



Site options profile #L4C

Katarapko Floodplains East

Clarks Floodplain - Draft

Lock 3 Master Plan



Location: Weir Pool 3, River Chainage Markers 512 to 506

Land Tenure: Crown Leasehold and Private Landholders

Wetland Size: 340 hectares (Ha)

Normal Pool Level: 9.8 mAHd

PROPOSED OPTIONS	
Option #1:	Improve floodplain condition in the eastern (upstream) basin of Clarks Floodplain, by supporting opportunities for environmental watering and increasing the duration of floodplain watering associated with managed and natural high-flow events, by enabling the retention of water through the installation of regulating structures and complementary embankments to 13 mAHd.
Description	This option aims to support the capability to retain water through the installation of regulating structures and complementary blocking bank to 13 mAHd, in order to extend the duration of watering events such as those associated with high-flow events as well as prompting opportunities for delivering water via pumping. Connectivity could be improved by reinstating natural commence to flow levels and un-obstructed flow through the main inlets and connections within the wetland complex, through a review and remediation of sill levels and re-profiling of obstructed flow paths.
Outcomes	• Benefits associated with an improved watering regime. • Conservation and improvement of floodplain vegetation. • Improved soil moisture conditions. • Replenish freshwater lenses over saline groundwater. • Support temporary wetland habitat to promote food sources for waterbirds.

Option #2:	Improve floodplain condition in the western (downstream) basin of Clarks Floodplain, by supporting opportunities for environmental watering and increasing the duration of floodplain watering associated with managed and natural high-flow events, by enabling the retention of water through the installation of regulating structures and complementary embankments to 13 mAHd.
Description	This option aims to support the capability to retain water through the installation of regulating structures and complementary blocking bank to 13 mAHd, in order to extend the duration of watering events such as those associated with high-flow events as well as prompting opportunities for delivering water via pumping. Connectivity could be improved by reinstating natural commence to flow levels and un-obstructed flow through the main inlets and connections within the wetland complex, through a review and remediation of sill levels and re-profiling of obstructed flow paths.
Outcomes	• Benefits associated with an improved watering regime • Opportunities for conservation and improvement of floodplain vegetation • Improved soil moisture conditions • Replenish freshwater lenses over saline groundwater • Support temporary wetland habitat to promote food sources for waterbirds

SITE BACKGROUND

Description

Katarapko Floodplains (East) consist of five of wetlands (Clarks Floodplain, Loxton Riverfront Reserve, Rilli Reach, Rilli Lagoons and Thiele Flat) located on the eastern bank of the River Murray, east of the Katarapko Island ^{1,2}. Clarks Floodplain complex consist of four tight meander bends, creating a series of sandy peninsulas. At higher elevations, several flood channels run across the clay floodplain, allowing for flows across the floodplain¹.

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

Since river regulation and the construction of locks and weirs along the River Murray, the water regime in the wetland complex has been altered. The lack of inundation in these areas has resulted in the decline of floodplain habitat within the wetland complex. Irrigation activities within Katarapko Floodplains (East) have also resulted in saline groundwater issues within these floodplains. A series of Salt Interception Schemes (SIS) have been installed in these areas to reduce the salinity impacts on the environment.

WETLAND ECOLOGY

The Katarapko East floodplains contain a number of smaller floodplain areas, all of them are currently watered by the Nature Foundation of SA (NFSA) with the aim to regenerate and sustain vegetation on the floodplain, mainly river red gums, black box and lignum shrubland. The conservation rating of the four floodplains included in this complex - Clarks Floodplain, Rilli Reach, Thiele Flat and Loxton Riverfront Reserve - is low to high^{3,4}, but the ecological value has likely increased with the recent active management occurring at these sites.

Flora and fauna: The major vegetation communities within Katarapko East Floodplain include river red gum (*Eucalyptus camaldulensis*) and black box (*Eucalyptus largiflorens*) woodland, lignum and samphire/ chenopod shrublands. Low fauna diversity and abundances were recorded at these sites during the baseline survey in 2004, likely as a result of the temporal nature of the wetland and water quality issues⁵.

WETLAND MANAGEMENT

Current Management:

The Katarapko Floodplains (East) are included in NFSA's Water for Nature program, which is supported by the Commonwealth Environmental Water Office (CEWO) to deliver environmental water to wetland and floodplain sites along the Murray River. Clarks Floodplain has been receiving e-water to improve habitat conditions for floodplain vegetation and sustain extensive regeneration of river red gum, black box and lignum. Efforts have focused on delivering water to flood runners and irrigating patches of elevated floodplain. A Salt Interception Scheme has been installed to help reduce the impact of saline groundwater. Options outlined within this profile seek to align and complement these activities.

Infrastructure:

Water delivery within the Katarapko Floodplains (East) includes the use of water pumps and sprinkler irrigation methods, utilising a combination of temporary and permanent infrastructure. The installation of additional embankments and structures would help optimise the current management efforts and increase opportunities for outcomes within the floodplain.

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 Clarks Floodplain, these included:

Environmental

- Potential investigations are required on benefits to vegetation in relation to inundation duration, and volumes of top up pumping required.

Cultural

- Aboriginal Waterways Assessment (AWA) and First Peoples have a strong interest in the area. Construction works need to be mindful not to disturb areas of cultural importance.

Operational/logistics

- Need to assess salinity impacts and SIS costs if inundating.
- This option needs land holder agreements and access to lockable structures for managers.
- Consider addition of culvert to large embankment for connectivity during high flow events.

KEY STAKEHOLDER INVOLVEMENT

- Central Irrigation Trust (CIT)
- Commonwealth Environmental Water Office (CEWO)
- Loxton District Landcare
- Loxton Waikerie Council
- Murraylands and Riverland Landscape Board
- National Parks and Wildlife Service SA

- Nature Foundation of SA
- Regent Parrot Recovery Team
- River Murray and Mallee Aboriginal Corporation (RMMAC)
- SA Water
- Murray-Darling Basin Authority (MDBA)
- Landholders

REFERENCES

1. Jensen A. Water for Nature Environmental Watering Site Monitoring Report- Clarks Floodplain, Lock 4 to Loxton Reach, South Australian Riverland. NFSA; 2016 Jul.
2. Jensen A. Delivery of Environmental Water by Water For Nature Program in the South Australian River Murray Valley 2013-16. NFSA; 2016 Oct.
3. 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.
4. 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.
5. SKM. River Murray Wetlands Baseline Survey – Final Report. Sinclair Knight Merz, Armadale. Prepared for the River Murray Catchment Water Management Board.; 2004.



