



Submission to the Productivity Commission

Murray–Darling Basin Plan: Five-year
assessment

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Acknowledgement of the Traditional Owners of the Murray–Darling Basin

The Murray–Darling Basin Authority pays respect to the Traditional Owners and their Nations of the Murray–Darling Basin. We acknowledge their deep cultural, social, environmental, spiritual and economic connection to their lands and waters.

The guidance and support received from the Murray Lower Darling Rivers Indigenous Nations, the Northern Basin Aboriginal Nations and our many Traditional Owner friends and colleagues is very much valued and appreciated.

Aboriginal people should be aware that this publication may contain images, names or quotations of deceased persons.

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The Basin Plan – five years on

We are now five years into implementing the Murray–Darling Basin Plan.

This is a time to report to the community on what has been achieved, to set out the things that have worked and those that could be improved, and to look ahead at what needs to be done over the next five years and beyond.

The Plan is a new way of managing the Basin. Implementing it requires innovative tools. Without them, the Plan will not achieve its outcomes.

Much of the past five years has been taken up with developing, negotiating and consulting on these tools. At the same time, there have also been some significant on the ground results.

Over the next five years the tools required for delivering a healthy working Basin will be in place or well underway.

Internationally, the Basin Plan is at the frontier of sustainable water management across multiple jurisdictions. This means guidance about our work is not available elsewhere. Instead, it must come from the continuous appraisal of experience and our being prepared to learn, adapt and evolve.

The origin of the Basin Plan and the Murray–Darling Basin Authority

The collective management of the Basin dates from 1914, when New South Wales, Victoria, South Australia and the Commonwealth signed the River Murray Waters Agreement. It settled states' shares of River Murray water, a governance structure, and capital works to regulate the river. Everything else – the management of the water resources within a state, licencing of use, and compliance — was left with each of the states. The Commonwealth's role was confined to providing a quarter of the funding and mediating disputes between states when called on.

The Agreement established a consensual governance process for trying to reconcile the states' competing interests in the river. As autonomous entities, the states were committed to retaining their independence, and would only join in co-operative action when there was a benefit to their constituencies from doing so. For this reason, decisions required unanimity, giving each state a veto power. Action could only occur if everyone agreed.

The work of the Agreement was to underpin economic development by securing and managing water for irrigation. In its early days, the catch cry was to 'irrigate the river dry'. Until late last century, water was regarded as an economic resource to be mined for irrigation.

From the 1970s on, as water allocations began to push against the limits of availability, the consequent environmental stresses, such as salinity, blue green algae and the closure of the Murray mouth, became starkly evident and of increasing community concern. However, addressing water quality entailed costs, by way of constraints on state autonomy, limits on irrigation, and the financial costs of capital works projects like salt interception schemes, which yielded benefits outside the

jurisdiction. In the face of these costs, states were slow to agree on actions to address water quality problems.

On the eve of Australia Day 2007, pressed by the Millennium Drought – the worst in recorded history – then Prime Minister John Howard proposed that the Commonwealth take over water management in the Basin and end the Murray–Darling Basin Agreement.

The Commonwealth argued that the lowest common denominator decisions of consensual governance meant over-allocation and water quality problems were not being tackled as they needed to be.

A new Commonwealth body was proposed, to be a ‘voice for the Basin as a whole’. The central idea was that the inter-connected Basin river system needed to be managed as the single entity it is, by a new body. As an independent group of experts, not representing state interests, the new body would make evidence-based recommendations to the Commonwealth minister about how to address over-allocation and restore the health of the Basin.

With bipartisan Parliamentary support, the Commonwealth enacted the *Water Act (2007)*. The Water Act authorised the making of a Plan for the management of Basin water resources. The Murray–Darling Basin Agreement remained in place and states’ water management powers were unaffected.

As a result planning for Basin water resources occurs under the Water Act and the Murray–Darling Basin Agreement by a Commonwealth entity, the Murray–Darling Basin Authority (MDBA). Governance of the MDBA is by a six member board, with skills in fields relevant to the MDBA’s functions, including ecology, economics and water resource management. As an independent, expert group, the Authority is a circuit-breaker to the constraints imposed by the competing interests of state politics. Having an expertise-based Authority is critical to developing a Basin-wide perspective, based on evidence, and being able to make judgements to optimise economic, social and environmental outcomes from Basin water resources.

The MDBA has two distinct roles and serves two masters:

1. Under the Water Act, as the independent, expert body the Commonwealth had proposed, the MDBA is responsible for developing a whole-of-Basin plan, which sets a sustainable diversion limit (SDL) on the quantity of water that can be taken from surface and groundwater resources. The SDL is implemented through state water resource plans accredited by the Commonwealth Minister with responsibility for water, on the advice of the MDBA. The MDBA is an enforcement agency for the Basin Plan and state water resource plans. With bipartisan support in the Commonwealth Parliament, the Basin Plan was made on 22 November 2012, with the SDL to take effect from 1 July 2019.
2. Under the Murray–Darling Basin Agreement, the MDBA is responsible for operating the dams, locks and weirs that regulate the River Murray and for managing joint natural resource programs on behalf of the states and the Commonwealth. This work is over-sighted by a Basin Officials Committee with states and Commonwealth representatives, on which the MDBA is an observer, and by a Ministerial Council.

The Basin Plan

After 100 years of managing water for economic development under the Murray–Darling Basin Agreement, the Basin Plan will ‘restore the balance’ between extractions and the volume of water left in rivers and groundwater systems. To improve the environment, a reduction in water use was required.

As with all resources for which there are alternative uses, water is a scarce resource. The recurrence of severe droughts means this is particularly true in Australia.

Scarcity means more water being allocated for one purpose or at one location is less for another purpose or location.

The Basin Plan seeks to restore balance in three ways:

- First, through increasing water for the environment – thereby reducing the amount available for consumption.
- Second, by improving the way in which water for the environment is managed, it is possible to deliver the same environmental outcomes using less water.
- Third, by improving the efficiency of water distribution and use, agricultural production can be maintained or enhanced while using less water.

In approaching its task, the MDBA was mindful of the need to establish an environmentally sustainable limit on the volume of water that could be taken from the Basin. In the longer run, restoring the balance serves consumptive use, because industry and communities need a healthy river system. The experience of the three decades preceding the Water Act was that over-allocation led to deteriorating water quality. Poor water quality reduces agricultural productivity, increases farming costs, compromises drinking water quality and diminishes the social and cultural amenity of water resources.

A decision on the balance is a trade-off judgement about the uses of water to optimise economic, social and environmental outcomes from the resource.

There is no one objectively correct answer about what the water balance should be. Setting the balance is a judgement, informed by the strongest available evidence, which is best made at the whole-of-Basin scale by the independent, expert body.

The Basin Plan sets an SDL reduction of 2750 GL, to achieve a healthy, working Basin.

As a legal instrument with clear prescribed review provisions, the Plan provides a level of certainty for industry and the community, which is important for business decisions and investment, and for families and communities thinking about their futures.

MDBA and the Basin Plan – the way we do our work

The MDBA implements its responsibility for the Plan through leadership, collaboration with states, and consultation with stakeholders, Aboriginal people and the wider community

As the voice for the Basin, the MDBA leads by setting the parameters for sustainably sharing the water, by ensuring compliance with these parameters, and by being accountable.

We underpin our leadership by relying on the best available evidence. This requires an investment in science. Good science is critical to the Plan. The Plan requires an understanding of the socio-economics of the Basin, its environmental assets and ecological processes, and the volume and quality of surface and groundwater resources. Science is also a matter of developing models to understand the dynamics of change and adaptation, and to identify different possible futures.

In relation to collaboration, the delivery of key elements of the Plan, such as the SDLs being implemented through accredited state water resource plans, is a shared responsibility between the MDBA and the states. Although this arrangement has the benefit of subsidiarity, by which decisions are made at the local level, it exposes the Plan to the enduring dynamic of state politics.

Each state's desire for autonomy, and the pressure on them to serve their constituencies, makes reaching agreement with states the greatest challenge to implementing the Plan. However, it is a fact of life with which the MDBA must work.

Consultation yields knowledge about local circumstances and values, and helps generate ownership of the Plan by communities. For the Basin Plan, as in all other areas of public policy, effective consultation depends on clearly defining the scope of the matters for consultation, ensuring participants' expectations about their role are clear, credible and accepted, and on consultations being conducted openly and in good faith by the MDBA.

By having all interests represented in one place, consultations crystallise the competing uses. On the one hand, this makes for tensions and conflict in the room. On the other, articulating different views is a prerequisite to reaching an outcome, though it will never be one with which everyone is satisfied.

Consultations with Aboriginal people, stakeholders and the broader community are critical to the effectiveness of the Plan's implementation. For this reason, we devote considerable effort to engaging with the community. Despite this, for us, and possibly others, it is rare to get consultations exactly right. So, we continually review experience to improve our consultation processes.

The MDBA has placed particular emphasis on consultations with Aboriginal people. These consultations are premised on our recognising and acknowledging that the Traditional Owners and their Nations in the Basin have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters.

There is much to learn from Traditional Owners about natural resource management. Ngarrindjeri elder Tom Trevor's powerful statement of their approach is at the very start of the Basin Plan:

Our traditional management plan was don't be greedy, don't take any more than you need and respect everything around you. That's the management plan – it's such a simple management plan, but so hard for people to carry out.

Extensive consultation was undertaken with Aboriginal communities on the draft Plan. Since then, we have been committed to developing ways of engaging with Aboriginal people in implementation.

Previously, Aboriginal people have been consulted about their aspirations for water use. A better model is for Aboriginal people to have a direct role in deciding what to do. For this, they need to have capacity and opportunity.

To that end, the MDBA has fostered the development of two peak Aboriginal organisations in the Basin, the Murray and Lower Darling Rivers Indigenous Nations (MLDRIN) and Northern Basin Aboriginal Nations (NBAN), to the point where both have become independent and self-determining.

Given the complexity and extent of reforms in the last ten years, it is reasonable for people not to feel confident they understand the new arrangements. For these reasons, communicating with people about what we are doing and engaging with communities is one of our highest priorities.

To help communication and engagement, we now have offices in Toowoomba, Albury–Wodonga and Adelaide. Regional Engagement Officers have been appointed in the Condamine–Balonne, Lower Darling and Sunraysia, Murrumbidgee, Lower Murray, Goulburn Murray and Upper Murray regions.

Our aim in the way we lead, collaborate and consult is to build a shared purpose. By this we mean a commitment by all to the good of the Basin. A prerequisite to a shared purpose is trust – trust that the MDBA is doing what needs to be done.

It is fair to say there is still a road for us to travel on this score.

Ultimately, people want to see results, and results in the Basin take time. For now, we are working to build a shared purpose and to gain the community's trust by being transparent and open; consistent in the way we do things; and impartial, by relying on the best evidence for what we do.

The effectiveness of implementation – the first five years

Looking back over the past five years, the implementation of some elements of the Plan have worked well. Others are behind schedule or, in the case of compliance, issues have arisen that were not foreseen.

For transparency, and to inform our future work, the record of achievements and challenges is presented here.

Environmental water

Planning for and delivering environmental water is central to the Plan. Since the Plan came into effect, there have been over 750 environmental watering events, sending 4500 GL of water down the Basin's waterways. The volume of water being delivered has increased markedly over time, as co-ordination between the Commonwealth and states, operators and water holders has improved—14,500 GL was delivered in 2013. Three years later, in 2016-17, the volume was 2320 GL.

The outcomes have been gratifying. To give some specific examples, we have seen one of the largest Murray cod spawning events in the Lower Darling in the last 20 years, the first ever recorded breeding of pelicans at Nimmie-Caira, and extraordinary sightings of regent parrots, a threatened species, at Hattah Lakes. Watering of the Gunbower Forest has yielded improvements in the condition of river red gums and strong aquatic plant growth. The successful mass spawning of golden perch in the Goulburn River in 2014-15 produced what community members report as being 'the best fishing in years'.

Sustainable Diversion Limit Adjustment Mechanism

The Plan provides for a Sustainable Diversion Limit Adjustment Mechanism. This mechanism provides for the adjustment of the SDL determined in the Plan, to take account of two kinds of measures. The SDLAM is driven by the notification of:

- 'supply measures' being measures which operate to increase the quantity of water available to be taken, while retaining equivalent environmental outcomes (that is, by which less water needs to be recovered in order to achieve environmental outcomes equivalent to 2,750 GL of recovery); and
- 'efficiency measures' being measures that operate to decrease the quantity required for consumptive use, while achieving neutral or improved socio-economic outcomes (that is, which increase water recovery, without leading to socio-economic impacts beyond those of the 2,750 GL reduction)

Developing the SDL Adjustment Mechanism during the negotiation of the Plan with states was critical to addressing the conflicting interests of the states. For their part, Victoria and NSW were concerned about the socio-economic impacts of 2750 GL. On the other hand, South Australia was concerned that the Plan would not yield the environmental improvements it wanted.

Supply measures include works like regulators to manage floodplain flows, changes in river operating rules to more effectively deliver water for the environment, and addressing constraints that limit the capacity to inundate floodplain assets. Efficiency measures increase on-farm and off-farm water use efficiency, such as piping and lining channels, or improved water delivery systems for urban and industrial water use. Basin states are responsible for developing the supply measures, while the Department of Agriculture and Water Resources is responsible for the efficiency measure program. The MDBA's role is to determine the environmental outcomes and SDL adjustment value of the package of supply measures.

