Australian Government

MURRAY–DARLING BASIN AUTHORITY

Community consultation report

Proposed Basin Plan amendments

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Acknowledgement of the Traditional Owners of the Murray–Darling Basin

The Murray–Darling Basin Authority acknowledges and pays respect to the Traditional Owners, and their Nations, of the Murray–Darling Basin, who have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters. The MDBA understands the need for recognition of Traditional Owner knowledge and cultural values in natural resource management associated with the Basin.

The approach of Traditional Owners to caring for the natural landscape, including water, can be expressed in the words of the Northern Basin Aboriginal Nations Board:

> …As the First Nations peoples (Traditional Owners) we are the knowledge holders, connected to Country and with the cultural authority to share our knowledge. We offer perspectives to balance and challenge other voices and viewpoints. We aspire to owning and managing water to protect our totemic obligations, to carry out our way of life, and to teach our younger generations to maintain our connections and heritage through our law and customs. When Country is happy, our spirits are happy.

The use of terms 'Aboriginal' and 'Indigenous' reflects usage in different communities within the Murray–Darling Basin.

Cover image: Consultation in the northern Basin (photo by Otis Williams)

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Foreword from the Chief Executive

When the Basin Plan was made in 2012, it was always meant to be a plan that adapts to new and changing information. It has built into it opportunities for review and checks on progress. For example, at the time, the Murray–Darling Basin Authority recognised that the knowledge about the northern Basin and its specific requirements could be improved, so with the support of Basin governments, we committed to a review of the settings in the north. Similarly, reviews were carried out for some groundwater areas and, as with all new programs, we have learnt about some features of the Basin Plan that could benefit from some fine-tuning.

This report is therefore an important step in the Basin Plan journey. It is the outcome of many carefully considered written submissions that the Authority members received outlining people's views on the suite of amendments to the Basin Plan that the Authority recommended in November 2016. It is also the outcome of many meetings and talks with community members and key stakeholders including local government, irrigators, Aboriginal communities, floodplain graziers, conservation groups, natural resource management groups and state agencies. The overwhelming message we received when discussing the Basin Plan and the proposed amendments is that people care deeply about their communities, their rivers and the surrounding regions. They want sustainable industries, vibrant communities and healthy rivers and wetlands.

The contributions made by communities, industries and researchers, not only during the formal consultation period but throughout the life of the reviews, that underpin our decision making are greatly appreciated. My fellow Authority members and I would like to thank the many hundreds of people who gave up much of their time to share their knowledge with us. You have helped give us confidence that our decisions are based on the best information available. That does not mean everyone will agree with our conclusions but it does mean our thinking has been tested and re-tested which can only mean a better outcome for the Basin overall.

We have considered the feedback we received, and have decided to make only minor alterations to the amendments we proposed in November 2016. These are:

- giving the states more time to request a reallocation of the shared reduction volume
- some modifications to water trading rules
- changes to the definition of groundwater boundaries
- a revised estimate of the baseline diversion limit for the Australian Capital Territory
- minor fixes to the commencement date for some review provisions, the heading text for s.10.44 (water access rights) and the numbering of provision 13.10 (a typographical correction).

The recommendation to change the total water recovery in the northern Basin from 390 GL to 320 GL on the basis governments commit to implementing certain measures aimed at improving water management remains unchanged.

We are confident that our proposed amendments, together with these further changes and with the additional 'toolkit' measures, will deliver a healthy and productive river system.

Changing any legislation takes time. The Authority will now provide these recommendations to the Basin state ministers for response, and then a final recommendation will be delivered to the Minister for Agriculture and Water Resources for his consideration.

Once again thank you to everyone who contributed. We look forward to continuing to work with you to achieve a healthy and productive Murray–Darling Basin that thrives in the long term.

Phillip Glyde
Chief Executive Murray–Darling Basin Authority

What is this report about?

In November 2016 we started the formal process to amend the Basin Plan by publicly proposing amendments and inviting submissions.

This report summarises the themes and issues raised in submissions and throughout our consultation on the proposed amendments, along with our response to these issues.

It also contains a broad outline of the changes that have been made to the proposed amendment since the start of the consultation period.

What is in this report?

This report outlines issues as they relate to the three categories of proposed changes:

- Northern Basin – changes to the limits on water use in the northern Basin
- Groundwater – changes to the limits on water use and management arrangements for groundwater
- Technical amendments – minor practical improvements such as boundary changes and changes to improve the clarity of the water trading rules.

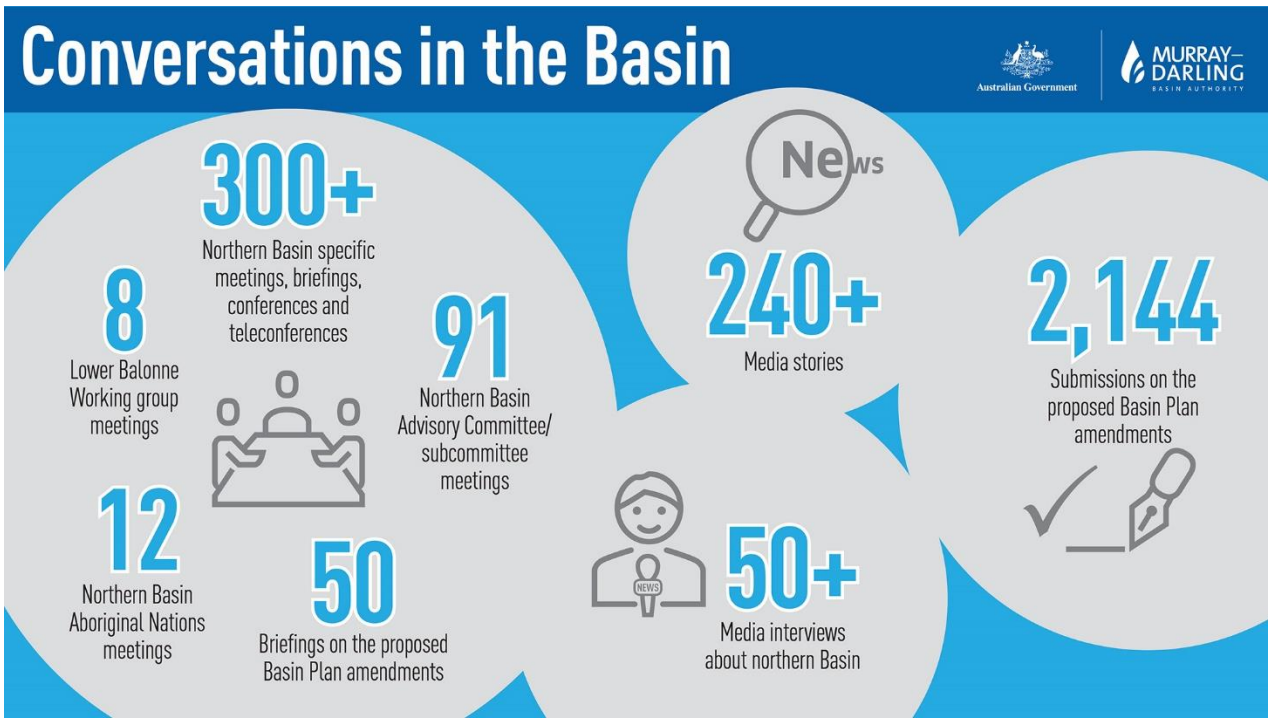
It also summarises feedback on matters that were not directly related to the proposed amendments, such as Basin Plan implementation and broader water reform.

What information is this report based on?

This report is based on the submissions received during the fourteen-week consultation period, as well as feedback received at other consultation activities during this period.

By the close of the submissions period, we received over 2,100 submissions from over 2,300 people and organisations across the Basin. We also received submissions from areas outside of the Basin.

In total, we held about 50 information sessions around the Basin and met with about 1000 people during the submission period. We met with community members, irrigators, floodplain graziers, Aboriginal people, conservation groups, local government, natural resource management groups and state governments.


Conversations in the Basin
Australian Government
MURRAY–DARLING BASIN AUTHORITY
300+
Northern Basin specific meetings, briefings, conferences and teleconferences
8
Lower Balonne Working group meetings
91
Northern Basin Advisory Committee/ subcommittee meetings
12
Northern Basin Aboriginal Nations meetings
50
Briefings on the proposed Basin Plan amendments
News
240+
Media stories
50+
Media interviews about northern Basin
2,144
Submissions on the proposed Basin Plan amendments

Northern Basin

Water recovery target of 320 GL

Many submissions provided views on our proposed change to the long-term average sustainable diversion limits in the northern Basin.

The proposed amendments are a change to the reduction amount for the northern Basin from 390 GL a year to 320 GL a year on a long-term average basis provided the Australian, New South Wales and Queensland governments commit to implementing a range of measures to improve water management.

Submissions presented a wide range of views on the proposed water recovery target, in line with the sectorial interests of the submitter.

An outline of the issues raised in relation to the toolkit is provided in the next section on p. 9.

The MDBA's proposal — 320 GL plus toolkit:
Some submissions supported the proposed change from 390 GL to 320 GL plus toolkit, although often this support was conditional. For example, '[we] broadly support the proposal to reduce water recovery target from 390 to 320 GL, however the devil is in the detail'.

Some accepted the overall reduction to the recovery target but disagreed with the distribution among catchments. Some noted that while it was not the outcome they were looking for, they could accept the proposal because it had been achieved through an open process.

278 GL:
A number of submissions supported no more water recovery on the basis of the social and economic assessment work done by us and using this as a basis for the view that 'enough is enough.' These submissions argued that communities needed certainty and the confidence that no more water recovery impacts would be experienced. Some submissions expressed the view that the current level of water recovery is enough to meet the environmental outcomes in the Basin Plan.

390 GL:
A number of submissions supported no change to the current Basin Plan settings on the basis that the proposed change to 320 GL was not justified by the evidence. Some submissions stated that the Bain Plan was already a compromise and any reduction in water recovery would further affect the environment and the communities that depend on the rivers and wetlands. Additionally there was a view that the Basin Plan has not been in place long enough to justify a review of its effectiveness.

Some claimed that the proposal of 320 GL plus toolkit is based on flawed assumptions, eg that environmental flows will be protected and the feasibility of co-ordinated releases. Others claimed that the social and economic studies did not cover a number of non-irrigation communities downstream of Bourke.

415 GL and above:
A number of submissions expressed the view that northern Basin rivers and wetlands need at least 415 GL returned to the environment as the proposed target reduction will place significant stress on vulnerable landscapes and species. The view was expressed that any volume lower

than this target puts at risk the achievement of commitments under the Water Act, Basin Plan and Basin-wide environmental watering strategy to meet international environmental obligations (eg Ramsar).

Many submissions called for this higher recovery target on the basis that Aboriginal environmental objectives and outcomes can only be delivered with adequate water sustaining the environmental landscape of the northern Basin; that socio-cultural research shows a direct relationship between environmental watering and improved Aboriginal wellbeing; and that we failed to demonstrate how these findings and the impact on cultural values were considered.

Response

The Northern Basin Review set out to investigate whether a water recovery target of 390 GL was suitable to ensure balance across water needs in the northern Basin. Authority members faced a difficult task of determining if the current 390 GL was still the most appropriate volume of water to achieve the outcomes of the Basin Plan.

As a result of this review, we have proposed changes to the long-term average sustainable diversion limits for some northern Basin surface water SDL resource units, provided the Australian, New South Wales and Queensland governments commit to implementing a number of 'toolkit' or complementary measures to ensure we make the best possible use of this water.

It is clear from the diversity of views put forward in submissions that there is no consensus among stakeholders about the best water recovery target for the northern Basin.

Stakeholders in the Basin have wide-ranging expectations about how the system should be managed. These views vary markedly: between upstream to downstream areas, between different sectors or groups of water users, and depending on individual views about 'what is sustainable'. The proposed change reflects a balance between these divergent views and interests.

After hearing the views of the community on our proposal, we still believe that changing the northern Basin recovery target to 320 GL strikes the best balance in ensuring the health of our northern rivers, while limiting the impacts on communities. Reducing the recovery target to 320 GL offers better social and economic outcomes for some irrigation communities compared with the current Basin Plan, and along with the toolkit measures delivers almost equivalent environmental outcomes by taking a more targeted approach to water recovery.

The management actions listed in the toolkit have the potential to improve upon the outcomes under a 320 GL recovery target. If agreed by the Australian, New South Wales and Queensland governments, these measures will increase our confidence that water managers will deliver a healthy and productive river system even with a reduced recovery volume.

We are satisfied that our proposal represents an environmentally sustainable level of take and as such meets our obligations under the *Water Act 2007* and international environmental obligations.

Toolkit

Many submissions provided feedback on our recommendation for governments to implement 'toolkit' measures — a broad range of actions and initiatives to accompany water recovery to maximise environmental benefits and minimise economic impacts.

Our recommendation for a toolkit included:

- *protection of environmental flows*
- *targeted recovery of water*
- *event-based mechanisms including: one-off temporary trade by event, options over pumping, and store and release*
- *measures to promote the coordination and delivery of environmental water*
- *measures at the Gwydir Wetlands to promote flows to the wetlands*
- *environmental works and measures to promote fish movement and habitat.*

Submissions expressed strong support for governments to consider more than just water recovery to improve environmental outcomes. Many were pleased to see us acknowledge that more than just water recovery was needed to achieve a sustainable Basin.

In general, people wanted to see certainty that recovered water will lead to good on-ground environmental outcomes and viewed toolkit measures as a way of improving the outcomes of environmental watering. Some saw toolkit measures as a way to help minimise negative economic and social impacts.

A number of submissions wanted water recovery to stop and governments to prioritise and commit to funding and implementing complementary or non-flow measures to maximise the environmental outcomes from the management of environmental water already recovered. Others argued that these sorts of measures should just be part of good water management and should not be linked to the setting of sustainable diversion limits.

A number of submissions expressed concern that the toolkit measures had not been modelled as part of our assessment of different water recovery scenarios.

Many submissions called for additional activities to be included such as better management of wetlands, riparian revegetation, restoration of fish habitat, weed and feral animal control, the introduction of the carp virus and improving water quality in general. Submissions generally agreed that toolkit measures needed to avoid causing third party impacts.

There were different views on whether measures should be considered as substitutes for water recovery. Some submissions suggested measures could be traded off for a specific gigalitre value. Other submissions supported toolkit measures but not as a substitute for water recovery, but to add value to the current environmental entitlements.

A number of submissions noted that some of the toolkit measures will only be effective if there is enough water in the system. Other submissions argued that there wasn't much point in recovering additional water unless other management actions were taken, for example improving water quality or controlling invasive species such as carp.

A number of submissions made comments about how toolkit measures would be funded. There was general agreement that toolkit measures need to be fully funded and agreed by

governments, otherwise it would be inappropriate for us to include them in our recommendation to change the sustainable diversion limits.

A number of submissions raised the need for greater certainty that the toolkit measures will be implemented by governments. Some submissions were worried that the toolkit measures would have no statutory force and wanted to know how we would guarantee delivery. Some submissions argued that measures must not only be agreed but fully implemented by governments before we make changes to the sustainable diversion limits. Some submissions expressed concerns about the lack of a legislative basis for toolkit measures.

Response

We were pleased to see so much support for further exploring toolkit measures. It is clear from the diversity of feedback that there's more work for us and the Basin governments to develop measures that get the most out of environmental water. We agree that the design and implementation of toolkit measures needs to ensure that third party impacts are appropriately addressed and we were pleased that so many people expressed a desire to be involved in progressing these measures.

