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Wentworth Group submission to the Menindee Lakes Review

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The Wentworth Group of Concerned Scientists welcomes the opportunity to provide a submission to the Menindee Lakes Review. We congratulate the Murray–Darling Basin Authority on the publication of the comprehensive and informative Technical Report and Issues Paper. The condition and management of the lakes and *Baaka*/Darling River have long been matters of major concern. This review is a timely opportunity to address options for their future management, as outlined below.

1. Governance, climate change, and the future of Menindee Lakes

The polarity between the Menindee Lakes as a water resource to be engineered into an efficient state or as a social-ecological system to be sustained and conserved needs to be resolved before any progress can be made on 'a clear collective vision of what is required for *a sustainable future* [our italics] for Menindee Lakes and to drive real and substantive improvements.'[1] The Wentworth Group considers such a resolution needs to be based on principles of water justice, central to the UN Sustainable Development Goal 6 of 'water for all.'[2] These principles require community consultation, engagement and active participation in planning, decision making and adaptive governance, including integration of Indigenous and local knowledge.[3]

We support the recognition of Menindee Lakes as a naturally variable social-ecological system, dependent on cycles of wetting and drying that underpin its ecosystem functions that remain of fundamental cultural importance to the Barkandji People and local communities. These functions include breeding and recruitment of native fishes, habitat provision and resources for waterbirds, freshwater invertebrates and floodplain vegetation. The Barkandji must be part of the process of lakes restoration, protection and future management. They hold Native Title in the region, including to Menindee Lakes, following the 2015 determination. Barkandji have a well-established River Ranger group able to undertake restoration and protection of the lakes.

A vision for the future of the lakes primarily as permanent storages to be engineered for water management and supply for consumptive use is not only inconsistent with water justice principles, it is likely to prove highly maladaptive under climate change. No engineering solution can fix declining inflows caused by global heating. However, restoration of flooding-drying cycles and implementation of adaptive management for the lakes can provide novel approaches to address this challenge.

2. Over-allocation of irrigation water in the northern Basin

Central to the future of the lakes and *Baaka*/Darling is the continued over-allocation of water for irrigation.[4] Storage capacity of large on-farm dams used for floodplain harvesting in the northern Basin has doubled since the Cap on Diversions in 1995. The estimated mean annual take from floodplain harvesting for regulated SDL resource units in the northern Basin is ca. 1,200-1,500 GL/year, rather than the 450 GL/year reported by MDBA for 2023-24, based on modelling outputs

[1] MDBA (2026) Menindee Lakes Review. Issues paper. Murray–Darling Basin Authority, Canberra, p. 7.
[2] Fanaian, S., Manero, A., Nguyen, N.-M. and Grafton, R.Q. (2025) Beyond a decade of water justice: review, directions, and pathways to achieve "Water for All". *Wiley Interdisciplinary Reviews Water* 12, article no. e70043. https://doi.org/10.1002/wat2.70043
[3] Ford, Z.E., Jackson, S., Bino, G., Brandis, K.J. and Kingsford, R.T. (2023) Scale, evidence, and community participation matter: lessons in effective and legitimate adaptive governance from decision making for Menindee Lakes in Australia's Murray–Darling Basin. *Ecology and Society* 28(1), article no. 15. https://doi.org/10.5751/ES-13594-280115
[4] Chiew, F.H.S. *et al*. (2022) Evaluation of causes of reduced flow in the northern Murray–Darling Basin. CSIRO, Canberra.

from NSW DCCEEW.[5] The SDL resource units in which floodplain harvesting is most extensive (Condamine-Balonne, Moonie, Border Rivers, Gwydir, Namoi, Macquarie–Castlereagh and Barwon–Darling) have a combined SDL of 3,706 GL and annual actual take in 2023-24 of 3,677 GL.[6] If floodplain harvesting is fully accounted for, the SDL would be exceeded by 720-1,020 GL that year.

Annual loss to evaporation from on-farm storages and irrigation channels in regulated catchments of the northern Basin was recently estimated at 1,247 GL; 39% of surface water take for irrigation.[7] Such diversions and losses directly affect flows in the *Baaka*/Darling River, driving unsustainable management of Menindee Lakes. Impacts of floodplain harvesting and on-farm water storage include increased frequency of low flow and cease-to-flow events in the *Baaka*/Darling River, repeated fish kills and cyanobacterial blooms. Decline in ecological condition is exacerbated by more rapid climate change and increased evapotranspiration, placing extra demand on water resources.[8]

3. Shared risks to water resources

The NSW Connectivity Expert Panel Report concluded reduced connectivity in northern Basin rivers has severe impacts on ecosystem condition and communities downstream. Progress to achieve change is constrained by hesitation to act: 'If there is a risk of "getting it wrong" the environment has continually borne the risk.'[9] Under the *Water Act* 2007 (Cth), risks to water resources are shared between entitlement holders, state and territory governments and the Commonwealth. The Menindee Lakes Water Savings Project, currently being re-designed under the Sustainable Diversion Limit Adjustment Mechanism, is intended to 'improve efficiency' by reducing evaporation (ca. 400 GL/year)[10] by lowering the volume of water in the lakes, threatening their ecological integrity. Yet 1,247 GL/year is lost to evaporation from on-farm storages and channels in in the northern Basin (cf. above), with no targets to reduce this loss under the Basin Plan. If evaporative loss from public environmental assets is considered a shared risk to water resources, then so is that from private storages. To conclude otherwise breaches the principle of shared risks in the *Water Act*.

