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MURRAY–DARLING BASIN AUTHORITY

# Prerequisite policy measures assessment:

## South Australia

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***Acknowledgement of the Traditional Owners of the Murray–Darling Basin***

The Murray−Darling Basin Authority pays respect to the Traditional Owners and their Nations of the Murray−Darling Basin. We acknowledge their deep cultural, social, environmental, spiritual and economic connection to their lands and waters.

The guidance and support received from the Murray Lower Darling Rivers Indigenous Nations, the Northern Basin Aboriginal Nations and our many Traditional Owner friends and colleagues is very much valued and appreciated.

Aboriginal people should be aware that this publication may contain images, names or quotations of deceased persons.

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# Contents

# Introduction

This report sets out the Murray-Darling Basin Authority's (MDBA) assessment of whether South Australia's Prerequisite Policy Measures (PPMs) were in effect by 30 June 2019, in accordance with section 7.15 of the Basin Plan. The two PPMs in section 7.15 are:

- **PPM1** - credit environmental return flows for downstream environmental use; and
- **PPM 2** - allow the call of held environmental water from storage during unregulated flow events.

The Authority must establish whether the PPMs are in effect by this date in order to retain these policy settings when calculating the SDL reconciliation for the Bain Plan SDL Adjustment Mechanism.

The implementation of PPMs is an important mechanism to enable the environmental outcomes in the Basin Plan to be met with the water identified for recovery, as was anticipated in the benchmark SDL modelling. Without the PPMs in place, more environmental water is needed to achieve the outcomes.

The PPMs are one mechanism set out in the Basin Plan to ensure that environmental outcomes are achieved. Other mechanisms include the protection of planned environmental water and environmental watering requirements through water resource plans, ensuring compliance with the SDL to protect environmental water from extraction, and providing for an adaptive management approach to the use of environmental water through reporting, evaluation and risk management.

While these other mechanisms will support the operation of PPMs, the MDBA has considered the issues specific to the PPMs in the assessment of whether the measures are in effect by 30 June 2019. The full implementation of the Basin Plan and associated compliance and adaptive management will ensure the other mechanisms, along with further refinement of the PPMs, enable the efficient and effective use of environmental water to achieve the Basin Plan environmental outcomes.

# Assessment approach

To establish whether the PPMs are in effect, the MDBA has developed criteria and assessment questions using principles set out in guidelines[1] developed by the MDBA in 2015. These guidelines were developed to assist states to implement PPMs. The criteria and assessment question are designed to test whether the PPMs are in effect according to these principles, and are set out in Table 1, with the key principles in bold.

[1] MDBA, 2015. Pre-requisite Policy Measures: Assessment Guidelines. April 2015.

**Table 1: PPM Assessment criteria**

| Criteria | Assessment questions |
|---|---|
| 1. Are PPMs enabled in a **secure and enduring** arrangement? | *How are PPMs enabled through legislative/statutory instruments? What other mechanisms are used to implement PPMs?*<br>*What is required to change mechanisms that enable or implement PPMs?*<br>*Given the above assessment findings, will the proposed arrangements enable PPMs in a way that ensure they will remain in effect from 30 June 2019?* |
| 2. Can PPMs be **fully operated** from 1 July 2019? | *Are there sufficient obligations to implement PPMs?*<br>*How is environmental water called from storage during unregulated flow events?*<br>*How is environmental water accounted for?*<br>*Given the above, are PPMs given effect through appropriate mechanism(s) within the relevant water management framework?* |
| 3. Are operational arrangements sufficiently detailed and **transparent**? | *Do operational arrangements include:*<br>*1. A process for ordering and delivering environmental releases that:*<br>– *Enables all environmental water holders to target the use of their entitlements, within operational requirements*<br>– *Includes processes for advising environmental managers of the estimated environmental releases and providing other information needed for event planning*<br>– *Requires proposed flow descriptions (rates, volumes, timing, locations, intended targets etc.)*<br>– *Describes accounting arrangements, including inter-valley accounting, where applicable*<br>– *Requires disclosure of explanations for refusing or altering orders*<br>– *Includes a process for resolving disputes*<br>*2. A process for accounting environmental water that:*<br>– *Clarifies roles and responsibilities for estimating releases, losses and credits*<br>– *Requires disclosure of the assumptions/information used in the estimations*<br>– *Includes processes for adjusting the estimation during and post-event, where applicable*<br>– *Applies the principle of incremental losses*<br>– *Improves estimates as knowledge improves*<br>– *Considers detrimental and beneficial impacts of environmental releases when considering potential third party risks*<br>*Given the above, do the operational arrangements provide for a process enabling PPM operation?* |

# Background

This report assesses how PPMs have been given effect within South Australia's water management legislation and policy frameworks for the South Australia River Murray. For PPMs on the River Murray System, provisions in the Murray-Darling Basin Agreement enable PPMs. The assessment of how PPMs are enabled in the River Murray system is considered in a separate assessment report. However, in conducting this assessment, the MDBA Assessment panel has considered how the arrangements enabling PPMs in the Murray-Darling Basin Agreement and under South Australian state legislation interact.