We decided to include the toolkit measures in the proposal in response to community feedback that we need more than just water recovery to improve environmental outcomes. The concept of a toolkit originated with the Northern Basin Advisory Committee, which we established to provide advice on the Northern Basin Review.

From the start, the toolkit measures were intended to complement, not substitute, water recovery. While we acknowledge that there are many complementary projects that could achieve very valuable natural resource management outcomes, we chose those included in the toolkit because they more directly support the achievement of environmental flow outcomes. More specifically, rather than choosing toolkit measures to model, our modelling work revealed the potential for actions to complement water recovery, for example:

- the need for environmental flow protection through the Condamine–Balonne if recovery upstream of Beardmore Dam was pursued
- targeted water recovery (ie the location, not just the volume) is an important factor influencing the flows achieved by the Basin Plan, especially through the Condamine–Balonne and Barwon–Darling river systems
- event-based mechanisms (such as temporary trade) can benefit some environmental assets, including the Narran Lakes and Lower Balonne Floodplain
- the coordination of environmental releases from storages across the northern Basin can be used to augment environmental outcomes in the Barwon–Darling.

We agree that a firm commitment from governments is required before going ahead with the proposed amendments. The mechanism for this commitment will be through a new schedule to the existing inter-governmental agreement for Basin Plan implementation which is currently being drafted.

The Department of Agriculture and Water Resources taskforce is taking the lead in developing a program of toolkit measures and our other recommendations included in the Northern Basin Review report. This includes seeking feedback from the community. We will carefully consider the nature of any commitment made on the toolkit measures before recommending a final proposed amendment to the Minister.

Protection of environmental flows

Many submissions commented on our recommendation on the protection of environmental flows.

Many submissions strongly expressed the view that low flows/ environmental flows must be protected. In upstream areas people did not feel it was fair that their communities had given up irrigation water just to have it pumped out downstream, while downstream communities wanted the water to reach them without being extracted en-route.

Other submissions raised concerns about the potential third party impacts and indicated that market based approaches were preferred if governments wanted to protect particular flows.

Some submissions expressed the view that relying on extraction limits like sustainable diversion limits or the Cap is not sufficient protection for environmental flows as they don't adequately protect water from extraction on an event-by-event basis. A common sentiment expressed is that the Basin Plan is completely undermined in the absence of some sort of mechanism to protect the water recovered for the environment in this way.

Some submissions claimed that the protection of environmental flows is already required under the Basin Plan and that it was inappropriate for us to propose a change to sustainable diversion limits contingent on governments implementing something they are already obligated to do.

A number of submissions stated that they had little or no confidence that this measure would be implemented and claimed that it was a 'flawed assumption' in deciding to reduce the water recovery target.

Some submissions emphasised the need for environmental flows to persist across state boundaries and that initiatives such as development of 'shepherding' rules in water plans should be implemented in both northern Basin states.

Some submissions put forward suggestions for how governments could improve the protection of environmental flows, for example by activating individual daily extraction limits in the Barwon–Darling water sharing plan.

Other submissions called for more metering, monitoring and compliance to make sure water arrives where and when it should.

Response

We agree that protecting environmental water as it flows through the system allows water managers to get the most out of a smaller volume.

Sustainable diversion limits provide a solid foundation for protecting water on a long-term average basis. However, they do not protect environmental water on an event basis or provide the opportunity to achieve targeted environmental outcomes.

This is why the Northern Basin Review included a recommendation to improve state water management arrangements to safeguard low flows and fresh flows, particularly in the unregulated systems. We are working with governments to explore options that deliver environmental outcomes and ensure no net advantages or disadvantages across water users as a result of environmental water recovery and use.

We agree that there need to be sound commitments for implementation of this toolkit measure. As part of the schedule to the intergovernmental agreement, we are looking for clear commitments from the New South Wales and Queensland governments to seriously explore ways that existing water arrangements can be used and adapted to improve environmental outcomes.

Our response to concerns about metering, monitoring and compliance is set out at p. 38.

Support for communities to adjust

Many submissions commented on our recommendation that governments consider further support for communities to adjust.

Submissions stressed the importance of well-funded and targeted structural adjustment assistance as an important way to help communities recover from the effects of water reform and particularly water buybacks.

There was a strong view that the towns suffering from substantial water recovery should be compensated for their losses. It was felt that structural adjustment assistance is needed to help remaining businesses diversify and also to promote new businesses to slow the rate of potential job losses. Submissions expressed the view that Dirranbandi, Warren and St George need urgent support.

Some submissions were of the view that historically, structural adjustment assistance and associated funding has not been managed fairly. Some submissions contended that there had been no redress for rights lost by floodplain graziers, stock and domestic users and towns.

Some submissions argued that the issue driving community push-back against water reform was the failure of structural adjustment assistance to support the communities most adversely affected. These submissions argued that had communities been more directly supported to adapt to change there would be less opposition to water recovery because people would be able to take advantage of the opportunities afforded by a healthy river.

Submissions raised concerns about lack of economic opportunities and support for Aboriginal people. A view was expressed that current economic compensation was inequitable, advantaging groups like irrigators, and ignoring Aboriginal people. It was submitted that more support for Aboriginal employment opportunities within the Basin was needed.

Submissions offered many suggestions on who should provide support and how it should be provided. Submissions suggested that assistance should be delivered by direct financial support, community growth programs, supporting regional diversification, debt relief, rental assistance, and other measures.

Submissions suggested methods of funding, such as creating dedicated funding arrangements to assist transitioning communities, jurisdictions joining in funding, and irrigation royalties used to fund community support.

We were urged to make representations to governments, show the impact on individual communities, and point out that it has not been addressed. However, there was concern that we

had no scope for making recommendations to address negative social and economic effects that were indicated by the research.

Response

There are a lot of changes going on in northern Basin communities and we know the impacts of water recovery will play out differently in different communities.

We acknowledge the impact that previous water reform and the current recovery of water has had on communities.

Through the Northern Basin Review we have improved our knowledge of the impact of water recovery on communities in the north and have identified the towns which have been most affected. Our floodplain grazing project has also provided a better understanding of the impacts of past decisions on floodplain grazing and the benefits of different water recovery options.

Through the review we have listened to people and now have a better understanding of how 21 northern Basin communities respond to water recovery and its effects. What we heard, together with our detailed analysis of economies and the environment, has informed our decision. The real social and economic effects on irrigation communities was a contributing factor to our recommendation that the recovery target be reduced, together with the environmental outcomes research. We considered a range of competing views in making our judgement.

Mapping the drivers of change and their impact for northern communities (including farming technologies, population changes, floods, droughts and water reform) is invaluable in helping us understand and prepare for what is often an unpredictable future. This information can provide a basis for communities to shape their future, given the breadth of change faced by rural populations; such as changes in farm technology, labour demand and commodity prices.

We have recommended that governments consider support, above that already provided, particularly for Dirranbandi and Warren. The prime focus for this support should be to assist communities, and then to provide tools for communities to find ways to adapt to the change.

Aboriginal views and issues

An overwhelming number of submissions from Aboriginal people stated that the changes proposed to the Basin Plan are not supported by Aboriginal people, specifically any reduction to the amount of water recovered for the environment and changes to the groundwater sustainable diversion limits.

Submissions emphasised that Aboriginal environmental objectives and outcomes can only be delivered with adequate water sustaining the environmental landscape of the northern Basin. They said that current recovery targets are insufficient to protect and sustain Aboriginal cultural values in most cases, and that further reductions will critically compromise Traditional Owner's ability to maintain cultural practices and transfer traditional ecological knowledge.

Submissions raised concerns about other factors that affect the health of the environment and way of life for Aboriginal people. These include the impact of climate change on flows and water quality, the impact of chemical runoffs such as pesticides, and the increased siltation caused by clearing vegetation along the banks.

Submissions were generally pleased that we had undertaken some socio-cultural research in partnership with the Northern Basin Aboriginal Nations to inform the Northern Basin Review but argued that this work had not been adequately taken into account.

Our socio-cultural study highlights the importance of water to Aboriginal people and showed a direct relationship between environmental watering and improved Aboriginal wellbeing. Submissions argued that reductions to the environmental recovery target are strongly opposed until the impacts on individual Nations' cultural values and uses are measured.

Submissions raised concerns that a reduction in water recovery for the environment will put unwanted stress on First Nations people spiritually and emotionally, and would affect the ability to collect bush foods, medicines and ceremony plants.

Submissions noted that First Nations people are the most underemployed in the irrigation sector and the most disadvantaged in the Basin. Submissions talked about a past history of dispossession and removal from traditional lands under government policies.

Submissions suggested that governments need to develop a comprehensive works program that will see the employment of First Nations peoples throughout the northern Basin with possible enterprise development opportunities

Submissions raised concerns about Aboriginal people's ability to access waterways. They state that rivers are being fenced off resulting in denial of access to important sites such as burial sites, and impeding cultural activities such as hunting, fishing, diving for mussels, telling stories and allowing their children to play by the river. Submissions noted that not being able to access traditional sites and burial grounds was affecting communities' abilities to transmit local knowledge and culture. Submissions pointed to The National Water Initiative, requirement 52, which requires all governments to provide for Indigenous access to water resources.

Submissions called for the Water Act and Basin Plan to better recognise the rights and interest of Aboriginal people.

Response

We have made a considered triple bottom line decision on the sustainable diversion limit for the northern Basin and have determined that on balance, when all factors are considered, a recovery target of 320 GL with effective implementation of the identified toolkit measures is appropriate.

We agree that Aboriginal environmental objectives and outcomes are important and can only be delivered with adequate water, improved understanding of Aboriginal social and cultural objectives as they relate to waterways, and more effective involvement of Aboriginal people in water management planning and decision making.

To this end we have a dedicated Aboriginal partnerships team which is progressing these matters through a number of programs and projects as described in our Aboriginal Partnerships Action Plan.

Through discussion and work with the Northern Basin Aboriginal Nations, we have identified a number of measures that could address some of the concerns of Aboriginal people and acknowledge their connection to Country, including the rivers.

We have recommended that governments consider support for the following measures, to address the concerns of Aboriginal people in the northern Basin:

- ensure Aboriginal access to waterways
- replace or refurbish weir pools at certain locations, such as Wilcannia and Cunnamulla
- continue to improve the capacity of Aboriginal people to engage in water planning and decision making, in order to factor in their social and cultural imperatives.

We acknowledge that access to waterways for Aboriginal people is a serious concern and this is reflected in our recommendation for governments to consider. While not specifically referring to access, the Basin Plan does acknowledge the relationship Aboriginal people have with the waterways of the Basin and for some matters requires us and Basin states to have regard to Aboriginal values and uses.

It is anticipated that results from the National Cultural Flows Research Project around Aboriginal water requirements and preferences will be available in late 2017. While this work was not able to be considered through the Northern Basin Review process, it will assist Aboriginal leaders to provide valuable information more comprehensively for future evaluations of the Basin Plan.

We agree that more work needs to be done to consider the importance of water to Aboriginal social, cultural, and spiritual wellbeing. The survey that we conducted in partnership with the Northern Basin Aboriginal Nations to find out about the importance of environmental water to Aboriginal Nations in the north was the beginning of a better understanding of the connection between Aboriginal wellbeing and cultural flows. We agree that work like this needs to be integrated into our ongoing evaluation of the effectiveness of the Basin Plan.

We agree that more needs to be done to involve Aboriginal people in water management. We want to improve awareness and relationships at all levels within our own agency and recognise and promote the rights and interests of Aboriginal peoples with regard to water management.

This is why we have included a recommendation to governments to continue to improve the capacity of Aboriginal people to engage in water planning and decision making, in order to factor in their social and cultural imperatives.

We are actively working with the Australian Government Department of Agriculture and Water Resources to explore opportunities for Aboriginal economic development. To this end, seed funding has been provided to the Northern Basin Aboriginal Nations to scope economic development opportunities for Aboriginal people.

Our response to concerns about water quality is addressed on p. 38.

Sustainable balance

Submissions put forward a variety views on whether we struck the right balance between economic, social and environmental outcomes in determining the environmentally sustainable level of take and sustainable diversion limits in the northern Basin. Many submissions argued that we had not given enough weight to one or other line of evidence.

Some submissions expressed the view that, in proposing an increase in the sustainable diversion limits, not enough weight had been given to social and economic outcomes that rely on water being available for productive use, such as employment in irrigated agriculture and the flow on effects this has on the economies and social structure of irrigation-dependent communities.

Other submissions expressed the opposite view; that not enough weight had been given to the social and environmental outcomes associated with increased environmental flows, such as benefits for the productivity of floodplain graziers, improved wellbeing for Aboriginal communities and ecological outcomes that are important for meeting international environmental obligations as required under the Water Act.

Some of these submissions stated that they did not believe that the cultural, social and economic benefits of a healthy river system has been adequately assessed. This includes improved floodplain grazing productivity, recreational fishing, tourism and the costs to health, social wellbeing and town water supplies when river levels are low and water quality is poor.

Some of these submissions contended that we had given insufficient weight to the value of cultural flows to Aboriginal people. These submissions argued that the triple bottom line leaves out the Aboriginal story and that we should expand its assessment to a quadruple bottom line.

Some submissions argued that we had not taken into account the impact of previous water reform. Some argued that the Authority had not adequately accounted for the negative economic/ cultural/ mental health consequences of previous buyback, and were concerned about the resilience of communities to be able to handle any future buybacks.

Some argued that we ought to consider the long-term effect of industrial improvements as a reason for rural job opportunity decline when assessing economic impacts of buybacks. Others were concerned that the baseline we used did not take into account the extent to which the economic potential of communities had already been limited by water recovery prior to the Basin Plan.

Some submissions claimed a lack of equity across the northern Basin valleys, questioning why some valleys have to contribute more than others.

A number of submissions questioned how we made our decision to amend the Basin Plan given the diversity in views and needs for consideration. Submissions variously questioned the process, methodology, and scope of the Northern Basin Review.

Submissions emphasised the importance of a transparent process. There was widespread support for a triple-bottom-line approach for setting limits on water use (which aims to balance water use between economic, social and environmental needs), although in general people were most concerned about what it would mean for their community.

Some submissions suggested that the triple-bottom-line approach is not consistent with the Water Act and is part of a trend to promote increased consideration of socio-economic factors.

A number of submissions stated that it was unclear how the economic, social and environmental information was used to reach the decision to increase the northern Basin sustainable diversion limit.

Submissions expressed the view that Aboriginal people should have had more control and consideration in the decision-making process. Some felt the decision-making process undervalued the perspective of Traditional Owners, and questioned whether the methodology used had given genuine consideration to the rights, interests and responsibilities of Traditional Owners.

Response

In a healthy working Basin there is a balance between the water available for healthy and resilient ecosystems, productive and resilient water-dependent industries and sufficient and reliable water supplies for communities. In the context of setting sustainable diversion limits this means ensuring that water resources can be used sustainably into the future but does not aim for a return to pre-development conditions.

The *Water Act 2007* requires that we set diversion limits in a way that balances economic, social and environmental outcomes. The purpose of the Northern Basin Review was to investigate whether the 390 GL recovery target was the most appropriate volume of water to help achieve the necessary environmental outcomes in the Basin while minimising any negative effects of water recovery on communities.

Consistent with the Water Act and the objective of a healthy working Basin, our proposed increase to the northern Basin sustainable diversion limit offers better outcomes for many communities and means that for some irrigation-dependent communities no more water will need to be recovered. This should give confidence to these communities to continue to adapt and plan for the future.

The diversity in views expressed in submissions about the right balance highlights the challenge that the Authority faced in reaching the proposed amendment.

