

Addressing the criteria to assess the Pre-requisite policy measures

Introduction

Criteria for assessment

1. As noted by the BOC in November 2018 (Agenda Item 11), the criteria used for the MDBA's assessment of PPM implementation are the Pre-requisite Measures Assessment Guidelines 2015 (the Guidelines), which were developed to provide assistance to states on developing their PPM implementation plans. The Guidelines advise that the PPMs should:
 - be secure and enduring
 - be fully operable
 - be transparent
 - provide for releases of Held Environmental Water from storages on top of other in-stream flows, including unregulated flows
 - allow environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution.
2. In addition, where risks have been identified in delivering the PPMs, the MDBA's assessment will also look to see that those risks have been addressed.
3. The final assessment of implementation will be based on states demonstrating that they will have effective policies in place by 30 June 2019 to implement the PPMs identified in the Basin Plan (section 7.15).

Role of the MDBA River Operations

4. A fundamental role of the MDBA River Operations is to operate the River Murray System (RMS) in accordance with the arrangements agreed to by the joint governments to give effect to their individual and collective water delivery needs. As these needs have changed, including via the implementation of PPMs, so too will the MDBA's operations day to day and season to season.
5. A relatively new task for the MDBA in the space of environmental water delivery – and one that is needed to give full effect to the delivery of PPMs – involves a range of estimation and accounting tasks across the bulk and retail scales. Compared to, say, an extractive water use where a state is best placed to manage the necessary measurement, the release of bulk state water entitlements from RMS storages is best determined by the MDBA River Operations because of its access to tools, systems and knowledge around the day to day management of the RMS. For this reason, the states require the assistance of the MDBA River Operations, not only in the bulk accounting of water entitlements in accordance with the Murray–Darling Basin Agreement (the Agreement), but also to provide states and relevant entitlement holders the necessary

information to enable state retail accounting and day to day management of, for example, environmental water portfolios. This information can also be required to implement any mitigation measures, such as limits on directed releases, imposed by governments either individually or jointly.

Aim of this document

6. This document outlines how the Agreement, the existing *Objectives and outcomes for river operations in the River Murray System document* (O&O document), the proposed O&O amendments along with other documents related to the role of the MDBA River Operations address the criteria outlined above.

Secure and enduring

Legislative instruments and other documentation

7. The MDBA role in implementing PPMs for the River Murray System aims to be secure and enduring by ensuring the primary provisions are included in the Agreement (or protocols), or within the *Objectives and outcomes for river operations in the River Murray System* (O&O document). These documents cannot be altered without the agreement of the Commonwealth, New South Wales (NSW), Victorian and South Australian (SA) Governments. Together with the each state's individual PPM policy documentation, the Agreement and O&Os will collectively ensure that PPMs are as secure and enduring as all other water management provisions in these documents.
8. To support the day to day delivery of environmental water consistent with PPMs, the MDBA is preparing an internal document – the Environmental Watering Manual (EWM) – which will provide operational detail on environmental water ordering, accounting and delivery. The EWM will be developed with advice from the four jurisdictions via the Water Liaison Working Group (WLWG) and the Southern Connected Basin Environmental Watering Committee (SCBEWC) and will be approved by the Senior Director of River Operations at the MDBA.
9. The information in the manual will need to be consistent with the Agreement, the O&O document and state legislation and PPM policies. The EWM will include the water accounting processes required to meet the 'retail' and 'bulk' water accounting systems. The EWM is expected to be progressively updated and reviewed over coming years as new information comes to hand, however, a first version will be prepared prior to end June 2019.

No immediate requirement for amendments to Agreement

10. The River Murray PPM Implementation Plan 2017 (PPM Plan) raised the possibility of making changes to the Murray-Darling Basin Agreement, including to improve clarity around unregulated flows, system losses and bulk accounting of overbank use.
11. The environmental water trials revealed, however, that the PPMs are able to be achieved without Agreement modifications but confirmed that amendments should be made in the future. The MDBA in consultation with the Water Liaison Working Group concluded that, whilst some amendments would be ideal in the longer term, the existing clauses of the Agreement have proven to be adequate for meeting the requirements of PPM

implementation. Given the interactions of any potential changes of the Agreement with further amendments expected to be made to implement SDLAM projects such as Hydro Cues and the Menindee Lakes Savings Project, along with a broad range of other Agreement issues requiring resolution, WLWG agreed that it would be prudent to consider any Agreement changes as ‘holistically’ as is practicable to ensure the impacts, including to state water entitlements, are fully understood. RMOC, at meeting 19, supported this approach.

