FOI 180308
Document 1

s22

From: s22
Sent: Tuesday, 16 May 2017 3:15 PM
To: s22
Subject: FW: NSW PPM Implementation Plan CEWH Commentary [DLM=For-Official-Use-Only]

Importance: High

Hi s22

Apologies for not forwarding on straight away but been in meetings. Below is the CEWH's view on the NSW PPM Plan. We are comfortable with this being provided to IRORG, either separately or attached to your assessment.

Cheers
s22

From: Taylor, Mark
Sent: Tuesday, 16 May 2017 1:38 PM
To: 'Russell James' <Russell.James@mdba.gov.au>
Cc: Papps, David <David.Papps@environment.gov.au>; s22 @environment.gov.au>; Amy.Fox@agriculture.gov.au; Tim.Fisher@agriculture.gov.au; Carl Binning <Carl.Binning@mdba.gov.au>; Peta.Derham@mdba.gov.au
Subject: NSW PPM Implementation Plan CEWH Commentary [DLM=For-Official-Use-Only]
Importance: High

Hi Russell

Thanks for passing on the Draft NSW PPM Implementation Plan, and for the opportunity to provide feedback. We've discussed this with David Papps and the commentary below reflects his views on NSW's PPM Implementation Plan. s22 also had a discussion with s22 so he should already have a sense of the direction of the commentary from the CEWH.

General Comments

The position of the CEWH remains consistent with the original policy intent of the Basin Plan (outlined in s7.15 (2): that appropriate mechanisms are in place throughout the Murray Darling Basin which

- ensure environmental water will flow throughout the length of the river, and between rivers, protected from extraction, re-regulation or substitution;
- allow environmental water to be released on top of other in-stream flows, including unregulated flows.

Despite what appears to be consistent attempts to erode these commitments and to abrogate responsibility for their implementation, they remain critical to environmental water delivery in NSW and are still a fundamental part of the balanced outcome which delivered a 2750 GL target.

In developing its PPM Implementation Plan, NSW has continued to use the flawed assumption that the use of Held Environmental Water (HEW) creates negative 3rd party impacts, as the basis for PPM implementation. If this remains unchanged or unchallengend it will continue to propagate inequitable treatment of environmental water holders through the development of WRPs. This inequitable treatment comes through very clearly in this draft PPM Implementation Plan through measures to levy costs inappropriately onto water license holders with environmental objectives.

I would note that this assumption is not fully consistent with the current position being put forward by NSW Senior Officials at BSOG/BOC which is that there should be neither 3rd party disadvantage or advantage arising from use of HEW.

The draft NSW PPM Implementation Plan, as with the previous draft, includes a role for the WaterNSW Customer Service Committee that provides undue and potentially detrimental influence over environmental water. This does not occur, and is not proposed, anywhere else in the Basin and represents an impractical, unworkable and inequitable treatment of environmental water managers, which is also in contravention of Commonwealth Water Act and the CEWH's statutory role. The CEWH cannot support any proposal that seeks the veto, overlay or compromise its statutory role to 'manage the Commonwealth's environmental water holdings to protect and restore environmental assets of the Basin'. I would also note that the Draft PPMIP is also inconsistent with our recent discussions with WaterNSW on the current changes to the make-up and scope of what will now be Customer Advisory Groups, rather than CSCs.

The NSW PPM Implementation Plan clarifies NSW's intent on how they will aim to implement PPMs throughout river systems affected by the SDLAM. In limiting its focus to the SDLAM, NSW has failed to identify how it will protect held environmental water in the Northern Basin, ensuring the fundamental rights of Water Access Licenses (WAL) are maintained for all water users.

I would also note that the issue of whether a position on supply measures excuses NSW from implementing PPMs in the Northern Basin is challengeable (due to the impact of environmental water protection on the Menindee supply measure), and has been challenged including by the EDO. There is also a question of whether infrastructure measures proposed under the Northern Basin toolkit which deal with constraints could also be considered to be 'supply measures' for the purposes of this matter – and on which your views would be welcomed.

More detailed comments on the plan:

NSW PPM Principles

Principle 1. NSW will only implement PPMs to the extent that impacts on third party licenced access rights can be mitigated or offset, whilst also enabling optimum environmental outcomes.

The current NSW PPM IP remains consistent with the NSW view that the use of HEW negatively impacts other WAL reliability. This position is fundamentally flawed and no evidence has been provided to support it. In addition this position forms the basis for NSW PPM Implementation and as such we remain concerned about the underlying intent (i.e. that environmental water will underwrite 3rd party benefits at the costs of the Australian tax payer).

In the majority of cases the use of HEW and patterns of delivery have provided **positive** impacts (which is acknowledged in section 4.2 on page 14 of the NSW PPMIP), although this is not supported by NSWs negative impact assumption. Any assessment of impacts should be undertaken on a no **net** third party impact stance and assessed in a way that is transparent and equitable. There is no evidence such an assessment has been undertaken. The issue of third party impacts should also not prevent new/ progressive delivery methods which are aimed at achieving more efficient water use.

Principle 2. NSW will develop operational tools that are simple, practical to implement and cost effective.

The CEWO is required to undertake actions that are an efficient and effective use of Commonwealth resources (both of water and public monies consistent with our obligations under the PGPA Act). In doing this we acknowledge that our watering actions should be undertaken with regard to the user pays principle. Usage costs should be consistent with other WAL holders, ensuring that WALs held by the CEWO are treated equitably with other WAL holders.

Principle 3. Reliability and access characteristics of licensed entitlements held for environmental water purposes are the same as other licenced entitlements.

The CEWO supports equitable characterisation of all WALs, including in relation to their reliability and access characteristics. There is still uncertainty surrounding the rules-based approach which has been identified for the WSP and WRP process. To date no information has been provided to WRP Stakeholder Advisory Panels in relation to how PPMs will be included within their specific WRP area.

In order to fully support and accept this process the CEWO requires more direct consultation in regards to any rules-based changes to NSW WSPs and potential impacts to the environmental water portfolio (held by the CEWH o behalf of all tax payers). We expect the MDBA would also be concerned about any erosion to the foundations of environmental management in the Basin Plan (i.e. net reduction in planned environmental water).

Principle 4. Adaptive management is required.

The CEWO supports an adaptive management approach to environmental water use and PPMs, however any approach must be consistent with the original intentions of Unimplemented Policy Measures within s7.15 (2) Basin Plan, and assumed under the benchmark conditions of the Basin Plan.

PPM 1: Piggybacking:

Piggybacking HEW on top of natural unregulated flows is an efficient use of environmental water to meet outcomes throughout the Basin. In this case HEW can be called from both water storage and on top of unregulated river flows to maximise natural events and the relatively small volume of HEW. This is a key assumption identified in the benchmark model of the Basin Plan. NSWs proposal of adding an additional debit to deliveries met from dam storage rather than via 'the most efficient method possible' (which remains undefined in the plan), must require an assessment of the **net impacts** to reliability associated with the delivery. It is difficult to see how such an operation would negatively impact 3rd parties, and no evidence has been provided to date to support such claims.

PPM2: Combination debiting:

Environmental flow reuse is key for the efficient use of HEW within the Basin. The CEWO understands that the identified method is similar to an earlier method considered for the multi-site watering trials (MSWT) and where transmission losses are socialised to the order point, and that beyond this point, transmission losses associated with HEW would be net of regulated flow transmission losses. We note this method was abandoned by the MSWT and has not been trialled – we suggest advice be sought from RMO on why this method was abandoned. We understand it was because it was deemed unworkable and did not equitably assign losses. The CEWO also assumes that this option would include an adaptive management process to refine assumed use over time, the PPM IP is not clear on how this process will be undertaken, if at all.

In addition we feel there is a lack of clarity surrounding the term 'without accurate measurement', prior to supporting this method greater information is needed to clarify at which point and under what circumstances this applies.

The CEWH cannot support aspects of the PPM Implementation Plan which could lead to the application of addition and non-discriminatory costs for watering actions which are central to the delivery of core environmental outcomes.

Other concerns:

- There is no mention of how HEW will be managed from the Lower-Darling into the Murray. As with the Murrumbidgee, HEW from the Lower-Darling must be available for re-use within the Murray system, particularly if the reconfiguration of Menindee is to yield an SDL Adjustment.
- Clarity is needed surrounding the protection of environmental water on top of supplementary allocations, and how this will be provided. NSW must ensure the protection of HEW flowing throughout the system, and not leave the protection of environmental water to third party negotiations between entitlement holders.

As the largest entitlement holder within the Murray-Darling Basin (responsible for a Commonwealth asset worth $3.4 billion), and the stakeholder most affected by PPMs, the CEWH remains concerned regarding the implementation of PPMs throughout the Basin. The CEWO encourages all parties to continuously engage in discussions surrounding all aspects of environmental water management throughout the Basin, particularly when developing policies which impact the value, utility and equitability of treatment of the Commonwealth environmental water portfolio.

In the event that PPMs do not provide arrangements that are satisfactory to the CEWH, it is possible that the CEWH will not consider watering events that use supply measures or arrangements set out in PPM plans to be an efficient or effective use of CEW. This will limit the effect of environmental water use and arguably negate any SDL offset contributed to that supply measure.

In addition pre-requisite policy measures must be implemented in a way that allows environmental water managers to fulfil their statutory functions and not be compromised (for the CEWH these are; Water Act 2007 s105; Basin Plan s8.03, s10.27, PGPA Act 2013 s38, Rule s15, s16F, SI1). The underlying intent of addressing PPMs is to facilitate environmental water management, not undermine it.

We're happy to discuss any of these issues in more detail, of course.

Cheers

Mark

***Mark Taylor*| Assistant Secretary | Wetland Policy and Northern Water Use**
Commonwealth Environmental Water Office | Department of the Environment and Energy

p: 02 6274 1904
e: mark.taylor@environment.gov.au |

From: Russell James [mailto:Russell.James@mdba.gov.au]
Sent: Wednesday, 3 May 2017 2:58 PM
To: Fisher, Tim <Tim.Fisher@agriculture.gov.au>; Morris, Paul <Paul.Morris@agriculture.gov.au>; Taylor, Mark <Mark.Taylor@environment.gov.au>
Cc: Peta Derham <Peta.Derham@mdba.gov.au>; s22 @mdba.gov.au>; Carl Binning <Carl.Binning@mdba.gov.au>
Subject: FW: NSW PPM Implementation Plan

Fyi at last!
s22 is managing our assessment so please discuss w him if you have comments
rj

From: Monica Morona [mailto:monica.morona@dpi.nsw.gov.au]
Sent: Tuesday, 2 May 2017 8:03 AM
To: Russell James <Russell.James@mdba.gov.au>
Cc: Peta Derham <Peta.Derham@mdba.gov.au>; Beth Overton <beth.overton@dpi.nsw.gov.au>; MDB Secretariat <mdb.secretariat@dpi.nsw.gov.au>
Subject: NSW PPM Implementation Plan

Hi Russell

Please find attached the NSW PPM Implementation Plan, apologies in the delay in providing this document to you for consideration.

If you have any queries in regards to the document, please contact Beth Overton, Director Governance and Strategy or myself in the first instance.

Gavin will be formally writing to Phil with the updated document later this week.

Monica

Monica Morona | Director Intergovernmental and Strategic Stakeholder Relations

Department of Primary Industries, Water

M: +61 (0) s22 | E: monica.morona@dpi.nsw.gov.au

W: www.dpi.nsw.gov.au

FOI 180308
Document 2

s22

From: s22
Sent: Tuesday, 6 June 2017 11:25 AM
To: joseph.davis
Cc: s22
Subject: FW: Addendum to the River Murray PPM plan [SEC=UNCLASSIFIED]
Attachments: Addendum to Pre-requisite Policy Measures (PPM) Implementation Plan for the River Murray.docx

Joe, as briefly discussed.

Cheers

Sent with Good (www.good.com)

From: s22
Sent: Tuesday, 6 June 2017 9:01:50 AM
To: s22
Subject: FW: Addendum to the River Murray PPM plan [SEC=UNCLASSIFIED]

FYI – no action required.

From: s22
Sent: Monday, 5 June 2017 1:18 PM
To: Peta Derham <Peta.Derham@mdba.gov.au>
Cc: 'Fisher, Tim' <Tim.Fisher@agriculture.gov.au>; Taylor, Mark <Mark.Taylor@environment.gov.au>; s22 @environment.gov.au>; s22 mdba.gov.au>; s22 @agriculture.gov.au>; s22 @environment.gov.au>; s22 @environment.gov.au>
Subject: FW: Addendum to the River Murray PPM plan [SEC=UNCLASSIFIED]

Hi PJ

I realise that as the CEWO is an observer on SDLAAC you weren't seeking our endorsement, in fact it was probably sent to us by accident. Nonetheless, below are our thoughts on the Addendum:

- Protecting the flow of e-water is not a singular action that can be dismissed as *non-essential* rather is fundamental for achieving the objectives of the BP Environmental watering plan, the effective and efficient use of Cwth resources and an underpinning assumption of the BP modelling. Before limiting the interpretation of s7.15(2) from its original intent, has MDBA sought legal advice that would support their change in policy position?
- The crediting of return flows is only one method that can provide a level of protection for environmental flows. Shepherding environmental flows and improving the accuracy of monitoring, measurement and accounting of environmental water are other methods identified in the IGA (s5.4) for this purpose of protecting environmental water flows. The addendum does not appreciate this nuance between the action and the principle outcome.
- The PPM Assessment Guidelines were agreed by the Authority and SDLAAC. Unless there has been an Authority approved amendment to these guidelines, this addendum is inconsistent with the MDBA's PPM Guidelines.
- If MDBA has moved away from the qualitative assessment of PPM implementation (purpose of the PPM Guidelines), the CEWO requests that the PPMs are then assessed quantitatively and the modelling for the SDL adjustment reflects the removal of mechanisms that protect environmental water throughout the river.

It is understood that previous modelling undertaken by the MDBA estimated that the removal of the PPMs requires an additional 1,370GL in the Murray alone to achieve equivalent environmental outcomes.

- Not protecting environmental water is likely to have a direct effect on the Cap factors and the reliability of Murray entitlements. Has MDBA quantified these effects?
- If the distinction presented has been at the recommendation of IRORG, this then raises question on their terms of reference and appropriateness of the current IRORG membership for performing objective and independent reviews – which we raised earlier only to see IRORG deleted from the relevant SDLAAC papers. It is unclear why IRORG would be providing an interpretation of the MDBA's PPM Guidelines and Basin Plan implementation requirements.
- *Simplifying the delivery of environmental water to SA* (determined as non-essential by the MDBA) would establish improved delivery arrangements for the Cwth's management of non-financial resources under the PGPA Act. Existing delivery arrangements are highly variable in their standard of service and in its entirety do not currently support the statutory obligations on the CEWH under the PGPA Act. Improving the delivery arrangements should be considered an essential activity on the basis of managing risks to the effective, efficient and ethical use of Commonwealth resources.
- This does demonstrate that MDBA's consultation on policy measures should be extended beyond WLWG to take better account of the requirements of environmental water holders in developing the mechanisms for implementing the Basin Plan.

Regards
s22

From: SDLAAC Secretariat [mailto:SDLAAC.Secretariat@mdba.gov.au]
Sent: Friday, 2 June 2017 4:09 PM
To: Carl Binning <Carl.Binning@mdba.gov.au>; Dan Jordan <dan.jordan2@sa.gov.au>; Diana Wood <diana.wood@dnrm.qld.gov.au>; s22 @environment.gov.au>; Melinda Stuart-Adams <melinda.stuart-adams@delwp.vic.gov.au>; Monica Morona <monica.morona@dpi.nsw.gov.au>; Paul Morris <Paul.Morris@agriculture.gov.au>; Stewart Chapman <stewart.chapman@act.gov.au>; Tim Fisher <Tim.Fisher@agriculture.gov.au>
Cc: beth.overton@dpi.nsw.gov.au; s22 @agriculture.gov.au>; Amy Fox <amy.fox@agriculture.gov.au>; s22 @agriculture.gov.au>; Andrew Brown <andrew.brown@dpi.nsw.gov.au>; Bea Rogers <Bea.Rogers@sa.gov.au>; s22 @mdba.gov.au>; Bethany Hanson <bethany.hanson@dpi.nsw.gov.au>; s22 @environment.gov.au>; Chris Morony <chris.morony@sa.gov.au>; s22 @agriculture.gov.au>; s22 @mdba.gov.au>; Di Favier <Diane.Favier@sa.gov.au>; s22 @agriculture.gov.au>; s22 @agriculture.gov.au>; Geoff Steendam <Geoff.Steendam@delwp.vic.gov.au>; Grace Mitchell <grace.mitchell@delwp.vic.gov.au>; s22 @agriculture.gov.au>; s22 @mdba.gov.au>; Jeanine Murray <jeanine.murray@dpi.nsw.gov.au>; s22 @agriculture.gov.au>; Jesse Rose <jesse.rose@delwp.vic.gov.au>; John Ritchie (john.ritchie@dnrm.qld.gov.au) <john.ritchie@dnrm.qld.gov.au>; John Robertson <john.robertson@agriculture.gov.au>; s22 @mdba.gov.au>; s22 @mdba.gov.au>; Justine Keuning <justine.keuning@sa.gov.au>; Kane Aldridge <Kane.Aldridge@sa.gov.au>; s22 @mdba.gov.au>; s22 @mdba.gov.au>; s22 @mdba.gov.au>; s22 @agriculture.gov.au>; Louise Grgat <louise.grgat@delwp.vic.gov.au>; s22 @mdba.gov.au>; s22 @mdba.gov.au>; MDB Secretariat <mdb.secretariat@dpi.nsw.gov.au>; s22 @mdba.gov.au>; s22 @agriculture.gov.au>; s22 @agriculture.gov.au>; Patrick Driver <Patrick.Driver@water.nsw.gov.au>; Paulo Lay <paulo.lay@delwp.vic.gov.au>; Peggy Kuk <peggy.kuk@dpi.nsw.gov.au>; Peta Derham <Peta.Derham@mdba.gov.au>; s22 @agriculture.gov.au>; Pradeep Sharma <Pradeep.Sharma@mdba.gov.au>; s22 @agriculture.gov.au>; s22 @agriculture.gov.au>; Richard Beecham <Richard.Beecham@dpi.nsw.gov.au>; Rozi Boyle <rozi.boyle@delwp.vic.gov.au>; Russell James <Russell.James@mdba.gov.au>; s22 @agriculture.gov.au>; s22

s22 @environment.gov.au>; SDLAAC Secretariat <SDLAAC.Secretariat@mdba.gov.au>; Shar Ramamurthy <sharada.n.ramamurthy@delwp.vic.gov.au>; s22 @agriculture.gov.au>; s22 @agriculture.gov.au>; Theresa Heneker <Theresa.Heneker@sa.gov.au>; s22 @agriculture.gov.au>; s22 @agriculture.gov.au>
Subject: Addendum to the River Murray PPM plan [SEC=UNCLASSIFIED]

Dear SDLAAC members,

As was discussed at SDLAAC 31 on Wednesday, it has been requested that an Addendum be added to the River Murray PPM Implementation Plan (RM Plan) to clarify the essential and non-essential items.

This is not a change to the plan. Rather, it combines information from two documents so that it is clearer and more transparent on what is required to be implemented in the RM Plan.

Please find the Addendum attached to this email for your consideration and endorsement. For the RM Plan to be finalised, we require endorsement from NSW and Victoria. As we have included an Addendum to the RM Plan, we also require South Australia to accept this change.

We would like to finalise the RM Plan by **COB Monday 5th June** so that the RM Plan can be endorsed by at Authority Meeting 110 on Tuesday.

Please provide your endorsement or otherwise as soon as possible on Monday to allow this to be progressed.

Best wishes,

s22

s22 ***for***
SDLAAC Secretariat

Australian Government | MURRAY–DARLING BASIN AUTHORITY

Murray–Darling Basin Authority
GPO Box 1801, Canberra ACT 2601
P: 02 6279 s22
E: s22 @mdba.gov.au

In the spirit of strengthening partnerships with Aboriginal people the MDBA acknowledges the culture of traditional Owners in the Murray–Darling Basin

viruses or defects. The MDBA accepts no liability for loss or damage arising from the use of this email or any attachments.

Addendum to Pre-requisite Policy Measures - Implementation Plan for the River Murray System

1/6/2017

Introduction

The River Murray Pre-requisite Policy Measures Implementation Plan (RM Plan) outlines an approach for implementing the PPMs established under the Basin Plan. The MDBA coordinated the preparation of the RM Plan on behalf of the jurisdictions, overseen by the SDL Adjustment Assessment Committee (SDLAAC). In developing the RM Plan, the MDBA worked closely with representatives from the Australian and state governments, primarily through the Water Liaison Working Group (WLWG). The RM Plan identifies a number of actions and a workplan that is required to ensure that Pre-Requisite Policy Measures are fully implemented on the River Murray by June 2019.

Members of the Independent River Operations Review Group (IRORG) conducted a review of the MDBA's assessment of the RM Plan. IRORG observed that whilst all the actions seem highly desirable, some of the actions proposed in some of the PPM plans were not essential to enabling implementation of the pre-requisite policy measures to a level sufficient to meet the Basin Plan requirements. IRORG recommended that the MDBA identify and prioritise the essential actions in the RM Plan, where essential actions much be delivered by June 2019 to meet the minimum requirements of the Basin Plan.

The MDBA has acted on IRORG's recommendation and has identified the actions listed in the Draft RM Plan that are considered essential to meet the Basin Plan requirements (s7.15).

This addendum report will:

1. Identify essential and non-essential in the River Murray Pre-Requisite Policy Implementation Plan are

This addendum should be read in conjunction with the River Murray Pre-requisite Policy Measures Implementation Plan (RM Plan).

Definitions

Essential action – An essential action in the RM Plan describes an action that must be fully implemented by June 2019 so that the requirements of s7.15 of the Basin Plan can be considered to have been met.

Non-Essential action – A non essential action in the RM Plan describes an action that is highly desirable and would improve the way environmental water is managed. However, these actions do not need to be implemented by June 2019 to address the requirements of S7.15 of the Basin Plan.

Essential and non-essential actions

A table outlining which actions are essential/non-essential is included below. Essential actions must be implemented within the 30 June 2019 implementation timeframe. Whilst the MDBA supports the implementation of non-essential actions these tasks do not necessarily need to be fully implemented by 30 June 2019 to meet the Basin Plan requirements.

A full list of the essential and non-essential actions in the draft Murray Plan is included at the table below.

Essential Actions	**Non-essential Actions**
5.1.1 Absence of an explicit provision for operators to release from the upper River Murray storages	5.1.3 Managing potential risks from airspace management at Hume Dam
5.1.2 Release of held environmental water from storage may impact reliability of state and retail water entitlements	5.2.1 Protect environmental water as it flows through the system
5.1.4 Estimating environmental releases from an upper River Murray storage	5.2.5 Simplifying the delivery of environmental water to South Australia
5.2.2 Estimating assumed use rate of directed releases from upper River Murray storages	
5.2.3 Definition of unregulated flow	
5.2.4 Wholesale water accounting treatment of overbank use	

Justification for non-essential actions

This section includes an explanation for why some actions included in the RM Plan have been classified as non-essential.

- 5.1.3: Managing potential risks from airspace management at Hume Dam is not considered essential to meet the PPMs. These risks do not need to be overcome to implement PPMs as they do not alter the right to call held environmental water from headworks during unregulated flow events, or affect the ability to credit environmental flows for downstream use.
- 5.2.1: Protecting environmental water as it flows through the system is not an explicit requirement of under s7.15 of the Basin Plan. The RM Plan includes actions to estimate assumed use rates and return flows. Completing these actions will meet the requirement for crediting environmental return flows.
- 5.2.5: Simplifying the delivery of environmental water to South Australia is a desirable outcome and one that is fully supported by the MDBA. As identified in the RM Plan, improving the mechanisms for delivering environmental water to South Australia is not specifically required to implement the PPMs.

FOI 180308
Document 3

s22

From: s22
Sent: Tuesday, 6 June 2017 1:12 PM
To: Joseph Davis
Cc: s22
Subject: FW: NSW PPM Implementation Plan CEWH Commentary [DLM=For-Official-Use-Only]

Importance: High

Hi Joe

s22 suggested it may be worth sending the companion piece to the recent email to PJ re. the Murray PPM Plan.

Did you see MDBA and IRORG's assessment? I can send those too if you like.

Cheers
s22

From: s22
Sent: Wednesday, 17 May 2017 9:00 AM
To: s22 @environment.gov.au>; s22 @environment.gov.au>; s22 @environment.gov.au>; s22 @environment.gov.au>
Cc: Taylor, Hilton <Hilton.Taylor@environment.gov.au>; s22 @environment.gov.au>
Subject: FW: NSW PPM Implementation Plan CEWH Commentary [DLM=For-Official-Use-Only]
Importance: High

Email trail below contained in document 2

FYI

s22

s22

s22

s22

s22

FOI 180308
Document 4

s22

From: s22
Sent: Friday, 1 July 2016 2:50 PM
To: 'Joseph Davis'
Cc: s22 '; Taylor, Mark; 'Fisher, Tim'; 's22 '
Subject: PPM Implementation Plan for the River Murray System - CEWO comments [SEC=UNCLASSIFIED]
Attachments: Final PPM Implementation Plan for the River Murray System - 20 June 2016 - CEWO comments.docx

Hi Joe

As discussed, please find below and in the attached comments/concerns from the Commonwealth Environmental Water Office (CEWO) on the draft PPM Implementation Plan for the River Murray System.

The plan represents a step forward, the CEWO is encouraged by the progress and we appreciate the opportunity to review the plan in more detail. As PPM Implementation Plans are a key component of Basin Plan implementation, particularly in facilitating environmental watering, there are elements of the draft River Murray System plan that should either be amended or point further work in a particular direction.

Consultation and involvement of environmental water holders

- Water Liaison Working Group (WLWG) and the Southern Connected Basin Environmental Water Committee (SCBEWC) do not represent environmental water holders or their interests. This needs to be corrected in the plan and the plan must seek to ensure environmental water holder interests are adequately and appropriately considered in this work from here on in.
- Many of the comments and concerns we have with the plan would have been addressed through adequate and appropriate consultation throughout its preparation. This includes ensuring a suitable level of direct engagement with the CEWO, NSW OEH and the VEWH.
- The CEWO has previously been concerned about this through development of the watering trials, particularly the 2016-17 trial.

Assumptions about the behaviour of environmental entitlement holders

- The plan makes a number of assumptions about the behaviour and future decisions of environmental water holders. We suggest that some are incorrect and that it is too early in the life of environmental watering under the Basin Plan to be assuming or locking in such behaviours, particularly in the absence of constraints being addressed.
- If assumptions are not right, they obviously affect the effectiveness of the plan to achieve what it's supposed to, which is to help facilitate meeting of the Basin Plan objectives.
- This could have been dealt with by adequate and appropriate consultation with environmental water holders.

Balancing risks to environmental entitlement holders and other entitlement holders

- The plan continually alludes risks to 3rd parties/other entitlement holders (particularly reliability), but never articulates what these risks are or how they materialise. This assumes that the only entitlements that may be negatively impacted are those held by irrigators, even though we hold the same types of entitlements. It also expects that environmental water holders should pay or be compromised, without substantiating that an impact exists.
- The purpose of the Basin Plan is to rebalance, between water for production and water for the environment. As such, any analysis of risk to should be balanced – that being it should focus on net impacts, rather than only ensuring no short-term negative impact to irrigators.
- Furthermore, we are concerned that there are potential positive benefits to irrigators from environmental water management that are not being considered in changes to river operations to ensure the optimal outcome for all.

Implementing PPMs is a key aspect of the Basin Plan

- PPMs are only required to facilitate achievement of the objectives of the Basin Plan. The horizons may need to be lifted in development of this PPM plan.
- The CEWH has specific statutory requirements as they relate to the Basin Plan and its objectives. If the CEWH (and others) cannot adequately and appropriately seek to meet the objectives of the Basin Plan, then the reforms and the tax payer investment will be significantly compromised.
- If the PPM plan does not focus on ensuring Basin Plan objectives can be met, then it is of limited value.

Need for appropriate audit and review processes

- The plan refers to existing review processes as a means of supporting implementation of the plan. Given the important role implementing PPMs plays in the achieving the objectives of the Basin Plan, existing audit and review processes are insufficient.
- IRORG's current terms of reference are not suitable and would need significant revision if they were to look beyond just MDBA river operations. Furthermore, there is a question if in the Basin Plan context whether such reviews should be managed by the MDBA in its current guise.
- Audit provisions should also be part of the way forward and are required to ensure basic statutory requirements can be met – i.e. transparent disclosure of the management, including accounting, of government resources.

Please let us know if you would like to discuss further.

Cheers
s22

Director
Environmental Water Policy
Commonwealth Environmental Water Office
Ph: (02) 6274 s22 | Fax: (02) 6275 9376 | e: s22 @environment.gov.au
GPO Box 787 | CANBERRA ACT 2601 | AUSTRALIA
www.environment.gov.au/ewater

The Department acknowledges the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present.

Pre-requisite Policy Measures

Implementation Plan for the River Murray System

Final Draft

Document history and status

Version	Date issued	Prepared by	Prepared for	Notes
Draft 1	30 April 2015	MDBA	SDLAAC 13	Contents in the section *Progress towards full implementation of PPMs* is subject to change pending consideration of the *2015-16 Environmental watering trial* by BOC.
Draft 2	30 June 2015	MDBA	Submission to the MDBA for initial assessment	Seeks to address the feedback received at the 3 June 2015 teleconference.
Final Draft	2 March 2016	MDBA	Submission to the MDBA for assessment	Addresses the initial MDBA assessment. Incorporates recommendations from the jurisdictions and by IRORG's review of the 2014-15 environmental watering trial
Final	XX	MDBA	Submission to the MDBA for assessment	XX Incorporated feedback from the jurisdictions/States, Commonwealth Environmental Water Office and checked for consistency with the planned 2016-17 environmental water trial. Approved by (who, position, role on date).

Table of Contents

1. Introduction

1.1 Background

This is the final Pre-requisite Policy Measures (PPMs) Implementation Plan for the River Murray System (RMS). It sets out the framework to guide the implementation of the PPMs in the RMS by 30 June 2019.

The PPMs are described in the *Basin Plan 2012* (Basin Plan) as Unimplemented Policy Measures (s7.15). These are anticipated measures consisting of a policy to:

a) credit environmental return flows for downstream environmental use; or
b) allow the call of held environmental water (HEW) from storage during un-regulated flow events.

The PPMs outlined in the Basin Plan seek outcomes that:

- provide for HEW releases from storages on top of other in-stream flows, including unregulated flows[1]; and
- allow environmental water to flow throughout the length of the river, including being re-used at multiple sites along the river, and to flow between rivers; and be protected from extraction, re-regulation or substitution for non-environmental purposes.

This Implementation Plan outlines a pathway for how PPMs will be implemented by 30 June 2019. It has been developed to meet the requirements of the PPM Assessment Guidelines (see Table 3) which require arrangements that:

- are secure and enduring
- are fully operable
- are transparent
- identifies and mitigates risks
- provide for releases of environmental water from an upper River Murray storage on top of other in-stream flows, including unregulated flows
- allows for environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution.

The Murray-Darling Basin Authority (MDBA) has coordinated the preparation of this Implementation Plan on behalf of the jurisdictions. The development of the Implementation Plan has been overseen by the Sustainable Diversion Limit Adjustment Assessment Committee (SDLAAC). MDBA has worked closely with representatives from the Australian and State governments, primarily the Water Liaison Working Group (WLWG) to develop the plan. This Implementation Plan identifies issues and associated tasks required to implement the PPMs in the RMS between now and June 2019. It builds on the environmental watering trials that have been undertaken in the RMS annually since 2010-11, which have been testing and refining methods to implement policy assumptions that became the PPMs.

[1] In NSW environmental releases made in conjunction with an unregulated flow event is referred to as 'piggybacking'.

The Independent River Operations Review Group (IRORG) annually reviews the MDBA's performance in operating the RMS and provides recommendations for improvement (see also section ~~42~~ 4). It is anticipated that the proposed changes discussed in the following sections will support the implementation of recommendations that:

- E2012:08 *the MDBA develop a strategic roadmap that identifies agreed timelines and priorities for resolving operational and water accounting processes that represent barriers to effective environmental water delivery.*
- E2014:06 *the MDBA builds upon the CMS* (Constraints Management Strategy) *and develops a prioritised work program that identifies:*
    - *the tasks required to resolve key operational and water accounting issues associated with environmental water delivery,*
    - *the process for developing/operationalising new delivery practices that have already been sufficiently tested; and*
    - *the timing and resources that will be committed to addressing each task.*
- E2015:03 *the MDBA and jurisdictions continue to work collaboratively on the PPM implementation program, and ensure that sufficient resources are made available in a timely manner to support the planned work program.*
- E2015:07 *the Authority* (MDBA) *progressively develop environmental water delivery guidelines to capture good practice in the planning, co-ordination, implementation and accounting for environmental events, and that these guidelines should form part of the framework for river operations in the River Murray system* (sic).

1.2 Relationship to State plans

This Implementation Plan addresses the collective actions required to implement PPMs in the RMS. This is often referred to as the 'wholesale' or 'bulk' entitlement level.

The States of New South Wales (NSW), Victoria and South Australia (SA) (States) have prepared separate State PPM Implementation Plans. These address the changes required to implement the PPMs in State regulatory and operations frameworks. The State plans will include the tributaries and State responsibilities in the RMS. The State level is usually referred to as the 'retail' level. The extent of implementation of the PPMs, both at the wholesale and retail levels will be assessed by the MDBA as part of the final determination of the Sustainable Diversion Limit adjustment mechanism under section 7.21 of the Basin Plan in 2024.

Figure 1 summarises the differences between the wholesale and retail levels. MDBA provide State environmental water in addition to water required for other uses such as irrigation water and town water. Environmental flows may consist of water from the retail accounts of multiple States. As shown in Figure 1 delivery of environmental water is managed at the wholesale level by MDBA and at the retail level by each State.

Commented [A1]: The CEWO has not been consulted on these plans and therefore it seems premature to assume that these state plans will address the necessary changes assumed in the Basin Plan, are fully operable or in fact service the statutory needs of the Cwth environmental water holder to implement the Basin Plan objectives. Agreement on his RMS plan would be difficult without being satisfied that state plans are adequate for this purpose. The interaction between these state plans to implement basin scale outcomes requires specific considera ion.

Figure 1: Two entitlement levels - Wholesale and Retail

The roles and responsibilities for developing the various PPM Implementation Plans, and for implementing the required changes in the RMS are outlined in **Appendix A**.

2. Approach to the implementation of PPMs in the River Murray System

Work to implement the PPMs in the RMS will focus on two key areas:

a) Work-stream 1 - Trialling of practices and procedures required to fully implement PPMs through annual environmental watering trials. This will test and resolve technical issues associated with the implementation of the PPMs before they are formally adopted.
b) Work-stream 2 - Codifying the practices and procedures required to implement the PPMs into the Murray-Darling Basin Agreement (MDB Agreement) and other river operations instruments. This will ensure the arrangements are secure and enduring.

Over time, all aspects of work-stream 1 will move to work-stream 2.

Consistent with the Basin Plan (sub-s 7.15(1)), PPMs will be implemented to the extent that 'there are no detrimental impacts on reliability of supply of water to the holders of water access rights that are not offset or negated'.

Commented [A2]: This is a key principle that implies no *net* third party impacts. However to support this principle requires a method for assessing net impacts – this method does not currently exist. Relying on using conserva ive approaches to accommodate uncertainty, ra her than applying a transparent repeatable method for the assessment of 'risk' is not acceptable, it does not support adap ive management, innovation or risk management and will not result in the fair and equitable treatment of all water holders, particularly environmental water holders. The development of an appropriate method is required to be included within the PPM IP work program. This task would support he preparation of a new SO&O for the management of risks to reliability; refer to p20, para 2.

2.1 Work-stream 1

Work-stream 1 supports the testing of operational actions through environmental watering trials. The purpose of the trials, as agreed by the Basin Officials Committee (BOC) at meeting 20 (14 February 2013), is to work towards:

a) incorporating environmental delivery into normal River Murray operations by identifying and analysing issues and potential changes to current operational practices and the enabling instruments

b) the resolution of unimplemented policy measures under the Basin Plan.

The Basin Officials Committee (BOC) has agreed to an annual environmental watering trial since 2010-11. The trials cover many of the actions needed to implement the PPMs and manage State water entitlements for environmental water delivery in the RMS.

The 2016-17 trial was approved by BOC at meeting 41 (28 April 2016). The trial continues to test actions from previous trials, adopts improved approaches and includes new actions arising from lessons from the previous trials. In summary it identifies:

a) river operations actions that are not codified in the MDB Agreement and other river operations instruments, and therefore requires BOC approval

b) risks associated with the uncodified actions

c) strategies to mitigate potential risks on State entitlements for BOC approval, and notes mitigation measures that should be undertaken by other stakeholders.

Once the MDBA and jurisdictions (States and the Commonwealth of Australia) are satisfied that the actions in the trials are sufficiently tested and ready for formal adoption, they will be transferred into work-stream 2 for codification in relevant instruments. As a result of the findings from previous environmental watering trials, it is likely that some actions in work-stream 1 will move into work-stream 2 earlier than others.

The environmental watering trials seek to provide a way for MDBA river operators to deliver environmental water, without adversely impacting other water users. Given this, they seek to meet the needs of environmental water holders as much as possible, but may not fully meet their needs or expectations. There is a risk that environment entitlement holders will not support the trial if they consider that the proposed measures prevent the cost effective delivery of environmental water. To manage this risk, the trials are developed in close consultation with WLWG, who represent all water users, including environmental water and are well placed to ensure that the needs of environmental entitlement holders are met. In addition, the past practice of consulting with the SCBEWC will continue.

The environmental watering trials have been vital for determining the best way to implement the PPMs. However, the actions that can be tested in the trials depend entirely on the conditions experienced in the water year and the environmental requirements. As such, there is a risk that not all of the actions in the trial will be fully tested before 2019, for example dry conditions have meant that none of the actions related to the Menindee Lakes Storage have yet been tested. Should aspects of the PPMs have not been tested by 2019, the measures put in place in 2019 will be based on the best available information at that time, and amended as more information is obtained, new risks are identified, lessons learnt etc. ~~If there is a high degree of uncertainty, the measures will be conservative, so to ensure no third party impacts related to water supply reliability.~~ The BOC may also choose other arrangements, such as including a timeframe for the SO&O to be

Commented [A3]: Include the Commonwealth Environmental Water Holder – implementing hese measures for the achievement of the Basin Plan objec ives relies on collaboration with, and agreement by the CEWH

Commented [A4]: This assumption is fundamentally incorrect. Neither the WLWG or SCBEWC represents the CEWH or any other environmental water holder. The development of he 2016-17 Watering trial has demonstrated that the WLWG are not well placed to meet the needs of environmental water holders. This text requires amendment. The text should reflect the need for the CEWH to be directly engaged throughout the development and implementation of any trials/investigations, without doing so represents a significant risk to the Basin Plan implementation. A more appropriate mechanism for appropriately engaging all key stakeholders collectively requires re-examination with a recommended alternative option presented within the plan as a way forward.

Commented [A5]: And the decisions of environmental water holders.

Commented [A6]: Who will determine this? See other comments re. impacts to realiability.

reviewed or a sunset provision. If there is a high degree of uncertainty, it may be necessary for the BOC to continue to trial appropriate measures, based on an in-principle agreement to adopt secure and enduring arrangements, such as new SO&Os once the measures have been adequately tested. Adaptive management is discussed further in.

The key dates for the development of the environmental watering trials are summarised in Table 1. It is anticipated that the trials will continue for another two years.

Table 1: Key dates for the development of the environmental watering trial (work-stream 1), for each in which a trial takes place.

Indicative timeline	Activity	Responsibility
February - Apri	Develop the trial for the upcoming water year	MDBA, with the advice of WLWG and SCBEWC*
June	Approve the uncodified actions to support the trial	BOC (through WLWG and RMOC**)
1 June - 31 May	Undertake the trial	MDBA River Operations and environment entitlement holders
August-September	Review the trial	IRORG
October	Determine which aspects of the trial can be moved to work-stream 2	WLWG

*Southern Connected Basin Environmental Watering Committee
**River Murray Operating Committee

Commented [A7]: This has not allowed sufficient time previously to inves igate the appropriate options and adequately consult on the arrangements.

Commented [A8]: See previous comment – they do not represent the interests of all water holders.

Commented [A9]: Timeframe should note the requirement for agreement by environmental water holders to support the operation of the trails. This agreement should not be assumed and is process that requires undertaking.

2.2 Work-stream 2

Work-stream 2 involves incorporating the actions to implement the PPMs into the various instruments that guide river operations. They include:

1. The Murray-Darling Basin Agreement (the MDB Agreement), which includes details of the distr bution of water between the States and some high level obligations and commitments for river operations.
2. The Objectives and Outcomes for river operations in the River Murray System (Objectives and Outcomes document), which includes the:
    a. (General) Objectives and Outcomes (O&Os) which MDBA strives to achieve in its river operations.
    b. Specific Objectives and Outcomes (SO&Os) which detail how the agreed rules for river operations relate to the General Objectives and Outcomes.
3. Internal documents such as MDBA procedures, guidelines and manuals.

Amending the MDB Agreement is a complex process, which occurs infrequently. As such, changes to the MDB Agreement to implement the PPMs will need to fit with other processes, primarily the Sustainable Diversion Limit (SDL) adjustment mechanism. The MDBA, at the request of BOC has engaged a consultant with expertise in water management to work with

the States and the MDBA to scope the required changes to the MDB Agreement and other river operations instruments to implement the SDL adjustment mechanism, including the PPMs. In principle agreement on the required changes will be included in new schedule to the Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin, the schedule is to be in place by mid-2017.

This plan assumes that the scoping and drafting of the changes will be a joint activity between the MDBA and the jurisdictions. Changes will be drafted consistently with the requirements of the PPM Assessment Guidelines. Key dates for work-stream 2 are summarised in **Error! Reference source not found.**~~Table 2~~, more detailed information on specific activities from July 2016 to June 2019 is provided in section ~~5~~3.

Table 2: Key dates for work-stream 2

Indicative timeline	Activity	Responsibility
July 2015 - February 2016	Scope options of changes to river operations instruments	MDBA/Jurisdictions
June 2016	Agree the final PPM Implementation Plan	NSW, Victoria and SA SDLAAC members
July 2016 to 2019	Draft changes to river operations instruments	MDBA
	Endorse changes to the instruments	WLWG/RMOC
	Agree any changes to the O&O/SO&O Recommend any changes to the MDB Agreement	BOC
	Agree any changes to the MDB Agreement	Ministerial Council

Changes to the O&O/SO&Os to implement the PPMs may be made by BOC periodically between 2016 and 2019, for example as part of the annual review of the in the Objectives and Outcomes document. However, as most changes rely on further testing through the environmental watering trials they are most likely to be made in 2019. Ministerial Council will only be asked once to make amendments to the MDB Agreement.

Review process

3. Consistency with PPM Assessment Guidelines

The PPM Assessment Guidelines describe how the MDBA expects the PPMs to be implemented. The guidelines are outcomes focused, recognising that the best way to implement the PPMs will vary depending on such things as location, historic practice and the needs of entitlement holders. The approach for meeting the guidelines in this implementation plan is summarised in Table 3**Error! Reference source not found.**.

Commented [A10]: Given the importance to the Basin Plan and as such the reforms, we trust the Cth (Dept) will be intimately involved.

Commented [A11]: As the implementation plan relies on the trials being implemented, it is critical that environmental water holders

Commented [A12]: Awaiting feedback on options, will remove if no informa ion by Thursday

Commented [A13]: Review and audit provisions are required to be included. *Review* provisions should extend beyond the current terms of reference for IRORG, relating directly to the adequacy of any arrangements/measures being implemented – refer to comments at s4.0. An *audit* provision is required to provide transparency in all matters rela ing to water accounting e.g. account adjustments, estimated loss and methods used, assessment of substitution. Given that these measures relate in most cases to the to use of Cwth resources audit requirements must therefore be compliant with the Cwth PGPA Act (and Resource Management Guides) and the National Guidelines for non-urban water metering. This relates strongly to s5.2.1. but not exclusively. Consideration of audit and review provisions should be reflected in the related state plans; refer to s1.2.

Table 3: Planned approach to maintaining consistency with the PPM Assessment Guidelines

Assessment Guideline	Summary of approach to meet the Guidelines
1) Secure and enduring	Agreed approaches will be codified in the various river operations instruments.
2) Fully operable	All activities to ensure full implementation of the PPMs have been fully scoped with State and Commonwealth (including the Commonwealth Environmental Water Holder) and included in the implementation plan. Options are trialled before being codified in river operations instruments. The Objective and Outcomes document embeds an adaptive management approach that allows for changes to reflect new information, emerging risks, changing needs etc.
3) Transparent	Options have been developed in consultation with State and Commonwealth water agencies. Annual Operating Plan will include expected operations, key assumptions etc. for environmental water activities in the coming water year. The MDBA reports to BOC on its compliance against the O&O document, including the SO&Os through the Annual River Operations Report. The report will discuss the methods used, relevant assumptions, any issues that occurred and suggest potential improvements. The report is independently reviewed by the Review of River Operations Group (IRORG) and is an important component of the MDBA's adaptive management process. River operations instruments are made available to State and Commonwealth water agencies, information not made publically available is usually able to be provided on request.

Commented [A14]: Refer to related comments on the ToR for IRORG, review and audit provisions required.

4) Identifies and mitigates risks	Risks and mitigation measures are identified for each of the agreed tasks required to implement the PPMs. The effectiveness of the mitigation measures are tested in the trials, reviewed and revised accordingly. Agreed mitigation measures will be codified in river operations instruments.
5) Provide for releases of environmental water from storages on top of other in-stream flows, including unregulated flows	The ssues have been fully scoped and actions tested to ensure the agreed actions achieve this outcome.
6) Allows for environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution	The issues have been fully scoped and actions tested to ensure the agreed actions achieve this outcome.

NB: Table 3~~Table 3~~ addresses the key themes in the PPM Assessment Guidelines. There are more detailed requirements under each of these themes. These additional requirement are addressed in Section 14~~3~~.

Commented [A15]: This plan does not demonstrate that the issues and alternative measures have been "fully scoped". Same comment applies at point 6 below.

Formatted: Font: 10 pt, Italic

4. Adaptive Management

The PPMs will be made secure and enduring through inclusion in relevant river operations instruments, such as the MDB Agreement or SO&Os by 2019. This will represent the best available information at that time. However, river operations are constantly evolving and adaptive management is a fundamental to good river operations. As such, the measures put in place in 2019 to implement the PPMs will be reviewed and amended as more information is obtained, new risks are identified and lessons learnt. In some cases, adaptive management will be explicitly part of the implementation approach, for example the method for estimating assumed use (section 5.2.2~~3.3.2~~).

Adaptive management will continue to be important in developing measures that could not be extensively tested through the environmental watering trials. In these cases, the adaptive management approach will continue to be applied to on-going trials or will be explicitly included as part of the new SO&O.

The MDBA undertakes a range of activities that reflect an adaptive management process, but there is no single, formal process. The two primary approaches for adaptive management used in river operations are descr bed below.

At the end of each water year the MDBA prepares a report on how river operations achieved the requirements of the Objectives and Outcomes document, a separate report on environmental water delivery is also prepared. This report is reviewed by the IRORG, which both analyses the findings of the reports and consults with representatives from the jurisdictions and State Constructing Authority on any issues or concerns they may have. From this, IRORG make recommendations to improve river operations. The MDBA is not required to implement IRORG's recommendations, they are discussed with WLWG and reported to BOC, and implemented as agreed by the jurisdictions. The process is well supported and encourages active review of practices and the adoption of improvements

Adaptive management is also built into the Objectives and Outcomes document. BOC require the document to be reviewed annually, which helps ensure that it is up to date and fit for purpose. In addition, the SO&Os section is designed to allow for amendments to be made to it relatively easily, allowing for improvements to be adopted quickly.

Adaptive management is also embedded in river operations through the Environmental Guidelines process, which:

- identifies issues arising from river operations practices
- undertakes research, trials etc. to test new practices
- formalises new approaches in documentation
- reviews the approach post implementation
- amends the practices and documentation to reflect lessons from the review.

The practices used in the Objectives and Outcomes document and the Environmental Guidelines will support the ongoing implementation of the PPMs. For example to ensure that mitigation measures to address risks to State water entitlements remain effective.

Although not formalised, the adaptive management approach used by the MDBA is consistent with the adaptive management requirements in sections 1.1 and 1.2 of the PPM Assessment Guidelines.

Formatted: Highlight

Commented [A16]: IRORG's ToR are specific to the function of MDBA RMO, with the implementation of recommenda ions 'optional'. This is not adequate for reviewing he effectiveness of the measures being implemented and to ensure on-going improvement. The purpose and ToR for the review process requires re-examination with alterna ive options be considered that provides a broader scope than provided under the current IRORG.
Given the importance to the Basin Plan, is IRORG the right instrument? Suggest a truly independent review process i.e. not managed by the MDBA RMO.

5. Implementing the PPMs

This section details the work required to implement the PPMs in the RMS by June 2019 by focusing on two specific criteria in the PPM Assessment Guidelines. Specifically:

1. sub-section 5.1 focuses on four issues that address PPM1: Releases of environmental water on top of other in-stream flows, including unregulated events
2. sub-section 5.2 focuses on five issues that address PPM2: Environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution.

Each issue is discussed in terms of:

- a background that descr bes why it is an issue, including associated risks
- the options that have been considered to address the issue, and associated risks
- the proposed change
- a way forward for implementing the change.

A summary of the activities and timeframes to implement the PPMs is provided in **Appendix B**.

5.1 PPM1: Releases of environmental water on top of other in-stream flows, including unregulated events

To implement PPM 1, the PPM Assessment Guidelines require PPM Implementation Plans to:

- Demonstrate the ability for the release of HEW from storages during unregulated flow events.
- Identify a transparent process to estimate environmental releases.
- Show that when HEW is released on-top of other instream flows or unregulated flows, that only the additional volume of water released to meet environmental requirements is accounted for.

The ability to make directed releases from an upper River Murray Storage requires the following issues to be addressed:

- Absence of an explicit provision for operators to release water from the upper River Murray storages.
- Releases of HEW from storage may impact reliability of State and retail water entitlements.
- Environmental watering has changed storage management and flood risk.
- A method to estimate the volumes of environmental releases from storage.

These are discussed in the following sub-sections.

5.1.1 Absence of an explicit provision for operators to release from the upper River Murray storages

Background

There are no explicit 'rules' which prohibit releases from the upper River Murray storages, including during unregulated flows, to meet retail entitlement demand. Rather, there is an absence of explicit enabling provisions to allow the MDBA to release HEW from storages, including during unregulated flows.

The MDBA and jurisdictions have agreed that clause 98 of the MDB Agreement provides the MDBA with sufficient powers to make directed releases from the upper River Murray storages to meet demands. Clause 98 describes the MDBA's role in the operation of the upper River Murray storages. Two key components of clause 98 support the MDBA to make releases from these storages to meet environmental demands:

- Para 98(3)(iv) requires the MDBA to have regard for 'facilitating the exercise by New South Wales and Victoria of their respective rights to use water from the upper River Murray, as they require'.
- Sub-cl 98(4) allows the MDBA to have regard for 'other water management and environmental objectives'.

NSW and Victoria have established operational arrangements to allow entitlement holders to request an order be met from an upper River Murray storage. The State PPM Implementation plans will set out how these arrangements will be formalised, so to meet the requirements of the PPM Assessment Guidelines.

Currently, environmental entitlement holders are not able to request that entitlements held in South Australia be released from an upper River Murray storage. This limitation was not assumed in the Basin Plan modelling; though it is noted that the modelling results may not have utilised this flexibility in the modelling rules. To mitigate potential impacts to reliability the environmental watering trials have not allowed entitlements from the South Australia or the tributaries to be traded to the River Murray for a directed release from an upper River Murray storage. Further investigation is required to understand if this restriction should be removed or amended.

Commented [A17]: If this comment is only based on supposition rather han fact then suggest delete red text.

The provisions in clause 98 extend to releases that do not interfere with property rights. Legal advice obtained by the MDBA indicates that neither the *Water Act 2007* (Cwlth) (Water Act) or MDB Agreement provide the MDBA with any legal liability protection if the overbank flow causes damage to private property. Amendments to the Water Act, the MDB Agreement and State legislation may be required to ensure the MDBA is sufficiently empowered to make or act on directions to release water for environmental overbank flows that may interfere with property rights. This issue is closely related to the Constraints Management Strategy and is being progressed outside the PPM process. It will need to be addressed by June 2019.

Traditionally, releases from the upper River Murray storages are only made when the demand cannot be met from other sources, such as water already in the river or tributary flows. As such, releases from the storages, when that demand could be met from other sources may impact the reliability of State water entitlements. This is discussed at 5.1.2~~3.2.2~~.

Options

NSW and Victorian frameworks must ensure that entitlement holders can request an order be met from a release from an upper River Murray storage. Further work is required to understand if the current practice of only allowing directed releases to be made with NSW or Victorian Murray entitlements should be ceased or amended. If a change is required, SA may also need to ensure entitlement holders can request a directed release from an upper River Murray storage.

Prior to reaching the conclusion that there is sufficient power in the MDB Agreement, the following options were also considered:

- Continue to seek ad-hoc agreement from BOC to undertake directed releases.
- Amend the MDB Agreement or Objectives and Outcomes document to specifically state that the MDBA may direct water to be released from the upper River Murray storages to meet downstream demands.

Way forward

Further work is required to understand if the current practice of only allowing directed releases to be made with NSW or Victorian Murray entitlements should be ceased or amended.

