Sept 27th 2023

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

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Introduction

The current Water Amendment (Restoring our Rivers) Bill 2023 is seeking to do the following:

1. expand the type of projects that can deliver the Basin Plan target of 450 gigalitres (GL) of additional environmental water;
2. repeal the statutory 1,500 GL cap on Commonwealth water purchases;
3. enable funds from the Water for the Environment Special Account to be used to enhance environmental outcomes in the Basin;
4. provide additional time for Basin States to deliver Sustainable Diversion Limit (SDL) Adjustment Mechanism projects;
5. enable the Inspector-General of Water Compliance to determine SDL compliance and require action plans;
6. provide for a roadmap for the delivery of constraints relaxation projects across the Southern Basin;
7. delay the review of the Act from 2024 until 2027; and
8. implement recommendations of the Water market reform: final roadmap report in relation to water markets and water management in the Basin.

We provide detailed comments to points 1), 2), 8) above, and provide brief comments in regards to points 3), 4) and 7).

Overall, we are not surprised that the timelines of water recovery are being extended. We are on the record as predicting that the Murray-Darling Basin Plan would fail to fully meet its water objectives, as well as costing considerably more for Australian taxpayers (e.g. Grafton 2019; Grafton and Wheeler, 2018; Wheeler, Connor, Grafton, Crase and Quiggin, 2018). In large part, this unfortunate outcome has been a consequence of limiting water recovery options. In particular, the legislation in 2015 to cap water recovery at 1,500 GL/year and to subsequently almost exclusive use subsidies for water infrastructure (on and off farm) to deliver environmental objects of the Water Act 2007.

Our submission provides peer-reviewed evidence and recent findings on water recovery programs in the Murray-Darling Basin (MDB). Our evidence clearly shows that the regional social and economic costs of buying water directly back from irrigators have been greatly exaggerated with most of the exaggerated claims appearing in poor quality studies. By contrast, the benefits of obtaining water via subsidies and grants for irrigation infrastructure and other supply projects have been over-inflated.

We provide both a) evidence points, and b) policy recommendations throughout our submission. We conclude by highlighting the need for high-quality economic evidence in public water policy decision making.

Sept 27th 2023

1. Water recovery policy choices

1.1 **The options that are available for water recovery** as outlined in Wheeler (2023; 7), include three primary methods – institutional changes; buyback; and irrigation infrastructure subsidies (detailed below).

(i) **Institutional changes (i.e., changing the rules of the game)** includes resetting entitlements to a lower yield level, or changing rules over their use, hence changing existing property rights. Other changes could include having downstream flow targets needing to be met before extraction upstream, giving legal rights to rivers or having minimum river flow requirements. If a strategy were chosen to reduce water allocations to entitlements by the same percentage, two approaches (uncompensated vs compensated) could be chosen by states:

- ***An uncompensated and permanent percentage cut to water allocations:*** Hence offering the environment a greater share to water resources. This scenario has happened in a number of places, for example, for groundwater in the South-East of South Australia.
- ***A compensated and permanent percentage cut to water allocations:*** This scenario happens regularly in other situations, such as compulsory land acquisition for transport infrastructure projects.

(ii) **Direct purchase of entitlements from willing sellers ('Buyback')**. This method protects existing property rights and buyback options include:

- ***A voluntary buyback of entitlements:*** This was the prime focus of the *Restoring the Balance program*, which is the program where most water has been recovered to date through voluntary offers of water by multiple sellers via an open tender process
- ***A strategic buyback of entitlements:*** This involves strategic purchase of water entitlements via direct negotiation with the seller, a strategy that has only been occasionally used. The 2017 purchase of Lower Darling entitlements from the Tandou property is an example.
- ***Buying temporary water allocations:*** It is possible for the Commonwealth Environmental Water Holder (CEWH) to supplement environmental flows from permanent entitlements by buying water allocations in areas where needed. To date, buying water allocations has been uncommon (and CEWH have been more likely to sell water allocations than to buy them).

(iii) Irrigation Infrastructure Subsidies/Modernisation: This also protects existing property rights and includes on and off-farm programs:

- ***On-farm subsidisation of irrigation infrastructure in return for water entitlements*:** This is the *Sustainable Rural Water Use Infrastructure Program*, and *Water for the Environment Special Account*. On-farm projects include converting flood irrigation systems to drip irrigation systems or deepening on-farm storages to reduce evaporative losses.
- ***Off-farm subsidisation of supply projects to achieve environmental outcomes (or 'offsets'):*** Off-farm projects include lining delivery channels to reduce seepage or decommissioning underutilised parts of an irrigation network. The irrigation infrastructure operator provides a share of the saved water to the Australian Government, and the entitlements of irrigators are unchanged. Non-irrigation infrastructure modernisation projects include environmental or other farm works that return water to the environment.

Sept 27th 2023

1.2 **Evidence point 1: Voluntary buybacks are the most cost-effective form of water recovery**. For evidence of this, see Table 1. As at 31 August 2022, recovering water through irrigation infrastructure has cost Australian taxpayers at least 3.1 times more per ML than buying water back from willing irrigators. Since the buyback cap was imposed in 2015, there has been very little water bought back. Hence, the cap is seen as limiting any current or further purchase of water from entitlements, and why it must be repealed for water recovery to be both cost effective and fit for purpose to deliver on the Basin Plan.