# Documents Assessed

A number of documents have been provided by South Australia for assessment. These are listed in Table 2, with shortened titles, which are used for referencing the documents throughout this report. The assessment of whether the PPMs were in effect in South Australia by 30 June 2019 was based on consideration of these documents.

During the assessment of this documentation, a number of questions were raised by the Assessment panel. These were provided to South Australia for a response in a Questions log. The information provided by South Australia in this log also informed the assessment. This included two additional documents: the Barrage Operating Strategy and Barrage and Water Level Management Policy, also listed in Table 2.

**Table 2: Documentation provided for assessment and shortened titles.**

| Document | Shortened title |
|---|---|
| Prerequisite Policy Measures Implementation in South Australia | Overview document |
| Policy for the Use of River Murray Unregulated Flow (RMUF) in the South Australian River Murray<br>(DEW Environmental Flow Policy No. 5) | Unregulated flow policy |
| Procedure for the Use of River Murray Unregulated Flow (RMUF) in the South Australian River Murray<br>(DEW Environmental Flow Procedure No. 5) | Unregulated flow procedure |
| Policy for Environmental Water Return Flows<br>(DEW Environmental Flow Policy No. 4) | Return flow policy |
| Environmental Water Return Flow Procedure<br>(DEW Environmental Flow Procedure No. 4) | Return flow procedure |
| Policy for Application of Losses to Environmental Water Entitlements<br>(DEW Environmental Flow Policy No. 10) | Transmission losses policy |

| | |
|---|---|
| Procedure for Application of Losses to Environmental Water Entitlements<br>(DEW Environmental Flow Procedure No. 10) | Transmission losses procedure |
| Procedure for environmental water accounting in South Australia<br>(DEW Environmental Flow Procedure No. 12) | Environmental water accounting procedure |
| Methodology to Calculate Water Use Losses for Environmental Water Delivery in South Australia | DEW Technical note, 2019 |
| Refinements to the River Murray Source Model in South Australia | Refinements to Source Model document |
| Environmental water accounting spreadsheet | Environmental water accounting spreadsheet |
| Objectives and Outcomes for River Murray Operations in South Australia | SA O&Os document |
| South Australian River Murray Annual Operating Plan 2018-19 | Annual operating plan |
| Barrage and Water Level Management Policy | Barrage policy |
| Barrage Operating Strategy | Barrage Operating Strategy |
| Lower River Murray, Coorong, Lower Lakes and Murray Mouth Watering Schedule 2018-19 | DEW-CEWH Watering schedule |

# Summary assessment statement

***Has South Australia demonstrated that the PPMs are in effect by 30 June 2019?***

The material provided by South Australia describes the legislative and policy instruments used to enable PPMs in a way that ensures they will remain in effect from 30 June 2019.

A number of new policies and associated procedures have been developed to give effect to PPMs within South Australia's River Murray operations activities. These policies and procedures are applied through the relevant river operations delegations and are secure and enduring in the context of South Australia's water resource management legislative framework.

South Australia has responsibility for managing environmental water from the border to the Murray mouth, including environmental water delivered from upstream. South Australia receives environmental water across the border from a number of sources, and the arrangements for receiving and managing this water vary. The policy and procedures that have been developed identify the standard processes DEW staff follow to implement PPMs in their day-to-day river operations activities.

The policy and procedures clearly document the operational arrangements which enable PPM operation.

These documents along with the supporting information provided by South Australia provide detailed and transparent information on how environmental water is managed in South Australia, and how PPMs are planned, delivered and accounted for as part of river operations.

**The Assessment panel considers that the information provided demonstrates that the PPMs are in effect in South Australia.**

# Prerequisite policy measures assessment

## Criterion 1: Securing and enduring arrangements

***1.1. How are PPMs enabled through legislative/statutory instruments? What other mechanisms are used to implement PPMs?***

Arrangements for water resource management in South Australia are set out in the *Murray-Darling Basin Act 2008, River Murray Act 2003,* and *Natural Resources Management Act 2004*. Section 2 of the *Overview document* describes how this legislative framework includes provisions to give effect to the Basin Plan and the *Water Act 2007* (Cwlth). Table 3 below briefly describes the purposes of these State legislative instruments.