Table 4: indicative timeframe, activities and responsibility for providing an explicit right to release from an upper River Murray storage

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – May 2018	Technical and operational analysis, and potentially trialling of options	MDBA/Jurisdictions
June - November 2018	Consolidate findings	MDBA/Jurisdictions
December 2018	Endorse SO&O	WLWG
February 2019	Endorse SO&O	RMOC
April 2019	Approve SO&O	BOC

5.1.2 Releases of Held Environmental Water from storage may impact reliability of State and retail water entitlements

Background

Directly releasing from the upper River Murray storages has the potential to impact the reliability of water entitlements. Historically, the supply of entitlements was first met from flows already in the river, then the closest tr butary or storage, with releases from the upper River Murray storages last. As such, the reliability of retail entitlements is based on all available water sources (for example, unregulated flows, water from tributaries and all storages) and not just water from the upper River Murray storages. Meeting an order from a

Commented [A18]: The current state based arrangements that allow a direct release from storage have evolved over time in response to issues arising and should be thoroughly reviewed prior to being assumed adequate in the long term. For example, current arrangements rely on the goodwill of e-water holders to utilise state specific access entitlements. Consideration of issues of using trade to give effect to the Victorian (and potentially SA) arrangements do not appear to have been considered. The interaction between the state frameworks requires consideration with regard to providing a fully operable arrangement.

storage, when it could be met from other sources will affect the way the storage is managed and other system operations, with potential implications for water entitlements. The aggregate effect could be positive or negative, depending on several factors, such as timing of the releases and whether the reservoir subsequently refills

NB, The volume and duration of unregulated flow events depends on actual flows in the river that are above any anticipated demand, including NSW Supplementary Entitlements and Victorian Bulk Diversions. The MDBA determines unregulated flow events in accordance with SO&O 12.7 Planning for, and communication of potential unregulated flow events. Any environmental water released on top of unregulated flows is accounted for separately in regards to unregulated flow announcements. This ensures that there is no net difference during unregulated flow events, the environmental water is both not extractable for consumptive use and does not alter the volume of unregulated flows available to water users. Diversions allowed by States during unregulated flow events will continue to in accordance with State rules.

There is also a potential that the trading of significant retail entitlements from a tr butary for directed releases from an upper River Murray storage could also impact the reliability of another State. As noted in section 5.1.1~~3.2.1~~, to mitigate such a potential impact, this actions s currently not allowed. Further investigation is required to determine if the restriction could be removed or amended.

Releases of environmental water from the upper River Murray storages to supplement unregulated flows was included in the Basin Plan modelling. The Basin Plan modelling indicated there was a very low risk to reliability as a result of directed releases from the upper River Murray storages. The modelling maintained diversions in order to ensure that reliability was not affected. Further modelling is required to better understand the impacts on reliability and the appropriateness of the risk mitigation measures. This will include:

- the effectiveness of volumetric limits
- poss ble alternative approaches
- identifying the conditions when risks are l kely to be highest, such as in very dry conditions
- poss ble implications if current channel capacity constraints change.

This analysis will inform the final approach.

The environmental watering trials have allowed for the release of HEW from Hume Dam from 2010-11 and from the Menindee Lakes since 2013-14. Allowing for releases from Lake Victoria was included in the 2015-16 trial. Releases have been made in all years from Hume Dam but have not yet occurred from Menindee Lakes or Lake Victoria. The 2015-16 trial uses the term 'directed releases to meet downstream demand' for releases of HEW from the upper River Murray storages.

Options

The following sections outline options to mitigate the risks to reliability at each of the upper River Murray storages[2]. As an initial mitigation measure, a maximum volume of release has been identified for individual storages. These values are based on preliminary modelling and initial environmental trials. As discussed above, additional analysis is required to better

Commented [A19]: And herefore requires a robust method of assessing the poten ial net impacts rather than relying on conservatism.

Commented [A20]: Investiga ion should include whether trade is the most appropriate mechanism for the transfer of environmental water throughout the SCB for meeting the objectives of the Basin Plan, and whether there are alternative measures that are more effective for minimising impacts to reliability than placing restrictions on the management of the environmental water portfolio and that may present opportunity for providing benefits.

[2] Although an upper River Murray storage, environmental releases are not made from Dartmouth Dam, as such it is not discussed.

understand the risks and mitigation measures. The preferred approach will be reviewed as new information becomes available.

In addition to the actions at the wholesale level, there are a number of measures at the retail level that the States could take to help mitigate the risks to reliability from directed releases. The environmental watering trials have recommended measures the States and entitlement holders should consider taking to reduce the risks. For example, limiting directed releases to NSW and Victorian Murray water entitlements and sharing the releases as equally as possible between NSW and Victorian water entitlements, noting that it is up to environmental entitlement holders to determine the balance of entitlements used for particular watering actions. These issues will need to be considered in the State PPM Implementation Plans and with environmental entitlement holders

Options to mitigate risks are described below for Hume Dam, Menindee Lakes and Lake Victoria.

Hume Dam

To mitigate the risk to reliability, the trials have limited the volume that could be directly released from Hume Dam to 700 GL/year. This limit is an estimate of the volume of water that should be replaced by historic inflows to the reservoir, which reduces the risk of the reservoir not being as full as possible when irrigation demands commence. The 700 GL limit was first approved by BOC for the 2013-14 trial (BOC 21, 2 May 2013) and adopted again in the 2014-15, 2015-16 and 2016-17 trials.

The MDBA undertook analysis to consider the effectiveness of the 700 GL limit (BOC 33, 11 June 2015). The analysis considered how much HEW could be released from Hume Dam with flow rates downstream of Yarrawonga of 15 000/ML day, 18 000/ML day and 25 000/ML day. This work showed that under these flow rates, channel capacity downstream of Yarrawonga limits the amount of HEW which can be used to below the 700 GL limit[3].

Additional analysis is required to better understand the risks and mitigation measures, including the conditions when risks are highest and how to manage the risks when constraints are relaxed.

Menindee Lakes

As with Hume Dam, the environmental watering trials have sought to mitigate potential impacts on reliability from directed releases from the Menindee Lakes by limiting the volume of the release. A limit of 400 GL/year was first approved by BOC for the 2013-14 trial (BOC 21, 2 May 2013) and was adopted again in the 2014-15, 2015-16 and 2016-17 trials. Due to low storage volumes over the last few years this provision has not been tested. Forecast seasonal conditions and very low levels in Menindee Lakes mean that the likelihood of using this action in the 2016-17 trial is again very low. Directed releases would only be made if the volume of water held in Menindee Lakes was well above 640 GL[4].

Further to the limit of 400 GL, the trial has only allowed for the directed release to be made during unregulated flow events. Analysis by the MDBA has indicated that releases during unregulated flow minimises risks to reliability (BOC 16, 2 May 2013). In addition, making directed releases in periods when flow to South Australia is regulated would unnecessarily

Commented [A21]: Throughout the document there is an assumed risk to the reliability of irrigators entitlements through managing water for the environment. If this assumption is being made, what are the risks to reliability? These must be articulated. The entitlements the Cth holds are irrigation entitlements and there characteristics remain, so how is the risk any greater or different than it was before? This risk must be ar iculated so everyone knows what you're are assessing. Furthermore, any analysis must be of net impact and to all entitlement holders and water uses.

Commented [A22]: This does not appear consistent with the PPM Guidelines in that a mitiga ing strategy should not be reliant on the goodwill and collaboration (PPM Guideline 2.1) and restricting portfolio management of a retail water holder e.g. sharing 50:50 NSW/Vic alloca ions. Alterna ive options need to be considered where impacts to state enti lements are less sensitive to large scale watering actions and the behaviour of a single retail water holder.

There is increasing recognition of the benefits of managing e-water as part of bulk entitlement (NSW BED) and the issues of relying on trade mechanisms for managing the e-water portfolio (e g. trade across the Choke). The extent to which bulk entitlement provisions could be established could be explored with e-water holders as a means of addressing a range of issues, including minimising third party impacts.

Commented [A23]: So what happens if it turns out e-water management actually reduces risks to reliability? Will e-water holders receive a dividend?

[3] The additional analysis will consider the effect of changes to channel capacity.
[4] Cl 95(1) of the MDB Agreement states that when the Menindee Lakes volumes fall below 480 GL NSW may use the water in the Lakes as they require, the water is managed by the MDBA as part of the shared resource when the volume next exceeds 640 GL.

complicate what can already be achieved under existing arrangements. That is, when the Menindee Lakes are under the direction of the MDBA, a direct order at the South Australian border would normally be met by a release from the Menindee Lakes as the priority source of water, and special arrangements are not required.

Preliminary analysis by the MDBA (BOC 16, 2 May 2013) indicates that directed releases could affect the release of additional dilution flows (ADF) to South Australia under certain circumstances. For example, if the directed release sees the Menindee Lakes fall below the ADF trigger points set out in *SO&O 12.3 Additional Dilution Flows to South Australia* earlier than otherwise anticipated. To manage this, the trials have recommended that MDBA assess the implications on ADF and discuss with WLWG, the South Australia Department of Environment, Water and Natural Resources and environmental water holders with the aim of reaching a consensus decision on any directed release from Menindee Lakes. Further investigation of the potential for impacts on ADF is required.

Commented [A24]: This does not appear consistent with the PPM Guideline 2.1 i e. reliant on the goodwill and collaboration over the long term to be fully operable. Suggest that ADF provisions are assessed to identify possible alternative triggers for use, that avoids substitu ion and/or less sensitive to the behaviour of e-water managers.

At times when the Menindee Lakes are being drawn down towards 480 GL[5], the making of directed releases, over and above MDBA's existing transfers to Lake Victoria, could negatively impact upon the management of lake levels. Transfers by MDBA are planned to maximise overall water availability without unduly jeopardising future water security at Menindee Lakes ~~when levels fall below 480 GL~~. If directed releases were permitted when the Menindee Lakes are close to 480 GL ~~at these times~~ they could result in NSW having reduced access to water in Lakes Wetherell and Pamamaroo, increasing risks around local water security. To avoid this, an additional mitigating measure has been included in the 2016-17 environmental watering trial to limit flow rates to those specified in *SO&O 10.4 Distribution of water stored within Menindee Lakes Storage*.

Lake Victoria

Entitlement holders may wish to prolong higher flows to South Australia by releasing additional water from Lake Victoria towards the end of an unregulated flow event. Under the current practice, entitlement holders have to order and provide the full flow in excess of base entitlement. This effectively requires entitlement holders to supply a significant volume of water that would otherwise have been unregulated. Such a use of entitlement is very difficult to justify and so entitlement holders generally wait until flows have receded to regulated entitlement before ordering. This can result in sharp changes in the hydrograph with flows first receding to entitlement rates before being increased again to meet environmental requirements.

In order to provide a smoother hydrograph, the 2015-16 trial introduced a new practice that, once Lake Victoria is filled, States may call on water from Lake Victoria to add to the unregulated flow event. Unfortunately, conditions in 2015-16 did not allow the measure to be tested. The measure was also included in the 2016-17 trial.

The MDBA does not expect there to be many opportunities to undertake this action. In the event that it does occur, it will be towards the end of an unregulated flow event and only small volumes are likely to be delivered. As the lake will be filled, and the volume of releases small there is not expected to be any risks to reliability. Given this, a limit on the volume of the release is not proposed at this time.

This approach will be reviewed and potentially modified over time. The wholesale, or 'bulk' provisions under cl 98 of the MDB Agreement may provide a more flexible and comprehensive solution to directed releases from Lake Victoria. The MDBA will explore this

with jurisdictions and look to include it in future environmental water trials. Modelling analysis is not expected to be required at this time.

Proposed change

The preferred approach is to prepare a new SO&O for the management of risks to reliability associated with directed releases from the upper River Murray storages.

Before an SO&O can be agreed, further work is required to demonstrate that the risks are fully understood and the associated mitigation measures are adequate. As such, directed releases from upper River Murray storages will continue to be tested through the environmental watering trials. MDBA will undertake additional hydrologic modelling and technical analysis to better understand the risks of directed releases, identify appropriate mitigation measures and consider the costs/benefits of making the release.

The establishment of an SO&O will usually, but not always require methods, practices etc. to be incorporated into MDBA internal documents. At this stage, further guidance to support the proposed SO&O is not expected. If this changes, guidance will be developed in consultation with the WLWG and other stakeholders on the advice of the WLWG.

The SO&O will need to be in place by June 2019. As discussed in section ~~12.4~~, the SO&O will be based on the best available information and amended as required.

Way forward

Table 5 provides and indicative timeframe, activities and respons bilities to develop an SO&O for the mitigation of the risks of directed releases from the upper River Murray storages.

Commented [A25]: Refer also to previous comment – this requires the development of a robust method for assessing the potential net risk to reliability rather than relying on conservatism. The way forward must include the development of an appropriate assessment methodology.

Table 5: An indicative timeframe, activities and responsibility for the development of an SO&O to mitigate the risks of directed releases from upper River Murray storages

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – May 2018	Conduct trials	MDBA River Operations and Environment entitlement holders
June 2016 – May 2018	Technical and operational analysis	MDBA/Jurisdictions
June - November 2018	Consolidate findings	MDBA/Jurisdictions
December 2018	Endorse SO&O	WLWG
February 2019	Endorse SO&O	RMOC
April 2019	Approve SO&O	BOC

5.1.3 Managing the potential for increased flood risk for communities downstream of Hume Dam

Background

Hume Dam is managed for water supply purposes. When the storage level is low, Hume Dam provides a high degree of flood protection for downstream communities as it can store large floods flowing in from upstream. In wetter years, the water level is managed to increase Hume Reservoir towards full supply level with the aim of filling it to 99% by the time downstream demand exceeds inflow. Unlike other dams, Hume Dam cannot store water above the full supply level. When it is full, floodwaters entering from upstream must be released through the spillway — only a limited reduction in flood peak height is possible.

The seasonal profile of releases from Hume Dam is changing as a result of HEW demands being earlier in the water year than historical irrigator demands. Generally the timing of HEW releases occurs when the storage is filling, and at times spilling. This changed demand pattern combined with the large volumes of HEW is altering the way the storage is managed and potentially increasing the flood risk to downstream communities.

Commented [A26]: An assumption is being made that environmental water holders have reached an equilibrium in their patter of use – we haven't quite yet, so should be get ing ahead of ourselves.

In general, with environmental water demands starting before irrigation demands, the airspace target at Hume Dam is I kely to be significantly less than was the case prior to the availability of large volumes of HEW. In response the MDBA aims to fill the storage earlier in readiness to meet these environmental demands. As a result, in some years the storage can be full or close to full for a significantly longer period during the peak inflow period. The unique characteristics of Hume Dam – large local catchment, the lack of any significant surcharge capacity and close proximity to a large urban centre - mean that during this time there would be reduced capacity to mitigate high inflows during a significant rainfall event, which increases the flood risks to downstream communities.

Addressing this issue is not specifically required to implement the PPMs, but further manages potential risks from allowing directed releases from Hume Dam. Alternative operations for Hume Dam are being considered in the SDL supply proposal '*Hume Dam Airspace Management and Pre-release Rules*'. It is proposed that the issue be addressed through this process, not through the implementation of the PPMs in the River Murray. In addition, the SDL proposal may have implications for the operation of the South Australian storage right under Schedule G to the MDB Agreement.

Commented [A27]: The SDL adjustment proposal has not been agreed and should not be assumed. This ac ion is more appropriate to be included for undertaking under this PPM IP as it relates specifically to the mitigation of risks

Options

Options to address the increased flood risk are being considered through the SDL adjustment mechanism. Options will need to also consider risks to the efficient use of environmental entitlements as well as to downstream communities.

Commented [A28]: This should be considered regardless of the SDL process.

NB, any potential option will require a method to calculate the volume of entitlement released for environmental water holders. This is related to the accounting method discussed in section 5.1.4.

Proposed change

The MDBA and WLWG are working through options to manage the increased flood risk through the SDL assessment mechanism process. It is likely that amendments to SO&O 2.4 *Hume Airspace and Flood Management* will be required. The final approach will need to be incorporated into the MDBA's flood management documents for Hume Dam.

Commented [A29]: See previous comments re. consultation/representation.

Way forward

This will be progressed through the SDL adjustment mechanism, not through the implementation of the PPMs in the River Murray (Table 6). A way forward for documenting the accounting method is set out in section 5.1.4.

Commented [A30]: The SDL adjustment proposal has not been agreed and should not be assumed. This ac ion is more appropriate to be included for undertaking under this PPM IP as it relates primarily to the mitigation of risks.

Table 6: An indicative timeframe, activities and responsibility for mitigating the increased flood risk at Hume Dam

Indicative timeframe	Activity	Responsibility
N/A	N/A	N/A

5.1.4 Estimating environmental releases from an upper River Murray storage

Background

The modelling to support the Basin Plan assumed that the volume of HEW released would be the difference between the water already in the system and volume required to achieve the flow or hydrograph required to meet environmental needs (Figure 2). Significantly more environmental water would be required to achieve the desired flow or hydrograph if this approach is unavailable.

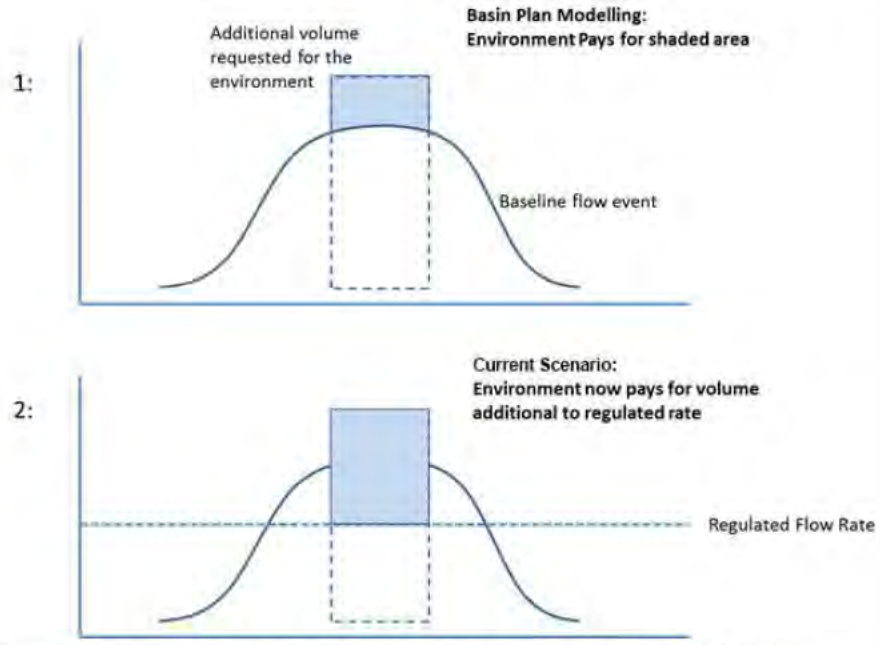


Figure 2: Comparison between the assumptions in the Basin Plan modelling for accounting for environmental flows (1, top) and the original approach (2, bottom).

Directed releases from headwater storage therefore require a specific accounting approach. Most accounting is based on the measurement or modelling of extractions from the RMS. In the case of directed releases, a method is required to determine the *additional volume* of water released from headwater storage to meet the required flow or hydrograph.

The 2010-11 and 2011- 12 trials attempted to measure the volume of additional release as environmental use, however this proved impractical and was abandoned[6].

In 2012-13 (BOC 16, May 2012), a new method was trialled whereby accounting for directed releases from upper River Murray storages was determined as the difference between the actual release and an estimated "without directed release" volume. This method proved operationally practical and has been in use ever since, with minor improvements[7].

In planning for this, the environmental water holder will make available this estimated additional volume of water (generally a range) to achieve the required flow or hydrograph. However the final environmental release volume will ultimately depend on the river conditions during the period of the watering. This environmental release volume is subsequently deducted from the environmental entitlement holder's account/s. Related to this, is the assumed use rate as discussed in section 5.2.2~~3.3.2~~. The assumed use rate is deducted from the environmental release volume and is used to determine the volume of water delivered to the final order point. A robust method to estimate the assumed use rate helps manage the risk of over/under delivery.

The accounting method has been successfully applied at Hume Dam since 2012-13, however it is important to note that conditions at Menindee Lakes and Lake Victoria have meant that directed releases have not been made from these lakes, and the method has not been tested at these locations.

Options

The method of accounting for directed releases from upper River Murray storages as the difference between the actual release and an estimated "without directed release" volume has been trialled successfully at Hume Dam since 2012-13 and has been supported by IRORG. It is proposed that this method be adopted.

The proposed method for accounting for directed releases from each storage is descr bed below for Hume Dam, Menindee Lakes and Lake Victoria.

Hume Dam

Directed releases from Hume Dam will be estimated by:

a) When Hume Dam is not effectively spilling, directed releases from Hume Dam to be accounted as the difference between the actual release and a hypothetical release case meeting all other water demands.

b) When Hume Dam is effectively spilling, directed releases from Hume Dam to be accounted as the volume by which Hume Dam falls short of reaching the effective full supply level of 99%.

[6] BOC out of session 21, 7 September 2010 and BOC Out of Session 33, 7 September 2011.
[7] 2014-15 (BOC 26), 2015-16 (BOC 33) and 2016-17 (BOC 41)

Menindee Lakes

Directed releases from the Menindee Lakes made during periods of unregulated flow will be accounted for as the difference between the actual release (measured at Weir 32) and a hypothetical release without the direct release – which could be expected to be normal minimums during periods of unregulated flow.

Commented [A31]: However this should not always be assumed. Should include provision to account for e-water that is released in addi ion to water provided for ADF.

Lake Victoria

Directed releases from Lake Victoria will be accounted for as the difference between the actual release and a hypothetical release based upon the MDBA making a high use assessment (high demands and losses) of the unregulated flow recession back to entitlement flows.

Commented [A32]: Requires a realistic assessment that should include reasonable assumptions relative to the exis ing conditions. Delete red text.

Proposed change

As directed releases from the upper River Murray storages have the potential to have a material effect on State water entitlements, BOC have approved the associated accounting methods as part of the environmental watering trials. As such, the first draft PPM Implementation Plan (June 2015) proposed that the accounting methods be documented in a new SO&O. Subsequent discussions with WLWG indicated that a new SO&O is not required, but that the current approach should be documented in accordance with SO&O 13.1 *Maintenance of the Water Accounts, including the Water Accounting Model, model code and associated data*. SO&O 13.1 requires the MDBA to notify the WLWG of any adjustments to the water accounts, and to keep a log of adjustments to the water accounts.

As accounting for the directed releases helps the MDBA manage the potential risks to State water entitlements from directed releases, a requirement to account for the release will be included in the proposed SO&O for mitigating the risks from directed releases (see section 5.1.2~~9~~).

The documentation will need to be in place by June 2019, however the MDBA is constantly improving its methods, as such the document will not be static and will be updated as required[8]. Although the overall approach used in the environmental watering trials is likely to remain the same.

Way forward

Commented [A33]: Must include e-water holders. Also, to be compliant with he PPM Guidelines and Cwth PGPA Act would require an annual audit to be undertaken that provides transparent disclosure of the es imated 'use' and account adjustments with results provided to e-water holders. Refer also to s2.2. Amendment required.

MDBA internal documents will be prepared in accordance with SO&O 13.1 for approval by the Executive Director, River Management Division. They will be developed in close consultation with the WLWG and provided to RMOC, and BOC for noting. Table 7 provides an indicative timeframe, activities and respons bilities for the development and approval of the documentation.

The documentation will be written consistently with section 5.2 of the PPM Assessment Guidelines. The guidelines require a transparent process to demonstrate the estimation of environmental releases, which includes:

[8] While the PPM Assessment Guidelines support adaptive management, it is important for the overall implementation of the SDL adjustment mechanism that any revisions to the MDBA internal document(s) are improvements only.

- the estimation method
- disclosure of assumptions used
- who has the role and responsibility of estimating environmental releases
- the timeframes for advising environmental managers of the estimated environmental releases
- how to address any subsequent adjustments to the estimation
- how any disputes will be resolved
- decision criteria to determine other parts of the hydrograph, such as pre-releases or unregulated flows
- the arrangements to transparently disclose the estimation of environmental releases.

Table 7: An indicative timeframe, activities and responsibility for the development of MDBA internal supporting documentation of the method for estimating directed releases from the upper River Murray storages

Indicative timeframe	**Activity**	**Responsibility**
July 2016 - June 2017	Draft MDBA internal documents	MDBA
July 2017 - December 2017	Consultation with key stakeholders	MDBA
January – March 2018	Revise MDBA internal documentation	MDBA
April 2018	Approve MDBA internal documentation	MDBA
June – September 2018	Note MDBA internal documentation	WLWG/RMOC/ BOC

5.2 PPM2: Environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution

The PPM Assessment guidelines outline two areas to be considered in implementing PPM 2:

- Ability to ensure flows throughout the length of and between rivers.
- Protection of environmental water from re-regulation or extraction.

The ability to ensure flows throughout the length of and between rivers is partly addressed through the ability to make directed releases from the upper River Murray storages.

There are a number of components to protecting environmental water from re-regulation and extraction. At the retail level, the States have a role in allowing environmental water to be used both within the river and at multiple sites along the river. They must also ensure that the water is not extracted to meet other demands and are responsible for ensuring the use is recognised in the retail accounts. These issues will need to be addressed in the State PPM Implementation Plans.

In the tributaries to the RMS, Victoria has put in place provisions to achieve environmental flows from the Goulburn into the Murray and on to South Australia in some circumstances. The MDBA is working with NSW to develop an approach to protect environmental flows from the Murrumbidgee River to South Australia. In 2015-16, the MDBA and NSW undertook a 'Bulk Entitlement Delivery (BED)' trial that used the provisions of clause 98 of the MDB Agreement to facilitate environmental watering within the River Murray. This BED trial will occur again in 2016-17, the MDBA has recommended both NSW and Victoria participate in the BED trial.

Commented [A34]: This has been a positive step forward however requires review in line wi h principle of adaptive management leading to an enduring solu ion.

At the wholesale level, the MDBA has a key role in managing regulated releases and protecting environmental water from extraction, re-regulation or substitution, when targeting a certain flow event. As part of this role, the MDBA will also advise environmental managers on methods to estimate order volumes to reach those targets. The MDBA must work closely with state based water managers such as Goulburn-Murray Water and WaterNSW to understand how water is being used at various locations in order to determine what portion of the water at a site can be re-regulated or is required for use further downstream. At times, this can create a cross over between the wholesale and retail levels.

The environmental watering trials have managed risks of re-regulation or extraction of directed releases from upper River Murray storages by agreeing an assumed use rate (see section 5.2.2~~3.3.2~~) and by mechanisms which 'separate' environmental water from the reporting of the shared resource, so that it reaches downstream sites, including South Australia. These mechanisms continue to operate in unregulated flow periods as the announcements of unregulated flows made by MDBA exclude the required delivery of directed releases across the South Australian border. This aims to ensure that access by States, for example under supplementary entitlements, are not enhanced when directed releases are made during unregulated flow events.

There can also be interaction between the retail and wholesale levels, for example approval conditions at the Koondrook-Perricoota environmental works limit the return of environmental water to the RMS, thus impacting the ability for the water to flow throughout the length of the system. This particular example is being progressed through the Edward-Wakool Constraints Business case.

The next sub-sections deal with the issues that need to be addressed at the wholesale level.

5.2.1 Protect environmental water as it flows through the system

Background

The MDBA undertakes a range of planning, coordination and accounting activities to support the creation of the desired flow event and to protect the event as it flows through the RMS. These activities are consistent with the broadly defined role of river operations set out in clause 2 of the MDB Agreement and cl 4 of the Objectives and Outcomes document but they are not explicitly required. However, delivering environmental water is significantly different to traditional river operations practices to deliver irrigation and town water, and is time and resource intensive. As such, there is benefit to recognising these new functions in the MDB Agreement and the Objectives and Outcomes document. The following two examples seek to demonstrate some of this new work.

For example, an environmental entitlement holder will often want an order to apply throughout the length of the RMS, and to achieve a specific flow event. Currently a water order is placed at a single location (usually an irrigation offtake), and the subsequent recognition of the use of the water is at the authorised diversion point. As such, placing a water order does not guarantee that a flow event will be created upstream or downstream of the order point and any required flow event is only achieved through the goodwill of the MDBA and States to work collaboratively with environmental entitlement holders to plan and coordinate events.

Another example is the work the MDBA does to help the States protect HEW from other deliveries. As HEW is a retail entitlement, and not separately recognised in the MDB Agreement, how it is protected from consumptive use is currently up to the relevant State. As such, HEW that enters the River Murray either from a tr butary or from an environmental asset is only recognised as being part of a State water resource. To support the States to protect environmental water, and to ensure all water demands are met, the MDBA needs to distinguish HEW from other water deliveries when doing normal water accounting. This role is not reflected in the MDB Agreement or Objectives and Outcomes document.

Options

Three potential options have been considered:

- Continue to rely on the broad definitions of river operations in the MDB Agreement to cover the new types of activities undertaken by river operations.
- Amend the Objectives and Outcomes document to provide further direction on the Authority's functions currently set out in the MDB Agreement.
- Amend the MDB Agreement and the Objectives and Outcomes document to explicitly provide the function to the MDBA.

NB, work undertaken to support the Sustainable Diversion Limit Adjustment Mechanism has suggested that the MDB Agreement could benefit from a new schedule to support the operations and maintenance of The Living Murray (TLM) environmental works. This schedule may also be able to reflect the MDBA's role in environmental water delivery

Commented [A35]: Suggest that there are two dis inct schedules – one for TLM infrastructure and one for role in e-water.

Proposed change

Given how different these activities are to traditional river operations and the potential for impacts on State entitlements, WLWG have recommended that these functions be set out in the MDB Agreement and supported by direction by BOC through new SO&Os. The new SO&Os could address such things as:

- assisting States to account for environmental water use
- applying methods/rules etc. determined by BOC and/or the individual States to protect environmental water
- interactions with stakeholders, including retail entitlement holders
- the MDBA's role in assessing the risks of environmental water delivery, and how this interacts with other risk management processes.

The proposed amendments to the MDB Agreement and the Objectives and Outcomes document will codify the arrangements for protecting environmental water. In addition to this, section 6.1 of the PPM Assessment Guidelines recommends that the PPM Implementation Plans could, include an explanation which describes:

- the operation of the flows and the subsequent accounting
- the timing of actual flows and the timing of trades, including retrospective adjustments
- how inter-valley accounts will be dealt with, including adjustments
- how any retrospective adjustments will be dealt with
- compliance with trade rules.

The MDBA undertakes a range of activities that are consistent with the requirements of the guidelines, such as:

- agreed accounting methods for individual The Living Murray sites
- maintaining monthly water accounts that explain how water has been used
- annual reporting of environmental water delivery actions.

To meet the requirements of the guidelines and fully implement the PPMs the MDBA will need to bring these various activities together in a single, comprehensive document.

It is anticipated that the preferred approach will support IRORG recommendation E2012:03 *that approaches to assess the potential third party impacts of environmental water delivery on water availability and entitlement reliability should focus on developing and assessing the net impacts of an overall package of water management changes needed to facilitate environmental water delivery*.

If further MDBA internal documentation is subsequently required to fully incorporate the SO&Os into river operations practice this will occur in consultation with the WLWG and other stakeholders on the advice of the WLWG.

Way forward

Commented [A36]: Requires direct consultation with e-water holders

The MDBA will scope changes to the MDB Agreement and the Objectives and Outcomes document to provide for its role in the planning, coordination and delivery of environmental water. These need to be in place by June 2019. Table 8**Error! Reference source not found.** provides an indicative timeframe, activities and roles required to implement measures to support the MDBA to track and protect environmental water.

Table 8: Indicative timeframe, activities and responsibilities for implementing measures to support the MDBA to track and protect environmental water

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – June 2017	Draft amendments to SO&Os	MDBA/Jurisdictions
July 2017	Endorse amendments to the SO&Os	WLWG
September 2017	Endorse amendments to the SO&Os	RMOC
December 2017	Approve new SO&Os	BOC
July 2016 - June 2017	Draft MDBA internal documentation	MDBA
July – December 2017	Consultation with key stakeholders	MDBA
January – March 2018	Revise MDBA documentation	MDBA
April 2018	Approve MDBA internal documentation	MDBA
June - September 2018	Note MDBA internal documentation	WLWG/RMOC/SDLAAC/ BOC
January – September 2018	Draft amendments to the MDB Agreement	MDBA/Jurisdictions
October 2018 – April 2019	Endorse amendments to the MDB Agreement	WLWG/RMOC/SDLAAC/ BOC
June 2019	Approve amendments to the MDB Agreement	Ministerial Council

5.2.2 Estimating assumed use rate of directed releases from upper River Murray storages

Background

A significant challenge to protecting environmental water, including return flows, is estimating and measuring environmental water use. It is very difficult to measure environmental water use on an event basis, due to long travel times and available data. It is also difficult to estimate the volume of water that enters and returns to the river from an environmental site. To overcome this, the environmental watering trials have used an estimated assumed use rate to apply to directed releases from the upper River Murray storages. In the long-term, protection by event should be the aspiration as it will provide the best environmental and operational outcomes.

The estimation of the assumed use rate is a potential risk to State water entitlements. To help mitigate this risk the early environmental watering trials adopted a very conservative use rate. A conservative assumed use rate could mean that the assumed use is higher than actual use during any particular watering event. Under these conditions a portion of directed releases from Hume Dam could be re-regulated in Lake Victoria rather than being passed to South Australia. This could disadvantage the environmental portfolio. Alternatively, if the assumed rate is less than what actually occurs, other entitlement holders ~~will~~ may be disadvantaged.

Options

Options to estimate assumed use are described below for Hume Dam~~, then Menindee Lakes and Lake Victoria.~~ The method for estimating assumed use from Hume Dam is the approach adopted in the 2016-17 trial, it is based on the best information available and lessons learnt to date, it will continue to be refined in coming years.

Assumed use rates have not yet been required for directed releases of HEW from Menindee Lakes or Lake Victoria. Similar to releases from Hume Dam, if directed releases from the Menindee Lakes have an overbank component an assumed use rate would need to be determined with the advice of the WLWG. Releases from Lake Victoria are made as a targeted flow rate to the South Australian border and an assumed use rate is not required.

Hume Dam

Methods of assessing use for directed releases from Hume Dam have been trialled since 2010-11 (BOC OOS 21). In the 2010-11 trial, the MDBA sought to estimate incremental environmental flows in real time. This method was abandoned during the event as it proved unfeasible. IRORG supported MDBA abandoning this method. Since then, the trials have adopted an estimate of environmental use[9].

The assumed use has been progressively refined through the trials based on improved data and experience. The 2013-14 and 2014-15 trials adopted an estimate of environmental use between Hume Dam and the South Australian border of 30% of the directed release, with the balance delivered to the South Australian border consistent with State policies. ~~A use rate of 30% effectively guarantees that no unacceptable third party impacts arise due to the~~

[9] Originally referred to as 'loss rates', now known as 'assumed use'.

Commented [A37]: We are concerned about approaches developed that create perverse outcomes – i.e. e-water holders actively deciding not to use them – which could be avoided with adequate consultation. Alternative options require scoping in consultation with e-water holders. The arrangement adopted in 2016-17 is not considered a long term op ion, and is overly conserva ive to underwriting he reliability of state and other access entitlements without fully assessing the potential net impact. Recommend that the work program includes investigation of alternative approaches that do not rely on fixed loss rates and annual negotiations.

~~estimation of environmental use.~~ Further analysis by the MDBA (WLWG meeting 172 and 174) indicates that this rate was ~~overly conservative, with the assumed use being much~~ higher than what actually occurred. As such the 2015-16 trial adopted an assumed use rate of:

- 0% to apply to deliveries which are intended to be delivered within channel. Environmental deliveries in the Edward-Wakool may be subject to additional use in accordance with NSW accounting practices.
- An additional 20%, to apply to the component of the delivery which is intended to flow overbank. Any such deliveries will not incur additional use by NSW in the Edward-Wakool system.
- Any additional use for managed environmental diversions to TLM works as determined by site specific methods previously endorsed by the WLWG.

Further, the trial requires:

- That the assumed use rate is agreed at the start of the water year and considers current and forecast conditions and the range of expected environmental watering events.
- Is applied on a no regrets basis and is not changed or adjusted retrospectively during the water year.
- At the end of the water year, actual estimated use will be calculated and compared against the cumulative total (since 2010-11) of assumed use.
- The assumed use rate for the subsequent year will be informed by the actual estimated use and cumulative use.
- IRORG will review the calculation of both estimates.

This was further refined in the 2016-17 trial to reflect lessons from the 2015-16 trial, which saw the directed release initiate, not follow a natural overbank release, and as such assumed use was higher. ~~Preliminary assessment of actual environmental use during the 2015-16 water year using operational data has indicated that usage was initially very high as overbank flows downstream of Yarrawonga Weir were initiated by the environmental watering, rather than following a prior overbank flow event. These initial losses were high due to the filling of wetlands and the soil profile, within the inundated area.~~

~~The assumed use rate was based on the assumption that any environmental watering followed an actual overbank event. However, in the 2015-16 trial this assumption was disproved with a combination of dry conditions coinciding with the first trial of 'translucent' operations led to directed releases initiating overbank flows through the Barmah-Millewa Forest.~~ Consistent with the adaptive management approach, the 2016-17 trial has an additional mitigation measure to allow, irrespective of the directed release volume, for this reduction in assumed use:

> *an initial assumed use of up to 50 GL, reduced by 1 GL for each 1 GL that the total daily flow downstream of Yarrawonga, in the preceding 30 days, exceeds channel capacity (nominally 10 000 ML/day). This maximum volume of initial assumed use may be reduced, prior to commencement of any directed release resulting in overbank flows downstream of Yarrawonga, subject to agreement by WLWG so that the volume of initial use which is debited will not exceed the volume of environmental water intended to flow overbank.*

Commented [A38]: Whilst this has been indicated to be in response to a review of the previous year, this approach is reactive and falls well short of establishing a longer term process that provides equitable treatment for e-water holders. This arrangement is not supported by the CEWO and does not encourage actions that will support achievement of BP objec ives and BWS outcomes. Delete text and focus on developing a project of work to establish arrangements hat do not rely on annual agreements on prescrip ive loss rates/initial losses. This is not considered consistent with the PPM Guidelines re. fair and equitable.

To date, the method for determining assumed use has been designed for environmental watering events that aim to water the Barmah-Millewa Forest with some additional minor overbank watering downstream ~~flooding. This is currently the main type of event targeted by directed releases from Hume Dam. As shown in 2015-16, the method will evolve and improve over time, as more information For example~~ If alternative types of watering events are proposed and the underlying assumptions no longer hold new assumed use rates may need to be developed. Likewise if new information or tools allow for new approaches to be considered, such as reach or antecedent condition specific rates. The adaptive management approach set out in the Objectives and Outcomes document (see section 4~~2.4~~) acknowledges this and as such allows the method to be reviewed as required.

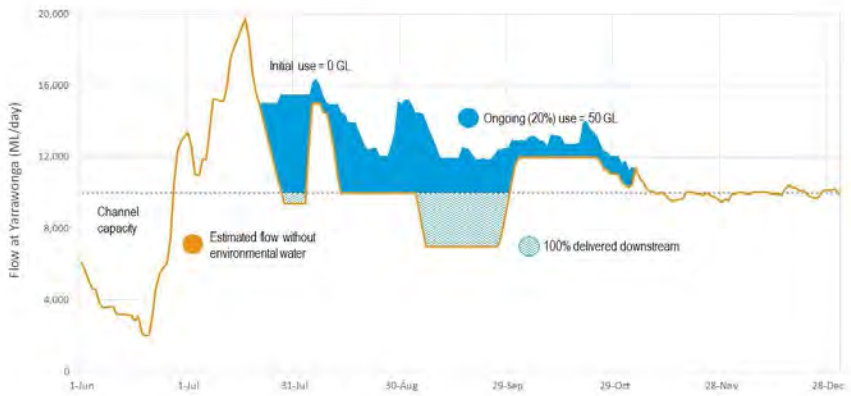
Commented [A39]: Evident by this statement, the arrangement outlined above does not provide an indication of being enduring.

The following examples (Figure 3~~Figures 3~~ toFigure 5~~-5~~) explain how the assumed use is calculated under different conditions. The white spaces above and below the channel capacity dotted line indicating estimated flow without environmental water. In contrast, the three blue colours used indicate environmental water use with:

- instream deliveries to the South Australian border all shown in palest blue below the channel capacity dotted line show the palest blue below
- overbank flows being above channel capacity dotted line. Here assumed use is illustrated using darkest blue for initial use and bright blue for ongoing use.

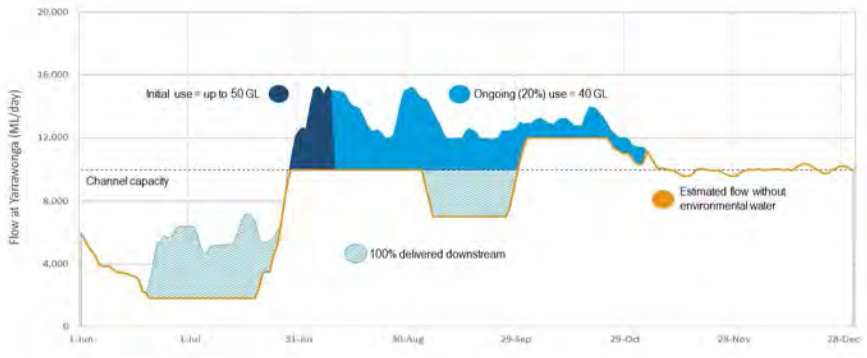
In the first example (Figure 3~~Figure 3~~), the directed release follows a natural overbank event, and there is no initial use. The total release is 330 GL, of this, 80 GL (lighter blue) is delivered to the South Australian border in-stream and 250 GL (brighter blue) is overbank flows. 20% of the overbank flow (50 GL of the 250 GL) is assumed to be used and the remainder (200 GL of the 250 GL) is delivered to South Australian border. A total of 280 GL (all of the 80 GL instream volume and 200 GL (80%) of the overbank flow volume) is delivered to the South Australian border.

Figure 3: Directed release follows a natural overbank event and there is no initial use - 280 GL total delivered downstream from a 330 GL directed release from Hume Dam



In the second example (Figure 4~~Figure 4~~), the directed release does not follow a natural overbank event. The total release is 440 GL, of this 190 GL (lighter blue) is delivered in-stream and 250 GL is overbank flow. Of the overbank flow, the first 50 GL (darkest blue) is considered the initial use, and 40 GL (20% of 200 GL) of the remainder of the flow is also used. The total assumed use is 90 GL, with a total of the assumed with 350 GL delivered to the South Australian border.

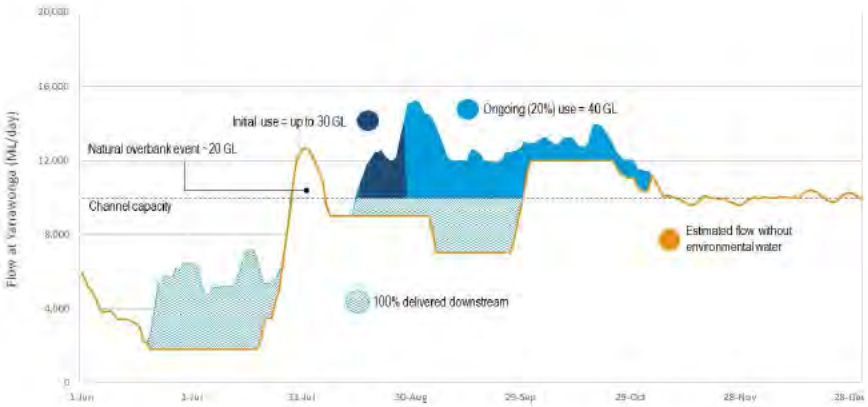
Figure 4: Directed release does not follow a natural overbank event - 350 GL total delivered downstream from a 440 GL directed release from Hume Dam



In the final example (Figure 5~~Figure 5~~), there is a natural overbank event of approximately 20 GL. The total release was 380 GL, 150 GL is delivered in-stream (palest blue) and 230 GL is overbank flow. Of the overbank flow, the first 30 GL (darkest blue) is considered the initial use, and 40 GL (palest blue) (20% of 200 GL) of the remainder of the flow is also used. The total assumed use is 70 GL. A total of 310 GL is delivered to the South Australian border.

Figure 5: Directed release follows a small overbank event, the initial use is 30 GL - 310 GL total is delivered downstream from a 380 GL directed release from Hume Dam

Commented [A40]: This illustrates the overcomplicated nature of the accoun ing arrangement for these events. Further complicated by the different entitlements being used and the different entitlement holders involved. This does not present a long term solu ion. Investigation is required to consider alternative arrangements that provide a more efficient practice.



Proposed change

The preferred approach is to prepare a new SO&O for estimation of assumed use for directed releases from the upper River Murray storages. The assumed use rate will continue to be tested through the Environmental Watering Trials, with the SO&O to be in place by June 2019.

In addition to the proposed SO&O, the MDBA will need to prepare MDBA internal documents to meet the requirements of the PPM Assessment Guidelines. Section 6.2 of the guidelines states that PPM Implementation Plans could demonstrate a loss methodology that is:

- Transparent, that includes:
  - the estimation method
  - strategies to mitigate risks to reliability
  - clarity of roles and respons bilities of estimating the losses
  - how subsequent adjustments will be made, including timeframes
  - how disputes will be resolved
  - a review process.

- Fair and equitable, that is:
  - Not unduly conservative.
  - Considerate of losses already provided for in the resource assessment. That includes losses which are incremental to conveyance losses and not the total loss.
  - Considerate of subsequent reduced conveyance losses, such as the impact of channel wetting or filling irrigation channels.
  - Consistently applied between water holders, including environmental water holders. If a method is inconsistent, the different treatment should be justified.

It is anticipated that the proposed change will support the implementation of IRORG recommendations:

- E2012:02 *that the MDBA and jurisdictions should allocate a priority to developing robust measures that will enable the recognition and protection of environmental return flows across the potential range of flow conditions that are likely to be experienced during environmental delivery events.*
- E2013:03 *that the Authority* (MDBA) *review environmental return flow accounting and trade processes, including reviewing the information needs, roles and responsibilities of all parties involved, and formalising these arrangements in to a guideline which includes agreed timelines for actions by all parties.*

Way forward

Table 9 provides an indicative timeframe, activities and responsibilities for the development of an SO&O for estimating the assumed use from directed releases from the upper River Murray storages.

Commented [A41]: Refer to comments above. This proposed arrangement is not considered consistent wi h the PPM Guidelines and therefore requires further scoping of the issues and alternative before considering the development of an SO&O. Include further investigations to be undertaken.

Table 9: An indicative timeframe, activities and responsibilities for the development of an SO&O for estimating assumed use from directed releases

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2015 – May 2018	Conduct trials	River Operations at MDBA and Environment entitlement holders
July 2016 - June 2017	Draft MDBA internal documents	MDBA
July 2017 - December 2017	Consultation with key stakeholders	MDBA
January 2018 – March 2018	Revise documentation	MDBA
April 2018	Approve MDBA internal documents	MDBA

June – September 2018	Note MDBA internal documents	WLWG/RMOC/SDLAAC/ BOC
June – November 2018	Consolidate findings from the trials	MDBA/Jurisdictions
December 2018	Endorse draft SO&O	WLWG
February 2019	Endorse draft SO&O	RMOC
April 2019	Approve proposed SO&O	BOC

5.2.3 Definition of unregulated flow

Background

The MDB Agreement defines regulated flow 'as the flow resulting from the release of stored water at the discretion of the Authority other than during, or in anticipation of, floods' (clause 2). For the calculation of losses, clause 110(3) defines unregulated flow as a 'flow which has not been planned by the Authority (MDBA)'.

The existing definition of regulated flow needs updating because planned releases from storages are intended (subject to clarification of consequential liability issues) to be made during flooding events for environmental watering actions. For example, the 2010-11 and 2011-12 environmental watering trials included planned releases to create or extend overbank flow events. The current definition reflects the historic practice that releases made in anticipation of flooding were unplanned, as they were not to meet orders but simply to pass flood inflows.

The definition of unregulated flow in clause 110 is broader and less problematic, but the two definitions must be consistent.

In practice, unregulated flow is taken to be a flow that cannot be re-regulated in Lake Victoria (clause 15(2) of the Objectives and Outcomes document). This approach is also used in SO&O 12.7 *Planning for and communication of potential unregulated flow advice*. This practice will not change, but potential interactions will need to be considered in the review of the MDB Agreement definitions.

Options

Options for amending the definition have not been scoped. There are other definitions in use, for example the Australian Water Information Dictionary includes the following definitions:

- regulated flows - A river flow resulting from an upstream release of a licensed allocation.
  NB: the term river can be replaced by channel with the same meaning.
- unregulated flows - A river flow that does not result from a controlled release made to service an allocation, or flows declared to be unregulated by the appropriate authority.
  NB: the term river can be replaced by channel with the same meaning.

However this definition of regulated flow does not take into account tributary flows that many be used to fill orders or to re-regulate into downstream storages (e.g. Lake Victoria).

Amendments will need to give consideration to definitions in State regulatory instruments. A preliminary review did not find any references in NSW or South Australian instruments. Victorian instruments define unregulated flow as '*the flow made available under an Unregulated Flow advice as instructed by MDBA'* (Flora and Fauna Bu k Entitlement). This is unl kely to be affected by any change to the MDB Agreement. Further assessment of the links with State instruments and practices is required.

Proposed change

WLWG recommended the MDBA scope potential changes to the MDB Agreement to amend the definitions for regulated/unregulated flow.

Depending on the nature of the changes, some MDBA internal documents may also need to be updated to incorporate the changes into river operations practice. This will occur in consultation with the WLWG and other stakeholders on the advice of the WLWG.

It is anticipated that the proposed change will support the implementation of IRORG recommendation E2011:04: *that the criteria for determining unregulated flow conditions should be revised. In particular, it is recommended that the criteria should exclude any environmental returns that are intended to be delivered to other downstream environmental assets when determining whether a period of unregulated flows will occur.*

Way forward

Table 10 provides an indicative timeframe, activities and roles required to implement the proposed changes.

Table 10: Indicative timeframe, activities and responsibilities for amending the definitions of regulated/unregulated flows in the Murray-Darling Basin Agreement and other river operations instruments

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June to December 2018	Scope amendments to the MDB Agreement	MDBA/Jurisdictions
April 2019	Endorse amendments to the MDB Agreement	BOC
June 2019	Approve amendments to the MDB Agreement	Ministerial Council

5.2.4 Wholesale water accounting treatment of overbank use

Background

Clause 110 of the MDB Agreement sets out how losses are to be treated in the water accounts prepared by MDBA. Under cl 110, environmental water that flows overbank and does not return to the river is considered a loss, even when this is the intended use of the water. Currently there is a risk that the water could be double accounted – as a diversion (the environmental water order) and as a loss.

MDBA uses the Accounts Model to prepare the water accounts each month. The model calculates loss as a function of flow and extracts State diversions from each State's share of flow. If in-stream use was included in the diversion data this would be accounted for twice,

once as a diversion and secondly as a component of the calculated loss. To avoid any double accounting the States do not report instream use in the diversion data supplied to the MDBA.

Subclause 110(2)(b) requires that losses from unregulated flow in any part of the upper River Murray be accounted in proportion to the flow allocated to New South Wales or Victoria in that part of the river. This is based on the total flow in the river. Due to an error in translating the rules of the Water Accounts Model into the MDB Agreement in 1992 (to adopt continuous accounting), the requirements of the MDB Agreement do not reflect the approach in the model. The approach in the model has been used since 1989.

The Accounts Model is based upon 'high flow losses', which are losses that occur when the flow exceeds bank full capacity. The model distributes these losses in proportion to the States' components of flow in excess of half the flow at which high flow losses commence. The Agreement proposes distributing them in proportion to the total flow. The practice in the model allows for the accounts to better reflect the proportion of New South Wales and Victorian water that contributed to the overbank event. This is particularly important when overbank events are added to, or extended with environmental water.

Options

The MDB Agreement should be amended to reflect how the Accounts Model deals with High Flow Losses and Unregulated Flows. The difference between the model and the requirements of the MDB Agreement is an error, and as such no other options have been investigated.

The practice to ensure no double accounting should be documented as per SO&O 13.1. This documentation will be noted by WLWG. State PPM Implementation Plans will need to ensure State actions to prevent double accounting are also documented.

Proposed change

The MDBA will scope changes to the MDB Agreement for in principle agreement by June 2016, with the changes to be in place by June 2019.

The arrangement between the MDBA and the States to ensure no double accounting will be documented in accordance with SO&O 13.1.

It is anticipated that the proposed change will support the implementation of IRORG recommendations:

- E2011:11a *that the current accounting processes should be modified so that during periods of intentional overbank flow for environmental watering, the volumes of water 'used' by the environment can be excluded from the estimated overbank loss component and dealt with in a manner more akin to a 'diversion' than a loss.*
- E2011.11b *that these modifications to the loss accounting models should be given priority for development and implementation. It is also noted that amendments to the Agreement (cl 110) and the O&O document are also likely to be required to fully authorise these accounting changes.*

Way forward

Table 11 provides an indicative timeframe, activities and roles required to implement the proposed changes.

Table 11: Indicative timeframe, activities and responsibilities for addressing issues with the calculation of overbank losses

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
July – September 2016	Document practice to prevent double accounting	MDBA
October 2016	Note the new documentation in accordance with SO&O 13.1	WLWG
December 2016	Approve documentation	Executive Director, River Management Division, MDBA
January - September 2018	Draft amendments to the MDB Agreement	MDBA/ Jurisdictions
October 2018 - February 2019	Endorse amendments to the MDB Agreement	WLWG/RMOC/SDLAAC
April 2019	Endorse amendments to the MDB Agreement	BOC
June 2019	Approve amendments to the MDB Agreement	Ministerial Council

5.2.5 Simplifying the delivery of environmental water to South Australia

Background

South Australia's entitlement is limited to the volumes set out in clause 88 of the MDB Agreement. To date, environmental flows in addition to South Australia's entitlement have been delivered to South Australia as a trade or during unregulated flows. There are a number of issues with both of these options. The trade mechanism is administratively intensive and the unregulated approach results in the loss of the environmental entitlement's status.

Improving the mechanisms for delivering environmental water to South Australia is not specifically required to implement the PPMs, but is included in the Plan because it has links to a number of the issues identified in the Plan and could support the work of the MDBA and States to protect environmental water. Further, working to a similar timeframe to the PPMs could simplify the approval process if amendments to the MDB Agreement are required, but as the changes are not required to implement the PPMs, there is no obligation for changes to be made by June 2019.

Commented [A42]: There is a question whether the PPM IPs' can be implemented collectively without simplifying delivery arrangements into SA. The interaction between the state PPM IP requires consideration. This does overlap with many of the other measures outlined earlier. The CEWO recommends that this work is undertaken however may be incorporated into other proposed activities.

