Submission
No 49

IMPACTS OF THE WATER AMENDMENT (RESTORING OUR RIVERS) ACT 2023 ON NSW REGIONAL COMMUNITIES

Organisation: Professor Sarah Wheeler, Professor Quentin Grafton, Professor Jeff Connor, Professor John Quiggin, Professor Lin Crase, Professor Alec Zuo and Professor Darla Hatton MacDonald

Date Received: 13 April 2025

April 11th 2025

SUBMISSION TO LEGISLATIVE ASSEMBLY COMMITTEE ON INVESTMENT, INDUSTRY AND REGIONAL DEVELOPMENT RE IMPACTS OF THE WATER AMENDMENT (RESTORING OUR RIVERS) ACT 2023

Professor Sarah Wheeler[1], Professor Quentin Grafton[2], Professor Jeff Connor[3], Professor John Quiggin[4], Professor Lin Crase[3], Professor Alec Zuo[1] and Professor Darla Hatton MacDonald[5]

1. College of Business, Government and Law, Flinders University
2. Crawford School, ANU
3. Centre for Markets Values and Inclusion, UniSA
4. School of Economics, University of Queensland
5. Tasmanian School of Business and Economics, University of Tasmania

This is an invited submission from seven Professors of water, agriculture and resource economics addressing some of the terms of reference for the *Inquiry into the impacts of the Water Amendment (Restoring Our Rivers) Act 2023 on NSW regional communities.*

In particular, we make some comments regarding the following terms of reference:

> a) the social, economic and environmental impact of repealing limits to the cap on Commonwealth water purchases
>
> e) the effectiveness and impacts of past water reforms, including community-based water reduction adjustment programs such as the Strengthening Basin Communities program and Murray-Darling Basin Economic Development Program
>
> f) options to improve future community-based reduction adjustment programs including next rounds of the Sustainable Communities Program

Our comments in this submission are primarily based on material we originally prepared for the Senate's *inquiry into the Water Amendment Act 2023 (Restoring our Rivers)* (Wheeler et al. 2023), but we also draw upon any recent evidence.

a) Social, economic and environmental impact of repealing limits to the cap on Commonwealth water purchases.

1.1 There has been extensive discussion over the past decade and a half by lobby groups and rural communities of claimed negative economic and social impact of Commonwealth water purchases (namely the program *Restoring the Balance* – otherwise known as voluntary buyback). Kosovac et al. (2024) note the excessive attention given to irrigators and lobby groups in media reports on MDB plan. Wheeler *et al.* (2024a), summarising nearly 7000 media articles on the MDB plan, similarly identified this overarching theme of claimed negative economic impact of the Plan, and particularly the buyback program. Other themes such as environmental and Indigenous needs were given far less representation.

1.2 The local effects on the selling regions of Commonwealth water purchases are the same as those of trades which lead to water transfers from one region to another. The crucial policy question is whether the voluntary sale of water rights harms the communities in which the sellers of such rights are located. In this context, it is important to note that existing water market structures allow for transferring rights from one entity to another, and even between states. That is, the transfer of irrigation water rights from low-value uses in one location to high-value uses in another is similar, in its local effects, to the buyback of water rights to support environmental flows. It is generally recognised that the operation of the water market has been highly beneficial to the irrigation sector as a whole. ACCC (2021) and Wheeler (2022) provided evidence debunking many wide-held beliefs about negative consequences of water markets.

1.3 Many socio-economic studies are of low quality and overstate negative impact of buybacks.
The belief that water recovery will 'decimate' local communities is fuelled by various consultancy studies using inferior techniques such as input-output modelling. As such, this has led to our call (Wheeler et al. 2023) for higher standards in economic work commissioned by the government, supported by our recent research (Wheeler *et al.* 2024b). This recent study established an internal and external validity ranking method to judge the quality of water economic studies conducted in the MDB and found that many studies showing significant job losses from buyback have little credibility and over-estimate job and economic activity losses.

1.4 Many studies *assume* that a 1% decrease in water extractions leads to an equal 1% decrease in irrigated hectares, resulting in an equal 1% decrease in irrigation production which in turn leads to a 1% loss of regional economic value and jobs. These assumptions are not supported by any credible evidence. Farmers make multiple adjustments when voluntarily selling water entitlements such that the net farm impact ranges from 1/10 to 1/3 of a 1% production reduction for a 1% reduction in available water. Businesses that service irrigated agriculture also make similar adjustments, especially where dryland and irrigated agriculture coexist.