South Australia's water resource management framework does not include an independent statutory agency with delegated authority for water resource management. As such there are no statutory instruments which set out obligations for the management of water under such an authorisation, with which to give effect to PPMs.

Instead, River Murray management responsibilities are delegated from the South Australia Minister for the Environment and Water to the Department for Environment and Water (DEW) under section 18 of the *Murray-Darling Basin Act 2008* (see *Overview document,* page 8). This includes responsibility as a Constructing Authority under the Murray-Darling Basin Agreement (the Agreement), and for managing and coordinating the delivery of consumptive and environmental water once this water crosses the South Australian border. Specifically, these responsibilities include:

- accounting for environmental water in South Australia
- support of environmental water holders in the use of held environmental water delivered into South Australia
- facilitation of environmental water delivery and watering events within the River Murray Water Resource Plan Area, including impacts on third parties and management of environmental and water quality risks.

SA Water also has some delegated responsibility as a Constructing Authority for the operation of South Australian River Murray infrastructure under the direction of DEW, and for monitoring flows within South Australia on behalf of the MDBA.

As the delegated authority for water management within the SA River Murray, the DEW has developed a number of policies and associated procedures which set out the internal processes to implement PPMs. These documents are approved by the Chief Executive Officer and their sub-delegates (Executive Directors and Regional Directors) who have delegated authority for aspects of water resource management. South Australia has indicated that the policy and procedures for implementing PPMs will be applied from 1 July 2019 (see Question log response). Thus, these

policies and procedures give effect to PPMs through the relevant authority and are secure and enduring in the context of South Australia's water resource management legislative framework.

The key policy document for PPM implementation is the *Return flow policy*, which guides the use of return flow from environmental watering actions in the South Australian River Murray and ensures that the accounting of return flow from environmental watering actions is available from one site to be re-used for environmental outcomes at other sites downstream. This policy is required to be implemented by DEW River Murray water resource and environmental water managers when planning, managing, and delivering environmental water actions and accounting for the water use. The policy is implemented through adherence to the *Return flow procedure*.

**Table 3: Commonwealth and State legislation relevant to PPM implementation.**

| State legislative instruments |
| --- |
| ***Murray-Darling Basin Act 2008***<br><br>This act facilitates the implementation of South Australia's statutory obligations under the Basin Plan within state law. In relation to enabling PPMs, section 18 authorises the South Australian Minister for Environment and Water to delegate a function or power relevant to operating or administering the *Murray-Darling Basin Act 2008,* or South Australia's responsibilities under the *Murray-Darling Basin Agreement.* Such delegations have been made through a Memorandum of Administrative Arrangement to relevant executives in the Department of Environment and Water. |
| ***River Murray Act 2003***<br><br>This Act aims to protect, restore and enhance the River Murray and its natural resources, and ensure that these resources are used and managed in a sustainable way. Sections 9(5) and (6) authorise the Minister for Environment and Water to institute, supervise or promote programs to protect, maintain or improve the River Murray. This includes doing additional works and programs for environmental outcomes not covered by the Murray-Darling Basin Agreement, but which are necessary to further the purposes of the Basin Plan and fulfil the objectives of the *River Murray Act 2003*. Section 9(4) obligates the Minister to adopt a leadership role in relation to the management of the Murray-Darling Basin, and under section 9(5) has the power to give effect to the requirements in the MDB Agreement and further the purposes of the Basin Plan. The Chief Executive of DEW has a delegation under section 12 of the Act for these authorisations, and has sub-delegated this to relevant Executives in DEW.<br><br>This Act also imposes a duty of care through section 23 on people to take all reasonable measures to prevent or minimise any harm to the River Murray through his or her activities. |
| ***Natural Resources Management Act 2004***<br><br>This Act provides the statutory framework for the management of activities that can affect water, including the taking of water. The Act requires the development of Water Allocation Plans (WAP), which govern water take and management. In relation to enabling PPMs, the WAP includes rules for how water allocations are calculated, and how allocations and use are accounted for. |

### *1.2. What is required to change mechanisms that enable or implement PPMs?*

The policy and procedure documents have a 2 year review (by July 2021). The Assessment panel note that South Australia's response to how these documents are changed in the Questions log includes a commitment to discuss any updates with key stakeholders, including the Commonwealth Environmental Water Office, Murray-Darling Basin Authority and other environmental water holders as required, or requested.

Within the Department, reviews will also be undertaken with key groups such as the River Murray Operations Working Group and Environmental Water Coordination Forum (see Question log response).

### *1.3. Given the above assessment findings, will the proposed arrangements enable PPMs in a way that ensure they will remain in effect from 30 June 2019?*

The material provided by South Australia describes the water management legislative framework in the state and outlines the legislative and policy instruments used to enable PPMs in a way that ensures they will remain in effect from 30 June 2019.