Options

Options to simplify the delivery of environmental water to South Australia include:

- no change – continue to rely on the existing mechanisms
- develop a new SO&O to support the delivery of above entitlement water to South Australia, without the need for trade
- amend the MDB Agreement, either by a new clause or a sub-clause to cl 88 to distinguish between South Australia's entitlement and additional quantities of water supplied for environmental purposes.

Related to this, the 2015-16 the MDBA and NSW trailed a new approach of delivering environmental water to the South Australian border. The trial, known as the Bu k Entitlement Delivery (BED) trial uses the provisions of clause 98 to allow NSW to request water be released from Hume Dam, for use at sites along the Murray River, with any remaining water delivered to the South Australian border, without being re-regulated in Lake Victoria. The trial applied the assumed use rates approved by BOC for the 2015-16 Environmental Watering Trial (discussed in section 5.2.2~~3.3.2~~) and will be reviewed by IRORG as part of its annual review of the MDBA's environmental water delivery operations. The 2016-17 Environmental Watering Trial has recommended that both NSW and Victoria consider adopting the BED trial in 2016-17.

The 2015/16 BED trial did not fully resolve the issues associated with environmental delivery, nor did it fully meet the needs of environmental entitlement holders, especially with regards to complimentary application in the tributaries. However, the initial results suggest that it is worth investigating how the provisions of cl 98 can be used to improve the delivery and protection of environmental water.

Proposed change

Further investigation is required before a preferred approach could be agreed, noting that no change is just as l kely an outcome at this stage.

Way forward

Table 12~~Table 12~~ provides an indicative timeframe for developing a preferred option for simplifying the delivery of environmental water to South Australia.

Formatted: Font: 11 pt, Not Ita ic, Font color: Auto

Table 12: Indicative timeframe, activities and roles to agree a way forward and implement any agreed changes

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – June 2018	Undertake the BED trial, investigate other options to simplify the delivery of environmental water to SA	MDBA/Jurisdictions
August 2018	Complete analysis of the BED trials and alternative options and recommend a way forward	MDBA/Jurisdictions
April 2019	To be determined - Endorse amendments to the MDB Agreement and/or approve proposed SO&O	BOC
June 2019	To be determined - Approve amendments to the MDB Agreement	Ministerial Council

Glossary

Acronyms used

ADF - additional dilution flows

BOC - Basin Officials Committee

GL - a gigalitre; one billion litres

HEW - Held Environmental Water

IRORG - Independent River Operations Review Group

LSEWE - Large Scale Environmental Watering Event

MDBA - Murray-Darling Basin Authority

NSW - The state of New South Wales

O&O - a (General) Objective(s) and Outcome(s) which can be found in the Objectives and Outcomes document

O&Os - Objective(s) and Outcome(s) which are found in the Objectives and Outcomes document

PPMs - Unimplemented Policy Measures

RMS - River Murray System

SA - the State of South Australia

SCBEWC - Southern Connected Basin Environmental Watering Committee

SDLAAC - Sustainable Diversion Limit Adjustment Assessment Committee

SO&O - Specific Objective(s) and Outcome(s)

SO&Os - Specific Objective(s) and Outcome(s) which are found in the Objectives and Outcomes document

WLWG - Water Liaison Working Group

Citing used:

cl - Clause

sub-cl - Sub-clause

para - Paragraph

paras - Paragraphs

s - Section

ss - Sections

sub-s - Sub-section

sub-ss - Sub-sections

Other terms used

Adaptive management - a structured, iterative process to improve decision-making when knowledge is uncertain. Adaptive management aims to reduce uncertainty over time by incorporating new knowledge and learning into decision-making, such as from system monitoring.

Additional dilution flows – additional flow to South Australia to assist with water quality, set out in SO&O *12.3 Additional Dilution flows to South Australia*.

Bankfull - the maximum amount of discharge that a stream channel can carry without overflowing.

Basin Officials Committee - set up to facilitate cooperation and coordination between the Commonwealth, the Murray–Darling Basin Authority and the Basin states in funding works and managing the Basin's water and other natural resources.

Basin Plan 2012 (Basin Plan) - a plan for the integrated management of the water resources of the Murray–Darling Basin, to be adopted by the Commonwealth Minister for Water under s. 44 of the Water Act.

Basin states - for the purposes of the Basin Plan, the Basin states are as defined in the Water Act 2007 (Cwlth) as New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory. For the purposes of this document the States are New South Wales, Victoria and Queensland.

Channel - of a watercourse, a natural or artificial streamflow with definite bed and banks to confine and conduct water. Of a landform, the bed of a watercourse that commonly is barren of vegetation and is formed of modern alluvium (deposited during relatively recent geologic time).

Codification – the process of documenting and approving high level decisions related to river operations, for example in the Murray-Darling Basin Agreement or the Objectives and Outcomes document.

Commonwealth Environmental Water Holder - The Water Act 2007 (Cwlth) establishes the Commonwealth Environmental Water Holder to manage water entitlements that the Commonwealth acquires. Under that Act, this official has the responsibility for using these entitlements to protect and restore the environmental assets of the Murray–Darling Basin, or assets outside of the Basin where water is held by the Australian Government for that area Entitlement (or water entitlement) – at the retail level, water users hold legal entitlement, or licence, to a share of the available water. The entitlement usually specifies size (or volume) of the share; the source of the water (e.g. the river or catchment; and the category (which can be a combination of priority and purpose).

Consumptive use - use of water for environmental water, irrigation, industry, urban and stock and domestic use, or other private consumptive purpose.

Constraints - a constraint is anything that affects the delivery of environmental water. It can include physical aspects such as low lying bridges, or river channel capacity, but can also include operational aspects such as river rules or operating practices that impact on when and how much water can be delivered. We can improve how effectively we manage and deliver environmental water by looking at how we can change some of these physical and operational constraints.

Cwlth – Commonwealth (legislation).

Environment entitlement – a right to water granted by a State as an allocation. The entitlement is the water to which the holder of an access licence is entitled from time to time under licence, as recorded in the water allocation account for the licence. For example, under New South Wales' *Water Management Act 2000*, water allocations in that state are called 'available water determinations'. Also see entitlement.

Environment entitlement holder –manages the water rights that a State or Commonwealth acquires. For example, under the Water Act, the Commonwealth Environmental Water Holder is an official who has the responsibility for using water rights that relate to water in the Murray–Darling Basin in accordance with the environmental watering plan.

Environmental return flows – environmental water that leaves and then returns to the River Murray System.

Environmental flow - any river flow pattern provided with the intention of maintaining or improving river health.

Environmental water - water used to achieve environmental outcomes, including benefits to ecosystem functions, biodiversity, water quality and water resource health.

Environmental watering trials – year-long plans that test the implementation of arrangements for delivery of water that is held by environment entitlement holders.

Entitlement (or water entitlement) - the volume of water authorised to be taken and used by an irrigator or water authority.
Also see Retail level and Wholesale level

Held Environmental Water (HEW) - water that is available under a water access right, a water delivery right, or an irrigation right for the purpose of achieving environmental outcomes.

In-stream flow – The flow of water that is conveyed through natural or artificial open water conveyance carriers (as opposed to piped conveyance) such as a river or stream, expressed in megalitres per day (ML/d) or in another appropriate unit; or flow up to bankfull.

Flow - the movement of water; the rate of water discharged from a source, given in volume with respect to time.

Flow event - a single event of flow in a river; sometimes required to achieve one or more environmental targets. A series of flow events comprises a flow history.

Instrument:

- a formal legal document e.g. the Murray-Darling Basin Agreement is an agreement between the parties to it
- other governance which river operations activities are affected e.g. the Objectives and Outcomes document
- something else by which river operations activities are affected e.g. determinations by the Ministerial Council or the Basin Officials Committee made under the Murray-Darling Basin Agreement.

Jurisdictions – the States of New South Wales, Victoria and South Australia plus the Commonwealth of Australia that are signatories to the Murray-Darling Basin Agreement.

Losses - surface water lost from a river system that is not available to other users e.g. evaporation and seepage. Losses are usually deducted from conveyance water, not any Held Environmental Water that is ordered by a State as a headwater release

ML - a megalitre; one million litres.

Murray-Darling Basin Agreement (MDB Agreement) - an agreement between the Australian and Basin state governments to 'promote and coordinate effective planning and management for the equitable, efficient and sustainable use of the water and other natural resources of the Murray–Darling Basin, including by implementing arrangements agreed between the Contracting Governments to give effect to the Basin Plan, the Water Act and State water entitlements.' The Agreement was ratified by identical legislation that has been enacted by the Parliaments of all the signatory governments.

Ministerial Council - established under Part III if the Murray-Darling Basin Agreement.

Overbank flows - are more than bankfull.

PPM Implementation Plans - the States of New South Wales (NSW), Victoria and South Australia will prepare separate State PPM Implementation Plans that address the changes required to implement the PPMs in State regulatory and operations frameworks. Additionally, this document is an Implementation Plan that addresses the collective actions required to implement PPMs in the RMS.

Regulated - a water system in which water is stored or flow levels are controlled through the use of structures such as dams and weirs.

Retail - level –the States of New South Wales, Victoria and South Australia each hold and distribute its own State's share of the River Murray System waters..

River Murray System (RMS) - the River Murray System extends from Hume Dam, at Albury New South Wales, downstream to the Coorong, Lower Lakes and Murray Mouth in South Australia. It includes connected anabranches, creeks and major tributaries such as the Murrumbidgee, Edward–Wakool, Kiewa, Ovens, Gou burn, Broken, Campaspe, Loddon, Avoca and the lower Darling River (south of Menindee Lakes). The system is highly regulated. The exact meaning is given in Subsection 86A(3) of the Water Act).

State entitlements - see Wholesale level.

Also see State water entitlement, as defined in cl 2 of the MDB Agreement as 'the entitlement of a State to water, determined in accordance with Part XII of this Agreement'.
States - the States of New South Wales, Victoria and South Australia.

State and Commonwealth water agencies - these are currently WaterNSW (NSW), Department of Primary Industries - Water (NSW), Department of Environment, Land, Water and Planning (Victoria), SA Water (Department of Environment, Water and Natural Resources, SA) and the Department of Agriculture and Water Resources (Australian Government).

Surface water - Surface water includes any water in a watercourse, lake or wetland, and any water flowing over or lying on the land after precipitation or after rising to the surface naturally from underground.

Sustainable Diversion Limit Adjustment Mechanism - Water Ministers from Basin jurisdictions had asked for the Plan to be improved by incorporating an adjustment mechanism for surface water SDLs. Activities to be considered under the adjustment mechanism will either allow equivalent environmental outcomes to be achieved with less water or increase the volume of water available for environmental use with neutral or improve socio-economic impact. The two different types of projects that will be considered by the adjustment mechanism for surface water SDLs are called 'supply' and 'efficiency' measures:

- supply measures are works, river operations or rule changes that enable the use of less water but still achieve the Plan's environmental outcomes.. An example of a supply project is the installation of infrastructure such as regulators on a floodplain to enable inundation events using smaller quantities of water than would typically be needed in a general 'overbank' flooding event. Other supply projects include re-configuring lakes or storage systems to reduce evaporation, or decreasing water losses while delivering environmental water by reducing seepage or evaporation
- efficiency measures recover and provide more water for the environment without negative social and economic impacts. They include improving the efficiency of on-farm irrigation and transferring the water savings for environmental use.

Unimplemented Policy Measures (PPMs) - The PPMs are described in the *Basin Plan 2012* as Unimplemented Policy Measures (s7.15). These are anticipated measures consisting of a policy to credit environmental return flows for downstream environmental use; or allow the call of held environmental water (HEW) from storage during un-regulated flow events. The PPMs outlined in the Basin Plan seek outcomes that:

- provide for HEW releases from storages on top of other in-stream flows, including unregulated flows; and
- allow environmental water to flow throughout the length of the river, including being re-used at multiple sites along the river, and to flow between rivers; and be protected from extraction, re-regulation or substitution for non-environmental purposes.

Upper River Murray storage - Upper River Murray Storages is defined in clause 2 of the Murray-Darling Basin Agreement and means Lake Victoria, the Menindee Lakes Storage, the storages formed by Dartmouth Dam, Hume Dam.

Water order (from an entitlement holder to a State) –operational arrangements to allow entitlement holders to request water, can be made by an entitlement holder to a State, or a State to the MDBA.

Wholesale level – the Murray-Darling Basin Authority's water distribution arrangements which support the water sharing arrangements in the Murray-Darling Basin Agreement. See Figure 1.

Year – water year (1 June to 31 May each year).

Water Act 2007 (Cwlth) - legislation that includes the Murray-Darling Basin Agreement (Schedule 1) and provides for the management of the water resources of the Murray-Darling Basin. It also provides for other matters of national interest in relation to water and water information etc.

Water sharing arrangements - interstate water sharing arrangements describes the consensus between the States to share water under the terms of the under the Murray-Darling Basin Agreement.

References

Basin Plan 2012.

PPM Assessment Guidelines (D15/29274).

Independent River Operations Review Group, Review of the MDBA's 2014-15 Environmental Watering Activities – Report of the Independent River Operations Review Group (D16/6875)

Objectives and Outcomes for River Operations in the River Murray System.

Appendix A

Roles and responsibilities with regard to implementing the PPMs in the RMS

Murray-Darling Basin Authority

Coordinate the PPM Implementation Plan for the RMS on behalf of the States through SDLAAC;

Develop the river operations and wholesale aspects of the implementation of the PPMs in the RMS on behalf of the States; and

Assess the PPM Implementation Plans.

States

Contr bute to the river operations and wholesale aspects of the PPM Implementation Plan for the RMS.

Bring forward the individual state entitlement aspects of the PPM Implementation Plan for the RMS.

Inter Jurisdictional forums.

Ministerial Council

Agree any changes required to the Murray Darling Basin - Agreement. (9d, Schedule 1, Murray-Darling Basin Agreement).

Basin Officials Committee (BOC)

Approve those aspects of each Large Scale Environmental Watering Event (LSEWE) which deviate from past river practise, or which could impact State entitlements.

Agree any changes to the Objectives & Outcomes for the River Murray System.

Recommend amendments to the MDB Agreement to Ministerial Council.

River Murray Operations Committee (RMOC)

Recommend any changes to the MDB Agreement and Objectives and Outcomes to BOC.

Sustainable Diversion Limit Adjustment Advisory Committee (SDLAAC)

BOC has directed SDLAAC to lead the policy development for implementing the PPM and supply and constraint measures in the RMS.

SDLAAC is required to agree to the PPM Implementation Plan for the RMS.

Agree or recommend to either BOC or RMOC the policy aspects of PPM Implementation.

Recommend to BOC or RMOC the annual LSEWE.

Water Liaison Watering Group (WLWG)

Advise BOC and the MDBA on the PPM Implementation Plan for the RMS.

Advise BOC and the MDBA on the technical aspects of each LSEWE.

Southern Connected Basin Environmental Watering Committee (SCBEWC)

Coordinate between environmental water holders on upcoming environmental watering events.

Advise State river operators and MDBA on desired operating actions for environmental watering events, including for LSEWE.

Agree any relevant mitigation strategies which affect environmental water holders.

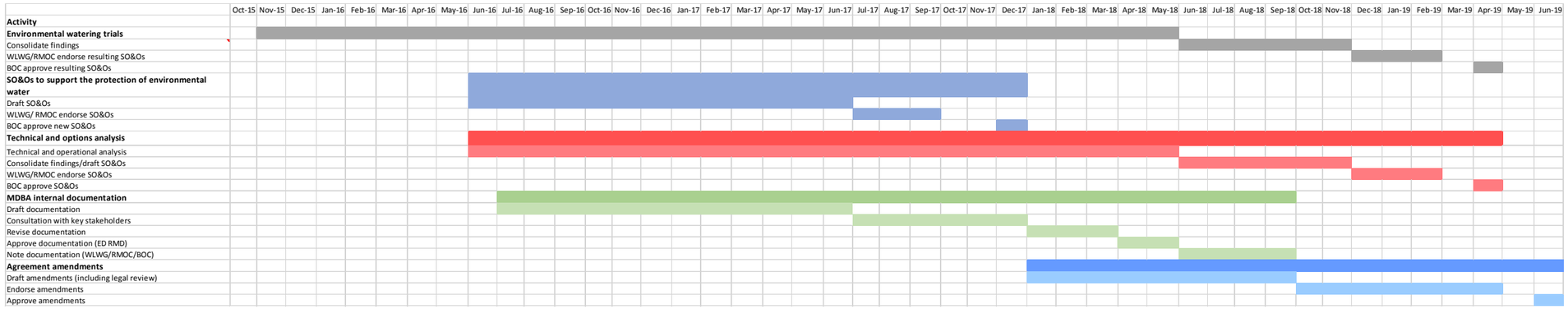
Independent River Operations Group (IRORG)

Reviews and makes recommendations on the LSEWEs each year.

Provides independent advice on how the assessment of the PPM Implementation Plans by the MDBA meet the PPM Assessment Guidelines.

Appendix B

Summary of the activities and timeframes to implement the PPMs



FOI 180308
Document 5

s22

From: s22
Sent: Thursday, 7 July 2016 1:41 PM
To: s22
Cc: Taylor, Mark
Subject: NSW PPM Implementation Plan [SEC=UNCLASSIFIED]
Attachments: 20160630_Final NSW PPM Implementation Plan.pdf; 20160630_PPMIP_Letter to Philip Glyde.pdf; PPM Implementation Plan for the River Murray System - CEWO comments [SEC=UNCLASSIFIED]

Hi s22

Thank you for the opportunity to review the NSW PPM Implementation Plan.

Below are overarching comments and concerns we have about the Plan – many of which are also similar to those raised about the River Murray System PPM Implementation Plan (see attached email).

The only purpose of the PPM Implementation Plans are to implement the Basin Plan, particularly in facilitating environmental watering that seeks to meet the objectives of the Basin Plan. From the Commonwealth Environmental Water Office's perspective this PPM Implementation Plan does not fulfil this purpose. Furthermore, the Plan represents an undermining of the CEWH's statutory role, the CEWH's ability to meet the objectives of the Basin Plan and would significantly compromise the Commonwealth's investment in the portfolio of water.

This Plan has been written to provide reassurance to consumptive water users that their rights are not affected. However, it does not provide a suitable of measures that would give effect to the Basin Plan objectives (particularly Chapter 8), the Basin-wide environmental Watering Strategy (BWS) outcomes (in some cases it is inconsistent with the BWS) and allow environmental water holders to meet their statutory requirements.

Risks

The measures proposed increases the risk on environmental water holders and the environmental license holder, with either no appropriate mitigation strategies or strategies that are unacceptable placing all obligation and responsibility on environmental water managers. For example:

- A loss of discretion by the CEWH in determining the use of Commonwealth environmental water (particularly timing and flow rates) and how objectives will be achieved. If the CEWH cannot make appropriate decisions providing an appropriate level of control on the use of Commonwealth water, the CEWH cannot meet its statutory obligations - Water Act, Basin Plan and PGPA Act – which is unacceptable and would mean the CEWH could not fulfil their statutory role. As such, the CEWH would be unlikely to support certain watering events and therefore this could create a perverse outcome in terms of Basin Plan implementation.
- Application of losses - the extent of the losses to be applied is not detailed in the plan. When read collectively with the River Murray System PPM IP there would be two losses applied - one at the bulk scale under the BOC agreed arrangements and then a second set of losses applied at the retail scale under the NSW plan. With the additional debit (tax) this becomes a highly unattractive proposition (i.e. Commonwealth water would not be used in such events as its doesn't represent value for money re. PGPA Act).
- There is an increase risk to the efficiency of environmental water use – the Plan proposes mitigation for the impact on water consumption being the increased volume of water ordered, application of losses for in-channel flows and the additional debits for the luxury of using new measures. There is also no clear indication the CEWH would know what these losses (or additional taxes) are in advance.
- There is also an increased liability risk for license holders and environmental water managers/holders relating to the physical impact on private land/infrastructure associated with e-water delivery – license holders have the responsibility to determine the volume required to achieve the desired outcome, place the volume order and the operators will deliver the volume to their best endeavour. Environmental water holders/license holders have limited control over the timing of e-water arrival and the particular volume cannot be guaranteed.

In the CEWO's assessment, this is not consistent with the PPM Guidelines sect. *4 Risks are identified and mitigated.*

Impacts on third party water supply reliability
The extent to which measures have been developed or will be implemented is dependent on determination of potential impacts on water supply and availability. There does not appear to be a transparent, robust and repeatable assessment methodology developed/proposed for determining the *net* impacts from environmental water delivery. In the absence of such a method being used, the proposed measures do not represent a value proposition and would result in an inefficient use of the e-water portfolio; achieving an outcome at a significantly increased water costs. This does not present a fair and equitable treatment of environmental water holders, or provide adequate transparency and in our assessment is therefore not consistent with the PPM Guidelines.

Operability of arrangements
The arrangements proposed for implementing the measures are not acceptable to the CEWO, presents an increased risk to the management of Commonwealth resources and does not allow the CEWH to meet their statutory obligations:

- *Basin Plan*
    - The Plan appears to require environmental water be managed in accordance with the AEP and the respective long term EWP which does not necessarily accord with the specific obligations of the CEWH i.e. e-water to be managed consistent with the BWS and objectives of the BP. The state documents do not have the same obligations and therefore cannot be determined compliant with Commonwealth requirements.
    - The PPM IP notes that NSW *may* consider meeting orders in the Murray using water from Murrumbidgee R. environmental water flows (p19) to be supplied from upstream Murray storages. In our assessment this is not consistent with the PPM Guidelines – ensuring flows throughout the length of and between rivers or statutory obligations.
- *PGPA Act*
    - The Plan does not support the accurate reporting on the use of the Commonwealth water relative to the purpose. E.g. water entering the Murray R. from the Murrumbidgee R. is not able to be reported on its subsequent use rather it continues through the system "until it is depleted due to use or losses". Meaning that if we can't accurately report on the use of the portfolio of water, it would be very difficult to meet the requirements of the PGPA Act.
    - The losses/additional debits are determined by the operators, open to negotiation with CSC. Decisions on the management of environmental water is at the discretion of the NSW authorities and does not remain discretionary to the decisions of the CEWH. If the CEWH can't make decisions on how the water is used, it could be deemed that they are being negligent in performing their role as a Commonwealth public servant. We are also concerned about CSCs (i.e. other entitlement holders) having a role in decisions on environmental watering.
    - Costs - arrangements are likely to result in increased on-going delivery costs (both water and monetary), which may result in certain watering actions being avoided (see comments above).

Should the Plan be accredited, the CEWH would need to review how it operates under changes that are proposed in PPM Implementation Plan to ensure they can fulfil their statutory duties which could cause problems elsewhere. For example, in the Murray R. we would be likely to transfer our NSW allocation onto the Vic accounts for delivery to SA - the upshot for Victoria is that this behaviour is likely to result in internal spills within Hume Dam and they would be the beneficiary to improvements in water resources - NSW's water reliability would be impacted by their own arrangements.

The implications of this Plan on the Commonwealth's water portfolio (its utility, its value and other risks to it), the CEWH and the flow on effect to genuine Basin Plan implementation are not insignificant. While we accept the CEWH has no role is making the decision on PPM Implementation Plans, we would be concerned about any approval/accreditation of such arrangements which has the potential to significantly impact the value of a Commonwealth asset.

Happy to discuss.

s22

s22
Director
Environmental Water Policy
Commonwealth Environmental Water Office
Ph: (02) 6274 s22 | Fax: (02) 6275 9376 | e: s22 @environment.gov.au
GPO Box 787 | CANBERRA ACT 2601 | AUSTRALIA
www.environment.gov.au/ewater

The Department acknowledges the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present.

Department of Primary Industries
Water

NSW Prerequisite Policy Measures Implementation Plan

Published by the NSW Department of Primary Industries Water

NSW Prerequisite Policy Measures Implementation Plan

First published June 2016

Acknowledgments

DPI Water would like to thank the Office of Environment and Heritage, Department of Primary Industries (Fisheries NSW) and WaterNSW who have provided input into the NSW Prerequisite Policy Measures Implementation Plan.

Acronyms

AEW Plans	Adaptive Environmental Water Plans
ALDP	Access Licence Dealing Principles
BOC	Basin Officials Committee
CEWO	Commonwealth Environmental Water Office
MDBA	Murray-Darling Basin Authority
PPMs	Prerequisite Policy Measures
RMO	River Murray Operations
SDL	Sustainable Diversion Limit
WMA	*Water Management Act 2000*
WRP	water resource plan
WSP	water sharing plan

Contents

Executive summary

Prerequisite Policy Measures (**PPMs**) are a mechanism to maximise the efficient use and outcomes of licensed environmental water, whilst maintaining the same reliability of water supply to consumptive users as at the establishment of the Basin Plan.

PPMs under the Basin Plan will provide the ability to use licensed environmental water at multiple sites (**environmental flow reuse**) and the opportunity to order licensed environmental water from a headwater storage during a natural flow event (**piggybacking**).

Under the Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin 2013 (the Agreement), NSW has agreed to deliver a Prerequisite Policy Measures Implementation Plan by June 2016 to the Murray-Darling Basin Authority (MDBA). The implementation of the Plan must occur by June 2019.

Additionally, the Basin Plan requires that the implementation of PPMs is not to have "*detrimental impacts on reliability of supply of water to the holders of water access rights that are not offset or negated*" (S 7.15 (1) (d) Basin Plan).

Under the Agreement, the NSW Government has continued to develop its approach to addressing PPMs in NSW in line with clause 5.4 of the Agreement, which requires third party impacts to be addressed in the implementation of measures. Additionally, the PPM Implementation Plan also has reference to clauses 5.2 of the Agreement and section 7.15 (1) (d) of the Basin Plan (see Appendix 1).

Due to the involvement of three Basin States, the MDBA is coordinating the delivery of the Prerequisite Policy Measures Implementation Plan for the Murray River.

This document sets the NSW Government's principles for developing and implementing the PPMs, as required under the Agreement, specifically for environmental flow reuse and piggybacking in NSW.

These principles include enhancing the flexibility in the delivery of environmental water through the system and devising tools that are as simple and cost effective as possible, in order to avoid, negate, offset or negotiate in regard to any proposed changes that may lead to unacceptable third party water supply reliability impacts, as a result of implementation of the measures.

Environmental flow reuse

NSW will prioritise implementation of environmental flow reuse in areas where 'supply measure' projects are proposed as part of the sustainable diversion limit (**SDL**) adjustment process. 'Supply measures' are projects that will achieve the environmental outcomes required under the Basin Plan, through environmental works and measures or rules changes, requiring the recovery of less water.

Prioritising implementation of PPMs to such areas will ensure that the benefits of those supply measure projects will translate into an adjustment of the SDL. In areas where supply measures are not proposed, environmental flow reuse will be implemented only after further agreements have been reached between NSW and the Commonwealth, and where it can be demonstrated that there will not be third party impacts to reliability.

In regulated systems, five options for implementing environmental flow reuse have been considered. These were:

- Multi-site watering trials
- Upfront debiting
- Downstream debiting
- Combination debiting

- Return flow credits

NSW has determined that 'combination debiting' is the most suitable option for implementing environmental flow reuse as it provides a balance between guaranteeing deliveries to the environment and ensuring that other water users do not face additional risk.

Piggybacking

Piggybacking is relevant to regulated systems only as it involves the release of water from headwater storages on top of uncontrolled flows events in order to maximise environmental outcomes.

However, piggybacking has the potential to impact the reliability of water supply for all water users. This impact will vary in size and may be either positive or negative depending on the headwater storage used, the patterns of ordering and the climatic conditions under which the releases are made.

NSW has identified possible measures to address the potential negative impacts on other licence holders. However, because impacts will vary from system to system, the final mitigation measures for a particular valley will be developed between June 2016 and 30 June 2019 as part of water resource plan (**WRP**) development, in order to avoid unacceptable third party impacts.

Once the mitigating measures are in place, the environmental licence holder will be able to order water from a headwater storage during an unregulated flow event. However, such management will require some level of negotiation between the river operator and environmental water managers on an event by event basis; further detail as to the operating rules and decision making framework will be developed between 2016 and 2019.

Piggybacking will be implemented in valleys where 'supply measures' are proposed (i.e. the Murrumbidgee and the Murray) first and then in other valleys only where further agreements have been reached between the NSW and Commonwealth Governments.

Next steps

Under the Basin Plan, PPMs are required to be fully implemented by June 2019. The summary of the process and indicative timelines for further development and implementation of environmental flow reuse and piggybacking is set out below. Further detail can be found in Section 7.

Table 1 Summary of indicative timeline for PPMs implementation in the Murray

Date	Task	Responsibility
April 2017 to June 2018	Develop Murray Water Sharing Plan (**WSP**) rules to implement PPMs in the Murray as part of the Murray-Lower Darling WRP development. This process will include the development of a Murray PPM Implementation Procedure manual.	DPI Water
April 2017 to December 2018	Consultation on Murray WRP including WSP PPM rules	DPI Water
1 July 2019	Commencement of Murray WRP	DPI Water

Table 2 Summary of indicative timeline for PPMs implementation in the Murrumbidgee to align with Nimmie-Caira commitments

Date	Task	Responsibility
June 2017 to November 2017	Develop Murrumbidgee WSP rules to implement PPMs in the Murrumbidgee. This process will include the development of a Murrumbidgee PPM Implementation Procedure manual.	DPI Water
February 2018	Consultation on the Murrumbidgee WSP amendment order to incorporate PPM rules.	MDBA and DPI Water
1 July 2018	Commencement of Murrumbidgee WSP amendment order.	DPI Water

1. Introduction

This document sets out the NSW Prerequisite Policy Measures Implementation Plan (**PPMs Implementation Plan**). The PPMs Implementation Plan is a plan to improve the efficiency and effectiveness of environmental water delivery, whilst maintaining the same reliability of water supply to water entitlement holders, as at the establishment of the Basin Plan. This is in accordance with the requirements of the Murray-Darling Basin Plan (**the Basin Plan**) and the Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin 2013 (**the Agreement**).

This PPMs Implementation Plan outlines the principles to guide development and implementation of the PPMs in NSW, in line with the above commitments, and the pathway to implement those policies. PPMs must be implemented by 30 June 2019 and the MDBA will use this PPMs Implementation Plan to assess whether they will be in place by that time. In the Basin Plan, PPMs are referred to as unimplemented or anticipated policy measures.

2. About Prerequisite Policy Measures

2.1 What are the PPMs?

The Basin Plan sets SDLs for the Murray-Darling Basin and also provides for an SDL adjustment mechanism under Chapter 7. The SDL adjustment mechanism includes two PPMs, which need to be implemented by 30 June 2019. These PPMs are:

- the ability to credit environmental flows that are returned to the water source so that water can be used for downstream environmental use (**“environmental flow reuse”**),
- the ability to allow the call of held environmental water from storage during unregulated flow events (**“piggybacking”**).

While the PPMs will be implemented as two separate measures, it is important to note that there will be times when they operate together. For example, when the environmental licence holder makes an order during an unregulated flow event from a nominated water storage (piggybacking), they will likely request the use of “environment flow reuse” to move that order through different environmental sites and between river systems.

PPMs will only apply to the use of licensed environmental water and not planned environmental water, which is established by rules under the relevant NSW water sharing plans.

2.2 Why are the PPMs being pursued?

PPMs are relevant to the implementation of the Basin Plan and, and additionally, to the operation of the SDL adjustment mechanism under the Basin Plan. The MDBA will use this PPM Implementation Plan to assess whether PPMs will be in place by 30 June 2019.

In setting the SDLs, the MDBA assumed that PPMs would be implemented, therefore maximising the environmental outcomes of the Commonwealth’s licensed environmental water. If PPMs are not implemented, proportionally more water will be required to meet the environmental outcomes of the Basin Plan. Additionally, if the MDBA assesses that PPMs will not be implemented by this time under this Plan, then the benefit of any SDL adjustment resulting from supply measures would be reduced or offset. Appendix 2 describes how this Plan meets the assessment guidelines provided by the MDBA.

From a NSW perspective it is important to implement PPMs in order to minimise the potential for the Commonwealth having to recover additional water for the environment to meet the environmental objectives of the Basin Plan.

NSW and Victoria have submitted a number of supply measure projects in the Murray and Murrumbidgee systems.

More information on proposed supply measures is located at http://www.water.nsw.gov.au/water-management/water-recovery/environmental-works.

3. Principles for implementing the PPMs in NSW

NSW has developed a set of key principles, which will guide how the PPM Implementation Plan will address the requirements of the Basin Plan. Appendix 1 identifies the framework for NSW operations in the Murray-Darling Basin. Any changes to this framework will be made in accordance with the principles identified in this section.

1. NSW will implement PPMs to the extent that third party water supply reliability impacts can be negated or offset.

Section 7.15 (1) (d) of the Basin Plan requires that in implementing PPMs there be no:

> "*detrimental impacts on reliability of supply of water to the holders of water access rights that are not offset or negated*".

Potential impacts on the reliability of supply that NSW seeks to specifically address through this PPMs Implementation Plan include:

a. an increase in the risk of delivery loss accounts being in deficit;
b. the use of averages to assume water use in extreme events or critical dry years;
c. system inefficiencies created through the delivery of water to environmental sites where the inflow and outflow to those environmental sites cannot be accurately measured; and
d. the potential decrease in the reliability of a water storage if water users can nominate to order water from a particular storage when a more efficient source is available, such as tributary flows.

Delivering environmental water as required by the PPMs is a fundamentally new way of managing and operating the State's river systems. Therefore this PPM Implementation Plan takes a conservative approach to ensure that the potential for incurring unacceptable third party impacts is reduced. As more experience and information is accumulated through modelling and actual activities, the mitigating measures proposed allow for adaptive management to enable better outcomes for the environment.

Environmental watering can also have physical impacts on the community due to increased flows. NSW will address these issues through separate processes such as the constraints management strategy.

2. NSW will develop PPMs that enhance the flexibility around the delivery of environmental water through the system, so that environmental outcomes can be achieved more efficiently.

NSW's focus is on improving flexibility in the delivery of environmental water to achieve the outcomes sought under the Basin Plan, whilst also avoiding unacceptable third party impacts, as required under section 7.15 of the Basin Plan.

Currently under the NSW legislative framework, any water that is returned to the river system after it has been delivered for use becomes part of the State's water rights. This PPM Implementation Plan seeks to address this issue through an environmental flow reuse option that enables the return of water to be recognised after the initial order point and used again downstream. Implementation of this option will require amendment of the *Water Management Act 2000* (**WMA**) regulations, to ensure the reuse of environmental water does not result in an offence being committed.

This PPM Implementation Plan also provides recognition for the movement of water between systems, for example from the Murrumbidgee to the Murray. It does not address the recognition of water between dams in series such as those within the Namoi or the Lachlan river systems.

There is little scope for the movement of licensed environmental water between dams in series and as such, implementation of PPMs in this situation would not be cost effective.

3. NSW will develop operational tools that are as simple as possible and practical. This will ensure that they are implementable and cost effective.

NSW will avoid options that are overly complex and will favour options that are more consistent with the existing legal framework. Options that require maximum effort or that will result in significant costs that are not in line with the funding provided by the Commonwealth Government to implement the Basin Plan will be avoided.

NSW recognises that implementing PPMs are likely to have on-going costs that will not to be met by current funding. NSW will seek to transfer the service cost of PPMs to the licences making use of these measures, rather than distributing these costs between all water users, as part of the next water management charges determination process, in line with the National Water Initiative principle of a “user pays” approach to pricing (clause 64 IV. Intergovernmental Agreement on a National Water Initiative).

4. NSW will develop operational tools to meet PPMs that could potentially be applied to all water users in the long term.

NSW’s approach is to develop tools that in the long term can be applied to all water users. Opportunities created for licensed environmental water will only be open to those licences at this time, but could be expanded to others through the development of the WRPs, or in the long term. The principles outlined in this document would apply to other water users wishing to benefit from these new tools. In the short term, some tools may benefit from being trialled with environmental licence holders before being rolled out to all water users.

5. Reliability and access characteristics of licensed entitlements held for environmental water purposes are the same as other licenced entitlements.

NSW will favour a rules based approach to implementing PPMs, which means the tools to improve the delivery of environmental water will be rules in WSPs and may be extended to other water users and entitlement holders. Where water users seek to take up alternative water delivery options; this will not impact current water delivery arrangements.

Additionally, this will ensure the tradability of the Commonwealth Government’s licences is not affected.

6. Adaptive management is required.

NSW recognises that policies to implement the PPMs need to be secure and enduring. However, there also needs to be flexibility to enable management approaches to change in response to new or improved information. Examples of where information maybe improved are the accurate measurement of flows into and out of environmental sites and environmental water use behaviour.

4. PPM Implementation

4.1 When will the PPMs be implemented

Following the submission of this PPM Implementation Plan, the NSW Government, through the development of WRPs, will work to implement the PPMs in line with the principles outlined above.

Section 7 of this Plan provides an indicative timeline of tasks that need to be completed to implement PPMs prior to June 2019.

NSW recognises that agreed outcomes for Nimmie-Caira need to be in place by December 2018; this will be resolved as part of development of the Nimmie-Caira project and PPM Implementation.

4.2 Where will the PPMs be implemented?

NSW is proposing to implement PPMs in the Murrumbidgee River and the Murray River, as PPMs are only required to be implemented in water sources where supply measures are proposed. Beyond this, both environmental flow reuse and piggybacking will be implemented only after further agreements have been reached between NSW and the Commonwealth Government. Such implementation will be consistent with the principles identified in Section 3 of this Plan.

4.3 Environmental flow reuse

Environmental flow reuse will be implemented in river systems by 30 June 2019 where a supply measure has been identified by June 2016. Supply measures have been proposed for the Murrumbidgee and Murray regulated rivers. Beyond this, environmental flow reuse will be implemented in other valleys only if required as part of a future agreement between NSW and the Commonwealth, and in a way that is consistent with the principles identified in Section 3.

There are no supply measures proposed for the unregulated Barwon-Darling system; however NSW acknowledges that if the shepherding methodology is implemented, as developed between the Commonwealth and NSW in 2012, this could be an important mechanism for transferring water recovered in the northern part of the Murray-Darling Basin to the Murray River.

NSW considers a shepherding methodology to be similar in outcome as an 'environmental flow reuse' mechanism, as it recognises the delivery of water between WSPs and allows natural continuity of flow throughout the length of the river system. As such, if appropriate funding is provided and if other outcomes that are beneficial to NSW water users can be negotiated, then NSW will consider implementing a shepherding methodology in the Barwon-Darling, in line with the principles outlined in section 3 (refer to Section 5.4).

Implementation of PPMs in other unregulated systems beyond the Barwon-Darling is outside of the scope of the PPM Implementation Plan.

4.4 Piggybacking

The implementation of piggybacking is only relevant to regulated systems as it involves the release of water from a nominated storage.

Facilitating piggybacking, while addressing third party impacts, will be a complex undertaking (see Section 6). As such, NSW will implement it across the Murrumbidgee and Murray first. Beyond these two regulated systems, piggybacking will be implemented only if required as part of a future agreement between NSW and the Commonwealth, and in a way that is consistent with principles in Section 3 of this Plan.

4.5 Murray PPM Implementation Plan

The Basin Officials Committee (**BOC**) has requested that the MDBA coordinate the PPM Implementation Plan for the Murray River. This is due to the fact that the Murray River is operated through three different states; NSW, Victoria and South Australia.

The Murray River is also operated in a different way to other systems in NSW to reflect that the inflows to the river are shared between different states. MDBA's River Murray Operations (RMO) group operates the river by delivering a volume of water to a location, without consideration of ownership of that water. Accounting is done retrospectively as per the Agreement, in order to determine each State's share of the inflows. Accounting for individual entitlements is dealt with by the relevant State's legislation, and in NSW under the relevant WSP.

The PPMs Implementation Plan for the Murray River will address PPM issues that:

- require a coordinated approach between the MDBA, NSW, Victoria and South Australia, such as potential amendments to the Agreement; and
- relate to operation of the Murray River by the MDBA.

However, the accounts for those access licences undertaking environmental flow reuse and piggybacking will be managed in accordance with the rules in the respective State's PPM Implementation Plan.

4.6 Environmental watering trials

Environmental watering trials have been occurring in the Murray River since the 2010-2011 water year. The aim of these trials has been to test enhanced water management practices, including PPMs. The methods for the trials are approved each year by the BOC. The aim of these trials is to gain an understanding of how water can be delivered to multiple environmental sites and what is an appropriate 'assumed use' of water by those environmental sites during these events. A schematic of the environmental watering trials is shown in Figure 1.

Water is delivered from Hume Dam, via environmental sites including the Barmah-Millewa Forest, Gunbower-Koondrook-Perricoota Forests, Hattah Lakes, Lindsay-Wallpolla Islands and the channel of the Murray River.

In the past, NSW has managed the environmental watering trials by trading licensed environmental water allocations from a NSW licence to a South Australian licence. The amount traded is the amount released from the dam minus the assumed use of the environmental water between the dam and the border.

The assumed use calculations in previous trials for this environmental water delivery were very conservative in an attempt to mitigate any third party impacts that might occur as a result of the trials.

This method has been designed around environmental watering events that aim to water the Barmah-Millewa Forest as this is currently the main type of event targeted. If alternative environmental watering events are targeted or if different methods are appropriate for different climate conditions, then alternative management methods will be adopted, consistent with the principles in Section 3 of this Plan.

The Murray PPM Implementation Plan will address the river operation aspects of implementing PPMs in the Murray River. The NSW PPM Implementation Plan will implement PPMs at the account management level.

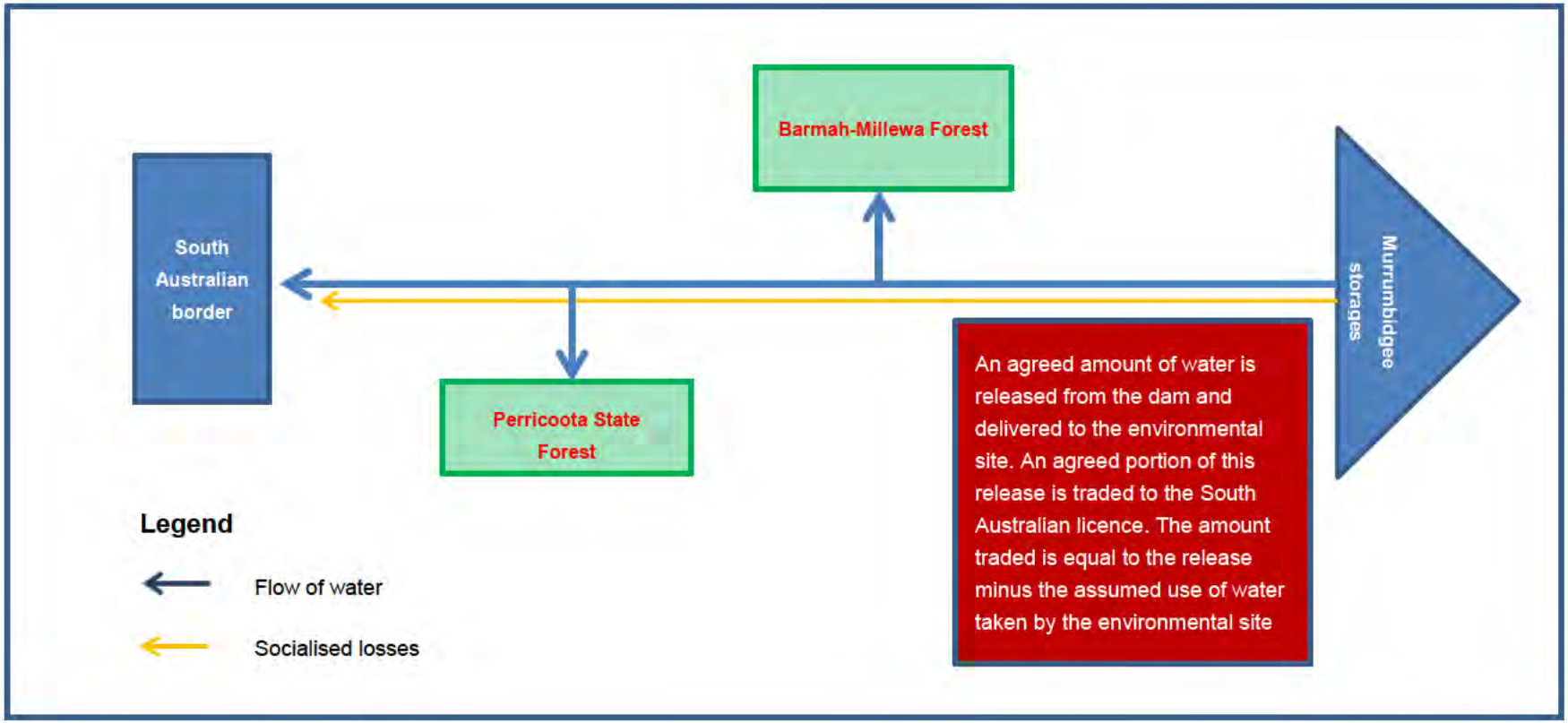


Figure 1 Environmental watering trials

4.7 PPMs and the Nimmie-Caira Project

The Nimmie-Caira System Enhanced Environmental Water Delivery Project (the **Nimmie-Caira Project**) is funded by the Commonwealth Government to help in the return of water to the environment under the Basin Plan. The Commonwealth Government has funded the Nimmie-Caira project to purchase the land and water entitlements associated with the Nimmie-Caira area in the Lowbidgee floodplain. Under this funding agreement, NSW owns the land and manages the transition to long-term arrangements while the Commonwealth Environmental Water Office (**CEWO**) owns and manages the supplementary water (Lowbidgee) access licence that was acquired as part of the project.

Under the Nimmie-Caira Heads of Agreement, the Commonwealth Government and NSW have committed to the Nimmie-Caira project "*providing enhanced capacity for improved environmental watering outcomes including through:*

i. relaxing physical constraints in the Nimmie-Caira area in the short term and (potentially) in adjacent areas in the longer term (subject to there being no adverse third party impacts), and

ii. facilitating shepherding and accounting of return flows for the Nimmie-Caira Entitlement [supplementary water (Lowbidgee) access licence] in the short term and (potentially) for other entitlements in the longer term (subject to there being no adverse third party impacts)".

To achieve these outcomes, DPI Water negotiated an additional agreement with CEWO (Agreement for the Protection and Re-use of Commonwealth Environmental Water held in the Murrumbidgee) to implement shepherding and accounting of return flows. This agreement did not involve the MDBA, and was made without reference to the PPM requirements under the Basin Plan. It was anticipated that arrangements would be in place before June 2018.

The outcomes to be achieved by this agreement clearly align with the objectives of the PPM Implementation Plan. To prevent inconsistencies and double handling, DPI Water will address this commitment through the implementation of PPMs rather than a standalone process.

5. Implementing environmental flow reuse

The aim of the environmental flow reuse PPM is to recognise the water that is returned to the river after an environmental site is watered, so that the returned water can be used for other environmental sites further downstream, or used to meet end-of-system flows.

The PPMs Implementation Plan is proposing options to meet the environmental flow reuse PPM in the Murray and Murrumbidgee regulated systems, and potentially in the Barwon-Darling unregulated system. The implementation of PPMs in the Barwon-Darling unregulated system will only be considered if an appropriate mechanism that addresses third party impacts is established (in line with the principles outlined in Section 3), appropriate funding is provided and if other outcomes that are beneficial to NSW water users can be negotiated.

5.1 Environmental flow reuse – regulated systems

A number of options were investigated to meet the environmental flow reuse option in regulated systems. The main point of difference between the options was how the risks associated with water losses were accounted for. A brief description of the other options that were considered can be found in Appendix 3 of this Plan.

NSW has determined that 'combination debiting' is the most suitable option for implementing environmental flow reuse as it provides a balance between guaranteeing deliveries to the environment and ensuring that other water users do not face additional risk.

5.2 Combination debiting – regulated systems

It is proposed that environmental flow reuse in NSW will be facilitated using 'combination debiting'. Under this scenario, ordered environmental water will be delivered to the first point where flow into and out of an environmental site cannot be accurately measured or to a delivery point after which in-stream delivery losses increase unacceptably, when taking into consideration other orders for that year and the reserves set aside for delivery losses at that time (if this point is further upstream than the environmental site without accurate measurement).

Prior to the delivery point, losses will be socialised. After this point, the river operator will make best endeavours to deliver the environmental water via environmental sites. Whilst this water will be protected from orders and re-regulation for non-environmental purposes, the river operator will not guarantee the volume and timing of water downstream of the delivery point. This will involve the river operator making assumptions on day to day river operations; however combination debiting provides the mechanism to protect water users from the risk of these assumptions. This is demonstrated in a case study for the Murrumbidgee River in Appendix 4 of this Plan.

Combination debiting provides a balance between guaranteeing deliveries to the environment and ensuring that other waters do not face additional risk where the measurement of how much water has been delivered to an environmental site is not possible. Over time as more experience and information is accumulated through modelling and actual activities, the ability to perform accurate use measurements will improve and allow for more efficient operation of the system.

It should be noted that when the environmental licence holder requests use of piggybacking and environmental reuse at the same time, an extra debit may be applied to the licence to reflect the changes in reliability to the dam. This extra debit would be the result of nominating a dam release to fill an order rather than via the most efficient method possible. This is discussed further in Section 6 of this Plan.

Combination debiting is an option that can ensure low risk to water users, whilst providing the environment licence holder with a mechanism to improve environmental outcomes through more accurate measurement. A schematic diagram of this option is show in Figure 3.

5.2.1 Description of proposed combination debiting

1. The environmental licence holder submits the volume and timing requirements for each environment site and the end-of-system, and the planned delivery path to the river operator.
2. The river operator plans for how the water order will be met for each environmental site based on the following criteria:
   a. The environmental licence holder can order water to the first environmental site that does not have accurate measurement. This means instream transmission losses to that point will be socialised.
   b. Beyond this point the river operator will make best endeavours to deliver the desired water order to the remaining environmental sites on the delivery path. This means that the river operator makes assumptions of likely losses along the delivery path and operates the river to make best endeavours to reach these targets.
   c. In some circumstances, the delivery of water to the first environmental site without accurate measurement could impact water users unacceptably due to the delivery losses involved. Currently, WaterNSW develop valley specific strategies, which describe triggers for altering river operation from on demand deliveries. These strategies are short-term plans that apply for 12-24 months and are refined once customers have submitted their watering intentions. They are presented to the customer service committee meetings for approval. It is proposed to treat the

environmental licence holder in a similar way. The river operator will negotiate with the environmental licence holder to ensure that environmental water delivery will not unacceptably increase system losses on an annual basis by negotiating a delivery point further upstream. This process will be identified in the river operator's strategy and negotiated with the customer service committee. Any change to the operation will remain within the resource assessment determined by DPI Water.

d. When considering the delivery path, the river operator will take into account any existing delivery constraints.

3. The environmental licence is debited the actual use (measured inflow minus measured outflow) at each environmental site that has accurate inflow and outflow measurement plus the remaining volume of water that reaches the offtake point of the first environmental site without accurate measurement (or a delivery point further upstream, if circumstances require). This means that the environmental licence will wear all losses downstream of the offtake point of the first environmental site that does not have accurate measurement.

5.2.2 Issues

- Under current legislation, water that returns to the river downstream of the first environmental site without accurate measurement would be re-regulated or used to meet water orders.
- A delivery path is a new concept in river operations and will need to be described for each environmental water licence order. For example, whether the water will be delivered by overbank flows or pumped into the environmental site will need to be determined. Describing the return of water to the river from the environmental site will be necessary, for example point source or diffuse source.
- At present there is no mechanism for a licence holder to require a release from the dam to meet a water order. The decision to meet an order from a dam release or a tributary inflow is currently made by the operator. Discussion around nominating a dam to meet a water order is in the "piggybacking" section of this paper (Section 6).

5.2.3 Implementation

The issues outlined above will be addressed through the relevant WSPs to address the re-regulation or new river operation proposals outlined as part of the combination debiting approach to environmental flow reuse. This will also require a change to the WMA regulations to support the WSP drafting.

Changes to the WMA:

Amendments to the WMA are required to enable PPMs to be implemented.

Changes to the WSPs:

WSPs will prescribe debiting rules for environmental flow reuse. This means that the WSPs will need to include a definition of environmental sites with accurate measurement.

The definition of an accurate measuring point will allow for adaptive management, so that if infrastructure is installed that can measure the flow of water during the term of the plan or some other activity to enable accurate measurement is undertaken, then the debiting method can be adapted to reflect the improved outcome, without requiring changes to the WSP.

A rule will also be required in the WSP that specifies that water resulting from environmental flow reuse must not be re-regulated for non-environmental purposes or used to meet downstream orders, planned environmental water or replenishment flows. A provision will also be required to

be drafted that specifies that environmental flow reuse will only apply to licensed environmental water, at this time.

These changes to the WSP will lead to changes in the conditions on the river operator's water supply work approval, which the river operator must comply with. The river operator's water supply work approvals are available on the DPI Water website.

5.3 Recognising the movement of environmental water between systems

Where river systems are connected, for example the Murrumbidgee to the Murray, environmental water moving from one system to another will be protected but not stored in storage or credited to an account in the next system.

Under this PPM implementation proposal, water will flow straight through from one system to another through any regulator or storage along the system and not be credited to an account in the connected system. It will continue through the system until it has depleted due to use or losses.

WSP rules will be required to be drafted in the Murray WSP to prescribe that this water will be protected in the sense that it will not be used for orders, either from the environment or from other water users, and it will not be permitted to be re-regulated for non-environmental purposes.

The benefits for the environment are that two separate environmental licences will not be debited for the same take, and that this water can be used in accordance with the respective long term environmental watering plan. The environmental licence holder will not have control over the timing of its arrival and a particular volume will not be guaranteed at a particular point. The environmental licence holder could choose to top it up from an additional order in the system to which that residual water moves (Figure 2).

The benefits for other water users are that there are no risks of protecting this water, in terms of socialising additional water or the loss of storage rights. Additionally, this water represents water that would have been historically taken upstream and therefore does not result in any net change in the water available to users downstream.