Fully operable (with a structured review process)

The starting point

12. The proposed O&O amendments have been developed to be consistent with the Agreement, the Basin Plan and relevant state legislation and policies, including those related to the implementation of PPMs on the RMS and relevant tributaries.
13. Some aspects of the PPMs documented in the SO&Os have been trialled, reviewed and modified several times as part of the Environmental Watering Trials (EWTs) between 2010-11 and 2018-19. However, other aspects of the PPMs have yet to be trialled because they are relatively new ideas and have not yet had favourable conditions for implementation. These include the revised method for accounting for directed releases from Lake Victoria.
14. As such, the proposed new SO&Os provide a ‘starting point’ based upon the relevant content of the 2018-19 EWT approved by the BOC at Meeting 60 and aim to be flexible enough to respond to changing conditions and as new information is gained.

Review process

15. The proposed SO&Os include a structured annual review process that enables refinement of the operational delivery of PPMs into the future. The annual review process is aligned with the Independent River Operations Review Group (IRORG) review of river operations and the annual review of the O&O document. These have been ongoing processes since 2009-10.
16. The objectives of the PPM review process are to:
 - allow sufficient time to seek and consider input from the SCBEWC
 - assess potential risks to third parties of directed releases and identify any actions that could be taken to mitigate risks or increase opportunities for directed releases
 - in the case of the January 2023 review, ensure consistency with any proposed O&O document changes associated with SDLAM implementation and include a comprehensive review of mitigation measures to manage potential impacts on reliability and deliverability of state water entitlements.
17. The implementation of the SO&Os and the review process aim to link knowledge, management, evaluation and feedback over time.

Further advice for states

18. To assist the states in fulfilling their role in implementing PPMs, the MDBA River Operations will continue to liaise and provide advice on potential mitigation measures they might implement to manage any risks to state water entitlements posed from PPM implementation. This would apply to mitigation measures that are the responsibility of states, rather than the BOC or the MDBA, to implement. Examples might include how directed releases might be shared between the states, the location of entitlements that might be used for directed releases or options the states might have under the Agreement to offset potential impacts.
19. Initial advice will be provided to assist states in their implementation of PPMs by end June 2019. Thereafter, the MDBA expects to provide ongoing assistance and advice to assist the operational delivery of environmental water consistent with PPMs in the longer term.

Transparency

20. The key documents relating to joint venture aspects of PPM implementation are the Agreement and the O&O document which are public documents available on the MDBA website. The proposed O&O amendments have been developed, throughout the period of the environmental watering trials, in consultation with WLWG and SCBEWC and have been supported by RMOC.
21. The MDBA reports to the BOC on its compliance against the O&O document, including the SO&Os, through the Annual River Operations Report. Each year the report will discuss the implementation of the PPMs including the methods used, relevant assumptions, any issues that occurred and suggest potential improvements. The report is available to all jurisdictions (including environmental water holders) for comment and is independently reviewed by IRORG. It is an important component of the MDBA's adaptive management process.
22. The annual review process for the proposed SO&Os, including independent assessment by IRORG, will allow environmental water managers to:
 - provide direct feedback on the effectiveness of the SO&O in achieving environmental outcomes
 - comment on new information
 - propose new ideas.
23. The specific inclusion of SCBEWC in the review process seeks to provide re-assurance to environmental water managers that there is a transparent pathway for their concerns and ideas to be considered by the MDBA and the joint governments including via the BOC.
24. The Environmental Watering Manual will include the detailed assumptions and methods used by the MDBA River Operations when delivering and accounting for environmental water. The EWM will be prepared in consultation with WLWG and SCBEWC and will be made available to all jurisdictions and water holders and will outline the ordering process,

the roles and responsibilities of difference agencies, delivery processes, the provision of data to states and environmental water holders and how issues or disputes would be resolved. Ongoing development of the manual will continue to be undertaken in consultation with WLWG and SCBEWC. A summary of the EWM could be created for the public if seen as desirable.

