

WENTWORTH GROUP OF CONCERNED SCIENTISTS

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SUBMISSION TO THE INQUIRY INTO THE *WATER AMENDMENT (RESTORING OUR RIVERS) BILL 2023*

Submission to the Senate Environment and
Communications Legislation Committee

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Wentworth Group of Concerned Scientists

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Overview

The *Water Act 2007* (Cth) (Water Act) and the *Basin Plan 2012* (Basin Plan) were bipartisan commitments by the Australian Parliament to address the chronic overallocation of water in the Murray-Darling Basin (MDB). Yet in the past decade, progress on national water reform has stalled. The Basin Plan has not been fully implemented and even if it were, would remain inconsistent with the core requirements of the Water Act, including because it does not take into account climate change. Accordingly, the MDB remains overallocated, degraded and subject to future catastrophic environmental events, placing the health of the MDB Basin and its communities at great risk.

Of further concern is the ongoing, unaddressed issue of Indigenous water dispossession. This is reflected in the failure of the Water Act and its subordinate legislation to provide for Indigenous rights and interests, and in the fact that Indigenous peoples own a mere 0.2% of surface water across the entire MDB.¹

Against this backdrop, the Wentworth Group of Concerned Scientists (Wentworth Group) acknowledges that the introduction of the *Water Amendment (Restoring Our Rivers) Bill 2023* (the Bill) to the Australian Parliament represents a more concrete step towards the Albanese Government's election commitment to deliver the Basin Plan in full. It also provides Parliament with an opportunity to legislate critical measures which, if enforced, will restore accountability, integrity and evidence-based decision-making to water management in the MDB and go some way to addressing Indigenous water injustice and climate change.

While some of the measures proposed will improve flexibility to enable increased recovery of water for river and wetland health, questions remain regarding the extension of statutory timeframes, particularly in the absence of binding recovery milestones and key integrity and governance mechanisms. Sufficient funding is also needed to establish a regional social and economic transition fund to support communities through these reforms.

To that end, the Wentworth Group:

- Fully supports provisions in the Bill that would provide greater flexibility for the Commonwealth to recover water for the environment, deliver constraints relaxation projects and provide greater support to affected communities.
- Supports the extension of time for recovering water and delivering the sustainable diversion limit adjustment mechanism (SDLAM), subject to measures that would guarantee delivery and ensure the scientific integrity of the process.
- Recommends transparency and accountability measures to restore public confidence in water reform such as whole-of-basin hydrological modelling, water accounting and auditing, and validation of annual permitted take models.
- Proposes urgently-needed additional reforms to advance Indigenous water rights and interests in the Basin, improve river system connectivity, protect important river flows, place Basin communities at the centre of reforms and prepare for a changing future.

We welcome the opportunity to put forward the following recommendations to the Senate Committee related to Schedule 1 (Water Act) and 2 (Basin Plan) of the Bill. In our view, adopting and implementing these recommendations is fundamental if we are to safeguard the health of the MDB, advance Indigenous nations water rights and needs, and support the Basin and its communities in a changing climate.

¹ Hartwig, L.D., Markham, F., & Jackson, S. (2021) Benchmarking Indigenous water holdings in the Murray-Darling Basin: a crucial step towards developing water rights targets for Australia, *Australasian Journal of Water Resources*. <https://doi.org/10.1080/13241583.2021.1970094>

Key recommendations

Full support

The Wentworth Group supports key aspects of the proposed amendments in the Bill including:

- Lifting the 1,500 GL cap on Commonwealth water purchases for the environment;
- The proposal that adjustments to sustainable diversion limits (SDLs) can be made on the basis of new acquisitions of held environmental water (HEW);
- The ability of the Commonwealth to make payments to address detrimental social or economic impacts associated with a project or purchase; and
- Development of a constraints relaxation roadmap to ensure that this key element of the Basin Plan is progressed and environmental water can in turn be delivered onto floodplains.

Conditional support (Section A of this submission)

The Wentworth Group conditionally supports the following:

1. **Broadening the purposes for which money under the Water for the Environment Special Account can be used (WESA; Water Act Part 2AA), subject to the following assurances:**
 - 1.1. A statutory requirement to recover the 450 GL in full by 2027;
 - 1.2. Agreed milestones to guarantee annual progress of water recovery towards the 450GL;
 - 1.3. Guaranteed WESA funding to deliver the full 450GL, Constraints Management Strategy, the necessary transition fund and any new provisions for Basin First Nations outcomes; and
 - 1.4. Surplus funds referred to in s86AH should be applied for the benefit of Basin First Nations, within the purpose of the Water Act..
2. **Postponing the final SDL determination to 31 December 2026, subject to the following integrity measures:**
 - 2.1. A requirement that the Murray-Darling Basin Authority (MDBA) updates the reconciliation framework based on latest and best available science;
 - 2.2. A requirement that existing SDLAM projects satisfy the twelve conditions described in Appendix A as a condition of any further project funding;
 - 2.3. A requirement that the Commonwealth make up any shortfall in the 605 GL offsets through temporary water recovery (e.g. allocation purchase or entitlement leaseback) from 30 June 2024 until SDLAM projects are delivered; and
 - 2.4. Deleting the proposed amendment to allow new or additional SDLAM supply measure projects.
3. **Preparation of a constraints management implementation roadmap, subject to:**
 - 3.1. Agreed annual milestones linked to transparent reporting and progress payments to guarantee delivery;
 - 3.2. Appointment of a suitable person or organisation to prepare the roadmap; and
 - 3.3. Ensuring the Commonwealth, in the last instance, has the capacity to negotiate directly with affected parties and the necessary powers under the Water Act to compulsorily acquire access to private land under just and fair terms to allow safe, managed overbank flows.
4. **Support for the Bill should be conditional on the following additional core accountability and monitoring mechanisms to restore public trust, and ensure that river flows are increasing as promised, by:**
 - 4.1. A statutory requirement for a whole-of-Basin water model that is independently accredited, publicly accessible, and annually validated and reported for planning and compliance purposes;
 - 4.2. A requirement for transparent, independently audited, double-entry water accounts;
 - 4.3. Re-establishing scientific monitoring programs to assess progress towards national and international environmental targets relevant to the Basin Plan.

Necessary amendments to the Water Act and Basin Plan (Section B of this submission)

The Wentworth Group has identified four urgently needed additional reforms to the Water Act and Basin Plan that should be included in the proposed Bill. The 2024 Water Act review should not be postponed until 2027 unless the Bill is amended to include the following reforms:

5. Protecting and prioritising flow requirements for river health, by:

- 5.1. Improving connectivity in the northern Basin; and
- 5.2. Ensuring water extractions do not compromise flow requirements for river health.

6. Place Basin communities at the centre of reforms, by:

- 6.1. Partnering and collaborating with MDB communities to recover water in a way that optimises socio-economic benefits;
- 6.2. Establishing a transition fund to support the wellbeing of communities in the MDB affected by water recovery projects or purchases; and
- 6.3. Improving town drinking water quality and security.

7. Prepare for a changing future, by:

- 7.1. Ensuring Australia's water laws address the impacts of climate change and support communities to adapt to a changing climate; and
- 7.2. Fair and equitable sharing of water security risks to the water resources of the MDB.

8. Enshrine Indigenous water rights and interests in national water laws, by:

- 8.1. Giving effect to the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) within the Water Act;
- 8.2. Amending the Water Act to explicitly provide for Indigenous rights and interests;
- 8.3. Supporting Indigenous nations to acquire more water entitlements;
- 8.4. Expanding the MDB Indigenous river rangers program;
- 8.5. Enabling Indigenous ownership and participation in water-using industries;
- 8.6. Updating Water Resource Plans (WRPs) to contain all relevant Indigenous values, uses, objectives and outcomes, and ensuring states and territories are accountable if they fail to do.

Section A. Recommended conditions of support for key elements of the Bill

i. Ensure that outstanding elements of the 3,200GL Basin Plan will be delivered urgently and in full

1. Statutory requirement to recover the 450 GL in full by 2027, with annual milestones to guarantee progress

The Basin Plan proposed a water recovery target of 2,750 GL by 2019, with a program to recover an additional 450 GL of water by 2024 under the adjustment mechanism, bringing the total to an adjusted or “offset” equivalent of 3,200 GL (Figure 1). Yet progress has stalled and only 2,107 GL of water has been recovered to date.² Only 3% (12.2 GL) of the 450 GL has been recovered so far.²