1.4.1 *Buyback can have positive local economy impacts,* when proceeds are spent locally, and when farmers re-invest in their businesses with proceeds. The positive impacts of buyback expenditure within the local economy have often been ignored; with some exceptions (see Wittwer and Young 2020 for more detail).

1.4.2 *Not all farmers who sold water entitlements left farming*, decreased irrigated production, some irrigators increased their value of irrigated production, and some farmers invested more to produce more in dryland enterprises. All of these farm activities generate positive regional economic follow-on activity.

1.4.3 *Climatic, socio-economic, and demographic factors can be much more important* than the volumes of water entitlements in a region when determining household and regional economy socio-economic outcomes such as employment and economic activity.

1.4.4 *Healthy rural communities depend on many other factors than water extracted* for irrigation, including stream flows and water quality. Whatever the destination of water transferred, there is the potential for a reduction in the value of irrigated agricultural output in the source region, which may have flow-on effects on the local economy. However, these flow-on effects may be offset by expenditure financed by the sale.

1.5 The trajectory of population changes in the MDB since 1996 has not varied. Smaller communities in outer regional and remote areas are declining in population and generally ageing while regional centres are growing**.** Evidence in Sefton et al. (2020) shows that many smaller communities in outer regional and remote Basin communities have declining populations, while larger populations in inner regional areas are growing. Importantly, these population trends pre-date water reform.

1.6 Current ongoing work – both academic and by the MDBA – has sought to further understand the causal impact of water recovery programs and socio-economic outcomes in regional MDB communities. This work will be released later in the year.

1.7 Voluntary buybacks are still the most cost-effective form of water recovery. For evidence of this, see Table 1. As of the latest available data for 30 June 2024, recovering water through irrigation infrastructure has cost Australian taxpayers at least 3.5 times more per ML than buying water back from willing irrigators. Namely – average costs of buyback = $2,135/ML; average costs of infrastructure = $7,133/ML; average costs of 450GL efficiency projects = $13,535/ML. This represents a substantial lost opportunity for taxpayers and communities through foregone public spending elsewhere (e.g. regional hospitals, schools and roads).
Although costs of both forms of acquiring water to deliver the Basin Plan have increased over time, irrigation infrastructure subsidy costs ($/ML) are still trending upward at a faster rate. Current water infrastructure projects put forward by states indicate very large costs per volume of water recovered– with costs regularly over $20,000 per megalitre (e.g. Ley, 2022). Table 1 illustrates that millions have been spent since 2018-19 on infrastructure and efficiency measures – for very little water transferred to the Commonwealth as a result. This only adds to the substantial water recovery cost, with no direct outcome. Buyback was resumed in 2023-24, with an immediate increase in the volume of water recovered.
Additionally, many infrastructure subsidy approaches intended to increase water use efficiency reduce return flows and thus less net flow in the river than assumed in the plans for these projects. When the actual water recovered from such projects net of lost return flow is considered, the cost premium for infrastructure relative to water recovery by buybacks is much greater than shown in Table 1 (Williams and Grafton, 2019).

Table 1: Water Recovery Volumes and $ Paid (nominal) from 2007-08 to 30 June 2024