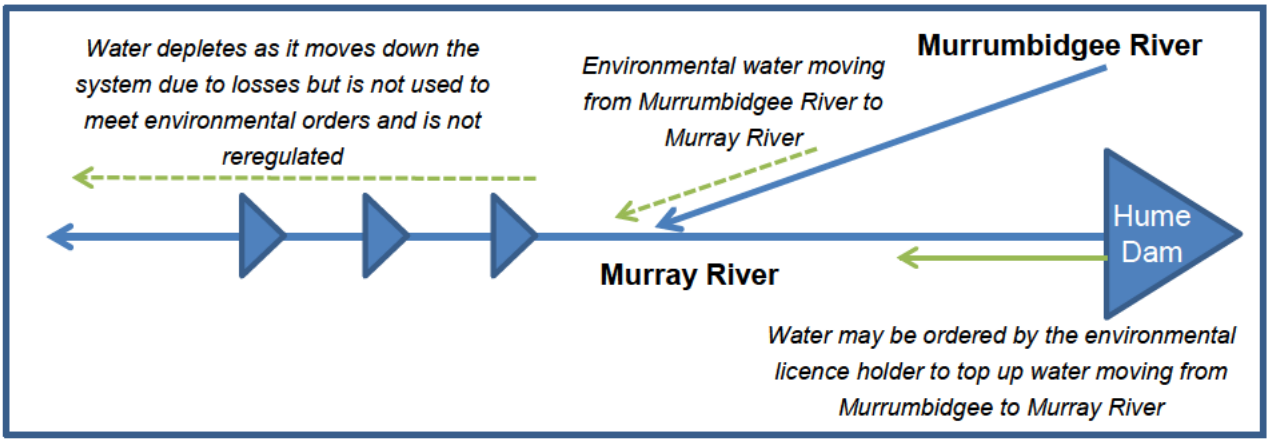


Figure 2 Environmental water moving between connected systems

In the future, NSW may consider meeting other water orders in the Murray River using water that results from additional environmental water moving in from the Murrumbidgee River. An equivalent amount would then be stored in the dam upstream and credited to the environmental licence. The environmental licence holder could then order this water later. This enables the environmental licence holder more flexibility in when and where that water can be used. Since this process will require the crediting of another licence and is a potentially complex process, it will be considered in the future to ensure that there are no third party impacts.

5.4 Shepherding – Barwon-Darling unregulated system

NSW has undertaken significant investigations into shepherding through the unregulated Barwon-Darling system; however, this is not a focus area for implementation of PPMs at this time. The below information outlines the findings of the study of shepherding in the Barwon-Darling and in the event that appropriate funding is provided and if other outcomes that are beneficial to NSW water users can be negotiated, then NSW will consider implementing a shepherding methodology in the Barwon-Darling, in line with the principles outlined in Section 3.

Shepherding in the Barwon-Darling involves the delivery of water from a licence in an upstream water source to an environmental asset in a downstream water source, including downstream of the Menindee Lakes. In the Barwon-Darling, this means moving water between multiple WSPs.

A method to shepherd water was developed by the NSW and Commonwealth Governments in 2012, but has not been implemented. The following sections describe the option (Section 5.4.1), barriers to its implementation (Section 5.4.2) and implementation requirements (Section 5.4.3).

5.4.1 Description of potential Barwon-Darling option

1. A shepherding access licence with a zero share is established which nominates a measurement point at the end of the system in the upstream regulated system.
2. The environmental licence holder trades from their environmental licence in the regulated river system to the shepherding access licence in the same system. This is accompanied by a physical water order from the dam that represents the water traded.
3. Water is traded from the shepherding licence in the regulated system to a shepherding licence in the Barwon-Darling unregulated system that nominates a measurement point at the most upstream point of that system.
4. Water is traded from the shepherding licence that nominates the most upstream measurement point in the Barwon-Darling unregulated system to a shepherding licence in the same system that nominates a measurement point at the most downstream point of the system (or desired delivery location in the same system).
5. In addition to step 4, the traded water is only credited to the downstream shepherding licence when the water physically arrives at the measurement point that is nominated by the access licence and the relevant access rules for that section of the river have been met. A loss reduction factor is applied to the trade to reflect that the water is in transit to avoid third party impacts.
6. If the water in the river that results from the water order in step 2 does not arrive within a set time period, then that water will not be traded to the downstream shepherding access licence.
7. Trade occurs between shepherding access licences until the water reaches Menindee Lakes. It is then held in the lakes until a water order is made for use downstream.

5.4.2 Issues

A barrier to the implementation of shepherding has been identified as ongoing costs. If shepherding in the Barwon-Darling is pursued, NSW will seek to ensure that the costs for participating in shepherding will be transferred to shepherding licences and not all water users. This is in line with the principles identified in Section 3 of this PPMs Implementation Plan.

Additionally, there remain a number of potential third party impacts that would need to be addressed prior to implementation. These may include:

1. Increased system losses as a result of water delivery to end of system;
2. Larger losses that may occur in dry years that would not be captured by an average ‘loss reduction factor’; and

3. Physical impacts to the local environment due to higher than average flow rates as a result of shepherding water through the Barwon-Darling River.

The current shepherding methodology mitigates some of these risks by proposing to develop rules to limit or suspend shepherding when certain triggers are met.

There is also the additional aspect of recognising shepherded water in Menindee Lakes, to enable this environmental water to be used to water environmental sites downstream of Menindee. This will require changes to the Murray-Darling Basin Agreement, which requires the agreement of jurisdictions party to the Agreement.

5.4.3 Requirements for implementation

Implementation of the proposed shepherding methodology will require:

1. Determination of an appropriate loss reduction factor that is to apply to the traded water;
2. Negotiation with the Basin States to determine how shepherded water will be recognised in Menindee Lakes Water Storage and amendment of the Agreement as required;
3. Investment in infrastructure, such as instream gauges, to more accurately measure flows;
4. Amendments to WSPs to provide for dealing rules to facilitate shepherding between parent licences and shepherding licences, and access, use and accounting rules to ensure no third party impacts;
5. Amendments to the Regulation to create a water shepherding access licence;
6. Amendment of the ALDP to enable trades to occur between unregulated and regulated water sources;
7. Development of an independent shepherding audit, report and review process.

5.5 Estimating environmental water delivery from AEW plans

Adaptive Environmental Water Plans (**AEW Plans**) are instruments that are linked to the individual NSW Environmental Licences. These plans specify how licensed environmental water will be measured and used to water environmental sites. AEW Plans do not change the characteristics of the licence.

The RiverBank Murrumbidgee Water Use Plan breaks up the Murrumbidgee catchment into areas depending on how water is supplied to those areas. For example the Lowbidgee floodplain within Yanga National Park that is capable of being watered by diversions from Redbank Weir or the section of the Lowbidgee floodplain in Yanga National Park that is capable of being watered by diversions from Maude Weir.

An AEW Plan specifies the water supply works and methods that are to be used to account for water take in each area. While these plans do not currently meet the requirements for implementing PPMs, as they do not recognise the use of water at multiple environmental sites in the system, they provide valuable tools for implementing PPMs. For example, the water that returns to the river is measured as the amount of water measured at the off-take regulators that is in addition to the water in the system for downstream orders and other downstream requirements such as basic landholder rights and delivery losses.

While these plans do not meet the requirements for implementing PPMs, they do provide a valuable basis to implement PPMs as they identify environmental sites, water supply works that are in the vicinity of those sites that can be nominated by an environmental access licence and they consider how environmental water use can be measured.

As these plans are accessible on the internet, stakeholders can view how environmental water use is currently measured. AEW Plans are currently not mandatory for environmental licence

holders. NSW will consider addressing transparency issues in a similar way for PPMs by providing more detailed locally-specific documentation outside of the WSPs.

5.6 PPMs and river operation

While the WSP will contain rules around the debiting of the environmental access licence when making use of environmental flow reuse, the detail behind the daily operation of the river will be contained in a PPMs procedure manual, which is specific for each valley. These procedures will identify assumptions that are made during river operation, such as assumed use for sites with inaccurate measurement and the justification for these rates. This manual will be developed by DPI Water in conjunction with the river operator, following development of the PPMs options, and will be made available on the DPI Water website.

Each manual will specify which environmental sites have been deemed to be accurate or inaccurate within that valley so that when the environmental licence holder specifies the delivery path, the appropriate debiting approach can be applied. As described previously, the definition of accurate measuring point in the WSPs will enable the procedure to be amended if measurement methods change.

After each environmental water delivery to a site without accurate measurement, the river operator will need to produce an assumed use statement for each licence that details how the assumed use at each environmental site without accurate measurement was determined.

It is noted that environmental targets identified in the Basin Plan identify river level values rather than dam release volumes. It will be the responsibility of the environmental license holder to identify the volume of release required, and to place an order for that volume with the river operator. The development of procedures to estimate appropriate volumes will require collaboration with river operator. It will be the responsibility of the environmental licence holder to evaluate the guidance on an event-by-event basis and estimate the required volume to order.

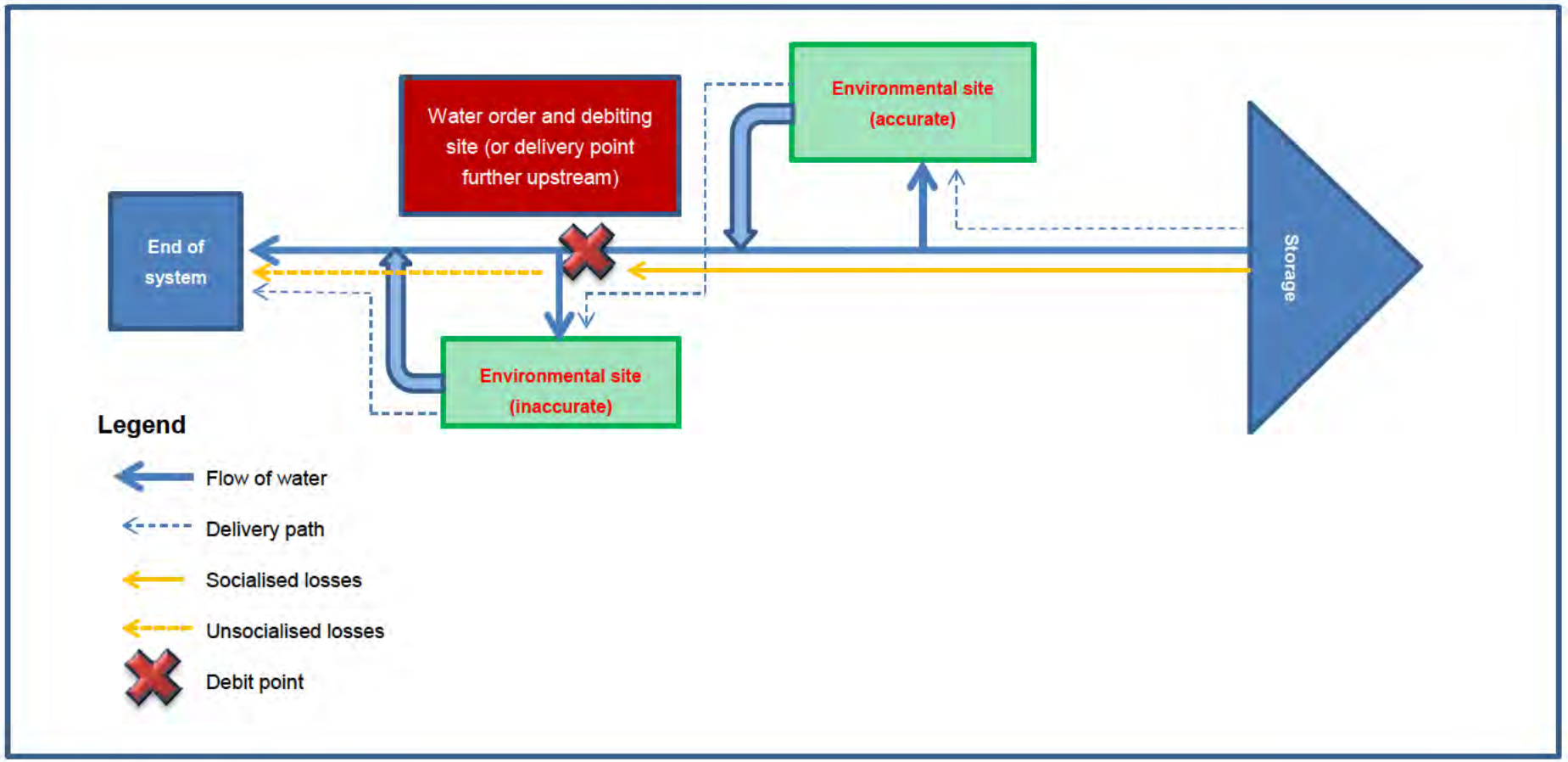


Figure 3 Combination debiting

6. Implementing piggybacking

This section addresses how a “piggybacking” option will be developed and implemented in the Murray-Darling Basin in NSW. This PPM is relevant to regulated systems only.

The aim of piggybacking is to allow the environmental licence holder to request water to be released from nominated storages at times when water orders would be met from uncontrolled flow. This enables water to be ordered from the most upstream point of the system and added to the volume of an uncontrolled flow event in that system.

6.1 Background

Supplementary flow events are defined in NSW WSPs as occurring when uncontrolled flows in the river system are surplus to water requirements for environmental provisions, basic landholder rights and water orders. These events are important to the environment as they can trigger fish breeding and movement, and result in the inundation of areas that can only be achieved under high flow events. When these events occur, water users who hold supplementary water access licences, and in some WSPs regulated river access licences, can access water, according to the WSP rules.

At present, if a general security access licence was to order water during a supplementary flow event then the river operator would, to the extent possible, use unregulated flow to meet this order. It would not be released from a nominated storage such as a headwater storage.

Environmental licence holders may seek to order water from the dam during these events to increase the peak flows and/or the duration of these events to support ecological processes.

Most NSW regulated river WSPs include rules that share uncontrolled flow access between the environment and water users. With the introduction of piggybacking, these sharing rules will still be applied and operated as normal, however the environment’s licensed order will be added onto the event and the licensed order will be protected from being used to meet any other purposes, including supplementary water licence access. The environmental licence will only be debited for what was ordered. The volume ordered will be protected from extraction or re-regulation along the delivery path. This also means that any water order made at this time, including one made by the environmental licence holder, will not be included in the amount available to supplementary licence holders for take, as this amount is not uncontrolled flow.

6.2 Issues

6.2.1 Permitting water users to order water from a particular headwater storage

Allowing water users to order water from a nominated storage rather than having their order met from uncontrolled flow has the potential to impact on the reliability of water allocations. Negative impacts may arise as water that would have been previously provided by uncontrolled flows will be taken instead from that storage, reducing the amount of water remaining in storage.

However, modelling undertaken by the MDBA to inform the 2012-2013 multi-site watering trial in the Murray River suggested that the ordering behaviour of the environmental water licence holder may not always result in a reduction in the volume available in the dam for other users. If the environmental water licence holder orders early in the irrigation season or at times when the dam is filling, as in an uncontrolled event, then the storage may end up containing more unallocated water.

Further modelling is required to better understand the potential impacts of any proposed options.

6.2.2 Providing peak flows during supplementary events

The environmental licence holder may seek to achieve a peak flow when making a release on the back of an uncontrolled flow event to achieve a particular environmental outcome. Currently

supplementary water licence holders are permitted to take a volume of water during a supplementary flow event. The licence holder may take this water as quickly or slowly as they like within the bounds of the supplementary flow event being announced. To achieve the protection of a peak flow on a particular day for the environment, the river operator would have to manage individual daily access to supplementary events.

NSW is not intending to make changes to regulatory instruments that will result in the management of specific peak flows during supplementary flow events.

Instead NSW proposes that the environmental water licence holder work with the river operator and/or licence holders to assess the likely take from a supplementary event so that they may make appropriate orders to optimise environmental outcomes.

6.3 Implementation

DPI Water has undertaken preliminary modelling in the Namoi Regulated River to look at potential impacts on water availability. A summary of these results can be found in Appendix 5. The results of the modelling suggest that a valley by valley analysis of the impacts of piggybacking is required to address the potential third party impacts of implementing this measure. Rather than suggesting one option for mitigating the potential impacts of piggybacking, this Plan suggests that a suite of tools that may be considered, modelled and as appropriate. These options may include:

(a) an overall limit on how much water can be ordered from a nominated storage,

(b) prohibiting the use of piggybacking when the dam reaches a particular storage level or at particular times of the year, such as prior to peak irrigation season, or

(c) placing an extra debit on the access licence when making use of piggybacking.

Mitigation measures that are proposed on a valley specific basis will be developed in conjunction with relevant government agencies and stakeholders. These mitigation measures will be supported by rules in the WSP and directions to the river operator in the water supply work approval and the valley specific implementation procedure manual.

Implementation of piggybacking will require:

1. Development of appropriate mitigating practices and measures, which will include further modelling on valley-specific basis to confirm the potential for impact and inform development of mitigation measures. Stakeholders, including the MDBA, CEWO and the Office of Environment and Heritage, will be consulted as part of the development of these mitigating measures.
2. Amendments to the WSPs to include specific provisions, which permit water users to request an order from the dam. The WSP will also include a rule to reflect the preferred approach to mitigating risks.
3. Analysis of the potential for supplementary access to impact environmental licence water orders and potential mitigation options if required, in line with the principles outlined in Section 3.
4. Potential amendments to the river operator's work approvals.

7. Indicative timeline for the PPMs implementation to 30 June 2019

The following tables provide a timeframe for the tasks required to implement PPMs prior to 30 June 2019 in the Murray and Murrumbidgee systems.

The tasks for the Murray River have been aligned with the review of the Murray WSP. This enables any WSP rule changes to be negotiated and drafted at the same time as other rule

changes that are required to align WSPs with Basin Plan requirements and avoid third party impacts.

The Murrumbidgee tasks have been aligned with the agreed to outcomes of the Nimmie-Caira project which requires PPMs to be in place by 30 June 2018.

These timeframes are indicative only.

Table 3 Indicative timeline for PPMs implementation in the Murray

Date	Task	Responsibility
2017	Identify and finalise WMA and Regulation amendments required to enable implementation of PPMs as part of broader Basin Plan implementation WMA amendments.	DPI Water
2017 to 2018	Consultation on Murray WRP, including WSP PPM rules.	DPI Water
April 2017 to June 2018	Investigate and develop Murray WSP rules to implement PPMs in the Murray as part of the Murray-Lower Darling WRP development. This process will include developing mitigating measures for any risks identified as a result of piggybacking. This will require the environmental licence holder to provide information on potential environmental watering activities. A balance in the drafting of these rules should be achieved so that they are transparent but also flexible enough to allow adaptive management as the understanding of the system improves. Development of these rules will also involve Murray water user representatives, the MDBA and Commonwealth and state government agencies.	DPI Water
2017	Incorporate any required changes into the Murray model to allow assessment of potential piggybacking impacts.	MDBA and DPI Water
Late 2017 to June 2018	Develop Murray PPM Implementation Procedure manual to support WSP rules and water supply work approval conditions. This will require the environmental licence holder to provide information on potential environmental watering activities. Development of this manual will also involve Murray water user representatives, the MDBA and Commonwealth and state government agencies.	DPI Water and river operator
January 2019 to June 2019	Murray WRP accreditation	DPI Water
January 2019-June 2019	Draft conditions for WaterNSW water supply work approvals to reflect changes to the Murray WSP including those for PPM implementation.	DPI Water
1 July 2019	Murray WRP commences, including rules to implement PPMs.	DPI Water
Ongoing	System operated according to water supply work approval conditions and PPM Implementation Procedure.	River operator

Ongoing	Update of Murray PPM Implementation Manual to reflect better understanding of operation and measurement at environmental sites.	DPI Water and river operator
Ongoing	Monitoring and evaluation of PPMs against the PPM Implementation Plan, including assessment of how risks have been mitigated	DPI Water
30 June 2029 or earlier	WRP including WSP is reviewed, which will include the review of the PPM implementation rules. However, if third party impacts are identified prior to this, then amendments to the WSP will be considered.	DPI Water

Table 4 Indicative timeline for PPMs implementation in the Murrumbidgee

Date	Task	Responsibility
2017	Identify and finalise WMA and Regulation amendments required to enable implementation of PPMs as part of broader Basin Plan implementation WMA amendments.	DPI Water
2017 to 2018	Consultation on amendment of the Murrumbidgee WSP amendment order to incorporate PPM rules.	DPI Water
June 2017 to Nov 2017	Develop Murrumbidgee WSP rules to implement PPMs in the Murrumbidgee. This process will include developing mitigating measures for any risks identified as a result of piggybacking. This will require the environmental licence holder to provide information on potential environmental watering activities. A balance in the drafting of these rules should be achieved so that they are transparent but also flexible enough to allow adaptive management as the understanding of the system improves. Development of these rules will also involve Murrumbidgee water user representatives, the MDBA and Commonwealth and state government agencies.	DPI Water
Early 2017	Incorporate any required IQQM changes into Murrumbidgee and model to allow assessment of potential piggybacking impacts.	DPI Water
June 2017 to Nov 2017	Develop Murrumbidgee PPM Implementation Procedure manual to support WSP rules and water supply work approval conditions. This will require the environmental licence holder to provide information on potential environmental watering activities. Development of this manual will also involve Murrumbidgee water user representatives, the MDBA and Commonwealth and state government agencies.	DPI Water and WaterNSW

May 2018	Submit Murrumbidgee WSP amendment order for NSW Ministerial approval.	DPI Water
April 2018 to June 2018	Draft conditions for WaterNSW water supply work approvals to reflect changes to the WSPs including those for PPM implementation.	DPI Water
June 2018	Murrumbidgee amendment order to incorporate PPM implementation to commence.	DPI Water
Ongoing	System operated according to water supply work approval conditions	WaterNSW
Ongoing	Update of Murrumbidgee PPM Implementation Procedure Manual to reflect better understanding of operation and measurement at environmental sites.	DPI Water and WaterNSW
Ongoing	Monitoring and evaluation of PPMs against the PPM Implementation Plan. Assessment will occur of how risks have been mitigated	DPI Water
30 June 2029 or earlier	WRP including WSP is reviewed, which will include the review of the PPM implementation rules. However, if third party impacts are identified prior to this, then amendments to the WSP will be considered.	DPI Water

Appendix 1 Framework for NSW operations

The instruments which guide NSW operations within the Murray-Darling Basin include the:

- *Water Management Act 2000* (**WMA**)
- water sharing plans (**WSPs**)
- Water Management (General) Regulation 2011 (**the Regulation**)
- Access Licence Dealing Principles Order 2004 (**the ALDP**)
- Basin Plan
- Murray-Darling Basin Agreement (**the Agreement**).

Water Management Act 2000

The WMA commenced in January 2001 and represents a fundamental reform in NSW water law. Previously water access had been tied to the land title whereas water access licences are now administered to water users, which allows users to trade water rights to different locations within the limits specified in WSPs. Water access licences are separate from water supply works and use approvals. The WMA provides the legislative framework for the sharing of water between industry, communities and the environment in NSW.

Right to take water

Underpinning the WMA is the creation of “State’s water rights”. In effect, this means that the right to the control, use and flow of all water in NSW (in rivers, lakes and aquifers; conserved by any works that are under the control of the Minister, and occurring naturally on or below the surface of the ground) is vested in the Crown. Any common law riparian right that an owner of riparian land had with respect to the flow of water has been abolished. Private access to water is dependent on a person holding a statutory right. Offence provisions apply where a person takes water, uses a work or uses water without a statutory right or in breach of a statutory right. There are two main ways a person may obtain rights to take and use water:

- As a basic landholder right, or
- Pursuant to an access licence and approval.

There are three different types of basic landholder rights, which are domestic and stock rights for people who own land overlying an aquifer or with river frontage, native title rights for people who hold native title with respect to water, and harvestable rights which allows landholders to collect a portion of runoff from their property.

Water sharing plans (WSPs)

WSPs are legislative tools under the WMA that set rules for access licences and water supply work approvals. The aim of a WSP is to share water between the environment and water users in a water source. WSPs contain a number of rules to achieve this sharing. These rules include setting a long-term limit on how much water can be taken from a water source or a group of water sources, rules for the operation of water allocation accounts, rules for when water can be taken, rules for where water can be traded and rules for where access licences or works can be granted or amended. All water sources within the Murray-Darling Basin are covered by a WSP. These will soon be incorporated into WRPs that are consistent with the Basin Plan.

Access licences and water supply work approvals

The licensing framework is built around the extraction of water. An access licence entitles its holder to a share in the available water in the specified water source and to take water at specified times, rates or circumstances (or a combination of these).

An extraction component of an access licence, limits the take of water from specified locations. The extraction component may also set limits on the times, rates or circumstances of extraction.

In regulated rivers it could be a right to a share of a delivery constraint (e.g. of capacity in a channel) and in unregulated rivers it could be a right to a share of available flow on a particular day.

An access licence does not confer the right to use water, or to construct and use a water management work to extract water. These are conferred by a water use approval and water management works approval respectively. An access licence must nominate a water supply work before water can be taken under that access licence.

There are different categories of access licence, for example a regulated river (high security) access licence or a regulated river (general security) access licence. Different categories of access licence can determine the priority for allocating water, sharing channel capacity constraints and access rules. These rules are set by provisions in the WMA and the WSPs.

The Regulation and the Access Licence Dealing Principles (ALDP)

The Regulation and ALDP are supporting regulatory instruments to the WMA.

The Regulation provides the administrative direction for the management of NSW's water resources under the WMA and specifies how issues are to be dealt with at a local level. The Regulation also deals with procedural matters, specifies activities, persons or authorities that are exempt from requiring a water supply work or water access licence, and prescribes savings and transitional arrangements for when areas transition to regulation under the WMA.

The ALDP sets overall provisions for trade, with the WSPs containing specific rules preventing trade from one area to another. For example, the ALDP currently prohibits the movement of access licences from unregulated river water sources to regulated river water sources. If there is any inconsistency between the ALDP and a WSP, then the ALDP prevails.

NSW Framework and PPMs

The Commonwealth Government has and will recover access licences from willing water users in NSW. While these access licences will be used for environmental purposes, they will still remain within the framework for NSW operations. This means that the same rules such as priority of allocation of water, access rules and water allocation account rules will apply to those access licences.

There are a number of issues with the current NSW framework that NSW needs to address in order to implement PPMs. These include:

- The WMA currently considers any water returning to the river after use as belonging to the State. Therefore it would be an offence to order water for an environmental site and take that water again for delivery to another environmental site after it returns to the river.
- The ALDP currently prohibits or restricts the movement of water allocations between regulated and unregulated water sources and some WSPs prohibit the movement of water between specific water sharing plan areas.

The Murray-Darling Basin Plan

The Basin Plan provides a coordinated approach to water management across the four Basin States and the Australian Capital Territory. The Basin Plan has been developed under the *Water Act 2007* (Commonwealth) and sets an overall SDL for the Murray-Darling Basin for surface water and groundwater, and SDLs for individual areas and aquifers within the Murray-Darling Basin. Under the Basin Plan, the SDLs represent the amount of water that can be sustainably taken from the Basin. The Basin Plan also includes requirements for an environmental watering plan, a water quality and salinity management plan and a water resource plan for the Basin States to comply with.

The Murray-Darling Basin Agreement

The Murray-Darling Basin Ministerial Council is made up of Ministers from NSW, Victoria, South Australia, Queensland, the Australian Capital Territory and the Commonwealth. The Ministerial Council has a policy and decision-making role for matters such as state water shares, and the funding and delivery of natural resource management programs, as set out in the Agreement.

The Agreement sets out the distribution of waters from the unregulated Barwon-Darling River to the States under different scenarios of water availability including:

- Tier 1 distribution of water under normal circumstances,
- Tier 2 distribution of water to ensure critical human water needs are met in times of severe water storage, and
- Tier 3 distribution of waters in extreme or unprecedented circumstances.

Currently, when the Menindee Lakes is under the control of the MDBA, NSW and Victoria each have a right to use half of the storage capacity under the Agreement and are entitled to equal shares of the inflows to Menindee Lakes. In addition, South Australia has a limited right to store deferred water in the combined airspace of Victoria and NSW's share of the storage. As such, there is no capacity currently to recognise water that enters the Menindee Lakes Storage System as a result of licensed environmental water orders as these inflows are divided between the Basin States according to the agreement.

Amendments to the Agreement require the agreement of all Murray-Darling Basin jurisdictions.

The Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin 2013

The Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin 2013 (IGA 2013) was signed by the NSW Premier in February 2014. This agreement brings all relevant jurisdictions together to implement the Basin Plan in a cost effective manner that balances sustainable water use with improving river and wetland health.

A commitment to cap water purchases at 1500 gigalitres and prioritising water infrastructure programmes for water recovery purposes were key factors for the NSW Government to commit to the agreement.

The key part of the IGA 2013 that relates to PPMs is as follows:

5.4 The Parties will work to facilitate the use of environmental water by protecting environmental water in-stream and on land, and in consideration of any associated third party impacts, where feasible and agreed by:

(a) implementing measures, to enable the delivery of held environmental water in-stream through arrangements such as water shepherding to facilitate environmental flows;

(b) enabling further use of environmental water at multiple locations along the river, such as return flow provisions;

(c) enabling river operators to deliver specified flow rates at particular locations to meet environmental water requirements within capacity constraints and as efficiently and effective as possible;

(d) working together to refine methods to accurately monitor, measure and account for environmental water use and return flows; and

(e) implementing measures to enable environmental water to be used to supplement unregulated flows, while addressing third party impacts.

Note: Nothing precludes such eligible measures from being considered as supply measures under the SDL adjustment mechanism.

The principles identified in Section 3 of this Plan are consistent with the IGA 2013 in that potential third party impacts will be considered and addressed, and that PPMs will be implemented, where feasible and agreed, in a cost effective way.

Operations

River operations include the management of river flows, the operation of regulating structures and meeting the needs of NSW customers in accessing water. The river operators meet water orders as efficiently as possible to maximise the conservation of water for future needs. Efficient river operation:

- typically uses tributary inflows that occur downstream of a major storage to the maximum extent possible before commencing releases from a major storage, or
- where there are re-regulating storages along a river system, unregulated flows that would not meet any known water orders or target flows are captured for later release.

Appendix 2 Meeting the MDBA's assessment guidelines

Table 5 MDBA's assessment guidelines and the NSW PPMs Implementation Plan

Assessment guideline	Assessment detail	Reference	Comment
Secure and enduring	The Implementation Plans should show that the proposed policy and implementation frameworks are secure and enduring.	5.2.3, 6.3, 7	Rules relating to environmental flow reuse and piggybacking will be drafted in the WSPs which are legal instruments. WSPs are enduring as they have a ten year term.
	If an adaptive management process is proposed post 2019, there should be clear pathway for enduring governance and implementation frameworks to be codified or become enabling provisions. The adaptive management process should be robust and include: (a) clear objectives (b) linking knowledge, management, evaluation and feedback over period of time (c) identification and testing of uncertainties (d) using management as a tool to learn and change its management (e) improving knowledge.	5.2.3, 6.3	The NSW PPMs Implementation Plan does not propose an adaptive management process post 2019. The methods for implementing PPMs will be established prior to 2019. WRP/WSP plan rules will be drafted in a way that recognises that DPI Water and the river operator's understanding of environmental use should increase over time.
Fully operable	The Implementation Plans should demonstrate that PPMs will be fully operable.	7	The NSW PPMs Implementation Plan includes a timeline outlining the tasks that need to be completed prior to 30 June 2019 to implement PPMs.
	The Implementation Plans should outline the mechanisms, that apply or are proposed to apply to enable governments and river operators to give effect to the PPMs.	5.2.3, 6.3, 7	The NSW PPMs Implementation Plan identifies changes that must be made to relevant instruments, such as the WSPs, the Regulation and the WMA to give effect to the PPMs. Changes to the WSP will result in changes to

			WaterNSW's water supply work approval conditions, which they must abide to.
	Where changes to existing frameworks are required, there should be clear identification of the roles, responsibility and changes required to give effect to tall aspects of implementation. This should include: (a) changes to river management and operating frameworks, (b) any agreements required by other parties or jurisdictions to achieve implementation, (c) any State instruments or Intergovernmental Agreement, which will need to be changed, (d) any unanticipated interdependencies.	7	The NSW PPMs Implementation Plan includes a timeline outlining the tasks that need to be completed before 30 June 2019 to implement PPMs. This table also includes the roles and responsibilities of those tasks.
Transparent	Where specific criteria identify the need for transparency, the Implementation Plan should detail how States, and where relevant, the MDBA will give effect to transparency for those issues. That detail could include: (a) the nature of disclosures, how, when, and to whom disclosures be available, and (b) the parties responsible for making relevant disclosures available within an identified timeframe.	5.2.3, 6.3, 7	The NSW PPMs Implementation Plan proposes to make changes to WSPs, the Regulation and the WMA to implement PPMs. All of these instruments are available to the public and are drafted in consultation with stakeholders and relevant government agencies.
Risks are identified and mitigated	The Implementation Plans should identify any risks and any appropriate mitigation strategies.	3, 5.2.1,6.2.1	NSW's first principle in implementing PPMs is to only implement PPMs to the extent that third party impacts can be negated, offset or are

			acceptable to the community. Both the environmental flow reuse and piggybacking options developed by NSW have been developed with this principle in mind and have mitigating strategies to minimise risk to third parties.
Releases of environmental water on top of other in-stream flows, including unregulated events	The Implementation Plans should demonstrate the ability for the release of Held Environmental Water from storages during unregulated flows.	6.3	NSW's option for piggybacking enables the release of held environmental water from storages during unregulated flows.
	The Implementation Plans will need to identify a transparent process to demonstrate the estimation of environmental releases.	6.2.2	The environmental licence holder will determine, in consultation with the river operator, how much water should be ordered to achieve a particular flow outcome. The environmental licence will be debited the volume of water that is ordered and the river operator will make best endeavours to achieve that flow outcome but this will not be guaranteed.
	The Implementation Plans should show that when Held Environmental Water is released on unregulated flows that only the addition to the flow height is accounted for, rather than everything above system requirements.	6.1	The environmental licence will only be debited for the amount that is ordered during an unregulated flow event. This is the amount of water that will be protected from extraction in addition to the environmental water that is protected under supplementary water sharing rules.
Environmental water to flow throughout the length of a river, and between rivers; and be protected from extraction, re-regulation or substitution	The Implementation Plans could demonstrate: (a) that the arrangements are codified, (b) an explanation which describes the operation of flows and the subsequent accounting, (c) the timing of actual flows and the timing of trades, including retrospective adjustments,	7	The options to implement PPMs in the NSW PPMs Implementation Plan do not involve trading. Therefore water moving between systems will not be recognised in inter-valley accounts. There are limited situations where this could occur (Namoi and Lachlan valleys) and would only involve very small quantities of environmental water. Retrospective adjustments are

	(d) how inter-valley accounts will be dealt with, including adjustments, (e) how any retrospective adjustments will be dealt with (f) compliance with trade rules.		not in line with PPM implementation methods identified in the NSW PPMs Implementation Plan.
	Implementation Plans could demonstrate a loss methodology, which is transparent and fair and equitable.	5.2.3, 6.3, 7	The NSW PPMs Implementation Plan does not propose specific daily operation rules. Instead, daily operational objectives are proposed. Operational detail will be contained in valley specific WRPs/WSPs and valley specific PPM procedure manuals.
	States proposing protection of environmental volume in the long term should demonstrate effective compliance or other arrangements to ensure that volumes are adequately protected from re-regulation or extraction.	N/A	The NSW PPMs Implementation Plan does not propose rules that protect environmental volumes over the long term.
	The Implementation Plans should demonstrate how environmental water is protected from re-regulation and extraction.	5.2.2, 5.2.3, 5.3	The NSW Implementation Plan states that WSP rules will be drafted to ensure that held environmental water released for the purposes of environmental flow reuse or during a piggybacking event will not be able to be used to meet orders or to be re-regulated for non-environmental purposes.

Appendix 3 Other environmental reuse options considered

Upfront debiting

'Upfront debiting' was a proposed option where the environmental licence holder would be debited for the amount of water released from the dam. Under this option, it was up to the environmental licence holder to estimate how much water would be needed to meet downstream environmental requirements. The river operator would then make best endeavours to deliver this water via the environmental delivery path.

While this water would not be used to meet other orders or re-regulated for non-environmental purposes, it would not be guaranteed past the debiting point at the dam wall. This means that under this option, the environmental licence would wear all losses downstream of this point, including instream losses that are usually socialised between all users. This was considered the most conservative approach, though inappropriate for environmental sites where inflows and outflows could be accurately measured as this would be treating environmental licence holders inconsistently compared to how other licence holders are debited.

This approach also has the potential to negatively impact other water users who elect to use environmental flow reuse, if this provision is extended in the future.

Downstream debiting

The converse of upstream debiting is the 'downstream debiting option', where the environmental licence holder is debited for an order at a downstream point. Water would be ordered from the dam by the environmental licence holder; this water would be delivered via environmental sites according to the specified delivery path and the licence holder would be debited for how much was ordered to the downstream delivery point (e.g. end of system) plus use from the environmental sites along the delivery path.

In this option, losses are socialised to the downstream point. The main risk for this option was that environmental use would need to be assumed for environmental sites where inflows and outflows could not be accurately measured. If the assumption of water use was too low, then the shortfall to meet the downstream order would potentially be made up by the delivery of more water from storages.

Return flow credits

Making use of the return flow provisions of the WMA, by using a progressive cascade of credits and debits to the environmental license along the river system, was also considered; however this option was found to have the same risks as downstream debiting and also be administratively difficult to implement due to the number of access licence transactions required.

Appendix 4 Case Study Combination debiting for the Murrumbidgee River

Under combination debiting, the river operator would have to make assumptions about the use of environmental water. However, by using the combination debiting approach, the risk of those assumptions would be placed on the environmental licence holder rather than water users generally.

The purpose of this section is to provide an example of the application of combination debiting in the Murrumbidgee River. This case study will demonstrate the relationship between the debiting of the licence and the operation of the system.

Background

The Murrumbidgee Regulated River runs from two head-water storages; Burrunjuck and Blowering Dams in a north-westerly direction towards Hay. Once it reaches the confluence with the Lachlan River it runs in a south-westerly direction towards Balranald and ends at the confluence with the Murray River.

There are a number of wetland sites along the Murrumbidgee River. Some of these wetlands can be watered using instream flows via weirs and regulators. Others can be watered by overbank flows.

The mid-Murrumbidgee wetlands are located around the main stem of the river between Wagga Wagga and Carrathool. The lower Murrumbidgee wetlands are located near Balranald and start about 38 kilometres upstream of Maude Weir. Significant infrastructure has been built along the Murrumbidgee River, which has substantially reduced the size and frequency of smaller floods.

Scenarios

To achieve environmental watering of key environmental assets in the Murrumbidgee, large within channel flows are required. Due to physical constraints upstream it is almost certain that dam releases would be required in conjunction with unregulated flows (piggybacking) to achieve the flow requirements for wetland watering to occur. Outlined below are three scenarios showing how the Murrumbidgee River could be operated under combination debiting to water some wetlands in the Murrumbidgee River.

Each of the scenarios described below refer to environmental sites with or without accurate measurement. These scenarios are meant to demonstrate how combination debiting may work in the future, however they are not meant to be definitive in terms of identifying sites that have or do not have accurate measurement. This work would be done as part of developing the Murrumbidgee PPM Implementation Procedure manual.

Scenario 1- Delivery to end of system via mid-Murrumbidgee (inaccurate) and lower Murrumbidgee wetlands (accurate)

1. Figure 4 shows how combination debiting interacts with the daily operation of the river when the environmental site without accurate measurement is further upstream of the environmental sites with accurate measurement.
2. The environmental licence holder seeks to deliver 50 gigalitres (GL) to the end of the system via the mid-Murrumbidgee and lower Murrumbidgee wetlands. In conjunction with advice from the river operator the environmental licence holder determines that 100 GL of water needs to be ordered to achieve this target.
3. The environmental licence holder orders 100 GL and specifies that this water needs to be delivered via the mid-Murrumbidgee wetlands and the lower Murrumbidgee wetlands to the end of the system. Delivery to the mid-Murrumbidgee wetlands is overbank and so the actual use by the environmental site cannot be determined. Delivery to the lower Murrumbidgee wetlands is via a regulator and so actual use can be determined.

4. The river operator releases 105 GL so that 100 GL of water reaches the debiting point, which is immediately upstream of the first site without accurate measurement, upstream of the mid-Murrumbidgee wetlands. This means that 5GL of losses is socialised in the same way as when other water users order water.
5. The environmental licence is debited 100 GL.
6. The river operator now makes best endeavours to deliver this water to the end of the system via the environmental sites on the delivery path. If the river operator estimates that cumulative use by the environment and instream losses downstream of the inaccurate measuring point reaches 100 GL before the end of system point is reached, then the river operator will not be able to make any further delivery.
7. The river operator is required to make assumptions on the amount of water likely to be returned to the river from the mid-Murrumbidgee wetlands. In this example, the river operator assumes these wetlands take 10 GL, and 90 GL will return to the river to continue downstream.
8. The estimated 90 GL return flows downstream to the Lower Murrumbidgee wetlands. For the purpose of this scenario, Redbank and Nimmie-Caira have been chosen as sites to be watered.
9. The losses associated with the travel of the water from the mid-Murrumbidgee wetlands to the lower Murrumbidgee wetlands are estimated to be 5 GL and are not socialised. This is because 90 GL is an estimate and the exact amount of water that is returned to the river cannot be measured. As such the river operator cannot accurately determine the associated amount of water needed to cover losses to move this water through the system.
10. The actual use of Redbank and Nimmie-Caira is 10 GL each, therefore 65 GL is assumed to continue downstream.
11. The losses associated with the travel of water from the Redbank and Nimmie-Caira wetlands to the end of the system are estimated to be 5 GL and again are not socialised.
12. The river operator estimates that the amount of water that reaches the end of the system is 60 GL. This is 10 GL in excess of the original end of system flow target desired by the environmental licence holder.
13. If all points were accurately measured and the estimate of the delivery of 10 GL to the mid-Murrumbidgee wetlands was accurate, then the licence would have been debited 80 GL rather than 100 GL (50 GL at end of system plus 10 GL at each of three wetland sites). This conservative approach results in 10 GL extra being left in storage to be shared between all water users.
14. The impact on the environmental licence holder is that the licence is debited for transmission losses after the mid-Murrumbidgee wetlands (and the related increased uncertainties in river operations due to estimates), and that the amount of water that reaches the end of the system may be less than or greater than the target specified originally.

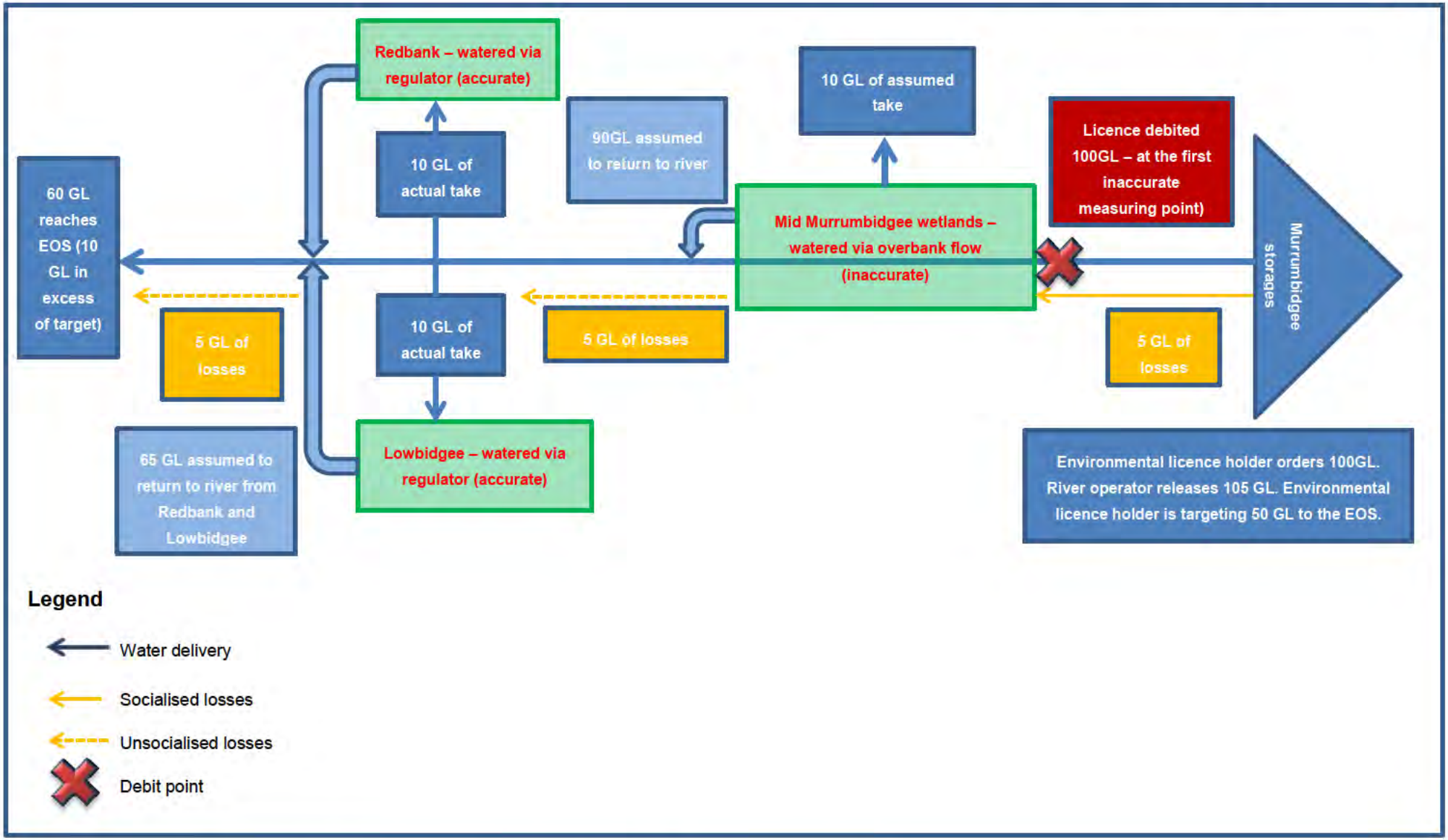


Figure 4 Delivery to the end of system via mid Murrumbidgee wetlands and lower Murrumbidgee wetlands

Scenario 2 - Delivery to end of system via lower Murrumbidgee wetlands (accurate) only

1. The schematic diagram in Figure 5 shows how combination debiting interacts with the daily operation of the river when the environmental site with inaccurate measurement is removed from the delivery path.
2. The environmental licence holder seeks to deliver 50 GL to the end of the system via the lower Murrumbidgee wetlands. For the purpose of this scenario, Redbank and Nimmie-Caira have been chosen as sites to be watered. The amount of water flowing into and out of these sites can be accurately measured. Under this scenario, the environmental licence holder will bypass delivery to the mid-Murrumbidgee wetlands.
3. The river operator releases 85 GL so that 50 GL of water reaches the debiting point, which is the end of the system.
4. The river operator must now guarantee to deliver this water to the end of the system via the environmental sites on the delivery path. The losses associated with the travel of water from the storage to the lower Murrumbidgee wetlands is estimated to be 10 GL and is socialised.
5. Water is delivered to Redbank and Nimmie-Caira in the lower Murrumbidgee wetlands and the actual use of water by these wetlands is measured as 10 GL each.
6. The losses associated with the travel of water from the lower Murrumbidgee wetlands to the end of the system are estimated to be 5 GL and are socialised.
7. 50 GL reaches the end of the system and 70 GL is debited from the environmental licence (including 20 GL of actual use by Redbank and Nimmie-Caira). The remaining 15 GL is attributed to losses which are socialised in the same way as when other water users order water.
8. Under this scenario there is no risk to water users or the environmental licence holder. As the inflows and outflows from Redbank and Nimmie-Caira can be measured, the licence can be debited to reflect actual use in a similar way as other water users are debited.

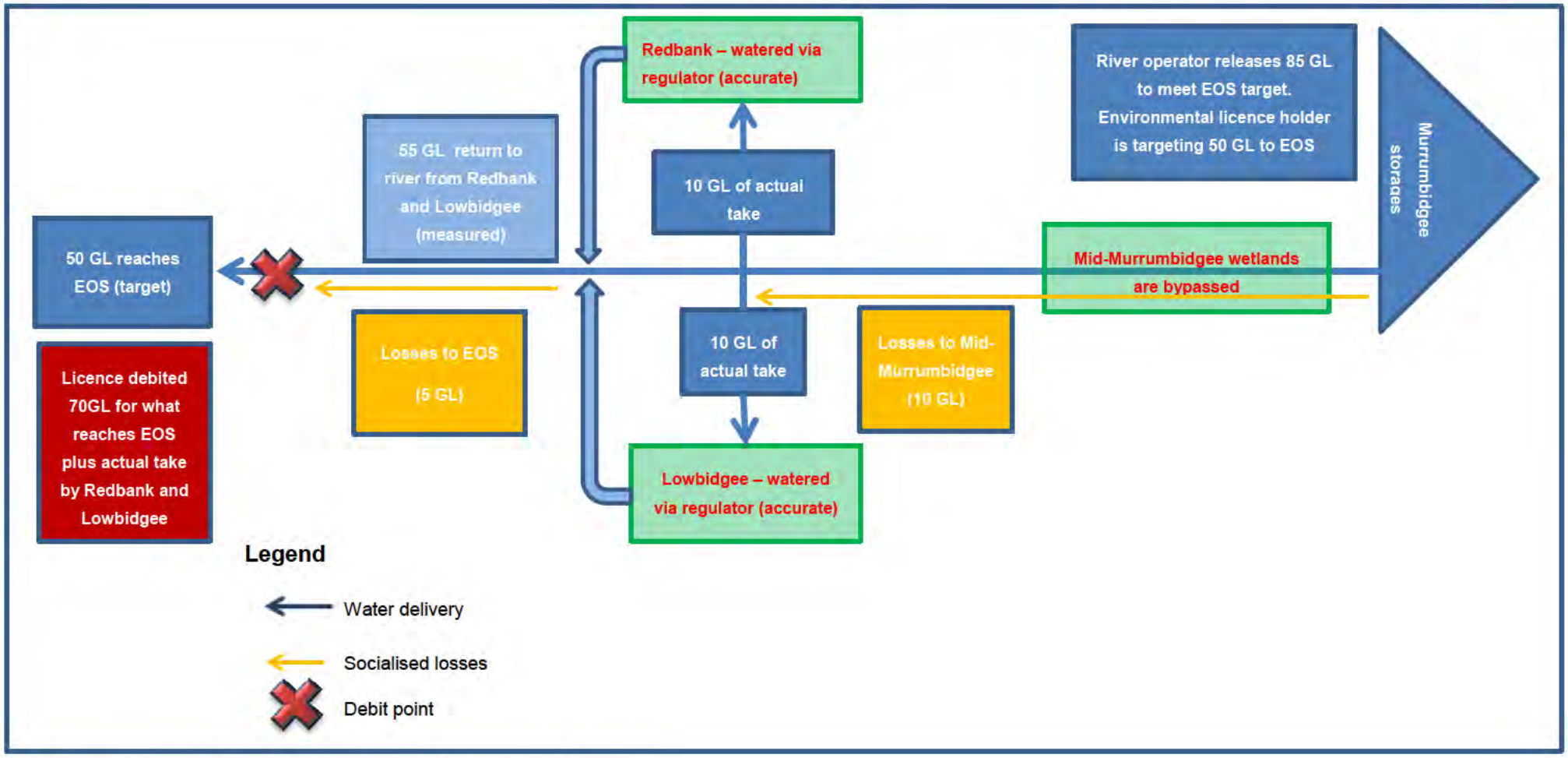


Figure 5 Delivery to the end of system via lower Murrumbidgee wetlands

Scenario 3 - Delivery to end of system during dry conditions

1. The schematic diagram in Figure 6 shows how combination debiting interacts with the daily operation of the river during times when the delivery point chosen by the licensed environmental holder will lead to unacceptably high losses.
2. Under this scenario, the Murrumbidgee catchment is experiencing extremely dry conditions and as such, normal river operation has ceased. This will occur when losses to a particular delivery point are unacceptably high. Whilst this situation is more likely to occur in northern parts of the Murray-Darling Basin, the Murrumbidgee system has been used here to demonstrate the operation of combination debiting.
3. Similar to Scenario 2, the environmental licence holder seeks to deliver 50 GL to the end of the system via the lower Murrumbidgee wetlands.
4. Under combination debiting, the end of system delivery point can be moved further upstream, even if all environmental sites below that point have accurate measurement, if losses to deliver to the end of system are deemed unacceptably high by the river operator. An example of where losses are deemed to be unacceptably high is when an order cannot be combined with other orders to increase efficiency and remaining volume set aside for system delivery losses is deemed insufficient to make the delivery separately. The river operator in this scenario determines that delivery losses would be unacceptably high and identifies a new upstream point to which the delivery of water can be guaranteed and losses socialised. This will be in line with strategies developed by the river operator and approved through the customer service committee.
5. The river operator releases 110 GL to deliver water to the delivery point. The environmental licence is debited 95 GL, with 15 GL of losses socialised.
6. After this point, the river operator makes best endeavours to deliver as much of this water as possible to the end of system via downstream wetlands and does not use this water to meet other orders or allow it to be re-regulated for non-environmental purposes. However, if the river operator estimates that cumulative use by the environment and instream losses downstream of the guaranteed delivery point reaches 95 GL before the end of system point is reached, then the river operator will not be able to make any further delivery.
7. Water is delivered to Redbank and Nimmie-Caira and the actual use of water by these wetlands is 20 GL each.
8. 40 GL of water reaches the end of the system as the remaining water from the order has been depleted through losses.