# Criterion 2: Fully operable arrangements

### *2.1. Are there sufficient obligations to implement PPMs?*

The policies developed by South Australia identify the roles and responsibilities of DEW staff to implement these policies, particularly River Murray water resource and environmental water managers. Implementation of the policies occurs through the application of the associated procedures in day-to-day operations, and is a performance requirement for relevant staff.

In addition, the *Overview document* describes how the rules in the WAP protect environmental water from consumptive use, obligating South Australian river operators to recognise and account for this water as environmental water/return flows in the South Australian River Murray. The *SA O&Os document* includes a specific objective to account for environmental water (SA O&O 3), which includes an obligation to provide timely and up-to-date information to stakeholders through monthly reporting (SO&O (3)(b)(ii), page 8).

The *SA O&Os document* also includes a number of objectives relating to the delivery of environmental water, in particular to meet environmental water delivery and accounting objectives as agreed with environmental entitlement holders (SA O&O (5)(a)(v), page 9). The Assessment panel notes the *DEW-CEWH Watering schedule* provides an example a watering schedule which sets out the agreed arrangements for DEW and an environmental water holder for delivering water over a water year, including operational strategies and possible operational constraints to watering actions. The *SA O&Os document* also includes an obligation for SA river operators to report in the actual environmental watering actions for the past water year (SA O&O (5)(c)(ii), page 9).

The Assessment panel is satisfied that these requirements under the WAP and SA O&Os provide sufficient obligations to implement PPMs, and include accountability against these obligations through reporting requirements.

### *2.2. How is environmental water called from storage during unregulated flow events?*

South Australia receives environmental water called from upriver storages during unregulated and regulated flow periods (see *Overview document*, page 4). South Australia has responsibility for managing environmental water from the border to the Murray mouth, including environmental water delivered from upstream.

The Lower Lakes may receive environmental water as part of a watering event, but there are also circumstances when the lakes may be used as temporary storage before environmental water is released to the Coorong. While environmental water holders cannot call water from the Lower Lakes under the South Australian water management framework, understanding how unregulated flow events are managed, including any environmental water components of these events (see below), and how environmental water is managed 'in storage' in the Lower lakes, is important for understanding how the PPMs are in effect in South Australia.

South Australia receives environmental water across the border from a number of sources, and the arrangements for receiving and managing this water vary between the sources:

- River Murray Unregulated Flow (RMUF) is available for environmental watering actions both upstream of and within South Australia. Prioritisation of the use of this water between the three States is determined by the South Connected Basin Environmental Watering

Committee (SCBEWC), with South Australia prioritising their use according to the *Unregulated flow policy* and associated procedure. RMUF is protected from extraction for consumptive use by the River Murray Water Allocation Plan for the River Murray Prescribed Watercourse 2019 (WAP).

- Environmental water can be ordered by NSW and Victoria from Lake Victoria during unregulated flow events using the MDBA's Specific Objective and Outcome (provision 9.4). This provision enables the delivery of up to 100 GL environmental water, shared equally between NSW and Victorian sources, at the end of an unregulated flow event. This measure was trialled in December 2016.
- Return flows from upstream environmental watering events in NSW and Victoria are delivered to South Australia, allowing for in-channel travel times. They originate from entitlements held by the Commonwealth Environmental Water Holder (CEWH) and The Living Murray (TLM), and on occasions from the Victorian Environmental Water Holder (VEWH) and the River Murray Increased Flows (RMIF) portfolio. Volumes contributed from Victoria are traded to the account of the South Australian Minister for Environment and Water, while NSW currently uses a Bulk Entitlement Delivery rather than a trade mechanism to facilitate return flows. Such return flows have been delivered since 2010-11.
- Trades for immediate delivery from environmental water entitlements in NSW and Victoria are possible at any time, as agreed by the environmental water holders and subject to operational constraints. These volumes are also traded to the South Australian Minister for Environment and Water.
- The CEWH and TLM both hold entitlements in South Australia. Currently, these entitlements are approximately 155 GL for CEWH and 45 GL for TLM. Allocations associated with these entitlements are delivered as part of South Australia's entitlement flow.

The *Return flows policy* states that held environmental water delivered from New South Wales or Victoria is not available for consumptive use under the River Murray WAP. This WAP defines the volume of water available for the consumptive pool under South Australian law. Principle 5 of the WAP prohibits any additional quantities of water (i.e. environmental water) from being allocated or used for consumptive purposes.

