that retains < 20% of indigenous cover. Estuary habitats relatively rare in Canterbury. Supports threatened species such as bittern, banded dotterel, black-fronted tern.
Diversity and pattern	High	Unvegetated sand and mud flats, saltmarsh, freshwater wetland habitats all present. High native plant and bird species diversity.
Naturalness	Moderate	Reduction in pre-settlement wetland area and some hydrological modification, but remainder largely native vegetation/habitats.
Ecological Context	High	Link in chain of coastal wetlands. Seasonally important habitat for migratory fish and birds. Inanga spawning area. Direct link to river and marine ecosystems.

Styx River mouth is assigned an overall ecological significance ranking of **High**.

References:

Clarkson BR, Sorrell BK, Reeves PN, Champion PD, Partridge TR, Clarkson BD (2004) *Handbook for monitoring wetland condition. Coordinated Monitoring of New Zealand Wetlands*. A Ministry for the Environment Sustainable Management Fund Project (5105)
(Describes the assessment method generally. In particular, Table 5 was used to determine the indicator scores and Table 6 for the pressure scores)

Crossland A. 2008. Brooklands Lagoon Wetland Complex: An overview of the site's importance to birdlife with habitat management recommendations. Unpublished report for the Transport and Greenspace Unit, City Environment Group, Christchurch City Council.

Wildland Consultants 2011. 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.