

# Martin Bend Wetlands Pre-Feasibility Fact Sheet

The proposal for Martin Bend seeks funding to undertake feasibility investigations for a Martin Bend Restoration and Stormwater Re-use Project. The proposal aims to increase the frequency of inundation in the temporary lagoons through the potential use of excess stormwater. The inundation of the temporary wetlands aims to provide habitat for native fauna and conditions suitable for the regeneration of native vegetation and assist in the creation of a freshwater lens, reducing the potential negative impact of saline groundwater.

The Martin Bend wetland system is a site of ecological value, providing important habitat for a diverse range of local native species. Martin Bend is also an area of high social value to the local community and visitors. It is a highly visible site to the local community and visitors to Berri.

Martin Bend is situated adjacent to the River Murray on the outskirts of Berri and incorporates five parallel wetlands across 145 hectares between the river and high land.



**Figure 1: Martin Bend Wetlands Location**

## ECOLOGICAL SIGNIFICANCE AND CONDITION

Martin Bend wetland has been identified in the Wetlands Atlas of the South Australian Murray Valley (Jensen et al. 1996) and in River Murray Wetlands: their characteristics, significance and management (Thompson 1986) as a wetland of high priority for management.

### Vegetation

During a baseline survey conducted in 2004, ten different vegetation communities were identified at Martin Bend. There are good stands of Tea tree (*Melaleuca lanceolata*), Black box (*Eucalyptus largiflorens*) and Lignum shrubland

Floodplain vegetation, which surrounds the permanent and temporary wetlands, is dominated by tree and shrub species. River salt bush (*Atriplex* Sp.) was considered the most significant vegetation community.

Wetland vegetation in the downstream inlet and fringing the permanent lagoon is dominated by emergent macrophytes, particularly Common Reed (*Phragmites australis*) and Bulrush (*Typha* spp.).

There is a decline in vegetation on the northern side of the wetland, which is attributed to a combination of shallow and saline groundwater occurring within the root zone of vegetation such as trees and shrubs that are not tolerant to salinity of this level.

### Birds

A total of 68 bird species have been recorded of which 29 are water dependent. During monitoring surveys, three species of conservation significance were recorded; the Australian Darter (*Anhinga novaehollandiae*) listed as rare within South Australia, the Caspian Tern (*Hydroprogne caspia*) and the Great Egret (*Ardea alba*) are listed as a significant species under the China-Australia Migratory Bird Agreement (CAMBA) and Japan – Australia Migratory Bird Agreement (JAMBA).

An additional two bird species of conservation significance were recorded at the wetland; the Spotless Crake (*Porzana tabuensis*) which is listed as rare and the Australian Little Bittern (*Ixobrychus dubius*) which is listed as endangered within South Australia. Another rare bird species (Ballion's crane) was recorded in spring 2003 during the baseline survey.



Areas of open water with aquatic macrophytes and invertebrates have been observed to be utilised by swans, ducks and coots while stilts, dotterels, spoonbills and ibis have been observed foraging in areas of shallow water and areas of wet mud surrounding the wetland basins. Pelicans, diving ducks, cormorants and darters which primarily feed on fish, tadpoles, frogs and larger invertebrates have been recorded in areas of deeper water.

#### **Fish**

Up to seven species of native fish and three introduced species have been recorded at Martin Bend since 2011; however further monitoring is required to determine population communities over time. One species of conservation significance the Freshwater Catfish (*Tandanus tandanus*), protected in South Australia, has been recorded at the site. High abundances of small-bodied native fish have been recorded at the wetland site since 2011 which constitute an important food resource, particularly for piscivores. Common Carp and other invasive species (including Goldfish (*Carassius auratus*) and Eastern Gambusia (*Gambusia holbrooki*)) have been recorded at Martin Bend.

#### **Frogs**

Since 2006, six species of frog have been recorded at Martin Bend including Eastern Banjo Frog (*Limnodynastes dumerilii*), Spotted Grass Frog (*Limnodynastes tasmaniensis*), Eastern Sign Bearing Froglet (*Crinia parinsignifera*), Perons Tree Frog (*Litoria peronii*), Southern Bell Frog (*Litoria raniformis*), and Long thumbed Frog (*Limnodynastes fletcheri*). The Southern Bell Frog is of conservation significance and is listed as vulnerable both in South Australia and nationally.

## CULTURAL AND SOCIAL VALUES

Due to its accessibility, Martin Bend is a popular recreational and tourist destination and is considered to be a significant site for local Aboriginal people. There is a canoe tree located at the site. Prior to European settlement, the Renmark area was inhabited by the Ngawait people.

The wetland is a popular recreational area for bird watching, walking, fishing, boating and camping. It is also an important local resource for educating the community, including school groups, about wetland management and monitoring.

## LAND OWNERSHIP AND SITE GOVERNANCE

Martin Bend is on Crown Land. The District Council of Berri Barmera manages most of the reserve. There has been no coordinated management of Martin Bend wetland over recent years.

In 2012, the Council formed a committee to oversee management and develop a coordinated approach among the many stakeholders with an interest in and involvement in Martin Bend.

## MANAGEMENT HISTORY

The permanent lagoon at Martin Bend functioned as a permanent wetland for over 70 years, with water levels maintained by the Lock 4 weir pool. In the 1970s, the Berri Marina and Stormwater and Drainage Disposal Basin were developed at Martin Bend. The basin was created to provide a detention basin for stormwater and drainage water before it enters the River Murray.

