

Lock 3 Reach Master Plan Project



Background

Lock 3 controls 85 km of the Murray River and contains the most diverse range of flow conditions of all the weir pools in the South Australian River Murray. The Lock 3 Reach connects many significant water bodies, including Lake Bonney, Banrock Station and Wachtels Lagoon. It is also the heart of the Riverland townships of Loxton and Barmera and others, which all rely on this stretch of river that includes offtakes that supply critical human water needs and support irrigation, industry, cultural uses and tourism.

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.

There has already been significant infrastructure investment in Lock 3 Reach to support River Murray environmental outcomes, namely at Pyap Lagoon, Yatco Lagoon and Beldora and Spectacle Lakes Wetland Complex, as well as recent investment on the Katarapko Floodplain.

Currently, there are multiple key threats causing ecological decline in the region, including reduced frequency and duration of floodplain inundation, loss of variability in water levels, salinity load and obstructions to fish passage. The extent of environmental benefit that could be achieved in this Reach has been constrained due to salinity risks, operational constraints and legacy social issues from past river management. This project aims to address the complex combination of ecological and hydrological issues that is unique to the Lock 3 Reach.

Project objective

The objective of this project was to develop a master plan for achieving environmental outcomes in the Lock 3 Reach through future investment initiatives, in collaboration with community stakeholder groups. The project's '*master plan*' will provide a dynamic, long-term conceptual layout to guide future investment in support of agreed objectives for River management throughout the Lock 3 Reach.

The Master Plan Project was informed through extensive consultation and investigations, which have identified and explored the feasibility of a suite of options and made recommendations on a pathway to proceed and demonstrates the value of further investment. These proposed investments are a combination of infrastructure investments (such as regulating structure upgrades e.g. stone weir) and operational investments (such as management of Lake Bonney), focused on achievement of environmental outcomes.

Following the finalisation of the Master Plan Project, the outcomes of implementing a program of complementary works in the Lock 3 Reach will include:

- Efficient and effective allocation of resources (e-water, people, infrastructure) as a result of having a clear, prioritised pathway for future investment in Lock 3 Reach
- Confidence and increased flexibility in the operation of Lock 3 and management of lakes and wetlands in the Lock 3 Reach (such as Lake Bonney, Banrock Station and Wachtels lagoon) through having an improved understanding of the outcomes of operational scenarios
- Enhanced environmental outcomes as a result of increased hydraulic diversity, inundation extent and connectivity in the Lock 3 Reach
- Enhanced social, economic and recreational benefits associated with improved connectivity, amenity and condition of high value wetlands / floodplains throughout the region.

Please note that no pre-determinations have been made on the solutions to be implemented.

The finalised master plans will be a key milestone in the Sustaining Riverland Environments (SRE) Program initiative, which will deliver practical projects to improve river and wetland health, and support native fish in the River Murray. Projects that are included in the master plans will have the opportunity to receive funding under the SRE program. In particular those that align strongly with SRE objectives.

Master planning process

The Master Plan Project began in July 2019 as an initiative of the South Australian Government's South Australian Floodplains Integrated Infrastructure Program (SARFIIP), funded by the Australian Government through the Murray-Darling Basin Authority. The project has occurred over two years and is a continuation of SARFIIP's Environmental Pathways Project (EPP). The EPP aims to ensure that the delivery of water for the environment is managed in an efficient and effective manner, improving the ecological health and resilience of the South Australian River Murray, between Locks 1-7.

Traditional River Murray planning approaches have started first with a set of discrete environmental objectives, to focus development of options for works and measures to best meet those objectives. The Master Plan Project was delivered using a new approach toward River Murray project planning and prioritisation, facilitating an open community forum to generate and collate ideas with a broad range of potential environmental objectives, rather than a single targeted objective. This has resulted in a suite of potential '*options*' providing a conceptual layout to guide future investment, which can then be prioritised for funding under future programs based on their alignment with the various objectives of those programs.

Productive and beneficial engagement with the RMMAC Working Group throughout the Master Plan Project highlighted the need to maintain strong engagement with First Peoples throughout the application of the works and measures. This should be incorporated into planning of future master planning projects and the next stages of project implementation.

Master planning at a weir pool scale (such as the Lock 3 Reach) enabled an adequate project size for engagement with a variety of stakeholder groups and generated a variety of potential opportunities and outcomes. It also enabled a large enough project footprint to realise a coordinated approach to future management in the Reach.

Site option profiles

Working with key stakeholders within the Riverland community, a comprehensive list of ideas and initiatives to support environmental outcomes along the River Murray has been compiled, collated and refined to form the foundations of a Master Plan for the Lock 3 Reach. These ideas and initiatives have been summarised into 'Draft Site Options Profiles', with some 'Sites' consisting of multiple and in some instances, scalable options.

A total of 19 'Draft Site Options Profiles' have been developed within the Lock 3 Reach, as part of the Master Plan Project:

1. Katarapko Creek
2. Katarapko Creek Floodplain West
3. Katarapko Island North
4. Clarks Floodplain (Katarapko Floodplain East)
5. Rilli Reach and Rilli Lagoon (Katarapko Floodplain East)
6. Thiele Flat (Katarapko Floodplain East)
7. Loxton Riverfront Reserve (Katarapko Floodplain East)
8. Katarapko Island South
9. Gerard Wetland Complex
10. Pyap Wetland Complex
11. Beldora and Spectacle Lakes Wetland Complex
12. Yatco Lagoon
13. Loveday Mussels Lagoons Wetland Complex
14. Wachtels Lagoon
15. Lake Bonney
16. Loch Luna Complex
17. Banrock Station Wetland Complex
18. Overland Corner
19. Weir Pool 3 Reach.

