



Submission on the review of the Water Sharing Plan for the NSW Murray and Lower Darling Regulated Rivers Water Sources 2016

About the Commonwealth Environmental Water Holder

The Commonwealth Environmental Water Holder (CEWH) is a statutory position established under the *Water Act 2007* (Cth). The CEWH is responsible for managing the Commonwealth holdings of environmental water. These water holdings are managed to protect and restore the environmental assets of Murray-Darling Basin (the Basin), including rivers, lakes, wetlands and floodplains, in the national interest. The CEWH manages the Commonwealth water holdings in accordance with the Basin Plan.

The Water Act also gives effect to relevant international agreements, including The Convention on Wetlands of international significance, and conventions that protect endangered and migratory species. The CEWH's function is a part of the sustainable management of the Basin's water resources over the long-term for environmental, social and economic outcomes.

INTRODUCTION

Thank you for the opportunity to make a submission to this Review of the Water Sharing Plan for the NSW Murray and Lower Darling Regulated Rivers Water Sources 2016 (hereafter referred to as the WSP).

The CEWH acknowledges that water management in the NSW Murray and Lower Darling is governed by multiple instruments in addition to the WSP under the *NSW Water Management Act 2000*. This includes:

- the Murray–Darling Basin Plan and Water Resource Plans, particularly regarding the protection of planned environmental water
- the Barwon-Darling and other northern Basin water sharing plans, particularly in regard to inflows to the Menindee Lakes and lower Darling / Baaka from upstream catchments
- the Murray–Darling Basin Agreement, particularly in regard to river operations and water sharing arrangements between jurisdictions.

SUMMARY OF COMMENTS

This submission identifies the following key issues and areas for improvement to be considered when reviewing the environmental, social, economic and cultural outcomes achieved from the WSP:

1. improve access to cultural water for First Nations peoples
2. improve capacity of the WSP to contribute to critical environmental outcomes

3. improve connectivity and protection of flows from the northern Basin
4. provide meaningful monitoring and evaluation reporting that quantifies how well aspects of the WSP contribute to its objectives
5. increase monitoring to inform management of water quality
6. provide certainty for the deliverability of water
7. provide access to key operational information.



1. Improving access to water for First Nations people

The CEWH acknowledges the First Nations of the Murray and Lower Darling valleys as the Traditional Custodians of its lands and waters and recognises their ongoing connection to culture and country. The CEWH supports the need to increase First Nations peoples' ownership, access, and management of water.

The WSP includes provisions for special access licences for Aboriginal cultural access, which is limited to 10 ML/year per individual or community. This provides less opportunities to undertake larger scale water use, particularly compared to cultural access licences available in other valleys (such as available under the Murrumbidgee Water Sharing Plan).

The CEWH would support, through consultation with First Nations, improvements to the WSP to enable First Nations organisations and communities to access and manage water, including through Aboriginal cultural access licences.

2. Improve capacity of the WSP to contribute to critical environmental outcomes in the lower Darling / Baaka River

Recent years have shown the inadequacy of the WSP in being able to meet critical environmental needs in the lower Darling / Baaka River. This is particularly the case in relation to water quality (algae and dissolved oxygen) and fish deaths. As the NSW Chief Scientist and Engineer observed in their [Independent review into the 2023 fish deaths in the Darling-Baaka River at Menindee](#), the 2023 fish deaths was “symptomatic of broader degradation of ecosystem health and consequential long-term pressure on the Darling-Baaka River system... [its] clear that without substantive change to our regulatory approach, paired with investment in people, data and infrastructure, there will be further environmental degradation and recurrence of such events.”

Minimum flows

Minimum flow rates, by month, for the mitigation of blue green algae in the lower Darling / Baaka River are specified in the [Objectives and outcomes for river operations in the River Murray system](#) as well as relevant WaterNSW operational guidelines (and were included in previous WSPs). Minimum flow rates are an important element of the design of water sharing rules in the system, which the CEWH considers should be addressed in this Review.