Table 1: Water Recovery Volumes and $ Paid from 2007-08 to 31 August 2022

Financial Year	Gap Bridging Infrastructure ($m) [7,8,10,11]	Gap Bridging Infrastructure (GL/y) [10,11,12,13]	Irrigation Infrastructure $/ML	Purchase (buyback) ($m) [7,8]	Total Purchase (GL/y)	Total Purchase $/ML
2007-08	86.0	-		33.1	14.214	2,328.7
2008-09	55.8	-		371.7	257.215	1,445.1
2009-10	189.1	0.7	254,508.7	780.2	298.974	2,609.6
2010-11	221.2	68.8	3,215.0	357.7	197.801	1,808.4
2011-12	527.6	190.8	2,765.0	540.9	302.302	1,789.3
2012-13	520.5	72.0	7,233.6	112.9	65.383	1,726.7
2013-14	492.4	259.6	1,897.0	55.9	21.254	2,630.1
2014-15	557.1	27.5	20,281.0	60.8	2.806	21,667.9
2015-16	262.6	25.9	10,123.0	40.0	8.32	4,807.7
2016-17	507.1	42.2	12,020.6	23.9	33.755	708.0
2017-18	426.4	2.1	203,047.6	117.2	27.232	4,303.8
2018-19	229.6			159.7	32.072	4,979.4
2019-20	108.5			17.6	5.07	3,471.4
2020-21	113.7					
2021-22	212.0					
2022-23	12.0					
Total	**$4,521.6**	**689.6**	**Ave: $ 6,557**	**$2,671.6**	**1,266.403**	**Ave: $ 2,109**

1. Estimates of water recovery are calculated using water recovery factors that allow for comparison with Basin Plan targets. The factors are subject to revision through 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 WRP's are finalised. Further information is available at: www.dcceew.gov.au/water/policy/mdb/water-recovery/progress-recovery/accounting
2. All water recovery figures are expressed in gigalitres per year long-term average annual yield (GL/y) terms.
3. Allow for minor variations in totals due to rounding.
4. The water recovery data provided is considered accurate to the nearest megalitre, being the third decimal place.
5. The water entitlements referred to in this table are held by the Cwlth and do not include state held environmental water entitlement.
6. Water recovery is reported at the point at which water savings or purchase have been received, estimated or agreed under contract or through a funding agreement. Contracted arrangements may change prior to settlement in some circumstances.
7. Expenditure includes actual Administered funding only, in nominal dollars.
8. The purchase and infrastructure expenditure correspond to settlement and infrastructure milestone payment dates and therefore may not align with the reported water volumes for that financial year.
9. The 2019-20 groundwater recovery figure includes 0.5 GL/y gifted to the Cwlth by the Queensland government, which was acquired through compulsory license reductions to achieve the SDL target in the QLD Upper Condamine Alluvium groundwater resource unit.
10. Infrastructure recovery and expenditure includes SRWUIP expenditure within the Murray-Darling Basin and the efficiency and purchase component of the SA River Murray Sustainability Program ($122.548m).
11. Infrastructure expenditure includes the SA Riverine Recovery Project. This project recovered 7.2 GL/y which does not contribute to gap-bridging targets and has been excluded from the water recovery volumes above.
12. Water Smart Australia program water recovery of 2.2 GL/y has been excluded. It is not possible to identify the portion of project funding that achieved this recovery.
13. The Mitiamo Pipeline Project water recovery of 1.0 GL/y has been excluded as the project was funded through National Water Grid

Source: DCCEEW personal data request – estimates valid as at 31 August 2022.

Although costs of both forms of acquiring water to deliver the Basin Plan have increased over time, irrigation infrastructure subsidies cost ($/ML) are trending upwards at a much faster rate. Strategic buyback purchases have also been shown to be

much more costly than voluntary water recovery methods. 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). Additionally, many infrastructure subsidy approaches intended to increase water use efficiency create a reduction of 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).

Separate to their benefits to tax payers and greater cost effectiveness, voluntary buybacks provide added benefits to farmers. This is because they can choose on what they spend their proceeds from sales of water entitlements (including paying down debt, farm exit, investing on and off-farm). In contrast, infrastructure schemes constrain what farmers do and how they make decisions in relation to their enterprises (Wheeler, 2023). The availability of voluntary buyback as an option is beneficial to farmers who seek to make a transition from irrigated agriculture to other land uses, or from more to less intensive modes of irrigation.

1.3 **Policy Recommendation 1: Remove cap on buybacks,** and reallocate expenditure back within all programs to *voluntary* water entitlement purchases. Also consider ongoing temporary purchases (perhaps through longer-term lease arrangements) to supplement water entitlement purchases.

1.4 **Evidence point 2: Not all on-farm water recovery infrastructure programs result in intended extraction reductions.** At least 13 different irrigation infrastructure programs to recover water across states were funded through the *Sustainable Rural Water Use Infrastructure Program*. They all contained different criteria for project selection, objectives, budgets, and methods/activities allowed. Negative unintended consequences from such programs have included: reduced return flows; partial or full 'rebound effect' that increases use of irrigated land area and water extractions; increased utilisation (proportion of water allocated that is used) of water entitlements; increased substitution of groundwater for surface water; equity issues (e.g. huge disparity in the range of subsidies paid to farmers); flood plain harvesting increases; and resilience risk issues (e.g. subsidies encourage conversion to permanent agriculture – which increases risk for those farmers in the future). See Wheeler et al. (2020) for further discussion. Williams et al. (2023) provide recent findings that show the growth in large farm dams, and document how dams have proliferated over time; especially in areas where floodplain harvesting is practiced.

