



Site options profile #L10

Wachtels Lagoon - Draft

Lock 3 Master Plan



Location: Weir Pool 3, River Chainage Markers 449 to 440

Land Tenure: National Parks and Wildlife Service SA

Wetland Size: 678 hectares (Ha)

Normal Pool Level: 9.8 mAH

PROPOSED OPTIONS	
Option #1:	Improve wetland and floodplain condition by promoting variable water levels created through weir pool manipulation (lowering and raising).
Description	The main inlet to the wetland is positioned to exploit the benefits associated weir pool manipulation. This presents an opportunity to increase the extent of managed floodplain area and have greater control of watering frequency through weir pool raising. Weir pool lowering will expose significant areas of substrate otherwise permanently inundated and promote the active transport of floodplain matter and nutrients, including salt, back to river. Preliminary investigations have identified that raising and lowering by +/-60 cm at flows of 20 giganlitres (GL) would increase opportunities for improving managed floodplain extent (raising) and exposed substrate (lowering) whilst improving the health of native vegetation and mitigating against water quality risks. An increased frequency in managed high-flow events and inundation equivalents with the implementation of the Constraints Measures Strategy (CMS) project and future weir pool manipulation activities has the potential to impact on aging floodplain infrastructure. To mitigate against any damage to the aging infrastructure an integrity assessment and potential upgrade or reinforcement of the structures is needed, to ensure they can withstand more frequent watering events and not compromise management outcomes and floodplain access.
Outcomes	• Benefits associated with wetting and drying management. • Conservation and improvement of floodplain vegetation. • Improved soil moisture conditions.

Option #2:	Improve connectivity by reinstating natural commence to flow levels and un-obstructed flow through the main upstream inlets to the wetland complex, through review and remediation of sill levels and re-profiling of obstructed flow paths.
Description	Less frequent high flow events, the installation of crossing structures, drought mitigation measures and changes in land management have led to deposition of material and promotion of reed growth along the connecting creeks at the upstream end of the wetland. The deposition of material has potentially created high points within the creeks and artificially high sill levels that could be remediated to support more natural commence to flow levels, which with the management of abundant bullrush (<i>Typha spp</i>) could allow for un-obstructed flow through the wetland. There are several existing structures on connecting creeks and flow paths to the floodplain. A concept design is currently underway to replace an existing crossing with dual cell trafficable box culverts, remove reeds and silt build-up at the inlet, and re-profile between 250-500 m of downstream channel. Additional efforts will investigate further similar opportunities to undertake works at existing structures that maximise lateral connectivity and promote transport processes (water, carbon, nutrients, biota) between the river channel and the lagoon.
Outcomes	• Enhanced capacity for greater exchange between the river and wetlands. • Manage build-up of sediment and abundant <i>Typha spp</i>.

SITE BACKGROUND

Description

Wachtels Lagoon is located on the western side of the River Murray, approximately 4 km from the township of Cobdogla and bypasses 9km of the river. Three inlet creeks are located within Moorook Game Reserve and feed the southern, downstream end of the lagoon.

Cultural Significance

The River Murray and Mallee Aboriginal Corporation (RMMAC) holds native title over the River Murray within the Lock 3 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 the regulation of flows in the River Murray and the construction of locks and weirs, Wachtels Lagoon would have had a more variable water regime. The stabilisation of water levels has led to permanent inundation of low-lying areas and reduced frequency and duration of inundation of the surrounding floodplains.

WETLAND ECOLOGY

Flora

Vegetation composition at Wachtels Lagoon includes river red gums (*Eucalyptus camaldulensis*) and black box (*Eucalyptus largiflorens*) with an understory of lignum, and grasses and sedges in low lying areas. Samphire can be seen on the low lying salt affected soils. Dense reeds line much of the shore line in the lagoon with grasses and samphire dominating further up the banks⁵.

Fauna

This area is an important nesting habitat for numerous waterbird species, particularly during flood periods. Large numbers of great cormorants nest in the lagoon⁵. An exclusion zone exists within the lagoon to protect white-bellied sea eagles that are found nesting in this location.

WETLAND MANAGEMENT

Current Management:

Wachtels Lagoon is managed by National Parks and Wildlife Service SA and serves as a popular destination for river-based recreational activities. Waterfowl hunting is permitted in the reserves on declared open days.

Infrastructure:

A new channel section was created in recent years to connect the southern point of the lagoon with part of an existing, silted inlet channel. Sediment removal works were previously performed at a culvert crossing at the start of the second inlet creek. However, the inlet to the first, southern creek has virtually closed due to sedimentation and reed accumulation, as well as a clogged culvert crossing that is set too high.

A concept design is currently underway to replace an existing crossing with dual cell trafficable box culverts, remove reeds and silt build-up at the inlet, and re-profile between 250-500 m of downstream channel.

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 Wachtels Lagoon, these included:

Environmental

- There is a low to moderate risk associated with acid sulfate soils at this site and this would require further assessment before any construction works or wetting and drying activities are undertaken⁶.
- Construction works need to be mindful of the impact on white-bellied sea eagle habitat.
- There is a risk associated with any construction activity of introducing pest species.
- Further investigations needed on salinity and risks at this site.
- Current condition of the wetland is quite good with low carp numbers, clear water and good seedbank.

Cultural

- Construction works need to be mindful not to disturb areas of cultural importance.

Community/Social

- Need to manage potential impacts on camp sites from construction and future operations.
- Need to maintain access to water for irrigators and stock and domestic connections.

Operational/logistics

- If progressing this option, need to consider additional operation and maintenance (O&M) costs and limited access for people to do O&M work in parks.

KEY STAKEHOLDER INVOLVEMENT

- Berri Barmera Council
- Berri Barmera Landcare
- Central Irrigation Trust (CIT)
- Commonwealth Environmental Water Office
- Loxton Waikerie Council
- Loxton Waikerie Landcare
- Murraylands and Riverland Landscape Board
- National Parks and Wildlife Service SA
- River Murray and Mallee Aboriginal Corporation (RMMAC)
- South Australian Murray Irrigators (SAMI)
- SA Water

REFERENCES

1. DEW. Riverland [Internet]. 2020 [cited 2020 Aug 24]. Available from: <https://www.environment.sa.gov.au/managing-natural-resources/river-murray/about-the-river/riverland>
2. UNESCO. Biosphere Reserves-Riverland [Internet]. Biosphere Reserves-Riverland. 2015 [cited 2020 Aug 24]. Available from: <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/asia-and-the-pacific/australia/riverland/>
3. Australian Government. Australia's Biosphere Reserves [Internet]. 2020 [cited 2020 Aug 24]. Available from: <https://www.environment.gov.au/node/20937>
4. Protected Planet. Moorook in Australia [Internet]. 2020 [cited 2020 Aug 24]. Available from: <https://www.protectedplanet.net/9490>
5. DEW. Loch Luna and Moorook Game Reserves [Internet]. 2020 [cited 2020 Aug 24]. Available from: https://www.parks.sa.gov.au/find-a-park/Browse_by_region/Murray_River/loch-luna-moorook-game-reserves
6. Grealish G, Shand P, Grocke S, Baker A, Fitzpatrick R, Hicks W. Assessment of Acid Sulfate Soil Materials in the Lock 1 to Lock 5 Region of the Murray-Darling Basin. CSIRO: Water for a Healthy Country National Research Flagship.; 2010.

