Inquiry into the Water Amendment (Restoring our Rivers) Bill 2023

Submission by Environment Victoria, Nature Conservation Council of NSW, Conservation Council of South Australia and Queensland Conservation Council

Introduction

The Water Amendment (Restoring our Rivers) Bill 2023 provides an essential intervention to enable the delivery of the *Basin Plan 2012* (Cth) (**Basin Plan**). Perhaps most notably, it allows the Australian Government to, once again, use straightforward, cost-effective water purchases to set water aside for the rivers of the Murray-Darling Basin.

This is a necessary precondition for delivering the Basin Plan's most prominent objectives: its two water recovery targets. This includes 2750 GL (billion litres) to reduce historical over-extraction and 450 GL to offer a lifeline to the wider floodplain, including several internationally significant wetlands.

Progress toward these targets has been slow over the past decade because straightforward water purchases were not an available instrument. The alternative, water-saving infrastructure, proved far less effective due to drawn-out timelines, exorbitant cost and few remaining savings to be found.[1]

But while allowing reliable procurement mechanisms is necessary to recover more water, it is not sufficient to ensure the protection and restoration of Australia's largest river system – as the *Water Act 2007* (Cth) (**Water Act**) aims to.[2]

For example, on 1 July 2019, new diversion limits came into effect. Across 7 Basin catchments, 49.2 GL was due to be recovered to correct overallocation. Basin States were also required to prepare plans to ensure compliance with these limits. This water could have been purchased without encountering the legislated limit on buybacks. The Murray-Darling Basin Authority (**MDBA**) had clear power to 'step in' and conditions triggering their intervention to prepare the overdue plans.[3] Despite legislated requirements, available instruments and step-in powers, the deadlines passed.

Basin governments and institutions have had the power they need to deliver much of the Basin Plan. Yet policy remains 'locked in' to inadequate approaches, significantly constraining Basin Plan implementation and prolonging the 'high cost and contested nature of Australia's water reforms'.[4] Without new incentives and disincentives, there is no reason to believe legislated deadlines and step-in powers are sufficient to change the present state of affairs.

Beyond the failure to deliver the express objectives of the Water Act, participating governments have also perpetuated damage by omission. This has been most evident in the neglect of First Nations water rights. While some institutions have taken steps

[1] DCCEEW, 'First Review of the Water for the Environment Special Account,' pp 21-22.
[2] *Water Act 2007* (Cth) s 3(d)(ii).
[3] *Water Act 2007* (Cth) s 68.
[4] Marshall and Alexandra, 'Institutional Path Dependence,' p 698.

recognising Indigenous cultural rights, obligations on government must be clarified to respect sovereignty and territorial integrity.

This submission outlines additional accountability measures and assurance mechanisms on these two themes – ensuring the delivery of the Water Act's objectives and clarifying the duty to act, avoiding further damage by omission. This includes mechanisms to:

1. **Return water rights to Traditional Owners**, enabling each Nation to exercise their custodial responsibilities to care for the river system.

2. **Ensure timely and reliable water recovery,** recognising the slow progress acquiring water over the past decade and the opaque systems currently used to track progress.

3. **Realise the benefits of water recovered,** relaxing constraints on water delivery that keep water from supporting wetlands.

4. **Phase out failed experiments,** shelving controversial offset programs which claim to substitute flowing water.

5. **Fund community adaptation,** addressing economic issues thoughtfully and directly.

We would welcome the opportunity to speak further on these topics at the inquiry hearings.

On behalf of the Murray-Darling Conservation Alliance

environment victoria

Nature Conservation Council The voice for nature in NSW

Conservation Council SA

Queensland Conservation Council

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Scope of submission

The Water Amendment (Restoring our Rivers) Bill 2023 proposes several measures to enable the delivery of the Basin Plan. While some of these changes are discrete, others are deeply intertwined with other provisions of the Water Act. This submission provides suggestions for specific provisions, broader changes, policy settings and program commitments which support the aims of the amendment to implement the Basin Plan in full.

Interrelated provisions

For example, the bill would allow funds allocated through the Water for the Environment Special Account (**WESA**) to be used to recover water through open tender rounds. This change is fairly straightforward.

On the other hand, the bill would allow new held environmental water (**HEW**) entitlements to contribute to the same 450 GL target (s 7.08B). This provision carries risks: how are these entitlements to be defined? How will they be protected? In this case, claimed 'over-recoveries' can contribute to the target. Similarly, this provision carries risks: how are they calculated? Will these calculations be revisited?

One approach might focus on stronger definitions of discrete provisions, in this case, s 7.08B. But this commentary would fail to recognise the bigger picture: the risks that would mark new provisions already undermine existing efforts.

In other words, rather than suggest proposals to make new provisions air-tight, we have chosen to suggest proposals which would rebuild confidence and trust for both new and 'completed' water recovery efforts. In the case of new HEW entitlements, they are at risk of being over-estimated because of opaque accounting and modelling. But all water recovery to-date is at risk of being over-estimated because of opaque accounting and modelling.

Omissions

Other recommendations, as discussed above, are intended to address damage that has been perpetuated by omission. This has been most evident in the neglect of First Nations water rights. It is also evident in the neglect of updated climate predictions, and best available science, in the development of the Basin Plan.

These amendments propose delaying the Water Act review until 2027, ostensibly to ensure focus remains on the delivery of the Basin Plan – with many of its requirements delayed until 2026.

There have been numerous reviews, including those by the Royal Commission and Productivity Commission, which have highlighted the need for these structural reforms. There is no compelling reason why their implementation should be delayed until the 2027 review, particularly when delay will perpetuate additional damage.

Delivery of stated objectives

Finally, it should be acknowledged that the Basin Plan, which began as a bipartisan project, has long been limited by what is politically acceptable. Instead of being bound by the requirements of the Water Act, the Plan has been reduced to what can be achieved through political consensus, the lowest common denominator to survive political tensions and interstate rivalries.

These amendments are nested within this larger institutional context. Immediately, they sit within a package of Basin reforms – being the deal announced by Basin ministers in August. The 'Agreement of Murray-Darling Basin Ministers to Deliver the Basin Plan in Full' is, in turn, inset within the bounds and ambitions of Labor's five-point plan for the Murray-Darling Basin, released April 2022.

These recommendations take these policies at face value. For example, the first point of Labor's election promises commits to 'Working with Basin governments and stakeholders to deliver on water commitments, including the 450 GL of water for the environment.' The intergovernmental agreement aims to deliver this water by bringing 'all options on the table, including water purchases.' The amendments aim to deliver this promise with provisions to delay deadlines, remove limitations on purchases, allow new water products and add an additional independent review of progress.

If other elements of the Basin Plan provide any example, these provisions are insufficient to deliver the stated objectives. In these cases, we have provided recommendations for interrelated amendments and policy settings to deliver stated objectives.

Recommendations

Where possible, we have provided section numbers for potential amendments and sought to distinguish between recommendations for interrelated amendments, to be addressed in this review, and policy settings necessary to deliver stated objectives.

These policy settings, and broader programs, could be committed to in the course of these amendments or – at minimum – committed to in the lead-up to and terms of reference for the Water Act review.

Recommendations

Return water rights to Traditional Owners

1. ***Proposed amendment.*** Amend the objects (s 3) of the Water Act and general basis on which the Basin Plan developed (s 21) to explicitly recognise and promote the rights of Traditional Owners, including UNDRIP in the definition of relevant international agreements (s 4).

2. ***Proposed amendment.*** Update the basis for the development of the Basin Plan, including environmental watering and other plans (s 21) to require the MDBA and Minister to act consistently with the rights and interests of Traditional Owners. Further, require the MDBA and Minister to take into account, and act on the basis, of First Nations water knowledge and cultural science.

3. ***Program commitment.*** The delivery of cultural flows and management of water in its broader cultural landscape should be reviewed. This process should progress as a priority, prior to the Basin Plan review and the review of the Water Act.

4. ***Proposed amendment.*** Amend WESA to direct any surplus (s 86AH) to be applied for the benefit of First Nations rather than returned to the Consolidated Revenue Fund. Ensure that any combined land and water purchase is held and managed by First Nations or their nominated representative organisations, permitting the use of funds to deliver cultural flows (s 86AD).

5. ***Proposed amendment.*** Require SDLs to meet First Nations cultural objectives and watering requirements (s 23(1)) and require WRPs to include a program for the design and delivery of cultural flows, sufficient to improve the spiritual, cultural, environmental, social and economic conditions of First Nations.

Ensure timely and reliable water recovery

6. ***Proposed amendment.*** Additional measures (s 86AD), repeal of the purchase cap (s 85C) and an additional WESA review (s 86AJ) are insufficient. Add requirements to define quarterly milestones for water recovery and report quarterly on water recovery progress to the Department's existing reporting requirements (s 86AI). These reports from DCCEEW should be incorporated into the MDBA reporting process.

7. ***Proposed amendment and program commitment.*** Amend sections crediting water to WESA (ss 86AC, 86AG) and pending project agreements to utilise tranche funding for both Commonwealth recovery and Basin State programs, disbursed upon successful completion of project milestones. This should be subject to report recommendation, by the Inspector-General or an independent auditor (proposed new requirement in s 86AJ on WESA reporting and s 135R relating to audits),

assessing the delivery of interim objectives.

8. ***Proposed amendment.*** To prevent persistent problems from impacting new purchases (s 86AD), establish an independent commission to oversee water purchases. The commission should provide oversight of water valuation and assess the relevance of water rights to environmental requirements. This may operate as an intermediary or draw upon SDL compliance reporting functions (s 71), entitlement history and valuation (proposed new s 77A), functioning as an independent review group similar to those established in the Murray-Darling Basin Agreement (Schedule G, cl 29; Schedule F, cl 14).

9. ***Program commitment.*** Additional measures (s 86AD), repeal of the purchase cap (s 85C) and an additional WESA review (s 86AJ) and other reforms may prove insufficient to ensure the recovery of 450 GL. Implement the recommendation by the Royal Commission to re-determine the ESLT, on the basis of the best available scientific knowledge, such that the 450 GL target becomes redundant, incorporated into the Basin-wide resource unit SDLs.

10. ***Proposed amendment.*** Amend the Water Act to provide for open or third party standing to ensure beach of the Act can be remedied. This may require a new section on remedy or restraint of breaches of the Act.