The proposed amendment, including toolkit measures, will help safeguard northern Basin water resources and those communities that rely upon them. Our proposal to return 320 GL of water to the environment is contingent on commitments from the Australian, New South Wales and Queensland governments to implement a number of toolkit measures which provide opportunities to improve water management and enhance environmental outcomes.

The amount of information considered as part of the Northern Basin Review was immense. It includes understanding the changes in communities – long-term drivers of change as well as those directly attributable to water recovery. We explored how to make the most out of water recovery and also have a much better understanding of people's intrinsic connection to rivers.

What we reaffirmed is that irrigated agricultural development has been good for businesses and communities; but taking water out of the system for productive uses has had a serious effect on the rivers and floodplains, and created potentially long-lasting issues for water quality and water security.

This impact can be seen not only on native birds, fish and trees, but also on businesses, farms and communities and particularly on Aboriginal communities.

The new research details what a healthy river system needs, and there is a much better understanding of what the effects of water recovery are on communities and river health.

The relationships between economic, social and environmental values are complex. With an improved information base in the north we examined the outcomes for businesses, communities and the environment under different water recovery targets. This work has fed into the recommendations on changes to Basin Plan settings in the north.

Considerations in the review included:

- the role of water recovery in the health of northern Basin rivers
- broader water management requirements for the health of rivers and catchments
- how, where and when water is recovered
- the effect of water reforms and other factors on some communities
- how water managers could do more with less water.

Our proposed amendment offers better social and economic outcomes for northern Basin irrigation communities overall compared with current Basin Plan settings. For many irrigation communities no further water needs to be recovered. But it does also mean different things for different communities. Under the reduced recovery proposal, in most of the 21 northern Basin communities investigated, the economic effects are expected to be relatively small. In many cases, the effects are much smaller than those caused by other contributing factors. However, we recognise that any local job losses has an impact on communities.

An important part of reaching this balanced proposal was consideration of the complementary or 'toolkit' measures. Returning water to the system is essential to addressing a history of over-allocation. However, we agree with the comments of some community members that a healthy and productive river system cannot solely be achieved through water recovery. The environmental science tells us that other management actions are needed to get the outcomes we want. This is why our approach – based on community input – includes a recommendation that measures in addition to water recovery could help achieve river health with less water.

We've taken on board community feedback about the need to be transparent about where trade-offs are made in making our decisions. We developed a triple bottom line assessment framework to support our decision making. This framework was used to set out the information base and guide the Authority in their consideration of economic, social and environmental outcomes across the range of water recovery scenarios. For more detail on the decision-making process see the Northern Basin Review report and the Triple Bottom Line report on our website.

We recognise that flexibility around where water can be recovered from to meet the shared reduction is important, especially when the water recovery programs are demand driven programs, and the final spread of water recovery across the upstream tributaries will reflect the level of interest and participation in the on and off-farm irrigation efficiency programs and entitlement purchase.

However, in reducing the overall water recovery target we needed to be more prescriptive about the locations and types of entitlement to be recovered to minimise social and economic impacts,

and still achieve almost the same environmental outcomes as under current Basin Plan settings. Water recovered in any of the northern Basin catchments not only contributes to meeting local environmental requirements, but also to meeting downstream needs. Along with water recovered within the Barwon–Darling itself, flows from the Condamine–Balonne, Namoi and Gwydir valleys contribute to achieving environmental outcomes in the Barwon–Darling and recovery targets have been set to reflect this.

Evidence base

Submissions raised concerns about the sufficiency of the environmental, social and economic evidence used by us to make our decision to change the northern Basin sustainable diversion limits.

A number of submissions were concerned that we had not used the best available information. Some submissions pointed to information sources such as scientific and socio-economic studies which they believed we ought to consider. In some cases, the submitters had undertaken their own research and analysis which they provided to us for consideration.

For the hydrological modelling, submissions questioned the use of modelling as the primary tool used to compare water recovery scenarios. Concerns were raised about the transparency of modelling assumptions, including that there was no model run for our final 320 GL scenario and that there were inconsistencies in assumptions between scenarios which made the modelled outcomes difficult to compare. Submissions also claimed that the hydrological models are not up-to-date or do not reflect the way northern Basin rivers are managed in practice and that the use of long-term averages is not suitable for highly-variable northern rivers. Some claimed that the outcomes were based on false assumptions about the feasibility of coordinating environmental flows.

For the environmental science, submissions questioned the choice and use of site-specific flow indicators, with some claiming that they are not a suitable approach to determine environmental outcomes. Submissions questioned why an environmental study in each valley was not undertaken as specifically as the socio-economic work. Submissions expressed concern that the outcomes described through modelling of environmental indicators cannot be achieved on the ground. Others expressed concern that not all of the site-specific flow indicators are met under any of the water recovery scenarios in the range that we considered.

For the social and economic assessments, concerns were raised that the assessments did not adequately assess the broad benefits of a healthy river system, including the benefits for tourism, recreational fishing and floodplain grazing. Some submissions claimed that the social and economic research only looked at the impact relating to irrigation and not on other uses of water. Additionally, it was considered that the value of cultural flows was not properly assessed. Submissions questioned the choice of towns used in the social and economic assessment. Many submitters wanted to know why their town was not included, or why we did not include towns downstream of Bourke. Some claimed that the socio-economic data was changed by peak industry groups.

Response

The Northern Basin Review set out to improve our knowledge of the northern Basin, including the water needs of water-dependent ecosystems, how water recovery has affected communities and floodplain graziers and Aboriginal values about water. In this regard, the Northern Basin Review can be considered to have achieved its goal. The evidence base used to reach the current proposal was vastly improved compared with the information available four years earlier.

All our research and reports have been peer reviewed and found to be fit for purpose.

All new information and analysis provided in submissions was technically reviewed by us. The overall conclusion was that submissions presented no new information that would, in the context of decision making for the Northern Basin Review, justify a change to the social and economic analysis, site-specific flow indicators or the hydrological modelling.

Hydrological modelling

In response to concerns about using modelling as the primary tool used by us to compare water recovery scenarios:

Hydrological modelling was one line of evidence considered in our recommendation to change the sustainable diversion limits.

The purpose of the hydrological modelling work was to measure the long-term flow changes that could occur under a wide range of possible Basin Plan options under consideration. For each option, the changes in flow were translated into a set of outcomes using the social, economic and environmental research streams, also part of the Northern Basin Review.

The various options were compared through a triple-bottom-line assessment framework which incorporated new research and knowledge. We also took into consideration other relevant information, such as management actions and community consultation findings. The breadth and depth of Authority members' experience also informed the proposed recommendation as they used their judgement to come to an understanding of the balance that was needed between economies, communities and the environment in the northern Basin.

The final proposed water recovery volumes for the northern Basin therefore represent a considered, evidence-based, triple-bottom-line judgement call for which hydrological modelling was an important (but not the only) line of evidence.

In response to the concern that there was no model run for our final 320 GL scenario and that there were inconsistencies in assumptions between scenarios:

We completed a model scenario representing the final sustainable diversion limit recommendation of 320 GL. This scenario was presented to the Authority prior to the release of the review findings in November 2016.

Nine whole-of-north scenarios had previously been completed as part of the review (the recommended 320 GL option was modelled as a tenth scenario). The purpose of the modelling work was to methodically test the impact of specific Basin Plan settings. The primary setting under investigation was recovery volume – four scenarios were completed to test recovery

volumes of 278, 320, 390 and 415 GL. The analysis showed the level of improvement in environmental outcomes slows down as recovery increases from 320 GL to 415 GL.

Other aspects of Basin Plan implementation were also tested. These scenarios examined the impact of water recovery location (ie the geographic distribution across the northern Basin); water recovery type (ie the mix of entitlement classes); and the use of water for the environment (ie an alternative strategy governing the release of environmental water from storages).

A process of 'single-parameter' investigation was applied to ensure that the modelling results could be clearly tied to a single input parameter. This is a scientifically robust approach.

In response to concerns about the models we used and whether or not they reflected current water sharing plan assumptions:

The models that underpin the Basin Plan modelling framework were provided by the Basin state governments, and have been the subject of development, calibration and testing for up to 40 years. The MDBA and Basin state governments acknowledge that the models contain inherent uncertainties, which are generally determined by the extent of available calibration data (ie gauged flows, diversions, storage releases and spills, evaporation, rainfall, and so on).

As is standard practice, Basin state governments continue to update their models to better represent river systems. Model updates are generally made if new calibration data is obtained, or if an aspect of the river system experiences a significant change. Ongoing model updates are an important aspect of water resource planning and management, and we gratefully acknowledge the collaborative approach adopted by Basin state modellers.

The general approach of the Northern Basin Review was to update the knowledge base from 2012 levels. This principle was applied to the modelling framework, but was adopted with the qualifier that each model had been subjected to sufficient quality assurance and peer review.

The models used for the Northern Basin Review are mostly those used for of the development of the Basin Plan, but with updates and improvements to address issues identified at that time. Some of them were minor repairs to errors discovered after the Basin Plan modelling, and some were the incorporation of recommendations from an independent audit of Cap models. In general, if any updated model had significantly changed the baseline diversion limits, and had not yet undergone an independent peer review, it was not adopted for the Northern Basin Review.

The Northern Basin Review focus was on understanding relative changes in hydrology under various scenarios. Based on modelling experience gained through similar past projects, we believe that the use of different versions of models is unlikely to have changed the relative outcomes significantly enough to lead to a different conclusion for the review.

In response to concerns about the use of long-term averages:

The different recovery scenarios explored are expressed as long-term average annual volumes and some of our analysis is similarly expressed in long-term averages. However, this is only one layer of detail. For each recovery option, a large dataset showing the day-to-day behaviour of the river system was produced. This dataset provided information on things such as daily river flows, the volume of water held in public storages, and the daily irrigation extraction from the river system. This day-to-day behaviour helped us to understand how characteristics such as irrigation extraction and river flows vary seasonally based on different conditions.

In response to concerns about the feasibility of coordinating environmental flows:

There is an expectation from the community that environmental water will be used as efficiently and practically as possible so that the recovery of additional water is minimised.

We included assumptions of a coordinated watering approach in the Northern Basin Review modelling. This was illustrative of a future when it may be possible to more efficiently coordinate water to achieve desired environmental flows through the Barwon–Darling.

Modelling assumed that environmental water would be used in an efficient way including by catchments coordinating releases of environmental water from storages and river operators investing in the knowledge and experience to achieve this type of coordination. However, we recognise that there are challenges to achieving this type of coordination in practice. It would require substantial upgrades to existing flow forecasting capacity and operational practices.

For this reason, a model scenario was completed in which the operational capacity was more in line with current practices (ie no flow coordination). The modelling indicated that some form of flow coordination has the potential to provide additional enhancements to environmental outcomes. The modelling also showed that flow coordination would only be appropriate under certain conditions (ie in a minority of years).

With the development or improvement in system tools and predictive climatic information there will be greater ability to coordinate such events. Importantly our analysis indicated that on average up to two events a decade could be enhanced by a level of coordination.

As a result, we have made the Northern Basin Review recommendation contingent on Australian, New South Wales and Queensland governments support for toolkit measures such as the development of systems tools to support coordination.

Environmental science evidence

In response to concerns about the choice and use of site-specific flow indicators:

Northern Basin catchments are ecologically complex, often data poor, and as such need to be represented by a smaller area within the catchment, called an umbrella environmental asset.

There are seven umbrella environmental assets in the northern Basin. The umbrella environmental assets are generally located at or near the bottom of the system (eg large terminal wetlands, lowland floodplain complexes) and below major areas of water extraction (eg dams and irrigation districts); and it is assumed that the water that reaches these asset areas will have flowed through and provided environmental benefits to areas upstream.

In each umbrella environmental asset, a set of flow indicators were described. Flow indicators are flow events that seek to support a particular environmental outcome (eg waterbird breeding in Narran Lakes; large scale movement opportunities for native fish in the Darling River). The flow indicators, working as a set, are also expected to support a wider range of ecological processes.

We used 43 site-specific flow indicators to translate specific flow patterns into environmental outcomes (eg inundation of snags providing fish spawning opportunities). Flow indicators are described in terms of:

- an amount of water (eg a flow rate, 5 ML/d; or a total volume, 50 ML)
- at a particular river gauging station (eg Brenda gauge)
- for a specific minimum duration (eg for a minimum of 20 days)
- a specific timing (eg between January and May)
- a frequency target range.

Using a hydrological modelling framework, we assessed how effectively each water recovery scenario could meet the environmental water requirements (as described by 43 different flow indicators) and therefore the expected environmental outcomes for the northern Basin catchments.

The site-specific flow indicators for the northern Basin are based on the best available science, some of which is catchment-specific and some of which is more general. We commissioned a range of new on-ground environmental research projects in the Condamine–Balonne and Barwon–Darling catchments, including research carried out by New South Wales government departments, to better understand the unique flow-ecology relationships of the rivers in the north.

Comprehensive reviews of existing peer-reviewed academic literature on flow ecology relationships were also conducted to ensure site-specific flow indicators were set using the best available information. Where there were knowledge gaps at a catchment level peer-reviewed literature from other catchments in the Basin were used to inform the site-specific flow indicators.

In response to concerns about why environmental studies were not conducted in all northern Basin valleys:

The environmental science element of the Northern Basin Review began with a range of scientific reviews and field studies that were undertaken on the water needs of northern Basin fish, birds and floodplain plants, in order to build upon the existing knowledge base.

This work was targeted at areas within the northern Basin where information was poorest (i.e. Condamine–Balonne and Barwon–Darling). Information from this program fed directly into the development of flow indicators for the Barwon–Darling and Condamine–Balonne.

The environmental science information was also used to determine environmental water requirements for the other northern Basin catchments, although the 2012 reports and flow indicators for these catchments were not updated.

In response to concerns that not all of the site-specific flow indicators are met under any of the water recovery scenarios in the range that we considered, and concerns that the modelled environmental outcomes cannot be achieved on the ground:

The environmental science provided 43 flow indicators across the northern Basin to monitor ecologically significant environmental flows. Our modelling results show that between 19 and 27 flow indicators cannot be achieved with the levels of water recovery that were examined. This means that, regardless of water recovery scenario, a level of environmental risk will remain in the northern Basin. For example, in the Lower Balonne base flows and small fresh flow indicators show little improvement with increasing water recovery. These flows are particularly important for breaking up extended dry-spells, and if not achieved risk the potential for local extinction or reduced/slower recovery by many aquatic species upon return to wetter conditions.

There is also little improvement in the Barwon–Darling wetland and floodplain flow indicators and the bank-full and inner floodplain watering needs of the Lower Balonne. Over the longer term this could result in vegetation stress with increasing dry-spell length likely to lead to changes in floodplain vegetation composition and condition, moving towards less water dependent species.

We acknowledge that some site-specific flow indicators are outside the range of influence, we have therefore not attempted to actively deliver these types of flows. A critical finding in this process was that the potential environmental benefits are likely to be heavily dependent on the implementation of other non-volumetric management measures. These measures (termed toolkit measures) could mitigate some of the identified risks, as well as enhance some of the benefits.