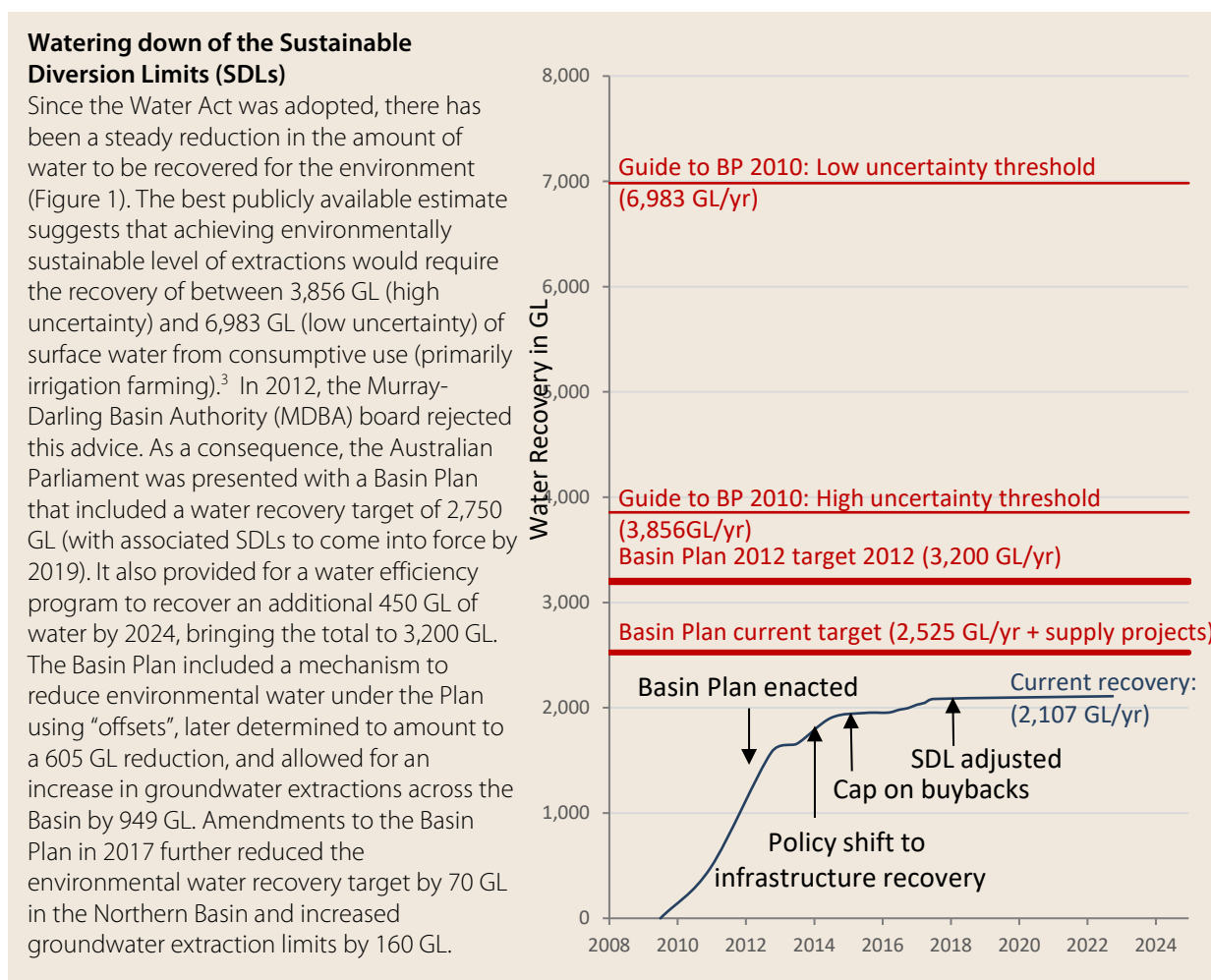


Figure 1. Progress on water recovery relative to Basin Plan targets.

² MDBA. (2023, 18 August). *Progress on water recovery*, Murray-Darling Basin Authority.

<https://www.mdba.gov.au/climate-and-river-health/water-environment/water-recovery/progress-water-recovery>

³ MDBA, (2010). *The Guide to the proposed Basin Plan: Technical background Part 1*. Murray-Darling Basin Authority. p. 114.

Unlike the 2,750 GL, the 450 GL of enhanced environmental water provided for in Part 2AA of the Water Act is not a legally binding target. It is therefore arguable that the public does not have any legal recourse if governments fail to fully implement Part 2AA.

Best-available science should be used to determine where water for the environment is still most needed (see Figure 2). Recovery of the 450 GL should be strategically focused to meet these needs. Governments should be flexible as to how water is recovered, provided any decision is based on evidence that it can achieve the objects of the WESA set out in Part 2AA of the Act. The Commonwealth Government should encourage states, Basin communities and industry groups to contribute to the development of a broad portfolio of projects that could meet this requirement. A transition fund should be established to assist and incentivise such an approach.

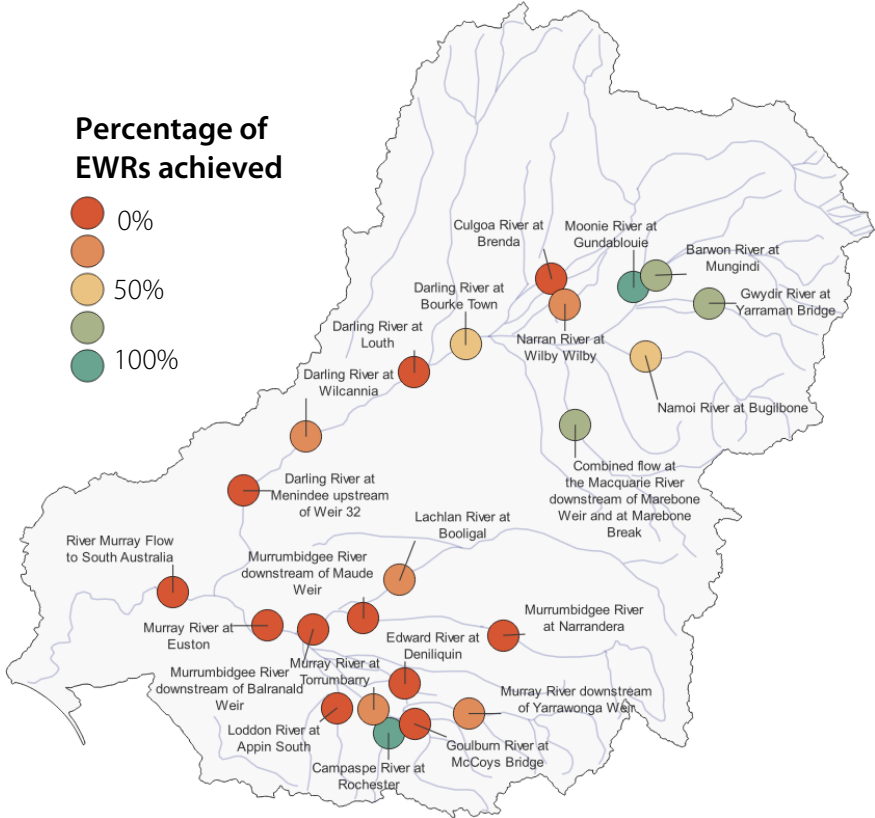


Figure 2. Decisions about water recovery should be informed by evidence of environmental water requirements. Our analysis of stream gauge data from 1979 to 2022 identifies where Basin’s water requirements are not being met.⁴

There is a continued risk of insufficient water recovery unless suitable accountability measures and appropriate consequences are in place. Our recommendation aims to ensure that there is progress year-on-year, any shortfall will be addressed at the end of each year, and the final water recovery target will be met on time.

Section 86AD(2)(a) as currently drafted in the Bill broadens the circumstances in which funds may be debited from the WESA and dilutes the requirement to use those funds to meet the objects of Part 2AA. In our view, this should only be agreed to if there is a guarantee that sufficient funds will be made available in the WESA account to deliver the full 450GL, Constraints Management Strategy, the necessary transition fund and any new provisions for Basin First Nations WESA outcomes. Otherwise, we recommend specifically limiting the circumstances in which funds can be debited from the WESA to only those which further the current objects of Part 2AA of the Water Act.

⁴ Sheldon, F. & Rocheta, E. & Steinfeld, C. & Colloff, M. & Moggridge, B. & Carmody, E. & Hillman, T. & Kingsford, R. & Pittock, J. (2023). Testing the achievement of environmental water requirements in the Murray-Darling Basin, Australia. Submitted to Marine & Freshwater Research, 10.13140/RG.2.2.24580.71045/1.

Paragraph 86AH in the proposed Bill creates a potential loophole that would allow future governments to move surplus funds from the WESA to Consolidated Revenue, rather than devoting these funds to delivering the objectives of WESA. Assuming any funds remain in the account, it is arguable that they should be spent on meeting the aspirations of the MDB's Indigenous nations in relation to water rights and related matters. This would require additional amendments to the Act, including those provided for in Recommendations 1.1 and 1.2, below.

Recommendation 1.1 – That the Water Act be amended to provide a statutory requirement that the 450 GL in water for the environment under Part 2AA of the Water Act be delivered in full by 31 December 2027.

Recommendation 1.2 – That the Water Act be amended to require Basin States to meet annual milestones in terms of water recovered towards the 450GL (i.e. 100 GL per year over 4 years). If a State fails to meet its annual milestone, the Commonwealth is required to make up any annual shortfall in the following year.

Recommendation 1.3 – That sufficient funds are guaranteed in the WESA account to deliver the full 450GL, Constraints Management Strategy, the necessary transition fund and any new provisions for Basin First Nations outcomes. If sufficient funds are not guaranteed, the proposed amendment to S.86AD(2)(a) should be limited to only those which further the current objects of Part 2AA of the Water Act.

Recommendation 1.4. Surplus funds referred to in s86AH should be applied for the benefit of Basin First Nations, within the purpose of the Water Act.

2. Ensure the integrity of SDLAM 'water offsets' under the Basin Plan

As part of the SDLAM, supply measures are intended to reduce the volume of water to be recovered for the environment while delivering equivalent environmental outcomes. Basin States have put forward 36 supply ('offset') projects which the MDBA initially estimated would deliver benefits equivalent to 605 GL of water (Box 1). There has been considerable criticism about the rigour and effectiveness of environmental equivalence for some of these projects, particularly for Menindee Lakes.⁵

The Basin Plan requires the MDBA to undertake a reconciliation process if it expects a different result from the original 605 GL offset determination. If this process results in a shortfall, then the Commonwealth Government is required to use alternative means (e.g. voluntary water purchases) to achieve SDLs.

The Bill proposes two main changes to the SDLAM process. The Bill will delay the reconciliation date by two years to 2026, and will allow new projects to be put forward. In our view, these proposed changes do not address the serious integrity issues with SDLAM projects. A total of 25 projects do not satisfy the conditions that we believe are necessary to ensure projects achieve equivalent or better outcomes (Appendix A).⁶ The method for determining the SDL adjustment volume is flawed.⁷ There are no

⁵ Ford, Z. E., S. Jackson, G. Bino, K. J. Brandis, & R. T. Kingsford. (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):15. <https://doi.org/10.5751/ES-13594-280115>

⁶ Wentworth Group of Concerned Scientists. (2017). *Submission to Murray-Darling Basin Authority on sustainable diversion limit adjustment draft determination*. Sydney. <https://wentworthgroup.org/2017/11/submission-to-murray-darling-basin-authority-on-sdl-adjustment-draft-determination/>

⁷ Lyons, K., Pittock, J., Colloff, M.J., Steinfeld, C., Rocheta, E. & Yu, Y. (2023) Towards a scientific evaluation of environmental water offsetting in the Murray–Darling Basin, Australia. *Marine and Freshwater Research* 74, 264 –280. <https://doi.org/10.1071/MF22082>

measures to address the current >300 GL shortfall⁸ which means the Environmentally Sustainable Level of Take (ESLT) is not being met. The Bill's recommendation to allow States to put forward new projects means further delays to a process that has already taken ten years and is still incomplete. These issues create uncertainty for communities and significant risks to the health of the Basin.