11. ***Proposed amendment.*** Water recovered toward the 450 GL may vary over time, requiring assessment and conversion into a common unit (proposed new s 7.16A). Improve Sustainable Diversion Limit (SDL) accounting. Information should be kept on model runs to recreate and independently assess them. Controls which preserved the rigour and integrity of Cap models should be applied to the SDL. This may require several changes to the Water Act (such as s 23A), the Basin Plan (such as s 6 and Schedule 3) and may draw on Schedule E of the Murray-Darling Basin Agreement.

12. ***Proposed amendment.*** Considering challenges that may arise from accounting for new contributions (proposed new s 7.16A), require independent auditing of LTDLE or Cap factors. Claimed 'over-recoveries' should not contribute to the 450 GL target without a comprehensive review of SDL models and accounting. This could be included in the new Inspector-General functions (proposed new s 135R) and modelled on the work of the Independent Audit Group (**IAG**) (Murray-Darling Basin Agreement, Schedule E).

13. ***Proposed amendment and program commitment.*** Proposed changes for SDL compliance (Part 4, Division 1) do not sufficiently overcome water information problems. Conduct a water resource assessment to develop a better picture of water use and availability. This should lead to double-entry water accounting: where credits (inflows) equal debits (extraction, evaporation and other losses). This is necessary to provide consistent and reliable information to underpin the protection of water recovered for the environment. These functions could be

outlined in Part 7 of the Water Act, outlining water information and publishing of water accounts.

14. ***Proposed amendment.*** Confer a duty on the Inspector-General to conduct audits and publish reports, rather than a discretion (s 135R). Require Basin States to respond to guidelines and action plans under the Basin Plan rather than having regard to them (s 6.08). Provide standards for what constitutes a 'reasonable excuse' for exceeding permitted take by more than 20%, to enhance accountability.

15. ***Proposed amendment and program commitment.*** Considering challenges that may arise from accounting for new contributions (proposed new s 7.16A), preclude unreliable water recovery products until a broader assessment of water access rules is completed. Rules-based water recovery is easily subject to change by Basin States and depends on consistent Water Resource Plans. It is unclear whether the amendment proposes incorporating a range of water products as additional HEW entitlements. This may require amendment to the process by which water becomes Held Environmental Water (proposed new 7.08B).

16. ***Program commitment.*** Bring forward the CSIRO Sustainable Yields Project to assess the water in the system and how connectivity is likely to be impacted in a hotter, drier climate.

17. ***Program commitment.*** Conduct a stocktake of strategic water recovery opportunities. Voluntary compensated projects decommissioning irrigation infrastructure or supporting industry restructure may minimise third party impacts while allowing for the acquisition of larger volumes of water over shorter time periods.

Realise the benefits of water recovered

18. ***Proposed amendment.*** The proposed constraints relaxation implementation roadmap (s 7.08A) is insufficient to deliver the program. Add to this section the requirement for a review, appointing a panel of independent experts to find a workable pathway to constraints relaxation. This should include consideration of a wider range of options for landholders to participate, including time-limited easements and voluntary land purchases.

19. ***Proposed amendment.*** To deliver the constraints program, extend the proposed roadmap (s 7.08A) to a requirement for the Commonwealth to establish and maintain a fund to quickly respond to and manage unexpected outcomes for private landholders.

20. ***Proposed amendment.*** Proposed delivery of constraints remains at 31 Dec 2026, two years after the completion of the roadmap (s 7.08A). Further amend s 7 to set a deadline for agreements after which compulsory acquisition of easements should be undertaken. The Commonwealth should oversee the compulsory acquisition of land

in accordance with the Commonwealth Procurement Rules.

21. ***Proposed amendment.*** Give the CEWH and MDBA the mandate to operate. Allow the MDBA and CEWH to develop plans and deliver water at flow rates identified in the Constraints Management Strategy (s 30). Allow for the use of water for the environment to inundate private land (s 110).

Phase out failed experiments

22. ***Proposed amendment and program commitment.*** Time extensions should not be permitted for all supply measures (s 7.11). Amend s 7.12 and immediately withdraw funding from failing or stalled supply measures projects and commence water purchases in target valleys.

23. ***Proposed amendment and program commitment.*** Amendments concerning the reconciliation framework (s 7.15) allow BOC to consider another method. This should be further amended, to require updating the method, improving the reconciliation framework and process to ensure the supply contribution achieves equivalent outcomes. This should incorporate empirical evidence from implemented projects, accounting for environmental risks (e.g., salinity and blackwater), likely impacts of climate change and water availability on the ability to deliver stated outcomes, and an assessment of negative impacts from the offset on the wider floodplain. This updated framework should be reviewed by an independent expert panel.

24. ***Proposed amendment.*** New supply measures should not be permitted (s 7.12). Amend the section to prohibit additional supply measures which will divert resources and funds away from completing the constraints relaxation program and other projects intended to deliver flows for the benefit of the environment.

Fund community adaptation

25. ***Program commitment.*** Conduct an inquiry to disentangle the factors that characterise the perceived impact of water recovery. This includes the impacts of water reform (unbundling and financialisation of water rights), the Basin Plan (water purchase and adaptive management) and broader challenges (climate change risk, commodity prices, trade sanctions, mechanisation). Identify structural obstacles to reliable employment, income, education, decent housing and a high standard of living – and pathways toward diverse, resilient economies.

26. ***Program commitment.*** Establish a transition fund to assist impacted regional and rural communities with climate change adaptation.

Background

In 2007, at the peak of the Millennium Drought, then Prime Minister John Howard moved to assume responsibility for the deteriorating health of the Murray-Darling Basin (**the Basin**).

> *This is the Commonwealth assuming responsibility for a problem created by the states. We are willing to address the chronic overallocation of water in the Basin and to carry the entire cost of doing so…*
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> *All parties must recognise that the old way of managing the Murray-Darling Basin has reached its use-by date. The tyranny of incrementalism and the lowest-common denominator must end.*[5]

The Water Act aims to protect and restore the Basin in the national interest.[6] The values of the Basin extend well beyond the channel of the two rivers. The Basin consists of 77,000 kilometres of rivers and streams covering more than 14% of the continent. It contains over 6.3 million hectares of wetland ecosystems, several of which are afforded protection under international law.[7] It is home to 286 listed threatened species that depend on a reliable rhythm of flows.[8] These ecosystems have adapted to the cycle of drought and flooding rains over millennia, attracting migratory birds that travel from as far as Siberia to rest and feed in these unique wetlands.

It is a landscape that more than 40 First Nations have cared for over tens of thousands of years, and it that time did not damage the Basin in the way that settlers have in the last 250. More than three million people now live in and rely on the Basin for their livelihoods – and millions more are connected to the rivers and wetland through tourism and outdoor recreation. But decades of mismanagement and taking too much water has resulted in rivers running dry, toxic algae blooms, blackwater events and massive fish kills – attracting international attention for all the wrong reasons.

The Water Act

The Water Act and Basin Plan sought to correct decades of historical over-extraction. The Water Act begins by recognising explicitly that the rivers of the Basin are over-allocated and overused.[9] The fundamental tool it provides to address the problem is a scientifically assessed limit on the water that can be taken from rivers – set at a level that does not compromise the Basin's environmental values. This is an environmentally sustainable level of take (**ESLT**) reflected in a sustainable diversion limit (**SDL**) that caps extraction.

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[5] Howard, 'Address to the National Press Club.'
[6] *Water Act 2007* (Cth) s 3(d).
[7] Chen et al, 'A trickle, not a flood: environmental watering in the Murray-Darling Basin,' p 616.
[8] Ryan et al, 'Flow to nowhere,' database based on selection criteria.
[9] *Water Act 2007* (Cth) s 3.

This approach recognises that protecting and restoring freshwater ecosystems depends on restoring variable flows. These are the regular, smaller floods in winter and spring that provide connectivity and diversity in a riverine landscape. The river rises, spreading out across the floodplain through networks of flood-runners, filling billabongs and wetlands. The water sits, seeps, evaporates and returns to the channel, responding to the subtle topography of the landscape. These subtle variations are responsible for the mosaic of vegetation and habitat on the floodplain. This rhythm of flows (**flow regime**) provides cues for native fish movement, allows species to migrate into wetlands, attracts waterbirds to the wetlands to nest and breed, and eventually returns organic matter to the channel – the carbon that drives life in the river.

In a highly modified system regulated with dams and weirs, reducing extraction is not enough to restore connectivity and a natural flow regime. Instead, the approach relies on a 'designer flows paradigm'. This means that components of natural flow variability – like flood duration at a certain time of year – are 'assembled' through the strategic use of water that has been set aside for the environment.[10]

While the definition of environmental flows was initially based on the requirement for minimum low flows, it now includes several strategies for active management. For example, water that has been set aside for the environment can be used to augment releases from dams to create more-variable 'pulses,' or it may be 'piggy-backed' on top of natural stream flows to mimic larger natural events.[11]

The Water Act reflects this understanding. When rivers are grossly over-allocated, there is not enough water to maintain wetlands and rivers. Protecting these ecosystems requires simultaneously dialling back extraction from the historical baseline and protecting that water for environmental use. This water reserve can be used toward achieving passive components of the flow regime, like minimum flows, as well as more active management strategies, like pulses to mimic the timing, duration, and frequency of natural floods.

Flawed determination of targets

The quantity of water needed to deliver these outcomes reflects the difference between the historical baseline of extraction, the Baseline Diversion Limit (**BDL**) and the lower, more-sustainable limit (**SDL**). This is the **water recovery target**, which was set at 2750 GL. But because this target is insufficient, these components of the flow regime cannot be delivered.