These measures include opportunities such as:

- the protection of environmental flows which could result in better low flows and in-channel connectivity in the Condamine–Balonne and Barwon–Darling
- the targeted recovery of water entitlements in high priority areas within catchments. Implementation could result in improved Narran Lakes outcomes (through targeting of in-stream Narran River entitlements), Lower Balonne floodplain outcomes (through targeting of overland flow licenses) and Barwon–Darling outcomes (through targeting of Barwon–Darling entitlements and some benefits from well-connected tributary recovery)
- event-based mechanisms such as one-off temporary trade by event, options over pumping (enduring agreements) and store and release from private storages. Implementation could result in enhanced environmental outcomes across a range of catchments; but is less useful in places where large volumes are required (eg Barwon–Darling bank-full and overbank flows)
- improved coordination of environmental water where release of environmental water is coordinated with other river operations to complement natural events. Implementation could result in improved frequencies of in-channel freshes in the Barwon–Darling.
- constraints management such as strategies to remove impediments to higher flows in the Gwydir. This could result in significant environmental outcomes related to floodplain and wetland processes
- infrastructure investment such as constructing fishways to improve fish passage at barriers, which would significantly enhance the native fish outcomes that can be achieved with environmental water. Other examples include screening of intake pipes at major irrigation offtakes
- mitigation of cold water pollution caused by release of water from lower depths of dams. Implementation of mitigation measures at large dams (eg the thermal curtain that was installed at Burrendong Dam in 2014) could result in enhanced water quality outcomes, especially for fish.

Social and economic evidence

In response to concerns raised that the assessments did not adequately assess the broad benefits of a healthy river system, that it only looked at the impact relating to irrigation and not on other uses of water, and that the value of cultural flows was not properly assessed:

The social and economic research undertaken for the Northern Basin Review used three inputs: community-level modelling; floodplain grazing modelling; and results from a survey of Aboriginal socio-cultural capitals (such as natural, social, physical and cultural).

This analysis expands on the socio-economic analysis undertaken at the regional level for the development of the Basin Plan in 2012, and it is the first time such information has been available for individual communities.

By developing community level modelling, it was possible to examine the effect that reduced water availability has on the area of irrigation and, consequently, employment at the community level.

We collected information from town and farm businesses, individuals, community groups, industry organisations, and governments, and learnt how communities have been changing. These changes have been driven by numerous factors, such as advances in technology, the mining boom, commodity prices, droughts and floods, increasing employment in government services, and demographic changes.

This information has enabled us to place the expected effects of water recovery within the context of all the other changes affecting the communities.

The social and economic analysis has highlighted how the effects of recovering water for the environment can be influenced by changes in the volume, location or type of entitlements recovered, and whether the recovery is through infrastructure investment or purchase.

Outputs from the modelling, interpreted with the use of all the other social and economic information collated, clearly articulates the expected effects of water recovery in different communities. The new work recognises that water recovery affects individual communities in different ways and that these impacts are influenced by social characteristics, as well as the make-up of local economies.

The timing and the pace of water recovery are two other factors influencing the effects on communities. For example, the purchase of large parcels of water over very short periods of time was found to have significant long-term effects as businesses take time (2–5 years) to adjust to the changes.

The community-level modelling was supplemented by other economic analysis for floodplain grazing, and socio-cultural research to quantify the importance of a healthy riverine environment to Aboriginal communities. Non-consumptive benefits for non-irrigation dependent towns were inferred from hydrological results.

For floodplain graziers there is the potential for increased environmental flows generated by water recovery to return around one-third of the production and profits lost as a consequence of historic up-stream irrigation development. However, it is noted that while these benefits may be significant to the floodplain graziers, they are relatively small compared to the production value of cotton from a similar volume of water.

The socio-cultural research done for the Northern Basin Review produced very strong evidence about the link between a healthy river and Aboriginal wellbeing. The results of this work highlighted that more water in the northern rivers should lead to social and cultural improvements which will be reflected in community wellbeing.

Along with the environmental improvements associated with water recovery, we recognised other types of benefits. Enhanced low flows are expected to contribute to improved wellbeing for people relying on of those flows for stock and domestic water. Some communities have benefited from the short-term stimulus provided when water is recovered in exchange for investing in new on and off-farm irrigation infrastructure.

The combined results from the community-level modelling, floodplain grazing modelling and the Aboriginal social and cultural survey formed a core part of our triple bottom line consideration of the sustainable diversion limits for the northern Basin catchments.

In response to questions about the choice of towns used in the social and economic assessment, and why we did not include towns downstream of Bourke:

Each community in the northern Basin has unique characteristics defined by its natural assets, development history, and social and economic conditions. The 21 communities chosen for assessment represented a mix of towns with different sizes, reliance on irrigated agriculture (and agriculture more broadly), broad drivers (and timing) of the multiple changes affecting them, and potential water recovery. The communities were selected because they were affected by water recovery, and the goal was to understand how this changed irrigated area and local employment.

We recognise that other towns and communities will experience change due to the Basin Plan, but these effects were assessed using other approaches such as hydrological measures of changed river flows.

In response to claims that the social and economic work was influenced by peak industry groups:

The assertion that we provided access or information to a particular group of stakeholders in preference to others is simply untrue. No one industry group, interest group or community group was favoured and there was no special treatment when releasing information or responding to information requests (which at times were incredibly detailed).

Industry groups were important partners in developing the social and economic modelling capability and analysis, as were local governments, local chambers of commerce and other businesses in northern Basin towns. These groups had information that was needed as an input to the modelling, such as historic and current information about the areas planted to irrigated crops, and employment numbers. This information was analysed and cross-referenced with other sources such as census data, before the findings and method were peer reviewed and found to be fit for purpose.

Catchment-scale comments

Condamine–Balonne local reduction

Submissions raised a range of views about our decision to keep the Condamine–Balonne local recovery target at 100 GL.

Submissions expressed concern about the social and economic effects already being felt by communities in the Condamine–Balonne catchment and the potential for any further water recovery to cause negative impacts. A strong push for targeted community assistance also featured in many of these submissions.

Some submitters held the opposite view and do not support the proposal to lower the recovery target as it perpetuates the impacts from upstream development on floodplain graziers. These submissions also suggested that the social and economic impacts in this area had been overstated.

A number of submissions were critical of some Condamine–Balonne site-specific flow indicators not being met under any of the recovery scenarios explored.

Some stated that water recovery beyond the existing 65 GL should be restricted to upstream of Beardmore Dam or through water efficiency projects.

Aboriginal submissions stated that the river was important to their community and a lack of water in the river was bringing harm to their culture and the health of their town.

After hearing the views of the community on our proposal, we still believe that keeping the Condamine–Balonne local recovery target at 100 GL strikes the best balance in ensuring the health of our northern rivers while limiting the impacts on communities.

We recognise that water recovery to date in the Condamine–Balonne has had an impact on communities in the region, and by continuing to recover water we recognise there will be further impacts, particularly on the smaller town of Dirranbandi. This is why we have recommended prioritising infrastructure over the purchase of entitlements, and spreading some water recovery above Beardmore Dam. We have also recommended governments consider providing additional assistance for communities, especially Dirranbandi.

In terms of environmental outcomes, less than 100 GL results in lower levels of improvement for key environmental outcomes, particularly in the Narran Lakes. While further improvement is possible with more recovery, much larger volumes would be required to provide a similar quantum of environmental improvement. An important point to note is that all recovery scenarios explored in this catchment were a long way from meeting all the local environmental needs.

However, the unique nature of this system (unregulated but with a relatively high consumptive use and a wide spectrum of entitlement characteristics) provides multiple ‘levers’ to influence changes in flow. Our modelling work explored how changes to the patterns of water recovery influence outcomes in the Condamine–Balonne. From this work we have learnt that:

- water recovery in the main stem of the river upstream of Beardmore Dam is viable. It has the capacity to enhance flows through the lower Balonne floodplain, where most of this increase is related to low-to-mid flows (ie mainly in-channel flows)

- this is subject to a protection mechanism — current arrangements do not protect water recovered upstream of Beardmore Dam from extraction by downstream users (over the long-term about one-third would be extracted). For this reason the modelling included a long-term protection mechanism for environmental water to ensure SDL compliance. Queensland water authorities have been working with the Commonwealth to provide a practical on-ground protection mechanism
- flows to Narran Lakes are best enhanced through water recovery along the Narran system (ie Balonne Minor from Bifurcation 1 to Bifurcation 2, and the Narran River)
- water recovery upstream of Bifurcation 1 can also provide flows to Narran Lakes, but with a substantially lower rate of return (ie in the range 5–10%)
- due to the terminal nature of Narran Lakes, water recovery along the Narran system will pass downstream to the Barwon–Darling only during extremely wet conditions.

Targeting water recovery may also provide benefits for floodplain graziers and provide similar outcomes for the environment that the current Basin Plan was expected to provide.

Namoi local reduction

Submissions raised a range of views about our decision to change the Namoi local recovery target from 10 GL to 20 GL.

Submissions expressed concern that the increased in-valley target would result in further impacts for communities such as Wee Waa.

A number of submissions rejected the increase referring to the 'minimal evidence' being provided and arguing that the site-specific flow indicators in the Namoi come close to being met with current environmental water. Some submissions criticised the environmental science that supports the local site-specific flow indicators, particularly the use of surrogate information from elsewhere in the Basin and the lack of new field studies.

Submissions also refer to a motion put forward at the Wee Waa and Gunnedah consultation meetings: 'That the MDBA in liaison with government ministers undertake work in the Namoi to review the instream requirements, and present the results of this work to a meeting in Wee Waa during winter of 2017'.

In 2012, the Basin Plan established a local recovery volume of 10 GL for the Namoi. This volume was based on a long-term volumetric calculation to meet environmental water requirements in the Namoi (measured through a set of site-specific flow indicators). The Basin Plan also recommended that catchments contribute water downstream to enhance flows through the Barwon–Darling — the Namoi default share required an additional 14 GL recovery, bringing the total to 24 GL.

The assessment made for the Basin Plan assumed that the in-valley environmental outcomes would be met so long as water for downstream needs was delivered in a way that could also contribute to these in-valley requirements. By completing the large number of model scenarios for the Northern Basin Review, we found that this was not a reasonable assumption. For this reason, we found that 20 GL was required to achieve the desired environmental outcomes in the Namoi without relying on the delivery of water through the Namoi system for downstream needs.

We have also recommended that the Namoi need not contribute water downstream for the shared reduction amount, hence the total recovery in this system would be limited to 20 GL. Overall, communities like Wee Waa will benefit from a reduction in the total recovery target.

Our assessment of the effects of water recovery to date in the Namoi has shown that there is an identifiable yet small effect on irrigated production. This is a consequence of the water recovery largely occurring through infrastructure investment where landholders have been able to retain a portion (around 30%) of the water savings arising from that investment. However, we acknowledge that Namoi communities have experienced water recovery at a time of considerable change. Basin Plan impacts are adding to impacts already felt from prior state water reform such as the Achieving Sustainable Groundwater Entitlements Program. Changes to the mining industry have affected Narrabri, and changes to population and employment have had an impact on Wee Waa.

In response to calls for new Namoi-specific studies and field data, studies of this type would not be able to be developed in time to inform the current amendments to the Basin Plan. The New South Wales Government has a number of studies underway to inform the development of their water resource plans, including the outcomes of the trial of the 50/50 rule.

Macquarie–Castlereagh local reduction

Submissions raised a range of views about the proposed decrease in the local reduction from 65 GL to 55 GL.

Some submissions agreed with the change and were pleased that in their view we had conceded that the original local target had been set based on recovery-to-date rather than the in-catchment needs of the Macquarie. Some submissions criticised the lack of sensitivity analysis conducted for the Macquarie local recovery target. Others called for a further reduction to the recovery target and for over-recovered water to be returned to productive use.

Some submissions objected to the proposed changes on the grounds that the Ramsar-listed Macquarie Marshes need more water, rather than less, to safe-guard their future. Submissions criticised us for making a change despite there being no new research undertaken in the Macquarie. Some submissions referred to the experience of the Macquarie River Environmental Flows Reference Group and that existing environmental water is barely adequate to meet environmental demands. They suggested setting the sustainable diversion limit based on the minimum recovery volume needed to meet all targets. They also listed the absence of specific fish site-specific flow indicators as a deficiency.

In some cases, the submitters had undertaken their own research and analysis to support their views, which they provided to us for consideration.

After hearing the views presented in submissions, we are satisfied that the proposed local recovery volume in the Macquarie of 55 GL achieves a sustainable balance in the Macquarie. The results show that local environmental needs in the Macquarie are met with this lower volume, and that an even smaller volume is highly likely to result in wetland deterioration.

We agree that as part of the Northern Basin Review we did not conduct new studies in the Macquarie, but there was much analysis done in 2012 and we think that this, combined with new research in surrounding reaches gives us a good picture of the region.

The existing site-specific flow indicators are based on knowledge of the environmental needs of the Macquarie Marshes built up over a number of years from research, monitoring and environmental watering experience from both scientists and New South Wales state water authorities. No new information has been identified in submissions that would lead us to change our assessment of the environmental water needs of the Macquarie Marshes. We are therefore satisfied that the existing site-specific flow indicators provide a sound basis for decisions on water recovery scenarios tested as part of the Northern Basin Review.

The approach of exploring the minimum recovery volume to meet the environmental targets is not considered appropriate. Under the 55 GL local recovery volume, all site-specific flow indicators for the Macquarie Marshes fall between the high and low uncertainty target range. Additional reductions to the recovery would result in the environmental results moving more towards the high uncertainty end of the target range.

Where submitters provided additional information or analysis to support their view, we assessed this information. The overall conclusion was that there was no new information that would justify a change to the site-specific flow indicators or the modelling. Sensitivity analysis was completed for the Northern Basin Review. Recovery volumes of 40, 55, 60 and 80 GL were tested and the results presented as part of the triple-bottom line assessment.

Our response to concerns about meeting Ramsar obligations is addressed on p. 39.

Border Rivers local reduction

Submissions raised concerns about the proposed increase to the Queensland Border Rivers local reduction target from 8 GL to 14 GL. Some questioned the justification for the increase. Many were concerned about the potential social and economic consequences of additional water recovery.

The environmental science shows that neither the Basin Plan nor the proposed 320 GL settings for the Border Rivers can fully achieve the three fish outcome-focused Border Rivers flow targets, although both options improve outcomes towards the targets. However, with the increase of 6 GL local recovery in the Queensland Border Rivers in combination with the assumed shared reduction contribution, we have greater confidence that the flows required to protect native fish species will occur more regularly than if the recovery volume were shared among catchments.

The proposed increases to the in-valley targets in combination with the toolkit measures is also part of a more targeted approach that allows for the reduction from 390 GL to 320 GL. Water recovery in well-connected catchments such as the Border Rivers can efficiently contribute to flows to the Barwon Darling as well as achieve environmental outcomes within the local valley.

The change to the local reduction could have been made on either or both sides of the Border. The Queensland local reduction was chosen after having regard to current recovery. The total water recovery target in the Border Rivers has reduced from 39 GL to 36 GL in moving from 390 to 320 GL, based on our shared reduction apportionment assumptions.

Gwydir local reduction

Submissions raised a range of views about our decision to keep the Gwydir local recovery target of 42 GL.

Some submissions opposed the decision to retain the existing recovery target on the grounds that the Gwydir Wetlands need more water to maintain their Ramsar values. There was also a call to review the in-catchment water requirements and reduce the target.

Some submissions questioned the potential benefits of the Gwydir constraints toolkit measure.

The Gwydir valley contains a number of nationally and internationally significant wetlands. We are confident that Gwydir local recovery target of 42 GL will have good environmental outcomes for the Gwydir.

In all water recovery scenarios we analysed in the Gwydir, five out of the nine flow indicators were met. All scenarios reached the target frequency for high, mid and low-level floodplain, and wetlands and near-channel vegetation flow indicators (including supporting colonial waterbird breeding). However, all scenarios just fell short of the target frequency for the base flow, in-channel fresh (connecting habitats and fish movement and breeding) or low-lying wetland indicators (more water-dependent vegetation types).