Supply measures in the southern Basin yielding up to 605 GL have been identified by states, to be implemented by 2024. To ensure accountability for the SDL Adjustment Mechanism, in 2024 the Authority will make a decision on whether it considers that the package of supply measure projects and any additional efficiency measures, as delivered, provide the environmental outcome determined in 2017. If the MDBA determines that the outcome would be different, it will undertake a reconciliation process, and adjust the SDLs to reflect the actual environmental outcomes. Governments would have to make up any shortfall in water recovery outcomes.

The Commonwealth also has until 2024 to implement efficiency measures to recover 450 GL of additional water for the environment, using funds set aside in the Water Act's Water for the Environment Special Account.

The Special Account includes funding to implement a program to address constraints to improve environmental watering. A number of the supply measures will address constraints, such as low lying bridges, flood easements and operating rules.

For the MDBA, the SDL Adjustment Mechanism has presented some significant challenges, by way of: the need for knowledge – a very detailed, robust understanding of environmental assets and condition; method – developing ways of modelling and assessing the impacts of projects; and process – managing the work with states.

Our work in these areas has been recognised by an Independent Review Panel of scientists as high quality and innovative.

As the proponents, states are responsible for consulting with their communities about the projects. Feedback from communities is that they would have liked more information to understand better what was being proposed. Many of the projects are complex, with questions around how they will work on the ground. Going forward, committing to comprehensive consultations with the community should be a priority for the states to secure a social licence for the supply measures.

A social licence will require transparency about project delivery and operation. For this reason, external oversight and reporting of project roll out would be valuable. While the Joint Venture arrangement of the Murray–Darling Basin Agreement is the logical vehicle to deliver many of the projects, this has not yet been agreed by the partner governments.

In relation to efficiency measures, two measures have been notified, under which individual projects can be brought forward through to 2024.

As with earlier programs, water saved through efficiency projects will be transferred as environmental water, and form part of the Commonwealth Environmental Water Holder's portfolio.

Concerns have been raised about the test of neutral or improved socio-economic outcomes for efficiency measures.

At the request of the Murray–Darling Basin Ministerial Council, an independent review by EY (formerly Ernst and Young) was commissioned in 2017 on how best to design, target and resource the efficiency measures.

The report found that water recovery of between 209 GL and 690 GL is possible in a socio-economically neutral or positive way.

EY recommended phased implementation of efficiency measures, along with improved engagement of stakeholders, and monitoring and evaluation to assess the impacts of projects.

Northern Basin Review

At the time the Basin Plan was made, it was recognised that the understanding of the northern Basin was far less robust than it was for the southern Basin. For this reason, the Plan provided for detailed new work on the environment and socio-economics of the northern Basin, from which to review the initial water recovery target of 390 GL.

The Review was four years of work that drew together hydrological, social, cultural, economic and environmental investigations. At its centre was a consultative body, the Northern Basin Advisory Committee (NBAC). The work also required collaboration with the NSW and Queensland governments.

The outcome was a recommendation that recovery be reduced to 320 GL. The MDBA estimates this would save 200 jobs in the region. When combined with 'toolkit' measures recommended by NBAC for improved flow management, including protecting environmental flows, the lower water recovery would yield similar environmental outcomes to what would have been achieved with 390 GL of water recovery.

A key learning from the Review is that flow management is at least as important as the volume of water recovery, and that this is especially so in the highly variable, unregulated rivers of the northern Basin. However, the MDBA cannot prescribe the adoption of the toolkit measures. This is a matter for the NSW and Queensland governments.

The Northern Basin Aboriginal Nations (NBAN) did not support the recommended 320 GL target, in part due to their concerns about impacts on downstream communities, such as Wilcannia and Brewarrina. They also raised concerns about reduced access for Traditional Owners to waterways and the need for more active involvement by Aboriginal people in decision-making about environmental water.

The MDBA's Review report recommended actions to address these issues, including ensuring Aboriginal access to waterways, replacing or refurbishing weir pools, at locations such as Wilcannia

and Cunnamulla, and supporting communities affected by water recovery to adjust to changing social and economic conditions.

On 7 May 2018, the Minister for Agriculture and Water Resources announced a range of commitments to support implementation of the Basin Plan, including funding to support indigenous communities investing in water entitlements and for economic development projects.

Compliance

Allegations of water theft raised in July 2017 have resonated deeply across the Basin. The perception that wrong doers are not detected or punished is corrosive to the very many entitlements who do comply with the rules and to the broader community, which may doubt the appropriateness of the social licence under which water is taken.

The community has expressed considerable frustration with the MDBA and some Basin states for not responding adequately to potentially serious breaches of water rules and the alleged misuse of environmental water.

This focus on compliance was not anticipated by the MDBA. It was clear we had given insufficient attention to the need for a clear statement of our compliance role, and had not dealt adequately with allegations of compliance breaches.

We are committed to fixing the problem by implementing the recommendations of the ‘Murray–Darling Basin Water Compliance Review’, published in November 2017.

The MDBA has six areas of compliance responsibility:

1. Water resource plans (WRPs) – once accredited, the MDBA is responsible for ensuring regulated entities, including Basin states, irrigation infrastructure operators and individual water access licence holders, comply with WRPs.
2. Sustainable diversion limits (SDL) – the MDBA is responsible for establishing and maintaining a register of take to assist with determining whether there has been non—compliance with the SDL. The MDBA also works to ensure that the methods for measuring consumptive use (such as metering coverage, remote sensing and gauging) are continually improving.
3. Compliance and enforcement in relation to illegal take – although primarily the responsibility of state regulators, once WRPs are accredited the MDBA will have the power to address failures of water access right holders to comply with the conditions of their licence. In this way, the MDBA can provide an assurance of the effectiveness of compliance and enforcement frameworks within each Basin state, and thereby improve confidence in the management of water resources. If a state regulator is failing to act on allegations of non-compliance, the MDBA is prepared to escalate the issue and use its own enforcement powers.
4. Protection of environmental water – the MDBA monitors and reports on compliance with the environmental requirements of the Basin Plan.
5. Trade rules – the MDBA enforces compliance with the Plan’s trade rules, which are designed to remove restrictions on trade and improve information in the market.

6. Water quality and salinity – under the Plan, the MDBA can set water quality and salinity targets. The MDBA currently monitors and manages water quality and salinity, to provide assurance that regulated entities have had regard to targets when making relevant water management decisions.

As a first step to discharging our compliance role properly, the MDBA has established an Office of Compliance. Underpinned by increased resources, establishing a separate Office gives prominence to compliance within the MDBA and the Basin community, as well as making accountability clear. The Office will undertake audits and compliance investigations, and manage non-compliance cases. It will also work with states and other experts to develop standards and guidelines for water management and compliance, such as water measurement, and benchmark state performance.

An Independent Assurance Committee has also been appointed to advise on how the MDBA should undertake its compliance obligations and assess how well it is performing. The Committee comprises four eminent experts with wide and deep experience in compliance and enforcement. Its advice to the Authority is published.

The MDBA is seeking to clarify and enhance its powers in relation to pursuing cases of non-compliance by individuals through legislative amendment.

In December 2017, the Murray–Darling Basin Ministerial Council commissioned the MDBA and states to develop a Basin Compliance Compact, as recommended by the Murray–Darling Basin Water Compliance Review. A draft Compact is expected to be considered by Ministers at the Council meeting in June 2018 and, if agreed, would be submitted to the Council of Australian Governments for endorsement.

The Compact would commit all states and the MDBA to bringing compliance up to best practice standards. It addresses, among other things, metering, the measurement of unmetered take, transparency, the need for a compliance culture, and the way in which alleged compliance breaches are investigated and progressed.

Water Resource Plan accreditation

Delivering the SDL is central to the effective implementation of the Plan. The overall SDL must be delivered through states' WRPs. As a consequence of Victoria's water management instruments running to 2019, the Plan allowed seven years – to 30 June 2019 – for states to submit their WRPs to the MDBA for accreditation assessment.

The work is well behind where it should be.

So far, only one WRP has been accredited, one has been submitted and another two are close to being submitted for accreditation consideration. The remaining 32 are at different stages.

While it is expected South Australia, Queensland and the Australian Capital Territory will be on time, the prospects are less certain for Victoria and NSW. Victoria's first two WRPs are close to being submitted, but the remaining three are still under development and will be submitted as a package. NSW has 22 WRPs to submit.

Responsibility for the delays lies with both parties, the MDBA and the states.

One factor affecting both is that work on SDL Adjustment Mechanism and the Northern Basin Review became almost all-consuming, absorbing the time and energy of government processes.

Beyond this, we may have underestimated the amount of work needed of our staff and those of states to meet the requirements.

On the other hand, while Queensland, South Australia and the Australian Capital Territory engaged early with the process, Victoria and NSW have been much slower.

For NSW, the problems have been instability in water management arrangements, including the need to review and renew existing state planning frameworks. Recent changes in NSW have led to greater engagement and commitment in the accreditation process.

With Victoria, there have been policy tensions relating to the legal basis and policy intent of the accreditation process.

Encouragingly, Victoria has recently stepped up its level of engagement and some good progress has been made in resolving long standing policy differences.

For its part, after reviewing the lessons of experience, the MDBA has streamlined the process for accreditation. A key change is to take a more strategic approach, by dealing with policy issues common to WRPs, and adopting the agreed approach across the individual WRPs.

There is no doubt it is going to be difficult to accredit all WRPs by 30 June next year. Success depends on states submitting their WRPs in a timely way and the MDBA reviewing them efficiently.

Throughout, both sides need to ensure that process and content are robust, and deliver the priorities of the Plan.

We believe it can be done and are committed to working to the Plan's timetable.

Structural adjustment

Under the Plan, 20 per cent of consumptive use water is being withdrawn – this is a significant structural change, with some adverse socio-economic impacts. These impacts are understandably contentious. Nonetheless, faced with the imperative of restoring environmental health, all Basin state governments and the Commonwealth Parliament endorsed the Plan.

Central to the tension of Plan implementation is the speed and visibility of adverse socio-economic impacts and the slowness with which environmental benefits are realised. Environmental gains tend to be incremental and are not dramatic, unlike empty shops and people out of work.

The MDBA has undertaken more detailed research than has ever been done before on [40 southern Basin communities](#), similar to the work done for the Northern Basin Review. Some of the results of this research were published in May. The findings in relation to the impact on employment will be published in June.

MDBA analysis has found that many communities are undergoing significant changes in irrigated agriculture and experiencing similar socio-economic trends, regardless of the amount of water recovery. These trends arise from long run factors such as mechanisation in agriculture and the movement of water through trade to higher value production.

The impact of water recovery on a community depends on two factors. Typically, communities do better where recovery has been by investment in more efficient infrastructure, rather than through buybacks. Infrastructure projects generate benefits for the local economy and lead to productivity gains. The other factor is the breadth of the local economy. The more diverse a local economy, the more resilient it will be.

There is no doubt that for some communities the net effect of buybacks and water efficiency investments has been significant. These communities are not necessarily those where the greatest water recovery has occurred. Rather, they are the communities which have had the greatest difficulty adjusting to water recovery.

The MDBA does this research as part of its commitment to understand and faithfully report on the impact of Plan implementation and water recovery. We believe our work provides an important evidence base to inform policy development by governments.

Governance

In order to deliver Basin water reform, a governance arrangement is needed for decision-making, collaboration and consultation in relation to Basin Plan implementation, water recovery, the Murray–Darling Basin Agreement, and environmental watering.

In these circumstances, governance is inherently vulnerable to complexity and lack of clarity about who decides what. And so it has been over the past five years.

Dating from the start of negotiations on the draft Basin Plan, governance has become increasingly dysfunctional due to the growth in the number of committees, set up in response to specific problems, scope creep by committees and by their roles becoming blurred.

The result is duplication, with the same issues often going to a number of committees, delays, excessive resources being sucked into processes, and, most fundamentally, very few decisions being made.

Governance has also suffered from a lack of transparency, which has reduced the pressure to move matters along, limited community understanding and hindered building trust in the water reforms.

As a first step to addressing these problems, governance principles need to be agreed. These could be the following:

- In place of the existing four peak committees (Basin Officials Committee, Basin Senior Officials Group, Basin Plan Implementation Committee and the Southern Connected Basin Environmental Watering Committee), there should be one body comprising states, the Department of Agriculture and Water Resources, the Commonwealth Environmental Water Holder and the MDBA, represented by their senior officials.
- This body would be responsible for considering all Basin water reform.
- Meeting agendas should group items for each of these matters, with it being clear which items are for decision (and by whom), and which are for advice.
- Meeting outcomes should be publically reported.

Vesting all matters in one body would help develop a shared purpose for managing the Basin that has so far been absent.

If these principles are accepted, a simplified governance arrangement could be developed and agreed across agencies.

The next five years

The MDBA's goal is that the implementation of the Plan will result in the environment, industry and the community all being better off.

For the environment, this is a matter of arresting its long-term decline and beginning to restore health.

For industry, it is a matter of staying with the Plan for the certainty this gives for business decisions and investment, securing the volume and quality of water for use, and ensuring water can be traded in efficient and competitive markets.

For the community, it is a healthy, working Basin.

Next year, 2019, will be a key milestone for the Plan. Water recovery will have been completed, difficult reforms such as the SDL Adjustment Mechanism projects will be underway, the Prerequisite Policy Measures must be in place, it is expected that WRPs will be accredited, and the compliance framework will be fully operational.

With these things complete, the new tools needed for the Plan will be in place. The focus of our work then moves to ensuring that the Plan realises its intended benefits.

For the MDBA to deliver, the benefits of the Plan will require the continuing evolution and strengthening of its leadership responsibility, balanced by the need for collaboration and consultation, and underpinned by science and organisational stability.