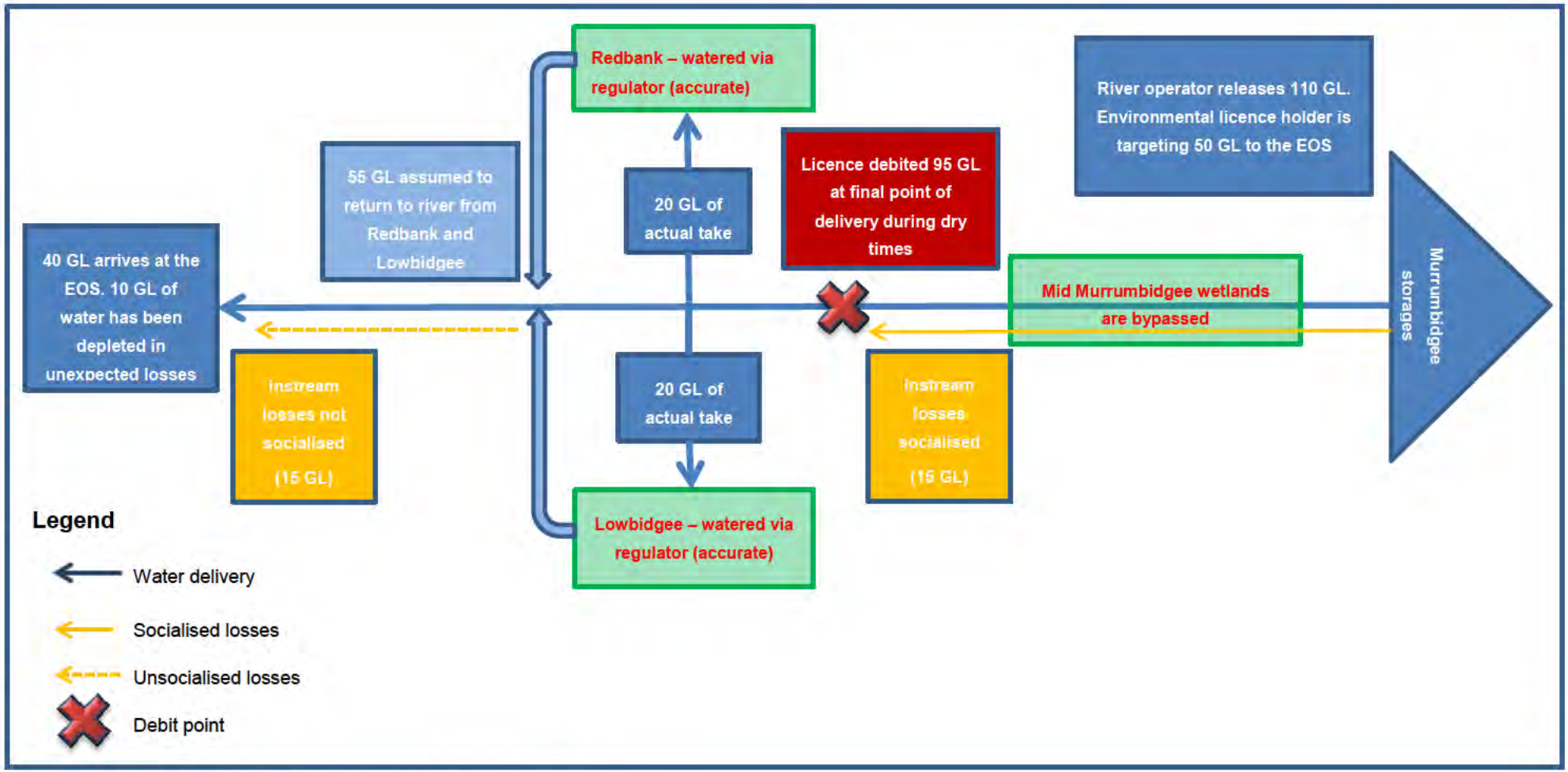


Figure 6 Delivery to the downstream point during dry conditions

Appendix 5 Case study of piggybacking in the Namoi

DPI Water has undertaken preliminary modelling in the Namoi Regulated River to look at potential impacts on water availability. The following assumptions were made:

- The full future water recovery is modelled, a volume of 45 GL. This reduction from current conditions is debited proportionally between the top 10 irrigator groups.
- No growth in utilisation of licensed environmental water, so utilisation is the same as general security irrigation. This results in a maximum of 33 GL of water being used by the environmental licence holder.
- Licensed environmental water has the same constraints as general security access licences, such as 125% annual take limit, 200% maximum balance and 3 year cumulative maximum take of 300% (all water recovered to date has been general security).
- The environmental licence holder will be seeking to meet the specific flow indicator targets set by the MDBA for the Namoi as outlined in Table 6. This table refers to flow in the Namoi River at the Bugilbone gauge, which is located towards the end of the system near Pilliga.
- An opportunity to piggyback is available when:
    - the combined inflows from the Peel River, Mooki River and Coxs River are greater than 600 ML/day, and
    - the flow at the Namoi River at Bugilbone gauge is within the range indicated in the Window column of table 1.
- For each day that an opportunity to piggyback is available, a 500 ML order is placed for delivery at the Bugilbone gauge.

Table 6 Specific flow indicator targets for the Namoi River used in the model to determine opportunities for piggybacking to occur

Flow target at Bugilbone	Duration	Flow window at Bugilbone
500 ML/day	75 days (minimum duration of 25 consecutive days) within a water year for 44% of years	±500 ML/day
1,800 ML/day	60 days (minimum duration of 6 consecutive days) within a water year for 32% of years	±300 ML/day
4,000 ML/day	45 days (minimum duration of 7 consecutive days) within a water year for 22% of years	±500 ML/day

The key findings from this preliminary modelling were that protecting flows that were piggybacked to Bugilbone resulted in:

- A decrease in the total water availability as at 1 September from 119% to 107% for general security users.
- An increase in delivery losses from 15% to 21% (which equates to an increase in volume from 28 GL/year to 39 GL/year).This has increased because it was assumed that water was recovered from upstream users.
- The number of days the storage spilled decreased from 54 days to 41 days.

The modelling has some limitations which may lead to the overestimation or underestimation of the findings identified. For example:

- The model enabled piggybacking to occur whenever certain conditions were met, regardless if those conditions occurred every year or multiple times within a year. This is unlikely to occur under the flow targets identified by the MDBA, where 1,800 ML/day was only required to be met 32% of years and 4,000 ML/day to be met 22% of years. This level of refinement is unable to be achieved in the current model and may lead to overestimation of impacts.
- The model assumes no growth in the use of the licence, which may not be the case. This results in an underestimation of impacts.
- The model assumes that licensed environmental water will be limited to that used in the modelling. However, there is no requirement for the environmental licence holder to use environmental water in such a way. Instead it is likely to be used in line with the objectives of the long term environmental watering plan, currently being developed by the Office of Environment and Heritage. Therefore, an understanding of the risk associated with environmental watering will be better understood on development of the long term environmental watering plan.

FOI 180308
Document 5b

Department of Primary Industries
Water

V16/145#15

Mr Phillip Glyde
Chief Executive
Murray Darling Basin Authority
GPO Box 1801
Canberra ACT 2601

Dear Mr Glyde

NSW Pre-requisite Policy Measure Implementation Plan

Under the Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin 2013, NSW has agreed to deliver a Prerequisite Policy Measures (PPM) Implementation Plan by 30 June 2016 to the Murray-Darling Basin Authority (MDBA).

To meet this commitment, please find attached the final NSW Pre-requisite Policy Measure Implementation Plan, which outlines the NSW Plan for implementation from 30 June 2016 to 30 June 2019.

This PPM Implementation Plan is consistent with the Murray-Darling Basin Plan (section 7.15(1)), which states that PPMs will be implemented to the extent that third party impacts relating to water supply reliability impacts can be negated, offset or are acceptable to the community. This requirement is also a key element of the Intergovernmental Agreement on Implementing Water Reform in the Murray Darling Basin 2013.

This Plan sets out the NSW path to deliver Prerequisite Policy Measures implementation. The Plan aims to improve the efficiency and effectiveness of environmental water delivery, whilst maintaining the same reliability of water supply to water entitlement holders, as at the establishment of the Basin Plan.

This is in accordance with the requirements of the Murray-Darling Basin Plan and the Intergovernmental Agreement on

I also note NSW support for the MDBA's proposed approach for continued investigation and development of PPMs for the River Murray System; NSW have sought to adopt a similar approach in the implementation of NSW PPMs.

It is imperative that the relevant jurisdictions and agencies involved in the development of PPMs, continue to support and uphold the commitment made under past agreements, relating to the PPMs, particularly in relation to the ensuring that third party impacts can be negated, offset or are acceptable to the community.

Should you have any questions in regard to this advice, please contact Ms Monica Morona, Director Strategic Stakeholder Relations, DPI Water on s22 or via email on monica.morona@dpi.nsw.gov.au.

Yours sincerely

GAVIN HANLON
DEPUTY DIRECTOR GENERAL
30/06/2016

FOI 180308
Document 6

s22

From: s22
Sent: Tuesday, 19 July 2016 11:24 AM
To: s22
Subject: FW: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

As discussed, nowhere in the email exchange below has the CEWO indicated we are satisfied with the RMS PPM Plan. I don't think we have the track changes version Trudy refers to below.

From: s22 @mdba.gov.au]
Sent: Monday, 18 July 2016 12:23 PM
To: s22
Subject: RE: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

Hi s22

I see that while I was on leave last week Joe has sent you the most recent PPM document and that we are meeting on Wednesday.

If you've had a chance to look at the document you'll see we were able to address many but not all of the comments, and that some of the changes create us the space to keep talking but aren't overly specific. From our perspective we'd like to talk about how we move forward with the CEWO's involvement with the actual implementation and possible alternative ways of addressing the concerns we could not readily accommodate. We did not intend to discuss all the changes we made in detail. I was thinking that we can decide on Wednesday if a more comprehensive, written response to your comments is required, but happy to provide something ahead of the meeting if you would prefer. As a minimum I have a 'track' changes version that we discussed with the working group, noting that is best to show what we changed, not the areas we didn't.

Regards

s22

s22
A/g Director
River Operations Improvement
River Operations Branch, River Management Division

Australian Government | MURRAY–DARLING BASIN AUTHORITY

Murray–Darling Basin Authority
GPO Box 1801 Canberra ACT 2601
p: (02) 6279 s22
f: (02) 6279 6005
e: s22 @mdba.gov.au
w: www.mdba.gov.au
Follow the MDBA:

In the spirit of strengthening partnerships with Aboriginal people the MDBA acknowledges the cultural authority of the Traditional Owners in the Murray–Darling Basin

From: s22 @environment.gov.au]
Sent: Friday, 15 July 2016 12:10 PM
To: Joseph Davis <Joseph.Davis@mdba.gov.au>
Cc: Taylor, Mark <Mark.Taylor@environment.gov.au>; Papps, David <David.Papps@environment.gov.au>; s22 @environment.gov.au>; s22 @agriculture.gov.au>; s22 @agriculture.gov.au>; s22 @environment.gov.au>; s22 @mdba.gov.au>; s22 @mdba.gov.au>
Subject: RE: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

Thanks Joe. Yes, we should discuss more – I'll ask Louise to set something up. Hope you're all getting better.

Cheers
s22

From: Joseph Davis [mailto:Joseph.Davis@mdba.gov.au]
Sent: Friday, 15 July 2016 12:06 PM
To: s22
Cc: Taylor, Mark; Papps, David; s22
Subject: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

Hi s22

Sorry I didn't get back you yesterday s22

Please find attached the latest version of the Murray PPM implementation plan. This plan has now been sent out to the SDL Adjustment Assessment Committee representatives for their approval to submit as the Final Plan for assessment by the MDBA (not my team) by COB Wednesday 27 July, 2016. It should be the same as the one you already have got, but it may change again depending if SDLAAC reps like it or not.

I keen to set a chat up with you again to talk through some of the CEWHO specific comments.

Consultation is a concern for me as well and it links into the role of the MDBA in the ewater space and could I suggest ,the role of holders of ewater in the MD Agreement.

Since we always work on a consensus model I feel that it is quite straight forward to present and receive comments from SCEWBEC as a body as it has legitimacy from MinCo on the RM operations business, but a little harder to incorporate comments from individual ewater holders unless they are in an informal sense or via to the departments within each jurisdiction. Trudy and I did discuss whether we need/could set up a section 203 (Water Act) committee (WLWG is a 203 advice committee) to advise the RM ops on ewater deliver/operational practice matters. However I feel we would step on our other division's toes and I doubt we would be allowed to especially since SCEWBC exists and is relatively new (note that TLMC and EWG were 203 committees). Also my team is often told that we don't develop policy, but we do develop operational practice which looks a lot like policy to me. I feel that there is a gap in policy development here, especially in light of our review groups (IRORG) recommendations.

I am working with the MDBA's TLM team (Sue Buckle's Team) to develop an annual plan for consultation (via SCEWBC) on three of our main areas in this space being the ewater trail deviations (approved by BOC), the Annual Operating Plan and the IRORG process. I am planning to present and discuss this plan at the next SCEWBC meeting. I'd be really keen to see if you feel that this might work. In terms of the trail I really don't want a repeat of this year and there are some simple things which will allow SCEWBC members to have a say. It also means that we have to align key meeting dates.

Anyway lets discuss some more face to face, have a good weekend.

Joe

Joseph Davis
Senior Director Operations
River Management Division

Australian Government | MURRAY–DARLING BASIN AUTHORITY

Murray–Darling Basin Authority
GPO Box 1801 Canberra ACT 2601
p: (02) 6279 0445
f: (02) 6230 6005
e: joseph.davis@mdba.gov.au
w: www.mdba.gov.au

From: s22 @environment.gov.au]
Sent: Thursday, 14 July 2016 8:51 AM
To: Joseph Davis <Joseph.Davis@mdba.gov.au>
Cc: Taylor, Mark <Mark.Taylor@environment.gov.au>; Papps, David <David.Papps@environment.gov.au>; s22 @environment.gov.au>; s22 @agriculture.gov.au>; s22 @agriculture.gov.au>; s22 @environment.gov.au>; s22 @mdba.gov.au>
Subject: FW: HPRM: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

Hi Joe

Following up from our phone conversation yesterday and the meeting between agency executive, the last version of the River Murray PPM Plan we've seen is the one attached. As mentioned by David Papps yesterday, we have concerns about this plan but they are not in the same league as the concerns we have about the NSW Plan, however there is some overlap.

While I've read the comments in the email below, we've only skimmed the attached plan as we were waiting to see the 'final' plan – which is what we talked about yesterday/meeting proposed for next Wednesday (I'll ask s22 to set something up if that suits). As we haven't seen it, I'm not sure how much the final plan as changed from the one attached.

Ahead of our meeting next week, amongst other issues consultation is likely to remain a concern. I'm thinking we have not previously explained our concerns in the right way.

The PPM Plans I've read all have an objective, seemingly above all else, to ensure no negative impact to 3rd Parties – to be clear, 3rd Parties are broadly other entitlement holders and landowners. With this as their primary objective, there is no need to consult with other entitlement holders as they won't be negatively impacted. To ensure there

are no negative impacts to 3rd Parties others will be affected by any changes, both positively and negatively. Those affected are environmental water holders and as such best practice government policy implementation would suggest they must be consulted – as would be the case if other entitlement holders or land owners were to be affected.

So we are not seeking special treatment because we are a Commonwealth agency or because the CEWH (and the Cth water portfolio) is a key pillar to Basin Plan implementation, rather it's because the Commonwealth is an entitlement holder affected by the changes. I appreciate the MDBA RMO is in a difficult space here and that you would need to discuss with the states on the best approach.

Also, without wanting to sound like a broken record, continuing consultation with SCBEWC doesn't fit the bill. Apart from it not being a representative body it is also not a holder of entitlements. While I'm unsure why we've suggested SCBEWC have more involvement than it already has, to be clear it does not represent the views of individual environmental water holders (CEWH, VEWH and OEH). WLWG may wish to consider in its agenda that environmental water holders are invited to participate in matters that affect them – such as the e-watering trials and other work of relevance that give effect to the PPM Plan. This would deal with the ongoing consultation issue as well as the role of SCBEWC in this (i.e. SCBEWC doesn't have a direct role).

Happy to discuss further next week.

Cheers
s22

s22
Director
Environmental Water Policy
Commonwealth Environmental Water Office
Ph: (02) 6274 s22 | Fax: (02) 6275 9376 | e: s22 @environment.gov.au
GPO Box 787 | CANBERRA ACT 2601 | AUSTRALIA
www.environment.gov.au/ewater

The Department acknowledges the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present.

From: s22 @agriculture.gov.au]
Sent: Thursday, 7 July 2016 11:12 AM
To: s22
Subject: FW: HPRM: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

Thought you might be interested in the MDBA's response to your concerns on the RMS PPM. This will be discussed at the WLWG meeting today at 2.30pm

---

From: s22 @mdba.gov.au]
Sent: Thursday, 7 July 2016 10:05 AM
To: s22 @agriculture.gov.au>
Cc: s22 @agriculture.gov.au>
Subject: FW: HPRM: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

Hi Ladies,

Some supporting information for the teleconference this afternoon.

s22 I've forwarded s22 the meeting invite.

s22

From: s22
Sent: Tuesday, 5 July 2016 2:16 PM
To: 'mark.harris@dpi.nsw.gov.au' <mark.harris@dpi.nsw.gov.au>; Chayna Moldrich (chayna.moldrich@dpi.nsw.gov.au) <chayna.moldrich@dpi.nsw.gov.au>; 'Rose Mannik' <rose.mannik@dpi.nsw.gov.au>; Brian Graham <brian.graham@dpi.nsw.gov.au>; s22 @agriculture.gov.au>; 'Jeremy.Kinley@delwp.vic.gov.au' <Jeremy.Kinley@delwp.vic.gov.au>; Penny Clark (penny.clark@delwp.vic.gov.au) <penny.clark@delwp.vic.gov.au>; Jacobs, Simon (DEWNR) <Simon.Jacobs2@sa.gov.au>; Chris Wright (Christopher.Wright@sa.gov.au) <Christopher.Wright@sa.gov.au>; Eaton, Jarrod (DEWNR) (Jarrod.Eaton@sa.gov.au) <Jarrod.Eaton@sa.gov.au>
Cc: Joseph Davis <Joseph.Davis@mdba.gov.au>; Valerie Pedvin <valerie.pedvin@mdba.gov.au>
Subject: HPRM: Final Draft v.3 PPM Implementation Plan for the RMS [SEC=UNCLASSIFIED]

Good afternoon,

Please find attached a Final Draft V.3 of the PPM Implementation Plan for the RMS. It addresses the most recent comments from NSW, VIC and the CEWO.

The CEWO have raised many concerns, a number of which are probably beyond the role of this plan. The attached version has addressed the more straightforward comments. I have included MDBA comments to show which of the CEWO comments I am addressing with the various changes.

There are a number of issues that we will need to discuss on Thursday afternoon. I propose we structure our conversation around the underlined headings below, followed by discussing any key concerns with the changes made to the document. To help the discussion, the key points from the CEWO are summarised below, with some thoughts in bold underneath.

I'm happy to receive minor comments, alternative words etc outside the meeting. Please get in touch if you have anything else you would like to discuss on Thursday or issues to discuss beforehand.

Regards

s22

Consultation and involvement of environmental water holders

- Water Liaison Working Group (WLWG) and the Southern Connected Basin Environmental Water Committee (SCBEWC) do not represent environmental water holders or their interests. This needs to be corrected in the plan and the plan must seek to ensure environmental water holder interests are adequately and appropriately considered in this work from here on in.
- Many of the comments and concerns we have with the plan would have been addressed through adequate and appropriate consultation throughout its preparation. This includes ensuring a suitable level of direct engagement with the CEWO, NSW OEH and the VEWH.
- The CEWO has previously been concerned about this through development of the watering trials, particularly the 2016-17 trial.

Consultation with entitlement holders has been very limited (none by the MDBA, perhaps some indirect consultation by the States). The CEWO has had some limited involvement through the Commonwealth's representation on WLWG. More broadly, due to the size of the CEWH's portfolio, and the impact of their actions on river operations the MDBA does consult more directly with the CEWH/CEWO than any other entitlement holders.

Successful implementation of the PPMs will require measures that environmental entitlement holders can use (but don't impact the reliability of other entitlement holders). The MDBA does not have an existing forum that it can use to consult with entitlement holders, nor does establishing one sit well within its responsibilities. Earlier comments from the CEWO requested greater involvement from SCBEWC, as an avenue for e-holders to participate. We did make some concessions in this space, but this no longer seems to be the preferred approach. We welcome advice from the jurisdictions on appropriate avenues for consultation.

Balancing risks to environmental entitlement holders and other entitlement holders

- The plan continually alludes risks to 3rd parties/other entitlement holders (particularly reliability), but never articulates what these risks are or how they materialise. This assumes that the only entitlements that may be negatively impacted are those held by irrigators, even though we hold the same types of entitlements. It also expects that environmental water holders should pay or be compromised, without substantiating that an impact exists.
- The purpose of the Basin Plan is to rebalance, between water for production and water for the environment. As such, any analysis of risk to should be balanced – that being it should focus on net impacts, rather than only ensuring no short-term negative impact to irrigators.
- Furthermore, we are concerned that there are potential positive benefits to irrigators from environmental water management that are not being considered in changes to river operations to ensure the optimal outcome for all.

The focus on reliability is due to s7.15(1)(d) of the Basin Plan, broader risks to third parties are sometimes alluded to but are not the focus. There are numerous aspects of the plan that acknowledge that more work is needed to understand the risks or to substantiate that a risk is real, but we aren't locked into an approach, so if the risk isn't substantiated or is different we can respond appropriately.

A consistent method to assess risks to reliability is a sensible idea, but not something that we can quickly come up with. We understand that other areas of the MDBA are investigating this, will try and tap into that process, but it won't be set out in the plan.

An effort was made in the preparation of the plan to balance risks, and to acknowledge that there are circumstances where irrigators receive positive benefits from the actions of environmental water managers. Some minor tweaks to language have been made to respond to the concerns that risks to irrigators are the focus.

Assumed use

(NB – s22 words, not the CEWO's)

- The CEWO are not satisfied with the approach to assumed use for 2016-15, and are concerned that we are locking this in, and that it will have the perverse outcome of e-water holders not participating in the trials.
- CEWO have recommended that the work program include investigation of alternative approaches that do not rely on fixed loss rates and annual negotiations

The plan is clear that there is still lots to learn in this space, but we have relied on the existing adaptive management approach for improvements rather than specifying a new piece of work. Given the issues with the rate, there would be benefit to including additional work, similar to the 'technical and operational analysis' included in section 5.1.2 Releases of HEW from storage may impact reliability of State and retail water entitlements. Noting that at this stage I don't have a clear idea of what the extra work would be.

Need for appropriate audit and review processes

- The plan refers to existing review processes as a means of supporting implementation of the plan. Given the important role implementing PPMs plays in the achieving the objectives of the Basin Plan, existing audit and review processes are insufficient.
- IRORG's current terms of reference are not suitable and would need significant revision if they were to look beyond just MDBA river operations. Furthermore, there is a question if in the Basin Plan context whether such reviews should be managed by the MDBA in its current guise.

- Audit provisions should also be part of the way forward and are required to ensure basic statutory requirements can be met – i.e. transparent disclosure of the management, including accounting, of government resources.

It is RMO's view that the question of audits against the achievement of the Basin Plan or Commonwealth expenditure requirements is a matter outside the scope of the implementation plan, however this might be something that our corporate or policy colleagues may wish to consider further. We will recommend, and if necessary help facilitate broader discussions between the CEWO and the MDBA on these matters. NB the comments regarding the PGPA Act (Public Governance Performance and Accountability Act applies to Commonwealth not State entities)

Although not the preferred option of the CEWO, there may be an opportunity to revise IRORG's terms of reference to deal with some of the concerns about the adequacy of implementation, for e.g. that we achieve operable and efficient outcomes

Implementing PPMs is a key aspect of the Basin Plan

- PPMs are only required to facilitate achievement of the objectives of the Basin Plan. The horizons may need to be lifted in development of this PPM plan.
- The CEWH has specific statutory requirements as they relate to the Basin Plan and its objectives. If the CEWH (and others) cannot adequately and appropriately seek to meet the objectives of the Basin Plan, then the reforms and the tax payer investment will be significantly compromised.
- If the PPM plan does not focus on ensuring Basin Plan objectives can be met, then it is of limited value.

Our focus has been a plan that meets the requirements of the PPM Assessment Guidelines, the question of how the PPMs meet Basin Plan objectives is a different matter (in the view of RMO). Again, we will recommend, and if necessary help facilitate broader discussions within the MDBA.

Assumptions about the behaviour of environmental entitlement holders

- The plan makes a number of assumptions about the behaviour and future decisions of environmental water holders. We suggest that some are incorrect and that it is too early in the life of environmental watering under the Basin Plan to be assuming or locking in such behaviours, particularly in the absence of constraints being addressed.
- If assumptions are not right, they obviously affect the effectiveness of the plan to achieve what it's supposed to, which is to help facilitate meeting of the Basin Plan objectives.
- This could have been dealt with by adequate and appropriate consultation with environmental water holder

Hopefully this doesn't make the MDBA look to sensitive, but this is a little harsh! One of the challenges of the plan is that the delivery of environmental water is still evolving, and we don't want to lock in impracticable, unreasonable etc approaches. A few tweaks have been made to make this clearer.

s22
A/g Director

River Operations Improvement

River Operations Branch, River Management Division

Australian Government | MURRAY–DARLING BASIN AUTHORITY

Murray–Darling Basin Authority
GPO Box 1801 Canberra ACT 2601
p: (02) 6279 s22

f: (02) 6279 6005
s22 @mdba.gov.au
w: www.mdba.gov.au
Follow the MDBA:

In the spirit of strengthening partnerships with Aboriginal people the MDBA acknowledges the cultural authority of the Traditional Owners in the Murray–Darling Basin

DISCLAIMER: This message, and any attachments, is intended for the addressee(s) named and may contain confidential or privileged information. If you are not the intended recipient please immediately delete this email, and any attachments, and notify the sender. This email is subject to copyright and no part of it may be used without the express written permission of the copyright holder(s). The views expressed in this message may be those of the individual sender and are not necessarily the views of the Murray-Darling Basin Authority ("the MDBA"). To the extent permitted by law the MDBA does not represent or guarantee that the email and any attachments are free of errors, viruses or defects. The MDBA accepts no liability for loss or damage arising from the use of this email or any attachments.

DISCLAIMER: This message, and any attachments, is intended for the addressee(s) named and may contain confidential or privileged information. If you are not the intended recipient please immediately delete this email, and any attachments, and notify the sender. This email is subject to copyright and no part of it may be used without the express written permission of the copyright holder(s). The views expressed in this message may be those of the individual sender and are not necessarily the views of the Murray-Darling Basin Authority ("the MDBA"). To the extent permitted by law the MDBA does not represent or guarantee that the email and any attachments are free of errors, viruses or defects. The MDBA accepts no liability for loss or damage arising from the use of this email or any attachments.

Pre-requisite Policy Measures

Implementation Plan for the River Murray System

Final Draft v.3

Document history and status

Version	Date issued	Prepared by	Prepared for	Notes
Draft 1	30 April 2015	MDBA	SDLAAC 13	Contents in the section *Progress towards full implementation of PPMs* is subject to change pending consideration of the *2015-16 Environmental watering trial* by BOC.
Draft 2	30 June 2015	MDBA	Submission to the MDBA for initial assessment	Seeks to address the feedback received at the 3 June 2015 teleconference.
Final Draft	2 March 2016	MDBA	Submission to the NSW, Victoria and South Australia for approval	Addresses the initial MDBA assessment. Incorporates recommendations from the jurisdictions and by IRORG's review of the 2014-15 environmental watering trial
Final Draft v.2	24 June 2016	MDBA	Submission to the NSW, Victoria and South Australia for approval	Incorporated feedback from the jurisdictions/States, Commonwealth Environmental Water Office and checked for consistency with the planned 2016-17 environmental water trial. Approved by Joseph Davis, Senior Director, Operations, River Management Division on 24 June 2016).
Final Draft v.3	5 July 2016	MDBA	Submission to the NSW, Victoria and South Australia for approval	Incorporates feedback from NSW, Vic, CEWO.

Table of Contents

1. Introduction

1.1 Background

This is the final Pre-requisite Policy Measures (PPMs) Implementation Plan for the River Murray System (RMS). It sets out the framework to guide the implementation of the PPMs in the RMS by 30 June 2019.

The PPMs are described in the *Basin Plan 2012* (Basin Plan) as Unimplemented Policy Measures (s7.15). These are anticipated measures consisting of a policy to:

a) credit environmental return flows for downstream environmental use; or
b) allow the call of held environmental water (HEW) from storage during un-regulated flow events.

The PPMs outlined in the Basin Plan seek outcomes that:

- provide for HEW releases from storages on top of other in-stream flows, including unregulated flows[1]; and
- allow environmental water to flow throughout the length of the river, including being re-used at multiple sites along the river, and to flow between rivers; and be protected from extraction, re-regulation or substitution for non-environmental purposes.

This Implementation Plan outlines a pathway for how PPMs will be implemented by 30 June 2019. It has been developed to meet the requirements of the PPM Assessment Guidelines (see Table 3) which require arrangements that:

- are secure and enduring
- are fully operable
- are transparent
- identifies and mitigates risks
- provide for releases of environmental water from an upper River Murray storage on top of other in-stream flows, including unregulated flows
- allows for environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution.

The Murray-Darling Basin Authority (MDBA) has coordinated the preparation of this Implementation Plan on behalf of the jurisdictions. The development of the Implementation Plan has been overseen by the Sustainable Diversion Limit Adjustment Assessment Committee (SDLAAC). MDBA has worked closely with representatives from the Australian and State governments, primarily the Water Liaison Working Group (WLWG) to develop the plan. This Implementation Plan identifies issues and associated tasks required to implement the PPMs in the RMS between now and June 2019. It builds on the environmental watering trials that have been undertaken in the RMS annually since 2010-11, which have been testing and refining methods to deliver environmental water. ~~The policy assumptions in the Basin Plan that became the PPMs were based on the early environmental watering trials.~~

Commented [A1]: MDBA 1.This is not a key point, so I have deleted it. It is correct that the early trials informed the BP modelling assumptions.

[1] In NSW environmental releases made in conjunction with an unregulated flow event is referred to as 'piggybacking'.

The Independent River Operations Review Group (IRORG) annually reviews the MDBA's performance in operating the RMS and provides recommendations for improvement (see also section 4). It is anticipated that the proposed changes discussed in the following sections will support the implementation of recommendations that:

- E2012:08 *the MDBA develop a strategic roadmap that identifies agreed timelines and priorities for resolving operational and water accounting processes that represent barriers to effective environmental water delivery.*
- E2014:06 *the MDBA builds upon the CMS* (Constraints Management Strategy) *and develops a prioritised work program that identifies:*
    - *the tasks required to resolve key operational and water accounting issues associated with environmental water delivery,*
    - *the process for developing/operationalising new delivery practices that have already been sufficiently tested; and*
    - *the timing and resources that will be committed to addressing each task.*
- E2015:03 *the MDBA and jurisdictions continue to work collaboratively on the PPM implementation program, and ensure that sufficient resources are made available in a timely manner to support the planned work program.*
- E2015:07 *the Authority* (MDBA) *progressively develop environmental water delivery guidelines to capture good practice in the planning, co-ordination, implementation and accounting for environmental events, and that these guidelines should form part of the framework for river operations in the River Murray system* (sic).

1.2 Relationship to State plans

This Implementation Plan addresses the collective actions required to implement PPMs in the RMS. This is often referred to as the 'wholesale' or 'bulk' entitlement level.

The States of New South Wales (NSW), Victoria and South Australia (SA) (States) have prepared separate State PPM Implementation Plans. These plans are need to address the changes required to implement the PPMs in State regulatory and operations frameworks. The State plans will include the tributaries and State responsibilities in the RMS. The State level is usually referred to as the 'retail' level. . Collectively the four plans will implement the PPMs, the plans have been written separately, and are not integrated. Consideration has been given to potential areas of inconsistency, with the view that different approaches can work together to implement the PPMs.

Commented [A2]: MDBA 2.I've changed the tone in response to comment A1.

The extent of implementation of the PPMs, both at the wholesale and retail levels will be assessed by the MDBA as part of the final determination of the Sustainable Diversion Limit adjustment mechanism under section 7.21 of the Basin Plan in 2024

Commented [A3]: MDBA 3.In response to comment A1 – it won't go far enough, but at least explains our approach.

Figure 1 summarises the differences between the wholesale and retail levels. MDBA provide State environmental water in addition to water required for other uses such as irrigation water and town water. Environmental flows may consist of water from the retail accounts of multiple States. As shown in Figure 1 delivery of environmental water is managed at the wholesale level by MDBA and at the retail level by each State.

Figure 1: Two entitlement levels - Wholesale and Retail

The roles and respons bilities for developing the various PPM Implementation Plans, and for implementing the required changes in the RMS are outlined in **Appendix A**.

2. Approach to the implementation of PPMs in the River Murray System

Work to implement the PPMs in the RMS will focus on two key areas:

a) Work-stream 1 - Trialling of practices and procedures required to fully implement PPMs through annual environmental watering trials. This will test and resolve technical issues associated with the implementation of the PPMs before they are formally adopted.
b) Work-stream 2 - Codifying the practices and procedures required to implement the PPMs into the Murray-Darling Basin Agreement (MDB Agreement) and other river operations instruments. This will ensure the arrangements are secure and enduring.

Over time, all aspects of work-stream 1 will move to work-stream 2.

Consistent with the Basin Plan (sub-s 7.15(1)), PPMs will be implemented to the extent that 'there are no detrimental impacts on reliability of supply of water to the holders of water access rights that are not offset or negated'.

2.1 Work-stream 1

Work-stream 1 supports the testing of operational actions through environmental watering trials. The purpose of the trials, as agreed by the Basin Officials Committee (BOC) at meeting 20 (14 February 2013), is to work towards:

a) incorporating environmental delivery into normal River Murray operations by identifying and analysing issues and potential changes to current operational practices and the enabling instruments

b) the resolution of unimplemented policy measures under the Basin Plan.

The Basin Officials Committee (BOC) has agreed to an annual environmental watering trial since 2010-11. The trials cover many of the actions needed to implement the PPMs and manage State water entitlements for environmental water delivery in the RMS.

The 2016-17 trial was approved by BOC at meeting 41 (28 April 2016). The trial continues to test actions from previous trials, adopts improved approaches and includes new actions arising from lessons from the previous trials. In summary it identifies:

a) river operations actions that are not codified in the MDB Agreement and other river operations instruments, and therefore requires BOC approval

b) risks associated with the uncodified actions

c) strategies to mitigate potential risks on State entitlements for BOC approval, and notes mitigation measures that should be undertaken by other stakeholders.

Once the MDBA and jurisdictions (States and the Commonwealth of Australia) are satisfied that the actions in the trials are sufficiently tested and ready for formal adoption, they will be transferred into work-stream 2 for codification in relevant instruments. As a result of the findings from previous environmental watering trials, it is likely that some actions in work-stream 1 will move into work-stream 2 earlier than others.

The environmental watering trials seek to provide a way for MDBA river operators to deliver environmental water, without adversely impacting other water users. Given this, they seek to meet the needs of environmental water holders as much as possible, but may not fully meet their needs or expectations. There is a risk that environment entitlement holders will not support the trial if they consider that the proposed measures prevent the cost effective delivery of environmental water. To manage this risk, the trials are developed in close consultation with WLWG, who seek to balance the needs of all water users, ~~represent all water users,~~ including environmental water. WLWG has been active for many years in revising river operations ~~is therefore well placed~~ to ~~ensure a balance is met that~~ support~~s~~ the needs of environmental entitlement holders while continuing to meet the on-going needs and rights of existing consumptive users. In addition, the past practice of consulting with the SCBEWC will continue.

Commented [A4]: MDBA 4. Revised in response to comment A4

The environmental watering trials have been vital for determining the best way to implement the PPMs. However, the actions that can be tested in the trials depend entirely on the conditions experienced in the water year, ~~and~~ the environmental requirements and the decisions of environmental water holders. As such, there is a risk that not all of the actions in the trial will be fully tested before 2019, for example dry conditions have meant that none of the actions related to the Menindee Lakes Storage have yet been tested. Should aspects of the PPMs have not been tested by 2019, the measures put in place in 2019 will be based on the best available information at that time, and amended as more information is obtained,

Commented [A5]: MDBA 5. In response to comment A5

new risks are identified, lessons learnt etc. The BOC may also choose other arrangements, such as including a timeframe for the SO&O to be reviewed or a sunset provision. If there is a high degree of uncertainty, it may be necessary for the BOC to continue to trial appropriate measures, based on an in-principle agreement to adopt secure and enduring arrangements, such as new SO&Os once the measures have been adequately tested. Adaptive management is discussed further in section 4.

The key dates for the development of the environmental watering trials are summarised in Table 1. It is anticipated that the trials will continue for another two years.

Table 1: Key dates for the development of the environmental watering trial (work-stream 1), for each water year in which a trial takes place.

Indicative timeline	**Activity**	**Responsibility**
February - April	Develop the trial for the upcoming water year	MDBA, with the advice of WLWG and SCBEWC*
June	Approve the uncodified actions to support the trial	BOC (through WLWG and RMOC**)
1 June - 31 May	Undertake the trial	MDBA River Operations and environment entitlement holders
August-September	Review the trial	IRORG
October	Determine which aspects of the trial can be moved to work-stream 2	WLWG

*Southern Connected Basin Environmental Watering Committee
**River Murray Operating Committee

2.2 Work-stream 2

Work-stream 2 involves incorporating the actions to implement the PPMs into the various instruments that guide river operations. They include:

1. The Murray-Darling Basin Agreement (the MDB Agreement), which includes details of the distribution of water between the States and some high level obligations and commitments for river operations.
2. The Objectives and Outcomes for river operations in the River Murray System (Objectives and Outcomes document), which includes the:
    a. (General) Objectives and Outcomes (O&Os) which MDBA strives to achieve in its river operations.
    b. Specific Objectives and Outcomes (SO&Os) which detail how the agreed rules for river operations relate to the General Objectives and Outcomes.
3. Internal documents such as MDBA procedures, guidelines and manuals.

Amending the MDB Agreement is a complex process, which occurs infrequently. As such, changes to the MDB Agreement to implement the PPMs will need to fit with other processes, primarily the Sustainable Diversion Limit (SDL) adjustment mechanism. The MDBA, at the request of BOC has engaged a consultant with expertise in water management to work with

the States and the MDBA to scope the required changes to the MDB Agreement and other river operations instruments to implement the SDL adjustment mechanism, including the PPMs. In principle agreement on the required changes will be included in a new schedule to the Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin. The schedule is to be in place by mid-2017.

This plan assumes that the scoping and drafting of the changes will be a joint activity between the MDBA and the jurisdictions. Changes will be drafted consistently with the requirements of the PPM Assessment Guidelines. Key dates for work-stream 2 are summarised in Table 2, more detailed information on specific activities from July 2016 to June 2019 is provided in section 5.

Table 2: Key dates for work-stream 2

Indicative timeline	Activity	Responsibility
July 2015 - February 2016	Scope options of changes to river operations instruments	MDBA/Jurisdictions
June 2016	Agree the final PPM Implementation Plan	NSW, Victoria and SA SDLAAC members
July 2016 to 2019	Draft changes to river operations instruments	MDBA
	Endorse changes to the instruments	WLWG/RMOC
	Agree any changes to the O&O/SO&O Recommend any changes to the MDB Agreement	BOC
	Agree any changes to the MDB Agreement	Ministerial Council

Changes to the O&O/SO&Os to implement the PPMs may be made by BOC periodically between 2016 and 2019, for example as part of the annual review of the in the Objectives and Outcomes document. However, as most changes rely on further testing through the environmental watering trials they are most likely to be made in 2019. Ministerial Council will only be asked once to make amendments to the MDB Agreement.

Progress against this implementation plan will be periodically reported to key stakeholders, such as the WLWG, SDLAAC and BOC.

3. Consistency with PPM Assessment Guidelines

The PPM Assessment Guidelines describe how the MDBA expects the PPMs to be implemented. The guidelines are outcomes focused, recognising that the best way to implement the PPMs will vary depending on such things as location, historic practice and the needs of entitlement holders. The approach for meeting the guidelines in this implementation plan is summarised in Table 3**Error! Reference source not found.**.

Table 3: Planned approach to maintaining consistency with the PPM Assessment Guidelines

Assessment Guideline	**Summary of approach to meet the Guidelines**
1) Secure and enduring	Agreed approaches will be codified in the various river operations instruments.
2) Fully operable	~~All activities to ensure full implementation of the PPMs have been fully scoped with State and Commonwealth and included in the implementation plan.~~ Options are trialled before being codified in river operations instruments. The Objective and Outcomes document embeds an adaptive management approach that allows for changes to reflect new information, emerging risks, changing needs etc.
3) Transparent	Options have been developed in consultation with State and Commonwealth water agencies. Annual Operating Plan will include expected operations, key assumptions etc. for environmental water activities in the coming water year. The MDBA reports to BOC on its compliance against the O&O document, including the SO&Os through the Annual River Operations Report. The report will discuss the methods used, relevant assumptions, any issues that occurred and suggest potential improvements. The report is independently reviewed by the Review of River Operations Group (IRORG) and is an important component of the MDBA's adaptive management process. River operations instruments are made available to State and Commonwealth water agencies, information not made publically available is usually able to be provided on request.
4) Identifies and mitigates risks	Risks and mitigation measures are identified for each of the agreed tasks required to implement the PPMs. The effectiveness of the mitigation measures are tested in the trials and are reviewed and revised accordingly. Agreed mitigation measures will be codified in river operations instruments.

Assessment Guideline	Summary of approach to meet the Guidelines
5) Provide for releases of environmental water from storages on top of other in-stream flows, including unregulated flows	The issues have been ~~fully~~ scoped and actions tested to ensure the agreed actions achieve this outcome.
6) Allows for environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution	The issues have been ~~fully~~ scoped and actions tested to ensure the agreed actions achieve this outcome.

NB: Table 3~~Table 3~~ addresses the key themes in the PPM Assessment Guidelines. There are more detailed requirements under each of these themes. These additional requirement are addressed in Section 5.

Commented [A6]: MDBA 6.Comment A15 says that the plan does not demonstrate this. This is subjective, so I've deleted the adverb.

Formatted: Font: 10 pt, Italic

4. Adaptive Management

The PPMs will be made secure and enduring through inclusion in relevant river operations instruments, such as the MDB Agreement or SO&Os by 2019. ~~This will represent the best available information at that time~~. However, the delivery of environmental water is still evolving, and it is unlikely that a comprehensive understanding of the best approach will be known by June 2019. ~~river operations are constantly evolving and adaptive management is a fundamental to good river operations.~~ As such, adaptive management will be a key part of the ongoing process for implementing the PPMs. T~~t~~he measures put in place in 2019 to implement the PPMs will represent the best available information at that time but they will be reviewed and amended as more information is obtained, new risks are identified and lessons learnt. In light of this, it is important to note that the extent of implementation of the PPMs, will be assessed by the MDBA as part of the final determination of the Sustainable Diversion Limit adjustment mechanism under section 7.21 of the Basin Plan in 2024, and as such any changes will need to ensure that the PPMs are fully implemented and consistent with the PPM Assessment Guidelines.

~~In some cases, adaptive management will be explicitly part of the implementation approach, for example the method for estimating assumed use (section 5.2.2).~~

Adaptive management will particularly ~~continue to be~~ important for those ~~in developing~~ measures that could not be extensively tested through the environmental watering trials. In these cases, the adaptive management approach will continue to be applied to on-going trials or will be explicitly included as part of the new SO&O (see section 2.1).In other cases, adaptive management will be explicitly part of the implementation approach, for example the method for estimating assumed use (section 5.2.2).

The MDBA undertakes a range of activities that reflect an adaptive management process, but there is no single, formal process. The two primary approaches for adaptive management used in river operations are descr bed below.

At the end of each water year the MDBA prepares a report on how river operations achieved the requirements of the Objectives and Outcomes document, a separate report on environmental water delivery is also prepared. This report is reviewed by the IRORG, which both analyses the findings of the reports and consults with representatives from the jurisdictions and State Constructing Authority on any issues or concerns they may have. From this, IRORG make recommendations to improve river operations. The MDBA is not required to implement IRORG's recommendations, they are discussed with WLWG and reported to BOC, and implemented as agreed by the jurisdictions. The process is ~~well~~ supported by the jurisdictions and encourages active review of practices and the adoption of improvements.

Adaptive management is also built into the Objectives and Outcomes document. BOC require the document to be reviewed annually, which helps ensure that it is up to date and fit for purpose. In addition, the SO&Os section is designed to allow for amendments to be made to it relatively easily, allowing for improvements to be adopted quickly.

Adaptive management is also embedded in river operations through the Environmental Guidelines process, which:

- identifies issues arising from river operations practices
- undertakes research, trials etc. to test new practices

Commented [A7]: MDBA 7.Revised words seek to reflect the CEWO's comments about too early to assume certain behaviour, and to provide assurance that changes will be improvements (noting that in the interest of balancing risks, not every stakeholder will view every change as an improvement…The statement about the extent of implementa ion is repeated to provide some assurance of adequate implementation.

- formalises new approaches in documentation
- reviews the approach post implementation
- amends the practices and documentation to reflect lessons from the review.

The practices used in the Objectives and Outcomes document and the Environmental Guidelines will support the ongoing implementation of the PPMs. For example to ensure that mitigation measures to address risks to State water entitlements remain effective.

Although not formalised, the adaptive management approach used by the MDBA is consistent with the adaptive management requirements in sections 1.1 and 1.2 of the PPM Assessment Guidelines.

5. Implementing the PPMs

This section details the work required to implement the PPMs in the RMS by June 2019 by focusing on two specific criteria in the PPM Assessment Guidelines. Specifically:

1. sub-section 5.1 focuses on four issues that address PPM1: Releases of environmental water on top of other in-stream flows, including unregulated events
2. sub-section 5.2 focuses on five issues that address PPM2: Environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution.

Each issue is discussed in terms of:

- a background that describes why it is an issue, including associated risks
- the options that have been considered to address the issue, and associated risks
- the proposed change
- a way forward for implementing the change.

A summary of the activities and timeframes to implement the PPMs is provided in **Appendix B**.

5.1 PPM1: Releases of environmental water on top of other in-stream flows, including unregulated events

To implement PPM 1, the PPM Assessment Guidelines require PPM Implementation Plans to:

- Demonstrate the ability for the release of HEW from storages during unregulated flow events.
- Identify a transparent process to estimate environmental releases.
- Show that when HEW is released on-top of other instream flows or unregulated flows, that only the additional volume of water released to meet environmental requirements is accounted for.

The ability to make directed releases from an upper River Murray Storage requires the following issues to be addressed:

- Absence of an explicit provision for operators to release water from the upper River Murray storages.

- Releases of HEW from storage may impact reliability of State and retail water entitlements.
- Environmental watering has changed storage management and flood risk.
- A method to estimate the volumes of environmental releases from storage.

These are discussed in the following sub-sections.

5.1.1 Absence of an enabling provision for directed releases from the upper River Murray storages

Background

There are no explicit 'rules' which prohibit releases from the upper River Murray storages, including during unregulated flows, to meet retail entitlement demand. Rather, there is an absence of explicit enabling provisions to allow the MDBA to release HEW from storages, including during unregulated flows.

The MDBA and jurisdictions have agreed that clause 98 of the MDB Agreement provides the MDBA with sufficient powers to make directed releases from the upper River Murray storages to meet demands. Clause 98 describes the MDBA's role in the operation of the upper River Murray storages. Two key components of clause 98 support the MDBA to make releases from these storages to meet environmental demands:

- Para 98(3)(iv) requires the MDBA to have regard for 'facilitating the exercise by New South Wales and Victoria of their respective rights to use water from the upper River Murray, as they require'.
- Sub-cl 98(4) allows the MDBA to have regard for 'other water management and environmental objectives'.

NSW and Victoria have established operational arrangements to allow entitlement holders to request an order be met from an upper River Murray storage. The State PPM Implementation plans will set out how these arrangements will be formalised, so to meet the requirements of the PPM Assessment Guidelines.

Currently, environmental entitlement holders are not able to request that entitlements held in South Australia be released from an upper River Murray storage. This limitation was not assumed in the Basin Plan modelling; though it is noted that an assessment has not been made regarding the extent, if any, to which the model used this flexibility. To mitigate potential impacts to reliability the environmental watering trials have not allowed entitlements from ~~the~~ South Australia or the tributaries to be traded to the River Murray for a directed release from an upper River Murray storage. Further investigation is required to understand if this restriction should be removed or amended.

Commented [A8]: MDBA 8.Comment A17 suggested dele ing because based on supposition not fact. I think the revised wording is better.

The provisions in clause 98 extend to releases that are within approved maximum regulated flow rates. The Constraints Management Strategy is investigating changes to maximum flow rates.

Traditionally, releases from the upper River Murray storages are only made when the demand cannot be met from other sources, such as water already in the river or tr butary

flows. As such, releases from the storages, when that demand could be met from other sources may impact the reliability of State water entitlements. This is discussed at 5.1.2.

Options

NSW and Victorian frameworks must ensure that entitlement holders can request an order be met from a release from an upper River Murray storage. Further work is required to understand if the current practice of only allowing directed releases to be made with NSW or Victorian Murray entitlements should be ceased or amended. If a change is required, SA may also need to ensure entitlement holders can request a directed release from an upper River Murray storage.

NB: There are potential links between this work and work set out in section 5.2.5 simplification of the delivery environmental water to South Australia: for example this might provide alternatives to relying on environmental entitlement holders to utilise state specific access entitlements.

Commented [A9]: MDBA 9.In response to comment 18.

Prior to reaching the conclusion that there is sufficient power in the MDB Agreement, the following options were also considered:

- Continue to seek ad-hoc agreement from BOC to undertake directed releases.
- Amend the MDB Agreement or Objectives and Outcomes document to specifically state that the MDBA may direct water to be released from the upper River Murray storages to meet downstream demands.

Way forward

Further work is required to understand if the current practice of only allowing directed releases to be made with NSW or Victorian Murray entitlements should be ceased or amended.

Table ~~4~~5: indicative timeframe, activities and responsibility for providing an explicit right to release from an upper River Murray storage

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – May 2018	Technical and operational analysis, and potentially trialling of options	MDBA/Jurisdictions
June - November 2018	Consolidate findings	MDBA/Jurisdictions
December 2018	Endorse SO&O	WLWG
February 2019	Endorse SO&O	RMOC
April 2019	Approve SO&O	BOC

5.1.2 Releases of Held Environmental Water from storage may impact reliability of State and retail water entitlements

Background

Directly releasing from the upper River Murray storages has the potential to impact the reliability of water entitlements. Historically, the supply of entitlements was first met from flows already in the river, then the closest tributary or storage, with releases from the upper River Murray storages last. As such, the reliability of retail entitlements is based on all available water sources (for example, unregulated flows, water from tributaries and all storages) and not just water from the upper River Murray storages. Meeting an order from a storage, when it could be met from other sources will affect the way the storage is managed and other system operations, with potential implications for water entitlements. The aggregate effect could be positive or negative, depending on several factors, such as timing of the releases and whether the reservoir subsequently refills.

NB, The volume and duration of unregulated flow events depends on actual flows in the river that are above any forecast demand, allowing access for NSW Supplementary Entitlements, Victorian unregulated flow entitlements and Victorian Bulk Diversions. The MDBA determines unregulated flow events in accordance with "SO&O 12.7 Planning for, and communication of potential unregulated flow advice". Diversions allowed by States during unregulated flow events will continue in accordance with State rules. Any environmental water released on top of unregulated flows is accounted for separately in regards to any such unregulated flow announcements. This ensures that there is no net difference during unregulated flow events, in other words the volume of unregulated flows available to water users during the event remains unchanged while the additional ordered environmental water is unavailable for consumptive use.

There is also a potential that the trading of significant retail entitlements from a tr butary for directed releases from an upper River Murray storage could also impact the reliability of another State. As noted in section 5.1.1, to mitigate such a potential impact, these actions are currently not allowed. Further investigation is required to determine if the restriction could be removed or amended.

Releases of environmental water from the upper River Murray storages to supplement unregulated flows was included in the Basin Plan modelling. The Basin Plan modelling indicated there was a very low risk to reliability as a result of directed releases from the upper River Murray storages. The modelling maintained diversions in order to ensure that reliability was not affected. Further modelling is required to better understand the impacts on reliability and the appropriateness of the risk mitigation measures. This will include:

- the effectiveness of volumetric limits
- possible alternative approaches
- identifying the conditions when risks are likely to be highest, such as in very dry conditions
- possible implications if assumed channel capacity constraints change.

This analysis will inform the final approach.

The environmental watering trials have allowed for the release of HEW from Hume Dam from 2010-11 and from the Menindee Lakes since 2013-14. Allowing for releases from Lake Victoria was included in the 2015-16 trial. Releases have been made in all water years from Hume Dam but have not yet occurred from Menindee Lakes or Lake Victoria. The

Commented [A10]: MDBA 10.Comment A20 suggests a comprehensive look at op ions. Some of the suggestions are more appropriate to section 5 2.5.

2015-16 trial uses the term 'directed releases to meet downstream demand' for releases of HEW from the upper River Murray storages.

Options

The following sections outline options to mitigate the risks to reliability at each of the upper River Murray storages[2]. As an initial mitigation measure, a maximum volume of release has been identified for individual storages. These values are based on preliminary modelling and initial environmental trials. As discussed above, additional analysis is required to better understand the risks and mitigation measures. The preferred approach will be reviewed as new information becomes available, for example if a higher or lower limit or an entirely different approach is more appropriate.

In addition to the actions at the wholesale level, there are a number of measures at the retail level that the States could take to help mitigate the risks to reliability from directed releases. The environmental watering trials have recommended measures the States and entitlement holders should consider taking to reduce the risks. For example, limiting directed releases to NSW and Victorian Murray water entitlements and sharing the releases as equally as possible between NSW and Victorian water entitlements, noting that it is up to environmental entitlement holders to determine the balance of entitlements used for particular watering actions. These issues will need to be considered in the State PPM Implementation Plans and with environmental entitlement holders. As noted in section 5.1.1, this issue may be considered through the work set out in section 5.2.5.

Options to mitigate risks are descr bed below for Hume Dam, Menindee Lakes and Lake Victoria.

Hume Dam

To mitigate the risk to reliability, the trials have limited the volume that could be directly released from Hume Dam to 700 GL/year. This limit is an estimate of the volume of water that should be replaced by historic inflows to the reservoir, which reduces the risk of the reservoir not being as full as poss ble when irrigation demands commence. The 700 GL limit was first approved by BOC for the 2013-14 trial (BOC 21, 2 May 2013) and adopted again in the 2014-15, 2015-16 and 2016-17 trials.

The MDBA undertook analysis to consider the effectiveness of the 700 GL limit (BOC 33, 11 June 2015). The analysis considered how much HEW could be released from Hume Dam with flow rates downstream of Yarrawonga of 15 000/ML day, 18 000/ML day and 25 000/ML day. This work showed that under these flow rates, channel capacity downstream of Yarrawonga limits the amount of HEW which can be used to below the 700 GL limit[3].