It is well-established that in determining the Basin-wide ESLT, the MDBA 'failed to act on the best available scientific knowledge'.[12] The Guide to the proposed Basin Plan (2010) recommended water recovery in the range of 3000-7600 GL to protect biodiversity.[13] The

[10] Acreman et al, 'Environmental flows for natural, hybrid and novel riverine ecosystems,' p 468.
[11] Stewardson and Guarino, 'Basin-scale environmental water delivery,' p 971.
[12] Walker, 'Royal Commission Report,' p 54.
[13] MDBA, 'Guide to the proposed Basin Plan: Technical background,' p 115.

lower bound represents a 'high-uncertainty target' – the boundary 'beyond which there is a high likelihood that objects and targets will not be achieved'.[14]

The water recovery target was set without incorporating available data for climate impacts and was readily acknowledged as being insufficient to maintain key environmental assets and ecosystem functions that should characterise an ESLT.[15]

Gradual unravelling of targets

Over the past decade of Basin Plan implementation, the water recovery target has become increasingly convoluted and reduced in what has been characterised as a 'step-down effect,' the 'steady reduction in the volume of water to be returned from irrigators to the environment'.[16]

The 'step-down effect' was possible because the process has been subject to undue pressure from Basin States. This is due in part to the limited referral of power which brought components of the Water Act into force. While giving the Commonwealth the ability to act, it also provided Basin States the option to revoke that referral throughout the development of the Basin Plan. This threat has consistently been deployed to leverage concessions and delays.[17]

The development of water recovery targets was meant to be insulated from Ministerial influence and based on the best available science. But the process has proven to be neither transparent nor replicable. Instead, it was communicated repeatedly as a deal that had been negotiated by Basin States.[18]

Ecological consequences of delay

After years of delay, the MDBA has provided advice that the full implementation of the Basin Plan is not possible by June 2024.[19] But it is essential not to view this deadline elastically. River Red Gum forests require floods at least every three years for maintenance. Black Box woodlands require flooding every three to seven years for growth and flowering.[20]

Despite two successive La Niña years, waterbird populations have continued to significantly decline. 41% of wetlands observed in the extensive Eastern Australian Waterbird Aerial Survey supported no waterbirds,[21] while the total population has fallen by

[14] Ibid., p 98.
[15] Young et al, 'Scientific Review of the Estimation of an Environmentally Sustainable Level of Take,' p 28.
[16] Lyons et al, 'Towards a scientific evaluation of environmental water offsetting,' p 265.
[17] Environment Victoria, 'Debasing the Basin Plan,' p 5.
[18] Ibid., p 11.
[19] MDBA, 'Authority response to the Minister's request for advice,' p 2.
[20] Roberts and Marston, 'Water regime for wetland and floodplain plants,' pp 15, 49.
[21] Porter et al, 'Eastern Australian Waterbird Aerial Survey,' p 2.

as much as 90% in the last four decades.[22] Native fish populations have declined by more than 90% in the past 150 years,[23] while no adult Murray cod were detected in a recent comprehensive monitoring survey of the lower Darling-Baaka.[24]

The growing pressure of climate change will bring further hydrological stress: 'the restoration and management of hydrologically diverse flow regimes is essential to support flow-dependent ecosystems'.[25]

[22] Casben, 'Waterbird population has fallen as much as 90 per cent in Australia's east, shows 37-year study.'
[23] Morton and Readfearn, 'State of the environment.'
[24] NSW DPI, 'Preliminary report into the 2023 fish deaths in the Lower Darling-Baaka River,' p 7.
[25] Thiem et al, 'A protected flow breaks the drought for golden perch,' p 2.

Return water rights to Traditional Owners

The Basin is the ancestral domain for over 40 First Nations, but colonisation has left them with few rights over land and water.[26] The overallocation of the Basin and the bureaucratic control of the river are anchored in 'an ideology of domination of nature, inspired by colonial hydraulic feats' and predicated on the ongoing dispossession of First Nations.[27]

The consolidation of water resources and insulation of decision-making are deeply related – 'the ways flows of water are created or modified by water infrastructure are intertwined with flows of power and influence'.[28] The political and financial influence that has been accumulated in the water sector has been accumulated by dispossession – in a process that further damages Country, disempowers Traditional Owners in water management and denies them a share of the wealth made from their land. Until we address this history, any pursuit of reconciliation will remain out of reach.

Legal and policy reforms are needed to ensure First Nations Peoples have rights and can exercise their moral obligation to care for water under their law and customs. These reforms may be conceptualised within three tiers, or approaches[29]:

1. **Transforming the foundations of water governance,** putting First Nations at the centre of water management.

2. **Increasing First Nations influence over water landscapes,** including when and how water is released and how that water is protected.

3. **Water rights for First Nations,** strengthening control and decision-making over surface and groundwater.

Transforming the foundations of water governance

Cultural flows have been defined as water available 'to each Indigenous Nation to enable them to exercise their custodial responsibilities to care for the river system'.[30] Beyond water allocations, cultural flows depend on supporting foundations: governance frameworks, management structures and guiding principles that put First Nations at the centre of water management – honestly acknowledging self-determination. For many First Nations, this may require treaty or political agreements.

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[26] Hartwig, 'Trends in Aboriginal water ownership,' 1.
[27] Molle, 'Hydraulic Bureaucracies and the Hydraulic Mission,' p 328.
[28] Ibid., p 336.
[29] MLDRIN et al, 'A Pathway to Cultural Flows in Australia,' p 6.
[30] Jackson and Morrison, 'Indigenous Perspectives in Water Management,' p 31.

In its current form, the Water Act fails to further these interests. Traditional Owners have called for involvement in policy and decision-making as well as direct involvement in the management of rivers and Country. This is more than consultation – it means ensuring no decisions directly related to First Nations rights and interests are taken without their informed consent.[31]

International instruments like the United Nations Declaration on the Rights of Indigenous Peoples (**UNDRIP**), endorsed by the Australian Government in 2009, are a powerful way to ensure these key principles inform law and practice. UNDRIP sets out global rights and standards for the realisation and protection of self-determination.[32]

The Water Act must give effect to the UNDRIP principles to improve First Nations' recognition, procedural and substantive rights and import the legal standard of free, prior and informed consent in decision-making frameworks.

The Water Act primarily respects the Commonwealth's external affairs powers, outlined under s 51 (xxix) of the *Constitution*. In effect, it implements Australia's treaty obligations and various bilateral agreements. These include the Ramsar Convention, the Biodiversity Convention, the Climate Change Convention and other relevant international agreements.[33] The same external affairs power can be relied upon to make these amendments.

Recommendation 1. Amend the objects (s 3) of the Water Act and general basis on which the Basin Plan developed (s 21) to explicitly recognise and promote the rights of Traditional Owners, including UNDRIP in the definition of relevant international agreements (s 4).

Increasing First Nations influence over water landscapes

The Water Act sets weak standards for First Nations participation in decision-making. In most instances, they compel Basin States and the MDBA to 'have regard' to the views of Indigenous people. This is the weakest level of obligation – it does not require further outcomes or actions,[34] nor does it require supporting documents, as required for other water planning, demonstrating that requirements were met.[35]

In the South Australian Royal Commission into the Murray-Darling Basin Plan (**Royal Commission**), it was recommended that the Water Act should be amended to remove the words 'having regard to'.[36] The Commissioner found the requirement creates a 'clear

[31] Morgan, 'Indigenous Rights to Water in the Murray-Darling Basin,' p 6.
[32] Davis, 'Indigenous Struggles in Standard-Setting.'
[33] *Water Act 2007* (Cth) s 4.
[34] MDBA, 'Basin Plan Water Resource Plan Requirements Position Statement 1B,' p 1.
[35] MDBA, 'Basin Plan Water Resource Plan Requirements Position Statement 6A,' p 1.
[36] Walker, 'Royal Commission Report,' p 73.

danger' by avoiding 'any procedure requirements or safeguards, or creating any obligation to give any weight to the views expressed'.[37]

This consultation requirement has been primarily directed toward Basin States and the MDBA in the development and assessment of Water Resource Plans (**WRP**). These sit within a larger framework, locking in rules and coordinating the planning and delivery of water for the benefit of the environment. State WRPs protect water for the environment and provide for the use of water in a way that is consistent with larger strategies.

The planning framework for these larger strategies is extensive and complex. In the long-term, WRPs sit alongside regional long-term watering plans (**LTWPs**) prepared by Basin States and a Basin-wide Environmental Watering Strategy (**BWEWS**) prepared by the MDBA to guide watering at the Basin scale. Annually, these inform annual environmental watering priorities developed by the MDBA, complimented by annual regional priorities developed by Basin States.[38]

In some Basin States, the planning framework has additional and parallel elements. For example, seasonal watering priorities are developed at the catchment scale in Victoria, informing annual seasonal watering plans developed by the Victorian Environmental Water Holder (**VEWH**).

This is a high-level description of planning in a larger, adaptive management cycle for held environmental water (i.e. water reserved as discrete entitlements). This cycle includes: **planning** where and when water should be delivered; **decision-making** responding to water availability and site conditions; **delivery** dependent on shorter-term weather and flow conditions; and **monitoring, reporting and evaluation** of outcomes.[39]

The settler framework for water planning requires changes to recognise self-determination and to avoid further damage to the river system. It is well recognised that 'Indigenous people have a long and deep association with water and if water is to be sustainable managed in Australia, Indigenous people require a seat at the water planning table'.[40]

Recommendation 2. Update the basis for the development of the Basin Plan, including environmental watering and other plans (s 21) to require the MDBA and Minister to act consistently with the rights and interests of Traditional Owners. Further, require the MDBA and Minister to take into account and act on the basis of First Nations water knowledge and cultural science.

A more comprehensive framework is required for genuine First Nations involvement in environmental water management and planning. For example, the Victorian Government is developing guidelines for Traditional Owners to submit watering proposals directly to the

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[37] Ibid., p 488.
[38] MDBA, 'Basin-wide environmental watering strategy,' p 73.
[39] Productivity Commission, 'National Water Reform: Water entitlements and planning,' p 49.
[40] Moggridge and Thompson, 'Cultural value of water and western water management,' p 11.

VEWH.[41] In a report commissioned by the MDBA, other recommendations proposed amendments to overall environmental objectives to incorporate Indigenous ecological values and to disclose the methodology taken to give effect to consultation requirements – ensuring transparency and consistency in the treatment of First Nations input.

On the BWEWS, the Productivity Commission recommended the inclusion of an objective that environmental watering should seek to contribute to cultural outcomes.[42] Some work has been undertaken by the MDBA and Commonwealth Environmental Water Holder (**CEWH**) – the First Nations Environmental Water Guidance Project – to ensure First Nations people are involved in decision-making and their objectives are included in water planning. Some Basin States have included First Nations values in LTWPs,[43] some have included notably less substantive input.[44]

Efforts to include values, objectives, targets and requirements relevant to First Nations have been inconsistent and opaque. There is no shortage of First Nations-led research, including the Aboriginal Waterways Assessment (AWA) process, which provides direction for more genuine consideration of First Nations interests and ownership by First Nations people in the adaptive management cycle of environmental water. Similarly, watering plans like the partnership between Nari Nari Tribal Council (NNTC) and CEWH at Gayini Nimmie-Caira and the cultural water management plan to establish cultural flows on Tati Tati Country provide direction for policy and governance changes required for settler institutions.[45]

Future pathways could include transferring substantive responsibilities and powers to Traditional Owner entities, developing responsive arrangements between Traditional Owner entities and water institutions, integrating cultural water planning proposals into existing instruments and supporting Traditional Owners in design and delivery of water programs.