Additional water recovery beyond the 42 GL volume did not improve outcomes for the low-lying vegetation. Instead, it was found that these outcomes could be achieved through the relaxation of flow constraints in the lower Gwydir.

A number of features and constraints within the valley currently limit the timing, duration and volume of flows to these key wetland areas. Addressing these constraints to allow a more rapid delivery of water for the environment in a minority of years (ie about once or twice a decade) was found to significantly improve environmental outcomes by restoring flows to the Gingham watercourse, Gwydir River and Mallowa Creek systems. Addressing these constraints would be achieved by working with landholders and water users, and would improve the health of around 6,000 ha of floodplain vegetation and wetlands systems.

This improvement will support the required vegetation and bird breeding outcomes consistent with the Ramsar ecological character for these sites and would contribute towards meeting other international obligations (ie JAMBA and CAMBA). Further environmental improvements are also possible through protecting environmental flows, and addressing cold water pollution.

Our response to concerns about meeting Ramsar obligations is addressed on p. 39.

Barwon–Darling local reduction

Submissions expressed a range of views on our decision to increase the Barwon–Darling local recovery target from 6 GL to 32 GL

A number of submissions expressed concerns about not enough water getting to and along the Barwon–Darling River and supported a higher overall recovery target for the northern Basin. Others did not agree with the increase in the local recovery target from 6 GL to 32 GL and requested more detailed explanation of the rational for the decision.

Some submissions questioned why the 2012 Barwon–Darling water sharing plan was not reflected in our modelling

Submissions also raised a variety of concerns about water management arrangements in the Barwon–Darling including recent changes to pump sizes for A Class licences, relaxed storage provisions for A Class water, the lack of individual or total daily extraction limits, changes to trading and increases to carryover.

The new environmental science and hydrological modelling undertaken as part of the Northern Basin Review shows that Barwon–Darling environmental outcomes are best achieved by recovering water within the catchment itself. This is why we have proposed to increase the local recovery target from 6 GL to 32 GL. This volume recognises both recovery-to-date, and that any further increase in recovery will result in additional negative social and economic effects. As a result of current recovery efforts no further recovery is expected in the Barwon–Darling.

The efficient use of environmental water for whole-of-system outcomes is an overarching principle of the Basin Plan, but in the northern Basin it represents a change (to some degree) to existing operational capacity. Current operational practices have not been designed to deliver regulated water through a catchment and downstream to the Barwon–Darling.

To further improve environmental outcomes in the Barwon–Darling, targeted recovery combined with management and protection of environmental flows will make the most of recovered water. These measures are included in the proposed toolkit and addressed in the responses above on the toolkit (p. 9) and protection of environmental flows (p. 11).

In response to concerns about the use of the 2012 Barwon–Darling water sharing plan, we have acknowledged that the version of model used for the Northern Basin Review does not fully represent 2012 water sharing arrangements. As stated in the detailed hydrological modelling reports, this was a result of the relatively late completion of the 2012 water sharing plan model. The Barwon–Darling is a complex system, and New South Wales were still finalising the model that supported the 2012 water sharing plan in 2016. We received a final version of the model in April 2016.

After New South Wales provided the updated model, we compared the flow results of both the old and new models. Site-specific flow indicator results, which were used as the primary measure of environmental outcomes, showed small variations between both versions of the model. However, the Northern Basin Review focus was on understanding relative changes in hydrology under various scenarios, and it was concluded that the use of the updated models would not have had a material impact on the findings of the Northern Basin Review modelling.

Furthermore, we acknowledged (page 22 of the detailed hydrological modelling report) that rule changes in recent years may have reduced the protection of low flows, but that this reduction will not be reflected in the Northern Basin Review modelling results. This is one of the reasons that we have recommended a reduced recovery volume conditional upon the achievement of a set of toolkit measures, including enhanced environmental flow protection.

Shared reduction

Submissions put forward a variety of views on our decision to reduce the shared reduction volume for the northern Basin from 143 GL to 41 GL.

Some submissions put forward a view that that the balance between the shared and local reduction targets should be changed to provide additionally flexibility to recover water from any catchment where there are willing participants, and to enable the remaining water recovery to be met from catchments where the local recovery target had already been met.

Some submissions questioned why we had assumed that the majority of the shared reduction is coming from the Macquarie

The proposed 320 GL recovery target is divided into shared and local reduction targets.

The northern Basin is a connected system, with some catchments more connected than others. Local recovery in any catchment can provide benefits for the catchments below it, and the overall health of the system. The shared reduction is the volume required in addition to the local reduction in each catchment to meet environmental outcomes at the bottom of the system in the Barwon–Darling.

The new environmental science and hydrological modelling shows Barwon–Darling environmental outcomes are best achieved by recovering water within the catchment itself, which is why we have proposed to increase the local recovery target in the Barwon–Darling to 32 GL.

Flows through the Barwon–Darling usually require contributions from multiple catchments, but the unique geomorphology of each catchment, in conjunction with the highly variable nature of the climate and river flows, introduces a relatively large degree of uncertainty to the forecasted travel times and losses of individual flow events.

Well-connected tributaries also contribute to flows in the Barwon–Darling, specifically the contributions of the Macquarie and the Border Rivers to base flows, and in wet years the contributions of the Condamine–Balonne and the Namoi to peak flows. The recommended allocation of the downstream component to the Macquarie system recognises that the contribution of Macquarie flows downstream to the Barwon–Darling have been heavily modified by a combination of irrigation extraction and the regulating influence of Burrendong Dam.

To further improve environmental outcomes in the Barwon–Darling, targeted recovery combined with management and protection of environmental flows, would make the most of recovered water.

Downstream considerations

Submissions raised concerns about what changes to northern Basin sustainable diversion limits would mean for downstream communities, Menindee lakes, the lower Darling and flows to South Australia.

Submissions emphasised that changes to northern Basin sustainable diversion limits must not be at the cost of flows or environmental outcomes in the southern Basin.

Submissions requested that we explain in a better way the implications for the southern Basin recovery target and inflows to Menindee and South Australia, particularly in dry years.

Some submissions argued that our assessment of impact for Menindee lakes is too reliant on strategic purchases of certain classes of entitlements, which entitlement owners may choose not to sell.

Response

The proposed amendment to the northern Basin sustainable diversion limit will reduce the whole of Basin recovery target by 70 GL from 2,750 GL to 2,680 GL. However, we expect that this change will have no material effect on environmental outcomes in the southern Basin.

Our research shows a 70 GL decrease in the northern Basin recovery target results in 7 GL long-term annual average reduction to flows reaching Menindee Lakes compared to the current Basin Plan settings, or 0.3% of long term average Menindee inflows.

This translates to a 4 GL long term annual average reduction in flows to South Australia, or 0.05 % of long-term average flows to South Australia. This small decrease is largely the result of the recommended targeted recovery pattern.

The tables below describe in more detail the impact to Menindee inflows and flows to South Australia arising from the proposed amendments. These numbers are long-term averages and are made in comparison to the benchmark (390 GL of recovery in the north) scenario used for SDL adjustment purposes.

Table 1a: Menindee Inflows (GL/y)

Type of Year	Menindee Inflows (GL/y)			Change from Baseline	
	Baseline (pre-BP)	Benchmark (390 GL)	320 GL	Benchmark (390 GL)	320 GL
Dry	188	278	269	+90 (+48%)	+81 (+43%)
Median	850	1,003	1,007	+153 (+18%	+157 (+18%)
Wet	4,131	4,349	4,334	+218 (+5%)	+203 (+5%)
All Years	1,723	1,877	1,870	+154 (+9%)	+147 (+9%)

Table 1b: Flow to South Australia (GL/y)

Type of Year	Flow to South Australia (GL/y)			Change from Baseline	
	Baseline (pre-BP)	Benchmark (390 GL)	320 GL	Benchmark (390 GL)	320 GL
Dry	4,673	6,347	6,358	1,675 (+36%)	1,685 (+36%)
Median	6,254	8,153	8,128	1,899 (+30%)	1,874 (+30%)
Wet	9,293	11,561	11,563	2,267 (+24%)	2,270 (+24%)
All Years	6,764	8,720	8,716	1,956 (+29%)	1,952 (+29%)

The 'all years' row lists the long-term average volumes for the baseline (ie pre-Basin Plan) scenario, the 390 GL Basin Plan, and the 320 GL proposed amendment option. The same parameters are also listed for the driest, median and wettest years. This analysis shows that the amendment to the northern Basin recovery target will not have any material impact on flows or environmental outcomes in the southern Basin.

Low flow characteristics in the lower Darling are near-equivalent to those displayed in the 390 GL benchmark scenario. Furthermore, site-specific flow indicator results in the lower Darling are unchanged by the proposed recovery target amendment with three out of five indicators being achieved both under the Basin Plan (390 GL recovery in the north) and proposed amendment (320 GL recovery in the north) model scenarios.

Long-term averages are useful, but provide only part of the story. Some years will experience an increase in flows to South Australia, while other years will experience a decrease. A more detailed analysis of the data indicates that the 320 GL option provides increased flows during dry years. As seen in the table below, flows to South Australia increased by 33 GL/y in the driest 10% of years, balanced by a 25 GL/y reduction in flows during median years.

Table 2: Long-term average change in flow to South Australia (GL/y) depending on the type of year

	Long-term average change in flow to South Australia (GL/y) depending on the type of year			
	Driest 10%	Driest third	Median third	Wettest third
Average change from the 390 GL to 320 GL scenario	+33	+11	-25	+2.7

Specifically, barrage flows and salinity at Morgan during 2006–09 would have been improved under the 320 GL option compared to the current 390 GL benchmark. This is a result of the targeted reduction strategy, in which water was preferentially recovered from those catchments that are best able to increase flows through the Barwon–Darling (and subsequently into Menindee Lakes and further downstream).

Given the improved performance in dry years and the modest reduction to long-term average flows, our view is that this is not a material change.

Our research and modelling conducted during the Northern Basin Review demonstrates that targeted (or strategic) water recovery makes a significant difference to the environmental outcomes that can be achieved. This information will be provided to the Department of Agriculture and Water Resources to inform their water recovery strategy.

Our recommendation for targeted water recovery assumes that sufficient entitlement holders will choose to sell water (within the legislated limit) or participate in infrastructure programs.

Additionally, the proposed amendment seeks commitments from the Australian, New South Wales and Queensland governments to implement other ‘toolkit’ measures, which includes the protection of environmental water. We will work with the relevant governments during the consultation period to finalise the detail of these measures and seek adequate commitments as to their future implementation.

Other issues and questions relating to the northern Basin amendments

Cap factors and water recovery estimates

Submissions questioned whether a correction to Cap factors would change the outcome of the Northern Basin Review.

Cap factors do not change the information underlying the Northern Basin Review — the modelled outcomes for all scenarios would remain the same, as would the evidence underlying the proposed 320 GL recovery target.

While we don't use Cap factors to set the sustainable diversion limit, they do affect the reporting of progress towards 'bridging the gap'. We agree that this creates uncertainty for communities who want to know how water recovery is progressing towards the targets set.

We are aware that the publicly-available estimates of water recovery for some catchments in the northern Basin are based on Cap factors that under-value the contribution of some entitlements — for example in the Gwydir and the Macquarie valleys.

The Ministerial Council agreed in mid-2015 that states would work with us to revise their planning assumptions. States have not yet finalised this work.

Climate change and drought

Submissions questioned whether climate change and drought had been properly taken into account in the modelling. Some questioned whether reducing flows would be able to deliver environmental outcomes, given climate change effects will create more erratic weather, increased evaporation, drought and infrequent short term flooding. They argued that the system, particularly vulnerable water-dependent ones, would need more water rather than less.

As part of the Northern Basin Review, we assessed the risk that climate change posed to the management of water resources in the northern Basin.

While we agree with the overwhelming scientific consensus that climate change is occurring, many of the effects are uncertain and the timeframes unclear. Studies in the Basin over the last 10 years have shown that changes in climate could have a significant impact on water resources, but there is a large degree of uncertainty around whether a wetter or drier future will eventuate in the northern Basin.

Our consideration of the northern Basin sustainable diversion limit has also been informed by the Basin's long-term climate record. This long-term dataset includes considerable natural climate variability from very wet periods to three prolonged droughts, including the Millennium Drought. This long-term climate record allowed the expected Basin Plan outcomes to be explored under a wide range of difference climatic conditions.

The Basin Plan takes an adaptive approach to climate change. This means that the uncertain effects of climate change are shared between all entitlement holders, including the environment. We consider this approach is appropriate to the adjustment of the northern Basin sustainable diversion limit.

Metering, monitoring and compliance

Submissions raised concerns about metering and the need to ensure compliance with limits on water use. Submissions argued that transparency around water use was fundamental to ensuring a credible compliance regime.

Some submissions called on us to review the gauging station network, and called for a greater strategic use of telemetry to gain a better understanding of inflows, river flows, transmission losses and extractions.

We acknowledge that proper compliance is essential for effective management of the Basin's water and other natural resources, including successful Basin Plan implementation. We are of the view that lack of compliance with respect to water use is unacceptable and should be addressed to the fullest extent possible under relevant laws.

Our compliance and enforcement functions and powers relate to sustainable diversion limits and not to water use, and we will work with states consistent with our focus on Basin-level planning, management and outcomes. However we do not own or maintain our own infrastructure to enable us to undertake monitoring on an event-by-event basis. We rely on our partnerships with Basin states to provide us with quality data to assess Basin Plan objectives, including compliance with the sustainable diversion limit.

States are and will remain primarily responsible for administering water rules. We expect that states will administer their water use rules, including the licensing, monitoring and compliance programs that underpin them, in a manner that achieves the intended outcomes of those rules.

Water theft

Submissions wanted to know whether we had undertaken any investigations into allegations of water theft.

We have had allegations of water theft made to us. However Basin states have day-to-day responsibility for compliance and any allegations that we have become aware of have been referred to the relevant state authority. We have carried out some spatial analysis as part of our work to better understand flows and diversions along the Barwon–Darling during periods when additional environmental water is flowing in the system. We have and will continue to bring any information about potential unauthorised water diversions to the attention of the appropriate state authority.

Water quality

Submissions questioned the potential impacts on water quality (including increased salinity) that could occur as a result of the proposed 70 GL reduction in water recovery.

In setting the proposed sustainable diversion limit for the northern Basin, we considered water quality in relation to low-flow environmental indicators in the Condamine–Balonne.

Land management and land use practices are a key cause of water quality degradation in the Basin. While the Basin Plan doesn't require that water quality is explicitly considered in the setting of sustainable diversion limits, it does set out a series of water quality targets that river

managers and environmental water users must have regard to when managing flows, or using environmental water.

Additionally, water resource plans being develop under the Basin Plan will include a water quality management plan, which will consider the impacts of wider natural resource and land management activities on water quality within the plan area.

Town water supplies

Submissions questioned the potential impacts on town water supplies as a result of the proposed 70 GL reduction in water recovery.

Nothing in the proposed amendment changes the way town water supplies and critical human water needs are managed. All governments agree that town water supplies are the highest priority and will be allocated before other consumptive uses.

The Basin Plan sets a limit on the total volume of water that can be taken for consumptive uses, such as industry, agriculture and town water supplies. The water that's needed to meet these limits is recovered through investment in more efficient irrigation infrastructure and water buybacks – town water supplies have not been part of this process.

Under the Basin Plan, the water returned to the environment will increase river flows, on average. This benefits both the environment and the towns who rely on these rivers, as the quality and quantity of town water supplies is strongly influenced by the volumes of water extracted upstream of each town.