This effectively means that any water above South Australia's entitlement cannot be extracted other than for environmental use, and hence protects all environmental water from extraction. The *Overview document* states that this applies to all environmental water delivered both from trade and the retail system and under Bulk Entitlement Delivery (BED) arrangements from New South Wales. Similarly, all return flow from environmental watering events and South Australian held entitlements within the River Murray in South Australia is protected and is not available for non-environmental consumptive purposes.

### *2.3. How is environmental water accounted for?*

Within South Australia, the volume of environmental water available for use includes the water delivered from upstream states and the volumes of water allocated to South Australian entitlements held by environmental water holders.

The Department for Environment and Water's River Murray Operations staff determine whether environmental watering actions require loss calculations according to the *Transmission losses*

*procedure.* If a loss calculation is to be applied, DEW consults with environmental water holders to agree on the specific water accounting methods to be used. These methods are set out in *Transmission losses procedure* and may include:

- Site-based models, such as MDBA's Chowilla model, which estimate the net volume of use by infiltration and evapotranspiration during the relevant watering action, as well as the volume of water retained on-site at the end of the watering action.
- Net water use for in-river actions such as weir pool manipulation is also estimated using models.
- An incremental net loss of 1–2% applied for environmental water that remains in the River Murray channel (as per DEW Technical Note, 2019)
- An incremental net evaporative losses, applied to environmental water stored in the Lower Lakes, except during an unregulated flow event and only if the lakes have been filled to 0.85 m AHD.

Incremental losses that occur during an unregulated flow event, which may or may not include environmental water, will be solely deducted from the unregulated flow, unless agreed otherwise, as per the *Transmission losses policy.*

The MDBA's River Murray Operations staff provide DEW (both the Environmental Water Team and South Australia's River Murray Operations branch) and environmental water holders the monthly volumes of return flows and directed trades of environmental water delivered to South Australia. These volumes are categorized by the State of origin and the water holder. This information is provided early in each month for volumes delivered the preceding month (see *Environmental water accounting procedure*).

The Department for Environment and Water's River Murray Operations branch is then responsible for coordinating the accounting of environmental water in South Australia according to the *Transmission losses procedure*. Water use is measured or estimated by:

- The accounting methods listed above, noting that no transmission loss is applied to South Australian entitlements held by the CEWH or TLM, as per the *Transmission losses policy*.
- Flow meters on the pumps that are used to provide water to wetlands.
- The barrage discharge calculator, which has been developed by South Australia to provide the best available estimate of the volume of water discharged from Lake Alexandrina into the Coorong. The calculator estimates the discharge volume based on the upstream and downstream water levels and the number of bays open at the barrages. The estimate also includes a volume for the discharge through the Barrage fishways.

The measured or estimated volumes are collated in the *Environmental water accounting spreadsheet.*[2] This spreadsheet records the monthly volumes of environmental water delivered to South Australia for each environmental water holder, volumes used along the Murray in watering actions at certain sites or in-channel, evaporation losses from the Lower Lakes, and volumes of barrage releases. The volume of each entitlement holder's water held within the Lower Lakes will be calculated.

[2] The *Environmental water accounting spreadsheet* was originally developed by the CEWO, and is now managed by DEW's River Murray Operations branch.

The *Transmission losses policy* sets out that any models used to estimate water use will be subject to a separate procedure and technical evaluation for quality assurance and to ensure that fit for purpose methods are used. This policy also sets out that South Australia will undertake post event modelling to determine the actual incremental loss to be recorded in the environmental water accounting spreadsheet. The Assessment panel notes that this continuous development process is an important part of future improvement for water use accounting in South Australia and the integrity of this process will be underpinned by transparency with all water holders.

The *Environmental water accounting procedure* and the *Environmental water accounting spreadsheet* set out South Australia's principles, processes and reporting of environmental water accounting. These documents indicate the commitment from South Australia to engage with environmental water holders regarding the planning, operation and reporting phases of environmental water delivery and accounting. The procedure also contains a process for continuous improvement of environmental water use calculations.

The Assessment panel supports the collaborative approach to the development of annual environmental watering schedules between the CEWO and DEW. The Assessment panel also notes that while TLM does not currently have a delivery schedule with DEW, decisions on the use of jointly held environmental water are made by SCBEWC in line with the watering proposals developed each year. All held environmental water will be managed in accordance with the policies outlined in Section 3, and the reporting and other arrangements outlined in Section 4, of the *Overview document*.

### *2.4. Given the above, are PPMs given effect through appropriate mechanism(s) within the relevant water management framework?*

The Assessment panel considers that the documentation provided by South Australia demonstrates that PPMs are in given effect through appropriate mechanisms in South Australia.