Recommendation 3. The delivery of cultural flows and management of water in its broader cultural landscape should be reviewed. This process should progress as a priority, prior to the Basin Plan review and the review of the Water Act.

Water rights for First Nations

The value of the water market in the Murray-Darling Basin is estimated to be greater than $16.5 billion.[46] The accumulation of this water began with the erroneous assumption of *aqua nullius*, that the water belonged to no one, and accelerated with the commoditisation

[41] DELWP, 'Water is Life: Traditional Owner Access to Water Roadmap,' p 10.
[42] Productivity Commission, 'Murray-Darling Basin Plan: Five-year assessment,' p 50.
[43] South Australian Department, 'Long-term environmental watering plan,' p 66-71.
[44] NSW DPI, 'Murray-Lower Darling Long-Term Water Plan,' p 31-32.
[45] O'Donnell, 'Cultural water and Indigenous water science,' p 621.
[46] Hartwig, 'The status of Aboriginal water holdings in the Murray-Darling Basin,' vi.

of water.[47] Today, while Indigenous people represent 5.3% of the total Basin population, Aboriginal entities in the northern Basin hold 0.11% of available water and 0.21% in the southern Basin.[48] These holdings are valued at $18.4 million.[49]

The Australian Government's 2018 and 2019 commitments to allocate funds for water purchase have not been delivered.[50] As the figures above illustrate, these funds are insufficient to address the inequity and disparity in water holdings.

Further, while parity of population and water holdings are illustrative of water distribution, this is not to say that it is an adequate measure for water justice. As described in the sections above, cultural flows can take multiple forms – 'Cultural Flows are about water and volumes of water, but not only about water and volumes of water'.[51] Nevertheless, additional reforms can provide meaningful changes for water access and ownership.

This legislation proposes several reforms to the Water for the Environment Special Account (**WESA**) aimed at removing unnecessary impediments to acquiring water for the environment. These can be extended to support First Nations water access.

Recommendation 4. Amend WESA to direct any surplus (s 86AH) to be applied for the benefit of First Nations rather than returned to the Consolidated Revenue Fund. Ensure that any combined land and water purchase is held and managed by First Nations or their nominated representative organisations, permitting the use of funds to deliver cultural flows (s 86AD).

Guaranteeing water for cultural objectives can also be achieved through other instruments in the Water Act. For example, the ultimate control by the Water Act to cap extraction is the sustainable diversion limit (**SDL**). This limit is required to reflect an environmentally sustainable level of take (**ESLT**), the level beyond which key ecosystem assets and functions are compromised.[52]

While these limits have been determined as Basin-wide, long-term averages, they have also been determined at the catchment level. The Water Resource Plans (**WRPs**), discussed above, ensure they are enforceable.[53] This framework provides another point of intervention.

Recommendation 5. Require SDLs to meet First Nations cultural objectives and watering requirements (s 23(1)) and require WRPs to include a program for the design

[47] O'Donnell, 'Cultural water and Indigenous water science,' p 619.
[48] Hartwig, 'The status of Aboriginal water holdings in the Murray-Darling Basin,' vi.
[49] Ibid.
[50] Burke, 'Media Release: Labor will get the Basin Plan Back on Track.'
[51] EJA, 'Margooya Lagoon: Establishing a Cultural Flows model on Tati Tati Country,' p 35.
[52] *Water Act 2007* (Cth) s 4.
[53] Hansard, 'Senate Estimates – 26 May 2023.'

and delivery of cultural flows, sufficient to improve the spiritual, cultural, environmental, social and economic conditions of First Nations.

Ensure timely and reliable water recovery

The Basin Plan's most prominent objectives are its two water recovery targets. This includes 2750 GL to reduce historical over-extraction and 450 GL to offer a lifeline to the wider floodplain, including several internationally significant wetlands.

As described above, progress toward these targets has been slow over the past decade. In fact, the majority of the 2100 GL contracted to date was recovered before the Basin Plan was adopted. In the late 2000s, the Restoring the Balance program facilitated the purchase of over 1000 GL in a 'no regrets' approach, anticipating that at least as much water would need to be acquired to meet pending limits on extraction.

The pivot away from straightforward water purchases toward water-saving infrastructure corresponds with the dramatic slow-down in water recovery.[54] Water efficiency projects are slow to implement, with some off-farm projects taking more than 14 years to complete.[55] Under existing policy settings, there are diminishing returns – there are few remaining savings to be found.[56] Projects are at least 2.5 times more expensive than water purchases,[57] and if the volume of water returned to the environment is as low as some studies suggest, they could be 25 times more expensive.[58]

But governments were aware of these shortcomings well before recent reports. In 2010, the Productivity Commission advised that achieving water savings through infrastructure upgrades would prove difficult, noting that it is 'rarely cost effective' because 'most of the 'low hanging fruit' has been picked' by previous programs.[59] The report advised that funds from the infrastructure program should be re-directed, using 'the buyback program as the sole means of easing the transition' to water recovery targets.[60]

This recommendation was not adopted by the Commonwealth. In the intervening years, over $4 billion has been spent on programs which the Australian Government had been made aware were poor value for money.[61] Regrettably, the approach was cemented in legislation and intergovernmental policy with the 1500 GL limit on water purchases,[62]

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[54] Whittle, 'Analysis of economic effects of water recovery,' p 3.
[55] DCCEEW, 'First Review of the Water for the Environment Special Account,' p 21-22.
[56] Ibid.
[57] Grafton and Wheeler, 'Economics of Water Recovery in the Murray-Darling Basin,' p 3.14.
[58] Williams and Grafton, 'Missing in action: Possible effects of water recovery on stream and river flows,' p 85.
[59] Productivity Commission, 'Market Mechanisms for Water Recovery,' XXII, XXIV.
[60] Ibid., XLIX.
[61] Grafton and Williams, 'Thirst for Certainty,' p 17.
[62] *Water Act 2007* (Cth) s 85C.

spending limitations for the Water for the Environment Special Account,[63] and socio-economic criteria[64] which excessively restricted existing legislation.[65]

It should not have been possible for governments to spend a decade and $4 billion on a manifestly inadequate approach with serious environmental consequences. Particularly one which advisory institutions had expressly advised against.

Ensuring timely and reliable water recovery requires:

1. **Assurance mechanisms to keep water recovery on track**

2. **Improved accounting to ensure water is reliable**

3. **Updated strategy to meet environmental needs and avoid impediments**

Assurance mechanisms to keep water recovery on track

The parochial objectives of Basin state governments have repeatedly influenced the design of the Basin Plan and constrained the possibilities for what can be achieved.[66] In fact, recognition of this dynamic was the impetus for the Water Act. Basin states had failed to deliver on Council of Australian Governments (**COAG**) commitments made in 1994 and 2004 to address overallocation, forcing the federal government to step in.[67]

Unfortunately, the design of the Basin Plan did not preclude this dynamic from continuing. Impediments were placed on water recovery to suit the vested interests of the irrigation sector, and were reinforced by governments in Basin States, often pursued under the guise of minimising socio-economic impacts.

Reports prepared for Basin governments have nevertheless consistently produced conclusions which should have assuaged these doubts. In 2010, the Productivity Commission found that 'a neutral, independent buyback actually assists (rather than impedes) adjustment processes'.[68] Another found that straightforward water purchases have limited – 'small if not neutral' – socio-economic impacts.[69] In 2018, Basin governments had postponed water recovery efforts while awaiting another socio-economic report. It

[63] *Water Act 2007* (Cth) s 86AD(2).
[64] MDBA, 'Murray-Darling Basin Ministers Meet in Melbourne.'
[65] *Basin Plan 2012* (Cth) s 7.17(2)(b).
[66] Environment Victoria, 'Debasing the Basin Plan.'
[67] Howard, 'Address to the National Press Club.'
[68] Productivity Commission, 'Market Mechanisms for Water Recovery,' XXXIII.
[69] Dwyer, 'Economic effects of the Commonwealth recovery programs,' p 28.

ultimately affirmed opportunities to recover water with neutral or positive socio-economic impacts – the report did not inform policy.[70]

By 2021, the imagined risks had left extremely limited options for water recovery on the table: dubious offset projects and limited, expensive off-farm water-saving infrastructure. The Royal Commission report commented that this approach is 'antipathetic' to the interests of the environment and makes the achievement of sufficient water recovery 'doubtful'.[71]

The approach is ineffective because it does not transfer water to the environment. This was in fact the intention of some Basin States. This was articulated explicitly in the Victorian Government's submission to the 2023 Productivity Commission Inquiry, stating the intention to prioritise options that do not require the transfer of Victorian entitlements to the environment or to the Commonwealth.[72]

The pivot from open tender purchases to irrigation infrastructure subsidies represents the willingness of previous governments to 'generate wealth transfers', with economists noting that 'water users are highly likely to react to these signals and adopt new technology; but only after holding out for a subsidy'.[73]

The Productivity Commission provided another articulation, stating that 'large subsidies to irrigators … are simply the price that needs to be paid to achieve reform. … But what the above analysis shows is that unless subsidies are kept to modest levels, the consequences are likely to be detrimental to the community as a whole. Subsidies not only transfer wealth from taxpayers to irrigators, they are also likely to lead to wasteful and inefficient investment'.[74]

The slow progress of water recovery makes clear that the strategy of 'purchasing' reform, at increasing taxpayer expense, has reached an impasse. A revised strategy requires new incentives and disincentives for Basin governments. In particular, it requires addressing the motivating factors maintaining these entrenched, ineffectual policy settings, including the insistence upon maintaining existing levels of use, rent-seeking for upgrades which infrastructure operators had previously accepted responsibility and the promise of funds and continuing employment within divisions of state water agencies.[75]

The previous regime of COAG water reforms had utilised a system of financial incentives – tranche payments which were conditional on implementation of water commitments.[76]

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[70] Ernst and Young, 'Analysis of efficiency measures in the Murray-Darling Basin,' p 21.
[71] Walker, 'Royal Commission Report,' p 62.
[72] Victorian government, 'Implementation of the Murray-Darling Basin Plan 2023: Information request,' p 32
[73] Adamson and Loch, 'Achieving environmental flows where buyback is constrained,' p 99.
[74] Productivity Commission, 'Market Mechanisms for Water Recovery,' p 140.
[75] Marshall and Alexandra, 'Institutional Path Dependence,' p 690.
[76] Heinmiller, 'Multilevel governance and the politics of environmental water recoveries,' p 68.