At least one of the infrastructure programs – the SA River Murray Sustainability Program – allowed for other (non-irrigation infrastructure) farm activities to be subsidised. For example, irrigators could spend the subsidy on various farm productive activities (e.g., netting fruit/nut trees), and consequently sell some of their water entitlements as part of the program – which potentially led to less unintended consequences on water extraction than in other programs. The Healthy Headwaters program in Queensland most likely led to increased

floodplain harvesting as a large portion of the programs' funds were spent on projects that raised dam walls or increased/improved storage (e.g. 38 out of the 73 projects funded by Healthy Headwaters program involved some form of storage upgrades, or ring tank work)[1].

1.5 **Policy Recommendation 2: Carefully evaluate past on-farm irrigation infrastructure programs and provide guidelines on best performing programs.** Although on-farm irrigation infrastructure programs are not recommended by us as first best policy, if they are to be used to meet the goals of the Basin Plan then, we recommend that program guidelines for best practice be a) created, including measurement of the consequences on return flows; and b) followed.

1.6 **Evidence point 3: There are multiple and evidence-based criticisms of SDL supply projects** (e.g. Williams et al. 2023), that indicate they have been unsuccessful in providing environmental benefits or increased stream flows.

Continuing failure to meet plan water recovery objectives can be expected from ongoing primary reliance on supply and infrastructure mechanisms.

1.7 **Policy Recommendation 3: Cull all existing SDL and constraints projects that are shown to be not working, ineffective and not socially beneficial.** Giving non-performing projects more time to deliver almost 11 years after the Basin Plan was enacted will not deliver key objects of the Water Act. Further, many of the projects' costs are sunk costs such that their cancellation does not generate additional costs to taxpayers.

2. Water recovery socio-economic impacts on communities in the Murray-Darling Basin

2.1 Evidence point 4: A widespread belief that water recovery has 'decimated' local communities is exaggerated and not supported by creditable economic studies. The crucial policy question is whether the voluntary sale of water rights is harmful to 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 the transfer of rights from one community 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.

The belief that water recovery will 'decimate' local communities is fuelled by several consultancy studies (e.g. Frontier & Cummins & Associates, 2022, RMCG 2016). These studies claim there will be large farm exit, job losses and substantial reductions in production from water buybacks. Recent research just published by the MDBA (Wheeler et al., 2023) has established an internal and external validity ranking method

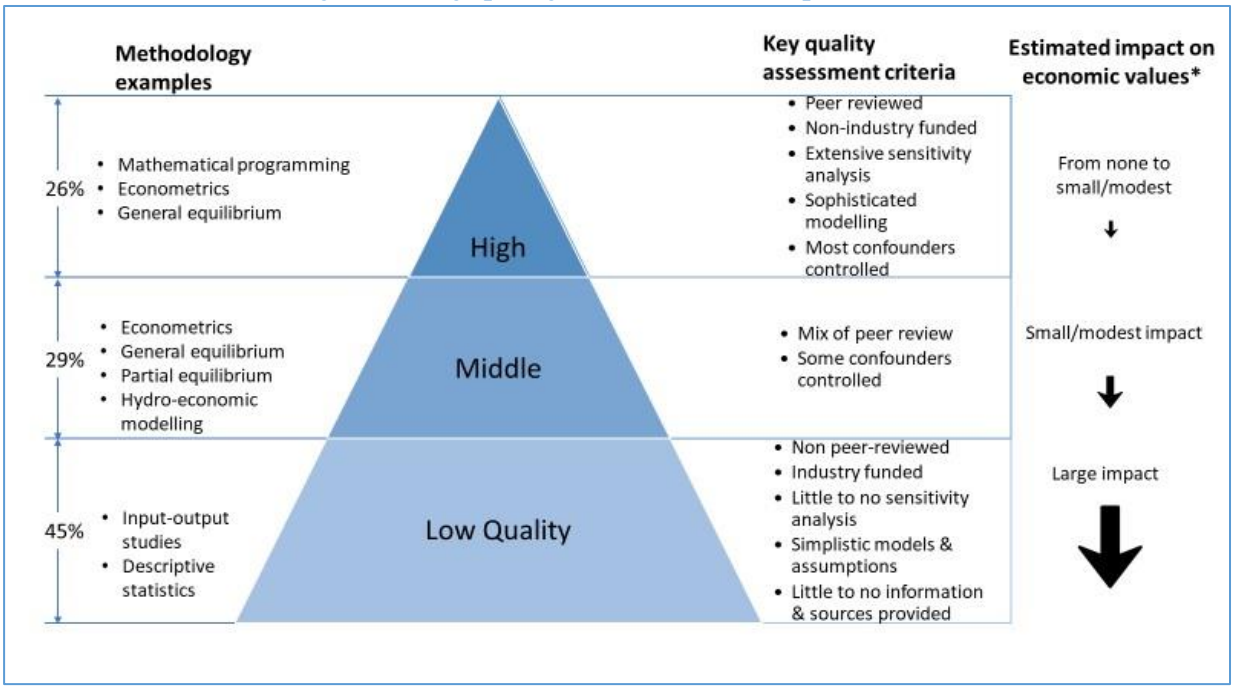
[1] See https://data.gov.au/dataset/ds-dga-0a4296b5-037b-478a-a38b-531b46c03da7/details for data and description of all projects funded.