The MDBA will be guided by its obligation to manage Basin water resources in the national interest, as an independent agency, under the guidance of the six member, expert Authority. Independence allows the MDBA to provide transparent, robust and evidence-based policy for the sustainable use of the Basin's water resources. The establishment of the Basin Plan was a world first, as it developed the MDBA as an agency responsible for cross-jurisdictional water management. The Authority will also continue to work collaboratively with Basin governments and stakeholders to deliver on the outcomes of the Plan.

To support our work over the next five years the MDBA submits that the Productivity Commission should recognise the need for the Plan to stay the course, and the challenges posed to implementation by the pressures of state politics.

In this context, we request that the Productivity Commission examines closely the following matters, with a view to making recommendations:

- Monitoring and evaluation is critical to the adaptive management on which the Plan is premised. Similarly, reporting is a means by which we account to the community for the outcomes of our work. Monitoring arrangements have been grafted on to data sources that predate the Plan. These pragmatic arrangements are not what is required. There is a need to design an integrated monitoring and evaluation framework, which brings together the work of the MDBA, the Commonwealth Environmental Water Holder and the states.

- The actions needed to implement the supply, constraint and efficiency measures, including:
 - setting milestones by which to assess progress
 - governance arrangements for delivery and ongoing performance. While the MDBA will produce annual reports that evaluate and verify each state’s progress in implementing the 36 supply and constraints projects, governance of this process has not been settled. One element of governance should be an independent review of progress. This could be done by an existing committee, such as the Independent River Operations Review Group (IRORG). Reports and recommendations by the MDBA and IRORG would need to be considered by governments.
 - building community confidence and engagement
 - active, close co-ordination between the Department of Agriculture and Water Resources and the states to expedite the development and delivery of the efficiency measures.
- Implementing the Basin Plan Water Trading Rules is critical to fostering competitive, efficient water markets. However, under the current resourcing and method of reviewing state trading rules for consistency with the Basin Plan Water Trading Rules, it will take over 35 years to complete the task. A better way needs to be found to remove restrictive and discriminatory rules that are inconsistent with the Basin Plan Water Trading Rules.
- Governance processes have become dysfunctional under the weight of duplication and the lack of clarity about who does what. This needs to be addressed, if implementation of the Plan is to occur ‘in full and on time’. The principles proposed here are the basis of a simpler, more effective and transparent governance framework.
- Building a consensus on the science behind the Plan, by working with the scientific community on key issues such as the impact of climate change on water availability and the measurement of return flows.

Concluding reflections

The Basin Plan is a big reform. It takes a long time for reforms of this scale to bed down and work as intended.

The first attempt to find a way of managing the competing interests in the River Murray was in 1857, when states were still colonies. The River Murray Waters Agreement was not settled until 1914, and only after the Commonwealth Government committed to funding the gap between what the states wanted and what they were prepared to pay.

The Agreement stood alone until 2007, over 90 years. By then, it had run its course. A new way was needed that addressed the Basin as the integrated river system it is, and that is the Basin Plan.

This is the first-ever Plan. It is now just over five years old. Much has been done and more needs to be done.

We know a great deal more than we did five years ago. It will be critical to apply this experience to the next five years.

As it has been from the beginning, the MDBA will be committed, transparent and consultative, with the expertise required to implement its responsibilities for the Plan.

The Sustainable Diversion Limit Adjustment Mechanism

IR 2 - The Commission is seeking information on:

- *risks that may prevent Basin states from successfully implementing SDL adjustment projects*
- *the extent to which adopting a different definition of 'neutral or improved socioeconomic outcomes' for efficiency measures to what is in the Basin Plan would affect the likelihood of projects being delivered on time and on budget*
- *whether there are other novel approaches to recovering water for the environment, such as purchase of entitlement options that may contribute to Basin Plan outcomes while achieving neutral socioeconomic outcomes.*

IR 4 - The Commission is seeking information on:

- *why progress to remove constraints has been slower than expected*
- *the implications of this slow progress*
- *what can be done to ensure that constraints are removed in a more timely manner while managing impacts on third parties*
- *strategies that are, or could be, put in place to increase the extent to which Basin Plan objectives are met when constraints cannot be removed.*

IR 8 - The Commission is seeking information on:

- *the extent to which the Prerequisite Policy Measures (PPMs) assumed to exist under the Basin Plan will be in place by the target date of 30 June 2019, so that the Plan's environmental objectives can be achieved under the SDLs agreed by governments, and how any identified concerns should be addressed*

Key outcomes

- A robust and innovative method for assessing ecological outcomes has been developed and agreed.
- 36 projects have been notified, with an offset of 605 GL, as determined by the MDBA. The Basin Plan has been amended to reflect this outcome.
- The modelled SDL Adjustment Mechanism package includes constraints projects for southern Basin reaches agreed by all jurisdictions – with the exception of the Goulburn River.
- A process for adaptive management and reconciliation in the period to 2024 has been developed.
- An independent assessment has confirmed the potential to deliver 450 GL of efficiency measures with positive or neutral social and economic outcomes.

Future Implementation– key issues and challenges

- An agreed pathway to implement efficiency measures in all jurisdictions must be found.
- Funding, risk management and governance arrangements for project implementation need to be agreed by jurisdictions as a matter of priority.
- Community consultation and engagement must be strengthened, particularly for the delivery of constraints and rules based projects.
- Delivering the constraints measures by 30 June 2024 will be a challenging undertaking, and working adaptively and locally with the community through this period is essential to a successful outcome for the program.
- Strong program management that facilitates a collaborative approach to project implementation between jurisdictions will be more likely to deliver the desired environmental outcomes.
- Delivery arrangements will need to be tailored to individual project needs.

The Sustainable Diversion Limit Adjustment Mechanism was included in the Plan to enable an increase in both socio-economic and environmental outcomes by adjusting SDLs set in 2012. It allows for 3200 GL of environmental outcomes under the Plan, with the socio-economic impacts of down to 2145 GL. The addition of this mechanism was an important factor in getting Basin states to sign up to the Plan.

Fully implemented the SDL Adjustment Mechanism will yield an environmental dividend equivalent to water recovery of 3200 GL (2750 GL + 450 GL) and the socio-economic impact of 2145 GL (2750 GL – 605 GL). This outcome is dependent on state delivery of contracted water recovery commitments, the outcome of planning assumption arrangements, and any potential reconciliation of SDL adjustment projects in 2024.

Under the SDL Adjustment Mechanism, supply measures must achieve equivalent environmental outcomes with less water, reducing water recovery required under the Basin Plan. Examples include environmental works which use regulators and other infrastructure to deliver water onto floodplains and wetlands. They can also include changes to the rules used to manage and operate rivers: for example, better aligning water released from storages with when it is needed by the environment.

Additional water for the environment is available through projects that make agricultural, water delivery and urban water use practices more efficient. This efficiency measure program of works will be run across the whole of the Basin to December 2023.

In October 2017, the MDBA determined that the package of supply projects agreed by Basin governments could deliver Basin Plan environmental outcomes in the southern Basin with up to 605 GL less environmental water. This determination reduces the water recovery task in the southern Basin and was supported by Basin governments through the Murray–Darling Basin Ministerial Council.

The SDL Adjustment Mechanism amendment was given to the then Commonwealth Minister responsible for water on 8 December 2017 and became law on 13 January 2018.

As part of the debate in the Senate on the amendment, an agreement was reached between the Commonwealth Government and the Federal Opposition to strengthen the SDL adjustment mechanism through a range of actions. These include an expression of interest for efficiency measures across the Basin, linking payments under the supply measure national partnership agreement to the delivery of efficiency measures, increased transparency through technical workshop reporting on the projects and public reporting on constraint measure progress.

Project assessments

Supply measure projects underwent a rigorous assessment at both the individual and package level. At the individual level, projects had to pass a phased assessment by Basin states and the Commonwealth, with the MDBA providing technical analysis and support. Jurisdictions examined each proposal against [a series of agreed criteria](#) at the feasibility and business case stages.

In response to issues raised during the assessment process, projects were modified, further analysis was done, and actions were agreed to deal with any remaining issues during project refinement and implementation. Only once proponents had addressed issues raised during assessments, to the satisfaction of all parties, was the project included in the final package notified to the MDBA.

Once the package was notified to the MDBA by jurisdictions, the MDBA operated the SDL Adjustment Mechanism according to the peer reviewed, scientific assessment method within the Plan, designed through a collaboration of Basin governments and the CSIRO. The development and use of the method is a significant advance in the way we consider ecological outcomes and is the first of its kind used worldwide. It includes tests for ecological equivalence and impacts on flow indicators.

Both the method, and the MDBA's application of the method, were independently reviewed by experts in the field. The method was found to be "scientifically fit for the purpose intended under Schedule 6 of the Basin Plan" and the MDBA's application of the mechanism was judged as correctly implemented.

Constraints

In developing the Plan, governments identified a number of constraints preventing the full benefits of water for the environment from being achieved. A constraint here means anything that reduces the ability to deliver water for the environment.

Relaxing constraints increases the ability to release and move water for the environment through the system, and better deliver this water when and where the environment will benefit most. This maximises environmental outcomes and can provide floodplain benefits that would otherwise be difficult to achieve. The relaxation of constraints is essential to fully realise the benefits of water recovery under the Plan, including the additional 450 GL from efficiency measure projects.

The enhanced environmental outcomes to be pursued with the 450 GL efficiency water are set out in schedule 5 of the Plan. In developing the Plan, modelling was undertaken for a number of scenarios, including the 2800 GL run. This modelling examined possible outcomes for a range of over a hundred environmental indicators, including average salinity in the Coorong and barrage flows, with a given level of reduction in consumptive use. Actual outcomes will depend on a variety of factors, including, the location and type of entitlements purchased, water management and sharing policies and how environmental water is used.

Constraint relaxation projects also improve the capacity of other supply and efficiency projects to achieve their intended outcomes. Measures to address constraints include raising low-lying bridges to improve access in the face of environmental flows, changes to river management rules and creating easements to enable higher managed flows to be delivered.

During the development of the Plan, a range of constraint relaxation options and scenarios was explored, based on the understanding at the time. Since then, our knowledge of the range of opportunities available, and the on-ground realities of constraint relaxation, have informed the proposals brought forward by states. While they may not be delivered exactly as conceived in the Plan's development modelling, constraint measures will need to achieve the ecological outcomes anticipated in the Plan.

Five constraints projects have been proposed as part of the SDL adjustment supply measure package:

- Hume to Yarrawonga
- Yarrawonga to Wakool Junction
- Murrumbidgee
- Lower Darling
- Lower Murray (in South Australia).

Projects to manage constraints in the Gwydir will be considered as part of the toolkit measures in the northern Basin. The Goulburn area was proposed only as a constraint proposal, and is not part of the supply measure package. All measures are to be in place by 30 June 2024.

Developing constraint measures began with a series of investigations in the MDBA's Constraints Management Strategy (CMS) 2013. States participated in the development of the strategy, and through this canvassed management practices worthy of further examination and their associated benefits and risks.

The strategy contained a series of agreed actions, including a proposed timetable for constraint measure development and implementation over the next 10 years, seven key focus areas for further analysis, and broad areas of operational and management practice for further consideration. The CMS provided a basis for considering constraints with governments, Basin communities and landholders, but did not set flow targets.

While there are multiple environmental and community benefits to relaxing constraints, governments recognise that some members of the community have concerns about what higher flow rates in the river will mean for them. In a number of cases this limited flow rates which Basin states were prepared to put forward as part of their constraint projects.

The management of constraints is an evolving space. The ideas and understanding of potential flow rates in the CMS do not always mirror the understandings of today, and different management arrangements may be possible to achieve the original goals. States recognise this in business cases, which commit to the continued investigation of ways to relax constraints, and were able to contemplate more ambitious flow rates in some business cases as a result. For example, the use of 'buffers' reflects the understanding that higher flow rates are only needed occasionally to achieve environmental benefits.

Working adaptively with communities is the only pathway through which constraint relaxation can be delivered. A key element of constraint relaxation under the Plan is the mitigation of third party impacts arising from changes to the delivery of water for the environment.

State governments have committed to the following principles for constraint projects:

- extensive community consultation, including identifying the most effective way to mitigate adverse impacts
- funding infrastructure to ensure that third party impacts of proposed flows are mitigated
- no managed flows at increased levels to occur until all necessary works are complete, noting that it may be possible to have a staged relaxation of constraints.

The Goulburn constraints project currently includes flow rates that are lower than originally estimated by Victoria in settling the Plan. In assessing this constraint project, jurisdictions and the MDBA will need to be satisfied that environmental outcomes are delivered.

Mitigating any third party impacts from higher managed flow levels has the benefit of also mitigating the impacts of natural flow events at the same levels. In addition, communities can benefit from increased infrastructure projects in their area, through economic opportunities for local contractors and the flow on benefits from project expenditures.

Efficiency measures

Efficiency measure projects make water delivery systems more effective. This can include replacing or upgrading on-farm irrigation, or lining channels to reduce water losses within an irrigation network. Water saved through efficiency measures is returned to the environment, improving environmental outcomes subject to neutral socio-economic outcomes.

The Commonwealth has implemented gap bridging water efficiency programs across the Basin since 2008. Project reviews have consistently shown benefits to irrigators that are broad and enduring, such as improvements to crop yield, quality and flexibility.

Two efficiency measures were notified as part of the package of SDL Adjustment Mechanism projects. Within the scope of those notifications, efficiency programs can roll out through to 2024, to be included as part of the 450 GL of water.