Payments for a package of programs, disbursed to both the federal water department, the Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) and Basin States, could ensure timely progress on water recovery.

This should begin with project planning. The proposed additional WESA Review to be undertaken by 30 September 2025 is insufficient.

Recommendation 6. Additional measures (s 86AD), repeal of the purchase cap (s 85C) and an additional WESA review (s 86AJ) are insufficient. Add requirements to define quarterly milestones for water recovery and report quarterly on water recovery progress the Department's existing reporting requirements (s 86AI). These reports from DCCEEW should be incorporated into the MDBA reporting process.

The tranche payments were acknowledged as playing a significant role in stimulating state water reform. Nevertheless, they were largely considered unsuccessful.[77] With a lack of independent intermediaries – institutions suited to withhold funding – the approach was constrained by the same intergovernmental politics.

This legislation moves to expand the powers of the Inspector-General of Water Compliance (**Inspector-General**), allowing for periodic audits by the Inspector-General or an appointed auditor – largely for the purpose of SDL adjustments and accounting (s 7.27(1)). These powers could be expanded to evaluate the progress reports described above.

Recommendation 7. Amend sections crediting water to WESA (ss 86AC, 86AG) and pending project agreements to utilise tranche funding for both Commonwealth recovery and Basin State programs, disbursed upon successful completion of project milestones. This should be subject to report recommendation, by the Inspector-General or an independent auditor (proposed new requirement in s 86AJ on WESA reporting and s 135R relating to audits), assessing the delivery of interim objectives.

Additionally, it is critical to ensure there is oversight of the purchase program. Previous strategic purchases have made notable missteps. For example, the Australian Government purchased 29 GL in the Condamine-Balonne for nearly $80m in 2017. Not only did the Commonwealth pay 85% more than the average price for more reliable water rights, but it paid 25% more than the seller's original asking price.[78] The purchase received additional scrutiny upon discovery that the Commonwealth did not raise concerns regarding potential conflict of interest, considering the seller was a corporation set up by then-Energy Minister Angus Taylor based in the Cayman Islands – though he had divested before entering Parliament.[79]

[77] Ibid.
[78] Slattery and Campbell, 'That's not how you haggle,' p 3.
[79] Slattery and Campbell, '#WaterMates,' p 2.

In 1996, the Independent Audit Group (**IAG**) was established to establish and review the implementation of the Cap, ensuring water use was not exceeded in Basin valleys. The IAG also audited the implementation of the *Living Murray Intergovernmental Agreement* and identified risks to the achievement of project objectives.[80] A similar, expanded institution should be established to provide timely advice on water purchases. Moreover, it might oversee spending from the WESA initiatives that are not necessarily related to water recovery (s 86AD(2)(a)).

Recommendation 8. To prevent persistent problems from impacting new purchases (s 86AD), establish an independent commission to oversee water purchases. The commission should provide oversight of water valuation and assess the relevance of water rights to environmental requirements. This may operate as an intermediary or draw upon SDL compliance reporting functions (s 71), entitlement history and valuation (proposed new s 77A), functioning as an independent review group similar to those established in the Murray-Darling Basin Agreement (Schedule G, cl 29; Schedule F, cl 14)

If a planned program with refined incentives does not succeed in water recovery, other options, which may ultimately prove more equitable, have been outlined in the past. These include the compensated reduction of extraction licenses – an across-the-board acquisition of certain water rights – or an across-the-board pro-rata purchase, evenly shared across industries.[81]

Significantly, it remains the case that the 450 GL is considered an 'additional' or 'optional' target that is not subject to the same rigour as the 2750 GL necessary to comply with the SDL. This is unacceptable, requiring further changes to the Water Act and Basin Plan to guarantee the recovery of the 450 GL – effectively bringing the total recovery target to 3200GL.

A 3200 GL target is necessary to 'reduce the number and duration of consecutive years where salinity thresholds are exceeded', determining the health and quality of habitat of the Coorong.[82]

To deliver the 450 GL the Royal Commission recommended re-determining 'the environmentally sustainable level of take (**ESLT**), and consequently amending the Basin Plan provisions relating to the Basin-wide resource unit SDLs, such that the additional 450 GL becomes redundant'.[83]

Recommendation 9. Additional measures (s 86AD), repeal of the purchase cap (s 85C) and an additional WESA review (s 86AJ) and other reforms may prove insufficient to ensure the recovery of 450 GL. Implement the recommendation by the Royal

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[80] Scanlon, 'A hundred years of negotiations with no end in sight,' pp 6, 9, 18.
[81] Young, 'Is there a place for an across-the-board purchase?' p 2.
[82] Higham, 'An analysis of MDBA modelling outputs for the draft Basin Plan,' ii.
[83] Walker, 'Royal Commission Report,' p 48.

Commission to re-determine the ESLT such that the 450 GL target becomes redundant, incorporated into the Basin-wide resource unit SDLs.

Finally, it is worth reiterating that many of the requirements of the Water Act and Basin Plan have not been enforced. This has been the case even where provisions are justiciable – where it appears Ministers and their delegates do not have broadly drafted powers.

This may be addressed with third party standing, or open standing, which ensures there are not restrictions on who can take legal action and on what basis. This is 'particularly important given the virtual impossibility of obtaining a writ of mandamus compelling the government to enforce its own laws'.[84]

An example of open standing can be found in the *Protection of the Environment Operations Act 1997* (NSW) s 252 which provides for the right of any person to bring proceeding for an order to remedy a breach of the Act.

Recommendation 10. Amend the Water Act to provide for open or third party standing to ensure beach of the Act can be remedied. This may require a new section on remedy or restraint of breaches of the Act.

Improved accounting to ensure water is reliable

Over the past decade of Basin Plan implementation, the CEWH portfolio has grown to include 2,889 GL of entitlements with a long-term annual average yield of 2,001 GL.[85] In the last water year, 1,515 GL was allocated against these entitlements.

The mismatch between these figures arises because not all water rights are equal. There are over 150 different classes of water rights across the Basin. Some depend on specific seasonal conditions while others are managed to deliver reliably.

The long-term annual average yield is how water is accounted against Basin Plan targets. These assign a long-term diversion limit equivalent (**LTDLE**) factor, or **Cap factor** to entitlements – using historical patterns to provide an exchange rate for different water products. While this provides an accounting system, allocations arise from a seasonal determination process – based on inflows, predicted inflows and how recent years have impacted outstanding obligations. While **entitlements** confer a legal right to use water, **allocations** represent the water actually available to use or trade.

Generally, the interface between these two processes – water accounting and the volume of annual permitted take – has been fraught. This is due, in part, to the inherent difficulty of the process.

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[84] EDO, 'Submission to the Productivity Commission on the National Water Reform Inquiry,' p 15
[85] CEWH, 'Environmental Water Holdings.'

Models are developed to consider historical climate variability while representing river management and operational rules and environmental flow processes. Models are calibrated for reaches of the river, analysing its ability to replicate flows at the downstream gauges.

This is an iterative process. As knowledge of the hydrology – the flow processes – of the system improves, the model and estimates of key figures are updated to reflect the best available information. This means that none of the Basin Plan's quantitative limits are set in stone. As new information feeds into the model, the Baseline Diversion Limit – or historical level of take – is re-assessed. The Sustainable Diversion Limit for each resource unit is revised to reflect proposed water recovery targets.[86]

The decision by the MDBA to maintain a constant relationship between the BDL and SDL creates risks. For example, if the BDL is re-assessed, estimating a higher level of historical take, then the SDL will also increase – both theoretically pivoting around the 2750 GL water recovery figure. An increase to the SDL changes the balance of water in the system – the environment's share and the annual permitted take allowed for consumptive use.

Because the SDL can be changed at any time with new information, without community consultation or Parliamentary scrutiny, it has been increased by 331.2 GL.[87] This increases allowable take, undermining the security of water that has been recovered for the benefit of the environment.

Recommendation 11. Water recovered toward the 450 GL may vary over time, requiring assessment and conversion into a common unit (proposed new s 7.16A). Improve Sustainable Diversion Limit (SDL) accounting. Information should be kept on model runs to recreate and independently assess them. Controls which preserved the rigour and integrity of Cap models should be applied to the SDL. This may require several changes to the Water Act (such as s 23A), the Basin Plan (such as s 6 and Schedule 3) and may draw on Schedule E of the Murray-Darling Basin Agreement.

Opaque modelling should also subject claims of 'over-recovery' to additional scrutiny. Like model runs, cap factors, the long-term exchange rates for water rights, have been changed repeatedly. In the Macquarie valley, they have been revised several times without independent verification – or disclosure on how they were determined.[88] In effect, this allows for an over-estimation of water that has been recovered – claiming that water delivers more reliably than it does.

The legislation proposes new measures to be used to deliver the 450 GL. These include water purchases, land and water packages as well as transferring claimed 'over-recoveries' from other targets. These transfers are not well-founded.

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[86] Jakeman et al, 'Independent Review of the Source Model,' p 7
[87] Slattery and Johnson, 'Submission to the Murray-Darling Basin Plan,' p 8.
[88] Slattery and Johnson, 'Water recovery and 'over recovery,' p 4

Recommendation 12. Considering challenges that may arise from accounting for new contributions (proposed new s 7.16A), require independent auditing of LTDLE or Cap factors. Claimed 'over-recoveries' should not contribute to the 450 GL target without a comprehensive review of SDL models and accounting. This could be included in the new Inspector-General functions (proposed new s 135R) and modelled on the work of the Independent Audit Group (IAG) (Murray-Darling Basin Agreement, Schedule E).

These problems have been expressed in Basin-wide accounting imbalances. There has been a significant disparity between the water expected each year under the Basin Plan and actual river flow at key sites. Concerningly, 20% of the water expected was not received.[89] This shortfall may be attributed to drier than expected conditions, higher conveyance requirements because of those conditions or because of large irrigation orders further from storages, inadequate rules protecting environmental flows and improper accounting.

It is not currently possible for decision-makers to understand with reasonable certainty how much water is available, how much is being used and where. The inability to validate assumed flow against observed data is further complicated by the likely overestimation of water recovery from water-saving infrastructure projects which 'do not 'save water' per se – they merely have the effect of redistributing water in space and time'.[90] Further, water accounting is likely undermined by improperly calculated Cap factors. As described above, some entitlements may be artificially inflated – they may yield less than they have historically.