Sept 27th 2023

to judge quality of water economic studies conducted in the MDB. This study found that most consultancy studies showing large job losses from buyback have very little reliability, exaggerate job and economics activity losses. All of these studies are ranked as low quality in terms of their research rigour and methods, many make assumptions or create scenarios that are inconsistent with real world adaptive adjustments of farms. We conclude that such studies should not be used for policy decision making.

Figure 1 below illustrates the findings from a review of 100+ water economic studies in the MDB.

Fig 1: Overview of water recovery studies by quality assessment and impact on economic values



Note: * Economic values include GDP, GRP, GRIAP, employment numbers, farm production, farm gross margins (which may decrease with water recovery). Other economic values such as water market prices have the opposite sign as some studies suggest they increase under water recovery. Diagram is not to scale.
Source: Wheeler et al., (2023; xi)

2.2 Evidence point 5: Many socio-economic studies fail to identify actual farm level impact from actual data and overstate negative impact of buybacks. Many studies *assume* 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 which in turn leads to 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 (Wheeler et al., 2023; cites multiple studies).[2]

[2] A recent paper by Davidson and Hellegers (2023) finds further support the very weak link between irrigation water use and regional community economic values in general.

Sept 27th 2023

2.3 Evidence point 6: Negative regional economy follow-on impacts of voluntary buybacks of water entitlements are overstated, positive regional economy impacts are understated and even ignored in many low-quality studies. 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 to the local economy. However, these flow-on effects may be offset by expenditure financed by the sale. The review of MDB economics studies over the past two decades in Wheeler et al., (2023) included studies that assess regional economy impacts. This review of the literature indicated:

2.3.1 *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).

2.3.2 *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.

2.3.3 *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[3];

2.3.4 *Healthy rural communities depend on many other factors than water extracted* for irrigation, including stream flows and water quality. Local health, education, communication and other services are also critical (Wittwer and Young 2020).

2.4 Evidence Point 7: 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 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 as is shown in Figure 2, which plots population change over the reform period 2006-16 against change over the pre-reform period 1996-2006. Two points are evident from Figure 2.

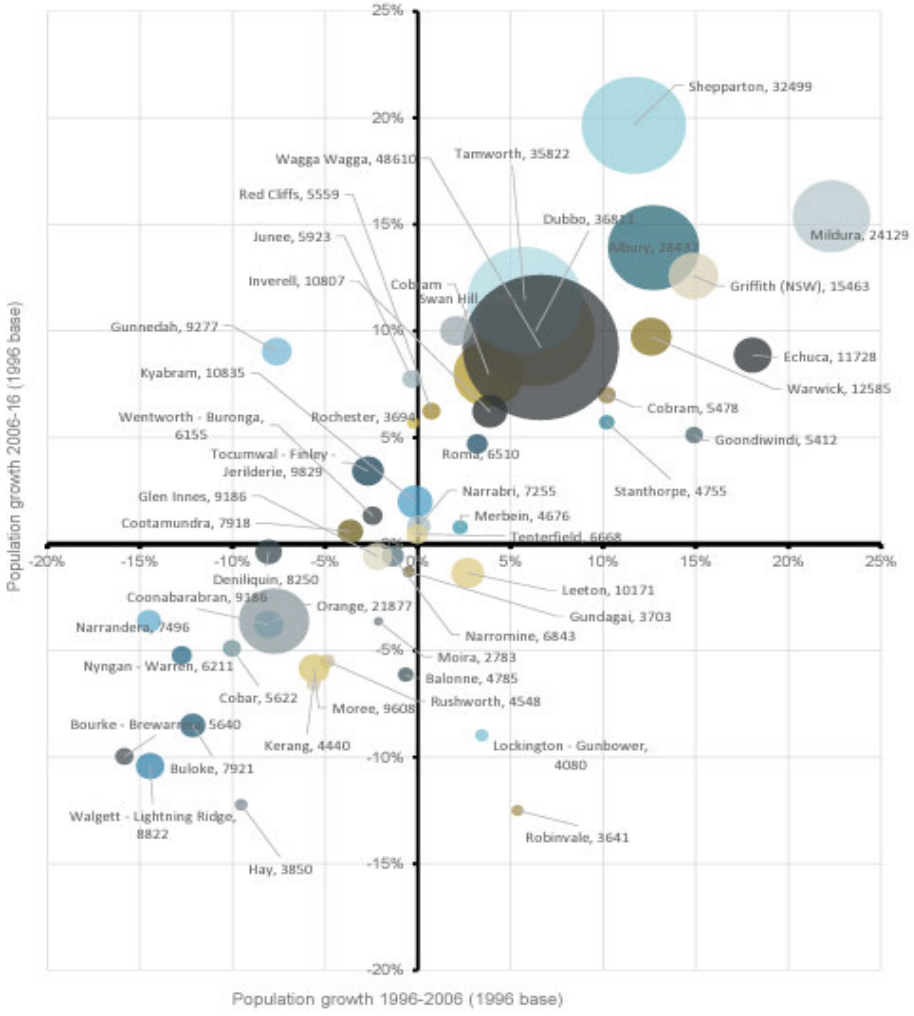
First, most observations lie close to a 45-degree line passing through the origin (0,0). That is, for most communities, rates of population growth (or decline) between 2006 and 2016 were similar to those previously observed between 1996 and 2006. Second, most large communities in the region are found in the top-right quadrant, representing sustained population growth. Conversely, most communities experiencing sustained decline, or a mixture of expansion and decline, have relatively small populations.