Box 1. Supply measure projects include:

- a. **Infrastructure projects (or 'environmental works and measures')** such as the construction of regulators, channels or levees which are intended to replicate elements of the flooding regime. These projects may provide some environmental benefits but do not fully replicate natural processes (for example, they block fish passage), tend to focus on small, low-lying wetlands, may exacerbate risks of salinity and blackwater events, cause damage to Indigenous cultural sites, and lead to operational failure. They are also very expensive. Further, the additionality of offsets from six Living Murray projects is questionable considering these projects were built under a program established a decade prior to the Basin Plan.
- b. **Constraints relaxation projects.** See description below. Some constraints measures have been included as supply measure 'offsets' for two reasons: so they could be funded by the \$1.2 billion available for supply measures and as a greater incentive for the States to deliver them. Constraints projects are crucial for river health; however the proposed flow targets are not consistent with those set out in the Constraints Management Strategy (CMS).^{9,6}
- c. **Major restructuring projects** (e.g. Menindee Lakes and Yanco Creek) which aim to offset large volumes of water by reducing evaporation and seepage. Significant community opposition to these projects has resulted in them being re-scoped by the NSW Government. As consequence, less than the original offset volume has been delivered. There are significant detrimental environmental impacts associated with these projects.
- d. **Rules-based projects** which are intended to adjust river operating rules to improve the efficiency and effectiveness of river operations. Rules-based projects generate water savings that should be converted into a water entitlement for the environment to ensure the savings will be realised.

To our knowledge, no water or other offset arrangement similar to SDLAM (where environmental outcomes are the currency of the offset) have been implemented elsewhere. The CSIRO 'Ecological Elements' method,¹⁰ which forms the basis of the MDBA reconciliation framework,¹¹ remains untested; lacks empirical validation; relies on hypothetical assumptions and outdated expert opinion and has not been formally peer-reviewed. Modelling should not be preferred over empirical observation. Reliance only on modelling is unlawful and inconsistent with the Basin Plan.¹³ There has been inadequate assessment of the projects under climate change scenarios, and SDLAM modelling assumes historical average inflows. These problems are exacerbated by the Bill providing for new projects to be put forward.

In our view, the proposed framework does not meet the standard of scientific rigour required by the Basin Plan and the Water Act. The significant flaws in the proposed reconciliation framework are likely to render

⁸ McConville, A. (2022, 22 November). *Address to the National and Rural Press Club*. Murray-Darling Basin Authority. www.mdba.gov.au/news-media-events/newsroom/media-centre/address-national-rural-press-club-address-national-rural

⁹ MDBA. (2013). *Constraints Management Strategy 2013 to 2024*. Murray-Darling Basin Authority, Canberra. <https://www.mdba.gov.au/sites/default/files/publications/Constraints-Management-Strategy.pdf>

¹⁰ Overton, I.C., Pollino, C.A., Roberts, J., Reid, J.R.W., Bond, N.R., McGinness, H.M., Gawne, B., Stratford, D.S., Merrin, L.E., Barma, D., Cuddy, S.M., Nielsen, D.L., Smith, T., Henderson, B.L., Baldwin, D.S., Chiu, G.S. & Doody, T.M. (2014) Development of the Murray-Darling Basin Plan SDL Adjustment Ecological Elements method. CSIRO: Canberra, ACT, Australia. <https://publications.csiro.au/rpr/pub?pid=csiro:EP153938>

¹¹ MDBA (2021) Sustainable Diversion Limit Adjustment Mechanism reconciliation framework, Murray-Darling Basin Authority Canberra. Murray-Darling Basin Authority. <https://www.mdba.gov.au/publications-and-data/publications/sustainable-diversion-limit-adjustment-mechanism-reconciliation>

the reconciliation process and outcomes invalid. These concerns are consistent with the recommendations of the Independent Review Panel (IRP) to the MDBA made nearly a decade ago: “Nevertheless, in reaching this judgement, the IRP recognises that the method is also novel and untried. Hence, there are significant ecological and management risks involved in its application. Some possible scientific actions to mitigate these risks are described in section 4 following. The IRP recommends that these scientific risk mitigation actions should be fully considered as part of the next phase of work by the MDBA and jurisdictions.”¹² This recommendation has not been implemented.

The South Australian Royal Commission into the Murray–Darling Basin in 2019 also found that the application of SDLAM “has been significantly flawed and has resulted in an adjusted sustainable diversion limit (SDL) that places the already endangered environmental resources of the Murray–Darling Basin (Basin) at even greater risk of degradation and decline... [t]he SDLAM takes the risk of recovering less water for the environment than the best available scientific knowledge states is necessary, in the hope that equivalent environmental outcomes will eventually be achieved in the future”.¹³

In November 2022, MDBA CEO, Andrew McConville, reported that projects amounting to a shortfall of between 190 and 315 GL of the 605 GL will not be delivered as required by June 2024.⁸ Basin States have agreed to allow more time to deliver existing projects. However, given projects are not yet operational nor achieving intended outcomes, this delay increases the risk of declines in the condition of wetlands and rivers.

Lyons et al. from the Wentworth Group and the Australian National University, *Towards a scientific evaluation of environmental water offsetting in the Murray Darling Basin, Australia*⁷ offer a way forward to ensure the reconciliation process is credible, based on real outcomes, and gives communities and businesses confidence that existing projects will deliver environmental outcomes equivalent to those that would accrue from the recovery of environmental water.

The Wentworth Group has separately raised these solutions with the Basin Governments, the MDBA and the Basin Officials Committee (BOC). We are pleased to see that the Bill, through Schedule 2 amendments to Paragraph 7.15(2)(b), proposes the MDBA alone determines the appropriate method for adjustment rather than requiring support of all governments through the BOC. Further assurances are needed to ensure the reconciliation process is credible and based on best available science as required under the Water Act.

Recommendation 2.1 – That the Water Act be amended to require the MDBA to immediately update their reconciliation framework to ensure it is based on the latest and best available science in time for the proposed 2027 reconciliation.

Recommendation 2.2 – That the Water Act be amended to ensure SDLAM projects satisfy the twelve conditions in Appendix A as a condition of any further project funding.

Recommendation 2.3 – That the Water Act be amended to require the Commonwealth to make up any shortfall in the 605 GL offsets through temporary water recovery (e.g. allocation purchase or entitlement leaseback) from 30 June 2024 until projects are delivered.

Recommendation 2.4 – That Schedule 2 of the Bill (Basin Plan) paragraphs 7.01(b) and 7.12(2A) allow for new and additional 605 GL supply measures be deleted.

¹² Brookes, J., Hillman, T., Jones, G. & Stewardson, M. (2015). SDL Adjustment Ecological Elements Method Development Report Review of Final Project Report by the Independent Review Panel. Murray-Darling Basin Authority. <https://www.mdba.gov.au/publications/independent-reports/sdl-adjustment-ecological-elements-method-development-report-review>

¹³ Walker, B. (2019). South Australia, Murray-Darling Basin Royal Commission. Government of South Australia. <https://cdn.environment.sa.gov.au/environment/docs/murray-darling-basin-royal-commission-report.pdf>.

3. Relax constraints to allow rivers to reconnect with floodplains

Many floodplains have been modified by agricultural and urban development and associated infrastructure. River operating rules are in place to protect low-lying bridges, roads and private land and properties from adverse impacts of managed overbank flow releases from headwater storages. These physical and operational barriers, known as 'constraints', impede the release of overbank flow pulses required to keep the floodplains and their dependent ecosystems healthy.

As minor and moderate flows have become less frequent, low-lying floodplains have become increasingly disconnected from the main river channels. Periodic floods are essential to maintain the environmental condition of wetlands.

The MDBA's CMS is intended to maximise the benefits of available environmental water by enabling higher flow volumes to be released down river channels and in turn flood low-lying areas, including private land. This is known as 'constraints relaxation' and is designed to reconnect rivers to their floodplains and achieve better environmental outcomes. The CMS is critical from a river system health perspective but is far from being implemented.

The CMS identified seven key river reaches where physical constraints need to be addressed. Three key reaches in the southern MDB are:

- River Murray, from Lake Hume to Yarrawonga Weir (NSW & Victoria);
- River Murray, from Yarrawonga Weir to the confluence of the Wakool River (NSW & Victoria);
- Goulburn River, from Lake Eildon to the confluence with the River Murray (Victoria).

While the Victorian and NSW Governments have been working with Basin communities to progress their respective constraints relaxation projects, there has been little on-ground progress.

Co-operative and co-ordinated approaches are needed by governments to work with the estimated 3,324 landholders¹⁴ on both sides of the river whose land may be flooded as a consequence of constraints relaxation. While Victorian and NSW officials have been in communication on the delivery of cross-border constraints relaxation, there is no public evidence of a co-ordinated approach.

The program is complex, though smaller-scale constraints relaxation was successfully implemented on the upper Murray, below Hume Dam. There are fundamental issues that the Commonwealth and States will need to resolve to address landholder concerns around access arrangements, including easements and compensation for any loss of amenity and damage.

The Wentworth Group is pleased that the proposed amendments to the Water Act include a roadmap for a co-ordinated approach to constraints management. The roadmap should be developed by the Commonwealth and States with full participation of affected communities and should include the following features: clear milestones and targets for delivery; a milestone payment schedule with financial incentives for delivery; and overarching assurances and arrangements to resolve issues around access to private land and certainty around risk management and compensation in response to unexpected, adverse events that cause material damage (see Box 2 for specific arrangements/assurances needed). Such a roadmap will provide the basis for building broad community support for this essential program.

Development of the roadmap will need to be led by an independent organisation with a high level of community trust; an ability to work with local communities; established relationships with

¹⁴ Kahan, G., Colloff, M. & Pittock, J. (2020). Using an ecosystem services approach to re-frame the management of flow constraints in a major regulated river basin. *Australasian Journal of Water Resources*. <https://doi.org/10.1080/13241583.2020.1832723>

Commonwealth, NSW and Victorian Governments and agencies; and an understanding of the respective government roles, responsibilities, and statutory frameworks.

