



Site options profile #B4

Goat Island-Paringa Paddock Wetland Complex - Draft Bookmark Creek Master Plan



Location: Straddles Weir Pool 4 and 5, River Chainage Markers 566 to 560.

Land Tenure: Local/state government, private landholders

Wetland Size: 66.8 hectares (Ha)

Normal Pool Level: 13.2 to 16.3 mAHd

PROPOSED OPTIONS	
Option #1:	Improve flow conditions and fish passage within Astons Creek, through to the outer horseshoe by reviewing the inlet and downstream outlet structures and where needed, replacing them with new infrastructure that optimises flow outcomes in the anabranche and allows for fish passage.
Description	The current inlet and outlet structures restrict the flow within Astons Creek, which feeds into the outer horseshoe billabong west of the Old River and prevents fish passage. This option aims to review and where needed, replace with infrastructure that will permit fish passage and optimise flow outcomes for the anabranche. This will allow small and medium-bodied fish to pass, whilst improving hydraulic conditions. A number of ancillary structures exist (roads, bridges, etc.) that would need to be reviewed and potentially upgraded to mitigate impacts and optimise outcomes. Active weir pool manipulation in Weir Pool 5 also presents an opportunity to create seasonal hydraulic diversity. Detailed designs have been created to support this option as part of the Riverine Recovery Project (RRP).
Outcomes	• Enhanced capacity for greater exchange between the river and wetlands. • Improved fish passage. • Improved hydraulic conditions for fish.

Option #2:	Improve flow conditions and fish passage within the anabranche and support floodplain inundation and water retention on the adjacent floodplain area, by reviewing the inlet and downstream outlet structures and where needed, replacing them with new infrastructure that optimises flow outcomes in the creek, allows for fish passage and can control water levels to support floodplain inundation and water retention.
Description	In addition to the activities proposed in 'Option 1', the downstream structure will be investigated to support floodplain inundation at NPL (normal pool level) and align with the potential inundation provided by weir pool manipulation and high-flow events, improving inundation extent, event duration and watering frequency. Floodplain watering outcomes are consistent with the proposed Renmark Irrigation Trust (RIT) plan for improvements to floodplain conditions adjacent the creek. Detailed designs have been created to support this option as part of the Riverine Recovery Project (RRP).
Outcomes	• Benefits associated with an improved watering regime. • Conservation and improvement of wetland vegetation. • Improved soil moisture conditions. • Enhanced capacity for greater exchange between the river and wetlands. • Improved fish passage.

SITE BACKGROUND

Description

The Goat Island-Paringa Paddock wetland complex is located on the west side of the River Murray between the towns of Renmark and Paringa. The wetland complex extends on either side of Lock 5 and includes an outer horseshoe (i.e., the Billabong) and an inner horseshoe lagoon (i.e., Old River). The Old River is the former river channel, which has silted up over time, and is now a terminal permanent wetland connected to the Lock 4 weir pool. The Old River outlet occurs as a single wide connection with the River Murray approximately 700 m below Lock 5, creating a head difference that facilitates water movement through the wetland. The Billabong is located to the west of The Old River and is fed by Astons Creek which originates upstream of Lock 5.

Cultural Significance

The River Murray and Mallee Aboriginal Corporation (RMMAC) holds native title over the River Murray within the Lock 4 and 5 Reach. The First Peoples intimate knowledge and understanding of Country and active participation across all levels is vital to the effective management of this landscape.

Post-colonial Use

Prior to river regulation, Goat Island-Paringa Paddock would have been a free-draining temporary wetland complex with water levels responding to changes in the river level. During low flow periods in late summer and winter, the wetlands and watercourses would have drawn down, re-filling as river levels increased into spring and summer. The Old River wetland was historically part of the main river channel, with a cutting to the east of Goat Island that connected through to the river on both sides (as a shortcut). Whilst the cutting may have been natural, it is likely to have been deepened in the late 1800s to shorten the travel distance for paddle steamers. After the construction of Lock 5, the cutting that separated Goat Island became the main channel and the upstream end of the Old River wetland began to silt up. This resulted in the Old River becoming a terminal, horseshoe shaped wetland with one connection to the river channel and some areas of the floodplain becoming temporary wetlands.

WETLAND ECOLOGY

The Goat Island-Paringa Paddock wetland complex bypasses Weir 5 and has relatively fast-flowing water through some of the areas within the wetland, such as the Billabong within Paringa Paddock wetland. The wetlands have been assessed to have high conservation value^(1,2).

Flora: Vegetation composition at Goat Island-Paringa Paddock wetland complex includes river red gum and black box woodland and forest, lignum, saltbush and samphire shrublands, reedbeds, sedgeland and herblands. See⁽³⁻⁵⁾ for detailed description of flora at site. Smooth heliotrope (*Heliotropium curassavicum*) was the only exotic species recorded at the latest survey in 2018. The tree and vegetation survey concluded that the trees in this wetland complex were mainly in the good or excellent Tree Condition Index (TCI) but the overall vegetation species richness were considered low⁽⁴⁾.

