



Site options profile #L13

# Banrock Station Wetland Complex - Draft

## Lock 3 Master Plan



**Location:** Between River Chainage 435 (above Lock 3) to 423 (below Lock 3)

**Land Tenure:** Crown Land under lease to Accolade Wines

**Wetland Size:** 240 hectares (Ha)

**Normal Pool Level:** Varies from 9.8 mAHD at inlet to 6.5 mAHD at outlet

| PROPOSED OPTIONS   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <b>Option #1:</b>  | <b>Support current management outcomes and improve management flexibility by supporting capacity to manage the two lagoon systems separately, through the installation of a regulating structure and complementary embankment.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b> | <p>To support current wetting and drying management activities within the lagoon system and associated outcomes (and to introduce management flexibility) it is proposed to install a regulating structure and complementary embankment to manage the eastern and western lagoons separately. This will introduce the capacity to tailor separate management hydrographs for the lagoons, in support of management outcomes for both risks and benefits.</p> <p>Structure and embankment heights will consider the complementary outcomes and measures outlined in Option 2 and 3.</p>                                                                                                                                                                                                                |
| <b>Outcomes</b>    | <ul style="list-style-type: none"> <li>• Benefits associated with wetting and drying regime.</li> <li>• Greater connectivity between the river and wetlands.</li> <li>• Improve management flexibility.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Option #2:</b>  | <b>Promoting opportunities for increased extent of inundation and duration of floodplain watering in the Eastern lagoon, associated with managed and natural high-flow events through the retention of water, utilising infrastructure proposed in Option 1 and complementary works.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b> | <p>This option aims to complement investment in Option 1 by raising the height (via an embankment and existing road network) of the lowest point of connection between the eastern and western lagoons. This will allow for retention of water within the Eastern Lagoon, further increasing management capacity to tailor separate management hydrographs for the lagoons in the support of management outcomes for both risks and benefits.</p> <p>Embankment height will consider the complementary outcomes and measures outlined in Option 1 and 3.</p>                                                                                                                                                                                                                                          |
| <b>Outcomes</b>    | <ul style="list-style-type: none"> <li>• Benefits associated with a wetting and drying regime.</li> <li>• Greater connectivity between the river and wetlands.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Option #3:</b>  | <b>Improve floodplain condition by promoting:</b> <ul style="list-style-type: none"> <li>• An increase in the duration of floodplain watering associated with managed and natural high-flow events, through the retention of water, utilising existing infrastructure and complementary works</li> <li>• Opportunities for increased floodplain watering inundation extent and frequency associated with weir pool raising.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b> | <p>Option 3 builds on 1 and 2 by enabling watering of greater extent. The lowest height of the main inlet structures to the wetland are set to 10.5 mAHD. This presents an opportunity to support the utility of these structures, by building up the perimeter access track, to hold water within the wetland to extend the duration of watering events, such as those associated with high-flow events and weir pool raising. This will enable ongoing access and track utility during high watering events.</p> <p>The main inlets to the wetland are well positioned to exploit the benefits associated with 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.</p> |

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| <b>Outcomes</b> | <ul style="list-style-type: none"> <li>• Greater connectivity between the river and wetlands.</li> <li>• Benefits associated with implementing a wetting and drying regime.</li> <li>• Improved fish habitat.</li> </ul> |
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| <b>Option #4:</b>  | <b>Promote conservation of local regent parrot populations, by supporting the installation of a new embankment and structure enabling watering activities as described within the Regent Parrot Recovery Project.</b>                                                                                                                                                                                                                  |
| <b>Description</b> | Banrock Bend (proposed watering site) and Banrock Swamp (existing water site) fall within the 'Katarapko Regent Parrot Floodplain Habitat Zone', identified as part of the Regent Parrot Recovery Project. The strategic watering of these sites up to 8.8 mAHD will support the conservation and improvement of vegetation important to regent parrots at these sites and is seen as a key part of conserving the current population. |
| <b>Outcomes</b>    | <ul style="list-style-type: none"> <li>• Conservation and improvement of vegetation important to regent parrots.</li> <li>• Support the conservation of the current regent parrot population.</li> </ul>                                                                                                                                                                                                                               |

## SITE BACKGROUND

### Description

The Banrock Station Wetland Complex straddles Lock 3 and is approximately 26 km northwest of Berri. The wetland consists of two large basins referred to as the Eastern and Western Lagoons, which join during high flow events. The Banrock Station Wetland Complex is bounded to the northwest, north and east by the River Murray, and the Banrock Station Vineyard to the south and southwest. Since 1992, the site has had wetting and drying cycles that are semi-natural and intermittent. In 2002, the site was designated as a Wetland of International Importance under the Ramsar Convention on Wetlands. Current land use includes horticultural, winery tourism, recreational activities, and wetland management.

