



Site options profile #B3

Bookmark Creek - Draft

Bookmark Creek Master Plan



Location: River Murray anabranch, River Chainage Markers 568.7 to 555

Land Tenure: Local government, private landholders

Creek Length/Floodplain Size: 8 km, 25 hectares (Ha)

Normal Pool Level: 16.3 mAHD upstream and 13.2 mAHD downstream

PROPOSED OPTIONS	
Option #1:	Improve flow conditions and fish passage within the creek by reviewing the inlet and downstream outlet structures and where needed, replacing them with new infrastructure that optimises flow outcomes in the creek and allows for fish passage.
Description	The current inlet structure restricts the flow within Bookmark Creek and prevents fish passage. This option aims to review and, where needed, replace structures with infrastructure that will permit fish passage and optimise flow outcomes for the creek. This will allow small and medium-bodied fish to pass, whilst improving hydraulic conditions. Both structures will be designed in consideration of environmental and community needs (e.g. pedestrian use, vehicle use). Active weir pool manipulation in Weir Pool 5 also presents an opportunity to create seasonal hydraulic diversity. A number of ancillary structures exist (roads, bridges, etc.) that would need to be reviewed and potentially upgraded to mitigate impacts and optimise outcomes. Any new or upgrades to structures will be mindful of the recreational opportunities such investment within the creek will present (i.e. canoeing, boating, bush-walking).
Outcomes	• Conservation and improvement of wetland vegetation. • Improved hydraulic conditions for fish. • Improved fish passage. • Improved recreational activities.

Option #2:	Improve flow conditions and fish passage within the creek and support floodplain inundation and water retention on the Bookmark Creek floodplain, 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) at Lock 5 and aligning with the potential inundation weir pool manipulation and high-flow event present, for improvements to watering 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.
Outcomes	• Benefits associated with an improved watering regime. • Opportunities for conservation and improvement of wetland vegetation and fauna. • Improved soil moisture conditions. • Improved hydraulic conditions for fish. • Improved fish passage. • Improved recreational activities. • Promote inundation opportunities.

SITE BACKGROUND

Description

Bookmark Creek is an 8km anabranch that bypasses Lock 5 and 13 km of the River Murray channel, straddling the township of Renmark. The creek is permanently connected at Lock 5 pool level via the upstream inlet structure, and flows back to the river channel within the Lock 4 weir pool via the downstream road crossing structure. A significant head difference between the inlet and outlet exists due to the bypass, presenting unique flowing habitat conditions beneficial to a number of native fish species. These conditions are not currently utilised due to the two impeding structures along the creek. The creek has extremely high social and recreational value to the regional community with an active and well-established local action group, supported by industry groups and key stakeholders¹.

Cultural Significance

The River Murray and Mallee Aboriginal Corporation (RMMAC) holds native title over the River Murray within in the Lock 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

Bookmark Creek has suffered significant changes instigated by European settlement, including the development of the first Australian irrigation district in the late 1880s and then construction of Lock 5 in 1927. These changes meant the creek was used as a reservoir to supply irrigation water and later as an irrigation disposal basin. The creek also experienced permanent inundation at the inlet following Lock 5 construction. The combination of these factors has had adverse impacts on the ecological values of the site and has contributed to significant environmental degradation of the landscape¹.

WETLAND ECOLOGY

Bookmark Creek was considered to have low ecological value at its time of assessment in 1986, but its value is likely to have increased since this assessment^{2,3}. The creek is considered a high priority site for management and on-ground works because it could provide unique flowing habitat conditions which benefit a number of large-bodied native fish species, however these conditions are currently unable to be delivered due to the two impeding structures along the Creek^{1,4}.

Flora: No vegetation surveys have been undertaken at Bookmark Creek and as such, no vegetation of conservation significance has been formally identified. Vegetation associations observed along Bookmark Creek and wetland include river red gums, black box with an understory of lignum, samphire sp., bulrush and common reed. See reference for further details of species composition at site¹.

Fauna: Six frog species have been recorded at Bookmark Creek, among them the vulnerable southern bell frog (*Litoria raniformis*)¹. Nine native species and five non-native species of fish have also been recorded in the creek. See reference for further details of species composition at site¹. Lower abundances were observed at sites upstream than at sites downstream, likely due to infrastructure preventing movement between habitats.

WETLAND MANAGEMENT

Current Management:

The Bookmark Creek is managed by the Murraylands and Riverland Landscape Board and by the operation of the upstream flow-control structure (structure managed by the Department for Environment and Water (DEW) Infrastructure Operations and Maintenance Team located near the Jane Eliza Estate. It is possible for flows to enter Bookmark Creek through the Council's infrastructure via a pipe near the Jane Eliza waterway. The Bookmark Creek Action Group has been actively engaged in the restoration, rehabilitation and management of the site since 1997. Given the close proximity of the site to the township of Renmark, the creek offers ample opportunities for fishing, canoeing and other recreational activities. Maintaining the integrity of Bookmark Creek is fundamentally important to both the Bookmark Creek Action Group and the broader community¹. There has been ongoing investment and commitment to the site from DEW over many years.