Progress with efficiency measures has been slow, with NSW and Victoria in particular reluctant to pursue water recovery above 2750 GL, citing negative impacts on irrigator communities. Despite a COAG commitment to implementing the Plan in full and on time, a credible pathway to deliver efficiency measures has been lacking.

The test for neutral or improved socio-economic outcomes in the Plan is participation, that is, any adverse impacts should at least be balanced against the positive impact, or alternative arrangements proposed by a Basin state, assessed by that state as achieving water recovery with neutral or improved socio-economic outcomes. Participation is taken to mean benefits are equal to or outweigh costs. If that were not the case, participation would not occur.

Concerns have been expressed about this definition, and its applicability at the community scale. In response to these concerns governments commissioned a review of how to best design, target and resource efficiency measures to provide additional water for the environment, while not impacting adversely on communities and industries.

The review, conducted by EY, reported to ministers in December 2017. The EY report found indicatively between 209 GL and 690 GL in efficiency measures is achievable in a way that is socio-economically neutral or positive, consistent with Plan requirements. The report focusses on the cost-benefit relationship for different types of efficiency measures, and recommends a phased implementation approach to ensure that potential adverse socio-economic impacts are avoided, for example, through planning and targeting a particular industry to avoid a competitive advantage for participants over non-participants within that industry.

The two elements of the SDL Adjustment Mechanism, supply and efficiency measures, are connected. The amendment to the Plan allows for both supply and efficiency measure adjustments to SDLs, and a minimum of 62 GL of efficiency measure entitlements is required by 2019 to allow the full 605 GL to be realised within the 5 per cent limit set in the Plan.

In May 2018, the Commonwealth announced that it will link payments under the National Partnership Agreement for the delivery of supply measures to states demonstrating full cooperation with the delivery of efficiency measures. Under this approach, state access to supply measure funding would be conditional on the Commonwealth being able to roll-out any efficiency measure programs as provided for in the Water Act 2007 and the Plan. These arrangements would be set out in performance milestones under National Partnership Agreements with the states.

The efficiency measures program runs through until 31 December 2023, and is available across the whole of the Basin, both north and south. Water saved through efficiency projects will, up to 2024, be progressively transferred back into the system as environmental water, forming part of the Commonwealth environmental water holdings.

Prerequisite policy measures

Prerequisite policy measures (PPMs), called unimplemented policy measures in the Plan, maximise the beneficial outcomes of proposed supply measure projects. They include arrangements to re-credit environmental return flows from floodplains for downstream environmental uses and enable environmental water to be released from dams to complement natural flow events in ways that deliver more environmental benefits.

States have submitted implementation plans for PPMs in surface water areas affected by supply measures, which includes the entire southern connected Basin. These plans have been assessed by the MDBA to ensure they will deliver on the required protections and management arrangements. The assessments were further reviewed by the Independent River Operators Review Group (IRORG) members, who found them to be appropriate, and recommended monitoring arrangements.

Work with Basin states and others in relation to this aspect of the SDL Adjustment Mechanism was not, initially, clearly communicated and included aspirational requirements. Even when the process was clarified between the MDBA and states, there remained a reluctance to progress PPM implementation plans in some states. Resolving these issues took some time, but the plans were all reviewed and agreed prior to the operation of the SDL Adjustment Mechanism.

In determining the SDL adjustment amount, MDBA modelling assumes PPMs are in place. This assumption is based on the assessment of state implementation plans. If, however, the arrangements are not in place by 30 June 2019, the Plan requires the MDBA to recalculate the SDL adjustment amount in 2024 without this assumption, which would reduce the adjustment determination.

A process for reporting on progress with implementing PPMs was agreed by jurisdictions in March 2017, with quarterly reporting to an interjurisdictional committee and an annual review by the IRORG, reported to the Basin Officials Committee.

Challenges, risks and next steps

The MDBA's determination of the SDL adjustment is the culmination of a four-year collaborative work program between Basin states, the MDBA and the Commonwealth. The focus now is to ensure that the benefits of the SDL Adjustment Mechanism are realised, for both communities and the environment.

The projects are all at [different stages of development](#), from the early stages of design and community consultation to being fully operational. Past experience implementing environmental works and operational changes in the Basin shows clearly that projects of this nature change and evolve as they are implemented, and new lessons are learned. This was anticipated in the Plan which allows for changes through amending project notifications. The more complex projects, such as Menindee Lakes and constraint measures, will take many years to implement and to settle on a configuration of works and rules.

The package of supply measure projects is ambitious, and each will present its own risks and challenges during implementation. Nonetheless they have the potential to deliver significant benefits, at both the local and system scale.

Doing things differently, experiencing higher managed flows and understanding the changes to river management may seem aspirational in the time available, but all of the projects starts with a solid basis of understanding how we currently manage rivers, and from lessons learned in implementing environmental works projects. For example, the Enhanced Environmental Water Delivery project builds on previous work done to review and revise river operations to get the greatest benefits from environmental water use in a system designed for consumptive water use.

To ensure accountability for the SDL Adjustment Mechanism, and safeguard the ecological outcomes of the Plan, in 2024 the Authority will make a decision on whether it considers that the package of supply measure projects, as delivered, would provide the environmental outcome determined in 2017. This is a requirement in the Plan and the MDBA must be confident that any project changes will still deliver environmental outcomes consistent with the 2017 determination.

If the MDBA decides that the outcome would be different, it will undertake a reconciliation process using the original methodology agreed by all governments, to evaluate the difference and adjust the SDLs to reflect the actual environmental outcomes delivered. Governments must make up any shortfall in water recovery outcomes, should this be determined.

To inform its decision, the MDBA will use an adaptive management approach, running from 2018 through to 2024, to evaluate, verify and report on the progress in implementing the package of 36 projects. It will include a publically reported and independently reviewed annual stocktake and review of project progress.

The adaptive approach to reconciliation will serve two purposes:

- to provide the transparency and credibility needed for stakeholders and the community to have confidence in the SDL adjustment projects delivering the environmental outcomes committed to by each project.
- to provide a level of accountability for project implementation across all governments.

Processes are in place to manage the implementation of the SDL adjustment project package, and the focus now for governments is on the effective delivery of these projects and communication with stakeholders and the community. Basin state governments have until 30 June 2024 to complete projects, and will work with communities, stakeholders and engineers on project design to address key issues and risks.

An amendment to the Intergovernmental Agreement on Implementing Water Reform in the Murray–Darling Basin is needed to establish governance for the program. Issues such as asset ownership and risk sharing arrangements need to be settled by Basin jurisdictions as part of this amendment.

Governments will need to work together to develop an integrated and coordinated approach to implementation, in particular for constraints projects which operate in separate jurisdictions along the River Murray. They must bring their communities and stakeholders along on this journey, and community involvement will be key to the successful delivery of the projects' anticipated ecological outcomes and resulting socio-economic benefits.

Northern Basin Review

IR 3 – The Commission is seeking information on actions governments should now take to achieve SDLs in the Northern Basin.

Key achievements

- The NBR has been completed, recommending revised SDLs within the northern Basin
- A set of toolkit measures has been agreed which:
 - enable more effective flow/event management to support environmental outcomes
 - relax constraints
 - implement fishways in key areas to support native fish movement across barriers.
- Arrangements to support strengthened metering, measurement, monitoring and compliance have been agreed.

Future implementation – key issues and challenges

- Completion of water recovery in key catchments, including the Condamine-Balonne, Namoi and Border Rivers by 2019.
- Implementation of agreed measures to protect environmental water and low flows, including consideration of more active unregulated river events.
- Implementation of agreed measures to strengthen Aboriginal engagement and participation in water management.
- Strengthened engagement with communities to build trust and understanding, particularly in modelling and analysis used to support water management decisions.

The Northern Basin Review was a comprehensive body of work undertaken by the MBDA over four years, which drew together evidence from hydrological, social, cultural, economic and environmental investigations, and local on-ground knowledge.

The data and associated analysis which underpinned the MDBA's recommendations from the Review were strong, accurate and stood up to the scrutiny of independent peer-review.

Further details about the Review and information considered by the MDBA in reaching its recommendations are available at mdba.gov.au.

The MDBA recognised that the decision-making process could not be purely numbers-based — it also needed to draw on people's lived experience with the river. The MDBA held many meetings with local communities, including Aboriginal people, to gather on-ground information and gain an understanding about the connection between local people and the river.

The MDBA established and supported the Northern Basin Advisory Committee (NBAC), which comprised community members from Queensland, NSW, and the Northern Basin Aboriginal Nations. The NBAC provided the Authority with invaluable advice, contributing significantly through their local knowledge, and scrutinised our work. The concept of the ‘toolkit’, a series of social, environmental and cultural actions to accompany water recovery, came from the NBAC.

After considering all available evidence, the MDBA recommended an amendment to the Plan. The proposed changes included a reduction to the northern Basin water recovery target (from 390 GL to 320 GL) and the adoption of toolkit measures to improve water management practices and increase the benefits of water for the environment.

The MDBA’s assessment was that these changes would optimise social, economic and environmental outcomes. They would save about 200 jobs in local irrigation-dependent communities.

The toolkit measures are a key outcome of the Northern Basin Review. They aim to achieve more with less water recovery, and provide a greater focus on flow management rather than diversion limits and water recovery volumes. Diversion limits are a relatively blunt instrument in the northern Basin — they are restricted to long-term average diversions and long-term average flows, and hence they do not have the required flexibility to adapt to the climate extremes and water sharing arrangements of the northern Basin.

The toolkit also includes recommendations to improve river access for Aboriginal communities, for closer involvement of Aboriginal people in water planning and management, and support for communities affected by water recovery to adjust to changing social and economic conditions.

Many of the toolkit measures fall outside of MDBA’s remit. For this reason, prior to recommending the amended SDL to the Commonwealth Minister for Agriculture and Water Resources, the MDBA secured in-principle agreements from the NSW and Queensland governments to the implementation of toolkit measures.

Building on commitments by Queensland, NSW and Commonwealth governments, implementation of the toolkit is already underway.

Many of the toolkit recommendations are to be implemented as part of the package of measures announced by the Commonwealth minister responsible for water on 7 May 2018. A new position of Northern Basin Commissioner will be created, who will report annually on toolkit progress and other matters arising from the Northern Basin Water Recovery Taskforce report. The commissioner will also monitor and advise on the implementation of compliance commitments, and provide advice to the Ministerial Council on additional information that is needed to strengthen the understanding of the northern Basin.

NSW has established a Taskforce, which will report by mid-2018 on immediate and long-term policy solutions for protecting ecologically significant flows, and has committed to implementing its Water Reform Action Plan, including a robust metering framework, enhanced protection of environmental water and increased transparency in water management.

A number of actions relating to cultural water and Aboriginal access to water entitlements, investment in hydrometric networks in the northern Basin and the development of remote sensing and other relevant technologies to enhance monitoring, measurement and compliance in all Basin jurisdictions were included in the Minister’s 7 May 2018 announcement.

Challenges, risks and next steps

The amount of information required for the Review was immense. For example, the MDBA investigated over 20 hydrological model scenarios to test the impact of alternative forms of water recovery on flows across northern Basin catchments, as well as whole of northern Basin scenarios. Scenarios ranging from 278 GL of recovery to 415 GL were considered.

The diversity of views expressed through the consultation process emphasised that there is no consensus among stakeholders about the best water recovery target for the northern Basin.

In this complex area, there is no single right solution, no absolute truth. The task of the MDBA in implementing the Plan is to balance fiercely competing interests and passionately held beliefs—by using the best available science and evidence. The MDBA believes it got the balance right for the environment, Basin communities and industry in the northern Basin. If adopted, the environmental benefits sought through the Plan could be delivered with 70 GL less water recovery—while saving about 200 jobs in local irrigation-dependent communities.

Water recovery

IR 3 - The Commission is seeking information on actions governments should now take to achieve SDLs in the Northern Basin. (Actions to achieve SDLs in the Northern Basin if disallowed)

IR 5 - The Commission is seeking information on:

- the extent to which the Australian Government's strategy to recover water in areas where gaps remain will be cost effective, align with the Basin Plan's environmental objectives, and be transparent*
- risks to achieving water recovery targets by 1 July 2019 and, where not already addressed under current arrangements, how any shortfalls may be resolved*
- examples of water recovery (both infrastructure projects and purchases) that have been either well implemented or had major deficiencies, including risks to securing contracted but not yet delivered water from water saving infrastructure projects.*

Water recovery through either buyback or efficiency programs is the responsibility of the Department of Agriculture and Water Resources. The MDBA provides advice on the expected environmental outcomes associated with proposals to acquire water entitlements.

Structural adjustment

IR 6 - The Commission is seeking information on:

- *what specific assistance has been provided to help communities adjust to the Basin Plan*
- *the extent to which this assistance has supported particular industries or regions*
- *evidence that this assistance has facilitated adjustment that would not have otherwise occurred and has contributed to meeting the intended outcome of the Basin Plan, including more resilient industries and communities with confidence in their long term future*
- *whether future structural adjustment assistance is warranted, and if so, what lessons can be learnt from past programs*

Key achievements

- Through targeted investment, particularly in improved irrigation delivery infrastructure, water recovery has been achieved with less impact on the consumptive pool than originally envisaged.
- At a Basin scale, impacts are less than anticipated in the original Regulatory Impact Statement. However, they are unevenly distributed with some local communities experiencing difficulty in adjusting to reduced water use.
- A comprehensive analysis of community scale impacts has been completed across the Basin.

Future implementation – key issues and challenges

- More effective engagement and facilitation of change and community scale economic development is required in adversely impacted communities.