Significant social problems arise from declining local populations, particularly when the decline is driven by the departure of young families and, more generally, people of working age. These problems require the attention of state and national governments. Importantly, economic and population declines in smaller communities are not specific

[3] A recent paper (Xu et al. 2023) illustrates that drought and hotter temperatures was associated with suicide in the MDB.

to communities dependent on irrigated agriculture, nor are they generated by voluntary buybacks. Rather than restricting voluntary buybacks of water entitlements, governments should focus their attention on mitigating the impacts of hydrological droughts on communities and diversifying their economic base.

Fig 2: Population change in 60 Basin SA2 regions, 1996–2016



Note: The bubble size shows the population in 1996. The horizontal axis measures the percentage change in population in the decade between 1996 and 2006. The vertical axis measures the percentage change in population in the decade between 2006 and 2016, when Basin reforms and environmental water recovery peaked.
Source: Sefton et al. (2020; p. 44).

Even in the context of a growing regional economy, it is likely that some population centres will experience contraction while other smaller population areas experience more rapid population growth. This pattern of population decline in smaller towns is happening across most of rural and regional Australia, not just in the Basin (Productivity Commission 2017). Many Australians are moving from smaller towns to larger regional towns and metropolitan cities, because larger centres offer things they

want and larger communities are more economically diverse. Often, it is younger families with children who are moving, and they move for many different reasons.

Many of these factors influencing healthy rural communities described here in Section 2 are usually ignored in consulting studies that predict large socio-economic cost from water recovery.

2.5 Policy Recommendation 4: A standard for economic evidence used in water policy is needed to protect the public interest. The Commonwealth, the States, and the MDBA have commissioned millions of dollars of research on the economic impacts of water policy. A recent review of the economics studies by Wheeler et al., (2023) found that around half of all work reviewed was of very low quality and resulted in false conclusions about the impacts of water buyback compared to infrastructure projects for water recovery.

DCCEEW and MDBA should set a standard for attribution based on scientifically recognised best practice for evidence that informs policy, and undertake/commission long-term research with credible methods (e.g. large sample sizes, dynamic assessment, longitudinal impacts, spill-over effects, area modelling at postcode level). This would improve confidence in the evidence used for policy decisions. We highlight that there is a need to focus on data sources that provide water recovery data at a postcode level over time so as properly identify negative (or positive) impacts of water recovery on a range of economic values (e.g., irrigated hectares, GVIAP, GVP, GRP, water extraction, GSP etc).

2.6 Policy Recommendation 5: Discard the socio-economic 'neutrality' test for the addition 450GL recovery. The stated objective of efficiency programs in the *Water for Environment Special Account* is to achieve 'neutral to positive socio-economic outcomes that are supported by the community'. Aither (2017) outlined the decision tree for the socio-economic neutrality test: a) a positive cost benefit analysis at a national scale; b) voluntary participation; and c) no material adverse impacts on irrigators (or operators or community at an industry, regional, community scale). This test is without foundation (Walker, 2019). Taken at the scale recommended in Aither (2017), *any* potential project in relation to any government project would not pass the neutrality test. Further, when evaluating a project under the neutrality test, who measures impact? Is the impact based on actual quantified high-quality evidence?

2.7 Policy Recommendation 6: Additional research is needed on the economic benefits of water recovery for First Nations people and their Country, and downstream communities. Recent community experience such as mass fish kills, and lack of domestic water supply in some communities in the Northern Basin, show that flows impact more than irrigation outcomes (Academy of Science, 2019; NSW Chief Scientist and Engineer, 2023). Yet research to date (see Wheeler et al., 2023's review of the literature) has primarily concentrated on irrigation impacts of water allocation changes. Estimating the values of water in all uses is a critical priority and is urgently needed to ensure a balanced and evidence-based view of Basin regional economy impacts of environmental water recovery.