Ultimately, reconciling this disparity requires a comprehensive assessment of water resources to develop a better picture of water use and availability. This would include a full disclosure of water balance by valley, enhancing reporting on inflows into rivers and dams, end-of-system flows and evapotranspiration. It would also more-comprehensively assess extractions, interceptions and on-farm storage capacity – which has increased 2.5 times since the introduction of the Cap on diversions.[91] The assessment might also draw upon reporting on irrigated agricultural production to verify water use. This could rely on satellite imaging as well as information collected by the Australian Bureau of Statistics (**ABS**) and Australian Bureau of Agricultural and Resource Economics and Sciences (**ABARES**). This assessment could be prepared by enhancing current reporting by the Bureau of Meteorology (**BOM**).

The new amendment enabling the Commonwealth to request information about the history of a water access entitlement (s 77A) may enable this process. But just as critically, the reforms above are essential to avoid the application of this provision to unvalidated claims of 'underuse' that may further undermine the integrity of the CEWH portfolio.

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[89] Wentworth Group, 'Assessment of river flows,' i.
[90] Crase et al, 'The Fluctuating Political Appeal of Water Engineering,' p 446.
[91] Brown et al, 'An unsustainable level of take,' p 43.

Recommendation 13. Proposed changes for SDL compliance (Part 4, Division 1) do not sufficiently overcome water information problems. Conduct a water resource assessment to develop a better picture of water use and availability. This should lead to double-entry water accounting: where credits (inflows) equal debits (extraction, evaporation and other losses). This is necessary to provide consistent and reliable information to underpin the protection of water recovered for the environment. These functions could be outlined in Part 7 of the Water Act, outlining water information and publishing of water accounts.

This package of reforms would link water models to improved water accounts, ensuring an accurate picture of water in the system and how much different water rights are worth over the long-term (i.e. their reliability). Independent reports on modelling performance, public disclosure of changes and independent auditing of results would minimise the risk of arbitrary changes over-valuing water recovered on paper – and consequently allowing over-extraction of water flowing through the river.

In effect, it would ensure the SDL, the ultimate quantitative control imposed by the Water Act, functions as an effective limit.

Finally, these reforms would benefit from stronger duties conferred on the Inspector-General. As proposed, this legislation gives the Inspector-General the discretion to conduct audits and publish reports, publish guidelines and assess compliance. These could be improved in several respects.

Recommendation 14. Confer a duty on the Inspector-General to conduct audits and publish reports, rather than a discretion (s 135R). Require Basin States to respond to guidelines and action plans under the Basin Plan rather than having regard to them (s 6.08). Provide standards for what constitutes a 'reasonable excuse' for exceeding permitted take by more than 20%, to enhance accountability.

In the 2020 water year, the New South Wales government made a reasonable excuse claim, citing the failure to adequately calibrate its model to account for new meters.[92] With opaque modelling described above, these problems have the potential to create self-reinforcing feedback loops.

Updated strategy to meet environmental needs and avoid impediments

Challenges to infrastructure-based approaches to water recovery

[92] NSW DPIE, 'Reasonable Excuse Report,' p 1.

Open tender water purchases have long-been acknowledged as the most reliable, cost-effective method for water recovery.[93]

Nevertheless, infrastructure-based solutions have been contemplated since Prime Minister Howard first announced his intention to legislate the *Water Act* as part of the National Plan for Water Security. Options included on-farm water efficiency infrastructure, as well as targeted, strategic rationalisation through irrigation authorities. This included the contraction of channel networks by closing parts of the distributions system while modernising the 'backbone,' or abandoning some assets altogether.

The risks of this approach were identified just as early. Projects financed under the Living Murray initiative had cost nearly 40% more than market-based measures.[94] It is well-documented that if investments do not meet basic cost-benefit criteria for water saving, they delay the adjustment irrigation areas will inevitably face. In other words, they can lead to 'gold plating' assets that may subsequently become stranded while perpetuating a dependence on increasing external support – imposing substantial costs elsewhere.[95] In effect, infrastructure investment may create an imperative to sustain the viability of those assets while perhaps neglecting more difficult, structural reforms.

Further, before the Basin Plan was signed into law, economists described water-saving infrastructure approaches as an egregious subsidy to irrigators at a huge loss to taxpayers because it was 'such an expensive way to solve a problem'.[96] Experts confirmed there was no evidence of significant water savings and discounted claims that such projects would ensure food security as an 'absolute furphy'.[97]

Studies considering the claimed flow-on benefits of these programs reveal that those advantages are merely speculative. Efficiency projects are relatively fruitless in terms of job creation, with modelling revealing that 'each dollar spent on human services creates four times as many jobs within the Basin as infrastructure upgrades spending'.[98] These projects also push up the price of water as beneficiaries have higher returns per megalitre and consequently more buying power. The step-up in demand is estimated to have increased water use across participating farms by 23%, increasing prices more than a program focused on purchases would have.[99]

Rules-based (administrative) changes provide another set of challenges. This approach is typically sought in unregulated catchments, where entitlements are not released from larger storages. In these systems, rules can be used to provide minimum base flows. For example, using 'cease to pump' conditions to ensure water passes downstream for

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[93] Productivity Commission, 'Market Mechanisms for Water Recovery,' XLIX.
[94] Ibid., XXXIV.
[95] Ibid., XXXV.
[96] Fyfe, 'Brumby's water plan savaged.'
[97] Ibid.
[98] Witter, 'Modelling variants of the Murray-Darling Basin Plan,' p 18.
[99] Whittle, 'Analysis of economic effects of water recovery,' p 7.

environmental purposes.

Challenges of rules-based approaches to water recovery

But rules-based approaches require simultaneous changes to state policy, shepherding water across trading zones and borders. In absence of these provisions, flows intended to benefit the length of the river can be pumped in certain jurisdictions. This problem was exemplified in the 2012 Barwon-Darling Water Sharing Plan, which removed pumping restrictions and allowed individuals to take 300% of their allocation in any year, effectively accumulating debt from the river. The process reversed several rules which collectively kept extractions below the Cap.

Similarly, water needs to be protected from capricious, unaccountable redirection by Basin States during dry periods. In Victoria, for example, the environment's share of available water is subject to temporary 'qualification', or redirection, by the Minister during times of shortage.

For rules-based approaches to contribute reliably to water recovery targets, it would be necessary to implement the accounting recommendations described above – ensuring a reliable level of annual permitted take and an accurate assessment of the water in the system. Further, it would depend on an assessment and revision of water access rules in Basin States which could circumvent these protections. Finally, it would require the use of flow targets based on the best available science, responsive to climate impacts and triggering enforceable limits on extraction until the environmental watering requirements of each catchment are met.

Recommendation 15. Considering challenges that may arise from accounting for new contributions (proposed new s 7.16A), preclude unreliable water recovery product until a broader assessment of water access rules is completed. Rules-based water recovery is easily subject to change by Basin States and depends on consistent Water Resource Plans. It is unclear whether the amendment proposes incorporating a range of water products as additional HEW entitlements. This may require amendment to the process by which water becomes Held Environmental Water (proposed new s 7.08B).

Ensuring rules-based recovery responds to climate impacts and environmental water requirements points to the need for a broader assessment. In a hotter, drier climate, both held environmental water (**HEW**) which is part of a licensed entitlement, typically released from dams, and planned environmental water (**PEW**), which is typically based on flow rules, are likely to become less reliable.

The challenge becomes more pronounced considering what can be achieved with water in a hotter, drier climate. This is partially the result of higher rates of evaporation and warmer

conditions, but also an effect of the reduced size of regular, natural flow events that water managers use for 'piggy-backing' environmental flows.[100]

Understanding how altered flow regimes and climate change are affecting wetlands across the Basin might begin with an update of the Sustainable Yields Project, which is assessing the likely impacts of climate change on surface water and groundwater in the Basin. In practical terms, it might look to establish the water in the system with a greater focus on connectivity. This means illustrating the ongoing requirements to achieve lateral (overbank), longitudinal (end-of-system flows) and vertical (groundwater interaction) connectivity in a range of climate scenarios.

Recommendation 16. Bring forward the CSIRO Sustainable Yields Project to assess the water in the system and how connectivity is likely to be impacted in a hotter, drier climate.

The difficulty of these reforms should point to the value of prioritising HEW for water recovery efforts. Ultimately, Basin-wide restoration requires multiple efforts working in tandem. Held environmental water is necessary to provide active management, replicating components of a more-natural flow regime. Rules-based (administrative) changes are often critical for providing minimum flows. Complementary measures play a role enhancing these outcomes. But flow variability is the essential driver of ecological condition for flow-dependent flora and fauna in the river and across the floodplain. In a heavily altered system, the needs of these species can now only be met through managed environmental flows.[101]

Strategic water purchases to avoid short-term shocks

Changing market conditions have fuelled speculation about what is possible to achieve with water purchases. For example, while the number of entitlement trades is increasing, the average parcel size is decreasing.[102] This has been used by some commentators as an indicator of the diminishing appetite for trade, the limited potential for water purchases and the outsized effect they may have on prices.

Nevertheless, it has also been acknowledged by active investors that larger parcels are typically only available when land and production assets are offered for sale.[103] This should draw attention to the role of off-market water exchange. It may also highlight how farms are restructuring now, at a pace that is not ideal for rural communities – but water rights are flowing to large agribusinesses and institutional investors rather than correcting systemic overallocation.

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[100] Horne et al, 'Kaiela Environmental Flows Study,' p 4.
[101] Ryan et al, 'Flow to nowhere,' p 1411.
[102] Aither, 'Australian Water Markets Report,' p 31.
[103] Duxton, 'Explanatory statement to notice of general meeting,' p 20.

Strategic purchases have been recommended in several instances, most notably in the Independent Assessment of the 2018-19 fish deaths[104] and the NSW Natural Resource Commission's review of the Barwon-Darling Water Sharing Plan.[105]

Recommendation 17. Conduct a stocktake of strategic water recovery opportunities. Voluntary compensated projects decommissioning irrigation infrastructure or supporting industry restructure may minimise third party impacts while allowing for the acquisition of larger volumes of water over shorter time periods.

[104] Vertessy et al, 'Independent assessment of the 2018-19 fish deaths,' p 74.
[105] Natural Resource Commission, 'Review of the Water Sharing Plan for the Barwon-Darling,' p 384.