Risks are identified and mitigated

25. Historically, the supply of water orders was first met, where practical, from flows already in the river. If this was not sufficient the water orders were generally met from the next nearest water source. Releases from headwater storages were used as a last resort in order to maximise efficiency and reliability of entitlements. The concept of directed releases from a specified headwater storage changes this practice, which in turn could affect the reliability of entitlements within and between states. Directed releases can, positively or negatively, impact the reliability of entitlements depending on several factors, including for example the timing of the releases and whether storages subsequently spill (Technical Report No 2015/05: Implementing Pre-requisite Policy Measures in the River Murray System, 2015).
 26. Large scale environmental watering along the RMS as a result of directed releases of HEW from upper storages on top of other instream flows provides a significant challenge in terms of water accounting, protecting the correct volume of environmental water for downstream use and managing impacts on reliability and deliverability of state water entitlements. This is primarily due to the uncertainties of identifying how much of the directed release of HEW is used on the River Murray floodplain and how much of it may have returned to the river and be available for use further downstream. There are also other risks in relation to higher than expected flow rates, water quality and cultural heritage.
 27. On the RMS, these risks can vary between storages, over time, and the watering strategy and water availability scenario. As such, each of the proposed PPMs related SO&Os outlines the relevant risks and identifies the mitigation actions that the MDBA can assist with. In addition, the MDBA will provide the states additional advice on actions that they may wish to take to further mitigate these risks.
 28. The review processes outlined in the SO&Os aims identify any further actions that could be taken to mitigate risks or increase opportunities for directed releases, and in the case of the January 2023 review, it includes a comprehensive review of mitigation measures to manage potential impacts on reliability and deliverability of state water entitlements.
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Provide for releases of Held Environmental Water from storages on top of other in-stream flows, including unregulated flows

Releasing HEW from MDBA storages

29. During the EWTs undertaken between 2010 and 2018, the ability for NSW or Victoria to order water from a specified MDBA storage has become known as a 'directed release'.

During the EWTs it became apparent that such an order, be in in regulated or unregulated conditions, can already be facilitated by the MDBA under clause 98(3)(iv) of the Agreement. In addition, the General Objective and Outcome 5 (Environment) requires the MDBA to facilitate environmental watering activities including by providing retail and wholesale estimates of environmental water use to the states and environmental water holders.

30. Whilst the environmental watering trials have demonstrated that directed releases can be made during regulated and unregulated flow conditions, they identified that there are risks to the reliability and deliverability of state water entitlements. In this regard the states may apply certain conditions on directed releases to assist in mitigating those risks and the proposed SO&Os outline specific accounting and notification arrangements to assist in mitigating risks. The existing provisions, combined with the proposed amendments work together to give effect to this PPM. More detailed explanation is available in **Attachment A**
31. To ensure that HEW can be released from storage ‘on top of other instream flows’, the Authority will calculate the volume of directed releases from Hume Dam and Menindee Lakes as the difference between the actual release (‘with environmental water’) and a hypothetical release without the directed release (‘without environmental water’) that takes into account all other requirements and flows along the system including minimum flows, unregulated inflows, expected demands (orders), expected system losses, transfers between storages, pre-releases and regulated tributary inflows. Due to the complexity of management at Lake Victoria, the method to calculate the volume of directed release is based on the difference in storage volume between the actual scenario and the expected storage volume that would have occurred without the directed release.

Environmental water to flow throughout the length of a river, and between rivers; and be protected from extraction, re-regulation or substitution

32. The EWTs investigated the ability of the MDBA to assist the states in estimating and accounting for the ‘assumed use’ of HEW along the upper River Murray and floodplains stemming from directed releases from Hume Dam and the Menindee Lakes. The EWTs also investigated the role of the MDBA in protecting the residual component of the HEW directed releases for use at downstream environmental sites and/or to be delivered at the SA border.