Additional analysis is required to better understand the risks and mitigation measures, including the conditions when risks are highest and how to manage the risks when constraints are relaxed.

Menindee Lakes

As with Hume Dam, the environmental watering trials have sought to mitigate potential impacts on reliability from directed releases from the Menindee Lakes by limiting the volume of the release. A limit of 400 GL/year was first approved by BOC for the 2013-14 trial (BOC 21, 2 May 2013) and was adopted again in the 2014-15, 2015-16 and 2016-17 trials. Due to

Commented [A11]: MDBA 11.Comment A21 wants a more balanced approach to risks. This is done in the background sec ion, the example seeks to complement his.

Commented [A12]: MDBA 12.Comment A22 says that this is inconsistent with the PPM assessment guidelines, as it relies on the goodwill of entitlement holders to do this rather than a secure and enduring approach. No change has been made, as this is a matter for he State plans not the Murray plan. MDBA 13.Reference to BED trial added in light of comment A22.

[2] Although an upper River Murray storage, environmental releases are not made from Dartmouth Dam, as such it is not discussed.
[3] The additional analysis will consider the effect of changes to channel capacity.

low storage volumes over the last few water years this provision has not been tested. Forecast seasonal conditions and very low levels in Menindee Lakes mean that the likelihood of using this action in the 2016-17 trial is again very low. Directed releases would only be made if the volume of water held in Menindee Lakes was well above 640 GL[4].

Further to the limit of 400 GL, the trial has only allowed for the directed release to be made during unregulated flow events. Analysis by the MDBA has indicated that releases during unregulated flow minimises risks to reliability (BOC 16, 2 May 2013). In addition, making directed releases in periods when flow to South Australia is regulated would unnecessarily complicate what can already be achieved under existing arrangements. That is, when the Menindee Lakes are under the direction of the MDBA, a direct order at the South Australian border would normally be met by a release from the Menindee Lakes as the priority source of water, and special arrangements are not required.

Preliminary analysis by the MDBA (BOC 16, 2 May 2013) indicates that directed releases could affect the release of additional dilution flows (ADF) to South Australia under certain circumstances. For example, if the directed release sees the Menindee Lakes fall below the ADF trigger points set out in *SO&O 12.3 Additional Dilution Flows to South Australia* earlier than otherwise anticipated. To manage this, the trials have recommended that MDBA assess the implications on ADF and discuss with WLWG, the South Australia Department of Environment, Water and Natural Resources and environmental water holders with the aim of reaching a consensus decision on any directed release from Menindee Lakes. Further investigation of the potential for impacts on ADF is required. In the longer term, ADF is likely to be influenced by the proposed Menindee Lakes SDL supply measure and will need to be reviewed in light of these changes.

Commented [A13]: MDBA 14.Comment A24 correc ly points out that his is reliant on goodwill to be fully operable, and suggest that ADF provisions should be assessed to identify possible alterna ive triggers that avoid substitution and/or is less sensitive to the behaviour of e-water holders. The new sentence reflects that this is likely to occur through the SDL adjustment mechanism

At times when the Menindee Lakes are being drawn down towards 480 GL[5], the making of directed releases, over and above MDBA's existing transfers to Lake Victoria, could negatively impact upon the management of lake levels. Transfers by MDBA are planned to maximise overall water availability without unduly jeopardising future water security at Menindee Lakes. If directed releases were permitted when the Menindee Lakes are close to 480 GL they could result in NSW having reduced access to water in Lakes Wetherell and Pamamaroo, increasing risks around local water security. To avoid this, an additional mitigating measure has been included in the 2016-17 environmental watering trial to limit flow rates to those specified in *SO&O 10.4 Distribution of water stored within Menindee Lakes Storage*.

Lake Victoria

Entitlement holders may wish to prolong higher flows to South Australia by releasing additional water from Lake Victoria towards the end of an unregulated flow event. Under the current practice, entitlement holders have to order and provide the full flow in excess of base entitlement. This effectively requires entitlement holders to supply a significant volume of water that would otherwise have been unregulated. Such a use of entitlement is very difficult to justify and so entitlement holders generally wait until flows have receded to regulated entitlement before ordering. This can result in sharp changes in the hydrograph with flows first receding to entitlement rates before being increased again to meet environmental requirements.

[4] Cl 95(1) of the MDB Agreement states that when the Menindee Lakes volumes fall below 480 GL NSW may use the water in the Lakes as they require; the water is managed by the MDBA as part of the shared resource when the volume next exceeds 640 GL.

In order to provide a smoother hydrograph, the 2015-16 trial introduced a new practice that, once Lake Victoria is filled, States may call on water from Lake Victoria to add to the unregulated flow event. Unfortunately, conditions in 2015-16 did not allow the measure to be tested. The measure was also included in the 2016-17 trial.

The MDBA does not expect there to be many opportunities to undertake this action. In the event that it does occur, it will be towards the end of an unregulated flow event and only small volumes are likely to be delivered. As the lake will be filled and the volume of releases small risks to reliability are not expected. Given this, a limit on the volume of the release is not proposed at this time.

This approach will be reviewed and potentially modified over time. The wholesale, or 'bu k' provisions under cl 98 of the MDB Agreement may provide a more flexible and comprehensive solution to directed releases from Lake Victoria. The MDBA will explore this with jurisdictions and look to include it in future environmental water trials. Modelling analysis is not expected to be required at this time.

Proposed change

The preferred approach is to prepare a new SO&O for the management of risks to reliability associated with directed releases from the upper River Murray storages.

Before an SO&O can be agreed, further work is required to demonstrate that the risks are fully understood and the associated mitigation measures are ~~adequate~~appropriate. As such, directed releases from upper River Murray storages will continue to be tested through the environmental watering trials. MDBA will undertake additional hydrologic modelling and technical analysis to better understand the risks of directed releases, identify appropriate mitigation measures and consider the costs/benefits of making the release.

Commented [A14]: MDBA 15.A consistent theme in the comments from CEWO is that e-water might improve reliability, e g comment A23. Appropriate has been used in an attempt to better reflect this. MDBA 16.Comment A23 also ask if e-water holders would receive a dividend if the risk to reliability is reduced by their actions. No, but we would change our mi igation approach.

The establishment of an SO&O will usually, but not always require methods, practices etc. to be incorporated into MDBA internal documents. At this stage, further guidance to support the proposed SO&O is not expected. If this changes, guidance will be developed in consultation with the WLWG and other stakeholders on the advice of the WLWG.

The SO&O will need to be in place by June 2019. As discussed in section 4~~42.4~~, the SO&O will be based on the best available information and amended as required.

Way forward

Table 5~~Table 6Table 5~~ provides and indicative timeframe, activities and responsibilities to develop an SO&O for the mitigation of the risks of directed releases from the upper River Murray storages.

Table ~~5~~6: An indicative timeframe, activities and responsibility for the development of an SO&O to mitigate the risks of directed releases from upper River Murray storages

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – May 2018	Conduct trials	MDBA River Operations and Environment entitlement holders
June 2016 – May 2018	Technical and operational analysis	MDBA/Jurisdictions
June - November 2018	Consolidate findings	MDBA/Jurisdictions
December 2018	Endorse SO&O	WLWG
February 2019	Endorse SO&O	RMOC
April 2019	Approve SO&O	BOC

5.1.3 Managing potential risks from airspace management at Hume Dam

Background

Hume Dam is managed for water supply purposes. When the storage level is low, Hume Dam provides a high degree of flood protection for downstream communities as it can store large floods flowing in from upstream. In wetter years, the water level is managed to increase Hume Reservoir towards full supply level with the aim of filling it to 99% ("effectively full") by the time downstream demand exceeds inflow. Unlike other dams, Hume Dam cannot store water above the full supply level. When it is full, floodwaters entering from upstream must be released through the spillway — only a limited reduction in flood peak height is possible.

The seasonal profile of releases from Hume Dam is changing as a result of HEW demands being earlier in the water year than historical irrigator demands. Although environmental water delivery patterns are still evolving, so far ~~Generally~~ the timing of HEW releases has generally occured~~s~~ when the storage is filling, and at times spilling. This changed demand pattern combined with the large volumes of HEW is altering the way the storage is managed and potentially increasing the risk of the dam spilling.

Commented [A15]: MDBA 17.Revised words in response to comment A26

In general, with environmental water demands starting before irrigation demands, the airspace target at Hume Dam is likely to be significantly less than was the case prior to the availability of large volumes of HEW. In response the MDBA aims to fill the storage earlier in readiness to meet these environmental demands. As a result, in some years the storage can be full or close to full for a significantly longer period during the peak inflow period. The unique characteristics of Hume Dam – large local catchment, the lack of any significant

surcharge capacity and close proximity to a large urban centre - mean that during this time there would be reduced capacity to mitigate high inflows during a significant rainfall event.

Addressing this issue is not specifically required to implement the PPMs, but further manages potential risks from allowing directed releases from Hume Dam. Alternative operations for Hume Dam are being considered in the SDL supply proposal *Hume Dam Airspace Management and Pre-release Rules'*. It is proposed that the issue be addressed through this process, not through the implementation of the PPMs in the River Murray.

NB the SDL proposal may have implications for the operation of the South Australian storage right under Schedule G to the MDB Agreement.

Commented [A16]: MDBA 18. Comment A27 says that the SDL proposal has not been agreed and should not be assumed. The proposal was in the list of proposals agreed by Ministers on 22 April, so has been accepted, although details around the changes are still being developed.

Options

Options to address the reduced capacity to mitigate high inflows are being considered through the SDL adjustment mechanism. Options will need to also consider risks to the efficient use of environmental entitlements as well as to downstream communities.

Commented [A17]: MDBA 19.Comments A28 and A30 say this should be considered despite the SDL process. The working group has agreed that it is better to progress this inn the one forum, as it supports but isn't required to implement the PPMs, the SDL space is more appropriate.

Proposed change

The MDBA and WLWG are working through options to manage the potential risks from changing airspace management at Hume Dam through the SDL assessment mechanism process. It is likely that amendments to SO&O 2.4 *Hume Airspace and Flood Management* will be required. The final approach will need to be incorporated into the MDBA's flood management documents for Hume Dam.

Formatted: No underline

Way forward

This will be progressed through the SDL adjustment mechanism.

5.1.4 Estimating environmental releases from an upper River Murray storage

Background

Directed releases from storage will require a method to calculate the volume of entitlement released. The modelling to support the Basin Plan assumed that the volume of HEW released would be the difference between the water already in the system and volume required to achieve the flow or hydrograph required to meet environmental needs (Figure 2). Significantly more environmental water would be required to achieve the desired flow or hydrograph if this approach is unavailable.

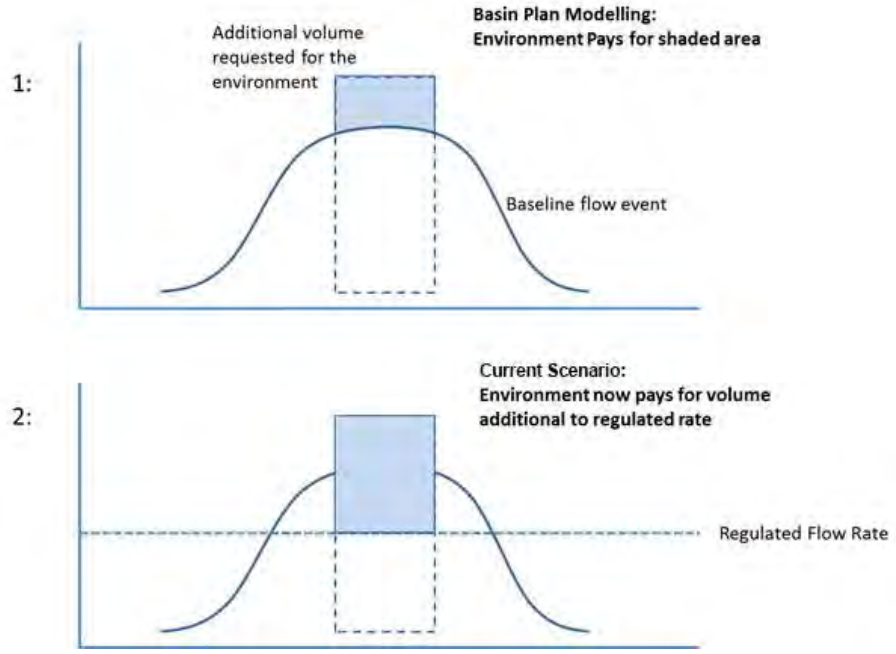


Figure 2: Comparison between the assumptions in the Basin Plan modelling for accounting for environmental flows (1, top) and the original approach (2, bottom).

Directed releases from headwater storage therefore require a specific accounting approach. Most accounting is based on the measurement or modelling of extractions from the RMS. In the case of directed releases, a method is required to determine the *additional volume* of water released from headwater storage to meet the required flow or hydrograph.

The 2010-11 and 2011- 12 trials attempted to measure the volume of additional release as environmental use, however this proved impractical and was abandoned[6].

In 2012-13 (BOC 16, May 2012), a new method was trialled whereby accounting for directed releases from upper River Murray storages was determined as the difference between the actual release and an estimated "without directed release" volume. This method proved operationally practical and has been in use ever since, with minor improvements[7].

In planning for this, the environmental water holders will make available their estimated additional volume of water (generally a range) to achieve the required flow or hydrograph. However the final environmental release volume will ultimately depend on the river conditions during the period of the watering. This environmental release volume is subsequently deducted from the environmental entitlement holder's account/s. Related to this, is the assumed use rate as discussed in section 5.2.2~~5.2.2~~3.3.2. The assumed use rate is deducted from the environmental release volume and is used to determine the volume of water delivered to the final order point. A robust method to estimate the assumed use rate helps manage the risk of over/under delivery.

[6] BOC out of session 21, 7 September 2010 and BOC Out of Session 33, 7 September 2011.
[7] 2014-15 (BOC 26), 2015-16 (BOC 33) and 2016-17 (BOC 41)

The accounting method has been successfully applied at Hume Dam since 2012-13, however it is important to note that conditions at Menindee Lakes and Lake Victoria have meant that directed releases have not been made from these lakes, and the method has not been tested at these locations.

Options

The method of accounting for directed releases from upper River Murray storages as the difference between the actual release and an estimated "without directed release" volume has been trialled successfully at Hume Dam since 2012-13 and has been supported by IRORG. It is proposed that this method be adopted.

The proposed method for accounting for directed releases from each storage is described below for Hume Dam, Menindee Lakes and Lake Victoria.

Hume Dam

Directed releases from Hume Dam will be estimated by:

a) When Hume Dam is not effectively spilling, directed releases from Hume Dam to be accounted as the difference between the actual release and a hypothetical release case meeting all other water demands.

b) When Hume Dam is effectively spilling, directed releases from Hume Dam to be accounted as the volume by which Hume Dam falls short of reaching the effective full supply level of 99%.

Menindee Lakes

Directed releases from the Menindee Lakes made during periods of unregulated flow will be accounted for as the difference between the actual release (measured at Weir 32) and a hypothetical release without the direct release – which could be expected to be normal minimums during periods of unregulated flow.

Lake Victoria

Directed releases from Lake Victoria will be accounted for as the difference between the actual release and a hypothetical release based upon the MDBA making a high use assessment (high demands and high losses, thereby ~~protecting third parties~~minimising the risk of shortfalls) of the unregulated flow recession back to entitlement flows.

Proposed change

As directed releases from the upper River Murray storages have the potential to have a material effect on State water entitlements, BOC have approved the associated accounting methods as part of the environmental watering trials. As such, the first draft PPM Implementation Plan (June 2015) proposed that the accounting methods be documented in a new SO&O. Subsequent discussions with WLWG indicated that a new SO&O is not required, but that the current approach should be documented in accordance with SO&O 13.1 *Maintenance of the Water Accounts, including the Water Accounting Model, model code and associated data*. SO&O 13.1 requires the MDBA to notify the WLWG of any adjustments to the water accounts, and to keep a log of adjustments to the water accounts.

Commented [A18]: MDBA 20.Comment 31 says 'this should not always be assumed. Should include provisions to account for e-water that is released in addi ion to water provided to ADF'. The method does not preclude this, if ADF was being released it would be part of 'normal minimums'

Commented [A19]: MDBA 21.CEWO saw the 20 June version, which only said high demands and high losses – comment A32 wants that deleted, as it should be a 'realistic assessment'. This is what we do, rightly or wrongly to minimise the risk of shortfall. I've changed 'protecting third parties' due to the sensi ivities about this.

As accounting for the directed releases helps the MDBA manage the potential risks to State water entitlements from directed releases, a requirement to account for the release will be included in the proposed SO&O for mitigating the risks from directed releases (see section 5.1.2~~0~~).

The documentation will need to be in place by June 2019, however the MDBA is constantly improving its methods, as such the document will not be static and will be updated as required[8]. Although the overall approach used in the environmental watering trials is likely to remain the same.

Way forward

MDBA internal documents will be prepared in accordance with SO&O 13.1 for approval by the Executive Director, River Management Division. They will be developed in close consultation with the WLWG and provided to RMOC, and BOC for noting. Table 6~~Table 7Table 6~~ provides an indicative timeframe, activities and responsibilities for the development and approval of the documentation.

The documentation will be written consistently with section 5.2 of the PPM Assessment Guidelines. The guidelines require a transparent process to demonstrate the estimation of environmental releases, which includes:

- the estimation method
- disclosure of assumptions used
- who has the role and responsibility of estimating environmental releases
- the timeframes for advising environmental managers of the estimated environmental releases
- how to address any subsequent adjustments to the estimation
- how any disputes will be resolved
- decision criteria to determine other parts of the hydrograph, such as pre-releases or unregulated flows
- the arrangements to transparently disclose the estimation of environmental releases.

[8] While the PPM Assessment Guidelines support adaptive management, it is important for the overall implementation of the SDL adjustment mechanism that any revisions to the MDBA internal document(s) are improvements only.

Table ~~6~~7~~6~~: An indicative timeframe, activities and responsibility for the development of MDBA internal supporting documentation of the method for estimating directed releases from the upper River Murray storages

Indicative timeframe	**Activity**	**Responsibility**
July 2016 - June 2017	Draft MDBA internal documents	MDBA
July 2017 - December 2017	Consultation with key stakeholders	MDBA
January – March 2018	Revise MDBA internal documentation	MDBA
April 2018	Approve MDBA internal documentation	MDBA
June – September 2018	Note MDBA internal documentation	WLWG/RMOC/ BOC

5.2 PPM2: Environmental water to flow throughout the length of the river, and between rivers; and be protected from extraction, re-regulation or substitution

The PPM Assessment guidelines outline two areas to be considered in implementing PPM 2:

- Ability to ensure flows throughout the length of and between rivers.
- Protection of environmental water from re-regulation or extraction.

The ability to ensure flows throughout the length of and between rivers is partly addressed through the ability to make directed releases from the upper River Murray storages.

There are a number of components to protecting environmental water from re-regulation and extraction. At the retail level, the States have a role in allowing environmental water to be used both within the river and at multiple sites along the river. They must also ensure that the water is not extracted to meet other demands and are responsible for ensuring the use is recognised in the retail accounts. These issues will need to be addressed in the State PPM Implementation Plans.

In the tributaries to the RMS, Victoria has put in place provisions to achieve environmental flows from the Goulburn into the Murray and on to South Australia in some circumstances. The MDBA is working with NSW to develop an approach to protect environmental flows from the Murrumbidgee River to South Australia. In 2015-16, the MDBA and NSW undertook a 'Bulk Entitlement Delivery (BED)' trial that used the provisions of clause 98 of the MDB Agreement to facilitate environmental watering. This BED trial will occur again in 2016-17, the MDBA has recommended both NSW and Victoria participate in the BED trial. This is discussed further in 5.2.5.

At the wholesale level, the MDBA has a key role in managing regulated releases and protecting environmental water from extraction, re-regulation or substitution, when targeting a certain flow event. As part of this role, the MDBA will also advise environmental managers on methods to estimate order volumes to reach those targets. The MDBA must work closely with state based water managers such as Goulburn-Murray Water and WaterNSW to understand how water is being used at various locations in order to determine what portion of the water at a site can be re-regulated or is required for use further downstream. At times, this can create a cross over between the wholesale and retail levels.

The environmental watering trials have managed risks of re-regulation or extraction of directed releases from upper River Murray storages by agreeing an assumed use rate (see section 5.2.25.2.23.3.2) and by mechanisms which 'separate' environmental water from the reporting of the shared resource, so that it reaches downstream sites, including South Australia. These mechanisms continue to operate in unregulated flow periods as the announcements of unregulated flows made by MDBA exclude the required delivery of directed releases across the South Australian border. This aims to ensure that access by States, for example under supplementary entitlements, are not enhanced when directed releases are made during unregulated flow events.

There can also be interaction between the retail and wholesale levels, for example approval conditions at the Koondrook-Perricoota environmental works limit the return of environmental water to the RMS, thus impacting the ability for the water to flow throughout the length of the system. This particular example is being progressed through the Edward-Wakool Constraints Business case.

The next sub-sections deal with the issues that need to be addressed at the wholesale level.

5.2.1 Protect environmental water as it flows through the system

Background

The MDBA undertakes a range of planning, coordination and accounting activities to support the creation of the desired flow event and to protect the event as it flows through the RMS. These activities are consistent with the broadly defined role of river operations set out in clause 2 of the MDB Agreement and cl 4 of the Objectives and Outcomes document but they are not explicitly required. However, delivering environmental water is significantly different to traditional river operations practices to deliver irrigation and town water, and is time and resource intensive. As such, there is benefit to recognising these new functions in the MDB Agreement and the Objectives and Outcomes document. The following two examples seek to demonstrate some of this new work.

For example, an environmental entitlement holder will often want an order to apply throughout the length of the RMS, and to achieve a specific flow event. Currently a water order is placed at a single location (usually an irrigation offtake), and the subsequent recognition of the use of the water is at the authorised diversion point. As such, placing a water order does not guarantee that a flow event will be created upstream or downstream of the order point and any required flow event is only achieved through the goodwill of the MDBA and States to work collaboratively with environmental entitlement holders to plan and coordinate events.

Another example is the work the MDBA does to help the States protect HEW from other deliveries. As HEW is a retail entitlement, and not separately recognised in the MDB Agreement, how it is protected from consumptive use is currently up to the relevant State. As such, HEW that enters the River Murray either from a tributary or from an environmental asset is only recognised as being part of a State water resource. To support the States to protect environmental water, and to ensure all water demands are met, the MDBA needs to distinguish HEW from other water deliveries when doing normal water accounting. This role is not reflected in the MDB Agreement or Objectives and Outcomes document.

Options

Three potential options have been considered:

- Continue to rely on the broad definitions of river operations in the MDB Agreement to cover the new types of activities undertaken by river operations.
- Amend the Objectives and Outcomes document to provide further direction on the Authority's functions currently set out in the MDB Agreement.
- Amend the MDB Agreement and the Objectives and Outcomes document to explicitly provide the function to the MDBA.

NB, work undertaken to support the Sustainable Diversion Limit Adjustment Mechanism has suggested that the MDB Agreement could benefit from a new schedule to support the operations and maintenance of The Living Murray (TLM) environmental works. This schedule may also be able to reflect the MDBA's role in environmental water delivery.

Commented [A20]: MDBA 22.Comment A35 suggests that there are two distinct schedules, one for TLM and one for role in e-water. Agree this is an option, the note is here to show he potential interdependency, not to rule options in or out.

Proposed change

Given how different these activities are to traditional river operations and the potential for impacts on State entitlements, WLWG have recommended that these functions be set out in

the MDB Agreement and supported by direction by BOC through new SO&Os. The new SO&Os could address such things as:

- assisting States to account for environmental water use
- applying methods/rules etc. determined by BOC and/or the individual States to protect environmental water
- interactions with stakeholders, including retail entitlement holders
- the MDBA's role in assessing the risks of environmental water delivery, and how this interacts with other risk management processes.

The proposed amendments to the MDB Agreement and the Objectives and Outcomes document will codify the arrangements for protecting environmental water. In addition to this, section 6.1 of the PPM Assessment Guidelines recommends that the PPM Implementation Plans could, include an explanation which describes:

- the operation of the flows and the subsequent accounting
- the timing of actual flows and the timing of trades, including retrospective adjustments
- how inter-valley accounts will be dealt with, including adjustments
- how any retrospective adjustments will be dealt with
- compliance with trade rules.

The MDBA undertakes a range of activities that are consistent with the requirements of the guidelines, such as:

- agreed accounting methods for individual The Living Murray sites
- maintaining monthly water accounts that explain how water has been used
- annual reporting of environmental water delivery actions.

To meet the requirements of the guidelines and fully implement the PPMs the MDBA will need to bring these various activities together in a single, comprehensive document.

It is anticipated that the preferred approach will support IRORG recommendation E2012:03 *that approaches to assess the potential third party impacts of environmental water delivery on water availability and entitlement reliability should focus on developing and assessing the net impacts of an overall package of water management changes needed to facilitate environmental water delivery*.

If further MDBA internal documentation is subsequently required to fully incorporate the SO&Os into river operations practice this will occur in consultation with the WLWG and other stakeholders on the advice of the WLWG.

Way forward

The MDBA will scope changes to the MDB Agreement and the Objectives and Outcomes document to provide for its role in the planning, coordination and delivery of environmental water. These need to be in place by June 2019. Table 7~~Table 8~~~~Table 7~~**Error! Reference**

source not found. provides an indicative timeframe, activities and roles required to implement measures to support the MDBA to track and protect environmental water.

Table 7~~8~~7: Indicative timeframe, activities and responsibilities for implementing measures to support the MDBA to track and protect environmental water

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – June 2017	Draft amendments to SO&Os	MDBA/Jurisdictions
July 2017	Endorse amendments to the SO&Os	WLWG
September 2017	Endorse amendments to the SO&Os	RMOC
December 2017	Approve new SO&Os	BOC
July 2016 - June 2017	Draft MDBA internal documentation	MDBA
July – December 2017	Consultation with key stakeholders	MDBA
January – March 2018	Revise MDBA documentation	MDBA
April 2018	Approve MDBA internal documentation	MDBA
June - September 2018	Note MDBA internal documentation	WLWG/RMOC/SDLAAC/ BOC
January – September 2018	Draft amendments to the MDB Agreement	MDBA/Jurisdictions
October 2018 – April 2019	Endorse amendments to the MDB Agreement	WLWG/RMOC/SDLAAC/ BOC
June 2019	Approve amendments to the MDB Agreement	Ministerial Council

5.2.2 Estimating assumed use rate of directed releases from upper River Murray storages

Background

A significant challenge to protecting environmental water, including return flows, is estimating and measuring environmental water use. It is very difficult to measure environmental water use on an event basis, due to long travel times and available data. To overcome this, the environmental watering trials have used an estimated assumed use rate

to apply to directed releases from the upper River Murray storages. In the long-term, protection by event should be the aspiration as it will provide the best environmental and operational outcomes.

Methods of assessing assumed use have been trialled since 2010-11. In the 2010-11 trial (BOC OOS 21), MDBA sought to estimate incremental environmental flows in real time. This method was abandoned during the event as it proved problematic, and IRORG supported MDBA abandoning this method. Since then the trials have adopted an estimate of environmental use[9]. The assumed environmental use estimate has been progressively refined through the trials based on improved data and experienced gained through the trials[10]. The current method is being trialled in 2016-17 and is described in more detail in the options section below.

The estimation of the assumed use rate is a potential risk to State water entitlements. To help mitigate this risk the early environmental watering trials adopted a very conservative use rate. A conservative assumed use rate could mean that the assumed use is higher than actual use during any particular watering event. Under these conditions a portion of directed releases from Hume Dam could be re-regulated in Lake Victoria rather than being passed to South Australia. This could disadvantage the environmental portfolio. Alternatively, if the assumed rate is less than what actually occurs, other entitlement holders ~~will~~ may be disadvantaged.

Options

Options to estimate assumed use are described below for Hume Dam. The method for estimating assumed use from Hume Dam is the approach adopted in the 2016-17 trial, it is based on the best information available, lessons learnt to date and will continue to be refined in coming years.

Assumed use rates have not yet been required for directed releases of HEW from Menindee Lakes or Lake Victoria. Similar to releases from Hume Dam, if directed releases from the Menindee Lakes have an overbank component, an assumed use rate would need to be determined with the advice of the WLWG. Releases from Lake Victoria are made as a targeted flow rate to the South Australian border and an assumed use rate is not required.

Hume Dam

The current 2016-17 trial adopts an assumed use rate of:

- 0% to apply to deliveries which are intended to be delivered within channel. Environmental deliveries in the Edward-Wakool may be subject to additional use in accordance with NSW accounting practices.
- An additional 20%, to apply to the component of the delivery which is intended to flow overbank. Any such deliveries will not incur additional use by NSW in the Edward-Wakool system.
- An initial assumed use value, if antecedent conditions in the Barmah-Millewa Forest are dry. A conservatively high estimate of this initial assumed use by the environment, based on operational data from 2015, is 50 GL. For each gigalitre of water that exceeds the channel capacity (nominally 10,000 ML/day) in the preceding

[9] Originally referred to as 'loss rates', now known as 'assumed use'.
[10] For more information, refer to papers from WLWG 172 and 174

30 days of a HEW release, as measured downstream of Yarrawonga, the 50 GL will be reduced by 1 GL. The volume of the initial assumed use may be reduced, prior to the commencement of any such directed release, subject to agreement by the WLWG.

- Any additional use for managed environmental diversions to TLM works as determined by site specific methods previously endorsed by the WLWG.

Further, the trial requires:

- That the assumed use rate is agreed at the start of the water year and considers current and forecast conditions and the range of expected environmental watering events.
- Is applied on a no regrets basis and is not changed or adjusted retrospectively during the water year.
- At the end of the water year, actual use will be calculated as well as the cumulative total (since 2010-11) of actual use.
- The assumed use rate for the subsequent water year will be informed by the actual use and cumulative use.
- IRORG will review the calculation of both estimates.

To date, the method for determining assumed use has been designed for environmental watering events that aim to water the Barmah-Millewa Forest with some additional minor overbank watering downstream. If alternative types of watering events are proposed and the underlying assumptions no longer hold new assumed use rates or approaches may need to be developed. Likewise if new information or tools allow for new approaches to be considered, such as reach or antecedent condition specific rates, these assumed use values may be refined. The adaptive management approach set out in the Objectives and Outcomes document (see section 442.4) acknowledges this and as such allows the method to be reviewed as required.

Commented [A21]: MDBA 23.Comment A39 criticizes his for not being enduring – however this is still an evolving space and we will need to make changes. As discussed in sec ion 1.2 the extent of implementation will be determined in 2014, so we cannot go backwards.

The following examples (Figure 3~~Figures 3~~ to Figure 5~~-5~~) explain how the assumed use is calculated under different conditions. The white spaces above and below the channel capacity dotted line indicating estimated flow without environmental water. In contrast, the three blue colours used indicate environmental water use with:

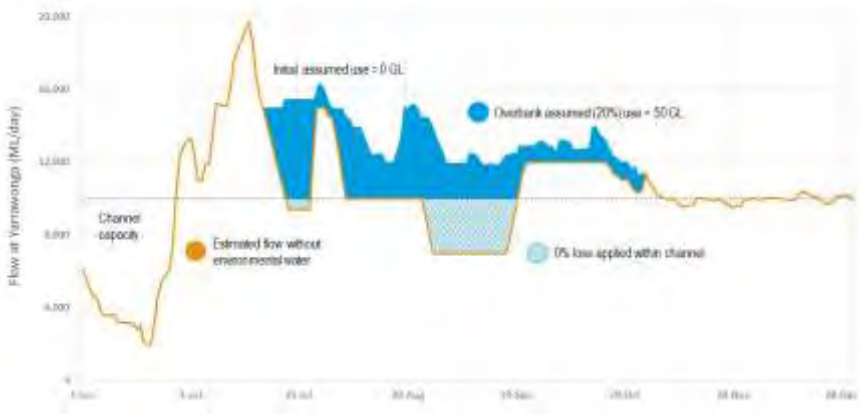
- instream deliveries to the South Australian border all shown in lightest blue below the channel capacity dotted line
- overbank flows being above channel capacity dotted line. Here assumed use is illustrated using darkest blue for initial use and bright blue for overbank assumed use.

Example 1: No initial assumed use and a 20% debit applies to overbank losses

In the first example (Figure 3~~Figure 3~~), the directed release follows a natural overbank event, and there is no initial assumed use. The total release is 330 GL, of this, 80 GL (lighter blue) is delivered to the South Australian border in-stream and 250 GL (brighter blue) is overbank flows. Of the overbank flow, 20% (50 GL of the 250 GL) is overbank assumed use, leaving

280 GL (all of the 80 GL instream volume and 200 GL (80% of the 250 GL overbank flow volume) delivered to the South Australian border.

Figure 3: Directed release follows a natural overbank event and there is no initial use - 280 GL total delivered downstream from a 330 GL directed release from Hume Dam

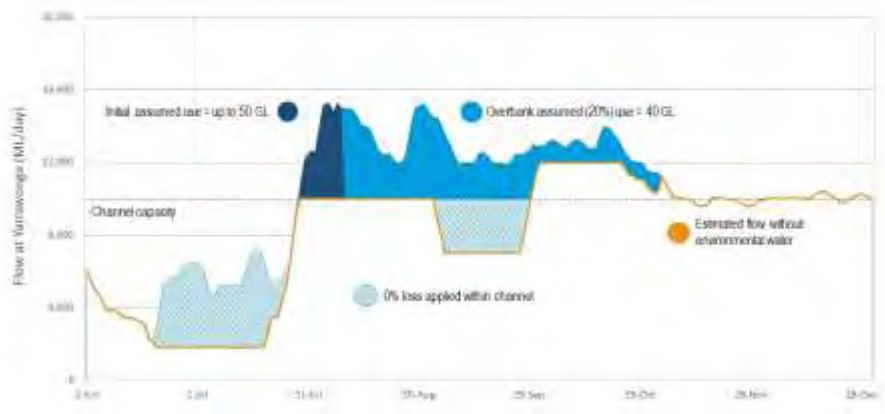


Example 2: Full initial assumed use and a 20% debit applies to overbank losses

In the second example (**Error! Reference source not found.**~~Figure 4~~), the directed release does not follow a natural overbank event. The total release is 440 GL, of this 190 GL (lighter blue) is delivered in-stream and 250 GL is overbank flow. Of the overbank flow, the first 50 GL (darkest blue) is initial assumed use, and 40 GL (20% of 200 GL) of the remainder of the flow is overbank assumed use. The total assumed use is 90 GL (40 GL + 50 GL), leaving

350 GL delivered to the South Australian border.

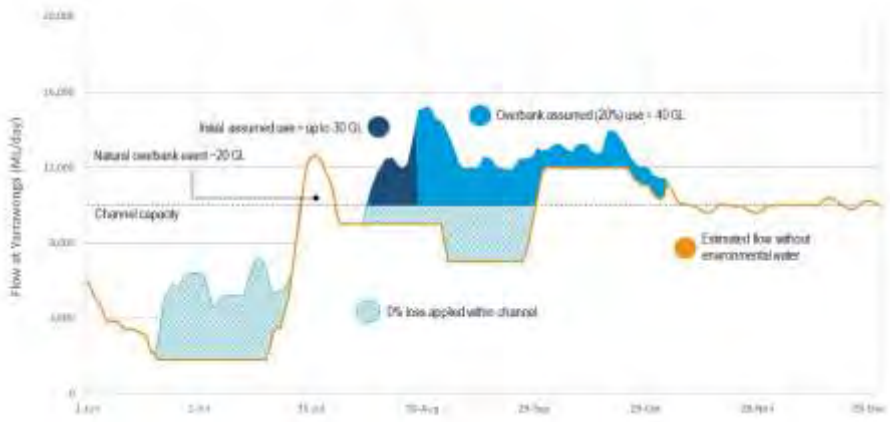
Figure 4 Directed release does not follow a natural overbank event - 350 GL total delivered downstream from a 440 GL directed release from Hume Dam



Example 3: Small initial assumed use and a 20% debit applies to overbank losses

In the final example (Figure 5~~Figure 5~~), there is a natural overbank event of approximately 20 GL. The total release was 380 GL, 150 GL is delivered in-stream (lighter blue) and 230 GL is overbank flow. Of the overbank flow, the first 30 GL (darkest blue) is initial assumed use, and 40 GL (20% of 200 GL) is overbank assumed use. The total assumed use is 70 GL (30 GL + 40 GL) leaving 310 GL delivered to the South Australian border.

Figure 5: Directed release follows a small overbank event, the initial use is 30 GL - 310 GL total is delivered downstream from a 380 GL directed release from Hume Dam



Proposed change

The preferred approach is to prepare a new SO&O for estimation of assumed use for directed releases from the upper River Murray storages. The assumed use rate will continue to be tested through the Environmental Watering Trials, with the SO&O to be in place by June 2019.

In addition to the proposed SO&O, the MDBA will need to prepare MDBA internal documents to meet the requirements of the PPM Assessment Guidelines. Section 6.2 of the guidelines states that PPM Implementation Plans could demonstrate a loss methodology that is:

- Transparent, that includes:
    - the estimation method
    - strategies to mitigate risks to reliability
    - clarity of roles and responsibilities of estimating the losses
    - how subsequent adjustments will be made, including timeframes
    - how disputes will be resolved
    - a review process.

- Fair and equitable, that is:
  - Not unduly conservative.
  - Considerate of losses already provided for in the resource assessment. That includes losses which are incremental to conveyance losses and not the total loss.
  - Considerate of subsequent reduced conveyance losses, such as the impact of channel wetting or filling irrigation channels.
  - Consistently applied between water holders, including environmental water holders. If a method is inconsistent, the different treatment should be justified.

It is anticipated that the proposed change will support the implementation of IRORG recommendations:

- E2012:02 *that the MDBA and jurisdictions should allocate a priority to developing robust measures that will enable the recognition and protection of environmental return flows across the potential range of flow conditions that are likely to be experienced during environmental delivery events.*
- E2013:03 *that the Authority* (MDBA) *review environmental return flow accounting and trade processes, including reviewing the information needs, roles and responsibilities of all parties involved, and formalising these arrangements in to a guideline which includes agreed timelines for actions by all parties.*

Way forward

Table 8~~Table 9~~~~Table 8~~ provides an indicative timeframe, activities and responsibilities for the development of an SO&O for estimating the assumed use from directed releases from the upper River Murray storages.

Table ~~8~~~~9~~: An indicative timeframe, activities and responsibilities for the development of an SO&O for estimating assumed use from directed releases

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2015 – May 2018	Conduct trials	River Operations at MDBA and Environment entitlement holders
July 2016 - June 2017	Draft MDBA internal documents	MDBA
July 2017 - December 2017	Consultation with key stakeholders	MDBA
January 2018 – March 2018	Revise documentation	MDBA
April 2018	Approve MDBA internal documents	MDBA

Commented [A22]: MDBA 24. The CEWO point out (comments 38 and 40) that this is an evolving space and recommend new work to investigate new or better approaches. We have relied on the existing adaptive management approach for improvements rather than specifying a new piece of work, but this might be a better approach, similar to the vague task for 'technical and operational analysis' that is part of the work to mitigating he risks of directed releases.

June – September 2018	Note MDBA internal documents	WLWG/RMOC/SDLAAC/ BOC
June – November 2018	Consolidate findings from the trials	MDBA/Jurisdictions
December 2018	Endorse draft SO&O	WLWG
February 2019	Endorse draft SO&O	RMOC
April 2019	Approve proposed SO&O	BOC

5.2.3 Definition of unregulated flow

Background

The MDB Agreement defines regulated flow 'as the flow resulting from the release of stored water at the discretion of the Authority other than during, or in anticipation of, floods' (clause 2). For the calculation of losses, clause 110(3) defines unregulated flow as a 'flow which has not been planned by the Authority (MDBA)'.

The existing definition of regulated flow needs updating because planned releases from storages are intended (subject to clarification of consequential liability issues) to be made during flooding events for environmental watering actions. For example, the 2010-11 and 2011-12 environmental watering trials included planned releases to create or extend overbank flow events. The current definition reflects the historic practice that releases made in anticipation of flooding were unplanned, as they were not to meet orders but simply to pass flood inflows.

The definition of unregulated flow in clause 110 is broader and less problematic, but the two definitions must be consistent.

In practice, unregulated flow is taken to be a flow that cannot be re-regulated in Lake Victoria (clause 15(2) of the Objectives and Outcomes document). This approach is also used in SO&O 12.7 *Planning for and communication of potential unregulated flow advice*. This practice will not change, but potential interactions will need to be considered in the review of the MDB Agreement definitions.

Options

Options for amending the definition have not been scoped. There are other definitions in use, for example the Australian Water Information Dictionary includes the following definitions:

- regulated flows - A river flow resulting from an upstream release of a licensed allocation.
  NB: the term river can be replaced by channel with the same meaning.
- unregulated flows - A river flow that does not result from a controlled release made to service an allocation, or flows declared to be unregulated by the appropriate authority.
  NB: the term river can be replaced by channel with the same meaning.

However this definition of regulated flow does not take into account tributary flows that may be used to fill orders or to re-regulate into downstream storages (e.g. Lake Victoria).

Amendments will need to give consideration to definitions in State regulatory instruments. A preliminary review did not find any references in NSW or South Australian instruments. Victorian instruments define unregulated flow as '*the flow made available under an Unregulated Flow advice as instructed by MDBA'* (Flora and Fauna Bulk Entitlement). This is unlikely to be affected by any change to the MDB Agreement. Further assessment of the links with State instruments and practices is required.

Proposed change

WLWG recommended the MDBA scope potential changes to the MDB Agreement to amend the definitions for regulated/unregulated flow.

Depending on the nature of the changes, some MDBA internal documents may also need to be updated to incorporate the changes into river operations practice. This will occur in consultation with the WLWG and other stakeholders on the advice of the WLWG.

It is anticipated that the proposed change will support the implementation of IRORG recommendation E2011:04: *that the criteria for determining unregulated flow conditions should be revised. In particular, it is recommended that the criteria should exclude any environmental returns that are intended to be delivered to other downstream environmental assets when determining whether a period of unregulated flows will occur.*

Way forward

Table 9~~Table 10~~~~Table 9~~ provides an indicative timeframe, activities and roles required to implement the proposed changes.

Table ~~9~~10~~9~~: Indicative timeframe, activities and responsibilities for amending the definitions of regulated/unregulated flows in the Murray-Darling Basin Agreement and other river operations instruments

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June to December 2018	Scope amendments to the MDB Agreement	MDBA/Jurisdictions
April 2019	Endorse amendments to the MDB Agreement	BOC
June 2019	Approve amendments to the MDB Agreement	Ministerial Council

5.2.4 Wholesale water accounting treatment of overbank use

Background

Clause 110 of the MDB Agreement sets out how losses are to be treated in the water accounts prepared by MDBA. Under cl 110, environmental water that flows overbank and does not return to the river is considered a loss, even when this is the intended use of the water. Currently there is a risk that the water could be double accounted – as a diversion (the environmental water order) and as a loss.

MDBA uses the Accounts Model to prepare the water accounts each month. The model calculates loss as a function of flow and extracts State diversions from each State's share of flow. If in-stream use was included in the diversion data this would be accounted for twice,

once as a diversion and secondly as a component of the calculated loss. To avoid any double accounting the States do not report instream use in the diversion data supplied to the MDBA.

Subclause 110(2)(b) requires that losses from unregulated flow in any part of the upper River Murray be accounted in proportion to the flow allocated to New South Wales or Victoria in that part of the river. This is based on the total flow in the river. Due to an error in translating the rules of the Water Accounts Model into the MDB Agreement in 1992 (to adopt continuous accounting), the requirements of the MDB Agreement do not reflect the approach in the model. The approach in the model has been used since 1989.

The Accounts Model is based upon 'high flow losses', which are losses that occur when the flow exceeds bank full capacity. The model distributes these losses in proportion to the States' components of flow in excess of half the flow at which high flow losses commence. The Agreement proposes distr buting them in proportion to the total flow. The practice in the model allows for the accounts to better reflect the proportion of New South Wales and Victorian water that contributed to the overbank event. This is particularly important when overbank events are added to, or extended with environmental water.

Options

The MDB Agreement should be amended to reflect how the Accounts Model deals with High Flow Losses and Unregulated Flows. The difference between the model and the requirements of the MDB Agreement is an error, and as such no other options have been investigated.

The practice to ensure no double accounting should be documented as per SO&O 13.1. This documentation will be noted by WLWG. State PPM Implementation Plans will need to ensure State actions to prevent double accounting are also documented.

Proposed change

The MDBA will scope changes to the MDB Agreement for in principle agreement by June 2016, with the changes to be in place by June 2019.

The arrangement between the MDBA and the States to ensure no double accounting will be documented in accordance with SO&O 13.1.

It is anticipated that the proposed change will support the implementation of IRORG recommendations:

- E2011:11a *that the current accounting processes should be modified so that during periods of intentional overbank flow for environmental watering, the volumes of water 'used' by the environment can be excluded from the estimated overbank loss component and dealt with in a manner more akin to a 'diversion' than a loss.*
- E2011.11b *that these modifications to the loss accounting models should be given priority for development and implementation. It is also noted that amendments to the Agreement (cl 110) and the O&O document are also likely to be required to fully authorise these accounting changes.*

Way forward

Table 10~~Table 11~~~~Table 10~~ provides an indicative timeframe, activities and roles required to implement the proposed changes.

Table 10~~11~~~~10~~: Indicative timeframe, activities and responsibilities for addressing issues with the calculation of overbank losses

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
July – September 2016	Document practice to prevent double accounting	MDBA
October 2016	Note the new documentation in accordance with SO&O 13.1	WLWG
December 2016	Approve documentation	Executive Director, River Management Division, MDBA
January - September 2018	Draft amendments to the MDB Agreement	MDBA/ Jurisdictions
October 2018 - February 2019	Endorse amendments to the MDB Agreement	WLWG/RMOC/SDLAAC
April 2019	Endorse amendments to the MDB Agreement	BOC
June 2019	Approve amendments to the MDB Agreement	Ministerial Council

5.2.5 Simplifying the delivery of environmental water to South Australia

Background

South Australia's entitlement is limited to the volumes set out in clause 88 of the MDB Agreement. To date, environmental flows in addition to South Australia's entitlement have been delivered to South Australia as a trade, during unregulated flows or as part of the Bulk Entitlement Delivery (BED) trial. There are a number of issues with these options. The trade mechanism can be administratively intensive. The other approaches can make it difficult to account and report environmental entitlement deliveries.

The BED trial was first undertaken in 2015-16 and was used by the MDBA and NSW to trial a new approach of delivering environmental water to the South Australian border. The BED trial uses the provisions of clause 98 to allow NSW to request water be released from Hume Dam, for use at sites along the Murray River, with any remaining water delivered to the South Australian border, without being re-regulated in Lake Victoria. The trial applied the assumed use rates approved by BOC for the 2015-16 Environmental Watering Trial (discussed in section 5.2.2~~5.2.23.3.2~~) and will be reviewed by IRORG as part of its annual review of the MDBA's environmental water delivery operations. The 2016-17 Environmental Watering Trial has recommended that both NSW and Victoria consider adopting the BED trial in 2016-17.

The 2015/16 BED trial did not fully resolve the issues associated with environmental delivery, nor did it fully meet the needs of environmental entitlement holders, especially with regards to complimentary application in the tributaries. However, the initial results suggest that it is worth investigating how the provisions of cl 98 can be used to improve the delivery and protection of environmental water.

Improving the mechanisms for delivering environmental water to South Australia is not specifically required to implement the PPMs, but is included in the Plan because it has links to a number of the issues identified in the Plan and could support the work of the MDBA and States to protect environmental water. Further, working to a similar timeframe to the PPMs could simplify the approval process if amendments to the MDB Agreement are required, but as the changes are not required to implement the PPMs, there is no obligation for changes to be made by June 2019.

Commented [A23]: MDBA 25.Comment A42 goes further, to suggests hat we need to rethink the delivery of water to SA to implement the PPMs, and that the work should be built into other components. From he MDBA's perspective, what is here is a big step forward.

Options

Options to simplify the delivery of environmental water to South Australia include:

- no change – continue to rely on the existing mechanisms
- develop a new SO&O to support the delivery of above entitlement water to South Australia, without the need for trade
- amend the MDB Agreement, either by a new clause or a sub-clause to cl 88 to distinguish between South Australia's entitlement and additional quantities of water supplied for environmental purposes.

Proposed change

Further investigation is required before a preferred approach can be agreed, noting that no change is just as likely an outcome at this stage.

Way forward

Table 11~~Table 11~~ provides an indicative timeframe for developing a preferred option for simplifying the delivery of environmental water to South Australia.

Formatted: Font: 11 pt, Not Italic, Font color: Auto

Table 11~~211~~: Indicative timeframe, activities and roles to agree a way forward and implement any agreed changes

Indicative timeframe	Activity	Responsibility
30 June 2016	PPM Implementation Plan submitted	MDBA/Jurisdictions
June 2016 – June 2018	Undertake the BED trial, investigate other options to simplify the delivery of environmental water to SA	MDBA/Jurisdictions
August 2018	Complete analysis of the BED trials and alternative options and recommend a way forward	MDBA/Jurisdictions
April 2019	To be determined - Endorse amendments to the MDB Agreement and/or approve proposed SO&O	BOC
June 2019	To be determined - Approve amendments to the MDB Agreement	Ministerial Council

Glossary

Abbreviations used

ADF - additional dilution flows

BOC - Basin Officials Committee

GL - a gigalitre; one billion litres

HEW - Held Environmental Water

IRORG - Independent River Operations Review Group

LSEWE - Large Scale Environmental Watering Event

MDBA - Murray-Darling Basin Authority

ML - a megalitre; one million litres

NSW - The state of New South Wales

O&O - a (General) Objective(s) and Outcome(s) which can be found in the Objectives and Outcomes document

O&Os - Objective(s) and Outcome(s) which are found in the Objectives and Outcomes document

PPMs – Prerequisite Policy Measures - see Unimplemented Policy Measures in the Other terms used sub-section.

RMS - River Murray System

SA - the state of South Australia

SCBEWC - Southern Connected Basin Environmental Watering Committee

SDLAAC - Sustainable Diversion Limit Adjustment Assessment Committee

SO&O - Specific Objective(s) and Outcome(s)

SO&Os - Specific Objective(s) and Outcome(s) which are Appendix 1 to the Objectives and Outcomes document

WLWG - Water Liaison Working Group

Citing used

cl - Clause

Cwlth - Commonwealth (legislation)

sub-cl - Sub-clause

para - Paragraph

paras - Paragraphs

s - Section

ss - Sections

sub-s - Sub-section

sub-ss - Sub-sections

Other terms used

Adaptive management - a structured, iterative process to improve decision-making when knowledge is uncertain. Adaptive management aims to reduce uncertainty over time by incorporating new knowledge and learning into decision-making, such as from system monitoring.

Additional dilution flows – additional flow to South Australia to assist with water quality, set out in SO&O *12.3 Additional Dilution flows to South Australia*.

Bankfull - the maximum amount of discharge that a stream channel can carry without overflowing.

Basin Officials Committee - set up to facilitate cooperation and coordination between the Commonwealth, the Murray–Darling Basin Authority and the Basin States in funding works and managing the Basin's water and other natural resources.

Basin Plan 2012 (Basin Plan) - a plan for the integrated management of the water resources of the Murray–Darling Basin that was adopted by the Commonwealth Minister for Water under s. 44 of the *Water Act 2007* (Cwlth).

Basin states - for the purposes of the Basin Plan, the Basin states are as defined in the *Water Act 2007* (Cwlth) as New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory. For the purposes of this document the states are New South Wales, Victoria and South Australia.

Channel - of a watercourse, a natural or artificial streamflow with definite bed and banks to confine and conduct water. Of a landform, the bed of a watercourse that commonly is barren of vegetation and is formed of modern alluvium (deposited during relatively recent geologic time).

Codification – the process of documenting and approving high level decisions related to river operations, for example in the Murray-Darling Basin Agreement or the Objectives and Outcomes document.

Commonwealth Environmental Water Holder (CEWH) - *The Water Act 2007 (Cwlth)* establishes the Commonwealth Environmental Water Holder to manage water entitlements that the Commonwealth acquires. Under that Act, this official has the responsibility for using these entitlements to protect and restore the environmental assets of the Murray–Darling Basin, or assets outside of the Basin where water is held by the Australian Government for that area Entitlement (or water entitlement). Is supported by the Commonwealth Environmental Water Office (CEWO).

Consumptive use - use of water for irrigation, industry, urban and stock and domestic use, or other private consumptive purpose.

Constraints – for the purposes of this document, a constraint is anything that affects the delivery of environmental water. It can include physical aspects such as low lying bridges, or river channel capacity, but can also include operational aspects such as river rules or operating practices that impact on when and how much water can be delivered. We can

improve how effectively we manage and deliver environmental water by looking at how we can change some of these physical and operational constraints.

Environment entitlement – an entitlement held by the CEWO or a State environmental agency. Also see Entitlement and Environmental entitlement holder.

Environment entitlement holder – manages the water rights, or entitlements, that a State or Commonwealth acquires. For example, under the Water Act, the Commonwealth Environmental Water Holder is an official who has the responsibility for using water rights that relate to water in the Murray-Darling Basin in accordance with the environmental watering plan.

Environmental return flows – environmental water that leaves the main river channel and then returns to the River Murray System.

Environmental flow - any river flow pattern provided with the intention of maintaining or improving river health.

Environmental water - water used to achieve environmental outcomes, including benefits to ecosystem functions, biodiversity, water quality and water resource health.

Environmental watering trials – year-long plans that test the implementation of arrangements for delivery of water that is held by environment entitlement holders.

Entitlement (or water entitlement) - the volume or share of water which the holder of an entitlement is authorised to take under a water licence. Examples of an entitlement holder include an irrigator, environmental manager or water authority. The entitlement usually specifies the source of the water (e.g. the river or catchment); and the category (which can be a combination of priority and purpose). Also see Retail level and Wholesale level.

Held Environmental Water (HEW) - water that is available under a water access right, a water delivery right, or an irrigation right for use by environmental water holders.

In-stream flow – The flow of water that is conveyed through natural or artificial open water conveyance carriers (as opposed to piped conveyance) such as a river or stream, expressed in megalitres per day (ML/d) or in another appropriate unit; or flow up to bankfull.