Fauna: The wetland complex provides a diversity of habitats for fauna. Cormorants and pelicans were among the most abundant species detected during the bird surveys that have been conducted, probably due to a combination of factors like access to permanent wetlands, close proximity to foraging areas and good roosting sites for cormorants. See references⁽³⁻⁵⁾ for further details about species composition at the site. Fish and frog surveys have been conducted over several occasions^(3,4,6). Paringa Paddock wetland complex has a diverse fish assemblage that is dominated by small native species. A total of 13 fish species have been caught across the different surveys, including eight native species and five exotic species. A total six species of frogs have been recorded at the complex, among them the listed southern bell frog.

WETLAND MANAGEMENT

Current Management:

Goat Island-Paringa Paddock is managed by the Department for Environment and Water (DEW) in conjunction with the Renmark-Paringa Council. In addition, the Nature Foundation South Australia (NFSA) also supports watering efforts on Goat Island. A number of public and private land titles exist over the wetland complex. Private landowners, including several irrigators, adjoin the western boundary of the wetland along the edge of the outer horseshoe. The Renmark Irrigation Trust (RIT) manages the adjacent irrigated land and the irrigation water diverted from the wetland. In addition, two private caravan parks are situated adjacent to the northern floodplain. The wetland floodplain is managed for conservation and public recreation. Several recreational paths are present throughout the wetland complex for walking, birding, fishing, wildlife viewing and biking. Recent works have increased management opportunities for wetting and drying cycles in order to reinstate a more natural state and build resilience towards changes in climate and the impacts of drought.

Infrastructure:

Recent infrastructure works were completed in 2019 to support wetting and drying cycles within Paringa Paddock. Other structures include a total of five pipe culvert structures that are present underneath roads. Known issues include a structure on the Billabong that has obstructed flows, which inhibits fish passage through this area. Structures on Astons Creek Inlet and Deep Creek are Murray-Darling Basin Authority (MDBA) joint venture structures in need of remediation. Discussions between DEW, MDBA and SA Water are ongoing.

ISSUES AND DRIVERS

As part of the Master Planning Project engagement process, an ongoing register of issues and drivers relating to sites and options was maintained. These highlighted key considerations and investigations that would need to be factored in and undertaken as part of any next steps towards realising the outcomes described within the option profiles. For Paringa Paddock-Goat Island, these included:

Environmental

- Potential investigations needed into salinity impacts and groundwater issues at the site as well as feasibility of recovery, and high flow dynamics/impediments including in relation to the road/stormwater drainage system.
- Acid sulfate soils are present within the wetland and this would require further consideration before any construction works or wetting and drying activities are undertaken^(5,7).

KEY STAKEHOLDER INVOLVEMENT

- Commonwealth Environmental Water Office (CEWO)
- Friends of the Riverland Parks
- Murraylands and Riverland Landscape Board
- National Parks and Wildlife Service SA
- Nature Foundation SA (NFSA)
- Renmark Irrigation Trust (RIT) – including the Environmental Watering Committee
- Renmark Paringa Council
- Renmark Paringa Landcare
- River Murray and Mallee Aboriginal Corporation (RMMAC)
- SA Water
- Murray-Darling Basin Authority (MDBA)

REFERENCES

1. Jensen A, South Australia, Department of Environment and Natural Resources, South Australian River Murray Wetlands Management Committee. Wetlands atlas of the South Australian Murray Valley: a summary of current knowledge of Murray Valley wetlands as a basis for integrated catchment management. Adelaide: Dept. of Environment and Natural Resources; 1996.
2. Thompson MB. River Murray Wetlands - Their Characteristics, Significance and Management. Adelaide: University of Adelaide for the Department of Environment and Planning and the Nature Conservation Society of South Australia; 1986.
3. SKM. River Murray Wetlands Baseline Survey – 2005. South Australian Murray Darling Basin Natural Resources Management Board.; 2006.
4. Donaldson J, Monk C, Hardy S, Cheshire D, Mason K, Turner R. Riverine Recovery Project Monitoring Data Report 2016-17 and 2017-18. Department for Environment and Water, Berri, South Australia.; 2018.
5. Hoffmann E, Scott A, Turner R. Paringa Paddock / Goat Island Wetland Management Plan 2019. Natural Resources – SA Murray-Darling Basin, Department of Environment and Water, Government of South Australia, Berri, South Australia.; 2019.
6. Wegener I, Tesoriero J, Nickolai C, Turner RJ. Riverine Recovery Project. Frog Baseline Survey Report 2012/13 and 2013/14. Department of Environment, Water and Natural Resources, Berri, South Australia.; 2014.
7. Shand P, Merry RH, Fitzpatrick RW, Thomas M. Acid sulfate soil assessment of disconnected wetlands between Lock 1 and Lock 5, River Murray, South Australia. CSIRO: Water for a Healthy Country National Research Flagship.; 2009 p. 197.

Goat Island Paringa Paddock

Inundation Extents

-  ~5 GL - At pool conditions
-  15.0 mAHD (Option 2)
-  Murray Flood 1956
-  Proposed Works
-  Proposed Embankment

Option #1 and #2

Option #2

GOAT ISLAND AND
PARINGA Paddock

Option #1

RIVER MURRAY



0 0.25 0.5 Kms

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Data Source DEW - TOPO, Aerial Imagery 2014, DEM,
Wetland Structures, Model Flow Extents

Compiled 30 June 2021

Projection South Australia Lambert

Datum GDA 1994

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