The proposed amendment reduces the water recovery target in the north by 70 GL, so the increase in flows may not be as large as would have been achieved under current Basin Plan settings.

Ramsar commitments

Submissions questioned the potential impact the amended sustainable diversion limits would have on Australia's Ramsar commitments, particularly in relation to the Macquarie Marshes, Gwydir Wetlands and Narran Lakes.

We are satisfied that along with the toolkit measures the proposed change to SDLs represents an environmentally sustainable level of take and as such meets our obligations under the *Water Act 2007* and international environmental agreements, including commitments in the Ramsar convention to maintain the ecological character of Ramsar-listed sites.

Under the proposed amendment to the northern Basin water recovery target, outcomes for the Macquarie Marshes are the same as expected under the current Basin Plan settings. Four out of four Macquarie indicators are met with the proposed 320 GL water recovery target – the same number of indicators as the 390 GL Basin Plan settings. Conditions are expected to favour larger waterbird breeding events in the Macquarie Marshes and provide outcomes to support life cycle and habitat requirements of native fish including increased opportunities for movement and access to food sources. Additionally, it's expected that inundation of large areas of the marshes

will occur with a regularity that will support the protection and maintenance of health of the native vegetation.

Flows into the Narran Lakes will be well-protected under the 320 GL scenario, with three out of four Narran Lakes indicators being met with the proposed 320 GL water recovery target — one more than 390 GL Basin Plan settings. These flows will support the important Ramsar area, and provide opportunities for waterbird breeding and healthy floodplain vegetation.

Five out of nine Gwydir indicators are met with the proposed 320 GL water recovery target — the same number of indicators as the 390 GL Basin Plan settings. Most areas of the Gwydir floodplain will receive regular inundation, supporting healthy vegetation, native fish and waterbird communities and overbank flows will be well protected. These overbank flows are expected to support the current extent of riparian, floodplain and wetland native vegetation, which provides for the habitat requirements of waterbirds and is conducive to successful breeding of colonial-nesting waterbirds. These flows also support key ecosystem functions (eg exchange of nutrients and biota between the floodplain and river channel).

Feasibility of 'store and release' of environmental water

Submissions questioned the feasibility of 'store and release' of environmental water given the level of pesticides in, and decreased nutrient value of, any stored water.

We have accepted that the use of private storages in unregulated systems to assist environmental watering is at an early stage of consideration and needs to be undertaken carefully. Nonetheless, it does appear that there may be some opportunities in this space in some circumstances, such as upstream of the Narran Lakes.

The Commonwealth Environmental Water Holder is exploring the use of private irrigation infrastructure to divert, store, supply and/or re-direct environmental water as part of active water management in the northern Basin because the availability of suitable public infrastructure (dams or weirs) is limited. Landholders releasing water from private storages need to meet relevant regulatory requirements, which may include ensuring that the quality of the water released to the environment is appropriate.

For example, the Queensland government worked with Cotton Australia and landholders in the Lower Balonne to develop a code of practice for the release of stored water. The code of practice outlines how to achieve compliance with the general environmental duty under the *Environmental Protection Act 1994* (Qld).

Groundwater

Changes to sustainable diversion limits

A number of submissions objected to the proposed increases to the groundwater sustainable diversion limits. Submissions stated that there is no clear justification, insufficient scientific evidence and a high level of uncertainty due to the scarcity of data for estimating the sustainable yield.

The main driver for the changes appears to be the needs of the mining and coal seam gas industries and concerns were expressed about the local impacts of these activities and environmental risks such as substrata compaction.

Submissions objected because of potential for impacts on Aboriginal cultural values, or on other groundwater users, including for stock and domestic supplies.

Some submissions highlighted the need to manage risks during dry periods when groundwater is used as a drought reserve.

Other submissions supported the sustainable diversion limit changes, stating that the change addresses concerns about the current Basin Plan settings and a less conservative approach can be justified if suitable management rules are in place.

Response

The proposed groundwater SDL increases are as a result of formal reviews undertaken to satisfy the requirements of section 6.06 of the Basin Plan. The outcomes of the reviews were that the SDLs in four SDL resource units in New South Wales and Victoria could be increased 'once assurances have been given by the relevant state to demonstrate that the resource will be managed by state policies and plans so as to limit impacts to acceptable levels.'

The reviews were conducted by expert panels for each SDL resource unit and included members of the Independent Expert Scientific Committee on Coal Seam Gas and Coal Mining as well as two individuals with expertise in groundwater, or groundwater management, nominated by the relevant state. Following the requirements of section 6.06 of the Basin Plan, the information reviewed considered all relevant knowledge on the SDL resource units including modelling, state planning and policy arrangements and an evaluation of the appropriateness of any precautionary factors associated with setting the SDL.

Any potential effect from the changes will only occur when the current SDLs are exceeded. As actual take in these systems is significantly less than the current SDLs, this is unlikely to occur in the near or medium term future. Further, in the NSW resource units the quality of the groundwater limits its potential use to industries other than agriculture.

The proposed changes in SDLs are accompanied by mandatory management controls in the review areas to protect:

- groundwater dependent ecosystems (reviewed NSW resource units)
- groundwater and surface water connections (reviewed NSW resource units)
- the ability of groundwater systems to continue to be productive, including stock and domestic users (reviewed NSW and Victorian resource units)
- groundwater quality (reviewed NSW and Victorian resource units).

New South Wales and Victoria already have management arrangements in place to protect cultural values and these, coupled with the mandated assurances mentioned above, are considered in the view of the MDBA to provide appropriate protection regarding the risk to cultural values arising from the proposed changes.

The setting of groundwater SDLs by the Basin Plan in 2012 took into consideration the rainfall variation over the period 1895 to 2009. In our view this fact, along with local management rules, is sufficient to manage any risks during dry periods when groundwater is used as a drought reserve.

Connectivity and impacts on other resources

Submissions were concerned about the risks to other resources, both groundwater and surface water, due to their connectivity. Submissions stated that the risks are likely to be significant in Eastern Porous Rock and Goulburn–Murray SDL units where groundwater is well connected to surface water.

Submissions indicated that the region of the Eastern Porous Rock is a major recharge area for the Great Artesian Basin and connections with other systems have been found to be far more complex than previously thought.

Submissions said that it is important to manage surface and groundwater resources together.

Response

It is our view that the risks of groundwater extraction on the availability to other water resources are extremely low. In regards to individual areas:

- In the Eastern Porous Rock the best available science suggests that the level of connection between Murray–Darling Basin groundwater resource units is low. This includes the connection between the Namoi Alluvium and the Gunnedah–Oxley Basin. While recognising the strong connections between the Namoi River and the Namoi Alluvium, the low connection between the Alluvium and Gunnedah–Oxley Basin means the risk to the Namoi River is low.
  We agree that the region of the Eastern Porous Rock is a major recharge area for the Great Artesian Basin. However Great Artesian Basin water resources are not managed under the Basin Plan and any activities in this area are a state responsibility.
- In the southern part of the Western Porous Rock area there is a strong connection between the groundwater and River Murray. However the groundwater is very salty and since the late 1980s salt interception schemes have removed the salty groundwater before it enters the river.
- In the Goulburn Murray Sedimentary Plain area the groundwater is usually taken from deeper areas (80 to 100 m below the surface) where there is no known connection with the surface water systems.

In recommending the revised groundwater SDLs, we considered the potential impacts of increased groundwater take on surface water resources, and were satisfied that the risk of this is low during the life of the Basin Plan.

Salinity risks

Submissions voiced concerns about the salinity risk of extracting and disposing of large volumes of water particularly in relation to mining and coal seam gas projects. Submission claimed that extraction mobilises vast amounts of salt currently stored safely underground and that the Basin does not need any more salt on the landscape where it becomes another expensive problem and environmental liability.

Response

Water quality risks, including salinity risks to water-dependent ecosystems, are addressed in the Basin Water quality and salinity management plan (Chapter 9 of the Basin Plan). The types of concerns that have been raised are managed under other Commonwealth and state legislation. For example, large coal mine and coal seam gas proposals trigger the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) where impacts on water resources are comprehensively assessed at a national level. Other mining activities are dealt with under state planning and approvals legislation.

Local management rules

Submissions expressed concern over relying on state/local management rules. Some claimed that there are no details on management controls and the MDBA has no legislative power to amend if they prove to be ineffective. Some submissions expressed a desire for making public states' management rules.

One submission did not support amendment of the local management rule sections (sections 10.20(1) (a) and (b)) because this would weaken the protection offered under accredited water resource plans.

Response

As regulators of the Basin Plan, we will assess water resource plans including local management rules put forward by Basin states to address risks posed to water resources in a water resource plan area. In many cases these rules already apply under state management arrangements and will be carried through into the water resource plans.

The amendments to section 10.20 and 10.21 clarify the intent of these two sections. The proposed changes will allow for some change in a groundwater system due to groundwater extraction before management action is required.

Groundwater source descriptions and boundaries

A number of submissions supported the changes to source descriptions and boundary changes on the basis that these changes ensure consistency with existing state planning boundaries. A submission identified further necessary changes for consistency with NSW source descriptions and planning boundaries

Response

We have aimed to make Basin Plan boundaries consistent with state water planning boundaries and are working with New South Wales to ensure that the Basin Plan datasets align with New South Wales water planning boundaries.

The changes in source descriptions will proceed as outlined in the proposed amendment.

Groundwater SDL compliance — 10-year rolling average method

Some submissions supported the 10-year rolling average, with one indicating that it is unnecessary in NSW water sharing plans where current accounting rules provide adequate protection for growth in use. Some submissions suggested that, as sustainable diversion limits are based on historic rainfall and recharge data, the proposed 10-year rolling average compliance method does not take account of the risk that groundwater recharge rates could be significantly reduced in the future due to climate change.

Response

The proposed 10-year rolling average method for the groundwater SDL compliance method will stay in the proposed Basin Plan amendment. This method will be consistently used for all groundwater SDLs in all Basin states to confirm that the water resource plans do provide adequate protection. The risk of climate change will be addressed with through the adaptive nature of the Basin Plan.

Water quality management plan for groundwater

Submission suggests that Chapter 10 Part 7 be amended so water quality management plans are not required to be developed for groundwater.

Response

We are considering the potential for an amendment to the water quality sections that are groundwater related. The purpose would be to make the relevant water quality management plans more applicable to groundwater.

Exclusion of the Sydney Basin MDB SDL resource unit

A submission requested that this SDL resource unit be excluded from the Basin Plan because the regional groundwater flow systems within the Sydney Basin are influenced by geology rather than surface water catchment topography. Only the western margin of the Sydney Basin is within the Murray–Darling Basin and the regional groundwater flow is eastward out of the Basin.

Response

The exclusion of the Sydney Basin MDB SDL resource unit cannot be achieved through an amendment to the Basin Plan. It requires a change to the *Water Regulations 2008* (Cth). The exclusion is being dealt with as a separate issue with New South Wales and the Department of Agriculture and Water Resources.

Technical amendments

Shared reduction amount

State submissions sought more time and flexibility than provided for by the proposed 30 June 2017 date for requesting adjustment of the splitting of the shared reduction amounts within zones. They have requested that the date be extended as far as practicable towards June 2019.

Response

The date for requesting adjustment of shared reduction amounts within zones has been extended to 30 June 2018. This allows more time for states to request adjustments to the splitting of the shared reduction amounts. It also provides enough lead time in order for the Australian Government to be confident it can meet its commitment to 'bridge the gap' by 30 June 2019 and gives communities certainty over their share of the SDL reduction.

Note that the timing for states to request a reallocation of the shared reduction amounts for the SDL adjustment mechanism remains at 30 June 2017 to allow enough time to undertake the modelling.

SDL compliance methodology — removal of cumulative debits in a particular circumstance

Some submissions expressed concern that the proposed amendment that adjusts the SDL compliance test as a result of a particular circumstance is too restrictive. The particular circumstance that would trigger an adjustment is for reasons beyond the Basin state's control, the Commonwealth has not achieved the water recovery target that it has set for itself. Submissions were of the view that there may be other circumstances where there is a reasonable excuse for excess take where the 'make good' provisions should not apply.

Response

The proposed amendment only allows a reduction in the cumulative balance where the reasonable excuse is due to delays in Commonwealth water recovery that are beyond a Basin state's control.

Expanding this provision for reasonable excuses additional to the above would erode the sustainable diversion limits and affect the reliability of water access rights. This is inconsistent with the purpose of the Basin Plan as set out in section 20 of the *Water Act 2007*.

Water trading rules

Some submissions opposed the deletion of section 12.17 as volumetric limits on trade are needed to protect hydrological connectivity or environmental flows.

Response

The removal of section 12.17 does not change the operation of the water trading rules, as volumetric limits are still covered as a restriction under section 12.16.

However, to provide further clarity that this is the case, we will clarify the definition of 'restrict' to include volumetric limits, and include text in section 12.16 setting out that restrictions include volumetric limits, and to move the definition of volumetric limit that was previously contained in section 12.17 to section 1.07(1). Considerations such as hydrological connectivity or environmental needs are considered under section 12.18.

Following consultation, the proposed changes to sections 12.18(c) and (d) will no longer be included. This responds to concerns about needing further investigations into the potential for trade along unregulated and intermittently connected rivers before making changes to the Basin Plan water trading rules. This will ensure rule changes to accommodate trade in intermittently connected systems are made in a holistic way that minimises the likelihood for unintended outcomes. Proposed changes to section 12.47 of the Basin Plan water trading rules are for clarity without changing the policy intent of the amendments.

Revised estimate of the baseline diversion limit

The Australian Capital Territory submission has proposed a further change to its baseline diversion limit description to better account for Commonwealth water.

Response

The baseline diversion limit estimates for surface water and groundwater SDL resource units are estimated having regard to the most up to date and accurate information. The ACT has provided new information (based on improved understanding) on historic Commonwealth water use. This information supports a change to the ACT's baseline diversion limit (groundwater and surface water) and SDL for surface water.

Communication and engagement

Many submissions commented on our consultation in the lead up to making our decision to propose changes to the Basin Plan.

A number of submissions welcomed the efforts we made to engage through the Northern Basin Review, and to share information on the science and the decision-making process. Others expressed the opposite view and asserted that the process was not transparent and even-handed, but rather favoured the irrigation industry.

Some submissions claimed that we did not provide enough time for communities to understand the detailed, technical information, and that the written reports (particularly the hydrological modelling report) were too technical. Some submissions claimed that consultation occurred after decisions had been made so communities did not get to have a genuine say.

Submissions expressed the view that in order to enable Aboriginal people to be involved in decision-making processes, Aboriginal people need longer time for consultation and more opportunities for engagement.

Response

Stakeholders in the Basin have wide-ranging expectations about how the system should be managed. These views vary markedly: between upstream to downstream areas, between different sectors or groups of water users, and depending on individual views about 'what is sustainable'. The proposed amendments reflect a balance between these divergent views and interests.

Claims that we did not respond to community feedback and do not engage with people in regional areas are incorrect. Such comments do not take into account the variety of stakeholders in the Basin with often opposing views, and the extent of what can be changed during the implementation phase of the Basin Plan.

Before deciding to propose changes to the Basin Plan, we held meetings and talks with community members and key stakeholders including irrigators, floodplain graziers, conservation groups, local government, natural resource management groups and state agencies.

Stakeholders have been actively involved in the Northern Basin Review since it kicked off in 2012. Community consultation on the review involved extensive advice from our formal committees and advisory groups, particularly the Northern Basin Advisory Committee which was set up specifically to provide advice for the Northern Basin Review.