Directed releases from Hume Dam and Menindee Lakes

33. SO&Os 2.4 and 10.4 have been developed to reflect the learnings from the trials of directed releases from Hume Dam and Menindee Lakes. The residual portion of the directed releases is protected for use further downstream in a number of ways:
- *Assumed use* – As the real incremental use along the river system and associated floodplains due to the directed release cannot be measured, the methods aim to balance the objectives of efficient use of environmental water and the mitigation of potential impacts on state water entitlements. The methods are considerate of river losses that would be expected if the directed release did not

occur and the proposed review process allows further change to the method as better information is obtained.

- *The ‘without environmental water’ scenario* – The ‘without environmental water’ scenario utilises all available water orders and expected demands, including water transfers between storages. As such, the residual portion of the directed release is unlikely to be diverted, re-regulated or substituted for other purposes as those orders will be met by other water already in the river. The residual portion of the directed release is therefore expected to arrive at the desired downstream destination.
- *Trade and/or Bulk Entitlement Delivery processes* – The MDBA will assist NSW and Victoria to protect the residual portion of the HEW directed release and facilitate its use at downstream environmental sites or release to SA in accordance with the preferred process adopted by each upper state. This may include the use of trade mechanisms and/or the bulk provisions under clause 98 of the Agreement.

Directed releases from Lake Victoria

34. As Lake Victoria is very close to measurement point for determining the flow to SA and because the directed releases from Lake Victoria occur only during a period of unregulated flow, the directed releases from Lake Victoria do not require an ‘assumed use’ to protect them from extraction, re-regulation and substitution for non-environmental purposes upstream of the SA border.

Environmental inflows from tributaries and return flows from TLM sites

35. In addition to the need to protect return flows from directed releases from headwater storages, is the need to protect environmental flows emanating from tributaries or returning from environmental watering sites along river. On the River Murray this may include:

- crediting environmental inflows to the Murray from tributaries, such as the Goulburn and Murrumbidgee Rivers, and
- crediting gauged return flows to the Murray from environmental sites, such as a TLM site.

36. Crediting return flows and inflows is already a feature of the bulk water accounting undertaken by the MDBA for the RMS. The MDBA monthly accounts track inflows from tributaries, such as the Goulburn and Murrumbidgee Rivers, and allocates them to the appropriate state for use or reregulation further downstream. Consistent with General Objective and Outcome 5 in the O&O document, the MDBA will assist NSW and Victoria in protecting the volume of environmental inflow to the River Murray from tributaries and facilitate their use at downstream environmental sites or release to SA in accordance with the preferred process adopted by each upper state. This may include the use of trade mechanisms and/or the bulk provisions under clause 98 of the Agreement. The details of this procedure will be documented in the EWM and will be reliant on information in the state procedures for PPMs.

37. In addition, the approval by Ministerial Council of nine environmental outfalls associated with TLM sites (Hattah Lakes, Gunbower Forest and Koondrook-Perricoota Forest) has made it possible for the upper states to either calculate net use or be able to credit return flows from these sites at the retail level. The MDBA has incorporated the TLM site gauge

data into its data-gathering systems and MDBA monthly accounting model to allow for re-crediting at the bulk scale.

Timely delivery of environmental water

38. To assist the timely delivery of the environmental water that is traded, the MDBA introduced the concept of trade for immediate delivery in 2010 which allowed the environmental water to be delivered as a pulse in line with the travel time of when the return flows were expected to reach the SA border. This was in contrast to the other trade deliveries, which were delivered pro-rata with SA entitlement between the months of September and April inclusive. This required a change to the [Murray-Darling Basin Agreement \(Schedule D – Adjusting Valley Accounts and State Transfer Accounts\) Protocol 2010 sub-clause 10\(3a\)](#).
39. For water that is not traded, the provisions of clause 98 of the Agreement already allow NSW and Victoria to specify their requirements relating to the timing of delivery.
40. Note that environmental water holders have also inquired as to whether they could reuse returned flows at sites in another upper state (e.g. return flows from Victoria to a site in NSW). Such an action is already able to be undertaken (at the bulk scale) under the provisions of the Agreement (clauses 98 and 113). In addition, the proposed trial detailed in the trade adjustments project paper to this meeting of the BOC will permit such operations to be undertaken via trade mechanisms.