Recent experience has shown the documented minimum flow rates to be inadequate in mitigating blue-green algae and other water quality issues in the river, which will have impacts on the community, First Nations and the environment. The CEWH suggests that these minimum flows should be re-evaluated based on contemporary science around minimum flows required to manage algal blooms; which species of algae are currently most problematic; and the timing when those species are most prevalent (for example, recent experience suggests algal blooms are persisting much later after summer than previously occurred). Minimum flows should also consider other aspects of water quality, such as maintaining dissolved oxygen and salinity target levels, as identified in Section 9.14 of the Basin Plan.

Adequacy of the Environmental Water Allowance

The CEWH's submission to the NSW Chief Scientist and Engineer [review of the 2023 fish deaths at Menindee](#) raised concerns about the adequacy of the 30 GL Lower Darling Environmental Water Allowance (EWA). The EWA can be used for reducing salinity, managing dissolved oxygen levels and mitigating impacts associated with blue-green algae. This allowance is insufficient to meet water quality needs, as has been observed in both 2022–23 and 2023–24.

The CEWH supports the NSW Chief Scientist and Engineer's (NSW CSE) findings in relation to the EWA (see the [final report](#) from the NSW CSE for more detail). This includes:

- *Insufficient volume*
 - The 30 GL allowance was not sufficient to mitigate the water quality issues and subsequent fish deaths in March 2023. This water was exhausted in 3 weeks, with the EWA accounting for just 15% of environmental water released into the lower Darling / Baaka River to 30 June 2023. A total of 173 GL of held environmental water (88 GL Commonwealth environmental water, 83 GL The Living Murray water and 2 GL NSW environmental water) was required in addition to the EWA to mitigate water quality risks. The reliance on held environmental water will not always be guaranteed and compromises other important work to protect and restore the Murray-Darling Basin.
 - Similarly in 2023-24, the EWA has been used sparingly in addition to other sources of water, such as The Living Murray flows and MDBA operational releases. However, the EWA was exhausted on 16 February 2024. Again, the EWA was not sufficient to mitigate water quality risks and The Living Murray allocations have been used since that date to mitigate the water quality in the lower Darling / Baaka River.
 - Water quality is a shared responsibility for all water users (i.e. community, First Nations) in the system – it is not solely an environmental issue to resolve. The Basin Plan identifies that 'an agency of a Basin State must have regards to the targets [of relevance here: to maintain dissolved oxygen at a target value of at least 50% saturation] when performing functions relating to the management of water flows' (Basin Plan Section 9.14(3)). This event has shown that current water management arrangements are not adequate to meet Basin Plan targets and longer-term changes and interventions are needed.
 - Delivery of held environmental water for water quality issues comes at a cost in terms of availability of water allocations to meet future environmental demands, both within the catchment and in the broader southern Basin. The review by the NSW CSE found that reliance on held environmental water for water quality issues is not sustainable. The WSP Review should consider the need for alternative sources of water to be available for water quality emergencies (i.e. a source that is borne by all water users, given that water quality is not just an environmental issue, but one that also affects town water supply, use for irrigation and stock and cultural outcomes).
- *Not available in drier years*
 - The EWA is not available for use in drier periods when the combined storage volume is below 480 GL and under NSW control. This limits the times when this allowance is

available for managing water quality issues, including those that create environmental impacts such as fish deaths.

- *Triggers for releasing water from the upper lakes*
 - The WSP does not specify conditions or triggers for when flows (whether they be WSP minimum flows, the EWA or other orders placed at Weir 32 such as environmental flows or operational calls made by the MDBA) could be released from the upper lakes to mitigate water quality issues between the Main Weir and Weir 32. WaterNSW currently has discretion over which lake(s) releases are made from to manage drought reserves. This can reduce the effectiveness of flows in certain situations. For example, water releases from Lake Menindee Outlet are not as effective in addressing water quality issues in the upper weir pool (below Main Weir), as compared to releases made from Lakes Pamamaroo or Wetherell.
 - Consideration should be given to including clear and transparent triggers or guidance for WaterNSW to consider when performing its functions that relate to water quality targets identified in Section 9.14 of the Basin Plan. This will enable WaterNSW to make publicly defensible trade-offs between managing water quality and maximising drought reserves in the upper lakes.