Infrastructure:

The Bookmark Creek inlet regulator is located at the junction of Bookmark Creek and Jane Eliza Estate Lagoon and consists of a bank and pipe culvert with a sluice gate control valve. There is also a structure around the inlet pipe which prevents reeds from blocking the inlet pipe. The outlet road crossing structure is near Nelwart Swamp and consists of a bank and four pipe culverts. While the site has not been used as an irrigation disposal basin for many years, Bookmark Creek is still technically classified as a saline disposal creek.

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 Bookmark Creek, these included:

Environmental

- Potential investigations required on salt risks to floodplains and associated groundwater, inundation impacts on flowing fish habitats and fish ecology assessments.
- Potentially need comparative analysis of expanding water on floodplain with a downstream regulator vs pumping onto floodplain.

Community/Social

- Consideration needed of impacts on Angove Family Winemakers, 23rd Street Distillery and canoe trail compatibility at design stage.
- Proximity to township means that community interest is high.
- Implementation needs to be cognisant of other investments in this area.

Operational/logistics

- A detailed wetland management plan is required.
- The area needs to be declassified as a drainage basin.
- Early engagement with MDBA needed on inlet structure, which needs upgrading.

KEY STAKEHOLDER INVOLVEMENT

- Bookmark Creek Action Group
- Commonwealth Environmental Water Office (CEWO)
- Murraylands and Riverland Landscape Board
- National Parks and Wildlife Service SA
- Private Landholders
- 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. Wegener IK, Inkster TR. Bookmark Creek and Wetland Management Plan 2012. Berri, South Australia: Natural Resources – SA Murray-Darling Basin, Department of Environment, Water and Natural Resources, Government of South Australia; 2012.
2. 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.
3. 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.
4. Mallen-Cooper M. Potential for rehabilitation of native fish populations in Bookmark Creek. Report prepared for SA Department of Environment, Water and Natural Resources; 2012 p. 19 p.



Bookmark Creek (Northern Section)

Inundation Extents

-  16.3 mAHD -
at pool water level height
at the Lock 5 weir
-  16.8 mAHD -
water level at the Lock 5
weir for a 20GL 50cm raise
-  ~5 GL - At pool conditions
-  Proposed Works

Option #1

Option #2

REMARK

BOOKMARK CREEK



0 0.25 0.5 Kms

Produced by Water Infrastructure and Operations Branch
Department for Environment and Water
81-95 Weymouth St Adelaide 5000
environment.sa.gov.au
Data Source DEW, TOPO, Aerial Imagery 2014, DEM,
Welland Structures, Model Flow Extents
Compiled 30 June 2021
Projection South Australia Lambert
Datum GDA 1994

© Copyright Department for Environment and Water 2020.
All Rights Reserved. All works and information displayed are subject to Copyright. For
the reproduction or publication beyond that permitted by the Copyright Act 1968 (Cth) or
written permission must be sought from the Department.

Although every effort has been made to ensure the accuracy of the information displayed,
the Department, its agents, officers and employees make no representations, either express
or implied, that the information displayed is accurate or fit for any purpose and expressly
disclaims all liability for loss or damage arising from reliance upon the information displayed.



Government of South Australia
Department for Environment
and Water

Bookmark Creek (Southern Section)

Inundation Extents

-  16.3 mAHD -
at pool water level height
at the Lock 5 weir
-  16.8 mAHD -
water level at the Lock 5
weir for a 20GL 50cm raise
-  Proposed Works
-  ~5 GL - At pool conditions

BOOKMARK CREEK

Option #1 & #2

0 0.25 0.5 Kms

Produced by Water Infrastructure and Operations Branch
Department for Environment and Water
81-95 Waymouth St, Adelaide 5000
environment.sa.gov.au

Data Source DEW - TOPD, Aerial Imagery 2014, DEM,
Welland Structures, Model Flow Extents

Compiled 30 June 2021

Projection South Australia Lambert

Datum GDA 1994

© Copyright Department for Environment and Water 2020.
All Rights Reserved. All works and information displayed are subject to Copyright. For
the reproduction or publication beyond that permitted by the Copyright Act 1969, written
permission must be sought from the Department.

Although every effort has been made to ensure the accuracy of the information displayed,
the Department, its agents, officers and employees make no representations, either express
or implied, that the information displayed is accurate or fit for any purpose and expressly
disclaims all liability for loss or damage arising from reliance upon the information displayed.

 Government of South Australia
Department for Environment
and Water