A three-phase engagement process was designed to build community understanding, involve a broad range of community members and help with input to the Northern Basin Review:

1. In March to June 2016 we met with key community representatives including local councils, chamber of commerce representatives, local businesses, farmers, recreational fishers and environmental interest groups to explain the review. Twenty community roundtables were held in northern Basin communities with more than 150 community members attending.

2. In July to September 2016 we held follow-up meetings with stakeholders to share findings/seek feedback on environmental, social and economic research and how this will inform decisions on whether to change current Basin Plan settings. We held nine meetings across the northern Basin, inviting all stakeholders that had participated in previous community meetings. Additional sessions were held in Sydney and Toowoomba to share findings and seek feedback from national and regional conservation groups and irrigation organisations.

3. In November 2016 to February 2017 we held formal public consultation meetings and briefings in accordance with the steps laid out in the *Water Act 2007*. To date we have held over 50 information sessions and meetings about the proposed changes in towns across the Basin to explain the amendments and to discuss broader Basin Plan issues. We used a variety of forums to meet with stakeholders across the Basin including town hall style meetings, drop in sessions, round table meetings, one-on-one meetings and workshops. During the consultation process we interacted with over 900 people (500 in the northern Basin and 400 in the southern Basin). Ten Aboriginal community information sessions, facilitated by the Northern Basin Aboriginal Nations, were held in the northern Basin and two in the southern Basin.

In response to the information shared during the Northern Basin Review, there were many questions about the information developed and people provided their own views and inputs. We responded to questions ranging from general issues to details about the new science and hydrological modelling. We responded through written replies, and for some of the more complex issues we arranged to have specific meetings and workshops to better explain our work. This also gave us time to incorporate many of the good suggestions and new information that was provided by local community members and stakeholder groups.

We are very appreciative of the time and effort made by the people of the northern Basin in the course of the Northern Basin Review.

Issues not relating to the proposed amendments

A number of submissions raised matters that were not directly related to the proposed amendments. These included issues relating to Basin Plan implementation as well as issues relating to water policy and water reform more broadly.

Basin Plan Implementation

Many submissions raised concerns about Basin Plan implementation.

Submissions variously called for both the Basin Plan to continue to be implemented in full and for governments to 'pause the plan'. Some submissions were concerned about the threat of incrementalism and that changes to groundwater and northern Basin sustainable diversion limits meant that we were backsliding.

A number of submissions argued the goals and objectives of the Basin Plan are not clear or do not represent a triple bottom line outcome. Some questioned the value of different components of the Basin Plan, including the environmental watering plan, the water trading rules, and the monitoring and evaluation framework. A number of submissions had questions and comments on the SDL adjustment mechanism.

Submissions commented on the use of environmental water to date. Some claimed that there have been few observed benefits from the water recovered so far, and argued that no more environmental water should be recovered until environmental water holders can demonstrate they can achieve outcomes with the water they currently hold.

Response

We are committed to the continued rollout of the Basin Plan, and associated water reforms.

The aim of the Basin Plan is to stop the river system declining further so that communities can continue to enjoy the social and economic benefits it provides into the future, and ecosystems are healthy and more resilient to change. The proposed amendment to northern Basin and groundwater SDLs promote this objective. Rather than backsliding, the changes represent a better balance based on updated information.

The water resources of the Murray–Darling Basin are vitally important to all Australians and should be managed accordingly. This means there must be sustainable limits on water use. It also means there needs to be an active water market that encourages productive use of the resource. In addition, it means managing the water resources in the Basin to meet the interests of all Australians including Aboriginal people, who have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters; dryland farmers, who need reliable stock and domestic supplies; tourism operators, rural and regional communities and cities which need reliable, clean, drinking supplies. This includes meeting the requirements of a sustainable irrigation sector whose products are important to our national economy.

It is incorrect to say that the goals and objectives of the Basin Plan are not clear or do not represent a triple bottom line outcome. The water resources of the Basin are finite. Beyond a certain level of development, the benefits derived from these water resources are at risk of being greatly diminished. The purpose of the Basin Plan is to bring back balance to how the river system is used and managed, so that future generations can continue to benefit.

Environmental water management is evolving. It is now better coordinated across the Basin and will continue to improve over time.

For the first time, the Basin is now being managed as one connected river system, and our job is to ensure that this is being done in a coordinated way. We set Basin-wide environmental watering priorities each year as a guide to state and Australian Government environmental water holders. These priorities take account of a range of factors including: long term objectives, storage levels, climate outlook, how wet or dry the catchment is, and the watering history of key sites.

State and Australian Government environmental water holders determine how to use their own portfolios of environmental water. These decisions are guided by the Basin priorities, expert advice from river operators, and other more local considerations (for example, advice from catchment management authorities and local land services).

Environmental watering is making a positive difference. Claims that there have been no benefits from environmental watering to date are unfounded.

State and Australian Government agencies are seeing immediate results from their watering activities across many regions in the Basin. Environmental monitoring has shown local level improvements for native fish, waterbirds, vegetation and water flows, and these outcomes are regularly reported by Australian Government and state environmental water managers.

This reporting shows the range of environmental responses achieved from each watering event, as well as how Australian Government and state environmental water managers coordinate to get the most outcomes from their water holdings.

It has taken decades for some of the negative impacts of development on the Basin's water resources to become evident. Similarly, it will take time — probably a decade or more — to show long-term improvements across the Basin in response to more water being left in the rivers, or being actively delivered to important sites.

The sustainable diversion limit adjustment mechanism process that is currently underway is about getting equivalent environmental outcomes with less water and less economic impact, by making environmental watering more efficient, improving river management practices, or overcoming some of the physical barriers to delivering water in the system.

This process will reduce the volume of water recovery that is still needed in the southern Basin. The sustainable diversion limit will need to be changed in the Basin Plan. We are working with all Basin jurisdictions to progress the projects that are due for finalisation this year.

Monitoring and evaluation of the Basin Plan

Submissions called for a whole-of-government integrated monitoring, evaluation, reporting and implementation framework that includes monitoring and evaluation that is sufficiently detailed and continuous at the catchment level to measure whether the objectives of the Basin Plan are being achieved.

Some submissions called for a similar review to the Northern Basin Review to be carried out in the southern Basin to determine the impacts of the Basin Plan on jobs estimates into the future and whether social and economic impacts prove greater than anticipated.

Response

We are not reviewing sustainable diversion limits in the southern Basin at this point. However there is an opportunity within the Basin Plan to change the sustainable diversion limits through the sustainable diversion limit adjustment mechanism. Basin governments are working hard to take greatest advantage of this opportunity by developing projects and programs which can enhance the social, economic and environmental outcomes from the Basin Plan.

We agree that monitoring and evaluation needs to be co-ordinated and use an integrated monitoring, evaluation, reporting and implementation framework. The Basin Plan contains a comprehensive monitoring and evaluation program. Through the program, we are responsible for leading evaluations of the effectiveness of the Basin Plan with the contributions from Basin states, the Commonwealth Environmental Water Holder and the Department of Agriculture and Water Resources.

Five years after the Basin Plan was legislated we're conducting an evaluation of the outcomes from Basin Plan implementation covering the full range of social, economic and environmental outcomes. This evaluation will draw on the findings of the Northern Basin Review. We will also incorporate new social and economic research and the experiences southern Basin communities have had in relation to the Plan. This research will be carried out in 2017. This community-level information will be combined with analysis of Basin, catchment and industry outcomes.

Information from the evaluation will be used to inform the future implementation of the Basin Plan. It may also provide insights into the range of adjustment pressures being experienced in the Murray–Darling Basin. This could be used by communities and industries to help them develop strategies to adjust to the many changes they face.

We collaborate with all governments through working groups established under the Basin Plan Implementation Committee. One group is made up of monitoring and evaluation experts from all the Basin governments and aims to promote best practice in monitoring and evaluation.

We are also actively working with all Basin governments to identify opportunities to further align monitoring and evaluation activities. These activities will ensure a comprehensive picture of the effectiveness of the Basin Plan in achieving its aims is able to be formed.

We also have a role in conducting formal legislated reviews, such as a 10 year review of the Basin Plan due in 2026, along with yearly Basin Plan annual reports. We undertake other assessments of Basin Plan operations and implementation when a need is identified.

General water policy

Submissions raised a range of concerns about historical water reforms and water management in general.

Many submissions commented on historical water policy decisions noting there has been continual change which has led to fatigue and disillusionment with water reform. Some argued that further change is often imposed upon communities and businesses still trying to recover from previous reforms.

Submissions contended that water reform often occurs with little consultation and no compensation. Many felt that the benefits of water reforms often do not align with the impacts and that structural adjustment assistance is misplaced.

When consultation occurs, people feel their views are ignored by governments and that reforms go ahead irrespective of the wishes of the communities and businesses directly impacted.

Many hoped that the Basin Plan might end uncertainty, however there was scepticism that the Basin Plan would be the last reform and many questioned what would happen after water resource plans are completed in 2019.

Some submissions commented on the difficulty in understanding the exact role the various government agencies played in water management. Some argued that our role has added bureaucracy to water planning and should be reviewed.

Submissions suggested exploring new water sources or projects to augment water supplies from sources outside the Basin. Others called for more dams and infrastructure to better 'drought-proof' the Basin.

Response

We acknowledge that previous water reform and the current recovery of water have had impacts on communities and businesses in the Basin. The Basin Plan is a large-scale reform, and it is has always been recognised that this level of change will have some effect.

However, there are many different drivers behind changes in Basin communities and industries, and our monitoring program is building a picture of what has been influencing change in Basin communities. It is apparent that many communities have undergone significant changes over the last few decades due to a number of economic, climatic and government policy changes.

Areas such as Dirranbandi, Warren, Collarenebri, Deniliquin–Wakool, Berri–Barmera–Loxton–Waikerie and Kerang–Cohuna have been showing signs of adverse change and are being looked at in detail to separate out the effects of the Basin Plan from other drivers. Other larger towns with more diverse economies such as Griffith, Dubbo and Moree are better able to adapt to some of the changes occurring. We are using many sources to identify what is changing in Basin communities and why. This includes information on irrigated agriculture production, water use, patterns of water trading, measures of productivity and new developments and investment. Other information being considered includes long-term shifts in demographics (such as population, age profiles and migration into or out of rural communities), employment, and estimates of social and economic conditions and community wellbeing.

Our work has found that where water is recovered in large volumes over short periods, local businesses in some areas have found it much harder to adjust. This reinforces the importance of the Basin Plan being rolled out over a long period and the Australian Government's recent action in capping the level of buybacks.

There have been positives from the Basin Plan for industry. These reforms represent the largest structural adjustment program by an Australian Government. Many hundreds of farmers across the Basin are benefitting from government infrastructure investment and will also be better positioned to cope with dry periods in the future. The economic benefits also have flow-on effects to local businesses.

The Basin Plan also puts an end to years of debate and uncertainty over whether the right balance has been struck. Not having the Basin Plan would result in further loss of confidence by water users and investors.

The Basin Plan is being rolled out over more than a decade, in order to complete the work and to give communities and industries time to adjust. Claims that the Basin Plan should be paused because it is being implemented too fast and causing business instability do not take into account the long implementation process over many years and the support of substantial government investment in innovative and efficient irrigation practices.

In response to questions about the role the various government agencies played in water management:

We acknowledge that water management in Australia is a complex space with Australian Government and state agencies having different responsibilities but still requiring collaboration and cooperation. We understand that this can be confusing and that it is not always clear who is responsible for different activities.

We have an important role to play in implementing the Basin Plan, but other Australian Government agencies play key roles and the Basin states have responsibility for implementation on the ground in their jurisdictions. In broad terms, the roles and responsibilities for water reforms in the Basin are as follows:

- We play a dual role in the Basin through two very clear and distinct functions. We oversee implementation of the Basin Plan at a Basin scale in accordance with the Water Act and as per the approach agreed in the 2013 Intergovernmental Agreement on Implementing Water Reform in the Murray–Darling Basin Plan.
- Separate to Basin Plan oversight, we carry out river operation functions in the River Murray and natural resource management programs, particularly in the southern Basin, on behalf of state governments in accordance with the 2008 Murray–Darling Basin Agreement.
- The Department of Agriculture and Water Resources is responsible for policy advice and program implementation, in particular investing in the Australian Government's water recovery strategy and National Partnership Agreement on Implementing the Murray–Darling Basin Plan.
- The Commonwealth Environmental Water Holder manages the use of environmental water held by the Australian Government (in collaboration with us, Basin states and local

water managers). It does not purchase water to bridge the gap to the new sustainable diversion limits.

- The Basin state governments own water and are responsible for allocating it to entitlement holders consistent with their water management frameworks. They also hold and deliver environmental water. Basin states are responsible for implementing the Basin Plan on-ground in their own jurisdictions, including proposing and implementing successful projects under the SDL adjustment mechanism and the Constraints Management Strategy.
- The Australian Competition and Consumer Commission provides advice to the Minister for Water on water market rules and water charge rules, which are intended to free up trade and regulate costs of monopoly infrastructure (eg access to irrigation schemes) and to monitor and enforce these rules.
- The Productivity Commission conducts five yearly inquiries into the effectiveness of the implementation of the Basin Plan and water resource plans — the first review is due in 2017.
- The Bureau of Meteorology has responsibility for compiling and making available water information for all of Australia. This includes producing a National Water Account and collecting and publishing water information.

In response to calls to explore new water sources and infrastructure to secure water supplies:

While new dams cannot be ruled out, we note there are real obstacles to them proceeding. These include lack of options for suitable dam sites in the Basin, the high financial cost and the requirement to ensure cost recovery from users, and the environmental impacts (at a time when the Basin Plan is trying to promote a more natural flow regime in the Basin's regulated rivers).

Recent studies have investigated proposals to transport water from higher to lower rainfall areas. All have concluded that proposals to transport water typically have very high economic, energy, social and environmental costs. The viability of such proposals must also consider the negative environmental and social impacts in the system from which the water would be transferred.

Appendix A: Broad outline of changes to the proposed Basin Plan amendment

This appendix, which has been prepared in accordance with section 47(11) of the *Water Act 2007* (Cth), describes the changes that have been made to the proposed amendment after the start of the consultation period.

A1. Sustainable diversion limit (SDL) resource unit shared reduction amount

Proposed change

Chapter 6 (section 6.05): changes that set out the process for Basin states to request any re-allocation of shared reduction amounts by 30 June 2018. Such a request would supersede the default shared reduction.

- A re-allocation request must be made by 30 June 2018.
- Basin states must take into account the water recovery achieved to date by the Commonwealth and ensure the request has the effect of replacing the shared reduction amount with a value equal to or greater than zero.
- If we receive a request we must publish the requested SDL shared reduction amounts on our website.
- Prior to a Basin state submitting a water resource plan for accreditation Basin states must request a re-allocation of the shared reduction amount, if this is before 30 June 2018.
- Once made a re-allocation request cannot be replaced.
- However, Basin states have an opportunity to request variations to the shared reduction volumes between 1 July 2018 and 31 December 2018. In this case the Authority may agree to the request only if the Authority and the Department consider it appropriate to accommodate changes in water recovery targets.
- Once published, the shared reduction amounts cannot be changed. The resulting SDLs are the SDLs that will used be in water resource plans for accreditation.