Box 2. Principles and assurances needed to deliver the CMS

1. Co-design participatory process for reaching agreement to deliver CMS with affected landholders and other third parties;
2. Acknowledgement of risks and liability, fair and equitable solutions, accountability and compensation for material damage in relation to legal obligations;
3. Assurance that flows from the Darling, Murrumbidgee and the Goulburn will be used in addition to those from the Murray to deliver end of system and within-catchment flows to contribute to meeting the CMS targets;
4. A requirement that river operators work with affected parties and use local knowledge to manage flood risks; and
5. Accountability, including the ability for impacted parties to make direct, formal complaints to an independent body, such as the Inspector General of Water Compliance.

While co-operative and consultative approaches are preferred, the Water Act should be amended to provide the Commonwealth with powers to acquire non-exclusive rights to access to private land (easements) for the purposes of achieving constraints relaxation and managed overbank flows (with these powers to be used as a last resort). Our recommendations regarding compensation for unexpected, adverse events causing material damage would be equally applicable in these circumstances.

Recommendation 3.1 – That the proposal in Schedule 2 of the Bill to add 7.08A(2) to the Basin Plan is amended to require the roadmap to establish clear targets and milestones for the delivery of constraints and the Enhanced Environmental Water Delivery Project (operating rules), linked to progress payments, and a requirement for transparent reporting against those milestones.

Recommendation 3.2 - That the proposal in Schedule 2 of the Bill to add 7.08A(2) to the Basin Plan is amended to delete “the Murray–Darling Basin Authority must” and replaced with “the Minister must appoint a suitable person or organisation to prepare” the roadmap for the purpose of achieving the object of this section by 31 December 2024. Amend S7.08A(3) to insert “the Authority” after “Commonwealth.”

Recommendation 3.3 – That the Water Act be amended to ensure the Commonwealth, in the last instance, has the capacity to negotiate directly with affected parties and the necessary powers under the Water Act to compulsorily acquire access to private land under just and fair terms to allow safe, managed overbank flows.

ii. Restore public trust through transparency, accountability and monitoring

4.1. Implement a whole-of-Basin water model that is independently accredited, publicly accessible and annually validated for compliance purposes

Scientifically robust water modelling is fundamental for informing water management decisions and building stakeholder confidence. The hydrological models that underpin most aspects of water planning in the MDB are deficient in a number of areas. For example, there is currently no single, Basin-wide

hydrological model to guide decisions related to the Basin Plan including the setting and reviewing of SDLs. Rather, separate models exist for different catchments. These models are poorly integrated, not publicly-available, and infrequently updated. They also fail to adequately measure floodplain or groundwater connectivity. Consequently, Basin-wide scenario modelling requires significant manual intervention, is resource-intensive and inter-catchment interactions are poorly represented. In the past, State governments have resisted adoption of a single Basin model that would replace their State models. While a one off 'Integrated River Modelling Uplift' program is underway,¹⁵ there is a need to legislate for a whole-of-Basin model to be used in upcoming Basin Plan reviews and to inform relevant Basin-wide water planning decisions to ensure they are fit for modelling climate change scenarios.

Climatic and landscape changes also make water modelling particularly challenging in the Basin. Changes in water inflows due to climate change and changes in land use (e.g. increased tree planting) are not well monitored nor incorporated into models. In our report 'Assessment of river flows in the Murray–Darling Basin: observed versus expected flows under the Basin Plan 2012-2019' in 2020,¹⁶ we found that over a seven-year period of Basin Plan implementation, 22% less water entered South Australia than expected. There is currently no system for assessing and managing such discrepancies. Hydrological models used for planning and compliance purposes are not validated against observed river gauge data (that is, the actual volume of water in the river). Accordingly, no adjustment is made if a model inaccurately estimates river flows or extractions (and thus generates inaccurate assessments of compliance with extraction limits).

Recommendation 4.1 – That the *Water Act* is amended to require:

- (a) A whole-of-Basin hydrological model to be used for water planning, management and SDL compliance for the 2026 Basin Plan review and thereafter;**
- (b) The Basin model, administered by the MDBA, is made public together with the parameters, assumptions, input data and output time series;**
- (c) The model is to be independently reviewed and accredited at least every five years, incorporating new data and knowledge, including risks to shared water availability;**
- (d) The MDBA is required to annually validate and report on the Annual Permitted Take model using observed river gauge data, and re-calibrate the model where required or correct model error to account for any discrepancies.**
- (e) The MDBA's annual validation is to be independently audited by an appropriately qualified expert, with the audit report and the MDBA's response to be made publicly available.**

4.2. Establish transparent, independently audited, double entry water accounts

Under the National Water Initiative (2004), all Australian governments agreed to track and provide information¹⁷ on water planning, monitoring, trading, environmental and on-farm management. However there is no information that tracks whether water recovery under the Basin Plan is delivering the additional volumes expected in the river system. This information cannot be readily accessed from the

¹⁵ MDBA (2023) Types of water modelling. <https://www.mdba.gov.au/water-management/water-resource-modelling/types-water-modelling>

¹⁶ Wentworth Group of Concerned Scientists. (2020). Assessment of river flows in the Murray–Darling Basin: observed versus expected flows under the Basin Plan 2012-2019. Wentworth Group of Concerned Scientists. <https://wentworthgroup.org/2020/09/mdb-flows-2020/>

¹⁷ CoAG (2004) Intergovernmental agreement on a national water initiative between the Commonwealth of Australia and the governments of New South Wales, Victoria, Queensland, South Australia, the Australian Capital Territory and the Northern Territory. Council of Australian Governments, Canberra. <https://www.pc.gov.au/inquiries/completed/water-reform/national-water-initiative-agreement-2004.pdf>

MDBA, the Bureau of Meteorology, the Commonwealth Environmental Water Holder (CEWH) or through the respective State water agencies. Existing water accounts lack essential features of basic water accounting, such as double-entry accounting, whereby the account tracks the full water balance including water extracted from the water source and the water remaining in the water source.

We urgently need a comprehensive, publicly accessible single set of annual water accounts for the MDB to track water holdings, allocations, use, river and groundwater flows and expenditure. Independent auditing of those accounts would help to ensure that the billions of dollars invested in water recovery under the Basin Plan delivers value for money.

Recommendation 4.2 – That the Water Act be amended to ensure that:

- (a) Water accounts are published annually to allow the public to track water holdings, allocations, use and expenditure in the MDB. Water accounts should include standard features such as such as double-entry accounting; and**
- (b) Basin and State water accounts be independently audited and published annually.**

4.3. Re-establish scientific monitoring programs to assess progress towards national and international targets

In the 1990s and 2000s Australian governments developed the terrestrial Interim Biogeographic Regionalisation of Australia (IBRA) and the Integrated Marine and Coastal Regionalisation of Australia as the basis for establishing a representative conservation reserve system. However, no such regionalisation was developed for wetlands. The governments only adopted Guidelines for Identifying High Ecological Value Aquatic Ecosystems¹⁸, without maps or a program for establishing reserves.

Since the Convention on Biological Diversity adopted a Global Biodiversity Framework (GBF) with conservation targets for 2030, for the first time, “inland waters” (freshwater wetlands) are explicitly named as the third biome to be conserved. The key conservation targets named in the GBF are for 30% restoration and 30% reservation of representative areas of ecosystems.

Specifically for the MDB the:

- a) word “representative” in GBF means that bigger wetland nature reserves are required and cannot just be river red gum floodplain forests or salt lakes to meet targets. They need to include a broad range of wetland ecosystems, including those that are more degraded and at risk.
- b) review of the Basin Plan by 2026 is an important opportunity to better conserve flow-dependent ecosystems. Stronger place-based wetland conservation measures should be considered in the next version of the Basin Plan.
- c) Commonwealth Government is proposing reforms to national environmental laws which support development of regional plans with the States to protect “Areas of High Environmental Value, where development will largely be prohibited”. This process could be used to identify those wetland ecosystems the Australian Government has agreed to protect and restore. Further, this would provide data to inform places that the proposed nature repair market could invest in.

¹⁸ Aquatic Ecosystems Task Group for Department of Sustainability, Environment, Water Population and Communities (2012) Aquatic Ecosystems Toolkit Module 3: Guidelines for identifying high ecological value aquatic ecosystems (HEVAE). Department for Climate Change, Energy, Environment and Water. <https://www.dcceew.gov.au/water/cewo/monitoring/aquatic-ecosystems-toolkit/module-3-guidelines-identifying-high-ecological-value-aquatic>

The failure of governments since 2012 to complete their interim Australian National Aquatic Ecosystem (ANAE) Classification Framework.¹⁹ and apply it for systematic conservation purposes needs to be addressed. This should be cognisant of the new International Union for Conservation of Nature (IUCN) typology for the Earth's ecosystems.²⁰ which includes a typology for freshwater and transitional ecosystems that are dependent on surface and ground water. This IUCN freshwater typology applies a functional approach to ecosystems and is increasingly being used in environmental accounting and throughout Australia. An Australian typology should also be able to be cross-walked with the Ramsar typology of wetlands and Freshwater Ecoregions of the World assessment.

Recommendation 4.4 – That the Water Act be amended to require:

- (a) Completion of a national inland waters bio-regionalisation and ecosystem classification by 2025 (similar to existing Australian terrestrial, marine and coastal bio-regionalisation) using the Global Ecosystem Typology to enable more strategic jurisdictional, Basin, national and global conservation initiatives for freshwater biodiversity conservation, monitoring and reporting, and**
- (b) Re-instatement of an independent Basin Sustainable Rivers Audit from 2024, including annual reporting on the area and types of freshwater ecosystems watered.**

¹⁹ Aquatic Ecosystems Task Group for Department of Sustainability, Environment, Water Population and Communities (2012) Aquatic Ecosystems Toolkit Module 2: Interim Australian national aquatic ecosystem (ANAE) classification framework. Department for Climate Change, Energy, Environment and Water. <https://www.dcceew.gov.au/water/cewo/monitoring/aquatic-ecosystems-toolkit/module-2-interim-australian-national-aquatic-ecosystem-anae>

²⁰ Keith, D.A., Ferrer-Paris, J.R., Nicholson, E., Bishop, M., Polidoro, B.A., Ramirez-Llodra, E., Tozer, M.G., Nel, J.L., Mac Nally, R., Gregr, E.J., Watermeyer, K.E., Essl, F., Faber-Langendoen, D., Franklin, J., Lehmann, C.E.R., Etter, A., Roux, D.J., Stark, J.S., Rowland, J.A., Brummitt, N.A., et al. (2022) A function-based typology for Earth's ecosystems Nature 610, 513–518. <https://doi.org/10.1038/s41586-022-05318-4>.