One of the more difficult aspects of implementing the Plan has been consideration of its socio-economic impacts. Central to the tension of Plan implementation is the speed and visibility of adverse socio-economic impacts compared to the slowness with which environmental benefits are realised. Incremental environmental gains are not dramatic, unlike empty shops and people out of work.

The MDBA has undertaken more detailed research than has ever been done before on [40 southern Basin communities](#), similar to the work done for the Northern Basin Review. Some of the results of this research were published in May. The findings in relation to the impact on employment will be published in June.

The MDBA analysis found that many communities are undergoing significant changes in irrigated agriculture and experiencing similar socio-economic trends, regardless of the amount of water recovery. These trends arise from long run factors such as mechanisation in agriculture and the movement of water through trade to higher value production.

The impact of water recovery on a community depends on two factors. Typically, communities do better where recovery has been by investment in more efficient infrastructure, rather than through buybacks. Infrastructure projects generate benefits for the local economy and lead to productivity gains. The other factor is the breadth of the local economy. The more diverse a local economy, the more resilient it will be.

There is no doubt that for some communities the net effect of buybacks and water efficiency investments has been significant. These communities are not necessarily those where the greatest water recovery has occurred. Rather, they are the communities which have had the greatest difficulty adjusting to water recovery.

We undertake research on socio-economic impacts as part of our commitment to understand and faithfully report on the impact of Plan implementation. This work provides an important evidence base to inform policy development by governments.

Water resource plans

IR 7 - The Commission is seeking information on:

- *the main risks to remaining WRPs being finalised and accredited by mid-2019*
- *how, and to what extent, recent measures to make the WRP accreditation process more efficient and streamlined have sped up the preparation of WRPs and whether there are opportunities to further streamline the accreditation process for WRPs*
- *other ways WRPs or associated planning processes (e.g. consultation, modelling inputs) could be changed to better meet the objectives of the Basin Plan*
- *how effective Basin states have been in consulting with all relevant stakeholders*
- *the main risks to planning assumption work being finalised on time.*

Key achievements

- A comprehensive WRP assessment framework, supporting policy guidance and templates has been prepared to support the preparation and accreditation of WRPs
- Accreditation of the Warrego–Paroo–Nebine WRP
- Progress toward accreditation is being made in all jurisdictions.

Future implementation – key Issues and challenges

- Meeting the accreditation deadline of 30 June 2019 for all plans requires considerable effort, noting there is a significant risk the agreed timeline will not be met.
- An agreed basis for SDL accounting, including the planning assumptions used to reconcile water recovery, must be finalised as a matter of urgency.
- Arrangements to embed key Plan policy commitments including PPMs and Toolkit measures need to be put in place.
- The processes for ongoing monitoring and evaluation of WRP implementation needs to be agreed, including the framework for review and continuous improvement.

By 2018 substantial progress with the development and accreditation of water resource plans (WRPs) was anticipated. This progress would be measured by WRP accreditation and the development of triannual water accounts for each WRP area.

To date only one WRP has been accredited — the Warrego–Paroo–Nebine WRP, in late 2017. The Queensland government and the MDBA reviewed the processes to develop, assess and accredit this WRP. As a result, steps were taken to improve the accreditation process for WRPs to make it more transparent, robust and efficient.

Preparation for all remaining WRPs is underway, with a small number progressed to the provision of draft material for MDBA review. In many instances, states are using their first WRP as a pilot, so that remaining plans can be progressed more quickly, while recognising each WRP area will also have its own issues.

In recent times, the MDBA has provided substantial guidance to Basin states on addressing WRP requirements. This has been done in a range of ways: through assessment guidelines; position statements; and bilateral and multilateral discussions. These have significantly improved knowledge and capacity building in both state agencies and the MDBA. Through a combination of education, awareness and drafting assistance by the MDBA, the capacity of jurisdictions has been enhanced.

Challenges and risks

The challenges in delivering WRPs are shared by Basin states and the MDBA. WRPs are developed by the states for MDBA assessment and recommendation to the Minister for their decision as to whether a WRP should be accredited.

The slower than expected progress to date can be attributed to a number of factors including:

- An assumption within some Basin states that WRP development was relatively simple, generally a matter of packaging up existing information with no need for any changes. This is not the case.
- Development and communication of policy positions and accreditation requirements took time. The MDBA should have provided earlier and clearer guidance about how to address Plan requirements. The need for states to ensure WRPs submitted to the MDBA are supported by sufficient evidence to demonstrate compliance with requirements was a learning process for both Basin states and the MDBA on what was adequate.
- A collaborative approach during the assistance and assessment phases was needed, with flexibility in the approach to achieving outcomes required from the MDBA.
- Too few resources were allocated to the task in both the Basin states and the MDBA.
- Some states did not give the planning task an appropriate priority.
- Some states have had significant and ongoing internal changes through restructuring and staff turnover, resulting in a loss of corporate knowledge and delays in undertaking work.
- There has been a reluctance by some states to engage fully in the WRP process and its requirements
- New knowledge and skills have been required to address some aspects of the requirements which may be new for states, such as Indigenous values. This has generally needed a specific engagement approach and longer timeframes.

The end result of all these factors is that the time remaining to complete the task is now very tight.

Aboriginal involvement in water resource plans

The framework to assess and accredit WRPs includes a leading initiative and commitment by the MDBA to enhance the involvement of Aboriginal people in Basin Plan decision-making. As part of this commitment, the MDBA has a partnership agreement with the Northern Basin Aboriginal Nations (NBAN) and the Murray and Lower Darling Rivers Indigenous Nations (MLDRIN), two peak Traditional Owner-based organisations in the Basin with a primary focus on natural resource management. These organisations are invaluable partners in working to deliver better environmental, cultural and social outcomes.

The Plan aims to assist Basin state governments develop WRPs in accordance with WRP requirements for Aboriginal values and uses.

To support the assessment of whether there has been regard to the views of Aboriginal people in relation to cultural flows, the MDBA requires states to provide an explanation and supporting evidence of the approach, tools or information used in the preparation of a WRP, to demonstrate due consideration has been given to cultural flows. The WRP should describe any changes to arrangements that have or have not been made to the WRP as a result of considering cultural flows.

The MDBA has facilitated meetings of NBAN and MLDRIN with state water planners to discuss the approach to engaging Aboriginal people in the development of state WRPs. The MDBA will also consult directly with NBAN and MLDRIN in relation to whether the requirements have been met. The MDBA provides funding to assist their involvement in this process.

The MDBA, MLDRIN and NBAN have developed Aboriginal Waterways Assessments (AWAs), a tool that measures and prioritises river and wetland health, so that Traditional Owners can more effectively participate in water planning and management.

AWAs have been developed by the MDBA in South Australia, Queensland, NSW and Victoria in partnership with states, MLDRIN and NBAN.

Protection of environmental water within water resource plans

The MDBA and an independent review panel conducted a Murray–Darling Basin water Compliance Review at the request of the Australian Government, to assess the legislative, policy and on-ground implementation of compliance across the Basin. As part of undertaking this review, the MDBA examined water management arrangements with regard to the protection of environmental water.

The management and operation of river systems within the Basin have historically been for consumptive use purposes. Managing the water in a way that sustains and improves the health of the environment is a relatively new concept. In many ways, the rules are not yet set up to adequately deliver this new objective, and the review noted the need for changes to management arrangements for both extractive use and environmental protection.

In the unregulated rivers of northern NSW and southern Queensland, existing rules are designed to achieve long-term average use levels. Changes are needed to better protect low flows that are important to downstream communities.

In reviewing the NSW Barwon–Darling Water Sharing Plan, the Murray–Darling Basin Water Compliance Review found that the current Barwon–Darling plan does not provide adequate protection for environmental water, particularly during low flows. The Barwon–Darling Water Sharing Plan was finalised a month before the Plan came into effect, so the MDBA had no formal ability to influence its content.

Next steps

The MDBA and Basin states are committed to delivering WRPs on time and have implemented processes to achieve this. Work is focused on:

- Close working relationships between Basin states, the MDBA, the Commonwealth Environmental Water Office and the Department of Agriculture and Water Resources to assist in WRP development, and identification and resolution of issues. This takes many forms and is based on the states' needs. There has been a recognition that the early and open sharing of information can assist in improving WRP progress.
- As required, rapid escalation of issue resolution to ensure the process does not stall.
- Highly visible project planning and reporting to monitor progress and call Basin states to account where progress is not adequate.
- Dedicated resources and prioritisation of the task with Basin states, the MDBA and the Department of Agriculture and Water Resources.

The Authority will consider the package of advice for each WRP, including unedited advice from MLDRIN/NBAN when formulating recommendations to the Minister on whether to accredit the WRP. Once a WRP is accredited, the MDBA will publish the finalised plan and associated package of advice on its website. This procedure has been tested by NBAN's assessment of the [Warrego–Paroo–Nebine WRP](#) in 2016.

Environmental water

IR 8 - The Commission is seeking information on:

- *how environmental water planning under the Environmental Management Framework is, or is not, facilitating achievement of the Basin Plan's environmental objectives within legislated timeframes, and what improvements should be made.*
- *how effective and efficient the delivery of environmental water is — including through coordination among owners of held environmental water, managers of planned environmental water and other stakeholders — and how any barriers could be reduced*
- *whether Australian and state Government objectives for the delivery of environmental water align, any examples of where this has not been the case, and how differences are resolved through the Environmental Management Framework*
- *any opportunities to better integrate environmental water planning and management with natural resource management programs and complementary works to facilitate achievement of the Basin Plan's environmental objectives*

Key achievements

- Environmental water is being actively managed and delivered to meet defined ecological goals and targets.
- The Environmental Management Framework is maturing and delivering continuous improvement in planning for environmental water.
- Coordination between holders of environmental water entitlements is being strengthened on an ongoing basis.

Future implementation – key issues and challenges

- The implementation of complementary Plan commitments, including the protection of environmental water (PPMs and toolkit) and constraints and efficiency measure delivery will be essential to delivering the Plan's environmental outcomes and objectives in full.
- Mechanisms to improve the coordination of environmental watering in the northern Basin are required.
- The ongoing integration of environmental water and river operations is needed to improve the efficiency and effectiveness of environmental water use.

The key components of the Environmental Management Framework are the Basin-wide environmental watering strategy (BWS), the Long-Term Watering Plans (LTWPs), the Basin annual environmental watering priorities, and the state annual environmental watering priorities. Together, they guide environmental water management across the Basin. Implementation of the Environmental Management Framework is supported by a number of decision-making processes, which bring together a range of stakeholders with different expertise.

Many of the Environmental Management Framework components have been completed. The Basin-wide environmental watering strategy was published on November 2014; Basin annual environmental watering priorities have been delivered annually since the 2013-14 water year; and state annual environmental watering priorities have been delivered annually. Seven Long-Term Watering Plans have been completed, with the remaining eleven plans (primarily in Queensland and NSW) scheduled to be completed by June 2019.

The Environmental Management Framework has informed decisions made by environmental water holders and managers. Basin annual environmental watering priorities have been met 85 per cent of the time, and where a Basin priority has not been met, constraints have been the primary barrier.

The Basin-wide environmental watering strategy has coordinated the use of environmental water by providing an agreed set of expected environmental outcomes and water management strategies. State annual environmental watering priorities, developed in consultation with communities, have guided annual decision-making to meet the watering needs of priority environmental assets.

Environmental responses

Environmental watering is an emerging practice in Basin water management and one that is challenging the boundaries of river operations. It is relatively early days in the application of institutional arrangements for environmental water policy and management. The MDBA and Basin water holders have worked cooperatively and creatively to explore and trial innovative methods for the delivery of water entitlements to achieve instream and floodplain environmental objectives.

Since 2013-14, more than 750 environmental watering events have been delivered across the Basin. The events are managed by the states and the Commonwealth, and target specific environmental outcomes, linked to the long-term objectives of the Basin Plan.

It will take some time for the full environmental benefits of the use of environmental water to be realised. Nevertheless, in those areas where water for the environment has been managed, there have been positive environmental and water quality outcomes. Examples of outcomes achieved during 2016-17 include:

- Releasing more than 300 GL of environmental water after the floods of 2016 to provide targeted oxygenated refuges for aquatic biota experiencing poor water quality (low oxygen blackwater) across multiple southern river systems, including the Murray and parts of the Murrumbidgee and Lachlan rivers.
- Providing wetland habitat to support the breeding cycles for hundreds of thousands of waterbirds, including the first ever recorded breeding of pelicans at Nimmie-Caira, with some 6,000 nests recorded.
- Exporting 520,000 tonnes of salt from the River Murray, Lower Lakes, and Murray Mouth.

- Coordinating the delivery of water for the environment from the Murray (Lake Hume), Goulburn and Campaspe rivers over summer to stimulate golden and silver perch migration, from hotspots in the mid-Murray (around Torrumbarry), to get fish moving up into the Goulburn, Campaspe and Edward–Wakool Rivers.

The planning and use of environmental water is highly dependent on the cooperation and involvement of multiple state and Commonwealth agencies, together with regional communities.

The MDBA, states, water holders, river operators and site managers have worked collaboratively to coordinate the planning, prioritisation and use of environmental water at a range of temporal and spatial scales. In addition, environmental water holders work bilaterally to plan for the annual delivery of environmental water. Across jurisdictions, planning occurs through the Southern-Connected Basin Environmental Watering Committee (SCBEWC), which is made up of Basin state and Australian Government environmental water holders, water managers and river operators. This Committee has been an effective forum for coordinating the planning and delivery of large volumes of water across multiple water holders, river operators and state boundaries.