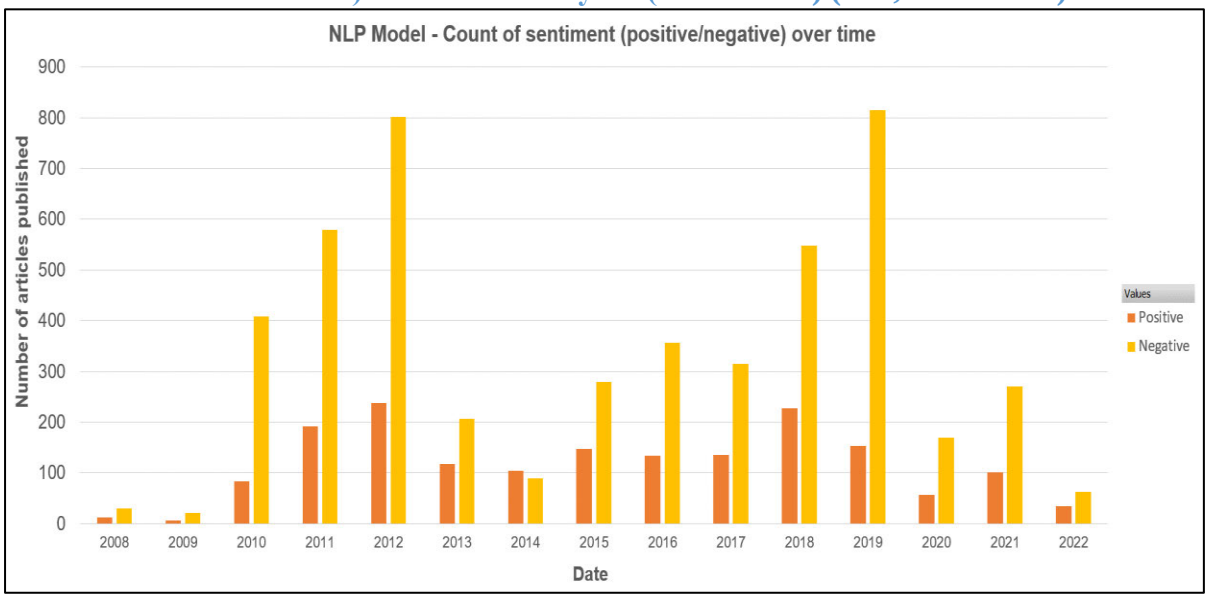
Sept 27th 2023

2.8 Policy Recommendation 7: Additional research on the outcomes of regional diversification fund expenditures, and the need to design proper structural adjustment programs. Given that water is only one contributor to regional economies, designing proper structural adjustment programs based on evidence about what really drives regional economies is of key importance.

3 Media Reporting and the Australian Public Water Recovery Perceptions

3.1 Evidence point 8: Misperception of the real economic impact of water recovery is misinformed by media reporting. For example, Figure 3 highlights the sentiment of newspaper articles written on the Basin Plan since 2008 to end 2022. It uses a natural language processing model (DistilBERT) to code all the articles as overall 'positive' or 'negative'. Only 14% of MDB Plan articles appeared in urban outlets, the rest were published in rural or agricultural outlets.

Figure 3: Number of Australian newspaper articles (that included the term Basin Plan) coded as positive/negative using Natural Language processing models (DistilBERT base uncased finetuned SST-2') for each whole year (2008 - 2022) (n=6,694 articles)



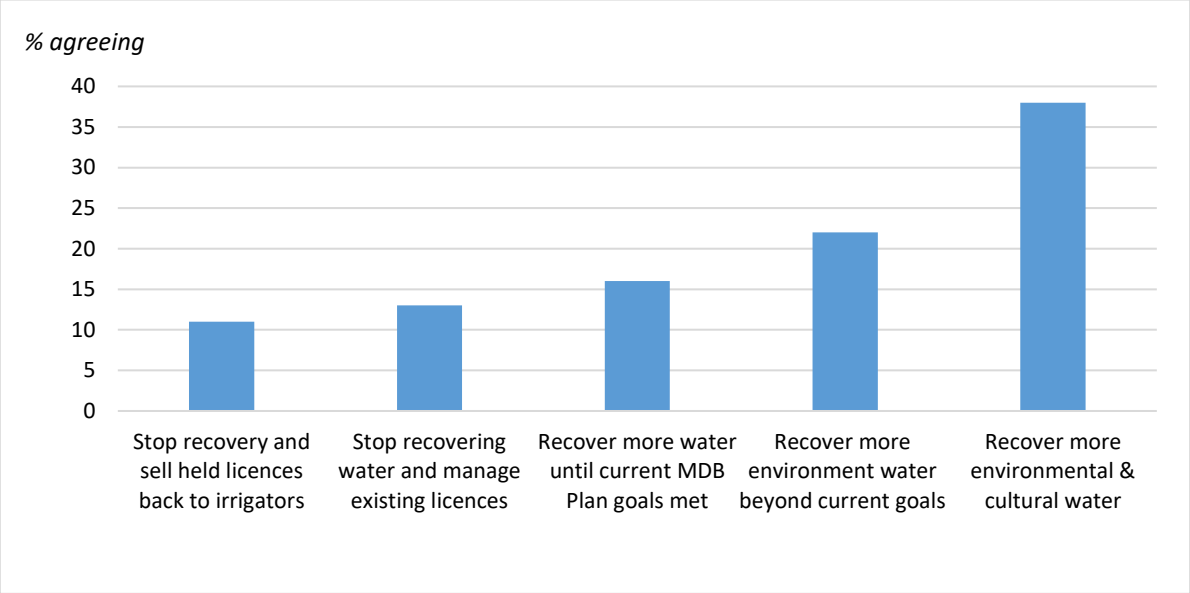
Source: University of Adelaide working paper, 2023. Graph represents ongoing work, and results are subject to change. Note, articles do not include independent media sources.