# Criterion 3: Transparent arrangements

***3.1 Do operational arrangements include a process for ordering and delivering environmental releases that:***

– ***Enables all environmental water holders to target the use of their entitlements, within operational requirements***

The documentation describes how environmental water holders can target the use of their water in South Australia, within operational requirements. The legislative and operational arrangements (policies and procedures) establish the responsibilities of all entities involved, covering each phase of water management, from water use planning and delivery, to accounting and review.

For example, the *Return flow procedure* outlines the process for managing environmental water originating from both South Australian held entitlements, and originating from upstream states. The process outlined in the documentation includes:

- Identification of potential environmental watering actions for the forthcoming year by environmental water managers in consultation with scientific, interest and community groups.
- Coordination and prioritisation of environmental watering proposals by the DEW Environmental Water Team in consultation with environmental water holders.
- Submission of advice on implementation of watering actions to DEW River Murray Operations.
- Estimation of likely water use and return flow volumes by site managers.
- Submission of River Murray Action Request form from environmental water managers to South Australia's River Murray Operations Working Group for review.
- Coordination of the delivery of environmental water by the DEW River Murray Operations branch.
- Consultation with environmental water holders and MDBA as appropriate regarding water delivery rates and operational implications.
- Reporting by DEW staff on environmental water use for each watering action to the environmental water holders on a monthly basis.

The delivery of water to the barrages from the South Australian border is tracked by the *Environmental Water Accounting spreadsheet*. The Assessment panel supports the ongoing development and use of this spreadsheet, which will be provided to all environmental water holders to improve transparency of the accounting arrangements (see *Environmental water accounting procedure*). Importantly, the spreadsheet allows the tracking of environmental water across water years, to ensure water for the environment remains available to the environment, and environmental water holders can plan for the use of this water across accounting years. The Assessment panel is satisfied that the accounting arrangements enable environmental water holders to plan the use of their entitlements. The panel also note that South Australia has been using continuous accounting arrangements since 1 July 2018, and these are to be reviewed after two years. The Assessment panel consider that continuous accounting arrangements are best practice and should be adopted permanently following the review, but that the current arrangements are adequate to give effect to PPMs.

- ***Includes processes for advising environmental managers of the estimated environmental releases and providing other information needed for event planning***

There are clear arrangements outlined in the *Environmental water accounting procedure* with regard to advising environmental water holders of the volumes and timing of environmental flows entering South Australia, and of the use of environmental water at the various sites along the South Australian River Murray. This information is provided monthly in the *Environmental water accounting spreadsheet*.

To date, the *Environmental water accounting spreadsheet* has been used to account for CEWH water. The *Environmental water accounting procedures* states that this spreadsheet will now be used to track all forms of environmental water delivery and use from the South Australian border to the to the Lower Lakes and Coorong. The current spreadsheet demonstrates that the mechanisms are in place to re-credit environmental water at the Coorong and Lower Lakes for all environmental water holders.

The documentation provided, including the *Barrage Operating Strategy*, *Annual operating plan* and *DEW-CEWH Watering schedule*, indicate that environmental water holders are aware that environmental water delivered for release through the barrages to the Coorong and Murray mouth may be temporarily stored in the Lower Lakes. This temporary storage may arise under drier conditions when lake levels become low and need to be managed by South Australia in order to maintain access for consumptive entitlement holders and potentially for the supply of critical human water needs. The manner in which South Australia manages trade-offs between competing objectives in relation to the management of the Lower Lakes is explained in the Questions log. South Australia's response indicates how environmental water holders are involved in that decision-making process (see also the dispute resolution question below). In addition, the policies and procedures that relate to this process are detailed in the *Barrage policy* and *Barrage Operating Strategy*, which include a decision making framework process to be followed.

The *Environmental accounting spreadsheet* tracks the volumes of environmental water accumulated in the lakes and released from the barrages. A copy of the spreadsheet maintained by DEW River Murray Operations is provided to environmental water holders on a monthly basis (or as requested) as part of routine reporting requirements (see *Environmental water accounting procedure*).

The confirmation from South Australia to extend information sharing arrangements currently in place between DEW and CEWH (see Questions log response), to all holders of environmental water and the Barrage Operations Advisory Group (BOAG), will significantly improve transparency and accountability of environmental water use in South Australia. Specifically, the intention to make the following sources of information available to environmental water holders and BOAG will support transparent planning and use of environmental water:

- Annual plan for deferring South Australian entitlement flow.
- Three month plans for environmental water use in the Coorong and Lower Lakes
- The monthly operations report for the Coorong and Lower Lakes
- The monthly accounting spreadsheet, supported by multi-year (continuous) accounting

- ***Requires proposed flow descriptions (rates, volumes, timing, locations, intended targets etc.)***

There is a clear process for proposing, planning and approving watering events along the River Murray from the South Australian border to the Lower Lakes. This process is outlined in the *Return flow procedure*. Similarly, the *Unregulated flow procedure* guides the use of unregulated flow. In particular, major environmental water actions require dedicated event management plans (see *Overview document*), while all environmental watering actions require a River Murray Action Request

under the *Unregulated flow procedure*. These plans and requests are assessed by DEW's River Murray Operations Branch and the River Murray Operations Working Group (see the *Overview document*).