Realise the benefits of water recovered

The governance and institutional arrangements for the Basin Plan present a number of significant risks. But these have been particularly evident in the implementation of the constraints relaxation program. These address both physical constraints, like low-lying bridges, roads and private land that would be flooded at higher flows, as well as operational constraints, like rules and practices for the MDBA and other infrastructure operators. In effect, they allow larger pulses of water which inundate the low-lying floodplain below minor flood levels – enabling recovered water to reach wetlands downstream.

Relaxing constraints on river flow is essential. Without these projects, 'achieving so-called enhanced environmental outcomes will either not happen, or will result in limited outcomes'.[106] These projects are also essential to realise the greatest benefit from water that has been recovered. The failure of state governments to implement these measures has, in the broader water management context, meant that only 7% of the wetland area in targeted river valleys is receiving effective environmental flows.[107]

They also provide notable benefits, including forward planning for infrastructure to protect communities from larger floods as well as more sophisticated early warning systems. The physical works needed to make roads and bridges accessible in smaller environmental flows will prove beneficial in larger, unplanned events. Similarly, updated modelling and measurement, incorporating observations from flooding, will provide a better understanding for how water will flow across the landscape.

Unfortunately, changes to proposals on tributaries like the Goulburn, as well as the slow rate of progress on projects across the board, indicates 'the appetite for ambitious constraints relaxation projects by state governments appears to be relatively low'.[108] While a range of instruments and options are available, governments have proposed that easement sales allowing water to flow over the lowermost floodplain remain voluntary.[109] This allows individual landholders to block the delivery of the program.

Recommendation 18. The proposed constraints relaxation implementation roadmap (s 7.08A) is insufficient to deliver the program. Add to this section the requirement for a review, appointing a panel of independent experts to find a workable pathway to constraints relaxation. This should include consideration of a wider range of options for landholders to participate, including time-limited easements and voluntary land purchases.

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[106] Walker, 'Royal Commission Report,' p 60.
[107] Chen et al, 'A trickle, not a flood,' p 601.
[108] Kahan et al, 'Using an ecosystems approach to reframe the management of flow constraints,' p 12.
[109] Pittock et al, 'Evidence-Based Conservation of the Northern Victorian floodplains,' p 113.

It is worth recognising that the constraints program and enhanced environmental water delivery (**EEWD**), a broader initiative to predict and coordinate flows, continue to evolve. In Victoria, for example, feasibility studies are being undertaken, project scope is being refined, and prototypes for implementation are in development. For several years, the Victorian government has also been updating modelling, incorporating observations from recent flooding to improve the understanding of how private property will be impacted by larger pulses.

As these programs continue to develop, there is reason to believe that they will become more-iterative programs. For example, a trial-based process may be adopted to advance relaxed constraints, recognising seasonal conditions, the short-term requirements of ecosystems, and a range of available water products. After years of intense water delivery for irrigated agriculture in the Sunraysia region, this may also be necessary to support the establishment of additional vegetation on banks to build stability – avoiding the risk of slumping and collapse with larger flows.

Currently, partially as a result of the slow progress by Basin States developing and working through these projects, there has been unclear communication on liability and the possibilities for managing unexpected outcomes. They may be advanced with mechanisms for managing unexpected outcomes.

Recommendation 19. To deliver the constraints program, extend the proposed roadmap (s 7.08A) to requirement for the Commonwealth to establish and maintain a fund to quickly respond to and manage unexpected outcomes for private landholders.

It should be recognised that the slow implementation of the constraints program has – perhaps deliberately – been utilised as a control valve for the speed of Basin Plan implementation for some time. For example, there has been consistent speculation on the value of recovering additional water for the environment while the constraints program remains incomplete. And conversely, whether it is worth advancing the constraints program while there is not additional water for the environment. Notably, this is not an argument that has ever been advanced by water managers. Partially because additional environmental water can deliver essential in-channel outcomes maintaining bank vegetation and flushing salt from the system.

Nevertheless, it highlights the need to address 'lock-in' on constraints management. This could be overcome with more explicit deadlines. As the Royal Commission observed, major infrastructure projects 'often involve the compulsory acquisition of property, on the basis they are one example of government action felt to be in the interest of the public at large… For progress to be made with landowners and others who will be impacted by constraint easing or removal, it is likely that the process will have to become compulsory in the national interest. This means of course, an appropriate acquisition and compensation scheme will need to be in place'.[110]

[110] Walker, 'Royal Commission Report,' p 60.

Recommendation 20. Proposed delivery of constraints remains at 31 Dec 2026, two years after the completion of the roadmap (s 7.08A). Further amend s 7 to set a deadline for agreements after which compulsory acquisition of easements should be undertaken. The Commonwealth should oversee the compulsory acquisition of land in accordance with the Commonwealth Procurement Rules.

Finally, recognising the value of test cases to gather information on flows with relaxed constraints, maintain the short-term needs of the environment, and build longer-term partnerships with riverside landholders, relevant institutions should be empowered to begin the process.

Recommendation 21. Give the CEWH and MDBA the mandate to operate. Allow the MDBA and CEWH to develop plans and deliver water at flow rates identified in the Constraints Management Strategy (s 30). Allow for the use of water for the environment to inundate private land (s 110).

Phase out failed experiments

Before the development of the Basin Plan, 'environmental works and measures' served as effective shorthand for the infrastructure, provisions and river operations needed to optimise the use of water set aside for the benefit of the environment.

By 2009, however, the concept had been reinterpreted. Rather than merely achieving benefits from water set aside for the environment, structural works were proposed as a substitute for recovering water in the first place.[111] This proposal became the basis of the Sustainable Diversion Limit Adjustment Mechanism (**SDLAM**), which is implicitly an offsetting program – where environmental outcomes equivalent to the 2750 GL environmental water recovery target are sought to be achieved with less water. Again, this volume has long been recognised as inadequate to create ecologically effective floods across the Basin. Rather than improving upon these outcomes, the SDLAM program treats them as a ceiling, locking in failure.

The water offsetting program seems to be the only program of its kind in existence. The approach 'remains untested, lacks on-ground validation and is based on ecological modelling that relies on generalised and hypothetical assumptions'.[112]

The offsetting program includes a range of projects, from infrastructure measures to rules-based measures, constraints measures and even works completed years earlier through the Living Murray initiative – which were included while the extent to which they had already been factored into the baseline conditions underlying the targets, and the extent to which they represent significant changes, remains difficult to discern.[113]

Some of these projects may be beneficial – but they may not all be necessary. The projects were developed in anticipation of an 'offset' and modelled in 'packs' without a robust analysis of additionality. In other words, because such a large and disparate package of projects was modelled together, it is difficult to tell how they are contingent on other projects or whether they provide additional outcomes.

For example, the relaxation of constraints is a precondition for these projected outcomes. The Royal Commission found that 'the ability for some supply measures to achieve their modelled outcomes is either highly or wholly dependent on the full implementation of the five constraints measures proposals… This greatly jeopardises the ability of the package of

[111] DSE, 'Northern Region Sustainable Water Strategy,' p 45.
[112] Lyons et al, 'Towards a scientific evaluation of environmental water offsetting,' p 267.
[113] Victorian government, 'Notice by the Victorian government under Section 43A(4),' p. 1.

supply measures to operate as supposedly intended, achieve its maximum benefit and thereby achieve or constitute environmental equivalence'.[114]

It may equally be that the projects do not provide any additional benefit over constraints. Or benefit that cannot be achieved with less intervention, such as additional water recovery and relaxed constraints. Further, it is unclear whether the projects can deliver the intended timing, frequency and duration of inundation with the existing portfolio of held environmental water, particularly as its reliability erodes in a hotter, drier climate.

This experimental effort to consolidate these projects as 'equivalent' to volumes of held environmental water has deprived the environment of essential flows for over a decade. Recognising the findings of the Royal Commission on the 'experimental and unprecedented' notion of ecological equivalence, this program should be urgently phased out.[115]

Recommendation 22. Time extensions should not be permitted for all supply measures (s 7.11). Amend s 7.12 and immediately withdraw funding from failing or stalled supply measures projects and commence water purchases in target valleys.

For other projects, it is crucial that the reconciliation framework, which will calculate the difference between predicted and achieved outcomes, is revisited. Despite concerns raised in the Royal Commission and peer-reviewed literature, the framework contains several inadequacies.

Critically, environmental outcomes are not being proven with empirical evidence, residual risks like blackwater and carp remain unaccounted for, and neither indirect floodplain impacts nor climate change stand to be considered.[116] Nor has the reconciliation framework addressed the risk these projects pose by limiting the modification of water regimes through adaptive management, potentially 'creating ecological 'museums'' at the expense of the wider floodplain.[117]

In practical terms, a number of these projects involve artificial flooding. Water may be pumped into sites on the floodplain, inundate a select area, facilitated by constructed levees, and recede back to the river channel. These are substantial interventions. The process requires clearing native vegetation to construct levees and install regulators. The flow patterns, which rely on a pattern of ponding that is not only conducive to carp breeding but will change how water is held on the floodplain – fundamentally changing the distribution of vegetation and habitat. The operative principle is that as the character of flow events changes, wetlands begin adapting to a new flow regime.[118]

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[114] Walker, 'Royal Commission Report,' p 310.
[115] Walker, 'Royal Commission Report,' p 57.
[116] Lyons et al, 'Towards a scientific evaluation of environmental water offsetting.'
[117] Acreman et al, 'Environmental flows for natural, hybrid and novel riverine ecosystems,' p 468.
[118] Schweizer et al, 'The Dammed and the Saved: a Conservation Triage Framework,' p 550.

While the Basin Officials Committee (**BOC**) is permitted to adopt a revised method, it is not compelled to adapt the previous method to the best available science.[119]

Recommendation 23. Amendments concerning the reconciliation framework (s 7.15) allow BOC to consider another method. This should be further amended, to require updating the method, improving the reconciliation framework and process to ensure the supply contribution achieves equivalent outcomes. This should incorporate empirical evidence from implemented projects, accounting for environmental risks (e.g. salinity and blackwater), likely impacts of climate change and water availability on the ability to deliver stated outcomes, and an assessment of negative impacts from the offset on the wider floodplain. This updated framework should be reviewed by an independent expert panel.

The results of this assessment should be regularly monitored, and offset volumes confirmed or re-calculated.[120] Until a significant body of peer-reviewed research has been developed, the Ecological Elements Scoring Method – and the experimental notion of ecological equivalence which it underpins – should not be used to attribute volumetric values to infrastructure or rule changes.