3. Improving connectivity and protection of environmental flows from the northern Basin

Flow connectivity across the northern Basin is critical to the health of native fish in the lower Darling / Baaka valley, and influences water quality and flow management, including in relation to the operation of the Menindee Lakes.

The NSW Murray and Lower Darling and Barwon-Darling WSPs and water resource plan areas are inextricably linked, the latter bearing particular importance for allowing environmental objectives to be met downstream in the lower Darling / Baaka, and for the broader River Murray system. Local community, both upstream and downstream of Menindee Lakes, are concerned about the effectiveness and consistency of protection measures for flows (both environmental and base flows). An [Independent Connectivity Expert Panel](#) has been appointed to review analyses that the NSW government has undertaken to improve connectivity and to provide an independent assessment of their adequacy. The findings from this review, due in draft in March 2024, will be relevant to the Barwon-Darling and other northern WSPs, but will also be of relevance to the Lower Darling WSP.

Structural changes to address the protection of environmental water and connectivity more generally in the northern Basin offer the best chance of reducing the frequency, magnitude and impact of fish death events ([Mallen-Cooper and Zampatti 2020](#)). This will require a coordinated and flexible approach: a toolkit of policy measures that can be tailored to specific systems and needs rather than a 'silver bullet' solution.

The CEWH considers the following as high priority actions (CEWH 2022):

- Completion of active management rules, to protect held environmental water as it moves through unregulated water sources.

- Resumption of flow rules extended to northern tributaries, to allow ecosystems in the northern Basin and through to Menindee Lakes to recover after cease-to-flow periods.
- Water shepherding arrangements to enhance flow connection from the northern to southern Basin, through Menindee Lakes. The WSP needs to include clear provisions to enable such arrangements for water for the environment to be shepherded through the Menindee Lakes.
- Fish flow targets to support fish passage and all aspects of native fish breeding cycles, supporting a more resilient, distributed native fish population.

Improving connectivity and protection of flows will also provide greater flexibility in the management of the Menindee Lakes storages. As noted above, one of the challenges in responding to the fish deaths at Menindee was the need to release water from the upper lakes and balancing this against the risk to future drought reserves. Improving flow connectivity across the northern Basin and into the Menindee Lakes and through to the southern Basin by having greater protection of future inflows reduces the significance of this trade off decision.

In establishing arrangements for shepherding held environmental water through the Menindee Lakes System, the CEWH supports the following key elements:

- Consistent with pre-requisite policy measures (PPMs) for return flows in other NSW valleys (e.g. Murray, Murrumbidgee and lower Darling / Baaka), the holder(s) of environmental water that is protected and shepherded through Menindee Lakes System should retain the decision-making over the subsequent use of return flows
- Decision-makers should be able to direct shepherded water down the lower Darling / Baaka River or the Great Darling Anabranch
- As per current arrangements for held environmental water use in the lower Darling / Baaka valley, any shepherded water should also be subject to PPMs that allow flows to be protected into and down the River Murray
- Options to carryover the shepherded water (including application of appropriate evaporation losses) should also be explored.

4. Monitoring and Evaluation

The WSP sets objectives and performance indicators for environmental outcomes. In addition, the [NSW Murray and Lower Darling Surface Water Resource Plan Monitoring, Evaluation and Reporting Plan](#) (Schedule J of the NSW Murray and Lower Darling Water Resource Plan) conceptually links the WSP's environmental objectives to both Long Term Watering Plan and Basin Plan objectives, and reporting on monitoring outcomes against the requirements of Schedule 12 of the Basin Plan. However, beyond Schedule 12 reporting under the Basin Plan by environmental water holders, we are unaware of any specific reporting against the performance indicators or assessment of the effectiveness of the strategies listed in the WSP, as specified in Part 2 of the WSP. It is therefore difficult to assess the extent to which the WSP is contributing to environmental, cultural, social and economic outcomes.