Currently there are five lagoons, one permanent lagoon adjacent to the river with a flow control structure, three temporary lagoons (T1, T2 and T3) and a stormwater lagoon (stormwater and drainage basin) which receives rainfall run-off from the township of Berri which then occasionally overflows into an adjacent temporary lagoon (T3), see Figure 2.

In 2001, a regulator was also installed on the downstream inlet of the permanent lagoon. Other works at the time included the construction of a channel between the disposal basin and T3 and a pipes to increase the frequency of flood events in temporary lagoons T1 and T2. The regulator connecting the River Murray to the permanent wetland was upgraded to connect the Permanent Wetland (referred to as P1 in Figure 6) to the River at pool level in 2011.

Community frog monitoring commenced in 1997 through the Environment Protection Authority's Frogwatch program, and a management plan was prepared for Martin Bend Wetland in 1998 by consultants ID&A. Schools and community groups became involved in revegetation and monitoring during the 2000s and a baseline survey of the wetland was undertaken in 2003-04. During 2005, weir manipulation resulted in increased flows to Martin Bend, inundating the permanent and temporary lagoons. Martin Bend was also selected as a site for the River Red Gum Rescue Project in that year, with 100 ML water pumped into the wetland. The combined impact of the two ecological flows was to increase the water level by 100 cm.

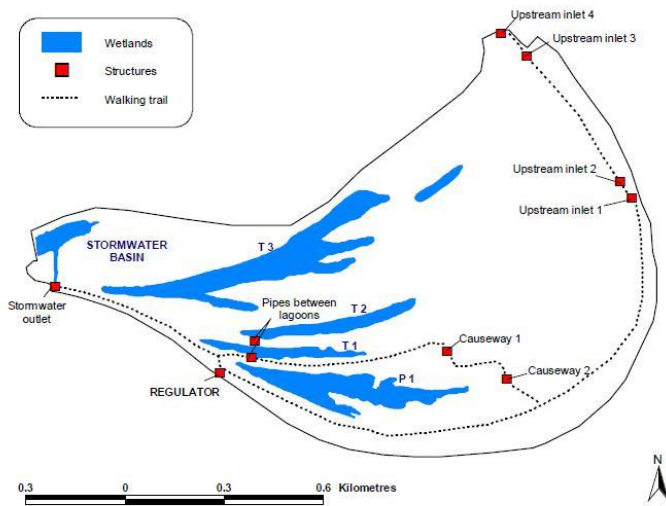


## BERRI STORMWATER RE-USE PROJECT

The Berri Barmera Council is planning a major stormwater project for the town of Berri, which will involve expansion of three stormwater basin sites, including the stormwater basin at Riverview Drive, Martin Bend.

Currently stormwater captured in the basin is not used for irrigation, although when stormwater supplies peak the water can flow into the Martin Bend Temporary Wetland 3 (T3). There is a pipe and sluice gate to the River Murray. In recent years no water has entered the river from the stormwater basin.

The capacity of the new stormwater basin is 26 megalitres. Council requirements are approximately 20 megalitres per annum and there is potential for water surplus to requirements for environmental watering at Martin Bend which will need to be investigated through feasibility.



**Figure 2 Martin Bend Wetlands, Stormwater Basin and Structures**

## CURRENT CONDITION

Although Martin Bend is degraded due to high salinity levels, and an altered hydrological regime, the wetland supports native vegetation communities and aquatic habitat, including open water used by wetland birds and woodland and shrubby vegetation on the floodplain. The high salinity levels are likely the result of the input of saline groundwater and the reduced frequency of flood events.

## THE PROJECT PROPOSAL

The proposed project involves the potential to re-use stormwater for environmental purposes. An opportunity identified during pre-feasibility assessment is to modify the existing stormwater basin design on Riverview Drive to incorporate a spill point that will allow flooding of the wetland floodplain. This requires further investigation.

### Outcomes and Benefits

Potential outcomes include:

- increased frequency of inundation in the temporary basins;
- reduced potential of negative impact of saline groundwater intrusion by creating a freshwater lens; and
- provision of stormwater to supplement or substitute river water for potential water savings.

Potential benefits include:

- improved water level management
- enhanced habitat for a range of bird, fish and frog species; and
- develop a high profile demonstration site for wetland management involving multiple stakeholders.

## FEASIBILITY OVERVIEW

Project feasibility would determine the optimal water volume and flow path requirements for Martin Bend wetland and identify the most appropriate management regime and structures to achieve hydrological objectives.

In relation to the opportunity for stormwater re-use, water quality would need to be assessed to determine suitability for wetland use. In addition, further investigation would be necessary in relation to the potential quantity of stormwater available for environmental use within the wetland.

If stormwater re-use is a viable option for watering Martin Bend wetland, infrastructure requirements need to be identified, including any modifications to the existing catchment basin design.

### Objectives of Feasibility Investigations

The objectives of the feasibility stage of this project would be to:

- Identify the optimal water management regime for Martin Bend;
- Determine infrastructure requirements for proposed hydrological regime (including a gap analysis of current infrastructure);
- Quantify the likely water volumes available for the wetland from stormwater;



- Assess ecological risks associated with the proposed project, including water quality risks from stormwater;
- Determine ongoing operation and maintenance costs and responsibilities;
- Identify approvals required to implement project;
- Support the ongoing community and stakeholder ownership and involvement in the project.

## ACKNOWLEDGEMENTS

The contribution of the South Australian River Murray Regional Community, including the many individuals and various local groups and organisations for their generous involvement and enthusiasm is greatly acknowledged. This partnership approach enabled the community ideas to be captured and prioritised by utilising and sharing local knowledge in the development of proposals.

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For more information

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