Key achievements facilitated by this committee include:

- Over 750 environmental watering events delivered in the first five years, with coordination increasing to over a third of events.
- Coordination efforts are now applied throughout the system. For example, flows to the Coorong from a variety of tributaries and sources during the high flow recession in 2016 to target outcomes, such as continuous barrage flows and fish passage for species moving from the Coorong to the Lower Lakes and improved water quality and lower salinity.

There are still improvements to be made, as environmental water managers learn from their actions through monitoring outcomes and adaptive management. For example, in the setting of both Basin and state annual environmental watering priorities, there have been instances, such as for the Coorong, Lower Lakes and Murray Mouth, where objectives have not aligned. Here, the Commonwealth Environmental Water Holder had prioritised the health of the Coorong, while the South Australian Government had prioritised the health of the Lower Lakes. The MDBA was able to use the Basin annual environmental watering priorities for 2015-16 and 2016-17 to find a middle ground. It would be better, however, to reach agreement on the long-term management of this priority environmental asset, and this is being investigated in the Variable Lakes Project, to develop an agreed barrage and water level management policy

While positive environmental change is taking place as a result of the Plan, and this will continue and grow, there are many other factors that have and will continue to influence river health. Examples include climate change, unsustainable land management practices and invasive species, such as carp. A coordinated approach across governments will be necessary to reduce the influence of these factors. In addition, the implementation of SDL Adjustment Mechanism projects will see significant changes to environmental water planning and delivery, as they become an everyday part of how the southern Basin's rivers are managed.

Challenges, risks and next steps

The successful implementation of the following work areas will be critical for the effective use of Commonwealth environmental water and for the role of the Commonwealth Environmental Water Holder:

- completion of WRPs
- improvements in compliance systems
- improved protection of environmental flows, and
- completion of SDL Adjustment Mechanism projects and prerequisite policy measures.

Over the next five years, it will be important for states to complete all Long-Term Watering Plans, which will enable the alignment of regional objectives with Basin-scale objectives, such as those in the Basin-wide environmental watering strategy, and will in turn benefit short-term processes.

The process to set Basin annual environmental watering priorities should continue to be improved (for example, by continuing to build in the flexibility to adapt, if resource conditions change from those predicted). Similarly, state annual environmental watering priorities could be improved by including unregulated catchments. By 2019 water recovery in unregulated catchments will be more advanced; mechanisms for protecting and coordinating environmental flows should have been developed; and WRPs finalised. These developments will provide opportunities to improve the priorities for unregulated WRP areas.

Reviews built into the Environmental Watering Plan include a review of the Basin-wide environmental watering strategy in 2019, and the Environmental Watering Plan in 2020, which will be an opportunity to examine the effectiveness of the Environmental Management Framework.

Finally, while coordination is working well in the southern Basin, there is no environmental water coordination forum for the northern Basin. The Northern Basin Review recommended toolkit measures to improve the management of flows. This could include actions to enhance managers' ability to coordinate releases from tributary flows, to improve habitat for aquatic organisms during dry times and improve the health of rivers downstream.

Water quality and salinity management

IR 9 - The Commission is seeking information on:

- *any inconsistencies between the various national water quality guidelines and the water quality management plan requirements in WRPs and whether these inconsistencies are being resolved and managed*
- *the adequacy of the actions of water managers to achieve the water quality objectives of the Basin Plan.*

Key achievements

- Delivery of the agreed 15-year *Basin Salinity Management 2030 strategy* that provides for long-term salinity planning and management in the Basin.

Future implementation – key issues and challenges

- Preventing water quality issues resulting from land management practices remains a challenge.

The Plan aims to achieve water quality and salinity levels that support environmental, social, cultural and economic activity in the Murray–Darling Basin, through:

- measures within Water Quality Management Plans in WRPs
- flow management actions
- long-term Basin salinity planning and management.

In developing Water Quality Management Plans for WRPs, states must have regard to water quality and salinity targets for water-dependent ecosystems, irrigation and recreational water use. The risks of not achieving the targets include the loss of productive land and adverse effects on public and private infrastructure.

The Plan allows for alternative water quality target values, if they are consistent with the water quality objectives and determined in accordance with the procedures in the Australian and New Zealand Environmental Conservation Council (ANZECC) Guidelines. The Plan also sets targets for managing water flows, and adopts the end-of-valley targets in Schedule B of the Murray–Darling Basin Agreement for Basin-scale salinity planning and management.

The main Plan mechanism by which water quality will be managed at the WRP scale is through the Water Quality Management Plans. The MDBA is supporting Basin states to prepare Water Quality Management Plans as part of the development of WRPs. These must include measures to achieve

water quality objectives aimed at ensuring the health of water dependent ecosystems, usable irrigation water and water for recreational use.

The national water quality guidelines relevant to the Plan are:

- ANZECC guidelines
- Guidelines for Managing Risks in Recreational Water (NHMRC 2008)
- Australian Drinking Water Guidelines (NHMRC 2011).

In the development of WRPs, and through the WRP accreditation process, the MDBA and states work together to ensure that these guidelines are consistently applied where the Plan makes specific reference.

In the WRP accredited to date (Warrego–Paroo–Nebine) and for those being prepared, states have applied the Plan target values or alternative water quality targets, determined in accordance with the procedures set out in the ANZECC guidelines. Additionally, if the water resource is also covered by a WRP area of another Basin state, the MDBA ensures that any alternative target values have been developed in consultation with that state.

Reporting by water managers to date indicates that, individually and collectively, they are taking the necessary actions, within their capacity, to have regard to water quality targets when managing water flows and making decisions about the use of environmental water. However, at this stage of Plan implementation, it is difficult to assess the adequacy of actions at the WRP scale, as 35 of the 36 WRPs are still being developed.

The use of Plan salinity targets for flow management, measured on a five year rolling basis, has been integral to keeping track of salinity management achievements in the Basin. Salinity outcomes at the target sites result from a combination of prevailing climatic conditions, long-term salinity management strategies that have been implemented since 1988, and water holder and managers making decisions having regard to the salinity targets.

Salinity target values were achieved at four of the five Plan reporting sites (Lock 6, Morgan, Murray Bridge and Milang) over the assessment period from 2012 to 2017. The salinity target at Burtundy on the lower Darling River was not met in some years, due to low flows between mid-2014 to early 2017 in the Darling River. Salinity levels at Burtundy were above the target value for 17 consecutive months and peaked at 3260 EC ($\mu\text{S}/\text{cm}$) in August 2016, when the lower Darling River recommenced to flow. Subsequently, these high salinity levels impacted water users in the lower Darling. Ensuring that water recovered for the environment is protected in the northern Basin (as detailed in the northern Basin toolkit measures), combined with the future management arrangements for Menindee Lakes, will be important in helping to address this issue.

Basin-scale salinity management planning by Basin governments and the MDBA has progressed consistent with the Plan. In November 2015, the Murray–Darling Basin Ministerial Council agreed on a 15-year [Basin Salinity Management 2030](#) strategy that provides for longer-term salinity planning and management in the Basin. Measures being implemented by Basin governments and the MDBA under this strategy provide for the:

- management of salinity to ensure that salinity levels of the upper River Murray and the River Murray in South Australia are appropriate for agricultural, environmental, urban, industrial and recreational uses

- achievement of the salinity target at Morgan and to support achieving salinity targets within the Plan.

Challenges, risks and next steps

Although there was adequate flushing of salt out to the Southern Ocean during the three year assessment period (July 2014–June 2017), it was often less than the three-year average of two million tonnes of salt per year target set in the Basin Plan. However, during periods of low flows, preventing salt entering the river is more important than exporting salt out to the ocean.

The removal of salt from the River Murray System into the Southern Ocean could be better measured in a way that takes into account variable river flows in a variable climate, as recommended in the [2017 Basin Plan Evaluation](#).

Water trading

IR 10 - The Commission is seeking information on:

- *whether the Basin Plan trading rules advance the water trading objectives and outcomes stated in chapter 5 of the Plan*
- *whether changes to state trading rules made to date as part of implementation of the Basin Plan adequately recognise and protect the environment and third party interests*
- *whether implementation of the Basin Plan has improved access to market information and what further actions Basin States, irrigation infrastructure operators or the MDBA might need to take*
- *whether processes for reviewing Basin State trading rules — including the roles of the MDBA and the water trade working group — are sufficiently transparent, evidence based and consultative.*

Key achievements

- Basin Plan Water Trading Rules have facilitated the removal of some significant trade restrictions.
- Basin Plan reporting requirements have improved access to water market information for market participants.
- Basin states have improved and published more information to support water trade decisions.

Future implementation – key issues and challenges

- The current approach to assessing existing state trade rules against the BPWTR requires modification. A continuation of the current approach would mean that the task takes over 35 years to complete.
- Increased state commitment to implementing the Basin Plan Water Trading Rules is needed.
- A pathway to manage pressures on delivery constraints as a result of the growth in water trade needs to be found.
- Improved integration of water trade and water management is required to provide water market efficiencies.

Basin Plan water trading rules

Following the separation of water entitlements from land titles, which meant water could be traded in its own right, water markets have grown and become a critical means by which entitlement holders can either realise the value of their asset, or respond to opportunities and adapt to economic pressures by buying and selling water. Not only does trade give irrigators flexibility for their

production, across industry it cushions the economic impact of drought, by allowing water to move to its most valuable uses.

The process for developing the Basin Plan Water Trading Rules (the Trading Rules) was transparent and robust. In addition to Basin Plan consultation, the Australian Competition and Consumer Commission undertook extensive stakeholder consultation prior to providing advice to the MDBA about the Trading Rules.

The Trading Rules came into effect on 1 July 2014. This meant that, for the first time, water markets were subject to uniform rules designed to ensure a competitive, level playing field.

The Trading Rules aim to do two things. The first is to remove restrictions on surface water trade, other than those relating to physical constraint, hydrological connectivity, environmental impacts, and third party impacts. The second is to improve access to market information.

Removing trade restrictions facilitates the operation and development of efficient water markets, and in doing so advances the objectives and outcomes of Chapter 5 of the Plan. These outcomes depend on the Trading Rules being implemented by Basin states.

States have advised the MDBA there are over 1500 restrictions on surface water trade. However, on the basis of its own research, the MDBA believes that the number of restrictions is significantly bigger. Clearly, the work required to review such a large number of rules is substantial.

To deal with the volume of work, the MDBA has prioritised the rules using a risk-based approach. This is set out in the MDBA's [strategic priorities Basin Plan Water Trading Rules](#) paper. Risks are assessed by the effect a rule has on water markets. Using this approach, the MDBA has prioritised discriminatory restrictions, whereby like is not treated in a like manner, for allocation trade in the southern connected Basin.

The MDBA examines trade restrictions on a case by case basis. The work comprises a desktop review of available evidence, including state legislation and policy and publically available information, and discussions with state policy and operational staff. Once a preliminary view is formed, this view is provided to the state. The state is given the opportunity to provide further material for the MDBA to consider.

Bilateral consultation occurs with states for each of the rules being examined. If the state agrees, the matter is also discussed at the Trading Rules Working Group, on which all states are represented. In order to progress work, the MDBA has identified rules that raise the same issues and sought to settle a common approach and resolution through the Trading Rules Working Group. So far, though, this has not been particularly successful.

As a result of the MDBA's review work, states have removed some significant trade restrictions. For example, Victoria removed the 4 per cent limit on trade out of an irrigation area in anticipation of the Trading Rules coming into effect, and South Australia has allowed water traded from interstate to be carried over since the Trading Rules came into effect.

Although the volume of trade is strongly influenced by factors like rainfall and industry conditions, there is undoubtedly an underlying growth in water markets. While this is welcomed, the growth of trade has imposed increased demands on delivery capacity. At the moment, these pressures are being managed administratively. However, the issue needs to be addressed more systematically. The

MDBA is actively working with state governments in the southern-connected system to understand the delivery capacity issues.

The Trading Rules require improvements to information reporting, and since 2014 there has been better access to market information. Basin states have published more information to support trade decisions. For example:

- South Australia provides early information on private carryover availability into the next water year
- In March 2017, NSW published “Water markets in NSW: Improving understanding of market fundamentals, development and current status”
- Victoria has started to consolidate into a single report information on annual water entitlement and usage
- Queensland has extensively updated its website to improve access to water market information

The MDBA publishes information about the 70 most traded entitlements. The aim is to produce a summary sheet describing in a consistent way the characteristics of each entitlement to assist people make trade decisions.

Information on prices is still very limited. The MDBA’s efforts to increase price disclosure have generally been resisted. At root, the obstacle to greater disclosure may be cultural. The dominant paradigm in water is physical water planning and management, about decisions on water volumes. This may be why one jurisdiction explains it does not collect price information because there is “no space on the form”.

Users having confidence in a market is essential to its success. As part of Trading Rules implementation, the Commonwealth Environmental Water Holder, and South Australian and Victorian water organisations have put protocols in place to ensure that staff, who are aware of an upcoming water announcement, do not trade until the information is public. The management of commercially sensitive water market information has also improved as a result of the Trading Rules. A number of government agencies have implemented Chinese wall arrangements, or have documented procedures for managing sensitive information prior to it being announced, in order to comply with Basin Plan Water Trading Rules requirements.

Challenges, risks and next steps

Work is progressing too slowly under the current approach of assessing existing state trade rules against the Trading Rules.

With experience, we have streamlined the assessment process. However, the need to gather evidence, consult with states, differences between states’ trading frameworks and the complexity of the individual rules, all constrain the extent to which the time required for the work can be reduced.

On average, it takes one person six weeks to complete the assessment of a state trade rule. With over 1500 rules to be assessed and current staffing levels, it will take over 35 years to complete the task. This is too long. A better way needs to be found for removing restrictive and discriminatory rules that are inconsistent with the Trading Rules.