	Gap Bridging Recovery [4,5,10,11,12,14]										450 Recovery for enhanced environmental outcomes[4, 13, 14]			450 GL efficiency
Financial Year	Gap Bridging Infrastructure ($m) [8,9]	Gap Bridging Infrastructure (GL/y) [8,9]	Infrastructure $/ML	Purchase ($m) [6,7]	Purchase Open Tender Surface Water (GL/y) [6]	Purchase Limited Tender Surface Water (GL/y) [6]	Other Gap Bridging Surface Water (GL/y) [10,11,12]	Purchase Open Tender Ground water (GL/y) [6]	Purchase Limited Tender Ground water (GL/y) [6,7]	Purchase $/ML	Efficiency measures ($m)	Efficiency measures (GL/y)	Additional HEW [13] (GL/y)	Efficiency $/ML
2007-08	86			33.1	14.2					2,330.99				
2008-09	55.8			371.7	257.2					1,445.18				
2009-10	189.1	0.7	270,142.86	780.2	299		15.4			2,481.55				
2010-11	221.2	68.8	3,215.12	357.7	196.4	1.4				1,808.39				
2011-12	527.6	190.8	2,765.20	540.9	192.9	109.4	2.2			1,776.35				
2012-13	520.5	72	7,229.17	112.9	24.1	41.3				1,726.30				
2013-14	492.4	259.6	1,896.76	55.9	15.7	5.5				2,636.79				
2014-15	557.1	27.5	20,258.18	60.8	2.8					21,714.29	-	-		
2015-16	262.6	25.9	10,139.00	40	2.8	3.1		1.6	0.7	4,878.05	-	-		
2016-17	507.1	42.2	12,016.59	23.9		33.4		0.4		707.10	1.8	0.7		2,571.43
2017-18	426.4	2.1	203,047.62	117.2		27.2		0		4,308.82	6.9	0.6		11,500.00
2018-19	229.6			159.7				31.3	0.8	4,975.08	5.5	0.6		9,166.67
2019-20	108.5			17.6		4.6		0.5		3,450.98	1.5			
2020-21	113.7						1			-	39.8	16.5		2,412.12
2021-22	212										102.1	5.5		18,563.64
2022-23	164.7										170.1	2.1		81,000.00
2023-24	244.3	0		123.5	19.4		4.9			5,082.30	44.5		1.5	29,666.67
Total	**4,918.60**	**689.6**	**7,132.54**	**2,795.10**	**1,024.6**	**226**	**23.5**	**33.7**	**1.5**	**2,134.80**	**372.2**	**26**	**1.5**	**13,534.55**

Source: Provided by DCCEEW as at 6/9/2024. 1. For total water recoveries allow for minor rounding. All water recovery figures are expressed in gigalitres per year long-term diversion limit equivalence (GL/y) terms.

2. Estimates of water recovery are calculated using water recovery factors that allow for comparison with Basin Plan targets. The factors are subject to revision during the Water Resource Plan accreditation process to account for the best available information. This table has been prepared consistent with accredited WRPs and revised NSW factors, which may change once those WRPs are finalised.

3. Water recovery is reported at the point at which water savings or purchase have been received, estimated or agreed under contract. Until water transfer contracts have settled however, figures may be subject to change.

4. Expenditure includes actual Administered funding only. Water for the Environment Special Account (WESA) Recovery includes funding from 1 July 2014. WESA expenditure relates only to efficiency measures funding for projects that increase the volume of MDB water available for environmental use by up to 450 GL/y; and excludes expenditure on constraints measures.

5. The purchase and infrastructure expenditure corresponds to settlement and infrastructure milestone payment dates and therefore may not align with the reported water volumes for that financial year.

6. Purchase consists of 49 tender rounds comprising: 30 surface water open tender rounds and 9 surface water limited tender rounds; and 6 groundwater open tender and 4 groundwater limited tender rounds.

7. In 2019 the Queensland government conducted compulsory license reductions to achieve the SDL target in the QLD Upper Condamine Alluvium (CCA) groundwater resource unit, recovering 0.5 GL/y. This volume has been included in the groundwater recovery figures. The compulsory licence acquisition may later be subject to risk assignment compensation provisions.

8. Infrastructure recovery and expenditure includes SRWUIP expenditure in the MDB and SA River Murray Sustainability Program (SARMSP) funding ($122.548m efficiency and purchase component).

9. Infrastructure expenditure includes environmental water recovery from the SA Riverine Recovery Project (7.2 GL/y) which does not contribute to gap bridging recovery targets.

10. In 2009-10, 15.4 GL/y of water was gifted by the Queensland government, which required no direct Commonwealth funding for the acquisition.

11. In 2011-12, 2.2 GL/y of water was recovered through Water Smart Australia funded projects. It is not possible to identify the portion of funding for this recovery.

12. In 2020-21, 1.0 GL/y of water was recovered through the Mitiamo Pipeline Project which was funded through the National Water Grid Fund.

13. In 2024, 6.4 GL/y of water was recovered through a Federation Funding Agreement under Gap Bridging Infrastructure with ACT to meet the ACT surface water recovery target. In May 2024, the Minister assigned 1.5 GL/y of the 6.4 GL/y as recovery towards the 450 GL as additional Held Environmental Water (HEW).