Section B. Necessary amendments to the Water Act and Basin Plan

iii. Protect and prioritise flow requirements for river health

5.1. Improve connectivity in the northern Basin

River connectivity is fundamental to a healthy Basin. Improving connectivity in the northern Basin has important benefits for instream and floodplain values, as well as improved water security for towns, stock and domestic supply.

The northern Basin includes five river valleys in NSW and four in QLD. It covers 45% of the Basin's land area, but only contributes about 34% of total flows to the Basin. The CSIRO Sustainable Yields Project estimated total annual flow from the Barwon-Darling catchments was 3,515 GL.²¹ While some headwater dams exist in the northern Basin, most of the flows in the Barwon–Darling River are unregulated. That is, they are highly variable and are not controlled by capture in, and release from, large public storages.

Poor connectivity is largely due to high levels of extraction and highly variable rainfall and river flow. The northern Basin, particularly the Barwon-Darling River, has a history of adverse environmental events associated with periods of low flows or no flows, including fish kills, algal blooms, and insufficient water to supply town, stock, and domestic requirements. Its floodplains are also generally in poor ecological health. These problems cannot be fixed by simply adjusting local management settings. They also require changing the way water is managed in upstream catchments. This requires ensuring that Water Sharing Plans (WSPs) and WRPs in the northern Basin work synergistically; Basin-wide reforms are meaningless if each catchment is treated in isolation from others, and Queensland and New South Wales need to jointly address connectivity.

There are three complementary ways to improve connectivity in the northern MDB:

1. Recover sufficient water for the environment. This will require a sufficient volume of water to be recovered in both regulated and unregulated systems of the northern Basin to ensure that the condition of wetlands and rivers will not be compromised. The CEWH holds a total of 334 GL of water entitlements in the northern Basin, including approximately 29 GL in the Barwon–Darling. Strategic acquisition of remaining 10 GL of low flow entitlements (known as “A Class licences”) and some of the remaining 150 GL of medium flow entitlements (known as “B Class licences”) in the Barwon-Darling could considerably improve connectivity in this river system. These entitlements are mostly used to extract water during small and medium flows, and, if acquired by the Commonwealth, could be used to achieve connectivity during periods of low flows.

2. Protect environmental water from extraction as it moves from one catchment to the next, through rules in WRPs and WSPs. The Barwon–Darling is an “actively managed” system, meaning environmental water can be protected by changes to water access rules on a day-to-day basis. This process is underpinned by river gauging, flow forecasting, and real-time measurement of extractions. However, there are particular circumstances where environmental water may be ‘re-regulated’ or become available for consumptive use as it moves between catchments in the northern Basin. Rules need to be codified in WRPs and WSPs to protect (‘shepherd’) water flowing between upstream tributary catchments (Paroo, Warrego, Condamine–Balonne, Border Rivers, Namoi, Gwydir and Macquarie), the Barwon–Darling

²¹ CSIRO. (2008). Water Availability in the Barwon-Darling. A report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project. CSIRO Water for a Healthy Country National Research Flagship, Canberra. CSIRO. <https://publications.csiro.au/rpr/download?pid=changeme:1928&dsid=DS1>

catchment through Menindee and through to the River Murray, to ensure water purchased for the environment remains in the river system to achieve its intended benefits. Several approaches exist to protect environmental water. These include temporary embargos on pumping under State water laws, conditions on entitlements which restrict pumping, active management rules, flow targets and shepherding agreements.

3. Establish rules to require flow requirements in WRP areas to be met before major upstream extraction. Improving connectivity on the basis of flow targets has been a key water management objective in the northern Basin since the 1990s. For example, the NSW North West Interim Flow Management Plan drafted in 1992 sought to improve water quality and connectivity by establishing flow targets that need to be met before extractions can occur. Despite being included and referred to in current WSPs, the North West flow plan is far from being fully implemented. There is considerable opportunity to improve connectivity by implementing an updated version of this plan, ensuring it includes evidence-based flow thresholds and access rules.

Recommendation 5.1 – That the Water Act, Basin Plan and WRPs be amended to require and include rules to improve connectivity, particularly in the northern Basin. Rule changes that demonstrably improve connectivity in the northern Basin should not be precluded, even if they require compensation for licence holders.

5.2. Ensuring water extractions do not compromise flow requirements for river health

The Water Act requires governments to ensure water extraction does not compromise the health of flow-dependent ecosystems. Environmental flow requirements represent the minimum flows needed at particular places and times to sustain important environmental assets and functions. They were defined by Basin governments as part of their commitment to the Basin Plan, based on best available scientific evidence. Achieving these flow requirements is a pre-requisite for the health of wetlands and rivers in the Basin.

In September 2023, the Wentworth Group published a study that assessed whether environmental water requirements had been achieved,²² by evaluating 72 science-based environmental flow requirements against flows measured at 23 river gauges over a period of 44 years (1979-2022). We found that only 31% of the environmental water requirements were achieved. In the decade since the Basin Plan was enacted, we found only 26% of requirements were achieved, demonstrating a declining trend.

The Water Act requires an environmentally sustainable level of take in the Basin, but this is clearly not occurring. The consequences are evident in the poor condition of many flow-dependent ecosystems in the Basin. For this to be reversed, it is vital that the Basin Plan secures the minimum flow volumes needed, at the right place and the right time.

Recommendation 5.2 - Ensure water extractions do not compromise flow requirements for river health, by:

- (a) Amending the Water Act to require the ESLT to be updated by 2026, and regularly updated thereafter, to ensure that it is capable of achieving flow requirements for priority assets and functions under likely projected climate change scenarios.**
- (b) Amending Chapter 10 of the Basin Plan to require rules in WRPs and Long Term Watering Plans to delay major upstream irrigation extractions until flow requirements for priority assets and functions within each catchment, and downstream, are met.**

²² Wentworth Group of Concerned Scientists (2023). Are Murray-Darling Basin rivers getting the water they need to stay healthy? Wentworth Group of Concerned Scientists. https://wentworthgroup.org/2023/09/safeguarding_health_mdb/

- (c) **Requiring that the current environmental flow requirements for priority assets and functions be refined by the Commonwealth and States and reviewed by independent experts to ensure that they are consistent, achieve legal requirements, are evidence-based, and can be operationalised.**
- (d) **Amending the Water Act to require the MDBA to publish a dashboard showing real-time achievement of environmental water requirements over a range of timescales, based on gauge data as well as hydrological models.**

iv. Place Basin communities at the centre of reforms

6.1. Partner and collaborate with Basin communities to recover water in a way that optimises socio-economic benefits

6.2. Establish a transition fund to support the wellbeing of communities in the Murray-Darling Basin affected by water recovery projects or purchase

Since 2004, national water reforms have brought significant direct and indirect benefits to the irrigation industry. However, some regional communities have been adversely affected, with the impacts of water recovery being more acute for those communities that are highly dependent on irrigated agriculture, and which have less diversified economies.²³

A recent review of socio-economic studies in the Basin²⁴ found those using simple assumptions and input-output modelling were more likely to recommend that water purchases had significant negative impacts. Studies that used more sophisticated modelling found that the impact of water recovery was far less negative, including minor impacts on employment and GDP.^{25, 26, 27, 28} Negative impacts on water-related economic values are complex, politicised and have been significantly overstated, while positive impacts of buybacks on local economies have often been ignored. Yet poor quality studies continue to be relied upon by governments and stakeholder groups to oppose voluntary water purchase.

Under current reforms, only those with water to sell will receive financial compensation, and only irrigators will benefit from infrastructure improvements. Less than one per cent of the \$13 billion has been made available to assist communities adapt to a future with less water. Irrigation industry groups have used this failure in assistance as an argument to lobby governments to halt water recovery.

²³ Wentworth Group of Concerned Scientists. (2017). Review of Water Reform in the Murray-Darling Basin. Wentworth Group of Concerned Scientists. <https://wentworthgroup.org/2017/11/review-of-water-reform-in-the-murray-darling-basin/>

²⁴Wheeler, S. A., Xu, Y., Zuo, Z., Haensch, J., & Seidl, C. (2023). Identifying the water-related economic values of the Murray-Darling Basin and rating the quality of water economic studies. . Murray-Darling Basin Authority. <https://www.mdba.gov.au/sites/default/files/publications/mdb-outlook-economic-literature-review2.pdf>

²⁵Dixon, P., Rimmer, M. T., & Wittwer, G. (2009). *Modelling the Australian government's buyback scheme with a dynamic multi-regional CGE model*. Centre of Policy Studies, Monash University, Melbourne.

²⁶Dixon, P. B., Rimmer, M. T., & Wittwer, G. (2011) Saving the southern Murray - Darling Basin: the economic effects of a buyback of irrigation water. *Economic Record*. <https://doi.org/10.1111/j.1475-4932.2010.00691.x>

²⁷ Wittwer, G. (2011a) Basin Plan CGE modelling using TERM-H2O. Report prepared for the Murray- Darling Basin Authority, Centre of Policy Studies, Monash University, Melbourne.

²⁸ Wittwer, G. (2011b). Confusing policy and catastrophe: buybacks and drought in the Murray–Darling Basin. *Economic Papers*. <https://doi.org/10.1111/j.1759-3441.2011.00122.x>

In 2010, the Wentworth Group put forward the case for water recovery to be linked with community development programs,²⁹ yet these recommendations were not adopted. Previous regional development programs have not been effective or well targeted.²⁴ The recent Productivity Commission review of Part 3 of the Future Drought Fund recommended it focus on programs that have a “lasting public benefit”.³⁰ There is a strong case for the Commonwealth Government to review its approach to community assistance and establish a ‘transition fund’ with clear criteria and goals developed in consultation with communities to improve their long-term sustainability and resilience.