Flow - the movement of water; the rate of water discharged from a source, given in volume with respect to time.

Flow event - a single event of flow in a river; sometimes required to achieve one or more environmental targets. A series of flow events comprises a flow history.

Instrument:

- a formal legal document e.g. the Murray-Darling Basin Agreement is an agreement between the parties to it
- other governance which river operations activities are affected e.g. the Objectives and Outcomes document
- something else by which river operations activities are affected e.g. determinations by the Ministerial Council or the Basin Officials Committee made under the Murray-Darling Basin Agreement.

Jurisdictions – the States of New South Wales, Victoria and South Australia plus the Commonwealth of Australia that are signatories to the Murray-Darling Basin Agreement.

Losses - surface water lost from a river system that is not available to other users e.g. evaporation and seepage.

Murray-Darling Basin Agreement (MDB Agreement) - an agreement between the Australian and Basin state governments to 'promote and coordinate effective planning and management for the equitable, efficient and sustainable use of the water and other natural resources of the Murray–Darling Basin, including by implementing arrangements agreed between the Contracting Governments to give effect to the Basin Plan, the Water Act and State water entitlements.' The Agreement was ratified by identical legislation that has been enacted by the Parliaments of all the signatory governments.

Ministerial Council - established under Part III if the Murray-Darling Basin Agreement. The Ministerial Council has policy and decision-making roles for matters such as state water shares, and the funding and delivery of natural resource management programs, as set out in the Murray–Darling Basin Agreement. The Council comprises of Ministers from each of the Basin the States and the Australian Capital Territory.

Overbank flows – the component of flow above bankfull levels.

PPM Implementation Plans - the States of New South Wales (NSW), Victoria and South Australia will prepare separate State PPM Implementation Plans that address the changes required to implement the PPMs in State regulatory and operations frameworks. Additionally, this document is an Implementation Plan that addresses the collective actions required to implement PPMs in the RMS.

Pre-requisite Policy Measures (PPMs) – The PPMs are described in the *Basin Plan 2012* as Unimplemented Policy Measures (s7.15). These are anticipated measures consisting of a policy to credit environmental return flows for downstream environmental use; or allow the call of held environmental water (HEW) from storage during un-regulated flow events. The PPMs outlined in the *Basin Plan 2012* seek outcomes that:

- provide for HEW releases from storages on top of other in-stream flows, including unregulated flows; and
- allow environmental water to flow throughout the length of the river, including being re-used at multiple sites along the river, and to flow between rivers; and be protected from extraction, re-regulation or substitution for non-environmental purposes.

Regulated - a water system in which water is stored or flow levels are controlled through the use of structures such as dams and weirs.

Retail level - the States of New South Wales, Victoria and South Australia each hold and distribute its own State's share of the River Murray System waters.

River Murray System (RMS) - the River Murray System includes the main course of the River Murray upstream of the eastern boundary of South Australia, all tributaries entering the River Murray upstream of A bury, all effluents and anabranches of the main course, the Darling River downstream of the Menindee Lakes, the upper River Murray storages and the River Murray n South Australia. The exact meaning is given in Subsection 86A(3) of the *Water Act 2007* (Cwlth).

State entitlements - State water entitlement, as defined in cl 2 of the MDB Agreement as 'the entitlement of a State to water, determined in accordance with Part XII of this Agreement'.

States - the States of New South Wales, Victoria and South Australia. Also see Wholesale level.

State and Commonwealth water agencies - these are Department of Primary Industries — Water (NSW); Department of Environment, Land, Water and Planning (Victoria); Department of Environment, Water and Natural Resources (SA); and the Department of Agriculture and Water Resources (Australian Government).

Surface water - Surface water includes any water in a watercourse, lake or wetland, and any water flowing over or lying on the land after precipitation or after rising to the surface naturally from underground.

Sustainable Diversion Limit Adjustment Mechanism - Water Ministers from Basin jurisdictions had asked for the *Basin Plan 2012* to be improved by incorporating an adjustment mechanism for surface water SDLs. Activities to be considered under the adjustment mechanism will either allow equivalent environmental outcomes to be achieved with less water or increase the volume of water available for environmental use with neutral or improved socio-economic impact. The two different types of projects that will be considered by the adjustment mechanism for surface water SDLs are called 'supply' and 'efficiency' measures:

- supply measures are works, river operations or rule changes that enable the use of less water but still achieve the *Basin Plan 2012*'s environmental outcomes.. An example of a supply project is the installation of infrastructure such as regulators on a floodplain to enable inundation events using smaller quantities of water than would typically be needed in a general 'overbank' flooding event. Other supply projects include re-configuring lakes or storage systems to reduce evaporation, or decreasing water losses while delivering environmental water by reducing seepage or evaporation
- efficiency measures recover and provide more water for the environment without negative social and economic impacts. They include improving the efficiency of on-farm irrigation and transferring the water savings for environmental use.

Unimplemented Policy Measures (PPMs) – See Pre-requisite Policy Measures.

Upper River Murray storage - Upper River Murray Storages is defined in clause 2 of the Murray-Darling Basin Agreement and means Lake Victoria, the Menindee Lakes Storage, the storages formed by Dartmouth Dam, Hume Dam.

Water order (from an entitlement holder to a State) –operational arrangements to allow entitlement holders to request water, can be made by an entitlement holder to a State, or a State to the MDBA.

Wholesale level – the Murray-Darling Basin Authority's water distr bution arrangements which support the water sharing arrangements in the Murray-Darling Basin Agreement. See Figure 1.

Water Act 2007 (Cwlth) - legislation that includes the Murray-Darling Basin Agreement (Schedule 1) and provides for the management of the water resources of the Murray-Darling Basin. It also provides for other matters of national interest in relation to water and water information etc.

Water sharing arrangements - interstate water sharing arrangements descr bes the consensus between the States to share water under the terms of the under the Murray-Darling Basin Agreement.

Water year – a 12 month period (from 1 June to 31 May each year) used by the Murray-Darling Basin Authority in river operations and water accounting.

References

Basin Plan 2012.

PPM Assessment Guidelines (D15/29274).

Independent River Operations Review Group, Review of the MDBA's 2014-15 Environmental Watering Activities – Report of the Independent River Operations Review Group (D16/6875).

Objectives and Outcomes for River Operations in the River Murray System.

Water Act 2007 (Cwlth).

Appendix A

Roles and responsibilities with regard to implementing the PPMs in the RMS

Murray-Darling Basin Authority

Coordinate the PPM Implementation Plan for the RMS on behalf of the States through SDLAAC;

Develop the river operations and wholesale aspects of the implementation of the PPMs in the RMS on behalf of the States; and

Assess the PPM Implementation Plans.

States

Contribute to the river operations and wholesale aspects of the PPM Implementation Plan for the RMS.

Bring forward the individual state entitlement aspects of the PPM Implementation Plan for the RMS.

Inter Jurisdictional forums.

Ministerial Council

Agree any changes required to the Murray Darling Basin - Agreement. (9d, Schedule 1, Murray-Darling Basin Agreement).

Basin Officials Committee (BOC)

Approve those aspects of each Large Scale Environmental Watering Event (LSEWE) which deviate from past river practise, or which could impact State entitlements.

Agree any changes to the Objectives & Outcomes for the River Murray System.

Recommend amendments to the MDB Agreement to Ministerial Council.

River Murray Operations Committee (RMOC)

Recommend any changes to the MDB Agreement and Objectives and Outcomes to BOC.

Sustainable Diversion Limit Adjustment Advisory Committee (SDLAAC)

BOC has directed SDLAAC to lead the policy development for implementing the PPM and supply and constraint measures in the RMS.

SDLAAC is required to agree to the PPM Implementation Plan for the RMS.

Agree or recommend to either BOC or RMOC the policy aspects of PPM Implementation.

Recommend to BOC or RMOC the annual LSEWE.

Water Liaison Watering Group (WLWG)

Advise BOC and the MDBA on the PPM Implementation Plan for the RMS.

Advise BOC and the MDBA on the technical aspects of each LSEWE.

Southern Connected Basin Environmental Watering Committee (SCBEWC)

Coordinate between environmental water holders on upcoming environmental watering events.

Advise State river operators and MDBA on desired operating actions for environmental watering events, including for LSEWE.

Agree any relevant mitigation strategies which affect environmental water holders.

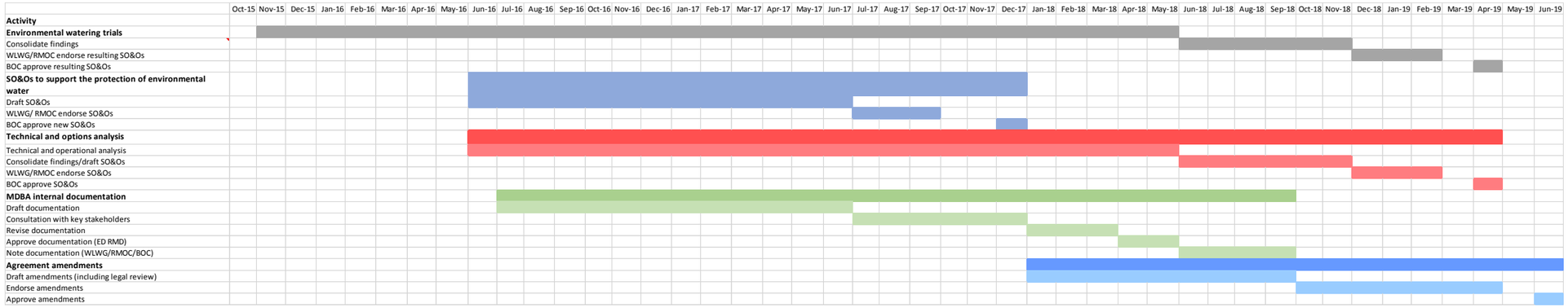
Independent River Operations Group (IRORG)

Reviews and makes recommendations on the LSEWEs each year.

Provides independent advice on how the assessment of the PPM Implementation Plans by the MDBA meet the PPM Assessment Guidelines.

Appendix B

Summary of the activities and timeframes to implement the PPMs



FOI 180308
Document 7

s22

From: Papps, David
Sent: Thursday, 21 July 2016 9:18 AM
To: 'Russell James'
Subject: RE: PPM. Workshop [SEC=UNCLASSIFIED]

Ok. I'm not sure we will have time to cover it off adequately but I have no issue with stating the more detailed conversation. Let's just make sure it doesn't get in the way of resolution on the PPMs.

If possible, would be useful to have preliminary chat. With Tim Fisher as well?

Cheers

From: Russell James [mailto:Russell.James@mdba.gov.au]
Sent: Wednesday, 20 July 2016 5:48 PM
To: Papps, David
Subject: FW: PPM. Workshop [SEC=UNCLASSIFIED]

Hi David – FYI pls see email below. Am suggesting the PPM workshop also addresses nthn basin e flow protection.

Do we need a get together beforehand?

RJ

From: Phillip Glyde
Sent: Wednesday, 20 July 2016 5:23 PM
To: Russell James <Russell.James@mdba.gov.au>; Michael Makin <Michael.Makin@mdba.gov.au>
Subject: Fwd: PPM. Workshop

For info and thanks heaps for the draft.

My only changes were to put it into my voice (I hope).

Cheers

Phillip

Phillip Glyde
Chief Executive

Murray–Darling Basin Authority
GPO Box 1801 Canberra ACT 2601
p: (02) 6279 0470
f: (02) 6279 0133
e: Phillip.Glyde@mdba.gov.au
w: www.mdba.gov.au

Begin forwarded message:

From: <Phillip.Glyde@mdba.gov.au>
Date: 20 July 2016 at 17:21:26 AEST
To: Gavin Hanlon <gavin.hanlon@dpi.nsw.gov.au>
Cc: Monica Morona <monica.morona@dpi.nsw.gov.au>
Subject: PPM. Workshop

Hi Gavin

I'm currently on the road (or should I say in a plane) with Monica as part of the first week of consultation re the NBR. Great to have NSW DPI on the trip - thanks.

Thanks also the phone discussion last week re the NSW PPM Plan and the idea of a senior level workshop to establish if we have a problem.

I understand that my EA (Rhonda) is working with yours to sort out a suitable time to get together.

I thought it might help to list (in language I can understand) the potential problem areas.

As mentioned, both the MDBA and CEWH have concerns with the NSW PPM Implementation Plan and I'm worried about possible implications for SDL offsets.

The main comments/concerns we have are around the following issues:

1. differences between the River Murray plan and the NSW plan, including possible impacts on State shares in the River Murray

2. lack of detail on key aspects of the policies proposed such as loss rates, locations, and operating procedures

3. it is unclear whether there is an adequate level of protection of environmental flows throughout the length of the river and between rivers;

4. the proposed policies may be inconsistent with the Basin Plan water trading rules, in particular the non-discrimination rules

5. the proposed approach appears to reduce environmental water holders' control over their portfolios, as well as disproportionally weighting risks against environmental entitlements and benefiting consumptive users. This could also impact on the CEWH's ability to meet his statutory obligations.

Given the likely expertise in the room, at this workshop I wonder if it would also make sense to revisit the issue of protecting environmental flows in the northern basin (you will recall at our recent catch up on the northern review that you suggested a more in depth discussion on

this topic with David Papps and us)? This is getting a lot of air play from our northern basin stakeholders and I'd like to better understand your position and approach. Let me know if this suits – we could extend the time for the meeting a little to accommodate this if needs be.

Cheers

Phillip

Phillip Glyde
Chief Executive

Murray–Darling Basin Authority
GPO Box 1801 Canberra ACT 2601
p: (02) 6279 0470
f: (02) 6279 0133
e: Phillip.Glyde@mdba.gov.au
w: www.mdba.gov.au

FOI 180308
Document 8

s22

From: s22
Sent: Thursday, 28 July 2016 12:18 PM
To: s22
Subject: CEWO notes [SEC=UNCLASSIFIED]
Attachments: NSW PPM_meeting notes for David_July 2016.docx; CEWO submission - draft NSW PPM implementation plan.docx

Hi s22

Attached are the notes I provided to David for a prep discussion we had before today's meeting and ultimately the conversation tomorrow. It's a bit of a random grab bag (and full of grammar and spelling mistakes) of the issues. I've also attached the previous input we provided 12months ago for info.

I'm in and out of meetings much of the afternoon, but give me a buzz if you need anything.

Cheers
s22

s22
Director
Environmental Water Policy
Commonwealth Environmental Water Office
Ph: (02) 6274 s22 | Fax: (02) 6275 9376 | e: s22 @environment.gov.au
GPO Box 787 | CANBERRA ACT 2601 | AUSTRALIA
www.environment.gov.au/ewater

The Department acknowledges the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present.

FOI 180308
Document 8a

Briefing for meeting with NSW and MDBA – NSW PPM Implementation Plan

Background

The only purpose of the PPM Implementation Plans are to implement the Basin Plan, particularly in facilitating environmental watering that seeks to meet the objectives of the Basin Plan. All states have agreed to implement the Basin Plan through the IGA, which included funding from the Commonwealth. Initial feedback on the NSW PPM Implementation Plan (the Plan) was provided on 7 July 2016 (Attachment A).

The Plan sets out a number of future arrangements, however they are incredibly vague and its not clear how they would be implemented. On face value, the proposed arrangements may make it difficult for the Commonwealth Environmental Water Holder to fulfil their statutory role and contribute meaningfully to the ojectives of the Basin Plan. NSW is likely to claim that because reliability is not affected, then the Commonwealth Environmental Water Holder should not be concerned.

The Commonwealth Environmental Water Office previously reviewed a draft in early 2015 and provided constructive feedback in May 2015 (Attachment B). While a comparison of the early draft with the final PPM Plan hasn't been undertaken, its clear there has been no progress from an environmental or Basin Plan perspective. It is difficult to see how the MDBA could approve the Plan (see assessment guidelines attached).

It is expected that issues relating to the Northern Basin Review may also be discussed at the meeting.

NSW PPM Implementation Plan - Issues of concern to the CEWO

Equitable treatment [core principle of the National Water Initiative and Basin Plan]

The Plan does not provide for equitable treatment of entitlement holders.

- Under the arrangements proposed in the Plan, environmental water holders would expected to pay (in losses) above what is expected of other entitlement holders. It is also unclear what the losses would be and there would be no offsets if environmental watering generates benefits for other entitlement holders. The Plan has been developed from the position that environmental water use creates a negative 3rd party impact, leading to a biased outcome, even though there is no clear evidence for this position.

  [For example, "..... environmental licence will **wear all losses** downstream of the offtake point of the first environmental site that does not have accurate measurement." p15)

- Proposed role for Customer Service Committees (WaterNSW) in negotiating and setting of operational details (environmental flow path) for individual watering actions and the exclusion of environmental water holders in the development of 'procedures manuals' are both not acceptable. Under this scenario irrigator dominated groups have the final say on whats achiveable for the environment and how it is to be acheived.

- The Plan has an overarching objective of ensuring no negative impact to 3rd Parties (i.e. other entitlement holders (non-environment) and landowners) – which are poorly defined in the Plan. To ensure there are no negative impacts to 3rd Parties others will be affected by any changes, both positively and negatively. Those affected are environmental water holders and as such best practice government policy implementation would suggest they must be consulted – as would be the case if other entitlement holders or land owners were to be affected. There is no indication environmental water holders would be consulted in the implementation of the Plan.

Transparency/certainty of arrangement [MDBA PPM Assessment Guidelines]

The Plan is quite vague and provides very little clarity on how the proposed arrangements would work in practice.

- It is unclear if environmental water managers will know what losses/arrangements will apply before placing an order – whether through the 'combination debiting' or the 'piggy backing' proposals in the Plan.
- The Plan does not outline how it would work in areas where supplementary access is based on local river flow triggers that would be influenced by an environmental water order - for example, could an instream environmental event could trigger a supplementary event and thus environmental water wouldn't be 'protected' and would simply create additional opportunities for other entitlement holders.
- The evidence justifying the approaches in the Plan, particularly the additional costs to be paid by environmental water managers, is not clear.
- Provides no clear indication of how arrangements will be implementated and what, if any, involvement environmental water managers would have.
- Its not clear how losses and accounting arrangements would work – annual or averaged out over a number of years – of if there will be balancing of the ledger/offsets (i.e. if environmental watering generates a benefit, would the CEWH be compensated?).
- The approaches in the Plan would ultimately become rules in Water Sharing Plans – it is not clear how this would allow for adaptive management [*Basin Plan requirement*] and improvement over time. It is also unlikely environmental water managers would be involved in the development of these rules in Water Sharing Plans and the focus of any consultation would be on the irrigation sector.
- The Plan suggests that as experience grows (combination debiting) and information accumulates, then measurement would improve and allow for more efficient operation of the system, however there is no apparent commitment to improve/adaptive management.

Environmental water protection [MDBA PPM Assessment Guidelines]

The Plan does not provide an adequate level of environmental water or environmental flow protection sufficient for the the CEWH to have confidence that the Commonwealth's water is managed appropriately - can be accounted and resported against, and the environmental outcomes to be acheived.

- Its not clear that flows from Murrumbidgee to Murray would be protected in any way. The Plan points to the Nimmie-Caira project however it is low on detail. Meanwhile, NSW has been seeking to water down what is in the Nimmie-Caira project as it relates to shepherding and return flows.
- The Plan makes vague reference to future work to allow crediting of accounts in connected system – as such, water protected to the end of the Murrumbidgee would not necessarily be protected by NSW in the Murray (p16), with the suggestion that it will continue through the system until it has depleted due to use or losses. How would the use/losses be calculated or accounted for?
- The Plan suggest that in the future NSW may consider meeting other water orders in the Murray River using water that results from additional environmental water moving in from the Murrumbidgee River.
- Its not clear exactly how the proposed arrangements would work in practice and the level of pretection afforded to environmental water.

Decision making and descrection of environmental water holders

The Plan seeks to dilute the decision making and descrection of environmental water holders in seeking to acheive environmental objectives. At the same time, the Plan gives Customer Service Committees a decision making role over environmental water.

- Limits water holders decision making in terms of acheiving environmental outcomes (i.e. only order a volume, no say in timing or flow rate). See p14 and 16. Also, the plan specifically states the river operators will not guarantee the volume or timing past first debit point.
- Appears that once the order is made, the environmental water holder has no say in what happens. How would events be implemented and what consultation would occur? (i.e. OAGs?)
- Provides CSCs with a decision making role, particularly over environmental water deliveries
- The PPM Plan doesn't instil confidence in environmental water management.

Risks [MDBA PPM Assessment Guidelines]

The Plan, in seeking to reduce risks to 3rd parties, seems to create additional risks to environmental water holders and their portfolios.

- While the MDBA's guidelines focus on reliability, the measures proposed would place greater risks on environmental water holders as they relate to the level of control they would have over how the water is delivered.
- The uncertainty of approaches proposed in the Plan is likely to create a risk around the efficiency of how enevironmental water is managed. The Plan proposes mitigation for the impact on water consumption being the increased volume of water ordered, application of losses for in-channel flows and the additional debits for the luxury of using new measures. There is also no clear indication the CEWH would know what these losses (or additional taxes) are in advance.
- There is also an increased liability risk for license holders and environmental water managers/holders relating to the physical impact on private land/infrastructure associated with e-water delivery – license holders have the responsibility to determine the volume required to achieve the desired outcome, place the volume order and the operators will deliver the volume to their best endeavour. Environmental water holders/license holders have limited control over the timing of e-water arrival and the particular volume cannot be guaranteed.

Consultation in implementation

The Plan does not indicate consultation with environmental water holders in it's implementation.

- There is no intention to consult with environmental water managers in its implementation (i.e. the work that needs to be done to put various arrangements and measures in place).
- There is a critical need, that relevant environmental water holders or managers are consulted appropriately as they are most affected by the potential change in arrangements.

Costs

Implementation of the proposals/measures in the Plan would result in increased cost to environmental water holders in the form of increased losses..

- Under the NSW PPM Implementation Plan there would be an increase cost via increase (and uncertainty) of losses – resulting in the Commonwealth investment being less effective than it could be.

Coverage

The Plan only covers the Murrumbidgee in any detail.

- Only appears to apply to the Murrumbidgee – so should we assume there is no need for issues to be resolved in the rest of NSW? It should outline a process/path way for addressing issues beyond the Murrumbidgee.
- What about Lower Darling? If this is captured in the Menindee supply proposal, it should be referred to in the PPM Plan.

<u>Northern Basin Review</u>

The outcomes of the Northern Basin Review will be known by mid-August. Form a CEWO perspective there are a number of matters that will require resolving regardless of the outcome of the reveiw:

- It is becoming increasingly obvious that a compliance regime is lacking in many areas of the Northern Basin, made difficult by the unregulated nature of the systems. As a minimum, an adequate compliance regime is required to ensure everyone is playing by the rules and to protect the Commonwealth's investment in water.
- Minimum flows is water sharing plans must be maintain or reinstated. Originally water sharing plans had lower flow licence classes designed for stock and domestics supply which protected low flows – however, these classes of licence are now being used for irrigation due changes in water sharing plans immediately prior to the Basin Plan in 2012 (i.e. Barwon-Darling WSP - removal of pump size restrictions on class A water, removal of individual daily extraction limits and removal of total daily extraction limits).
- In finalising the Northern Basin Review, there must be environmental water protection mechansisms as part of the outcome – this along with a compliance regime are more important that the final recovery figure as without them the water would be ineffective in acheiving outcomes from the environment.
- More recently the coordination of environmental flows in the Northern Basin is being seen as part of the solution to reach a workable outcome from the Northern Basin Review. It is unclear where the idea originated, however it is simply unfeasible and would not be a realistic/practical means of achieving environmental outcomes in this part of the Basin. It is difficult to coordinate flows in highly regulated systems in the Southern Basin and it would be near impossible in the North.

  There is also a question mark around how coordinating flows of the magnitude environmental water could support that would be good for the environment as:

  - the systems are highly episodic and variable spatially, that naturally there wouldn't have been much 'coordinated' flows naturally other than during extreme events which are beyond environmental watering.

  - there is currently no protection of flows and losses would be high, the ability to coordinate flows of a meaniful magnitude would be limited.
- While there is limited value in coordinating flows, there is value in supporting connecting flows (from tributary flows into and through the Barwon-Darling), however the issue of environmental flow protection remains.

Commonwealth Environmental Water Office's submission on the draft NSW Prerequisite Policy Measures Implementation Plan

29 May 2015

The Commonwealth Environmental Water Office (CEWO) thanks NSW for the opportunity to provide a submission on the Draft NSW Prerequisite Policy Measures Implementation Plan (draft plan). We are supportive of the implementation of PPMs throughout NSW and seek to continue to be engaged as the implementation plan is further refined. Our comments focus on maximising environmental outcomes with the available environmental water.

Scope

The CEWO notes that the implementation of the plan will apply to the use of the Nimmie-Caira entitlement, however, it is unclear how the proposed options for environmental water re-use would apply to the Nimmie Caira entitlements. We seek further clarification on this matter. The CEWO also seeks clarification of proposed environmental flow re-use mechanisms for unregulated entitlements in regulated systems more broadly.

The CEWO seek that any environmental water released from storage on top of unregulated flows continue to be protected downstream of the order point in accordance with the environmental water re-use provisions for regulated systems.

Environmental flow re-use in regulated systems

The CEWO supports NSW's proposal to use the River Murray multi-site watering trials as a basis for enduring arrangements for re-use of environmental water in NSW regulated systems. The CEWO submits the following comments on the four options provided in the draft plan:

1. Up-front debiting

Key points:

Environmental licence holder determines volume of water required to meet downstream outcomes, including transmission losses and assumed use at environmental sites. River operator uses best endeavours to deliver water to sites. Environmental water account is debited at dam.

Clarifications and assumptions:

The CEWO assumes that transmission losses associated with environmental water would be net of regulated flow transmission losses. We also assume that this option includes an adaptive management process to refine assumed use, based on the process used for the multi-site watering trials.

CEWO response:

We understand that this option is similar to the current multi-site watering trial arrangements, except that any environmental water left after watering of the proposed environmental assets would not be accounted (the current multi-site watering trial for the River Murray includes trade of water remaining after watering of the environmental assets to the SA border after the assumed use has been applied). We also understand that this option is consistent with the Operational Management option proposed for the protection and re-use of environmental water in the Murrumbidgee catchment. For this project, the CEWO supported further investigation of this option, "particularly if it could include a variant to provide a legal right to

extraction, short of re-crediting the water in the CEWH's account" (refer to Final meeting record - Protection and Re-use of Commonwealth Environment Water Held in the Murrumbidgee Catchment – Workshop, 22 October 2014). The upfront debiting as currently proposed does not meet the variant recommendation put forward by the CEWO for this project.

As outlined above, the main disadvantage of this option to the CEWH is that any environmental water remaining after watering of specific assets will not be accounted for. This would mean that any environmental water remaining at the end of the system could not be credited for use in downstream systems and would risk being re-regulated. As such, environmental water may not be protected along the contiguous length of the Murray-Darling Basin streams. The CEWO would not support adoption of this method as it currently stands as it does not achieve the objective of allowing re-use of return flows further downstream. The CEWO would re-consider this method if there was some measure or assurance in place to protect environmental water from downstream extraction.

2. Downstream debiting

Key points:

Environmental water holder specifies volume of environmental water for each environmental asset and at the most downstream site or end of system. River operator determines volume of water to be released from dam to meet target environmental asset volumes taking into account transmission losses and assumed use at environmental sites. River operator uses best endeavours to deliver water to sites. Environmental water account is debited at downstream order point.

Clarifications and assumptions:

The CEWO notes that transmission losses associated with the environmental water would be socialised. We assume that average losses would be used to determine transmission losses for an environmental watering event. Other users may be concerned that the use of average losses will understate actual losses in some circumstances and may result in negative third party impacts. The CEWO submits that its approach to management of Commonwealth environmental water will result in lower socialised losses than currently occur. This is because the CEWO typically uses a trigger-based approach to the delivery of environmental water responding to natural hydrological cues. The way that Commonwealth environmental water is delivered would therefore result in less than average losses for the environmental water component, meaning that if losses are socialised (based on an assumed average loss), irrigators would be slightly better off under the proposed re-use arrangements than currently. In rare instances when Commonwealth environmental water is used to provide baseflows during dry periods to support drought refuges, we would seek prior agreement on apportionment of losses.

The CEWO also assumes that this option includes an adaptive management process to refine assumed use, based on the process used for the multi-site watering trials.

CEWO response:

We understand that this option is similar to the current multi-site watering trial arrangements. The ability to order water at the most downstream site or end of system would enable protection of environmental water between systems, providing appropriate policy mechanisms were in place to effect transfer / trade from one water resource plan area to another. The CEWO therefore supports further exploration of this option.

3. Combination debiting – regulated systems

Key points:

Environmental water holder specifies volume of environmental water for each environmental asset and at the most downstream site or end of system. Environmental water holder can order to first environmental asset which does not have accurate measurement. River operator determines volume of water to be released from dam to meet target environmental asset volumes taking into account transmission losses and assumed use at environmental sites without accurate measurement. River operator uses best endeavours to deliver water to sites without accurate measurement. Environmental water account is debited at first point of accurate measurement.

Clarifications and assumptions:

The CEWO understands that transmission losses are socialised to the order point, and that beyond this point, transmission losses associated with the environmental water would be net of regulated flow transmission losses.

We also assume that this option includes an adaptive management process to refine assumed use, based on the process used for the multi-site watering trials.

CEWO response:

We understand that this option is similar to the current multi-site watering trial arrangements, except that any environmental water left after watering of any proposed environmental assets without accurate measurement would not be accounted (the current multi-site watering trial for the River Murray includes trade of water remaining after watering of the environmental assets to the SA border after the assumed use has been applied).

The main disadvantage of this option to the CEWH is that any environmental water remaining after watering of specific assets will not be accounted for. This would mean that any environmental water remaining at the end of the system could not be credited for use in downstream systems and would risk being re-regulated. As such, environmental water may not be protected along the contiguous length of the Murray-Darling Basin streams. Therefore this option is not preferred. . The CEWO would re-consider this method if there was some measure or assurance in place to protect environmental water from downstream extraction.

4. Return flow credits

Key points:

Environmental water holder specifies volume of environmental water for each environmental asset and at the most downstream site or end of system and the timing of delivery. Environmental water holder places multiple orders at each environmental asset. River operator determines volume of water to be released from dam to meet target environmental asset and transmission losses. Water is debited and credited back to environmental account at each asset.

Clarifications *and assumptions*:

The CEWO understands that this option would require accurate measurement of return flows from all environmental assets. As there is often considerable lag between commencement of environmental watering at a site and return flows from the site, the CEWO suggests that the time between debiting and crediting the environmental account for each environmental asset watered would need to be agreed up front, together with any estimate of environmental use after the agreed crediting date.

CEWO response:

Whilst this option would provide the greatest certainty around the use of environmental water, with the lowest risk of third party impacts, the complexity of flow within the river system would make this difficult and costly to implement. It may be possible to use hydraulic models in the future to estimate use to an acceptable level to apply the debiting and crediting approach. The CEWO note that there could be merit in having detailed modelling in some areas, whilst utilising less accurate estimates of return flows in others (i.e. a combination of option 4 and option 2). This approach would be consistent with the dealing and accounting framework proposed for the Murrumbidgee catchment identified in the *Draft scoping and initial analysis - Agreement for the Protection and Re-Use of Commonwealth Environmental Water held in the Murrumbidgee Catchment Stage 1 – Phase 1* that was supported by the CEWO.

Environmental flow re-use in unregulated systems

The CEWO notes NSWs proposal to limit environmental flow re-use provisions in unregulated streams to the Barwon-Darling at this stage. We support the proposed implementation of the shepherding framework in the Barwon-Darling River, including development and implementation of options for environmental water re-use downstream of Menindee Lakes storage. There has been considerable work undertaken to date in arriving at the proposed shepherding arrangements for the Barwon – Darling and it would be useful to reflect this in the discussion on environmental flow re-use in unregulated systems. For example, we suggest including the background to the selection of preferred shepherding option for Barwon-Darling and justification for the selection of the preferred option, noting that it balanced complexity and cost with potential for third party impacts. These options could also potentially be included in the comparison table in document.

The CEWO assumes that this model would also be used for unregulated entitlements in regulated systems (e.g. the Nimmie-Caira supplementary access licences) and seeks further confirmation of this assumption.

Options for implementing piggybacking

The CEWO welcomes NSW's commitment to enable environmental water to be called from storages on top of unregulated flows. We understand the potential for third party impacts to reliability arising from this measure, given that water orders supplied during unregulated flow events are currently supplied from the unregulated flow in preference to making a regulated release. However, we also note that these impacts may be offset by the ordering behaviour of environmental water holders favouring the early part of the water year prior to irrigation demands.

The CEWO notes NSW's proposed options for managing reliability impacts:

1. Reliability debit based on long term ration of orders that are met from dam releases compared to those that are met from tr butary inflows

2. An overall limit on how much the environmental water holder can take from the dam in a water year.

We support further hydrological modelling, which seeks to account for l kely environmental water ordering patterns, to assess the potential scale of any reliability impacts prior to providing support for further analysis of either of the proposed mitigation options. Any modelling in the southern-connected basin should also include rules-based supply measures which may influence future dam operations. The MDBA has already commenced hydrological modelling using a more feas ble estimation of environmental water demand than that used in the Benchmark model as part of the development of constraints measures in the River Murray.

In relation to option 2 above, the CEWO submits that any limit imposed on the environmental water holder would require careful consideration and justification. The CEWO suggests that any such limit would need to be rules-based and should reflect equity between environmental and irrigation uses.

The CEWO notes that the current scope of piggybacking is limited to the Murray and Murrumbidgee and suggests that consideration be given to including other systems where demonstrable benefits can be achieved from implementing this practice. The CEWO would be happy to work with NSW to identify any additional areas where piggybacking may be beneficial to achieve increased environmental outcomes from the Commonwealth environmental water holdings, while protecting reliability of other entitlements.

Specific editorial comments

Section 2.4 and 3.1.5 – first paragraphs. Amend the following sentences as shown to reflect the outcome, rather than one of many mechanisms to achieve the outcome:

Section 2.4: This may ~~result in the Commonwealth government purchasing~~ require the recovery of more water to enhance environmental outcomes.

Section 3.1.5: The Commonwealth Government has and will ~~purchase~~ recover access licences from willing water users in NSW.

Section 4 – Impacts not permitted under the current framework. Second paragraph. The text states: "*The Commonwealth Government's water ordering behaviour may have impacts that are not considered acceptable to the community. Where impacts are not acceptable, measures to negate or offset the impact will need to be devised*". The CEWH is not obligated to offset impacts associated with water ordering behaviour. However, in making decisions to

use Commonwealth environmental water, the CEWH does take into consideration potential impacts to third parties. The CEWO suggests clarifying this paragraph to reflect the CEWH's obligations under the Water Act, and the considerations that the CEWH takes into account when making water use decisions.

Section 7.1.2 – Shepherding unregulated system – Issues. The text states: "*A significant barrier to implementation is cost. Current Basin Plan funding does not cover the implementation of shepherding.*" Whilst this statement is true, it could be mentioned that Stage 1 development of shepherding arrangements was funded through a separate project with the Commonwealth Environmental Water Office and further funding is potentially available for Stage 2.. It would also be useful to include some detail to clarify the high implementation cost.

Section 7.6 – Assessment of environmental re-use options. The CEWO suggests some changes to the shepherding framework, upfront debiting and downstream debiting to reflect comments made in this submission (refer to Appendix A)

Other comments

CEWO questions whether other mechanisms for shepherding of water aside from those included in the draft plan could be considered (e.g. in the case of the Murrumbidgee - trade of return flows to SA directly, or in other systems – trade to a downstream water resource unit).

The CEWO seeks to continue to work with NSW to implement the *Proposed arrangements for shepherding Commonwealth environmental water in NSW* (Barwon-Darling focus) and the *Protection and re-use of Commonwealth environmental water held in the Murrumbidgee catchment*, consistent with separate Project Agreements.

Appendix A – Specific comments on Section 7.6 Assessment of environmental reuse options

Unregulated

Option	Third party impacts are negated or offset (or acceptable to the community)	PPMs will facilitate the delivery of environmental water through the system	Option implementable by June 2019	Available to all water users	Option is transparent	Reliability and access characteristics are the same for licensed environmental water and other licensed entitlements	Adaptive management	Tools are as simple as possible and practical
Shepherding framework	Conservative assumed use factor mitigates risks to water users.	Shepherding results in licensed environmental water being recognised at the end of the system in Menindee Lakes. Complete implementation of this option will potentially result in water moving from Menindee Lakes to the River Murray.	Basin Plan funding does not cover the implementation of this option. A number of outstanding tasks need to be completed before this option can be implemented.	This option can potentially be open to all users, however there are significant costs involved which may be a barrier to uptake.	Uses existing licensing framework and all movement of water must occur within this framework. Method will be fully available and prescribed in WSPs.	Water will be traded from a purchased environmental licence to a shepherding access licence. The shepherding access licence will retain the same reliability and access characteristics as the purchased environmental licence.	Rules for shepherding will be codified in WSPs. WSPs are legislative tools and are not the most flexible.	Received feedback on public exhibition that shepherding was overly complex and a major barrier to implementation is the cost involved.

Commented [HJ3]: It is not as complex as other options inves igated. Also, as stated in NSW's response to feedback, he complexity is required to manage third party risks.

Commented [HJ2]: Shouldn't this be orange too (as per similar options below)? If trialled before putting in the WSP, hen this would reduce the risk of not being able to adaptively manage. 10 years may be appropriate review period for he Barwon-Darling given the variable nature of the system.

Commented [HJ4]: Was this feedback? Or is this a separate point raised by NSW assessment? It the later, suggest including as a separate statement. Also, how significant are hese costs (par icularly given the Commonwealth has funds available for Stage 2 of the project). Also, it's not as costly as other options investigated.

Commented [HJ1]: How significant are the funding obstacles? Commonwealth funding is available for Stage 2 of he project.

Regulated

Option	Third party impacts are negated or offset (or acceptable to the community	PPMs will facilitate the delivery of environmental water through the system	Option implementable by June 2019	Available to all water users	Option is transparent	Reliability and access characteristics are the same for licensed environmental water and other licensed entitlements	Adaptive management	Tools are as simple as possible and practical
Multi-site watering	The application of a conservative assumed use factor mitigates risk to other users.	Trials have resulted in water being recognised at the end of the system and used to water downstream environmental sites.	It is feasible that this option will be implemented by 30 June 2019.	The method is currently not available to all water users.	The trials do not occur within the NSW licensing framework.	This is not a rules based approach and so characteristics will be the same as other licences.	This option is very flexible as rules are not codified. Approval from the BOC is obtained before each trial.	Reviews have identified that the current methods are difficult to incorporate into day-to-day river operations.
Upfront debiting	Risks to water users are minimal because the river operator only needs to deliver water immediately downstream of	Does not guarantee water beyond the first delivery point.	It is feasible that this option will be implemented by 30 June 2019, however an Act amendment is required to implement this	This option is similar to what is available to all water users currently and could be made available to all water users.	Rules to protect environmental reuse water from reregulation and ordering will be in the WSP. Directions to the river operator will be located	Reliability characteristics will be the same as other licences but ordering and debiting conditions for the licence will be	Water ordering rules will be codified in WSPs. WSPs are legislative tools and require a process to be amended.	This option can be implemented without a large increase in workload for the Office of Water or the river operator.

Commented [HJ5]: Shouldn't this be orange, similar to the other options requiring codification in WSPs?

Option	Third party impacts are negated or offset (or acceptable to the community	PPMs will facilitate the delivery of environmental water through the system	Option implementable by June 2019	Available to all water users	Option is transparent	Reliability and access characteristics are the same for licensed environmental water and other licensed entitlements	Adaptive management	Tools are as simple as possible and practical
	the dam.		option.		on a water supply work approval.	different.		
Downstream debiting	Risks to water users can be mitigated by devising a conservative assumed use factor but there will be risk involved due to difficulties in calculating how much water will be lost to the environment and travel times etc.	This option will guarantee that a target must be met at the end-of-system. Additional WSP rules will add protection from re-regulation and extraction.	It is feasible that this option will be implemented by 30 June 2019, however an Act amendment is required to implement this option.	This option could be made available to all water users, however they will have to provide further investment to obtain a more favourable assumed water use calculation.	Rules will be prescribed in the WSPs. Assumed use calculations will be external to the WSP. The Office of Water may be able to make assumed use calculations available.	Reliability characteristics will be the same but access characteristics will be different so that an assumed use factor can be applied.	Water ordering rules will be codified in WSPs. WSPs are legislative tools and require a process to be amended.	This option will require additional work from the Office of Water and the river operator to determine assumed use. This could be mitigated by proposing a simple and conservative assumed use factor and implementing a 'user pays' system for

Commented [HJ6]: Unclear why this risk is greater han for multisite watering?

Option	Third party impacts are negated or offset (or acceptable to the community	PPMs will facilitate the delivery of environmental water through the system	Option implementable by June 2019	Available to all water users	Option is transparent	Reliability and access characteristics are the same for licensed environmental water and other licensed entitlements	Adaptive management	Tools are as simple as possible and practical
								obtaining a more favourable assumed use factor.
Combination debiting	Risks to water users will be minimal as NSW will determine if there is sufficient information to guarantee a delivered volume to an environmental site.	This option will facilitate the delivery of environmental water through the system and provides an opportunity for adaptive management.	It is feasible that this option will be implemented by 30 June 2019, however an Act amendment is required to implement this option.	This option could be made available to all water users.	Rules will be prescribed in the WSPs. Assumed use calculations will be external to the WSP. The Office of Water may be able to make assumed use calculations available.	Reliability characteristics will be the same but access characteristics will be different so that an assumed use factor can be applied.	This option allows water use calculation and environmental access licence debiting to be improved as knowledge of environmental systems or water measuring infrastructure increases.	This option will require additional work from the Office of Water and the river operator to determine the appropriate water use factors and determine when a end-of-system debiting or upfront debiting approach is appropriate.

Option	Third party impacts are negated or offset (or acceptable to the community	PPMs will facilitate the delivery of environmental water through the system	Option implementable by June 2019	Available to all water users	Option is transparent	Reliability and access characteristics are the same for licensed environmental water and other licensed entitlements	Adaptive management	Tools are as simple as possible and practical
Return flow credits	Re-crediting the environmental licence results in a right to re-order water for that volume. If re-crediting calculations are incorrect, then there will be third party impacts.	This option will clearly deliver water through the system with and result in a re-credit of water if water reaches the end of the system.	It is feasible that this option could be implemented by June 2019, however significant work would be required to apply this to all NSW regulated systems.	This option could potentially be applied to all water users that meet return flow requirements.	This option will require the drafting of a return flows regulation and will result in a licensing process under the NSW framework.	Reliability characteristics will be the same, however access conditions as the right to extract water is relevant to a particular location.	These rules will be drafted as a regulation, however the implementation of this option could build in some flexibility.	This will be a difficult option to implement across NSW and has the potential to be very costly and complex.

Purple= Critical criteria

Blue= Non-critical criteria

Green= Fully meets criteria

Orange = Criteria is not fully met

Red= Criteria is not met

FOI 180308
Document 9

s22

From: s22
Sent: Thursday, 1 September 2016 4:46 PM
To: 'Michael Makin'
Cc: 'Russell James'; s22 '; Papps, David; 'Slatyer, Tony'; 'Fisher, Tim'; Taylor, Mark
Subject: RE: Draft letter to NSW regarding PPM implementation plan [DLM=Sensitive] [SEC=UNCLASSIFIED]
Attachments: DRAFT NSW Final PPM Implementation Plan Letter to Gavin Hanlon CEWO.DOCX; DRAFT NSW Final PPM Implementation Plan Letter to Gavin Hanlon Attachmen....docx

Hi Mike

Please find attached the CEWO's comments on the letter NSW and it's attachment.

We've added a bit into it, so happy for you to make the call about what may be better dealt with at a workshop.

Let me know if you have any questions or concerns.

Cheers
s22

Director
Environmental Water Policy
Commonwealth Environmental Water Office
Ph: (02) 6274 s22 | Fax: (02) 6275 9376 | s22 @environment.gov.au
GPO Box 787 | CANBERRA ACT 2601 | AUSTRALIA
www.environment.gov.au/ewater

The Department acknowledges the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present.

From: Michael Makin [mailto:Michael.Makin@mdba.gov.au]
Sent: Wednesday, 31 August 2016 6:08 PM
To: Papps, David; s22 ; 'Slatyer, Tony'; 'Fisher, Tim'
Cc: Russell James; s22
Subject: Draft letter to NSW regarding PPM implementation plan [DLM=Sensitive]

David, Tony,

Please find attached a draft letter from MDBA to NSW regarding our initial assessment of the final NSW PPM implementation plan. We are planning to send this to NSW on Friday, but would appreciate any comments from either of you before we send it.

As discussed previously, we plan to follow up on the letter with a workshop with NSW later in September, and with NSW agreement will seek to have representatives from CEWH and DAWR present, along with Water NSW and OEH.

Please send any comments you have back to me and we will endeavour to incorporate, and I am happy to discuss if needed.

Cheers,

Mike Makin
A/Executive Director, Policy and Planning

T (02) 6279 0523
M s22
E mike.makin@mdba.gov.au
W http://www.mdba.gov.au

FOI 180308
Document 9a

Australian Government

MURRAY–DARLING BASIN AUTHORITY

Office of the Chief Executive

TRIM Ref: D16/28839

Mr Gavin Hanlon
Deputy Director General Water
DPI Water
Locked Bag 5123
PARRAMATTA NSW 2124

Dear Mr Hanlon

I refer to your letter date 30 June 2016 providing the *NSW Pre-requisite Policy Measures Implementation Plan (the NSW Plan)*, and our subsequent meeting on 29 July.

Please find attached a copy of the MDBA's initial assessment of the NSW Plan. This assessment has been undertaken against the requirements of the Basin Plan, and having regard to both the IGA on Implementing Water Reform in the Murray-Darling Basin June 2013 and the PPM Assessment Guidelines that were prepared in consultation with the Sustainable Diversion Limit Adjustment Assessment Committee.

In summary, the MDBA is not yet convinced that the NSW Plan meets the requirements of s7.15 of the Basin Plan, and seeks the opportunity to clarify a number of issues with relevant NSW and Commonwealth agencies. Our key concerns, expanded on in the assessment, are as follows:

- lack of detail - while the MDBA supports the use of high level principles to guide the implementation of PPMs in NSW, there is an overall lack of clarity and necessary detail in the NSW Plan to enable a clear understanding of the policies proposed or ~~assessment of~~ how ~~it~~the policies will operate in reality;
- inadequate policies to ensure that environmental water can be used at multiple sites along a river and between rivers.
- apparent inconsistencies with the NSW Plan and the River Murray PPM Plan (RM Plan);
- a number of potentially serious inequities in approach that could have the effect of the loss of control by the ~~unnecessarily fettering the behaviour of~~ environmental water holders on the most effective use of their water portfolio, expose them to higher costs, and result in an enhancement of reliability of ~~windfall gains to~~ other entitlement holders.
- potential conflicts with the water trade rules.

As discussed at our recent meeting, we would like to work with NSW to clarify the issues contained in our assessment. Given the implications of the work for other parties, my proposal is that the workshop involve relevant officers from DPI Water, OEH, Water NSW, the CEWO and MDBA. This would help us to clarify the issues we have identified, determine how these may be resolved and to better understand the linkages with the

Commented [CEWO1]: The NSW proposal has potentially significant impacts on environmental water deliveries to SA and potential impacts on State shares. Suggest Vic & SA also need to be involved.

Murray PPM Implementation Plan. A follow up discussion may then be required between senior officials to resolve any outstanding issues.

As part of the workshop, we would also like to discuss how the NSW Plan has taken into account the collaborative learnings from environmental delivery trials conducted on the Murray over the last six years. As you would appreciate, NSW officials have actively worked with other southern Basin agencies to implement an adaptive management framework for environmental watering that has identified a range of useful methods and approaches, and we see opportunities to incorporate these learnings in all of the PPM implementation plans under development.

I have asked the team here to commence discussions with your staff to arrange a workshop as soon as possible in September. The contact officer at MDBA is Mike Makin, General Manager – Water Resource Planning on (02) 6279 0523 or mike.makin@mdba.gov.au .

Given the implications of the NSW Plan for the CEWH and Basin Officials, I have copied this letter to Messrs Papps and Parker for their information.

Yours sincerely

Russell James
A/g Chief Executive

1 September 2016

FOI 180308
Document 9b

Attachment A

MDBA Initial Assessment of NSW Pre-requisite Policy Measures Implementation Plan

Purpose

This document describes MDBA's initial assessment of the NSW Pre-requisite Policy Measures Implementation Plan (NSW Plan).

Background:

DPI Water submitted the NSW Plan to MDBA on 30 June 2016, in order to demonstrate that by 30 June 2019 it will implement the unimplemented policy measures (aka Prerequisite Policy Measures) specified in s7.15 of the Basin Plan as follows:

> ***unimplemented policy measure*** *means an anticipated measure consisting of a policy to:*
>
> *(a) credit environmental return flows for downstream environmental use; or*
>
> *(b) allow the call of held environmental water from storage during un-regulated flow events*
>
> *to the extent, if any, that the measure, at the time of the determination, is not expected to, or did not, come into effect by 30 June 2019.*

Any PPMs that are not fully implemented by June 2019 would reduce (or completely offset) the SDL adjustment resulting from supply measures. Due to the inter-connected nature of the system, policies deemed to be not adequately addressed in any one jurisdiction will impact upon the determination of the SDL adjustment for the whole of the southern connected basin.

The governments of Victoria and South Australia have also developed similar PPM plans, and the MDBA is assisting a working group of Basin state officials to develop a PPM Plan for the jointly managed River Murray System.

Summary of initial assessment

The MDBA has assessed the NSW Plan against the requirements described at s7.15 of the Basin Plan, and considering relevant sections of the Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin June 2013 (IGA) and the PPM Assessment Guidelines that were developed in consultation with the SDL Adjustment Assessment Committee.

In summary, the MDBA is not yet convinced that the NSW Plan meets the requirements of s7.15, and seeks the opportunity to clarify a number of issues with relevant NSW and Commonwealth agencies (see 'Way Forward' at end of report).

The key issues of concern to the MDBA are summarised below, and expanded on further in the report:

- lack of detail - while the MDBA supports the use of high level principles to guide the implementation of PPMs in NSW, there is an overall lack of clarity and necessary detail in the NSW Plan to enable a clear understanding of the policies proposed or ~~assessment of~~ how the policies ~~it~~ will operate in reality;
- Inadequate policies to ensure environmental water can be used at multiple sites along a river and between rivers
- apparent inconsistencies with River Murray PPM Plan (RM Plan);

Commented [CEWO1]: Detail wi hin the plan is not consistent with the "high level principles e.g. efficient use of e-water and adaptive management (e-watering managed under the rules of the WSP)

- a number of potentially serious inequities in approach that could have the effect of loss of control by the ~~unnecessarily fettering the behaviour of~~ environmental water holders on the use of their water portfolio~~.~~, expose them to higher costs, and result in an enhancement of reliability and as such windfall gains to other entitlement holders.
- potential conflicts with the water trade rules.
- the extent that river operators and environmental water holders were included in the development of the NSW Plan is not clear. Their input is important to ensure the NSW Plan is acceptable and operable.

Specifics

The following comments are grouped according to the requirements in s7.15 of the Basin Plan and the headings used in the PPM Assessment Guidelines

(a) credit environmental return flows for downstream environmental use:

Key concerns that require clarification are:

- This will require significant additional water to achieve the same environmental outcomes modelled to determine the Basin Plan. The effect to which the proposed NSW policies have on environmental water availability to achieve the outcomes promoted under other SDL adjustment mechanisms will require consideration.
- This proposal will not meet the objectives of the Basin Plan (Chapter 5) or the provisions under chapter 8 of the Basin Plan or the Basin Watering Strategy to manage and coordinate environmental water at multiple sites, and therefore is not consistent with the statutory obligations of the CEWH.
- Page 14 - the 'combination debiting' approach appears to result in inequitable sharing of losses. The NSW Plan outlines that the environmental entitlements will bear all conveyance losses downstream of the 'first inaccurate measurement site'.
  - It is unclear whether the proposal relates to the conveyance losses for all water or the additional conveyance losses that arise from the environmental deliveries.
  - It is unclear why the environmental entitlements should bear all in stream conveyance losses downstream of an inaccurate metering point.
  - The approach does not seem consistent with principle five of the NSW Plan which suggests that all licensed entitlements are treated the same.
  - The use of inaccurate loss rates applied to environmental deliveries pose a risk to the reliability of those entitlements. While the MDBA accepts that risks arising from the implementation of the PPMs must be mitigated, this should not enhance or diminish the reliability or other characteristics of any entitlements, whether used for (consumptive or environmental) purposes. (IGA 2013 5.2)
- Page 14 – the proposed method for delivery is not clear.
  - The BED (Bulk Entitlement Delivery) method developed by DPI Water and the MDBA for delivering environmental water is a current ~~good~~ method being trialled for the delivery of environmental water. Clarification is sought on whether NSW DPI is planning on using this method as part of the NSW Plan.
  - If an alternative method based on trade to deliver or move environmental water is adopted, the MDBA would need to consider whether the trade is consistent with the Basin Plan water trading rules (Chapter 12). The most likely inconsistencies could relate to non-discrimination rules (ss12.06-12.15).

Commented [a2]: See comment below – suggest this be removed.

Formatted: Font color: Black

Commented [CEWO3]: Request this is removed, as trade is currently used in the Murray and Victorian tribs for Victorian entitlements held for he environment. The discrimination we'd be receiving is broader han trade.

- Page 14 - the application of the proposed combination debiting approach and the lack of clarity on the proposed delivery method mean that the NSW Plan does not clearly demonstrated how environmental flows will be managed for environmental outcomes downstream of the Barmah Millewa Forest (BMF), the mid-Murrumbidgee wetlands or the Murrumbidgee junction.