Separate from their benefits to taxpayers and greater cost-effectiveness, voluntary buybacks provide added benefits to farmers. This is because they can choose how they spend the proceeds from sales of water entitlements (including paying down debt, farm exit, investing on and off-farm, and even retirement). In contrast, infrastructure schemes constrain what farmers do and how they make decisions about their enterprises (Wheeler, 2024). The availability of voluntary buyback as an option benefits farmers who seek to make a transition from irrigated agriculture to other land uses, or from more to less intensive modes of irrigation.

e) the effectiveness and impacts of past water reforms, including community-based water reduction adjustment programs such as the Strengthening Basin Communities program and Murray-Darling Basin Economic Development Program

and

f) options to improve future community-based reduction adjustment programs including next rounds of the Sustainable Communities Program

2.1 Assessing the effectiveness and impacts of past water reforms is a broad topic and can be addressed in many ways. The economic impacts have been discussed above. The environmental impacts still need much further assessment, though Colloff *et al.* (2024) have published the latest overview summary of MDB indicators. 27 Indigenous, economic, environmental, social and compliance theme indicators were chosen to assess the effects of policy interventions for water reform within the *Water Act 2007.* The study found that five of seven economic targets, relating to irrigated agriculture and capital value of land, showed improvement, whereas of 20 Indigenous, environmental, social and compliance indicator targets, only two environmental ones were met.

2.2 Water compliance issues will continue to challenge all states. One of the most effective compliance changes that have occurred in the past decade is the creation of NRAR in NSW. It is providing a leading example worldwide of an effective water compliance agency. However, within the Basin (and NSW), there is still considerable need for improvement. Seidl and Wheeler (2024) provide three main recommendations for improvement for compliance in the Basin, namely: (a) improving compliance data and reporting; (b) increasing the probability of detection and prosecution; and (c) increasing penalties, regulator visibility, and reforming legislation.

2.3 We reiterate calls we have made previously, regarding the ongoing need for a water audit (and proper water accounting) in the Basin. We believe that there is still an ongoing need for this audit and improved governance and reporting in the Basin. We refer the Committee to detail in a previous submission by us and others (i.e. Grafton et al. 2018). Other sources of information include: Colloff et al. (2018); Seidl et al. (2020); Walker (2019).

2.4 There is a need to recognise the difference between climate change and water overallocation effects. Many scientists and other policy makers often attribute the main blame for water scarcity to climate change issues, and the need for more money to be invested in climate change research. We reiterate our concerns that there must also be an ongoing focus on water over-allocation issues. Grafton *et al.* (2022) and Chu *et al.* (2025) provide quantitative evidence and modelling to suggest that long-term meteorological trends are only responsible for less than half the decline in stream flows in the northern MDB. This therefore demands the need for localised water governance solutions, and the need to reduce and regulate consumptive water extraction.

2.5 In regards to issues surrounding structural adjustment and regional diversification, we are not aware of any new research/reports in this space (although we are aware of current projects in this space that are planned to soon start by Professor Mark Morrison of CSU), and refer to comments we have made previously (Wheeler *et al.* 2023 and Wheeler *et al.* 2018):

"Given that there can be socioeconomic costs to communities from water reform, which goes alongside other transitional changes (such as technology change, economic prices, population changes, declining social services, climate change, etc.), **we emphasise the need for both proper assessment – and application - of structural adjustment and regional diversification funds**. Such measures were proposed back in 2010 by the Wentworth Group (2010, pp. 22-25) in the strategy of 'Reasonable return and community development'. It is also important that money needs to be targeted to where it can have the most beneficial return for communities."

Thank you for your time. Please feel free to ask us for additional evidence, journal papers or questions if needed.

References

ACCC. (2021) Murray-Darling Basin water markets enquiry: Final report. Canberra: Australian Competition and Consumer Commission (ACCC). https://www.accc.gov.au/about-us/publications/murray-darling-basin-water-markets-inquiry-final-report

Chu L, Williams J, Manero A, Grafton Q (2025). Effects of long-term meteorological trends on streamflow in the Northern Murray-Darling Basin (MDB), Australia 1981–2020. *Journal of Hydrology: Regional Studies*, 58, 102232.