Solutions include restructuring industries; providing assistance to businesses; assisting with labour markets and investing in new economic opportunities. A transition fund could invest in non-water infrastructure (energy, internet, education, transport), decentralisation of public services and regional development funds from which community groups can bid for projects. These initiatives could assist communities to adapt to changing markets, climate and demography. Irrigated agriculture regions align well with renewable energy zones (Figure 3) and may be suitable sources of cheap, reliable power through community grids. Such initiatives could diversify sources of local employment, income and economic development.

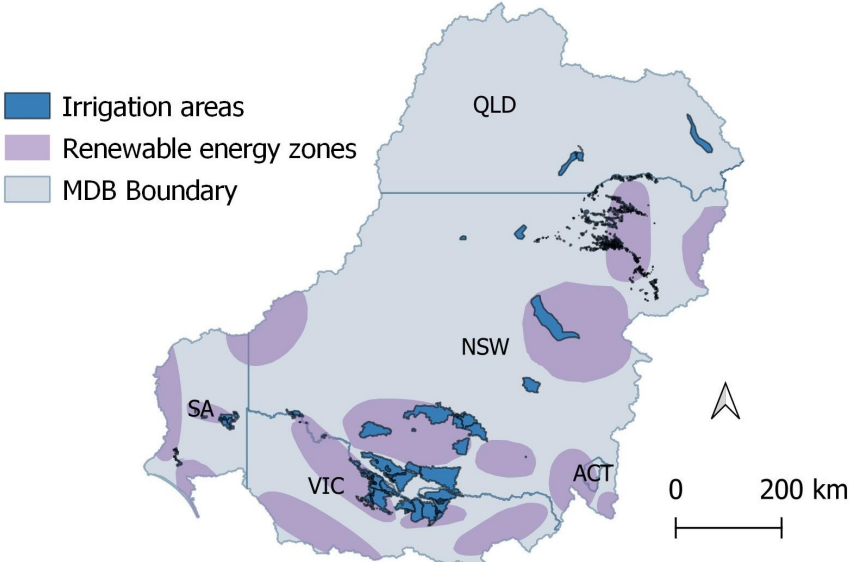


Figure 3. Indicative Renewable Energy Zones 2021, published by the Australian Energy Market Operator (AEMO),³¹ overlaid with Australian irrigation areas, 2013,³² within the Murray–Darling Basin.

Recommendation 6.1 – That the Commonwealth partner and collaborate with MDB communities to recover water in a way that optimises socio-economic benefits.

Recommendation 6.2 – That the Commonwealth establish a transition fund to address detrimental impacts on the wellbeing of any community in the Murray-Darling Basin associated with a water recovery project or purchase.

²⁹ Wentworth Group of Concerned Scientists. (2010). Sustainable diversion in the Murray-Darling Basin. Wentworth Group of Concerned Scientists. <http://wentworthgroup.org/wp-content/uploads/2013/10/Sustainable-Diversions-in-the-Basin.pdf>

³⁰ Productivity Commission (2023) Review of Part 3 of the Future Drought Fund, Inquiry Report, Report no. 102 – 8 September 2023, <https://www.pc.gov.au/inquiries/completed/future-drought-fund/report>

³¹ AEMO. (2021). Indicative Renewable Energy Zones 2021. Australian Energy Market Operator. <https://amsis-geoscience-au.hub.arcgis.com/datasets/b1e8003e917d467c9ff434c556fa8f62/explore>

³² ABARES. (2023). Australian Irrigation Areas (Vector), Version 1A, National Land and Water Resources Audit. Australian Bureau of Agricultural and Resource Economics and Sciences. <https://data.gov.au/dataset/ds-dga-3c934692-b670-4608-8f74-ee36583f74c1/details>

6.3. Improve town drinking water quality and security³³

Communities are regularly exposed to unreliable and unsafe water supplies. This has a range of impacts. Poor drinking water quality imposes major economic costs on households, including for filters, bottled water, replacement of appliances and fittings. Health costs are incurred by drinking unsafe water, and substituting with carbonated, high-sugar drinks. Lack of access to safe, secure water supplies creates stress and anxiety, as documented by the 2019 Citizen’s Inquiry into the Health of the Darling-Barka River.³⁴ and in research by the Dharriwaa Elder’s Group.³⁵

Droughts, floods, irrigation diversions and land use change undermine the capacity of water treatment plants to meet the Australian Drinking Water Guidelines. Residents of towns such as Walgett and Wilcannia have been forced to switch to poor quality bore water for extended periods of time. Dubbo and Orange have experienced boil water alerts and acute shortages. The social and economic costs of water insecurity are high and will only worsen under climate change.

The Basin Plan (s. 9.05) specifies objectives for minimising health risks and ensuring the aesthetic (smell, taste, colour) characteristics of drinking water are acceptable. These objectives align with agreement under the National Water Initiative to provide ‘healthy, safe and reliable’ supplies.¹⁷ Water service providers test treated water against a range of standards under the Australian Drinking Water Guidelines. The MDBA Basin Plan Evaluation tracks source water salinity, algal blooms and blackwater events. However, the absence of Basin-wide public monitoring or reporting of drinking water quality undermines the implementation of these objectives.

This situation is exacerbated by state-level deficiencies. For example, a review of drinking water monitoring in NSW found that in 2018-19 there was no detailed public reporting on drinking water quality for 42 NSW local council water providers in the Basin, covering 560,000 customers. Further, while NSW Health oversees testing for local council water providers, the data it collects is not publicly available.³⁶ Queensland lacks State-wide reporting, while local council providers are only required to report non-compliances, not water quality data. By way of contrast, there is a far greater degree of transparency in South Australia, with data reported by water characteristic, postcode, and suburb.³⁷

³³ The Wentworth Group would like to acknowledge the input and contribution of Paul Wyrroll to this section.

³⁴ Maloney, M., Boehringer, G., MacCarrick, G., Satija, M., Graham, M. & Williams, R. (2020). 2019 Citizen’s inquiry into the health of the Baaka/Darling River and Menindee Lakes. Report and recommendations. Australian People’s Tribunal for Community and Nature’s Rights, Brisbane.

<https://tribunal.org.au/sessions/2019-barka-darling-inquiry/> For testimonies of community members see: <https://tribunal.org.au/sessions/2019-barka-darling-inquiry/testimonies/>

³⁵ Tonkin, T., Deane, A., Trindall, A., Weatherall, L., Madden, T., Moore, B., Earle, N., Nathan, M., Young, S., McCausland, R., Leslie, G., Bennett-Brook, K., Spencer, W., Corby, C., Webster, J. and Rosewarne, E. (2023) Food and water for life. Key findings from the food and water security surveys in Walgett, Yuwaya Ngarra-li Community Briefing Report; Yuwaya Ngarra-li, Walgett. <https://tribunal.org.au/sessions/2019-barka-darling-inquiry/> Dharriwaa Elders Group and Walgett Aboriginal Medical Service (2023) Aboriginal organisations demand action: Walgett drinking water health threat. Media release, 13th April, 2023.

https://www.dharriwaaeldersgroup.org.au/images/downloads/130423_MEDIA_RELEASE_Walgett_Water.pdf

³⁶ Wyrroll, P.R., Manero, A., Taylor, K.S., Rose, E. & Grafton, R.Q. (2022). Measuring the gaps in drinking water quality and policy across regional and remote Australia. *Clean Water* <https://doi.org/10.1038/s41545-022-00174-1>

³⁷ Data SA (2023) Water quality. South Australian Government Data Directory, Government of South Australia, Adelaide. <https://data.sa.gov.au/data/dataset/water-quality>

Recommendation 6.3 – That the Water Act be amended to require:

- (a) The development of a Basin-wide mandatory public reporting framework that is consistent with the Australian Drinking Water Guidelines³⁸ to give communities confidence that water quality objectives in the Basin Plan are being met;**
- (b) Prioritisation of the upgrading of infrastructure under the expanded National Water Grid Authority remit to include domestic water security and quality;**
- (c) Improved management, monitoring and assessment to ensure quality and security of town water supply through a record-breaking drought.**

v. Prepare for a changing future

7.1. Ensure Australia’s water laws address impacts of climate change and support communities to adapt

Winter rainfall and streamflow in the southern Basin have declined by nearly 40% since the mid-1990s.³⁹ and the Basin has warmed by around one degree Celsius since 1910. The Basin is likely to experience significant changes in water availability due to human-induced climate change, particularly in the southern Basin where annual rainfall is projected to change by -11 to +5% by 2030. Any reduction in precipitation is likely to have significant impacts on water flows in rivers, in some cases driving a threefold reduction in runoff, with implications for water recovery under the Basin Plan. The MDBA estimated the reduction in river inflows over the past 20 years was almost 40%.³⁹ In the future there will be less water available for irrigation and the environment. There is an urgent need for Basin communities to adapt now to the effects of climate change and the prospect of more extreme weather and water availability.

The Basin Plan does not take into account to the impacts of climate change, nor is it responsive to climate change impacts.⁴⁰ The 3,200 GL target of water recovered for the environment under the Basin Plan was based on the historical climate (1896-2009), and will be insufficient to restore the long-term sustainability and health of important wetlands and rivers in the Basin, particularly in the absence of agreed mechanisms for climate change adaptation.

New approaches are required regarding the management of river flows in a changing climate. They need to include the use of likely future climate change projections (not just historical records) in water management, modelling and planning, rules to conserve and protect priority flows, the design and implementation of environmental triage for wetlands.⁴¹ and new arrangements to support communities to adapt to climate change. The delay in implementing the current Plan and the failure to address overallocation make this urgent task significantly harder. The consequence of failing to address climate change now is reduction of long-term water entitlement reliability, and the failure of water plans to function effectively through record-breaking droughts.⁴²

³⁸ see Section 3.10.2 on page 57 of National Health and Medical Research Council (Australia) (2022) *Australian Drinking Water Guidelines 6*. <https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines>

³⁹ MDBA. (2020). The 2020 Basin Plan evaluation. Murray-Darling Basin Authority, Canberra. <https://www.mdba.gov.au/sites/default/files/pubs/bp-eval-2020-full-report.pdf>

⁴⁰ Pittock, J. (2015) The Murray-Darling Basin Plan fails to deal adequately with climate change. Water. https://openresearch-repository.anu.edu.au/bitstream/1885/67496/2/01_Pittock_The_Murray-Darling_Basin_Plan_2015.pdf

⁴² DPE. (2023). Water sharing plan suspensions. NSW Department of Planning and Environment. <https://water.dpie.nsw.gov.au/plans-and-programs/water-sharing-plans/suspensions>

⁴² DPE. (2023). Water sharing plan suspensions. NSW Department of Planning and Environment. <https://water.dpie.nsw.gov.au/plans-and-programs/water-sharing-plans/suspensions>

Communities need more information and certainty about how governments are proposing to address climate change in the Basin Plan so they can prepare effective adaptation responses. This will require amendments to the Water Act and Basin Plan to more explicitly describe what is required prior to, and as part of considering climate change in the 2026 Basin Plan review.