There are a number of options for accelerating the progress of the work.

One would be to declare all notified state water trade rules to be inconsistent with the Trading Rules, and place the onus on a state to make the case and provide evidence to support retaining a rule. This approach reverses the onus of proof, by requiring states to demonstrate that a restriction is necessary for reasons relating to a physical constraint, hydrological connectivity, protecting the needs of the environment and third party interests. Presently, the MDBA needs to show that a rule is not necessary for any of these reasons.

The benefit of this approach would be that it achieves a breakthrough in the reform, by immediately establishing a level playing field and more open market. It does so by shifting the work on to states.

A variant of this option would be to make a declaration in relation to the restrictions identified as having the greatest material impacts. Such a triage approach would target the restrictions that matter. Depending on the test of materiality applied, it would have a worthwhile benefit in relation to liberalising trade by removing unjustified restrictions, with a lesser resource impact on states.

As either option would be a significant change, there would need to be a lead time before its implementation. This should be sufficient to allow the required processes to be settled and for consulting and communicating about the change with stakeholders.

A third option would be to strengthen existing process. This could occur by:

- Developing and applying principles for groups of state trading rules that pose issues of the same kind. This approach has been adopted for progressing the accreditation of WRPs. The Plan presents high level principles about allowable restrictions. It would help the process if these principles were developed in more detail, so that they provide an assessment framework.
- Increasing the transparency of the process by publishing a list of the state trading rules being assessed by the MDBA and the reasons states give for retaining the rules.
- Clarifying Trading Rules governance. Being accountable for the Trading Rules means the MDBA is responsible for making the decisions on their implementation. Consultation with states would continue to occur, but decisions must be matters for the MDBA.

Another challenge arises in relation to environmental water. As the Trading Rules apply to all trades and transfers, there can be a tension between applying the Trading Rules and ensuring Plan outcomes. This tension was recognised when the Plan was drafted, with limited exemptions for the delivery of environmental water being provided. The Plan includes the requirement to review these exemptions. The MDBA would like this review to consider the interactions between the delivery of environmental water and the Trading Rules and how best to achieve Plan outcomes.

There remains, finally, the question of whether the current water market design is optimal.

Water management practices have evolved over the past 100 years, while the development of water markets only dates back to the early 1990s. This has generally resulted in states developing trade policies as an adjunct to water management. The model that Victoria has used to assess how their markets are operating against the elements of an effective water market could assist other states to identify areas for development and improvement.

Apart from the reason of their differing histories, conceptually the lack of integration of water management and markets is not surprising. Water management is about controlling administratively

the volumes of water allocations, with decisions being made by reference to planning criteria. In contrast, the water market determines an allocation and use of water through price signals, generated by individuals separately pursuing their economic interests.

The critical question for the future is whether the existing market design within current water management constraints can adequately meet the emerging challenges. For one thing, the growth in trade is creating pressures on delivery constraints, for which there has so far been no resolution. Furthermore, because water trade assessments are made administratively on a case by case basis, the transactions costs imposed on the market are rising.

In this regard, a great deal can be learnt from design of other similar markets. It would be useful to explore alternative market design concepts as a way of addressing integrated resource management, the growing complexity of water markets and rising transactions costs.

Critical human water needs

IR 11 - The Commission is seeking information on:

- *risks to meeting critical human water needs (CHWN) under the Basin Plan, how the Plan addresses these risks, and what, if any, further measures are required*
- *any concerns about provisions in WRPs relating to CHWN under extreme conditions.*

Key achievements

- The MDBA and states have fully incorporated Basin Plan critical human water need requirements into their water management practices.
- A recent review of the current arrangements found a robust but flexible framework to deal with extreme conditions.

Future implementation – key issues and challenges

- For WRP accreditation, states will need to identify the volume of water required to meet critical human water needs and ensure processes are in place to respond when these volumes are at risk.

The Plan's provisions for critical human water needs were forged during the Millennium Drought. They reflect the lessons of that extreme dry period, the worst ever recorded.

The Plan focuses on critical human water needs for communities dependent on the River Murray system, setting out a process to identify risks, while providing the flexibility to respond to circumstances. The MDBA and states have fully incorporated these Plan requirements into their water management practices. For example, processes are in place to ensure states set aside the required critical human water needs volumes and report these to the MDBA, by the start of the water year.

Since the commencement of the Plan, neither Tier 2 nor 3 water-sharing arrangements have been triggered. However, very dry conditions in 2015 and early 2016 raised concerns that Tier 2 might be triggered, if the then prevailing dry conditions persisted. In light of this, with the southern Basin states, the MDBA reviewed drought preparedness, including the Plan provisions. The review found that current provisions provide a robust but flexible framework to deal with extreme conditions. More information on this can be found in the report, [Since the Millennium Drought – the River Murray System](#).

The volume of water needed to meet critical human water needs in NSW does not take into account water taken from the Menindee Lakes storages during dry conditions. Proposed changes to the operation of the Menindee Lakes storages, including when it is considered part of the River Murray system and once Broken Hill's water is supplied from the River Murray through a new pipeline, will

warrant review and possibly changes to the volumes required to meet critical human water needs in NSW.

The Plan also requires WRPs to demonstrate that arrangements are in place to provide for critical human water needs during extreme events. As with the arrangements for the River Murray system, it is anticipated that states need to first understand the volume of water required to meet critical human water needs and, secondly, ensure processes are in place to respond when these needs are at risk. In addition, the Plan requires WRPs to set out how extreme events will be managed, including those that would compromise a state's ability to meet critical human water needs.

Looking to the future, the MDBA will continue to closely monitor risks to critical human water needs and the management of extreme droughts, and will factor any relevant new information into future reviews of the Plan. After any triggering of Tier 2 or 3 water sharing arrangements, the MDBA would review the effectiveness of its response, including the requirements of the Plan and the Murray–Darling Basin Agreement and would seek amendments if required.

Compliance

IR 12 - The Commission is seeking information on:

- risks to the MDBA's ability to monitor and enforce compliance with the Basin Plan and WRPs from July 2019, and what, if any changes should be made to address these risks
- the extent to which non-compliance with the Basin Plan will be addressed by recent changes to compliance and enforcement announced by governments
- any further changes that should be introduced to increase water take compliance across the Basin.

Achievements, issues and challenges

- Following considerable community dissatisfaction about alleged non-compliance, the MDBA undertook a thorough review of compliance arrangements.
- The review identified a program of action to restore community confidence, including the establishment of an Office of Compliance.
- The Office has developed a compliance policy and a first set of annual priorities; and implemented a protocol for handling allegations of non-compliance.
- The MDBA is seeking to clarify and enhance its enforcement powers.
- Although states are responsible for ensuring compliance with their water management rules, the MDBA is working with them to agree a Basin Compliance Compact.
- The Compact will include commitments to improve all aspects of compliance including metering, measurement, monitoring, enforcement and transparency.

Basin-wide Water Compliance Review

When the Plan was adopted, the MDBA's approach to compliance was predicated on a significantly increased role from 30 June 2019, when WRPs and the SDL would be in place. The 2014 MDBA Compliance Strategy presents this approach.

In response to allegations of illegal take, maladministration and malfeasance in NSW in mid-2017, the Prime Minister requested the MDBA to conduct a Murray-Darling Basin [Water Compliance Review](#). The Review found serious problems with compliance and enforcement arrangements across the Basin and recommended that Basin states:

- improve water measurement, particularly metering of consumptive take and measuring floodplain harvesting
- improve compliance resourcing, culture and transparency
- increase the use of civil or administrative penalties, and in some jurisdictions adopt a broader range of penalties with stronger sanctions
- submit WRPs for accreditation by 30 June 2019, thereby triggering SDL compliance
- ensure state WRPs protect environmental water.

On the MDBA's performance, the Review found that there was community frustration the MDBA had not responded adequately to allegations of serious water theft, had not given sufficient attention to compliance and had not provided a clear statement of its compliance role.

The Review identified nine actions for the MDBA to improve its performance. All recommendations have been adopted by the Authority.

MDBA compliance activities

The community has made clear that it expects everyone to abide by the water rules. This requires that water rules are effectively policed. The perception that wrong doers are not detected or punished is corrosive to the very many entitlements who do comply with the rules and to the broader community, which may doubt the appropriateness of the social licence under which water is taken.

The MDBA is an enforcement agency for the Plan. Much of this role can be characterised as being a 'regulator of regulators' – that is, making sure that state agencies are meeting their Plan obligations. While the obligations apply variously to state agencies, irrigation infrastructure operators or individual water users, many of them are regulated by, or are the responsibility of, state water agencies.

In the past, MDBA compliance functions have been under-resourced. However, with recent additional funding from the Australian Government, the MDBA has established an Office of Compliance responsible for managing all compliance activities, including audit, investigation and management of non-compliance cases.

Since being established in late 2017, the Office has:

- established an Independent Assurance Committee to provide expert advice on how the MDBA performs its compliance functions, and recommend areas for improvement
- revised the MDBA compliance and enforcement policy and developed its first annual work plan (to be released shortly)
- negotiated with Basin states the drafting of a Basin Compliance Compact (to be considered by the Murray–Darling Basin Ministerial Council at its June 2018 meeting)
- developed a [Memorandum of Understanding](#) with the new NSW Natural Resource Access Regulator
- published the first quarterly [WRP progress update](#)
- commenced planning for compliance audits
- commenced drafting of guidelines on hydrometric networks and hydrological modelling, in consultation with state agencies
- published a [protocol](#) for handling allegations of non-compliance
- been working with the Department of Agriculture and Water Resources to scope out a proposal to clarify and enhance the MDBA's enforcement powers in relation to pursuing cases of non-compliance by individuals through legislative amendment.
- worked with other MDBA teams on the SDL accounting and reporting arrangements
- continued to work on compliance with the Trading Rules.

More information on some of these activities is below.

Basin Compliance Compact: Development of a Basin Compliance Compact was recommended by the Basin-wide Water Compliance Review, and commissioned by the Murray-Darling Basin Ministerial Council in December 2017. The Council appointed Dr Wendy Craik to assist in bringing together the recommendations of the Review and other relevant reviews, such as the ‘Independent Investigation into NSW Water Management and Compliance’, by Mr Ken Matthews AO, for the NSW Government.

The Compact is intended to commit all states and the MDBA to bringing compliance up to best practice standards. It will address, among other things, metering, the measurement of unmetered take, transparency, culture, and the way in which alleged compliance breaches are investigated and progressed.

Like the Matthews Report, the Basin Compliance Review recommended a ‘no meter, no pump’ policy. Consequently, a particular focus of the Compact will be on improved metering and measurement of water. This should provide a strong basis for more transparent monitoring of water take.

The Compact will provide for annual public reports on progress with implementing the various commitments. It is intended that the MDBA will assess states’ progress with implementing their commitments. The Independent Assurance Committee will assess the extent to which the MDBA has met its own commitments.

MDBA compliance policy: The MDBA is revising its compliance approach in light of the above reviews, and will release a new policy and annual work plan in June 2018.

The MDBA has six areas of compliance responsibility:

1. WRP – the MDBA assesses state-developed WRPs for the requirements set out in the Plan. Once accredited, the MDBA is responsible for ensuring regulated entities, including Basin states, irrigation infrastructure operators and individual water access licence holders, comply with WRPs.
2. The SDL – the MDBA is responsible for establishing and maintaining a register of take to assist with determining whether there has been non-compliance with the SDL. The MDBA also works to ensure that the methods for measuring consumptive use (such as metering coverage, remote sensing and gauging) are continually improving. The MDBA’s approach to SDL compliance will be set out in the SDL Reporting and Compliance Framework, due to be published later in 2018.
3. Compliance and enforcement in relation to illegal take – although primarily the responsibility of state regulators, the MDBA provides assurance of the effectiveness of compliance and enforcement frameworks within each Basin state, to improve community confidence in the management of water resources. The MDBA will audit state compliance and enforcement practices, including the way allegations of water theft are handled, to ensure effective enforcement of the water rules.
4. Protection of environmental water – the MDBA monitors and reports on compliance with the environmental requirements of the Plan, including the Basin-wide environmental watering strategy, annual watering priorities, and relevant environmental protection rules.

5. Water markets and trade – the MDBA enforces compliance with the Trading Rules. This is focussed on ensuring restrictions on trade are compliant, disclosure of water announcements, compliance by irrigation infrastructure providers, accurate reporting of water trade prices, use of exchange rates and restrictions on tagged water trades.
6. Water quality and salinity – under the Plan, the MDBA can set water quality and salinity targets. The MDBA currently monitors and manages water quality and salinity, to provide assurance that regulated entities have had regard to relevant Plan targets when making relevant water management decisions.

The key tools used by the MDBA in performing its Plan compliance role will be to:

- identify and promote good practice – for example, by preparing guidelines or practice notes on relevant aspects of water management, in consultation with states and other experts, and to benchmark performance
- conduct audits of different aspects of Plan implementation, including state compliance arrangements, and publicly report on these
- investigate cases of non-compliance as necessary
- report on the performance of different parties in meeting their Plan obligations.

MDBA powers: As with other regulators, the MDBA has a range of enforcement powers that we will use where necessary. In line with the recommendations of the Murray–Darling Basin Water Compliance Review, the MDBA is seeking to clarify and enhance its powers in relation to pursuing cases of non-compliance by individuals through legislative amendment. If passed, these changes would increase the MDBA’s ability to enforce compliance with accredited WRPs.

In terms of the allegations of illegal take in the northern Basin highlighted last year, the MDBA understands that the NSW government is taking steps to investigate and take appropriate action on those matters.