3.1.1 **Negative news about the Basin Plan dominated in regional communities.** Articles tend to peak around key implementation times (e.g. from the release of the Draft Plan in 2010; the Plan's implementation in 2012; the MDB adjustment review and the SA MDB Royal Commission in 2018; the fish kills and the SA MDB Royal Commission report in 2019).

3.2 Evidence Point 9: There is strong public support for water recovery for the environment (and for additional environment and cultural water). Figure 4 shows that in an Australian survey conducted in 2020, most respondents (60%) favoured recovering water *beyond* current MDB Plan goals. If we add in the respondents who

wanted environmental water recovered until current goals were met (17% of respondents), then 77% of Australians supported this policy choice of recovering more water (at the very least to current goals). In total, less than 1 in 10 respondents believed that no water recovery for the environment should be undertaken, and hence agreed that existing water should be sold back to irrigators, while the remainder 13% of respondents believed further water recovery should be paused at the current level.

Figure 4: Australian Public's Future Water Recovery Policy Preferences (n=991, sample weighted %)



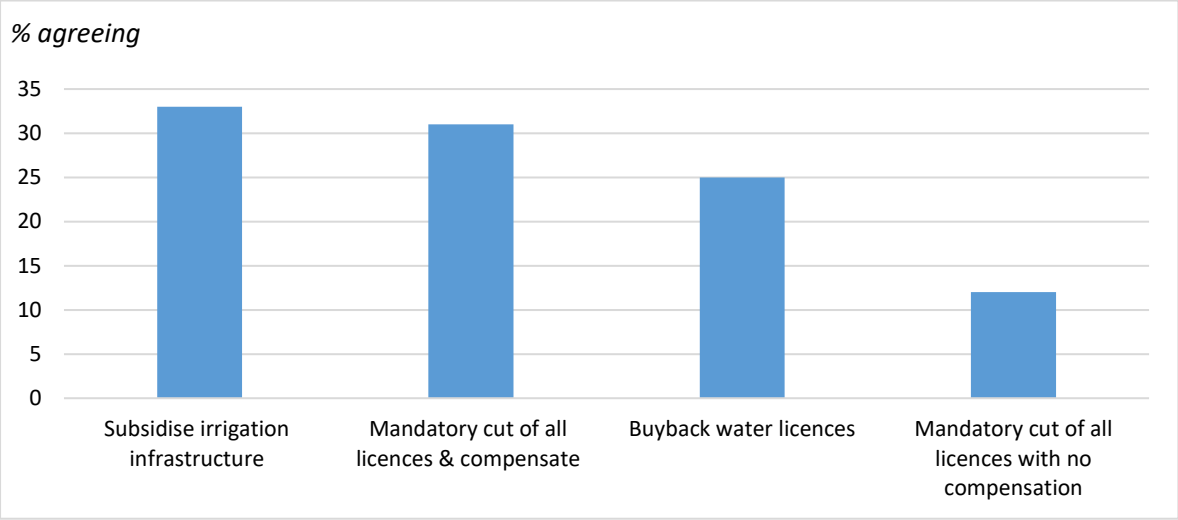
Source: University of Adelaide working paper, 2023. Graph represents ongoing work, has not been peer reviewed and results are subject to change.

3.3 Evidence Point 10: There is strong public support in Australia for using buyback and mandatory compensated cuts to water licences to achieve additional water recovery. When respondents were asked their preferences for future water recovery approaches (among those who believed there should be future water recovery – see Figure 5), subsidising irrigation infrastructure and other supply projects was identified as the most preferred individual policy method, at 33%; followed closely (31%) by cutting all irrigation water licences by the same percentage (compensated via compulsory acquisition at market prices); then buybacks (25%); with cutting all irrigation water licences by the same percentage, without compensation, the least preferred method (12%). Hence, reacquisition of water entitlements via the market (both through voluntary tender and compulsory funded acquisition) was the preferred overall strategy for 56% of respondents.

Similarly, it has previously been shown that irrigators' preferences for market-based water recovery mechanisms is a lot higher than lobby groups suggest (Loch et al. 2014).

Sept 27th 2023

Figure 5: Australian Public's Preferences for Various Methods to Achieve Water Recovery (n=749, sample weighted %)



Source: University of Adelaide working paper, 2023. Graph represents ongoing work, has not been peer reviewed and results are subject to change.

In sum, from a public policy and taxpayer perspective there is no socio-economic justification that water should be recovered through irrigation infrastructure versus buying the water back from willing irrigators.

4 Water market legislation planned changes[4]

Wheeler (2022) provides a review of the water market literature, and shows that water markets provide many benefits to irrigators and also the economy in the MDB.

4.1 Policy Recommendation 8: We support the following changes in regards to the water market legislation: Safeguards against water market manipulation and insider trading rules, with associated substantial penalties and enforcement rights for the ACCC; the intermediary code of conduct which specifies detailed behaviour provisions and trust account rules, together with penalties for non-compliance; the abolishment of 'grandfathered tagged' entitlements; and the need for more water market data standards are all positive developments. Recognising irrigation infrastructure operators as water market intermediaries and bringing them under the umbrella of data quality and capture regulation is also a strong beneficial reform.