Targeted ecological monitoring, such as CEWH funded short term or long term intervention monitoring projects and monitoring through The Living Murray program, is not designed to assess

listed WSP objectives. However, it does support the evaluation of environmental water use, including in some cases, the use of planned environmental water made available through the WSP. Examples include:

- [Monitoring native fish response to environmental water delivery in the Lower Darling / Baaka River 2021-2022](#)
- [River Murray Channel Monitoring 2021-22: Ecological responses](#)
- [Edward/Kolety-Wakool River System Selected Area Reports 2021-22](#)
- [Monitoring of Commonwealth environmental watering actions from the Edward and Niemur Escapes in 2022-23](#)

5. Increased monitoring to inform management of water quality outcomes

Lower Darling / Baaka

A number of telemetered water quality stations are available in the Menindee Lakes and lower Darling / Baaka River. Following the fish death event in autumn 2023, there was a significant increase in water quality monitoring. The improved data has enabled informed and responsive management of water releases to manage the water quality situation over spring and summer 2023-24. Reflecting on the value of this increased water quality monitoring, having additional monitoring data in the lead-up to the event would have been useful to identify the emerging risk promptly and inform decisions on the volumes and locations of water releases. Should additional resources be available for monitoring activities, agencies such as DPI Fisheries, NSW DCCEEW BCS, NSW DCCEEW Water and MDBA would be well placed to provide advice on priority locations for ongoing monitoring, including additional telemetered stations.

Murray

The ability of the plan to contribute to environmental outcomes, particularly those relating to water quality, which in turn are linked to potential fish kills, is the ability to monitor in real time key water quality parameters including dissolved oxygen. The CEWH is aware of significant gaps in the water quality monitoring system in the NSW Murray with several key sites still reliant on hand-held monitoring by various agency staff during critical flow events (e.g. summer floods).

To improve the ability of the plan to contribute to managing water quality outcomes in the NSW Murray, an expanded network of dissolved oxygen loggers need to be installed and connected to the NSW Real Time web site (and eventually the [WaterInsights](#) website). For example, there is no publicly available daily dissolved oxygen data at Torrumbarry, which would provide an early warning of hypoxic water entering the Murray from the Goulburn/Vic central Murray systems during floods before it enters Koondrook Perricoota Forest. This in turn would enable managers to make better informed early responses to the provision of refuge flows in the lower Wakool River system once Goulburn flood flows move through Koondrook-Perricoota Forest.

Installation of flow and dissolved oxygen gauging upstream and downstream of the Werai Forest is required to inform future watering actions to this Ramsar wetland.

6. Providing certainty for the deliverability of water

The plan should, to the best of its ability, provide a high level of certainty about the volumes of water that can be reliably delivered through the Murray system and complemented by delivery from Murray Irrigation Limited's Mulwala Canal-Edward Escape into the Edward River. The reduced capacity of flow through the Barmah Choke will place additional need to transfer water via the Mulwala Canal-Edward escape, especially during dry/high demand periods. Any risk to using the Mulwala Canal-Edward Escape needs to be resolved to provide water users with confidence of supply when it is needed most.

From an accounting perspective, the WSP should also provide certainty that return flows from all environmental watering actions in the Murray and lower Darling / Baaka are protected through to the lower Murray, whether that be flows within those catchments or flows shepherded from upstream (in the case of the Barwon-Darling to Menindee Lakes).

7. Inclusion of key operational information

Previous versions of the WSP included valuable information as appendices, for example operational guidelines, minimum flows and the intent or purpose of key clauses within the WSP. While having this information housed in separate documents can mean it can be updated more readily in response to new knowledge, it is now difficult to find from a public transparency perspective. Key information about operational procedures is also important for ensuring such information is not lost and operational decisions are informed by a clear understanding of the intent of various 'rules of thumb'. These subsidiary operational documents could be referenced in the WSP to ensure all water users can know where this information is available.

Thank you again for the opportunity to provide input, the CEWH looks forward to seeing the outcomes of the Review.

Further supporting information:

- [CEWH submission to NSW re the Murray and Lower Darling Water Resource Plan \(2019, see pages 44-60\)](#)
- [CEWH submission to NRC on the review of the Barwon-Darling water sharing plan \(2019\)](#)
- [CEWH submission to NSW on proposed amendment of the Barwon-Darling water sharing plan \(2022\)](#)