Auditing and Reporting: Auditing is a critical compliance tool for the MDBA. Under the Water Act and the Plan, the MDBA has a broad audit function with significant information gathering, inspection and investigation powers. The MDBA will undertake and make public its monitoring, auditing and, if required, investigations, thereby giving assurance that Plan reporting is accurate and implementation is on track.

An audit program will be developed and operational by June 2018. Audits and investigations may be undertaken as part of the annual compliance program, or may be instigated in response to a specific incident or intelligence reports.

A related tool the MDBA intends making better use of is simply to report more effectively to the public on the state of play with aspects of water management and compliance across the Basin.

Allegations of non-compliance: In the first instance, the MDBA refers allegations of illegal water take to the relevant state regulator for investigation. However, if there is evidence a state is not adequately discharging its regulatory responsibilities, the MDBA will conduct its own investigations and take direct enforcement action in accordance with its [escalation pathway](#).

Encouraging best practice: The MDBA is developing, in consultation with state and other experts, a range of guidelines to document best practice approaches on a range of topics such as water

measurement, compliance arrangements and sanctions for non-compliance. These will help provide a platform for benchmarking state performance and ongoing improvement. The MDBA is also scoping out with states a project to build a joint capability in harnessing new technologies to measure and monitor water compliance in a way that is accessible to the public.

SDL accounts: Ensuring compliance with SDLs will require accurate, timely SDL accounts. In late 2017, the MDBA published the [accounts](#) for the first four years of the transition period (2012-19), addressing a significant backlog in annual reporting. These reports are a ‘proof of concept’ at this stage and will not have any compliance implications until the 2019-20 water year. Some of the delay can be attributed to the time need to develop the accounting arrangements associated with the Plan settings, including for the first time a Basin-wide groundwater account.

The MDBA is committed to improving the timeliness of annual reporting ahead of the formal commencement of the accounts from 2019-20. For the 2016-17 water year, the MDBA will publish the water accounts in June 2018.

Communicating with and educating the community about the MDBA compliance role and approach will be challenging. The community’s expectation is that the MDBA should actively police day to day water take, while the MDBA’s formal regulatory role is primarily as a regulator of Basin states. Communicating our role and educating regulated entities on how to comply with the Plan and WRPs will require a concerted and sustained effort, in an already complex space.

Monitoring and evaluation

IR 13 - The Commission is seeking information on:

- *how well current arrangements for monitoring, evaluation and reporting support the delivery of the objectives of the Basin Plan; and how they could be improved to increase the likelihood of the objectives being met*
- *whether there is a clear delineation of responsibilities for monitoring, evaluating and reporting on the Basin Plan, and, if not, how it could be improved*
- *the usefulness of the MDBA's Framework for Evaluating Progress and its recent application in evaluating the Basin Plan*
- *how data and information obtained through monitoring, evaluation and reporting could be made more useful for decision making and evaluation of the Basin Plan (including how to make this data and information more outcomes focused)*
- *the general information required to provide confidence to communities and others that the Plan is being implemented well and is achieving its objectives*
- *whether processes are in place to monitor key risks to the continued availability of Basin water resources.*

Key achievements

- The MDBA's [2017 Basin Plan Evaluation](#) provided evidence of improved environmental health; farmers' adaptation and modernisation of their practices; and water markets functioning to facilitate water trade.
- The evaluation provided insights into the impact of water recover on agricultural communities.

Future implementation – key issues and challenges

- Monitoring and evaluating an area the size of the Murray–Darling Basin is challenging.
- Consolidating a large body of the current sources of data to provide clear evaluation outcomes.
- The monitoring and evaluation budget is relatively small. As such, our work needs to aggregate and analyse information from external sources as much as possible.

Monitoring, evaluation and reporting is undertaken by the MDBA, the Commonwealth and Basin states. The suite of monitoring activities collects information on themes such as hydrology, ecology, economic and social trends, and Aboriginal and cultural information. This information is a critical component of the Plan's adaptive management cycle, and is used to guide a flexible approach to implementation. Community-based information is crucial, tying in with scientific data and analyses.

Environmental monitoring information is used annually to guide the planning, prioritisation and coordination of environmental water. Monitoring information directly inputs into the MDBA's environmental watering outlook and the MDBA's annual environmental watering priorities. [These reports](#) help guide environmental water holders plan and use their annual water allocations.

Information from monitoring is also used on time-cycles beyond the yearly priority setting and environmental water use. Chapter 13 of the Plan, for example, sets out the program for evaluating the Plan's effectiveness. This process relies heavily on information gathered from monitoring-by - Basin partners, and allows the MDBA to track progress toward its environmental objectives.

The MDBA is currently finalising the [2017 Evaluation of the Basin Plan](#). Monitoring information from across the Basin allowed the MDBA to confirm evidence of improved environmental health; that many farmers are adapting and modernising their practices; and that water markets are functioning to facilitate water trade. The evaluation also provided insights into how agricultural communities have been affected by water recovery. It makes recommendations to strengthen implementation of the Plan, a key part of the adaptive management cycle. As part of the 2017 Evaluation the MDBA met with advisory committees to seek advice on the evaluation approach, to get local perspectives and ground-truth results.

Challenges, risks and next steps

Monitoring and evaluating an area the size of the Murray–Darling Basin against numerous complex criteria, using information from a variety of partners, is a challenging undertaking.

The principal approach used by the MDBA has been to define a project, commission it and then collect the evidence from on-ground data gathering programs. However, the Basin is too big, the MDBA budget is too small and there are too many players for this to be a sound basis for our evaluation and reporting.

We need to better leverage a small budget, improve the capacity to do future evaluations by pivoting the MDBA environmental monitoring and evaluation from commissioning to aggregating and analysing information from a range of external sources. The approach could include:

- identifying who has an interest in similar outcomes to the ones we are seeking. The next step is to then bring them to the table to share the information we need (potential partners include universities, CRCs, state agencies including existing research partners, such as Strategic Research Partnerships)
- identifying what data they hold, where it is available and if it is accessible. What does it mean, are there any gaps?
- developing a participative network and the role of the MDBA as a collaborator, synthesiser and user rather than commissioner of data
- investigating and developing innovative approaches and emerging data and knowledge sources with collaborative partners, including citizen science, key groups such as recreational fishers, bird watch, CSIRO Atlas of Living Australian and app-based approaches
- communicating opportunities for involvement (underpinned by a clear plan for how data will be gathered and analysed) – using MDBA monitoring and evaluation as a chance for reciprocal stakeholder engagement.

The 2017 Evaluation highlights that there are a myriad reporting requirements, and developing a clear evaluation outcome from the current disparate and 'holey' sources of data is difficult. The 2017 Evaluation is an opportunity to take a 'snapshot' of our environmental monitoring and evaluation, and reassess our approach.

We could involve relevant stakeholders to do more monitoring, review and evaluation activities or better access what they already have. While open access to information is well covered in MDBA processes, we still rely on direct source of limited data sets for our monitoring base.

Governance

IR 14 The Commission is seeking information on:

- *whether current institutional and governance arrangements provide for sufficient oversight of the plan and support engagement with the community*
- *whether there are risks to the achievement of the objectives of the Plan that arise from the current institutional and governance arrangements*
- *what improvements can be made to ensure that institutional and governance arrangements are fit for the next phase of implementing the Plan.*

In order to deliver Basin water reform, a governance arrangement is needed for decision-making, collaboration and consultation in relation to Basin Plan implementation, water recovery, the Murray–Darling Basin Agreement, and environmental watering.

In these circumstances, governance is inherently vulnerable to complexity and lack of clarity about who decides what. And so it has been over the past five years. Since the time negotiations started on the Plan, governance has become increasingly dysfunctional due to the growth in the number of committees, set up in response to specific problems, scope creep of committees and, associated with this, the roles of committees becoming blurred. The result is duplication, with the same issues going to a number of committees, delays, excessive resources being sucked into processes, and, most fundamentally, very few decisions being made.

As a first step to addressing these problems, governance principles need to be agreed. These could be the following:

- In place of the existing four peak committees, there should be one body comprising states, the Department of Agriculture and Water Resources, the Commonwealth Environmental Water Holder and the MDBA, represented by their senior officials.
- This body would be responsible for considering all Basin water reform, including the Basin Plan, the Agreement, the Water Recovery Strategy and environmental watering. The consideration of issues would need to respect the accountability of officials with decision-making responsibilities – for instance, state and Commonwealth officials would need to decide on Agreement matters, the MDBA on Plan compliance, and the Commonwealth Environmental Water Holder on the use of its portfolio.
- Meeting agendas should group items for each of these matters, with it being clear which items are for decision and which are for advice.
- Meeting outcomes should be publically reported.

Vesting all matters in one body would help develop a shared purpose for managing the Basin that has so far been absent.

If these principle are accepted, a simplified governance arrangement could be developed and agreed across agencies.

The second issue here is the responsibilities of the MDBA itself.

The MDBA has three responsibilities, the Plan, the natural resource programs of the Agreement and operating the River Murray. The Water Act brought the three functions together when it established the MDBA. The rationale was that the three areas of work are closely linked, and would be best delivered by one organisation. This has been the experience of the past five years.

Environmental planning and management is a powerful example of the benefits of working under one roof. Environmental planning is central to the Plan. The Living Murray program of environmental water recovery is one of the largest remaining undertakings of the Agreement. The River Murray Water division of the MDBA is responsible for delivering environmental water in the Murray and knows a great deal operationally about how to optimise the outcomes from environmental water.

Working jointly across the three areas generates the cross-fertilisation of ideas and sharing of knowledge, which serve to achieve the healthy working Basin to which all governments are committed.

Further reading

Sustainable Diversion Limit Adjustment Mechanism

[Sustainable Diversion Limit Adjustment Mechanism - Draft Determination](#)

The MDBA assessed a suite of projects to determine an adjustment to the sustainable diversion limits. The report outlines how the MDBA administered the assessment framework, which was designed in collaboration with Basin governments, to assess the state projects and calculate how much water these projects will contribute towards any change in SDLs.

[Benchmark conditions of development for assessment of the SDL supply contribution](#)

The benchmark outlines a model of a fully implemented Plan, with 2750 GL of water recovery for the environment. The report describes changes to the Plan Benchmark scenario to produce the sustainable diversion limit benchmark scenario. This model was agreed to by all Basin governments.

[Modelling assessment to determine SDL Adjustment Volume](#)

The modelling assessment report describes the implementation of the supply measures package scenario in the modelling framework. The report explains how the model represents and assesses the supply measures to achieve the maximum supply contribution. It also lists the results of three equivalence tests (ecological elements score tests, limits of change in environmental outcomes, and reliability of supply targets) to compare these, and the reliability metrics of the sustainable diversion limit adjustment scenario to the sustainable diversion limit benchmark scenario.

[Independent Review of Hydrologic Modelling for SDL Adjustment \(by Bewsher Consulting\)](#)

The Independent Audit of Modelling report details the findings of the independent review of the sustainable diversion limit benchmark and adjustment scenarios. It gives a detailed evaluation of the modelling framework, outlining the methodology and criteria used to assess the sustainable diversion limit benchmark and adjustment scenarios. The independent audit lists a number of suggested improvements to ensure the modelling framework is an appropriate representation of the system and remains fit for purpose.

[Independent Expert Panel Murray–Darling Basin Plan SDL Limits of Change Review](#)

Prior to the SDL adjustment determination, early MDBA modelling indicated the potential for a number of limits of change rules to breach. The MDBA commissioned an expert review panel to undertake an independent ecological analysis of the potential breaches likely to occur across several possible sustainable diversion limit adjustment model runs. This report outlines the independent expert panel's assessment.

[The SDL adjustment assessment framework for supply measures](#)

The MDBA developed and trialled the way the assessment framework assesses projects under the Plan's Sustainable Diversion Limits Adjustment Mechanism in 2017. The framework brochure explains the key concepts, how the Sustainable Diversion Limit Adjustment Mechanism assessment works, and

results from trialling the method using seven of the supply projects submitted by Basin state governments in 2016 for the purpose. The framework includes the use of an independently-developed (by the CSIRO), scientifically-robust scoring method (test) for environmental equivalence. An Independent Review Panel has found the framework and test to be fit-for-purpose.

[Advice from the Basin Officials Committee](#)

The [Basin Officials Committee](#) reviewed the draft determination and provided its advice to the MDBA on the proposed adjustment to sustainable diversion limits. This advice was provided collaboratively by the NSW, Victorian and South Australian governments.

Northern Basin Review

Northern Basin snapshot <https://www.mdba.gov.au/sites/default/files/pubs/773-BP-amendments-nbr-snapshot-24%20Feb.pdf>

Northern Basin review report - <https://www.mdba.gov.au/publications/mdba-reports/northern-basin-review-report>

Links to supporting documents detailing evidence base and any independent peer reviews, which cover:

- background information and research
- social and economic research
- environmental science
- hydrological modelling.

<https://www.mdba.gov.au/basin-plan-roll-out/basin-plan-amendments/basin-plan-amendments-northern-basin>

Proposed Basin Plan community consultation report - <https://www.mdba.gov.au/publications/mdba-reports/proposed-basin-plan-amendments-community-consultation-report>

Environmental water

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MDBA. 2017. Native Vegetation Evaluation, 2017 Evaluation. Murray–Darling Basin Authority 2017.

MDBA. 2017. Native Fish Evaluation, 2017 Evaluation. Murray–Darling Basin Authority 2017.

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Critical human water needs

For more information on drought management in the River Murray, go to the [Drought and River Murray operations](#) section on the MDBA website.

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