4.2 Evidence Point 11: We raise questions regarding the following water market changes: The amendment bill fragments water market regulatory and compliance responsibility and, thus, appears to have departed from the original ACCC advice about the need for uniting water market reform under one organisation. For example, it is proposed in the amendment legislation that the BOM be responsible for water market data collection and data standard setting; the ACCC for policing insider trading, market manipulation and the intermediary code of conduct; and the IGWC for

[4] We are grateful to Dr Constantin Seidl, University of Adelaide, for helping us prepare the section on water market changes.

compliance with the water market data standards and BOM's data handling performance. However, it is unclear which organisation will be responsible for implementing the intermediary code of conduct, as the legislation states that the code may delegate its powers to a) the minister, b) the ACCC, or c) another person.[5]

4.3 Policy Recommendation 9: We believe there a strong argument for a re-established and revamped National Water Commission (NWC) that would be allocated some of the powers proposed to be given to other entities while assuming responsibility for the water market overview. That is, unite water functions under one organisation. In particular, a revamped NWC should conduct water audits, support water extraction measurement, play a role in creating opportunities for consideration of broader water values; and implement robust risk analyses of government-funded water infrastructure and also a range policy options and water reforms.

Summary of Nine Key Policy Recommendations

1. **Remove cap on buybacks,** and reallocate government expenditures back to voluntary permanent market purchase while evaluating purchases of water allocations (perhaps through longer-term lease arrangements) to supplement water entitlement purchases.
2. **Carefully evaluate past on-farm irrigation infrastructure programs and provide guidelines on best performing programs.** Although on-farm irrigation infrastructure programs are not recommended by us as first best policy, if they are to be used to meet the goals of the Basin Plan then, we recommend that uniform and scientifically creditable program guidelines for best practice be a) created, including measurement of the consequences on return flows; and b) followed.
3. **Cull all existing SDL and constraints projects that are shown to be not working, ineffective and not socially beneficial.** Giving them more time will not make non-performing projects better and they should be terminated.
4. **A standard for economic evidence used in water policy is needed to protect the public interest**. The Commonwealth, including the MDBA, and states have commissioned millions of dollars of research on the economic impacts of water policy, many of which has been shown to be of very low quality. In addition to setting a standard for attribution based on scientifically recognised best practice for evidence

[5] Furthermore, it is unclear how sole traders are affected by the intermediary code of conduct and the water market data standard provisions, as they are likely deliberately exempt to reduce administrative burden. Provisions need to be in place to determine what happens if sole-traders breach data standards and code of conduct provisions. The water market data standard setting by BOM can create a legislative grey zone in regards to mandatory price reporting, because the amendment act already removes relevant passages from the Basin Plan, but also relegates these items into the regulation determining the water market data standards, which by will not be in force for a while after the amendment bill has passed. Until they become active, mandatory price reporting may effectively be abolished.
Another issue in the water markets data standard is data disclosure provisions. Firstly, data can only be disclosed to the ACCC, the IGWC, and if it is in the "public interest". It is unclear whether making data available for scientific research is or is not in the public interest. Furthermore, the BOM is prohibited from publishing data identifiers, which allow water market participants to be identified, unless they are already published. It is unclear how this interacts with the "unique identifier" for water market participants as recommended by the ACCC. Does it rule out any newly created identifier, and would it enable ABNs to be used, as they are already publicly available?

that informs policy, DCCEEW and MDBA should undertake long-term research with credible methods (e.g. large sample sizes, dynamic assessment, longitudinal impacts, spill-over effects, area modelling at postcode level).

5. **Discard the socio-economic 'neutrality' test for the addition 450GL recovery**. The objectives of the efficiency program in the Water for Environment Special Account are to achieve 'neutral to positive socio-economic outcomes that are supported by the community'. This test is without foundation, and taken at the scale recommended, *any* potential project in relation to any government project would not pass the neutrality test. Further, when evaluating a project under the neutrality test, who measures impact? Is the impact based on actual quantified reliable evidence?
6. **Additional research is need on the economic benefits of water recovery for First Nations people and their Country, and downstream communities**. Recent community experience such as mass fish kills, and lack of domestic water supply in some communities in the Northern Basin, show that low stream flows impact more on communities than irrigation outcomes. Yet research to date has primarily concentrated on irrigation impacts of water allocation changes. Estimating the values of water in all uses (including in stream) is a critical priority and is urgently needed to ensure a balanced and evidence-based view of Basin regional economy impacts of environmental water recovery.
7. **Additional research on the outcomes of regional diversification fund expenditures, and the need to design proper structural adjustment programs**. Given 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.
8. **The following changes in regards to the water market legislation is supported:** Safeguards against water market manipulation and insider trading rules, with associated substantial penalties and enforcement rights for the ACCC; the abolishment of 'grandfathered tagged' entitlements and the need for water market data standards.
9. **There a strong argument for a re-established and revamped National Water Commission (NWC)** that would be allocated some of the powers given to other entities, while assuming responsibility for water markets. In particular, a revamped NWC should conduct water audits, play a role in creating opportunities for consideration of broader water values; and implement robust risk analyses of government-funded water infrastructure and also a range policy options and water reforms.

Sept 27th 2023

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Sept 27th 2023

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