The largest use of environmental water is in the Coorong, Lower Lakes and Murray Mouth. Water usage here is guided by the *DEW-CEWH Watering schedule,* and the water accounting arrangements set out in the documentation (*Environmental water accounting procedure and spreadsheet*) and described in Section 2.3 of this report demonstrate how the environmental water has been used.

- ***Describes accounting arrangements, including inter-valley accounting, where applicable***

The documentation provided by South Australia described the accounting arrangements, as outlined in Section 2.3 of this report above.

- ***Requires disclosure of explanations for refusing or altering orders***

For use of environmental water within South Australia, specific water orders are not required in the same sense as occurs upstream in NSW and Victoria, where specific releases are made from headwater storages to meet specific water demands downriver.

There are various types of environmental water entering South Australia and being used within the state, requiring different processes for refusing or altering watering plans. For environmental water delivered to South Australia, the processes for managing the various types of environmental water are as follows:

1. Environmental water delivered to South Australia from upstream states as a return flow, involves DEW RMO staff liaising with MDBA, SA Water and CEWO regarding delivery rates (*Return flow procedure*). This water includes trades of return flows from Victoria and NSW bulk entitlement deliveries.
2. Environmental water delivered to South Australia from upstream states as a trade for immediate delivery is subject to the normal approval processes for inter-state trade. These trades are undertaken by the delegated officer within the DEW Finance team (*Return flow procedure*).
3. Environmental water allocated to entitlements within South Australia is usually delivered as part of, and in proportion to, South Australia's entitlement flow (*Environmental Water Accounting spreadsheet*).
4. Unregulated flow, by definition, is not able to be ordered (*Unregulated flow policy*).
5. Environmental water can be ordered by NSW and Victoria from Lake Victoria during unregulated flow events using MDBA's Specific Objective and Outcome 9.4.

There is a process for assessing requests to undertake watering actions as follows (see Figure 1 in the *Overview document*):

1. Prioritisation of the use of RMUF is undertaken by DEW's Environmental Water Team. The prioritisation process may include consultation with asset managers. Recommendations for use of RMUF are submitted to the Environmental Watering Coordination Forum for consideration and endorsement as outlined in the *Unregulated flow procedure*. Successful proponents then submit River Murray Action Request form for consideration to River Murray Operations Working Group for final review before being submitted to the Director, River Murray Operations for approval. If necessary, approval is also sought for recommended actions from SCBEWC.

2. Major environmental water actions require dedicated event management plans, while all environmental watering actions require a River Murray Action Request. These plans and requests are assessed by DEW's River Murray Operations Branch and the River Murray Operations Working Group (see *Overview document*). This assessment process may trigger further discussions with environmental site managers to modify the event to reduce the likelihood of negative impacts.
3. A River Murray Action Request is not required for the Coorong, Lower Lakes and Murray Mouth. This area is covered by the *DEW-CEWH Watering schedule*. This schedule prescribes the conditions under which barrage releases are undertaken, depending on the volume of CEWH water currently held in the Lower Lakes, the time of year, volumes of entitlement deferred by South Australia and the water level of the lakes. Similar provisions are available for water delivered by TLM, VEWH and RMIF to South Australia.

The *Overview document* details an extensive range of groups involved with South Australia's environmental water delivery arrangements, covering all phases from planning, implementation and review. These arrangements incorporate the need to review event management under changing conditions over time. In addition, the *DEW-CEWH Watering schedule* outlines the risks involved and the mitigations that may occur, including changes to the delivery of environmental water. The confirmation from South Australia to expand the information sharing, accounting and reporting arrangements which exist in this schedule to other environmental water holders and BOAG (see Question log response) will provide transparency about planning, decision and accounting of environmental water and need to deviate from an order or delivery plan.

In addition, the River Murray Operations Working Group will also assess whether an action is likely to cause negative impacts on the River Murray and/or downstream users in South Australia, and provide this advice to DEW. Regular meetings with environmental water holders and providing a three month forward watering plan aims to ensure that cooperative adaptive management occurs to avoid order cancellations.

Given these arrangements, the Assessment panel considers that the processes for modifying watering plans are adequate.