Finally, there are significant risks that may arise from permitting new projects in the SDLAM program. This arises from the persistent effort by Basin States to expand the offset program, reinterpreting structural works as a substitute for flows.

Projects likely to be proposed would previously have been designated as 'complementary measures' – they are complementary to environmental flows – not a substitute. These programs typically address invasive species, restore habitat, address cold water pollution and improve fish passage.

In some respects, these works acknowledge the far-reaching impact of irrigation, which over the past century has required intense development and disrupted flow patterns with major headwater storages, locks, weirs and other impoundments. This 'river regulation' not only facilitated over-extraction of water, it also changed rivers profoundly by reversing seasonal patterns, depriving wetlands and floodplains of water, and seriously degrading the habitat of native species that depend on freshwater flows for their survival.[121]

This degradation isn't the result of over-extraction alone. Instead, it is the result of the paradigm of 'working rivers' which repurposed rivers to make over-extraction possible, fundamentally altering flows in the process.

Numerous expressions of river degradation emerge from this system of river operation. **Cold water releases** from storages disrupt fish and invertebrate breeding during spring and summer when water is sent downstream for irrigation. **Sediment** which fills in habitat

[119] *Basin Plan 2012* (Cth) s 7.15(2)(b).
[120] Lyons et al, 'Towards a scientific evaluation of environmental water offsetting,' p 277.
[121] MDBC, 'Report of the River Murray Scientific Panel on Environmental Flows,' p 18.

and limits light for aquatic plants is largely derived from instream bank erosion caused by long- duration summer irrigation flows.[122] **Fish passage** has been limited by weirs, some of which function to maintain hydraulic head for water diversion into canals. Similarly, **poor water quality and blackwater** is the result of the less frequent smaller floods which would have regularly swept manageable amounts of organic matter from the floodplain.

But these impacts cannot be genuinely addressed without confronting overallocation, which remains the fundamental driver of river regulation. In isolation, these measures are insufficient to achieve large-scale wetland restoration.[123]

For example, considering efforts to address invasive species, like carp, it is worth recognising a complicated but significant dynamic. Environmental flows allow native fish to remain competitive but appear to cause little impact on the trajectory of the carp population. But critically, the alternative to environmental flows – artificial floodplain inundation, discussed above – causes significant and maintained carp recruitment compared to the baseline.[124]

Similarly, the role of private land management has strong possibilities and inherent limitations. This is often raised in the context of rice paddies and other paddocks which can provide habitat for endangered species like the Australian bittern. While this is sometimes among the last remaining habitat in a cleared and fragmented landscape, it is limited by several factors: these paddocks have limited species diversity and all decisions about what to grow, how much water to use, which chemicals to apply, when to use water, when to harvest – and ultimately whether to continue maintaining the landscape – are made by landholders to meet their business needs. Environmental objectives are most often secondary. Further, it is essential to recognise that these landscapes do not provide habitat in perpetuity. This is in contrast to wetland habitat which has adapted over thousands of years to support a variety of species.

Achieving benefits from complementary measures, improving private land management and ultimately integrating these efforts with environmental flow management is an ambitious goal for the Basin. But these projects are consistently positioned as 'substitutes' for water recovery – which is anathema to their function as 'complementary' measures.

Recommendation 24. New supply measures should not be permitted (s 7.12). Amend the section to prohibit additional supply measures which will divert resources and funds away from completing the constraints relaxation program and other projects intended to deliver flows for the benefit of the environment.

Finally, it must be recognised that these projects have taken years to develop. Many of the proposed SDLAM projects received funding for feasibility investigations in May 2011.[125]

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[122] Rutherford et al, 'Human impacts on suspended sediment and turbidity, p 523.
[123] Cresswell and Baumgartner, 'The relative environmental benefits of complimentary measures,' iii.
[124] Todd et al, 'Does environmental water management promote invasive fish?' p 1.
[125] Ministerial Council, 'Environmental Works and Measures Feasibility Program.'

Victoria has so far spent $54 million just on planning these projects in a process that has spanned over a decade.[126] It is unlikely that new, rigorous projects could be proven in the next two years. Moreover, the opportunity to begin new projects, with additional sunk costs, risks creating the conditions for further delays and extensions in 2026.

[126] Pittock and Collof, 'Victoria's plans for engineered wetlands on the Murray.'

Fund community adaptation

The program of voluntary water purchases began successfully recovering water for the benefit of the environment in 2008. But over the same period, it was marked by the perception of socio-economic impacts.

While water recovery was a notable policy, it was ultimately situated among more significant changes in land ownership and financialisation – the series of COAG reforms discussed above which facilitated the exchange and accumulation of water rights as a tradeable commodity.

The Water Act 'was introduced at a time that Australian farmers were losing competitiveness due to a soaring Australian dollar resulting from the mining boom' and when 'the Basin was in drought, which brought community stress'.[127] The coalescence of these factors have led economists to conclude that 'buybacks have become a scapegoat for adversity within the Basin'.[128]

This scapegoating is most often applied in the incorrect contention that there is a proportional relationship between reductions in farm water use and farm irrigated production. This 'unit elastic response' has been described theoretically, in a recent report commissioned by the MDBA: that 'a 1% decrease in water extractions leads to an equal 1% decrease in irrigated hectares, which subsequently results in an equal 1% decrease in irrigation production'.[129]

These figures have been used to extrapolate the impact of water purchases on water prices and commodity prices, like the annual farm-gate value of dairy production, and further, the impact on jobs across the region. **But this assumes a direct linear relationship that does not hold true in empirical – or even theoretical – contexts.**

Other applied economic studies 'using surveys and real data have found there is not a direct proportional relationship between reductions in farm water use and farm irrigated hectare production, because of factors such as farmer adaptation, surplus water use, water substitution, water trade and farm restructuring following buyback'.[130] This represents a 'significant difference between much work commissioned by irrigator groups, governments and the work done by academics and other research groups'.[131]

Crucially, the 'bulk of the large-scale reviews to date … have not managed to identify a causal relationship between water recovery and economic outcomes'.[132] But the figures suggesting water recovery is to blame for a loss of regional economic value and jobs

[127] Wittwer, 'Modelling variants of the Murray-Darling Basin,' p 7.
[128] Ibid.
[129] Wheeler et al, 'Identifying water-related economic values,' p 88.
[130] Ibid., p 18.
[131] Ibid.
[132] Ibid., p 87.

continue to be cited. This dynamic has been described by economists in a literature review commissioned by the MDBA to assess the quality of socio-economic reports:

> 'These figures quite rightly upset many people in rural and regional communities (and urban communities) when they are discussed and circulated, as no one wants rural communities to suffer. In addition, these are the only sorts of figures that are repeated in rural newspapers, with very little to zero commentary ever provided on more balanced assessments.
>
> **But are such figures of socio-economic impact correct? The answer is unequivocally, no. Indeed, they have all also been rated as 'low quality' in our quality assessment.** The reason why is that the majority of farmers make decisions every year on how to maximise their farm production and they regularly adapt to changed situations. These situations include a changed climate; changing commodity prices; changing input prices; water use; technology; irrigation infrastructure; trade; diversification off-farm income; reinvestment etc'.[133]

Addressing the real concerns with water purchases likely requires untangling these various instances of false attribution. As referenced above, drought and climate change in combination with decreased commodity prices presents real challenges.[134] Industries like dairy suffer from trade sanctions while prolonged drought drives up water prices. These factors play a significant role in farm exits.[135]

These factors also apply to the 'Swiss cheese' effect, which has been used to describe both the flow-on impacts in the community from farm exit as well as the flow-on impacts to other customers on the channel system, who bear an increasing burden for channel maintenance upon the exit of other customers. These claims would seem to be undermined by evidence that many famers participating in voluntary water purchases sold only a portion of their water, generating cash-flow to pay off long-term debts and invest in their business. Further, as discussed above, the simplistic relationship between water use and farm production does not hold true – while broader claims on community impact disregard evidence that water buybacks have positive impacts on community spending.[136]

At the same time, it is possible that other factors may be influencing the 'Swiss cheese' effect. For example, farmland value has grown significantly in the past decade.[137] Practices by investment groups taking advantage of appreciating land values may intersect with the trade and termination of delivery rights. Meanwhile, other factors could include the rapid expansion of horticulture in the lower Murray, with changing patterns of use driving local change. If these factors are driving lower utilisation of channel systems and thus increased

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[133] Ibid., p 89.
[134] Wheeler, 'Debunking Murray-Darling Basin water trade myths,' p 7.
[135] Wheeler et al, 'Modelling the climate, water and socio-economic drivers of farmer exit,' p 551.
[136] Wheeler et al, 'Submission to the Murray-Darling Basin Royal Commission,' p 3.
[137] Rural Bank, 'Australian farmland values,' p 31.

evaporation, they may compound the inherent problems with water-saving infrastructure upgrades discussed above – further undermining claimed efficiency savings.

While it remains critical to identify opportunities for water recovery that maximise public benefits, economists have concluded that separate policies would be more efficient and equitable to provide water for the environment and support jobs and incomes in the Basin.[138] Disentangling these confounding variables will be essential to progress these aims thoughtfully – pairing buybacks with thoughtful spending on regional development projects to help ease adjustment pressure.[139]

Recommendation 25. Conduct an inquiry to disentangle the factors that characterise the perceived impact of water recovery. This includes the impacts of water reform (unbundling and financialisation of water rights), the Basin Plan (water purchase and adaptive management) and broader challenges (climate change risk, commodity prices, trade sanctions, mechanisation). Identify structural obstacles to reliable employment, income, education, decent housing and a high standard of living – and pathways toward diverse, resilient economies.

The same broad assumptions regarding the impact of water purchases on communities with irrigated agricultural production have constrained this assessment. In other words, it is crucial to recognise that 'water is only one minor contributor to regional economies, designing proper structural adjustment programs based on evidence about what really drives regional economies is of key importance'.[140]

Mitigating the impacts of droughts on communities and diversifying their economic base requires collaboration with those communities – without assuming the desired pathways of economic diversification and community development.

Recommendation 26. Establish a transition fund to assist impacted regional and rural communities with climate change adaptation.

[138] Wittwer, 'Modelling variants of the Murray-Darling Basin,' p 25.
[139] Whittle, 'Analysis of economic effects of water recovery,' p 7.
[140] Wheeler et al, 'Identifying water-related economic values,' p 14.

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