This task cannot wait. As the effects of water scarcity under climate change become more acute, options for adaptation that are available now will not be available in the future.⁴³ Essential ecosystem services that communities rely upon for their livelihoods and wellbeing will be diminished in supply or no longer available under climate change.⁴⁴ Work to develop climate change adaptation strategies should commence immediately and as a matter of urgency.

- Recommendation 7.1 – Ensure the Water Act addresses impacts of climate change by:**
- (a) Amending Section 3, Objects, to add a new object to recognise and acknowledge the threat of the impacts of climate change to the communities, environment and industries of the Basin and the need for the immediate and urgent action in response.**
 - (b) Amending the Water Act to ensure the Basin Plan is required to provide immediate, urgent and adaptive responses to the impacts of climate change.**
 - (c) Requiring the ESLT to be updated in 2027, and regularly updated thereafter, to ensure that it is capable of achieving flow requirements for priority assets and functions under likely projected climate change scenarios.**
 - (d) Requiring the MDBA to review State water planning rules and practices to ensure objectives can be achieved under likely climate scenarios.**
 - (e) Requiring the Commonwealth to develop a ‘National Standard for Managing Water in Water in a Changing Climate’ and ensure that Basin States and Territory update their water planning and management rules to meet this standard as part of the WRP process.**

7.2. Address risks to the shared water resources of the Basin

Climate and other environmental changes are diminishing inflows of water into the rivers of the Murray–Darling Basin. In 2006, a CSIRO assessment estimated that by 2026, stream flow could be reduced by between 2,500 and 5,500 billion litres per year at a time when average stream flow was understood to be 24,000 billion litres per year (in other words, 10 to 23% less water).⁴⁵ A recent review found that few risk factors have decreased in significance, most remain and new risks were identified.⁴⁶

Reinforcing the significance of these reviews, in 2020 the MDBA reported that in the preceding two decades, inflows to Basin rivers had fallen by an average of 39% over the long-term.³⁹ Further, a 2020 Wentworth Group report found that in the preceding seven years that water flowing into South Australia

⁴³ Colloff, M.J., Gorddard, R., Abel, N., Locatelli, B., Wyborn, C., Butler, J.R.A., Lavorel, S., van Kerkhoff, L., Meharg, S., Múniera-Roldán, C., Bruley, E., Fedele, G., Wise, R.M. & Dunlop, M. (2021) Adapting transformation and transforming adaptation to climate change using a pathways approach. *Environmental Science and Policy* 124, 163–174. https://www.researchgate.net/publication/352705407_Adapting_transformation_and_transforming_adaptation_to_climate_change_using_a_pathways_approach

⁴⁵ van Dijk, A., R. Evans, P. Hairsine, S. Khan, R. Nathan, Z. Paydar, N. Viney, & L. Zhang. (2006). *Risks to the Shared Water Resources of the Murray-Darling Basin: Part II*. Canberra: Murray-Darling Basin Commission. <https://publications.csiro.au/rpr/pub?pid=procite:fa89ebbb-8274-415f-904c-f0809bfaa29e>

⁴⁵ van Dijk, A., R. Evans, P. Hairsine, S. Khan, R. Nathan, Z. Paydar, N. Viney, & L. Zhang. (2006). *Risks to the Shared Water Resources of the Murray-Darling Basin: Part II*. Canberra: Murray-Darling Basin Commission. <https://publications.csiro.au/rpr/pub?pid=procite:fa89ebbb-8274-415f-904c-f0809bfaa29e>

⁴⁶ Pittock, J., Corbett, S., Colloff, M.J., Wyrwoll, P., Alexandra, J., Beavis, S., Chipperfield, K., Croke, B., Lane, P., Ross, A. & Williams, J. (2023) A review of the risks to shared water resources in the Murray–Darling Basin, *Australasian Journal of Water Resources*, 27:1, 1–17. <https://doi.org/10.1080/13241583.2023.2190493>

was 22% below that expected, based on our assessment of MDBA’s models and excluding climate variability.⁴⁷

Risks to shared water resources come from climate change, greater transpiration from forest expansion, poor groundwater management, new water infrastructure, declining water quality and poor governance. Often responses to climate change exacerbate the loss of inflows to rivers, for example, storing more water in farm dams and pumping groundwater.

Two immediate threats to water resources are not currently sufficiently regulated. Firstly, the expansion of on farm water storages, notably “floodplain harvesting” dams in the northern Basin, are withholding vast volumes of water from rivers and there are insufficient safeguards to prevent floodplain extractions from compromising flow requirements.⁴⁸ Secondly, the boom in greenfields irrigated tree nut plantations in the southern Basin based on purchase of upstream water licences is negatively impacting both river flows and existing irrigation communities.⁴⁹

The current Basin Plan was prepared based on historic average water availability and no direct allowance was made for losses due to climate change or other risks.⁵⁰ Current government monitoring and modelling programs do not assess these risks well. Under the Water Act, the next review of the Basin Plan – due by 2026 – is meant to include an assessment of risks to shared water resources.⁵¹

Water managers must plan for a significant decrease in water availability in the Basin and governments need to actively manage and share these risks under conditions of increasing uncertainty.

Better monitoring, assessment, and regulation of risks to shared water resources would have modest costs. Understanding the scale and proactively managing the loss of water will enable more strategic decisions to limit the negative impacts on the environment and rural communities. Governments and communities need to make informed decisions as to how current and future losses are to be shared. A first step is to minimise the scale of water losses by better regulating inflow reduction activities, such as construction of new, on farm dams.

Recommendation 7.2 – Water security risks to the water resources of the MDB are mitigated and shared, through the following measures:

- (a) The Water Act is amended to require the MDBA for each Basin plan review and 5 years subsequently to: quantify projected losses of water due to climate change, transpiration from forest expansion, poor groundwater management, new water infrastructure and declining water quality; publicly propose how these losses of water may be shared; and publicly propose how risks to shared water resources may be better regulated.**
- (b) That the Commonwealth Government fund a research program dedicated to better understanding, quantifying, and defining management options for risks to shared water resources.**

⁴⁷ Wentworth Group of Concerned Scientists. (2020a). *Assessment of River Flows in the Murray- Darling Basin: Observed versus Expected Flows Under the Basin Plan 2012-2019*. Sydney: Wentworth Group of Concerned Scientists. <https://wentworthgroup.org/2020/09/mdb-flows-2020/>

⁴⁸ Brown, P., Colloff, M.J., Slattery, M., Johnson, W. & Guarino, F. (2022). An unsustainable level of take: on-farm storages and floodplain water harvesting in the northern Murray–Darling Basin, Australia. *Australasian Journal of Water Resources*. <https://doi.org/10.1080/13241583.2022.2042061>

⁴⁹ Davies, A. (2019, 26 May) Tough nut to crack: the almond boom and its drain on the Murray-Darling. *Guardian Australia* <https://www.theguardian.com/australia-news/2019/may/26/tough-nut-to-crack-the-almond-boom-and-its-drain-on-the-murray-darling>

⁵² Productivity Commission 2021, *National Water Reform 2020*, Inquiry Report no. 96, Canberra (pg122).

⁵² Productivity Commission 2021, *National Water Reform 2020*, Inquiry Report no. 96, Canberra (pg122).

(c) That the Commonwealth Government seek agreement of the States and Territory at the Basin Ministerial Council to place a moratorium / cap on expansion of on farm water storage and permanent crop plantings (orchards) as soon as possible. These caps could be administered by the institutions established to regulate the water entitlement markets.

vi. Enshrining Indigenous water rights and interests in national water laws

For more than 60,000 years, the Basin has been core to the cultural, social, and economic well-being of Indigenous peoples. However, colonial water planning and management has failed to recognise, acknowledge, and address the legitimate rights and interests of Indigenous People. This has resulted in Indigenous peoples owning a mere 0.2% of the volume of issued surface water and 0.02% of groundwater entitlements in the MDB.

Fundamental inadequacies of the current Water Act 2007 and Basin Plan 2012 include:

- The absence of any formal recognition of the Indigenous water rights and cultural interests of Basin Indigenous Nations in the objects of the Act.
- The absence of a requirement that water management decisions in the Basin must be made in accordance with Indigenous water rights and cultural interests of Basin Indigenous Nations.
- The absence of a requirement that cultural objectives are optimised in the release and use of environmental water.
- The absence of any provisions to give / recognise Basin Indigenous Nations ownership, control, self-determination and decision-making powers over the ownership, allocation and use water entitlements and allocations under the entitlements acquired by the Commonwealth for Basin Indigenous Nations.

Further, most jurisdictions 'routinely failed to identify and provide for Indigenous cultural values and objectives in water plans'⁵².

The Wentworth Group has sought the views of Indigenous experts and organisations to develop the recommendations below. We defer to Indigenous nations as the primary source of advice on the necessary reforms.

8.1. Give effect to the United Nations Declaration on the Rights of Indigenous Peoples within the Water Act 2007 (UNDRIP)

On 3 April 2009, Australia endorsed UNDRIP. However, the Water Act has not been updated to give effect to Australia's obligations under this declaration. The Bill is a clear opportunity to do so with several Articles in UNDRIP that directly relate to water and Indigenous people.

Recommendation 8.1 – That the Bill be amended to give effect to UNDRIP.

