

**MDBA ANALYSIS:**  
**FLOWS FOR THE FUTURE PROPOSAL**  
**PROPONENT: SA**

The Murray-Darling Basin Authority's (MDBA) advice addresses criteria from the Basin Officials Committee agreed *Phase 2 Assessment Guidelines for Supply and Constraint Measure Proposals*. The Guidelines section reference is shown in brackets.

### Key points/summary

- This proposal seeks to alter water use patterns to ensure environmental flows are provided at critical times as well as allowing harvesting of higher flows for consumptive use. Modelling demonstrates that returning low flows, coupled with limits on consumptive use, will meet environmental water requirements.
- The return of (particularly low) flows has been identified as a key contributor to help address the long-term decline in distribution/condition of water-dependent ecosystems within the EMLR.
- Some potential indirect impacts were identified as a result of failing to deliver low flows, via not using/maintaining the low flow devices.
- Risks related to water quality and salinity was considered 'residual' and able to be adequately mitigated under current mitigation treatments.
- MDBA has not been able to add the additional Lower Lakes inflow time-series, as a result of flows generated by this proposal, into the SDL adjustment model as it has not yet been supplied and remains unavailable. To assist the proposal's integration into the MDBA's model-based assessment framework, further clarification and refinements are required.

## 1. Eligibility (3.1)

### 1.1. Supply measure requirements (3.1.1)

MDBA considers the Flows for the Future proposal meets the eligibility requirements for supply measures as follows:

- It aims to return flows to the EMLR system and increase downstream water availability for the River Murray and Lower Lakes. The affected surface water resource unit area is SS11 South Australian Murray within the SA River Murray Water Resource Plan area.
- It aims to improve environmental outcomes within the EMLR that are currently affected by water capture, alleviating the need for equivalency using existing held environmental water.
- It aims to maintain an adequate and reliable supply of water for industries and communities through the adoption of a low flow release strategy, consumptive use limits, and a risk

management strategy allowing for threshold flow diversions to occur within the EMLR. Whilst small reductions in supply reliability for some users may occur through the return of low flows, this impact is inherent to the water planning requirement to return low flows, rather than being a specific risk associated with this measure. The relative impact of returning low flows on reliability of supply is significantly smaller compared to the alternative of reducing entitlements to secure low flows.

## 1.2. Measures not included in the benchmark conditions of development (3.1.2)

The MDBA confirms that the measure was not in the benchmark conditions of development (cl.7.02 of the Basin Plan).

## 2. Ecological values of the site (4.2)

Given the catchment scale nature of this proposal, an adequate description of the ecological values of the Eastern Mount Lofty Ranges (EMLR), Coorong and Lower Lakes (CLL) and Murray Mouth (MM) environmental assets affected is provided. Key ecological values include:

- Three nationally protected species of native fish
- Environment Protection and Biodiversity Conservation (EPBC) listed critically endangered Fleurieu Peninsula Swamps
- Internationally recognised Ramsar wetlands (CLL).

A reduction in flows (particularly low flows) has been identified as a key contributor to a long-term decline in distribution and/or condition of water-dependent ecosystems within the EMLR. Identified impacts include the local extinction of a number of fish species.

## 3. Ecological objectives and targets (s4.3)

This proposal provides some generic ecological objectives for the EMLR and CLL, such as to protect, sustain, and enhance EMLR water dependent ecosystems by providing adequate flows during periods of low flow.

Similarly, an ecological objective of the proposal is to maintain and/or restore self-sustaining populations of aquatic and riparian flora and fauna which are resilient in times of drought.

Although not presented within the proposal itself, additional references, specifically Van Laarhoven and van der Wielen 2009, outline resource condition targets to which the environmental water requirements are expected to significantly contribute.

These objectives and targets are generally consistent with the assessment criteria although they are generally not quantitative. Whilst the proponent has identified that quantitative targets supported by evidence would ideally be developed, they have indicated it has not been possible to link achievement of environmental water requirement metrics to specific ecological targets at this time. The reason for this lack of connection is due to the limited availability of ecological condition data to identify the current and desired ecological condition. It is expected that these will be developed as the project progresses.

## 4. Anticipated ecological outcomes (4.4)

### 4.1. Anticipated ecological benefits (4.4.1)

The anticipated ecological benefits of shifting the timing of water use to ensure environmental flows exist at critical times, are described qualitatively. An example is the expected benefits from restoring low flows—a naturally occurring, low volume (yet essential) part of the flow regime needed to maintain natural processes and catchment health. These qualitative descriptions are supported by investigations within the EMLR and relevant scientific studies from elsewhere within Australia (including the adjacent Western Mount Lofty Ranges, WMLR).