– ***Includes a process for resolving disputes***

The iterative processes for assessing proposed watering actions provides for the prevention, mitigation or resolution of potential issues associated with watering actions during the planning phase either through:

- River Murray Action Requests
- Event management plans
- Watering schedule for the Coorong Lower Lakes and Murray Mouth

In addition, South Australia's response to this matter in the Questions log indicates that a range of processes can be implemented to resolve disputes. In summary, initially the parties involved work together to define the problem and decide whether it requires escalation. Further, DEW, CEWO and MDBA regularly meet through forums such as the Barrage Operations Advisory Group, River Murray Operations Working Group and direct meetings with the CEWO where issues can be discussed and resolved. Watering events are also supported by event plans outlining risks and potential issues (as mentioned above).

South Australia's response in the Questions log indicates that CEWO and DEW are currently preparing a Partnership Agreement. This includes a section on managing disputes and requires parties to use reasonable efforts to resolve by negotiation any problem that arises.

Specifically in relation to the management of the Lower Lakes, conflicts may arise between competing objectives particularly under low lake level conditions (as outlined in the *Barrage Operating Strategy*). South Australia's response in the Questions log on this matter mentions a range of potentially competing objectives to meet under the Basin Plan and *Water Act 2007* (Cwlth), ranging from providing a minimum flow of 650 GL over the barrages, managing water levels in the Lower Lakes and securing supplies for future Critical Human Water Needs. These factors are considered when assessing the potential trade-offs of flow/water management decisions and environmental water holders are involved in processes relating to trade-offs. The policies and procedures that assist with this process are outlined in the *Barrage policy* and *Barrage Operating Strategy,* which includes a decision making framework to be followed.

In relation to deferral decisions, South Australia provides CEWH with a copy of the deferral plan at the start of the water year on 1 July. This enables the CEWH to undertake delivery planning with clarity on South Australia intentions in relation to deferrals. This arrangement is also identified in the CEWH delivery schedule. The deferral plan is provided in advance of any substantial volumes of environmental water being physically delivered at the South Australian border.

South Australia's dispute resolution processes at the working group level and as outlined in the *DEW-CEWH watering schedule* are considered adequate.

The commitment from South Australia to expand information sharing, accounting and dispute resolution arrangements in place with the CEWH, to other environmental water holders and BOAG (see Question log response), will likely reduce the occurrences of disputes occurring through improved transparency around planning and use of water.

***Do operational arrangements include a process for estimating environmental releases that:***

- ***Clarifies roles and responsibilities for estimating releases, losses and credits***
- ***Requires disclosure of the assumptions/information used in the estimations***
- ***Includes processes for adjusting the estimation during and post-event, where applicable***
- ***Applies the principle of incremental losses***
- ***Improves estimates as knowledge improves***
- ***Considers detrimental and beneficial impacts of environmental releases when considering potential third party risks***

The roles and responsibilities for estimating the volume of environmental water delivered to South Australia and subsequent losses and credits, including the assumptions and information used in estimating losses, and in adjusting these estimates as required, are clearly outlined in the documentation submitted for assessment and described in Section 2.3 of this report. South Australia has documented its commitment to the principle of applying incremental losses to both transmission losses (when under regulated conditions) and to evaporative losses from environmental water temporarily stored in the Lower Lakes, and to a net loss assessment for weir pool level manipulation in the *Transmission losses procedure*.

South Australia has committed to the continuous improvement of the management of environmental water in South Australia through cycles of identification of watering actions, prioritisation, proposal development and assessment, operational delivery, monitoring, review and reporting (see Figure 2 in the *Overview document*). These processes include consultation and collaboration between DEW and environmental water holders, Aboriginal Nations, RAMSAR managers, scientists, and the community.

The potential third party risks of environmental watering actions are considered throughout the planning and implement phases, including in the following ways:

- Event management plans are prepared for major environmental watering actions which are required to specifically address potential third party impacts.
- The assessment process for River Murray Action Requests includes the potential modification of watering proposals to reduce the likelihood of third party impacts.
- The *DEW-CEWH Watering schedule* includes consideration of lake levels (which can affect water quality and access by other entitlement holders) when determining the feasibility of barrage releases. A risk assessment is included as an appendix to this schedule.
- Issues which arise during watering actions can be addressed through the Operations Advisory Groups.

### *3.2 Given the above, do the operational arrangements provide for a process enabling PPM operation?*

The Assessment panel are satisfied that the documentation provided clearly documents the operational arrangements which enable PPM operation, and provide detailed and transparent information on how PPMs are planned, delivered and accounted for as part of South Australia river operations. South Australia's commitment to further information sharing and continuing to embed these planning, delivery and accounting process for all types of environmental water will increase transparency and facilitate continuous improvement.

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