### 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, Banrock Station 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. The installation of regulators has since enabled the wetting and drying of wetlands, improving the ecological outcomes within this area<sup>1</sup>.

## WETLAND ECOLOGY

Banrock station wetland is a complex of connected permanent and ephemeral wetlands. It is a wetland of importance and high conservation value<sup>2-4</sup>. The Banrock station wetland complex supports a range of biological diversity (including diversity in habitat types) found in the region. It provides non-breeding habitat for multiple migratory waterbirds listed under the international migratory bird treaties and provides an alternative migration path around Lock 3 for small native fish as well as large-bodied fish. It is also a refuge area for waterbirds and other aquatic fauna during drought, and a roosting site for waterbirds<sup>1,5,6</sup>.

**Flora:** The dominant wetland vegetation types on the floodplain include river red gum woodland (*Eucalyptus camaldulensis*), black box woodland (*Eucalyptus largiflorens*), lignum and samphire shrubland, and sedgelands. Aquatic herblands are present in Banrock Lagoon providing significant habitat value for aquatic biota, see references for further details of species composition at site<sup>1,5</sup>.

**Fauna:** The site supports a high diversity of ecological communities and species, including plants, birds, mammals, reptiles, fish, amphibians, waterbirds and wetland-dependent species listed as threatened, see references for further details of species composition at site<sup>1,5</sup>. Among the listed species are the Vulnerable regent parrot (*Polytelis anthopeplus monarchoides*) and the Vulnerable Southern bell frog (*Litoria raniformis*). In addition, the site is one of the few locations in South Australia where the rare river snail (*Notopala sublineata*) has been successfully bred<sup>5</sup>. Snail breeding was completed in PVC tubes imbedded into the wetland bed and in the lower end of Banrock Creek. The populations within the wetland itself are no longer present as a consequence of the wetting to drying cycles. However, the snails are still present within Banrock Creek.

## WETLAND MANAGEMENT

### Current Management:

The wetland complex is managed by Accolade Wines and adjoins to the Banrock Station Wine and Wetland Centre, which promotes wetland conservation as well as its wines and cellar door. Banrock Station's Wetland Manager operates a series of control structures to implement wetting and drying regimes. Additional works could improve connectivity within the wetland complex, and increase the amount and duration

of flowing creek habitat in the Banrock Creek system<sup>1</sup>. Ecological monitoring and the evaluation of environmental assets are regularly completed in order to retain its Ramsar accreditation.

#### **Infrastructure:**

Crude control structures were installed at the downstream end of Banrock Lagoon and on inlet creek in the 1950s, with the lagoon being managed to maintain a water level of 8.6mAHD. In 1992, flow control gates were installed on the inlet channel of Banrock Creek, which enabled the management of wetting and drying management regimes at the margins of Banrock Lagoon. A series of self-guided trails were completed in 2001, which included information huts and five bird hides for bird watching.

### **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 Banrock, these included:

#### **Environmental**

- There is a variable risk of acid sulfate soils ranging from low to high across this site<sup>7</sup>. This would require further assessment before any construction works or wetting and drying activities are undertaken.
- Note the site is Ramsar listed with associated management requirements.

#### **Cultural**

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

#### **Community/Social/Economic**

- Tourism value needs to be maintained.
- Potential impacts on vineyard aspects of business need consideration.

#### **Operational/logistics**

- Note that the perimeter access track must continue to allow for use during high water events and provide access to Lock 3.
- Consider potential to siphon water from existing basin to the regent parrot site.
- Note that the long embankment will potentially create issues with water flowing back and erosion; mitigation and management of erosion risk need consideration.

### **KEY STAKEHOLDER INVOLVEMENT**

- Banrock Station Wine and Wetland Centre
- Commonwealth Environmental Water Office (CEWO)
- Loxton-Waikerie Council
- Murraylands and Riverland Landscape Board
- National Parks and Wildlife Service SA
- Regent Parrot Recovery Team
- River Murray and Mallee Aboriginal Corporation (RMMAC)
- SA Water

### **REFERENCES**

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4. Tourenq C, Field T. Banrock Station Wetland Complex Ramsar Site Management Plan. 2014 Review and Update. Accolade Wines Australia Ltd, Reynella, SA. Australia; 2014.
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