The anticipated benefits have been quantified in terms of the average annual volume of additional flows into EMLR Water Resource Area (WRA) riverine environments and those reaching the Lower Lakes. Modelling of the anticipated achievement of environmental water requirements following implementation of the proposal has also been undertaken. This modelling demonstrates that returning low flows coupled with limits on consumptive use will meet environmental water requirements.

The proposal describes the potential to reduce flows required from the Murray system to maintain limits of change (LoC) associated with the CLL and MM site. MDBA's modelling advice provided to the Basin Officials Committee (BOC) indicated that LoC will likely restrict the overall SDL adjustment supply contribution possible unless proposals alleviating these limits are included in the notified package for assessment. This proposal's increase in end of system flows is one such example and so has the potential to improve local as well as overall SDL adjustment outcomes.

### 4.2. Potential adverse ecological impacts (4.4.2)

The proposal includes a detailed risk register covering a range of risks including financial, operation, environmental, and reputational. The risk assessment did not identify any potential direct impacts on aquatic ecosystems from this proposal.

Some potential indirect impacts as a result of a failure to deliver low flows were identified i.e. low flow devices are not operated and/or maintained.

Appropriate risk treatments are identified which include specifying licence conditions mandating operation and regular maintenance, monitoring, audits and enforcement (see below).

This proposal seeks to shift the way water is taken to ensure environmental flows are provided at critical times as well as allowing harvesting of higher flows for consumptive use. The proponent was requested to provide further information on whether any potential adverse ecological impacts were expected because of increased consumptive use during high flows. The proponent has been able to confirm through modelling scenarios representing the return of low flows that environmental water provision targets are met for all parts of the flow regime (including high flows).

Modelling indicates an occasional reduction in the magnitude of peak flow caused by returning low flows. This highlights that some impacts on parts of the flow regime are expected. Assessments against environmental water requirements have shown these adverse impacts are within acceptable levels and will still support sustainable aquatic ecosystems and processes.

A well designed monitoring program is identified as a key risk treatment to demonstrate the benefits of the proposal. A monitoring and evaluation program of the impact of the low flow devices (including

ecological response monitoring) and a compliance and audit program are funded activities within the State Priority Project (SPP) funding component of the proposal.

## 5. Hydrology of the area and environmental water requirements (4.5)

### 5.1. Current hydrology and proposed changes to the hydrology (4.5.1)

The business case and supplementary information provide some information to explain the project's current hydrology, and changes associated with the supply measure proposal. However, the MDBA have not yet been able to add the additional Lower Lakes inflow time-series into the SDL adjustment model as it has not been supplied and remains unavailable. To assist the proposal's integration into the MDBA's model-based assessment framework further clarification and refinements are required.

### 5.2. Environmental water requirements (4.5.2)

The MDBA considers the proponent has satisfactorily dealt with environmental water requirements (EWRs). A number of detailed studies have been undertaken to describe and quantify the EWRs of the EMLR e.g. Van Laarhoven and van der Wielen 2009 and 2012. The source material provided describes the expert panel approach used to determine the EWRs, with limited reference to scientific evidence other than generic literature. An example is citations from Rolls et al. 2012 and Marsh et al. 2012 on low flow water requirements. Assessments of the impact of water resource development have shown the disproportionate impact on the achievement of low to medium flow EWRs.

## 6. Operating regime (4.6)

The proposal includes information on the operating regime, and associated risks and impacts. It does not relate to measures undertaken directly on the River Murray System (RMS), but describes a process for returning an estimated additional volume/flow to the lower RMS from the eastern Mt Lofty Ranges catchments. No impacts or negative actions relating to the functions of river operations in the Risk Management Strategy are evident in the proposal.

## 7. Assessment of risks and impacts of the operation of the measure (4.7)

A comprehensive risk management process was undertaken by the Department of Environment Water and Natural Resources (DEWNR). The process identified all risks related to the proposal and their mitigation treatments. Treatments are identified in part 12 of the proposal.

The risk management process complies with the AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines. Risks related to water quality and salinity was considered to be residual, which could be adequately mitigated under current mitigation treatments.

Implementation of the measure is likely to reduce the residual risk of insufficient flow available to improve water quality and support water-dependent ecosystems and their functions.

## 8. Complementary actions and interdependencies (4.9)

The proposal will link closely with South Australia Murray-Darling Basin (SAMDB) NRM Boards and the Environmental Protection Agency (EPA) on existing water-dependent ecosystem monitoring proposals, and with the current licensing program for compliance and monitoring of low flows.

The origin of the water savings is beyond the South Australian Murray, and water savings from the EMLR region lead to additional in-flow to the Lower Lakes.

## 9. Proposal governance and proposal management arrangements (4.11)

### 9.1. Legal and regulatory requirements (4.11.2)

The proposal does not appear to impact any transitional or interim plans.

If any actions in the proposal result in an amendment to a transitional or interim water resource plan, MDBA would expect the Basin State to seek accreditation of any such amendment in the normal way.