(b) allow the call of held environmental water from storage during un-regulated flow events

Key concerns that require clarification are;

- Page 14 - the NSW Plan outlines that releases of environmental water from a headwater storage potentially incur two additional losses: one loss in advance for requesting the release from a headwater storage and an additional loss retrospectively if there is deemed to be a reliability impact.
  - The MDBA assumes that the first loss is to mitigate any impacts on reliability caused by making environmental releases from headwater storages. It is unclear why the second loss is required and how it is justified as this appears to be charging the environmental portfolio twice for the same risk.
  - Modelling undertaken for the River Murray by the MDBA shows that releases from headwater storage improves reliability in all years except for very dry years (less than 5%). The treatment proposed in the NSW Plan does not attribute this upside benefit to the reliability of relevant entitlements. Any adjustment should be based on the net impact and should not result in a different loss rate to that applied at the State level in the River Murray.
- Page 14 and 40 - the proposed role that the Customer Service Committees (CSCs) have in approving an environmental licence holder's watering intentions needs to be clarified.
  - The NSW plan outlines that the CSCs will negotiate the use of environmental water with Water NSW through the River operator's strategy. This will ~~could~~ result in environmental water holders losing autonomy over the use of their portfolios and being unable to fulfil their statutory obligations effectively or efficiently.
  - Having Customer Service Committees negotiate the use of another water license holder is also potentially at odds with the non-discrimination provisions of the trade rules and could trigger insider trading provisions.
  - It is a conflict of interest for Customer Service to negotiate the use of environmental water licenses. Customers of the consumptive pool can directly benefit from the timing of environmental water flows, particularly where losses are excessive against the environmental portfolio.
  - Customer Service Committees would not have appropriate authority and governance structures, including conflict of interest management, or sufficient expertise to take on the proposed role.
  - The MDBA does not support arrangements which diminish the control of environmental water holders over their portfolio. Such arrangements may be inconsistent with the non-discrimination provisions of the water trading rules in the Basin Plan. Such an approach would also be inconsistent with the NSW commitment under paragraph 5.2 of the 2013 IGA and may restrict the Commonwealth Environmental Water Holders (CEWH) ability to use the water in accordance with its functions identified in the Water Act.
- Page 9 – the NSW Plan appears to propose inequitable costs for requests for a release to be made from a specific storage, including increased user fees for the environmental

Formatted: Font color: Auto

Formatted: List Paragraph,Bullet 1,Bullet list,List 1,Recommendation, Space Before: 6 pt, After: 12 pt, Line spacing: At least 14 pt

Formatted: Font color: Auto

portfolio. It is unclear how these costs are justified and whether they will be subject to an Independent Pricing and Regulatory Tribunal determination.

to the extent, if any, that the measure, at the time of the determination, is not expected to, or did not, come into effect by 30 June 2019

This part of the assessment considers whether the NSW Plan adequately details how the policies will be implemented, by when and in what ways. The MDBA must have confidence that the policies will be in operation by 30 June 2019.

There is a lack of specific detail about how, when and by whom the policies embedded in the NSW Plan will be implemented. It would be useful to include a more detailed work plan which includes this information

Commented [CEWO4]: There are many questions relating to the operability of the NSW proposal. CEWO hasn't identified many of their questions & concerns here as the operational aspects of he plan are too ambiguous and at imes inconsistent.
The operational feasibility could be addressed after the policy issues are resolved.

Secure and enduring:

- Page 16 - the NSW Plan identifies that changes to the river operator's water supply work approval is required. It is not clear how this impacts on operations or relates to the Objectives and Outcomes that guide operations on the Murray River. Further clarification is required on how river operators will be empowered to (a) credit environmental return flows for downstream environmental use; and (b) allow the call of held environmental water from storage during unregulated flow events -and the method for determining losses.
- Page 8 - the NSW Plan identifies adaptive management as a key principle for addressing PPMs. More detail on how the adaptive management process will be implemented is required. The adaptive management process agreed through BOC for the Murray trials provides a good example.

Fully Operable:

- Multiple pages - it is not clear what is meant by 'river operator', whether this is an agency such as Water NSW or, MDBA river operators or another river operator. Clear definition and reference to the various operations groups in the NSW Plan would provide the document with greater clarity.
- Page 14 - the NSW plan outlines that the river operator and the environmental ~~water holder~~water licence holder will negotiate a delivery path for environmental flows. The Operator will make their best endeavours to deliver environmental water consistent with the delivery path, but will not guarantee the timing or volume of the delivery past the first inaccurate metering site. This appears to be inconsistent with how environmental water is delivered in the Murray.
- Page 14 - the NSW Plan proposes that the river operator will monitor environmental flows, return flows (from an inaccurate measurement point) and losses in real time, while making their best endeavours to deliver environmental flows.
    - This approach was attempted in the first Murray Environmental Watering Trial and abandoned part way through the trial as it was not feas ble. The Independent River Operations Review Group reviewed the event and agreed that the MDBA River Murray Operations was correct to abandon the attempt.
    - While the MDBA agrees that this proposal may be worthy of further investigation with improved tools, knowledge and gauging, we are not clear that NSW intends making the necessary investment for this. Can NSW clarify if it has additional information

that would allow real time monitoring of flows and losses, so that we can consider this in the assessment?

- Without this information, the best available information (the Murray Environmental Water Trial) indicates that the proposed approach will not be operable. The outcome from the proposed approach in the NSW Plan will result in:
  - The operator bearing the risk of affecting water users,
  - Overly conservative estimates of return flows and losses;
  - The environmental water holders over-paying for losses.
  - Return flows unlikely to be reasonably credited for downstream environmental reuse.
  - Compromise to the environmental outcomes or increased third party property risk resulting from the consequences noted above.

- Page 15 - the requirement for the river operator to negotiate with the environmental water holder a delivery path and upstream delivery point that prevents unacceptable system losses and third party impacts appears unrealistic. It is unclear how this could be achieved, the role of the customer services committee in negotiating the strategy and what rules could be implemented to enable the operator to perform this task.
- Page 16 - it is not clear how the NSW Plan interacts with the River Murray Plan (RM Plan).
  - The NSW Plan is written in a way that implies that it applies to all rivers in the NSW part of the MDB. However, parts of the proposed approach are inconsistent with the approach in the RM Plan and the arrangements on the Murray agreed through BOC. Examples include:
    - The poss ble application of a debit on environmental portfolio for impacts to storage reliability (Page 14, para 4). The Murray Plan include measures to address reliability risks. If both methods are applied to address reliability, then it is l kely that the environment pays more than it should.
    - Treatment on instream losses and use rates.
  - Greater clarity is required on how it is proposed to move environmental water between the Murrumbidgee and Murray systems. For example:
    - How will the proposed Water Sharing Plan Rules for the Murray that aim to "protect" environmental flows from the Murrumbidgee translate to operational rules.
    - How will the operator track the volume of environmental water and deplete it for use and losses.
  - As the MDBA understands it, the Murrumbidgee and Murray are operated in a similar fashion. Therefore the learnings from the River Murray Environmental Watering Trials should be applicable to environmental watering on the Murrumbidgee. Many of the issues outlined in this section of the assessment could be addressed if the NSW Plan was to build on the learnings from the approach agreed by the Basin Officials Committee (BOC) in the 2016/17 River Murray Environmental Watering Trials (please refer to Agenda Item 11, BOC Meeting 41 – 28 April 2016).

Transparent:

- As identified above, the process for determining losses is not clearly defined. The application of losses as defined in the NSW Plan appear likely to enhance the reliability of consumptive entitlement holders at the expense of the environmental portfolio. Evidence is required to demonstrate that no entitlement holder will be adversely affected and disclosure on the method used to determine losses.

Risks are managed and identified:

- The NSW Plan articulates a number of risks to entitlement holders associated with reliability of supply. The proposed resolution is to have 'very' conservative loss estimates that are imposed on the environmental entitlement holders. It is considered that the proposed measures may result in increased reliability for entitlement holders.
- The MDBA suggests that an assessment of the risk to the environmental outcomes resulting from the proposed conservative accounting arrangements be provided.

Way Forward

As indicated above, the MDBA's initial assessment of the NSW Plan is that a number of issues require clarification before MDBA could be confident it will adequately address the requirements of s7.15 of the Basin Plan.

As agreed with DPI Water, MDBA proposes a workshop be convened by mid-September to discuss the issues identified in this initial assessment including:

- whether they can be resolved by clarifying or revising the text in the NSW Plan
- any outstanding conflicts in policy approach, and the reasons for this.

FOI 180308
Document 10

s22

From: s22
Sent: Tuesday, 27 September 2016 10:08 AM
To: s22 @mdba.gov.au'
Subject: FW: MLS Supply Measure and PPMs - legal advice [SEC=UNCLASSIFIED]
Attachments: Advice MLS Supply Measure and PPMs 23.9.16.pdf

s22
I'm sure you'll see a copy of this through MDBA, but this might be quicker.
Interesting reading and a good opportunity to help with the protection of environmental flows in the BD.
Regards,
s22

From: Emma Carmody
Sent: Monday, 26 September 2016 10:37:23 AM
To: Taylor, Mark; Papps, David; Tony.slatyer@agriculture.gov.au; David.parker@agriculture.gov.au; Phillip.glyde@mdba.gov.au
Cc: bevsmiles@bigpond.com
Subject: MLS Supply Measure and PPMs - legal advice

Good Morning,

We act for the Inland Rivers Network (IRN).

The IRN has closely followed the Basin Plan development and implementation process, including the Northern Basin Review.

They sought our advice regarding the relationship between the proposed Menindee Lakes Scheme Supply Measure and PPMs (notably water shepherding in the Barwon-Darling). They have requested that we forward this advice to you for consideration.

Kind Regards,

Emma Carmody

NSW EDO
DEFENDING THE ENVIRONMENT ADVANCING THE LAW

Dr Emma Carmody | Policy and Law Reform Solicitor | EDO NSW
Level 5, 263 Clarence Street, Sydney NSW 2000 AUSTRALIA
T: +61 2 9262 6989 | F: +61 2 9264 2414
E: emma.carmody@edonsw.org.au
W: www.edonsw.org.au
Tuesday, Thursday, Friday

NSW EDO
DEFENDING THE ENVIRONMENT
ADVANCING THE LAW

EDO NSW
ABN 72 002 880 864
Level 5, 263 Clarence Street
Sydney NSW 2000 AUSTRALIA
E: edonsw@edonsw.org.au
W: www.edonsw.org.au
T: + 612 9262 6989
F: + 612 9264 2414

23 September 2016

Bev Smiles
Inland Rivers Network
14/338 Pitt Street
Sydney 2000
By email: bevsmiles@bigpond.com

Dear Bev

Proposed Menindee Lakes Scheme Supply Measure and Prerequisite Policy Measures (Water Shepherding)

1. You have requested advice regarding the relationship between the proposed Menindee Lakes Scheme Supply Measure (**MLS Supply Measure**) and Prerequisite Policy Measures (**PPMs**). Specifically, you have sought advice as to whether the Basin Plan requires a PPM – namely water shepherding in the Barwon-Darling – to be undertaken in order to successfully implement the MLS supply measure.

Executive Summary

2. If water shepherding in the Barwon-Darling is not given effect by 30 June 2019, the 'un-shepherded' volume of water will have to be deduced from the 'savings' made under any notified supply measures (as required under cl. 7.15 of the Basin Plan).

3. To clarify, if water shepherding is not given effect by 30 June 2019, there is a statutory obligation that the aforementioned deduction take place. This deduction must occur *regardless* of whether or not the sustainable diversion limit (**SDL**) for the Barwon-Darling[1] could theoretically be met over the long-term without water shepherding being implemented.

4. Given the relationship between shepherding and inflows into Menindee Lakes, it is reasonable to assume that any 'un-shepherded' water would be deducted from the MLS Supply Measure (assuming the MLS Supply Measure is notified under cl. 7.12 of the Basin Plan).

5. If the volume of 'un-shepherded' water is large enough, it could completely cancel out the 'savings' associated with the MLS Supply Measure. This would mean that the MLS Supply Measure could not be implemented (or implemented in full), which would in turn reduce the overall supply contribution under the SDL adjustment mechanism. This would have a knock on effect on supply measures and environmental outcomes in the Lower Darling and Murray River.

6. Failure to implement water shepherding would also influence the calculation of 'equivalent environmental outcomes' as prescribed under the Basin Plan. That is, it may make it more difficult to stay within the 'limits of change' (prescribed in Schedule 6 of the Plan). Further advice should be sought on this issue from an appropriately qualified expert.

[1] That is, the SDL prescribed under the Basin Plan.

7. We also recommend that you seek further information from either DPI Water or the Murray-Darling Basin Authority (**MDBA**) regarding first, the likely contribution to inflows into Menindee Lakes associated with water shepherding and second, the impact of failing to implement the MLS Supply Measure on other supply measures and environmental outcomes in the Lower Darling and Murray River.

8. Finally, the 'ecological elements method'[2] (concerning 'equivalent environmental outcomes' for supply measures) may not satisfy the requirements of Schedule 6 of the Basin Plan. We recommend that you request further advice about this matter from an appropriately qualified expert.

MLS Supply Measure and PPMs

Basin Plan

9. Chapter 7 of the Basin Plan concerns the sustainable diversion limit (**SDL**) adjustment mechanism, which if implemented will alter the 2,750GL benchmark reduction scenario.

10. Clause 7.15 outlines the method for calculating notified supply measure contributions. Relevantly, this clause requires any 'unimplemented policy measures' (also known as PPMs) to be subtracted from the 'notified supply measures'. Put differently, failure to 'give effect to' any relevant PPM by 30 June 2019[3] will reduce the quantity of water that is redirected to the consumptive pool as a consequence of one or more supply measures.

11. Unimplemented policy measures or PPMs are defined as 'an anticipated measure consisting of a policy to: (a) credit environmental return flows for downstream environmental use; or (b) allow the call of held environmental water from storage during un-regulated flow events…'.[4]

12. We further note that clause 7.15(1) requires supply measure contributions to first, achieve 'equivalent environmental outcomes'[5] and second, to ensure that there are 'no detrimental impacts on reliability of supply of water to the holders of water access rights that are not offset or negated'. 'Equivalent environmental outcomes' is discussed in subsequent sections of this advice, while the notion of 'no detrimental impacts on reliability of supply' is analysed in the letter attached at **Appendix 2**. If necessary, we can provide additional, detailed advice about the correct legal construction of this phrase (within the broader context of the Water Act and Basin Plan).

Significance of PPMs

13. We have analysed a number of documents in order to understand the legal and practical significance of PPMs, paying particular attention to 'water shepherding' in the Barwon-Darling (due to its effect on inflows into Menindee Lakes).

14. First, 'water shepherding' is provided for in a Memorandum of Understanding between the Commonwealth and NSW (**MoU**). Briefly, the MoU requires water shepherding

[2] Overton IC, Pollino CA, Grigg NJ, Roberts J, Reid JRW, Bond NR, Barma D, Freebairn A, Stratford D and Evans K. 2015. *The Ecological Elements Method for adjusting the Murray-Darling Basin Plan Sustainable Diversion Limit*, CSIRO, Canberra.
[3] The definition of 'unimplemented policy measure' specifies this date: Cl. 7.15 (2).
[4] Cl. 7.15(2).
[5] Relative to benchmark environmental conditions, that is relative to environmental outcomes achieved under the 2,750GL/year reduction scenario. See also cl. 7.17.

arrangements to be developed so as to protect the Commonwealth's environmental water (**CEW**) from consumption as it moves through the Barwon-Darling system. It also requires 'recognition of CEW as it flows into or past the Menindee Lakes' and to make this water 'available for use at the direction of the CEWH' (subject to certain conditions being met).[6]

15. In response to this MoU, NSW developed a document for consultation in 2012 entitled 'Proposed arrangements for shepherding water in NSW' (**Proposed Arrangements**). This included explicit discussion of the proposed arrangements for shepherding water through the Barwon-Darling system to Menindee Lakes. EDO NSW wrote a submission critiquing the Proposed Arrangements. This is attached at **Appendix 1**.

16. Second, in 2015 the former NSW Office of Water sought feedback on a document entitled 'Draft NSW Prerequisite Policy Measures Implementation Plan' (**Draft PPM Plan**). The Draft PPM Plan specified that water shepherding through the Barwon-Darling 'is a proposed option to meet the environmental flow reuse PPM in the unregulated Barwon-Darling system'.[7] In other words, this clarifies that water shepherding in the Barwon-Darling constitutes a PPM as defined in cl. 7.15(2) of the Basin Plan. EDO NSW wrote a letter critiquing the Draft PPM Plan. This is attached at **Appendix 2**.

17. Third, the hydrologic modelling that was undertaken to inform the Basin Plan assumes that shepherding will be implemented in the Barwon-Darling. Put differently, the SDL for the Barwon-Darling that is prescribed in the Basin Plan assumes three things: that environmental water will be shepherded through the Barwon-Darling; that this environmental water will be protected from consumptive use; and that this water will accordingly contribute to inflows into Menindee Lakes.[8]

MLS Supply Measure

18. The 'SDL Adjustment Stocktake Report'[9] (**Report**) provides information about a range of proposed efficiency and supply measures, including the MLS Supply Measure.

19. According to the Report, the MLS Supply Measure involves operational and structural changes that will reduce evaporative loss. The plausible supply contribution range associated with this supply measure is 50-80GL, with 'potential to achieve up to 100GL if the project were enhanced to include consideration of the approximately 40GL available from lowering demands on the MLS and considering flows from the northern basin.'[10]

20. The Report outlines risks associated with each supply measure and assigns a level of confidence (low, moderate, high) regarding the resolution of these risks. Risks associated with the MLS Supply Measure include the following: '[i]mplications of water shepherding of northern environmental water to the MLS will influence savings'. This particular risk is assigned a 'low' confidence level,[11] with the relevant footnote stating that it '[w]ill remain a significant concern without conciliation.'[12] This is no doubt because – as outlined above – the Basin Plan SDL for the Barwon-Darling was based on modelling that assumed shepherding would be successfully implemented.

---

[6] MoU, cl. 18.
[7] Draft PPM Plan, p. 8.
[8] Murray-Darling Basin Authority, *Hydrologic modelling to inform the proposed Basin Plan: Methods and results*, February 2012, pp. 104-5,113.
[9] Warren Martin and Graeme Turner, *SDL Adjustment Stocktake Report*, August 2015.
[10] Ibid, p. 72.
[11] Ibid.
[12] Ibid, footnote 11.

21. Consequently, if environmental water is not shepherded through the Barwon-Darling and delivered to Menindee Lakes, the 'un-shepherded' volume of water will have to be deduced from the 'savings' made under the MLS Supply Measure (as required under cl. 7.15).

22. We have been unable to obtain data indicating the extent to which water shepherding will contribute to inflows into Menindee Lakes. We recommend that you request clarification from either the MDBA or DPI Water regarding this matter. However, if the volume of 'un-shepherded' water is large enough, it may completely cancel out the 'savings' associated with the MLS Supply Measure.

23. It is likely that failure to implement the MLS Supply Measure would have a knock on effect on supply measures and environmental outcomes in the Lower Darling[13] and Murray River.[14] As a consequence, it may be more difficult to satisfy the 'limits of change' test set out in Schedule 6 of the Basin Plan (and which must be met before supply measures can be approved).[15] We recommend that you seek further advice about this issue from an appropriately qualified expert.

24. It is important to note that even if the SDL for the Barwon-Darling could in theory be complied with over the long-term (with or without shepherding), cl. 7.15 categorically requires any unimplemented PPM to be deducted from the overall supply contribution.

25. Furthermore, the method for calculating supply contributions set out in Schedule 6 requires explicit consideration of whether or not the targets for hydrologic indicator sites are met within the 'limits of change' (relative to the benchmark model for the 2,750GL/year scenario). That is, the method – as prescribed by law – requires more than the satisfaction of a long-term annual average SDL.

Equivalent Environmental Outcomes

26. For the sake of thoroughness, we have considered the requirement that supply measures achieve 'equivalent environmental outcomes'.[16] To that end, we have analysed both the method set out in Schedule 6 of the Basin Plan and the CSIRO Report summarising the 'ecological elements method' developed to satisfy the requirements of cl. 7.15 and Schedule 6 (in particular S6.04).[17]

27. Relevantly, S6.03 of Schedule 6 specifies the indicator sites and regions that are to be used under the 'equivalent environmental outcomes method'. We note that the regions that are to be used are both the northern Basin and the southern Basin. Each reach within these two regions is to include one hydrologic indicator site (**HIS**) used under the Environmentally Sustainable Level of Take (**ESLT**) method (used to calculate SDLs under the Basin Plan).

[13] This is confirmed in the Stocktake Report, which states at p. 26 that '[t]he Lower Darling business case will be dependent upon the nature of any supply measure proposal brought forward for the Menindee Lakes.'
[14] The Stocktake Report refers to links between the supply measure proposal for Hume Dam and the MLS supply measure. See for e.g. p. 72.
[15] Basin Plan, Schedule 6, S6.07.
[16] Basin Plan, cl. 7.15(1).
[17] Overton IC, Pollino CA, Grigg NJ, Roberts J, Reid JRW, Bond NR, Barma D, Freebairn A, Stratford D and Evans K. 2015. *The Ecological Elements Method for adjusting the Murray-Darling Basin Plan Sustainable Diversion Limit*, CSIRO, Canberra.

28. Reference to both regions (i.e. the northern Basin region and the southern Basin region) is repeated in S6.07, which outlines the '[l]imits in change in score or outcomes'. By way of contrast, the note to S6.06 does state that '[t]he method may be applied using separate modelling runs for the northern and southern Basin, or parts therefore, as necessary to determine relevant supply contributions'.

29. The CSIRO Report only includes HISs and ecological assessments for the southern Basin.[18] That is, it does not include a HIS north of Menindee Lakes. This may be inconsistent with the requirements of Schedule 6 for the following three reasons.

30. First, the note attached to S6.06 is to be read within the context of the substantive provisions in Schedule 6 which outline how the method is to be developed and applied.[19] This context includes both the northern and southern Basins, and a method that is designed to test via modelling whether 'equivalent environmental outcomes' can be achieved with supply measures, some of which are influenced by flows from the northern Basin.

31. Second, the note states that the method may be applied using separate modelling runs for each region 'as necessary to determine relevant supply contributions.' It is arguable that the contribution associated with the MLS Supply Measure *cannot be determined* without undertaking a modelling run that includes a HIS on the Barwon-Darling. This is due to the clear relationship between the Barwon-Darling and inflows into Menindee Lakes.

32. Third, if there is a conflict between the note and the text of Schedule 6, the text prevails.[20] That is, if the substantive provisions of Schedule 6 can only be satisfied by including a HIS on the Barwon-Darling, this requirement prevails over the note to the extent of any inconsistency.

33. We recommend that you seek further clarification about this matter from an appropriately qualified expert.

Please do not hesitate to contact us to discuss this advice or any matters arising from this advice

Yours sincerely,
EDO NSW

Dr Emma Carmody
Policy and Law Reform Solicitor
Our Ref: 1722.

[18] Ibid, p. 9. This map indicates that the northern-most indicator is Weir 32 on the Darling River, which is beneath Menindee Lakes.
[19] See for example: *CIC Insurance Ltd v Bankstown Football Club Ltd* [1997] HCA 2; (1997) 187 CLR 384 at 408.
[20] *Fair Work Ombudsman v Wongtass Pty Ltd* [2011] FCA 633; (2011) 195 FCR 55 at [47].

Appendix 1

Submission in response to Proposed arrangements for shepherding environmental water in NSW – Draft for consultation

prepared by

EDO NSW
05 July 2012

About EDO NSW

EDO NSW is a community legal centre specialising in public interest environmental law. We help people who want to protect the environment through law. Our reputation is built on:

Successful environmental outcomes using the law. With over 25 years' experience in environmental law, EDO NSW has a proven track record in achieving positive environmental outcomes for the community.

Broad environmental expertise. EDO NSW is the acknowledged expert when it comes to the law and how it applies to the environment. We help the community to solve environmental issues by providing legal and scientific advice, community legal education and proposals for better laws.

Independent and accessible services. As a non-government and not-for-profit legal centre, our services are provided without fear or favour. Anyone can contact us to get free initial legal advice about an environmental problem, with many of our services targeted at rural and regional communities.

EDO NSW is part of a national network of centres that help to protect the environment through law in their states.

Submitted to:

alex.omara@water.nsw.gov.au

For further information on this submission, please contact:

Emma Carmody, Policy & Law Reform Solicitor, EDO NSW
T: 02 9262 6989
E: emma.carmody@edonsw.org.au

EDO NSW
ABN 72 002 880 864
Level 5, 263 Clarence Street
Sydney NSW 2000 AUSTRALIA
E: edonsw@edonsw.org.au
W: www.edonsw.org.au
T: + 61 2 9262 6989
F: + 61 2 9264 2412

Introduction

EDO NSW welcomes the opportunity to comment on the *Proposed arrangements for shepherding water in NSW – Draft for consultation* (the **Draft**).

We would like to state at the outset that we support the development of an effective shepherding framework to optimise the use of Commonwealth Environmental Water (**CEW**).

We are nevertheless concerned that the *Proposed arrangements for shepherding water in NSW* (**Proposed Arrangements**) will not guarantee delivery of CEW to environmental assets in the Murray-Darling Basin (**MDB**). This is particularly problematic insofar as this water was purchased by the Commonwealth as part of their 'Restoring the Balance in the Murray-Darling Basin' (**RtB**) program. Under this program, the Commonwealth has committed significant public funds - $1.3 billion dollars - to buying back water for the environment.[21] Accordingly, all due care should be taken to ensure that CEW is indeed used to protect and restore water-dependent ecosystems in the MDB. EDO NSW therefore submits that the shepherding framework must be capable of realising and prioritising the environmental goals of the RtB program.

This submission is divided into three key sections.

- **Third party impacts** - The first section examines the *Memorandum of Understanding in relation to shepherding of water for the environment* entered into between the NSW Minister for Water and the Commonwealth of Australia (the MOU)[22]. Particular emphasis is placed on understanding the extent to which the MOU imposes an obligation on the NSW Office of Water to develop a shepherding methodology that avoids 'third party impacts.'

- **Implications for shepherding methodology** - The second section discusses the implications of developing a shepherding framework built around avoidance of 'third party impacts', and whether it is indeed permissible to design a methodology on this basis. Specific examples are provided.

- **Recommendations** - The third section comprises a series of recommendations intended to tighten the link between the terms of the MOU and the Proposed Arrangements with a view to improving delivery of shepherded water to environmental assets in the MDB.

[21] http://www.environment.gov.au/water/policy-programs/entitlement-purchasing/index.html.
[22] The MOU was entered into in July 2010.

1. Third party impacts

In July 2010, the NSW Minister for Water and the Commonwealth of Australia entered into a *Memorandum of Understanding in relation to shepherding of water for the environment* (the **MOU**). In response to this MOU, the NSW Office of Water developed the Proposed Arrangements.

EDO NSW submits that the Proposed Arrangements are required to be developed in accordance with the terms of the MOU. By way of evidence, the MOU specifies that it 'sets out principles and processes which the parties have agreed to facilitate shepherding of environmental water.'[23] The NSW Office of Water appears to be mindful of this obligation, noting in the Draft that '[the] MoU establishes a plan for investigating the development of a new water management framework to facilitate shepherding of CEW.'[24]

In spite of this acknowledgment, the Proposed Arrangements have been developed on the basis that shepherding must – above and beyond any other consideration - avoid 'impacts' on third parties. Specifically, the Draft notes that:

> *A key aspect of the MoU is the underlying principle that there will be no impact on third parties as a result of water shepherding. This principle is central to the proposed shepherding methodology*.[25]

EDO NSW accordingly submits that in our opinion, the Proposed Arrangements do not accurately reflect (*inter alia*) the Objective[26] or the Guiding Principles[27] the MOU. That is, the terms of the MOU cannot be reasonably interpreted as directing the NSW Office of Water to develop a shepherding framework that is built around the idea of 'no third party impacts'. Furthermore, the Proposed arrangements seemed overly focussed on preventing *negative* third party impacts, and do not adequately acknowledge the significant potential for third party *benefits.* Our analysis is based on the following observations.

First, the Objective of the MOU is to:

> …*optimise the use of all water for the environment, to provide the capacity to deliver water to high priority environmental assets, and, in the case of in-stream environmental watering, to provide protection for environmental flows to pass through the system as far as transmission losses allow.*

This clause may be broken down into four key elements, namely:

- Optimising the use of water for the environment;
- Delivering water to high priority environmental assets;
- Protecting environmental flows; and
- Accounting for transmission losses.

While the reference to transmission losses may be broadly interpreted as protecting the entitlements of other users, it may not be construed as overriding the first three elements. That is, these three elements clearly indicate that the overarching Objective of the MOU is to procure improved environmental outcomes, *not* to avoid third party impacts.

---

[23] MOU, clause 4.
[24] NSW Department of Primary Industries (Office of Water), *Proposed arrangements for shepherding environmental water in NSW – Draft for consultation*, page 1.
[25] NSW Department of Primary Industries (Office of Water), *Proposed arrangements for shepherding environmental water in NSW – Draft for consultation*, page 1.
[26] MOU, clause 14.
[27] MOU, clauses 15 and 16.

Second, the Guiding Principles of the MoU, which are described as 'the foundation for this MoU and the future action envisaged by this MoU',[28] comprise ten principles which apply generally to the shepherding of environmental water. An additional five guiding principles apply specifically to the shepherding of CEW.[29]

The first ten guiding principles include (but are not limited to): a prohibition on trading shepherded water for consumptive use;[30] a reference to climate change and its impact on long term flows;[31] application of certain restrictions to shepherded water;[32] use of rules-based over event-based water management where practical;[33] and incorporation of shepherding arrangements into water sharing plans (**WSPs**) where practical.[34] The additional five guiding principles include (but are not limited to): a requirement that the NSW Office of Water deliver CEW in order to meet the environmental objectives of the Commonwealth consistent with State and Commonwealth legislation and the MOU;[35] a requirement that the CEWH consult with relevant government agencies regarding the delivery of shepherded water;[36] and a prohibition on extracting water downstream in anticipation of CEW being made available as a result of a shepherding event from an upstream water source.[37]

Of these fifteen guiding principles, only *one* refers to the relationship between shepherded water and other entitlements or allocations. Specifically, 15 (e) states that:

> *Entitlements and allocations held by water users in NSW will not be enhanced nor diminished as a result of environmental watering actions and shepherding of environmental water under this MOU.*

Despite its minority status amongst the guiding principles, 15(e) appears to have been over-emphasised by the Office of Water resulting in the development of a shepherding methodology that seeks, above all, to avoid third party impacts.

This is problematic insofar as it constitutes a potentially skewed interpretation of both the subclause itself, and the guiding principles as a whole.

With respect to the former, the phrase '[e]ntitlements and allocations held by water users in NSW will not be enhanced nor diminished' is not consistent with the notion of 'no third party impacts'. Rather, it may be interpreted as meaning that a licence holder's share in a given water source is to remain unchanged as a result of shepherding. This is not the same as avoiding all impacts on licence holders. For example, an impact that does not 'diminish or enhance' entitlements or allocations would be perfectly consistent with this subclause. Thus it would arguably be acceptable to include rules in a WSP that prohibit licence holders from pumping for a short period in order to facilitate a shepherding event. This will be discussed in greater detail in section 2.

With regards to the second, the guiding principles encompass fifteen separate principles. Clauses 15 and 16 of the MOU do not create a hierarchy with respect to these principles.

[28] MOU, clause 15.
[29] MOU, clause 16.
[30] MOU, clause 15 (c).
[31] MOU, clause 15 (b).
[32] MOU, clause 15 (f).
[33] MOU, clause 15 (h).
[34] MOU, clause 15 (i).
[35] MOU, clause 16(a).
[36] MOU, clause 16(b);
[37] MOU, clause 16 (e).

Accordingly, in our opinion the MOU does not empower the Office of Water to build an entire methodology around subclause 15(e).[38]

We note that one additional clause in the MOU refers to impacts on other water users. Clause 19 of the MOU specifies that '…NSW water users will not be adversely impacted by shepherding the Warrego water gifted to the Commonwealth…'. We would like to reiterate that an 'adverse impact' may not be construed as being the same as *an impact*. As the wording of clause 15(e) suggests, an impact may be beneficial. EDO NSW would further submit that an impact may be so minor or inconsequential so as to not unduly disadvantage a third party. In other words, it could not reasonably be interpreted as adversely affecting that party.

Two additional points need to be made about clause 19. First, it only relates to a specific parcel of water. To that extent, it is limited in application. Second, like clause 15(e), it must be read within the context of the entire MOU. This context includes, notably, an Objective which is clearly oriented toward protecting CEW in order to procure improved environmental outcomes, as well as the 15 guiding principles.

EDO NSW further submits that both clause 15(e) and clause 19 must be read within the context of Schedule 3 of the MOU. This Schedule provides that the 'Implementation Plan for Water Shepherding in NSW (Stage 1)' is subject to the 'National Partnership agreement on Water for the Future.' The Schedule further notes that the 'objective in the National Partnership is to secure water supplies and to assist with climate change adaptation.'[39]

EDO NSW is familiar with the National Partnership. We are therefore aware that it seeks to 'contribute to increase efficiency of rural water use, protect and improve the environmental health of freshwater and freshwater dependent ecosystems, prepare communities for climate change…'[40] While the National Partnership has a range of goals, it is clearly focussed on reducing consumptive use of water and improving environmental outcomes. In other words, its central guiding principle is not avoidance of 'third party impacts.'

Schedule 3 also specifies that under the National Water Initiative, the Commonwealth:

> *has committed to be a financial partner in optimising the use of all water for the environment, to provide the capacity to deliver water to high priority assets, and, in the case of in-stream environmental watering, to provide protection for environmental flows to pass through the system as far as transmission losses allow.*

This language, which mirrors word-for-word the Objective of the MOU, reiterates the clear link between water shepherding events and the realisation of specific environmental goals.

In conclusion, EDO NSW submits that the Proposed Arrangements must reflect the breadth of the MOU. As our analysis has indicated, this extends to creating a methodology that protects CEW for the purposes of advancing the MOU's Objective. It is clear, therefore, that the MOU does not empower the Office of Water to make the principle of 'no third party impacts' 'central to the proposed shepherding methodology'.[41]

---

[38] This in any case may not be interpreted as being synonymous with avoiding all impacts on third parties.

[39] MOU, Schedule 3, clause 1.

[40] Council of Australian Governments, National Partnership Agreement on Water for the Future, entered into in 2009.

[41] NSW Department of Primary Industries (Office of Water), *Proposed arrangements for shepherding environmental water in NSW – Draft for consultation*, page 1.

2. Implications for shepherding methodology

EDO NSW submits that the decision to build a methodology around the notion of 'no third party impacts' undermines the intent of the MOU. The corollary of this is that water shepherding may be compromised, thereby reducing its capacity to achieve the environmental goals specified in the Objective, guiding principles and Schedule 3.

EDO NSW is accordingly concerned about certain aspects of the Proposed Arrangements. We will discuss each of these in turn.

Rules-based management

The *Water Management Act NSW* (**WM Act**) and associated WSPs are predicated on a rules-based approach to water management. While EDO NSW does not propose that this system be entirely reinvented for the purposes of facilitating water shepherding, we are mindful that:

> *…over the years it has proved difficult to protect rules-based [environmental] water from encroachments by entitlement-holders. The rules have always favoured entitlements when water supplies are reduced during droughts. The management rules have this bias because the original reason for building dams and regulating rivers was to supply water to agriculture and towns during the summer and in droughts when the natural flow is low. In addition, there is the burden of water theft, which the late Peter Cullen guesstimated was responsible for at least 20 per cent of all extractions. Most of that stolen water comes from the rules-based component of flow.*[42]

In light of the foregoing analysis, we are concerned that attempting to fit shepherding into an exclusively rules-based system weighted in favour of other entitlement holders (who must be protected from all impacts) will not 'optimise the use of water for the environment.'[43] Rather, it may result in shepherded water being misappropriated and pumped by other licenced users.

While we acknowledge that entitlement holders may only pump in accordance with the conditions imposed upon their licence, there is a strong argument to be made in favour of protecting shepherded water as it moves through the system. First, there is no guarantee that the quantity of shepherded water pumped by other entitlement holders will be replaced by subsequent flows. Second, certain volumes of water are necessary to achieve particular environmental outcomes. This will be discussed in greater detail below under 'Events-based management.'

Accordingly, EDO NSW is of the view that the WM Act and WSPs should be amended, with the latter including rules designed to protect shepherded water. For example, the relevant WSP(s) should include appropriate 'cease to pump rules.' This is perfectly feasible insofar as the MOU provides for the WM Act and WSPs to be amended in order to facilitate shepherding in accordance with the terms of the MOU.[44]

---

[42] Connell, Daniel, *The Role of the Commonwealth Environmental Water Holder*, in Connell, Daniel and Grafton, R. Quentin, eds, *Basin Futures Water reform in the Murray-Darling Basin*, ANU E Press, Australian National University, Canberra, 2011.Downloadable at: http://epress.anu.edu.au/apps/bookworm/view/Basin+Futures+Water+reform+in+the+Murray-Darling+Basin/5461/ch20.xhtml

[43] MOU, Objective (clause 14).

[44] MOU, clause 9. Clause 22 (d) also provides for WSPs to be amended in the period before permanent arrangements are agreed so as to 'facilitate the shepherding of CEW.'

Events-based management

As our comments in the previous section indicate, EDO NSW advocates a combined rules and events-based management framework. As the Proposed Arrangements must reflect the terms of the MOU, we have taken care to ensure that a combined approach is indeed permissible. In short, clause 15(h) of the MOU provides for shepherded water to be managed on an events basis. While we acknowledge that this clause does specify that 'rules based water shepherding arrangements will be implemented in favour of events-based water management where practical,'[45] we submit that rules-based management may not be practical in certain circumstances (where practical is defined to mean 'likely to succeed or be effective in real circumstances; feasible').[46]

For example (and as noted in the previous section), there will be instances where the volume of shepherded water pumped by other licence holders will not be replaced by subsequent flows. In cases such as these, an exclusively rules-based management structure will not be successful or effective insofar as success or efficacy is measured against the MOU's Objective, in particular optimising 'the use of all water for the environment' and delivering water 'to high priority environmental assets.'[47]

The Office of Water has indicated that events-based management is not feasible in an unregulated river system. EDO NSW submits that there is sufficient anecdotal and documented evidence (held by farmers and the NSW Government, respectively) regarding timings of flows along the Barwon-Darling. With this in mind, it would be possible to create cease to pump rules that apply for short, fixed periods to enable shepherded water to move safely through the system.

Further to our comments regarding the proper construction of clauses 15(e) and 19, we submit that the occasional imposition of cease to pump shepherding rules would not 'diminish' or indeed 'adversely impact' the entitlements and allocations of other water users.

Storage in Menindee Lakes and use within the Barwon-Darling

Further to our previous comments, EDO NSW supports a methodology whereby water may be either shepherded to the Menindee Lakes or alternatively used within the Barwon-Darling.

With respect to the latter, we note that the Barwon-Darling region contains 64 Key Environmental Assets (**KEAs**) and three hydrological indicator sites.[48] With this in mind, it would be consistent with the MOU and Proposed Murray-Darling Basin Plan to shepherd CEW to KEAs in need of specific volumes of water.

As the Murray-Darling river is by nature a 'flood and drought' system, certain KEAs will only require additional 'shepherded' water on a relatively infrequent basis (every five years, for example). EDO NSW understands that the CSIRO, together with other government agencies, possess the data necessary to manage watering of these assets.

We would like to reiterate that having scrutinised the MOU, we can find nothing that would prevent the Office of Water from creating a flexible management framework that enabled water to be shepherded either to KEAs within the Barwon-Darling or to the Menindee Lakes.

---

[45] MOU, clause 15 (h).
[46] Oxford Dictionary. http://oxforddictionaries.com/definition/practical
[47] MOU, clause 14.
[48] Murray-Darling Basin Authority, Summary of Barwon-Darling Region (From the Guide to the Proposed Plan). http://download.mdba.gov.au/FactSheet_Barwon-Darling.pdf

Individual daily extraction limits for shepherding WALs

Under the Proposed Arrangements, an individual daily extraction limit will be imposed on shepherding WALs. We submit that a daily limit is problematic for two reasons.

First, it reflects the undue emphasis placed on avoiding 'third party impacts'. Specifically, the daily limit is designed to avoid impacts on other licenced 'shareholders' in the Barwon-Darling.[49] As previously discussed, the MOU should not be interpreted so as to privilege these users over the environment. Further to this point, the MOU does not prohibit impacts on other entitlement holders; it merely specifies that entitlements and allocations may not be diminished as a consequence of shepherding. EDO NSW submits that a daily extraction limit is not necessary to protect the allocations of other licence holders. Rather, careful rules and events-based management of shepherded water will enable that water to be optimised for the environment without diminishing third party allocations. This will be discussed in greater detail later in this section.

Second, while CEW is held on a WAL, it is for all intents and purposes different to other licenced water insofar it was purchased by the Commonwealth with a view to restoring the health of the MDB. Placing a daily limit on a shepherding licence may compromise its capacity to be optimised for the purposes of achieving this goal. For example, specific timings and volumes of water are required to meet the ecological needs of KEAs. Placing a daily extraction limit on shepherding WALs will make it particularly difficult to manage them for the purposes of watering assets within the Barwon-Darling.

In light of this analysis, we strongly recommend creating a more flexible management system that recognises the true nature and purpose of shepherding WALs. We envisage this will involve a combination of WSP rules that allow for flexible management of extraction to meet environmental objectives at specific times. We imagine that larger extraction events would be relatively infrequent, and capable of being managed in such a way so as to not diminish other allocations (which we note may be extracted over an entire accounting year).

Forfeiting of water

Under the Proposed Arrangements, shepherded water that does reach the end-of-system within the fixed period 'because it is extracted by other licence holders or used in-stream' will be forfeited.[50] EDO NSW would like to make the following comments in respect of this proposal.

First, the example provided by the NSW Office of Water demonstrates why it is necessary to protect shepherded water with cease to pump rules. Again, as it is possible to estimate how long it will take this water to be shepherded through the tributary to the end-of-source, these rules can be imposed for a relatively short, fixed period.

Second, forfeiting water under these conditions arguably contravenes clause 15(e) of the MOU insofar as it potentially enhances the allocations of other water users.

Third, forfeiting shepherded water in these circumstances is again potentially based on an inaccurate construction of the MOU. That is, it reflects a desire to avoid all impacts – however trivial – on other entitlement holders at the expense of the environment. As stated, this is contrary to the terms of the MOU.

---

[49] NSW Department of Primary Industries (Office of Water), *Proposed arrangements for shepherding environmental water in NSW – Draft for consultation*, pages 10 -11 (shepherding within the Barwon-Darling); 15 (shepherding from regulated and unregulated tributaries to the Barwon-Darling).

[50] NSW Department of Primary Industries (Office of Water), *Proposed arrangements for shepherding environmental water in NSW – Draft for consultation*, page 12.

Menindee Lakes – first to spill

EDO NSW is concerned that the Proposed Arrangements will result in shepherded environmental water stored in the Menindee Lakes being treated as inferior to NSW and Victorian holdings. This is evidenced by the proposal for the 'first spill' to be debited from the Lower Darling shepherding WAL allocation account. This is not only inequitable, but will potentially undermine the purpose of shepherded CEW, which is to return water to the environment.

EDO NSW therefore recommends developing a more equitable accounting system that will protect and optimise shepherded water as per the MOU's Objective.[51]

We also recommend that shepherded water stored in the Menindee Lakes that is used to meet critical human needs in Broken Hill be re-credited to the shepherding WAL allocation account when rainfall permits.

Accounting - carrying over water

The Proposed Arrangements outline the accounting methodology that will apply to shepherded water. We note that shepherding account balances originating from a parent licence in the Barwon-Darling will only be carried over from one accounting year to the next if this is permissible under the WSP for the Barwon-Darling.

EDO NSW is of the opinion that this will undermine the delivery of water to environmental assets. As previously indicated, specific volumes of water are required to meet the ecological needs of KEAs in the Barwon-Darling. With this in mind, it would be logical and indeed consistent with the terms of the MOU to develop an accounting system that permits shepherded water to be carried over for a certain number of years. In making this recommendation we would reiterate that CEW is qualitatively different to other allocations insofar as it was purchased with Commonwealth funds for the purposes of restoring health to the MDB. The accounting system used to manage shepherded water should therefore reflect its unique status.

3. Recommendations

In summary, EDO NSW makes the following recommendations with respect to the Proposed Arrangements. These Arrangements should:

a) properly reflect the MOU, in particular its Objective and 15 Guiding Principles. Accordingly, the arrangements should not place undue emphasis on avoiding 'third party impacts' at the expense of optimising the use of shepherded environmental water;

b) reflect the particular status of CEW. That is, CEW was purchased for the explicit purpose of restoring health to the Murray-Darling River system;

c) comprise a combination of rules-based and events-based management. This will allow shepherded water to be optimised for the purposes of watering KEAs in the Barwon-Darling;

d) provide for cease to pump rules to apply when water is being shepherded through the system;

[51] MOU, clause 14.

e) not provide for shepherded water to be forfeited if it does not reach the end-of-system within a fixed time. (We note that if (d) is implemented, the chances of water being forfeited are significantly reduced);

f) create a flexible limit system that would involve a combination of WSP rules that allow for flexible management of extraction to meet environmental objectives at specific times;

g) manage water that is stored in the Menindee Lakes in an equitable fashion. For example, shepherded water that is used to meet critical human needs should be re-credited to the shepherding WAL account; and

h) provide for the Barwon-Darling WSP to include rules permitting shepherding account licences to be carried over for more than one year. This would enable CEW to be optimised for the purposes of watering KEAs at specific times.

Appendix 2

29 May 2015

Chayna Moldrich
Water Policy Officer
NSW Department of Primary Industries
Office of Water
Level 11 Macquarie Tower
10 Valentine Avenue
Parramatta 2124

Sent by email: chayna.moldrich@dpi.nsw.gov.au

Dear Chayna

Draft NSW Prerequisite Policy Measures – Implementation Plan

Many thanks for your informative presentation outlining the Draft NSW Prerequisite Policy Measures (**PPMs**) and proposed implementation plan for each of these measures (**Draft Plan**). We enjoyed meeting both you and your colleagues, and look forward to further engagement as the policy process and eventual implementation for PPMs unfolds between now and 30 June 2016.

We note, however, that details of the eight supply measure sites where PPMs are to be implemented are yet to be published on your website. As discussed during our meeting, it is difficult to properly comment on the suitability of PPM options for each location in the absence of any information about those locations. We certainly understand that this is a complex process involving several units within NOW, however we seek further details regarding the supply measure sites in order to provide comprehensive feedback during the public exhibition period.

In the absence of this background information, our comments will focus on following areas:

1. Legal considerations
2. Principles for implementing the PPMs in NSW
3. Options for implementing environmental flow reuse
4. Options for piggybacking.

1. Legal considerations

As PPMs contribute to supply measures contributions which in effect increase SDLs, they are required to comply with certain provisions in the Basin Plan, and in turn the *Water Act 2007* (**Water Act**).

We note that adjustments to SDLs based on supply measures must result in two outcomes. First, 'there are to be equivalent environmental outcomes', with equivalent outcomes measured against the 'benchmark environmental outcomes.' Second, supply measures must avoid 'detrimental impacts on reliability of supply of water to the holders of water access rights that are not offset or negated.' [52]

[52] Basin Plan, 7.15 (1).

Of further consideration are the management objectives and outcomes to be achieved by the Basin Plan, outlined in Chapter 5. Relevantly, these include environmental objectives which are to give rise to a specific environmental outcome, namely 'the restoration and protection of water-dependent ecosystems and ecosystem functions in the Murray-Darling Basin with strengthened resilience to a changing climate.'[53]

We note that this outcome is to be balanced with other outcomes, including 'greater certainty of access to Basin water resources.'[54] However we emphasise that this balance cannot be achieved – legally or practically – if consumptive use is protected at the expense of restoring and protecting water-dependent ecosystems and ecosystem functions.

Significantly, the Water Act, with which the Basin Plan must legally comply, states that SDLs 'must reflect an environmentally sustainable level of take' (**ESLT**).[55] As you would know, an ESLT is defined as the level of take from a water resource which if exceeded, would compromise the resource's key environmental assets, its ecosystem functions, its productive base or key environmental outcomes.[56] While we acknowledge that the various objects of the Act must be balanced,[57] as must the mix of elements underpinning the 'purpose of the Basin Plan',[58] it is our view that these are ultimately secondary to the implementation of an ESLT.

Finally, we cannot overestimate the importance of ensuring environmental watering under the Basin Plan implements – as per the requirements of the Water Act – the relevant environmental treaties to which Australia is signatory. These include the Ramsar Convention, the Convention on Biological Diversity, and various bilateral treaties protecting migratory birds.[59]

2. Principles for implementing the PPMs in NSW

EDO NSW wishes to raise concerns with respect to two of the principles underpinning PPMs.

NSW will implement PPMs to the extent that third party impacts relating to both physical and reliability impacts can be negated or offset, or are acceptable to the community.

According to the Draft Plan, this principle is based on the clause reproduced above, according to which supply measures must have 'no detrimental impacts on reliability of supply of water to the holders of water access rights that are not offset or negated.'

'No detrimental impacts on reliability of supply' does not equate to 'no third party impacts' for the following reasons.

In the first instance, 'no detrimental impacts' is far narrower than 'no third party impacts'.

Second, what actually constitutes a 'detrimental impact' in this context is debatable. We would argue that an analysis of this issue must start with the clear fact that reliability of supply *is not absolute or guaranteed*. Rather, it is impacted by a variety of factors, the most

[53] Basin Plan, 5.03 (1), (2).
[54] Basin Plan, 5.05 (2) (c).
[55] *Water Act 2007*, s. 23.
[56] *Water Act 2007*, s. 4, definitions.
[57] *Water Act 2007*, s. 3.
[58] *Water Act 2007*, s. 20.
[59] *Water Act 2007*, s. 20. See also s. 3, objects.

important of which are rainfall, the quantity of water in storages and the State's allocation policies. The security level of a given licence will also influence reliability of supply, particularly during drier periods.

It is therefore apparent that supply is inherently variable, being continuously subject to the 'impacts' outlined above. This being the case, it is difficult – indeed impossible - to argue that environmental watering has a more detrimental impact on reliability of supply than these other factors. In fact, we would argue the reverse.

Furthermore, an impact will not always amount to a 'detrimental impact.' Certainly, protecting environmental water as it moves through the system may have an impact on other users, but properly managed this impact will not be unreasonable. It will certainly be far less detrimental than low rainfall or low storage levels.

Conversely, failing to protect environmental water may result in a short-term net benefit to other users at the expense of Basin health. This benefit may also result in breaches of the Water Act and/or Basin Plan if it occurs at the expense of statutory obligations (such as the reinstatement of an ESLT).

NSW will devise PPMs that facilitate the delivery of environmental water through the system.

According to the Draft Plan,

> *NSW's focus is on improving flexibility in the delivery of environmental water to achieve the outcomes sought under the Basin Plan. This is not the same as protecting licensed water from extraction through the system.*

Building on our previous comments, failure to protect environmental water as it moves through the system may result in breaches of the Water Act and/or Basin Plan.

We therefore strongly support changes to rules to ensure that legislated environmental outcomes are achieved.

In making this recommendation, we note that rules can and are changed from time to time, and that these changes may impact certain users. For example, changes in 2012 to the Hunter Unregulated and Alluvial Water Sharing Plan exempting mining companies from cease-to-pump rules very likely had an impact on farmers in the area.

Furthermore and as with other legal instruments, water sharing plans and rules are subject to the will of Parliament and to that extent are not impermeable. Indeed, the *Water Management Act 2000* (**WM Act**) empowers the Minister to change a water sharing plan by non-disallowable order,[60] rather than a disallowable legislative instrument or Bill. This certainly implies a desire to facilitate, rather than hinder, changes to water sharing plans.

3. Options for implementing environmental flow reuse

EDO NSW supports laws and policies which provide environmental water with the necessary protection to meet the environmental outcomes mandated in the Water Act and Basin Plan. We are strongly opposed to any options which place undue emphasis on so-called 'third party impacts' at the expense of these outcomes.

[60] *Water Management Act 2000*, s. 45 (1) (a). See also *Interpretation Act 1987*, ss. 21, 41.

Accordingly, we offer in principle support for the following options for multi-site watering, subject to certain conditions being met. Furthermore, we understand that some of these options may be better suited to certain supply measure sites. We look forward to providing more detailed comments when this information becomes available.

Shepherding – unregulated system

As outlined in our 2012 submission responding to *Proposed arrangements for shepherding environmental water in NSW*, we support this option subject to environmental water being protected from consumptive use as it moves through the system (amongst other stipulated protections). This submission is attached as a PDF document at the end of our letter.

Downstream debiting – regulated system

EDO NSW strongly supports this option. In guaranteeing delivery of environmental water, it is unlikely to breach either the Water Act or Basin Plan.

We are mindful of the fact that the current system does not provide for a licence holder to require a release from a dam to meet a water order. This is no doubt due to the fact that historically, regulated systems and the laws and rules that govern them were designed to meet the needs of consumptive users, not the environment.

While the WM Act already contemplates and provides for environmental watering, it is arguable that water management under the Basin Plan requires further amendments to the Act designed to maximise the use of environmental water, including a right to require the release of water.

We are also confident that appropriate risk management measures can be built into any amendments in order to avoid unduly prejudicing water operators.

Combination debiting – regulated

EDO NSW supports this option subject to losses excluding water pumped for consumptive use. Again, we propose rule amendments to optimise the use of environmental water as it moves through the system.

Return flow credits – regulated

We note that the WM Act already provides for the creation of 'return flow rules' which enable a user to recredit water to their account.[61] To that end, the Act 'ruled in' this option despite the possibility that it may impact on other users. Again, we note that water supply and in turn the WM Act cannot be construed as seeking to avoid *all impacts* on users of consumptive water. Nevertheless, we are mindful that accurately estimating the timing and volume of releases is desirable both environmentally and socially. We are also mindful that this option (indeed all options) may be more suited to certain supply sites than others.

4. Options for implementing piggybacking

EDO NSW submits that the ability to call for the release of held water during an unregulated flow event ('piggybacking') is an important environmental tool. We would argue that contrary to the comments in the Executive Summary, achieving a 'peak outcome' is entirely consistent with ensuring ecological targets for certain indicator sites, including Ramsar-listed wetlands, are met.

[61] *Water Management Act 2000*, ss. 75, 76.

Please do not hesitate to contact me if you have any further inquiries.

Yours sincerely,
EDO NSW

Dr Emma Carmody
Policy and Law Reform Solicitor

EDO NSW Sub
Shepherding July 201