Colloff M., Williams J., Grafton Q. (2018) Joint Submission To The Productivity Commission 'Murray-Darling Basin Plan: Five-Year Assessment', https://www.pc.gov.au/__data/assets/pdf_file/0011/227297/sub012-basin-plan.pdf

Colloff M et al (2024) Murky waters running clearer? Monitoring, reporting and evaluation of the state of the Murray–Darling Basin after more than three decades of policy reform. *Marine and Freshwater Research*, 75, https://www.publish.csiro.au/MF/MF24193

Jackson, S., Hatton-MacDonald, D., & Bark, R.H. (2019). Public attitudes to inequality in water distribution: Insights from preferences for water reallocation from irrigators to Aboriginal Australians. *Water Resources Research*, 55(7), 6033-6048

Grafton Q, Chu L., Kingsford R., Bino G., Williams J. (2022) 'Resilience to hydrological droughts in the northern Murray-Darling Basin, Australia' *Philosophical Transactions A of the Royal Society*, 380, https://doi.org/10.1098/rsta.2021.0296

Grafton Q, Wheeler S, Williams J., Colloff M., Connor J., Crase L., Hatton MacDonald H., Kingsford R. and Quiggin J. (2018) Submission to the Productivity Commission in response to its draft report 'Murray-Darling Basin Plan: Five-year assessment', October 8th, 2018. https://www.pc.gov.au/__data/assets/pdf_file/0017/232019/subdr098-basin-plan.pdf

Kosovac, A., Shermon, A., O'Donnell, E., Horne, A. and Mesikämmen, E., 2024. Water courses and discourses: A media content analysis of environmental water reporting in Australia. *Environmental Science & Policy*, *154*, p.103703.

Ley, S. (2022) $126m to deliver water savings under NSW Off-farm Efficiency Program, Media release, Jan 17, 2022.

Seidl, C., Wheeler, S.A., & Zuo, A. (2020). High turbidity: Water valuation and accounting in the Murray-Darling Basin. *Agricultural Water Management*, 230, 105929.

Seidl, C., Wheeler, S.A. (2024). Breaking water laws in the Murray-Darling Basin: Understanding Water compliance challenges and stakeholder perceptions. *Water Resources Research*, 60, e2023WR035635. https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2023WR035635

Sefton, R., Peterson, D., & Woods, R. Kassebaum, A., McKenzie, D., Simpson, B., & Ramsay, M. (2020). *Final Report: Independent assessment of social and economic conditions in the Murray–Darling Basin.* Melbourne, Australia: Panel for Independent Assessment of Social and Economic Conditions in the Murray–Darling Basin.

Walker, B. (2019). Murray-Darling Basin Royal Commission Report. Murray-Darling Basin Royal Commission, Adelaide. https://cdn.environment.sa.gov.au/environment/docs/murray-darling-basin-royal-commission-report.pdf

Wentworth Group of Concerned Scientists (2010). Sustainable Diversions in the Murray-Darling Basin. An analysis of the options for achieving a sustainable diversion limit in the Murray-Darling Basin https://wentworthgroup.org/2010/06/sustainable-diversions-in-the-murray-darling-basin/

Wheeler S (2022) Debunking Murray-Darling Basin water trade myths. The Australian Journal of Agricultural and Resource Economics. Vol 66, 797-821 https://onlinelibrary.wiley.com/doi/10.1111/1467-8489.12490

Wheeler S. (2024) Comparing the success and failure of the Murray-Darling Basin Plan's water recovery programs. *Australian Journal of Public Administration*, **https://doi.org/10.1111/1467-8500.12672**

Wheeler S., Connor J., Grafton R.Q, Crase L, Quiggin J. (2018) Submission to the Murray-Darling Basin's Royal Commission, available at: https://cdn.environment.sa.gov.au/environment/docs/profs-s-wheeler-j-connor-q-grafton-l-crase-j-quiggin-sa-qld-mdb-rc-gen.pdf

Wheeler S., Grafton R.Q, Crase L, Quiggin J., Connor J., (2023) Submission to the inquiry into the Water Amendment (Restoring our Rivers) Bill 2023, available at: https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/MDBAWaterBill2023/Submissions

Wheeler, S, Zuo, A Pickersgill J (2024) The propensity for negative media reporting of the Murray-Darling Basin Plan in Australia, *Journal of Rural Studies*, 109, 103320.

Wheeler S, Xu Y, Zuo (2024b) Developing an economic quality assessment framework and applying it to water economic studies in the Murray-Darling Basin, *Environmental Science & Policy*, 152, 103654

Williams, J., Grafton, R., 2019. Missing in action: possible effects of water recovery on stream and river flows in the Murray–Darling Basin, Australia. *Australasian Journal of Water Resour*ces, 23, 78-87.

Wittwer, G., & Young, M. (2020). Distinguishing between policy, drought and international events in the context of the Murray Darling Basin Plan. Working Paper No. G-295. Centre of Policy Studies, Victoria University, Melbourne. https://ideas.repec.org/p/cop/wpaper/g-295.html