8.2. Amend the Water Act to explicitly provide for Indigenous rights and interests

While the Water Act and Basin Plan include requirements to consult with, or have regard to, Indigenous peoples and their values and uses, these provisions have failed to give rise to any meaningful change with

⁵² Productivity Commission 2021, *National Water Reform 2020*, Inquiry Report no. 96, Canberra (pg122).

respect to Indigenous rights and interests. Specifically, Basin states have failed to implement the basic requirements in WRPs (have regard to Indigenous values, uses, objectives and outcomes) under the Basin Plan Chapter 10 Part 14.

Recommendation 8.2 - Amending the Water Act to explicitly provide for Indigenous rights and interests, by the following:

- (a) Section 3, Objects, be amended to add a new object to recognise and acknowledge the unceded Indigenous rights to water under the Act and to make reference to the UNDRIP;**
- (b) Section 20, Purpose of the Basin Plan, be amended to add a new sub section by 'in particular providing for Indigenous rights and interests, and that section 20 paragraph (a) be amended to refer specifically to the UNDRIP;**
- (c) Section 21, General basis on which Basin Plan to be developed, be amended to add a new sub section which includes appropriate reference to Indigenous rights and interests;**
- (d) Section 22, Mandatory Content of Basin Plan Item 4 and Item 13, be amended to include appropriate reference to Indigenous rights and interests, and Paragraph 22(3)(ca) be amended to include more substantive requirements with respect to Indigenous rights and interests; and**
- (e) That further, more detailed amendments be made to provide for, *inter alia*, cultural objectives, cultural flows and water for Country.**

8.3 Support Indigenous nations to acquire more water entitlements

In 2018, \$40 million was allocated by the Commonwealth Government to purchase water entitlements for the Indigenous peoples of the Basin.⁵³ This is a small sum considering the price of water and investment in implementing the Water Act to date. No acquisition has occurred to date.

Recommendation 8.3 - Supporting Indigenous nations to acquire more water entitlements, by:

- (a) Amending Section 50 Review of the Basin Plan to add a Sub Section that specifically relates to Indigenous rights and interests including consideration of current Indigenous water ownership across the Basin, achievement of cultural flows and related targets.**
- (b) Amending Section 86AA to require 'cultural outcomes' (to be appropriately defined) to be optimised in the achievement of the objects of the WESA.**
- (c) Amending Section 86AD, purposes of the WESA, to also provide for Indigenous rights and interests and cultural outcomes and a scheduled minimum amount for this purpose, including possible future funding for further acquisition of water rights and entitlements.**

8.4. Expand Murray–Darling Basin Indigenous River Rangers Program

The expansion of the Indigenous River Rangers Program⁵⁴ would allow Basin Indigenous Nations to play a much greater role in the management of planned environmental water and protect river Country and connected aquifers. The employment of Indigenous River Rangers would provide an opportunity for Indigenous people to work on Country day to day and to contribute to the management and protection of the environmental and cultural values of the Basin.

⁵³ Jasper, C. (2023, 29 April). \$9m pledge to advance First Nations water rights in Murray-Darling raises concern over unfulfilled commitments. ABC News. <https://www.abc.net.au/news/2023-04-29/first-nations-groups-urge-progress-on-water-delivery/102273040>

Recommendation 8.4 – That in passing the Bill, Government in consultation with Basin Indigenous Nations, make an additional policy and funding commitment to maintain and extend the current River Ranger Program over the remaining period of the Basin Plan and that the upcoming Basin Plan Review examine options for establishing an ongoing program in recognition of the significant Indigenous Nations rights and interests in the management of the waters of the Murray-Darling Basin.

8.5. Enable Indigenous ownership and participation in water using industries

As noted above, Indigenous people in the MDB own a miniscule percentage of available water entitlements, with this being the product of colonisation, colonial settler water laws and associated water dispossession. This has undermined their ability to not only care for Country, but to derive economic benefit from water-dependent businesses and activities.

Recommendation 8.5 – That in passing the Water Amendment (Restoring Our Rivers) Bill 2023, Government in consultation with Basin Indigenous Nations, makes an additional policy and substantial funding commitment for the urgent acquisition of water entitlements for Basin Indigenous Nations over the remaining period of the current Basin Plan.

8.6. Update Water Resource Plans to contain all relevant Indigenous values, uses, objectives and outcomes and ensure states and territories are accountable if they fail to do so.

Despite strong local Indigenous opposition, the Commonwealth Minister accredited WRPs that did not contain all relevant provisions for Indigenous values, uses, objectives and outcomes. There is no mention of water for Indigenous Nations in the new agreement to deliver the Basin Plan, and only weak requirements for governments to “have regard to” Indigenous values and uses.⁵⁵ There is an urgent need to improve Indigenous ownership, engagement, and management of water in the Basin, and implement measures relevant for ‘closing the gap.’⁵⁶ There are little to no implications and accountability for governments that fail to meet the requirements of the Water Act or Basin Plan in this regard.

Recommendation 8.6 – That the Water Act / Basin Plan be amended to require that States, the MDBA and the Minister must act in accordance with the cultural values and interests of Basin Indigenous Nations in the development and accreditation of WRPs.

Recommendation 8.7 – That any WRPs yet to be accredited will be reviewed and updated to ensure that adequate regard is taken of the advice of Basin Indigenous Nations and of their cultural values and interests prior to being to being resubmitted and considered for accreditation.

Recommendation 8.8 - That current Murray–Darling Basin Authority’s State WRP accreditation process be halted and that all WRPs be withdrawn and reviewed to ensure that Indigenous values and uses are incorporated in consultation with relevant Indigenous Nations as required under Commonwealth and State Water Acts.

⁵⁵ Rigney, G., O’Donnell, E., Hooper, F., & Hartwig, L.D. (2023). Labours New Murray-darling Basin Plan deal entrenches water injustice for First Nations, *The Conversation*, 1 September 2023, <https://theconversation.com/labors-new-murray-darling-basin-plan-deal-entrenches-water-injustice-for-first-nations-212261>

⁵⁶ NIAA. (2021). National Agreement on Closing the Gap, National Indigenous Australians Agency, Canberra. <https://www.niaa.gov.au/indigenous-affairs/closing-gap>

Appendix A. Conditions to ensure supply measures projects are consistent with the Basin Plan.

Condition of Approval	Statutory Reference	Detail of proposed condition
1. Works-based projects must align with Basin Plan targets.	Basin-wide environmental watering strategy. ⁵⁷	Projects have agreed quantified environmental objectives that align with Basin Plan targets, as set out in Chapter 5, Schedule 5, Schedule 7 and the Basin-wide Environmental Watering Strategy.
2. All works-based projects must be assessed using a scientifically robust method.	Basin Plan S6.05	Works-based project are assessed using the Ecological Elements scoring method developed by CSIRO.
3. Any adjustment of the sustainable diversion limit must ensure that there is no change in flow indicators.	Basin Plan S6.07	Limits of change rules are satisfied as per clause 6.07 in Schedule 6 of the Basin Plan.
4. Sustainable diversion limit must not change by more than $\pm 5\%$ overall.	Basin Plan s7.19	Sustainable diversion limit is within the overall limits specified in section 7.19 of the Basin Plan.
5. Environmental risks must be mitigated to acceptable levels.	Phase 1 Assessment Guidelines for Constraint and Supply Proposals, Overarching Evaluation Criteria #4.	Environmental risks are mitigated to acceptable (low risk) levels, ensuring that: a) All risk mitigation measures are funded as part of the proposed project; b) The use of planned and held environmental water in addition to that required to fulfil ecological objectives, is not proposed as a risk mitigation measure; c) Projects are operated to avoid inundation at frequencies above natural levels; and d) Cumulative effects are assessed via strategic assessment under the Part 10 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
6. Project must be completed by 2026 and long-term governance arrangements must be secured.	Phase 1 Assessment Guidelines for Constraint and Supply Proposals, Overarching Evaluation Criteria #3.	Long-term governance arrangements are secured, specifically: a) Ownership and management responsibilities are clearly defined, and operations and maintenance are borne by the owner; b) Projects will be independently audited and periodically re-licensed; c) Funding is committed for ongoing operation, risk mitigation measures, long-term monitoring and auditing; d) Agreement is secured from landholders affected by the project; e) The Office of the Commonwealth Environmental Water Holder is capable of delivering the proposed environmental water regime, as modelled by the Authority (see Basin Plan Sch 6.06 (3)).

⁵⁷ MDBA, 2014. Basin-wide environmental watering strategy. Murray-Darling Basin Authority.

7. Environmental water must be able to reach works projects and the broader floodplain in the future.	Basin-wide environmental watering strategy ⁵⁷	Projects can operate in a natural way with all structures open during regulated and unregulated flows, and under a range of future water availability scenarios, incorporating an assessment of climate change impacts.
8. Any water savings from rules-based projects will be converted into a water entitlement.	Recommended in the SDL Adjustment Stocktake report commissioned by MDBA "Converting savings to licence entitlements is required to achieve a supply contribution" ⁵⁸	Any water savings (e.g. evaporative savings or operational loss savings) are converted into an equivalent volume of water entitlements by 2026.
9. Projects must deliver value for money.	<i>Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin</i> , and Phase 1 Assessment Guidelines for Constraint & Supply Proposals, Overarching Evaluation Criteria #2	Projects are cost effective, defined to mean an overall average of not more than \$1,900/ML.
10. Projects must be monitored to ensure outcomes are delivered.	Basin-wide environmental watering strategy ⁵⁷	Monitoring, evaluation and reporting arrangements are in place, specific to each project, to test the cause/effect hypothesis on which the project is based, manage risks and enable quantitative assessment of outcomes against agreed environmental objectives.
11. Constraints projects contribute to the Constraints Management Strategy, and flow rates as at 2012 are used as a benchmark to compare changes.	Constraints Management Strategy, Phase 2 Assessment Guidelines for Supply & Constraint Measure Business Cases #3.2.2	Constraints measures contribute towards the operational flow targets in the Murray-Darling Basin Authority's Constraints Management Strategy.
12. Pre-requisite policies proposed by states for managing environmental water must be configured in the model used to calculate an adjustment.	Basin Plan s7.15 (1) (ii)	Pre-requisite policy measures implemented by states for managing environmental water are configured into the SDL adjustment Benchmark model used to calculate the reconciliation amount.

⁵⁸ Martin, W. and Turner, G., 2015. SDL Adjustment Stocktake Report. Independent Report to the Murray-Darling Basin Ministerial Council: Canberra