4. Failure to implement recommendations of reviews into issues with the *Baaka*/Darling

There have been multiple reviews and enquiries into what has been going wrong with the management of Menindee Lakes and the *Baaka*/Darling River and how to address ecological decline, including on fish kills, connectivity, Water Sharing Plans and management of NSW water resources.[11]

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[5] Colloff, M.J., Slattery, M., Pittock, J. and Johnson, W. (2026) Just another form of take: evaporation from irrigation dams in cotton-growing catchments in the northern Murray–Darling Basin and the implications for water policy reform. *Australasian Journal of Water Resources* https://doi.org/10.1080/13241583.2026.2650962 MDBA (2025) Annual Water Take Report 2023–24. Murray–Darling Basin Authority, Canberra.

[6] MDBA (2025) 2023-24 Sustainable Diversion Limit accounts. Registers of take and interim registers of take. Murray–Darling Basin Authority, Canberra.

[7] Colloff *et al*. (2026), p. 1.

[8] Foster, G. and Rahmstorf, S. (2026) Global warming has accelerated significantly. *Geophysical Research Letters* 53, e2025GL118804. https://doi.org/10.1029/2025GL118804 Petrie, P. and Hall, A. (2025) The impact of climate change on crop irrigation requirements across the Murray–Darling Basin. One Basin CRC.

[9] Dula, A., Duncan, P., Sheldon, F., Smith, C., Southwell, M. and Townsend, P. (2024) Connectivity Expert Panel final report. NSW Department of Climate Change, Energy, the Environment and Water, Sydney, p. iii.

[10] NSWDI (2019) Measurement and comparison of evaporation in water storages. NSW Department of Industry, Sydney.

[11] Vertessy, R., Barma, D., Baumgartner, L., Sheldon, F. and Bond, N. (2019) Independent assessment of the 2018-19 fish deaths in the lower Darling. NSW Chief Scientist & Engineer (2023) Independent review into the 2023 fish deaths in the Darling-*Baaka* River at Menindee. Office of the NSW Chief Scientist & Engineer, Sydney. Dula, A. *et al*. (2024) Connectivity Expert Panel final report. NRC (2019) Review of the Water Sharing Plan for the Barwon–Darling Unregulated and Alluvial Water Sources 2012. NSW Natural Resources Commission, Sydney, pp. 9–14. NRC (2024) Review of the Water Sharing Plan for the New South Wales Murray and Lower Darling Regulated Rivers Water Sources 2016. NSW Natural Resources Commission, Sydney, pp. 7–12. ICAC (2020) Investigation into complaints of corruption in the management of water In NSW and systemic non-

The recommendations from these enquiries have rarely been implemented. There is a clear need to address how recommendations can be incorporated into revised operating rules, Water Resource Plans and water reform policy.

5. Environmental water and end-of-system flow targets

Environmental water use in the northern Basin is restricted by lack of implementation of constraints management in some catchments, rules that restrict transfer of water from regulated to unregulated rivers, limitations on storage and release of e-water due to lack of large headwater dams and in passage of e-water through the Menindee lakes system and into the lower Darling. Further, complementary measures are not a substitute for environmental flows and their implementation has largely failed in the northern Basin. The recent IGWC report on the Northern Basin Toolkit measures makes these shortcomings abundantly clear.[12] Proposed end-of-system flow targets exist on paper, are often unclear (e.g. expressed in terms of percentile exceedances of particular flow ranges, rather than as volumes per unit time), and there are no compliance and enforcement consequences for failure to deliver them. The Wentworth Group supports implementation of recommendations by the Connectivity Panel to establish enforceable flow targets. Upstream take should not be permitted until flow targets are met. Without implementation of Connectivity Panel recommendations and stronger enforcement rules, there is little prospect of achieving end-of-system flows.

Recommendations

- Commonwealth and Basin state governments to commit to establishing an independent body to develop governance arrangements and a vision for environmental sustainability through adaptive management of the Menindee Lakes under climate change that includes community members, Barkandji Traditional Owners and Barkandji River Rangers, scientists and staff from government agencies affected by the future of the lakes. The Barkandji, as Native Title holders and with thousands of years of connection to the lakes, must be at the table for decision-making.
- The Inspector General of Water Compliance to conduct an audit into floodplain harvesting in the northern Murray–Darling Basin. Within its Audit Framework, the focus should be on compliance with the Basin Plan and Water Resource Plans and, within its Compliance and Enforcement Framework, to determine whether Basin governments and agencies have complied with requirements of the *Water Act* 2007 (Cth), the Basin Plan and Water Resource Plans regarding floodplain harvesting;
- The Murray–Darling Basin Authority to re-assess, based on best available science, estimates of floodplain harvesting take in its SDL accounting framework, revise it accordingly and work with NSW DCCEEW to ensure Cap and SDL compliance;
- Under the auspices of the Basin Plan review, Commonwealth and NSW government agencies to plan and implement recommendations relating to hydrological connectivity from the NSW Connectivity Panel and from the NSW Natural Resources Commission regarding Water Sharing Plans for the Barwon–Darling and Lower Darling;
- The MDBA, CEWO and Queensland and NSW water agencies to establish a working group to develop options to improve effectiveness of environmental water delivery in the northern Basin, particularly the *Baaka*/Darling. River operators need to be held accountable for the delivery of end-of-system flows under their operating licences and relevant state legislation, e.g. the *Water Management Act* 2000 (NSW).

compliance, with the Water Management Act 2000. NSW Independent Commission Against Corruption, Sydney.

[12] IGWC (2026) Northern Basin Toolkit Inquiry. Inspector General of Water Compliance, Canberra.