Chapter 7 (section 7.14A): changes enable Basin states to provide separate advice for the reallocation of the shared reduction amount for the purposes of the operation of the SDL adjustment mechanism, including:

- Section 7.14 has been included to allow Basin states to advise us of any reallocation of the shared reduction amounts by 30 June 2017. Such a request would supersede the default shared reduction or a request previously received under section 7.23 by 30 June 2016. This advice may be done in anticipation of the Basin Plan amendment, in the event that the amendment has not been registered by 30 June 2017.
- Notes have been added to clarify that these shared reduction requests are for SDL adjustment mechanism modelling purposes only.
- Notes have been added clarifying that in 2024, the shared reduction amounts adopted for the modelling of the SDL adjustment mechanism package will also be used in the reconciliation of the SDL adjustment mechanism in 2024.

Repeal Part 3: Section 7.22 and section 7.23.

Consequential amendments that remove references to Part 3 of Chapter 7.

Issue

Basin states, in responding to the proposed Basin Plan amendment, have indicated they would like more time (that is, after 30 June 2017) to determine any re-allocation of the shared reduction amount for an SDL resource unit within their Basin zone, in particular the Basin states said they wanted to know the supply outcome of the SDL adjustment mechanism prior to setting shared reductions. The shared reduction amounts form part of the water recovery targets, which give effect to the SDL.

Purpose

The intended outcome of the proposed changes to sections 6.05, 7.14A and 7.23 is to provide for reallocating the shared reduction amount for two purposes.

Firstly, it is to enable a Basin state to advise a reallocation of the shared reduction amount by 30 June 2017 for the purpose of allowing the MDBA to determine the SDL offset associated with the SDL adjustment mechanism. This will also provide certainty in the process if there is a reconciliation of SDL adjustment mechanism required in 2024. That is to say that the same shared reduction amounts will be used for the purpose of calculating initial adjustments in 2017 and any reconciliation in 2024.

The second purpose allows a Basin state to request a reallocation of the shared reduction amount up to 30 June 2018 for the purpose of settling SDLs for accreditation of the water resource plans, while also enabling the Australian Government to plan any remaining water recovery required to 'bridge the gap' by 30 June 2019.

Additional flexibility has also been provided by allowing Basin states to make a variation to the shared reduction volumes by 31 December 2018 in circumstances where the Authority and the Department consider it appropriate to accommodate changes in water recovery targets.

A2. Water trading rules

Proposed change

- Sections 12.16 and 12.17: removed section 12.17 of the Basin Plan. This will in effect, consolidate sections 12.16 and 12.17. Reference to volumetric limits included in section 12.16(1).
- Section 1.07(1): the definition of restrict altered to explicitly include volumetric limits. Volumetric limit definition is updated to mean a limit whose purpose or effect is to cap the total volume of water that may be traded into or out of an area.
- Section 12.18: removed the proposed section 12.18(2)(d). Proposed change to section 12.18(2)(c) also not incorporated.
- Section 12.47: reworded to avoid introducing a new defined term — large scale operator. The definitions of customer and infrastructure service from the Water Charge (Infrastructure) Rules 2010 have been added.

Issue

Discussions with the Australian Competition and Consumer Commission (ACCC) and the Department of Agriculture and Water Resources highlighted issues of clarity with the changes

that were proposed to section 12.16, 12.17, 12.18 and section 12.47 of the Basin Plan water trading rules. Some submissions raised concerns that volumetric limits were no longer provided for as allowable restrictions due to the removal of section 12.17, which further supports the need to provide clarity about the changes.

Purpose

To improve clarity the Authority proposes to consolidate section 12.16 and 12.17, which leads to the removal of section 12.17. This change means that volumetric limits will still be prohibited as volumetric limits are still covered as a restriction under section 12.16. To provide further clarity that this is the case, the Authority proposes to alter the definition of restrict in section 1.07(1) to explicitly include volumetric limits. The definition of volumetric limit that was previously contained in section 12.17 will also be retained in section 1.07(1), and updated to make clear that volumetric limits also include limits that cap the total volume of water that may be traded into an area (as well as out of an area). For further clarity, a reference to volumetric limits has been included in section 12.16(1).

Following consultation, the Authority has elected to remove the proposed change to section 12.18(2)(d). The Authority considers that further investigations of the potential for trade along intermittently connected rivers need to be undertaken before making changes to the Basin Plan water trading rules. This will ensure rule changes to accommodate trade in intermittently connected systems are made in a holistic way that minimises the likelihood for unintended outcomes. This is consistent with recommendation 6-M of the ACCC Water Trading Rules Final Advice, March 2010.

As well as this, the Authority elects not to incorporate the proposed change to section 12.18(2)(c), which would have clarified that the subsection sets out an allowable restriction on trade within and between regulated systems. This change will not be incorporated so the option remains for this clause to apply if a valley account or state transfer account were established to facilitate trade in an unregulated system in the future.

For section 12.47 the changes maintain the policy intent contained in the previous drafting, but avoid introducing an unnecessary new defined term large scale operator and adds the definitions of customer and infrastructure service from the Water Charge (Infrastructure) Rules 2010. By adding the definitions for customer and infrastructure service it ensures that these terms retain their original meaning from the Water Charge (Infrastructure) Rules 2010.

A3. Groundwater boundaries

Proposed change

- Section 3.06: definitions for NSW Border River Alluvium water resource plan area and Lachlan Alluvium water resource plan area corrected to remove unnecessary reference to the NSW Murray–Darling Basin Porous Rock exclusion from these areas.
- Section 10.21A and Section 10.47A: clarifications that mandatory conditions (explained in section 10.21A(1), section 10.21A and 10.47A) will apply to Western Porous Rock SDL resource unit and the Eastern Porous Rock water resource plan area (comprised of the Gunnedah-Oxley Basin MDB and Sydney Basin MDB SDL resource units), but not the Oaklands Basin SDL resource unit. There is also a minor language correction for section 10.47A(b) where the word ‘goals’ will be changed to ‘objectives’ in order to be consistent with section 10.21A.

- Schedule 4: The definition of the Gunnedah-Oxley Basin MDB SDL resource unit (GS17) in item 23, NSW GAB Surat Shallow SDL resource unit (GS34) in item 54, NSW GAB Warrego Shallow SDL resource unit (GS35) in item 55 and NSW GAB Central Shallow SDL resource unit (GS36) in item 56 are all to be corrected following advice from New South Wales.

Issue

The New South Wales submission on the proposed amendment raised a number of issues that necessitate minor administrative changes, including changes to the definition of some groundwater boundaries in the Basin Plan.

Purpose

The changes are intended to align better with the New South Wales groundwater boundary definitions that are slightly different to the initial draft of the Basin Plan Amendment Instrument 2017 (No.1). Note that section 22 item 2 of the Water Act states that the water resource planning areas in the Basin Plan should be aligned, as far as possible, with the State water resource planning areas.

Definition changes are needed for the Gunnedah-Oxley Basin MDB, NSW GAB Surat Shallow, and NSW GAB Warrego Shallow SDL resource units, and the NSW Border Rivers Alluvium water resource plan areas, in order to fully align with the NSW horizontal and vertical groundwater source boundaries.

Due to the creation of the NSW Murray-Darling Basin Porous Rock water resource plan area from four SDL resource units (Western Porous Rock, Gunnedah-Oxley Basin MDB, Sydney Basin MDB and Oaklands Basin SDL resource units) clarification is needed as to which of the SDL resource units are subject to the mandatory conditions in section 10.21A and 10.47A.

The mandatory conditions that are specified in section 10.21A(1) should only apply to the SDL resource units that were subject to groundwater reviews. These are the Western Porous Rock SDL resource unit and the Eastern Porous Rock water resource plan area (comprised of the Gunnedah-Oxley Basin MDB and Sydney Basin MDB SDL resource units).

The groundwater reviews did not apply to the Oaklands Basin SDL resource unit and neither should the mandatory conditions specified in section 10.21A and 10.47A. These amendments do not change the intent of the Basin Plan, nor alter the policy position of the MDBA.

A4 Revised estimate of the Australian Capital Territory baseline diversion limit

Proposed change

- Schedule 2, Item 29, Column 2 which describes the SDL for surface water (currently proposed as 54.5 GL per year following The Living Murray amendment),is to be increased by 0.2 to 54.7 GL per year to reflect the revised estimates of Commonwealth water use.
- Schedule 3, Item 29, Column 2 which describes the baseline diversion limit for surface water. Paragraph (a) describes take from a watercourse, which is one component of the ACT's baseline. The amendment to paragraph (a)(i) provides clarity that take from a watercourse includes an adjustment to historic water use.

- Schedule 4, Item 1, Column 3 which describes the baseline diversion limit for groundwater, is to be increased by 0.566 GL per year to 2.27 from 1.70, to reflect the revised Commonwealth water use estimate. Note that this does not increase the sustainable diversion limit for groundwater.

Issue

The Australian Capital Territory has provided new information on historic Commonwealth water use (based on improved understanding). This is due to the enactment of the *ACT Water Management Legislation Amendment Act 2013* (Cth) which transferred the management of certain Commonwealth water resources to the ACT. The ACT now meters Commonwealth water use in the ACT. This new information has identified that there would have been higher level of Commonwealth water, than originally estimated under the Cap. This information supports further changes to the ACT's baseline diversion limits (ground water and surface water) and respective sustainable diversion limit for surface water.

Purpose

The proposed changes include amendment to the descriptions of the baseline diversion limits, and revision to the estimates of the baseline diversion limits and sustainable diversion limits for the ACT. The intent of these changes is to allow for Commonwealth water use based on an improved estimate.

A5. Header text for section 10.44. Information relating to measuring take — water access entitlements

Proposed change

The header for section 10.44 is replaced with the term 'water access rights'.

Issue

For consistency with the rest of the section it is proposed the header for section 10.44 is replaced with the term 'water access rights'.

Purpose

The change is to make the language of the proposal consistent and does not change the policy intent of the amendments.

A6. Timing of reviews

Proposed change

Commencement date: a new commencement date has been inserted for the provisions related to the timing of the reviews of the water quality and salinity targets in the water quality and salinity management plan and the environmental watering plan. This has led to consequential amendments to other items in the proposed amendment that relate to the commencement date of certain provisions.

Issue

There has been a change to the commencement date for items 54–59 of the proposed amendment, these items relate to the reviews of the water quality and salinity targets in the water quality and salinity management plan and the environmental watering plan. These provisions are consequent on the passage of the Agriculture and Water Resources Legislation Amendment Bill

2016. Due to this, their commencement date has been amended to the date after that Bill receives Royal Assent.

Purpose

The change allows items 54–59 of the proposed amendment to come into effect once the Agriculture and Water Resources Legislation Amendment Act 2016 comes into effect. Items 54–59 allow the relevant provisions of the Basin Plan to be amended and the reviews to be re-phased for completion in 2020, in line with the Australian Government response to the independent review of the *Water Act 2007*.

Issue

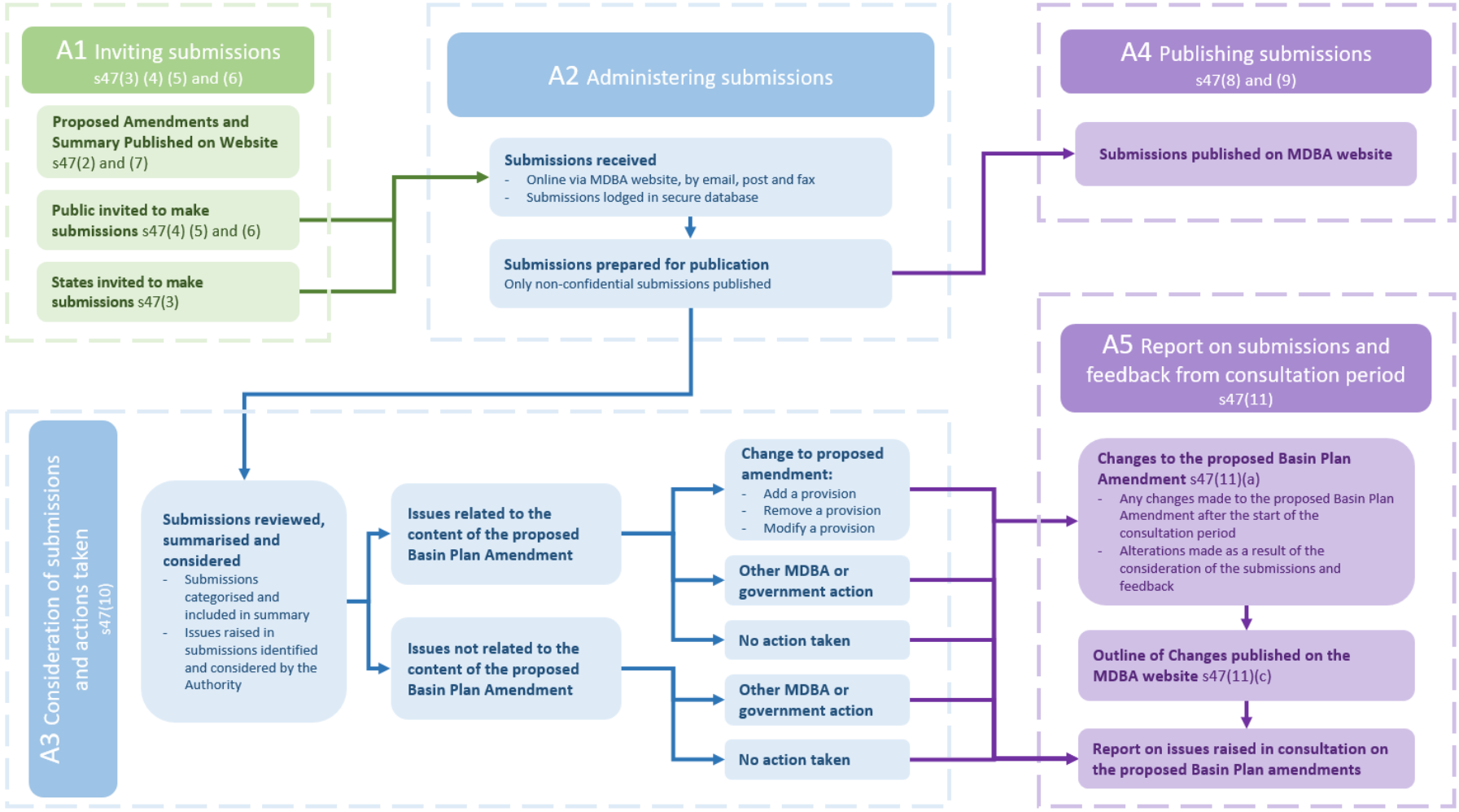
A separate issue is simply a correction to a typographical error. The amendment at section 13.10 (Review of the social and economic impacts of the Basin Plan) should be labelled 13.09A as it is intended as a new review process.

Appendix B: process for considering submissions on the proposed Basin Plan amendments

Section 47 of the *Water Act 2007* (Cth) describes the process required to be carried out by the Murray–Darling Basin Authority once we have prepared a proposed amendment of the Basin Plan. Following the release of the proposed amendment and the plain English summary on 22 November 2016, we began a 14-week consultation period that ended on 24 February 2017. This included a two week extension period announced on 3 February 2017 in response to stakeholder requests for additional time to analyse our reports and make suggestions on the changes.

A flow chart setting out how we considered submissions and met the requirements set out in section 47 of the Act is presented in Figure A1.

Figure A1: Flow chart of the submissions process



B1. Inviting submissions

In accordance with s.47 of the Act the Murray–Darling Basin Authority invited members of the public and each Basin state to make a submission on the proposed amendments to the Basin Plan.

The invitation for public submissions was published in the Commonwealth of Australia Government Notices Gazette on 22 November 2016. This invitation was also published in newspapers circulating generally in each Basin state (see Table A1, Press advertisements calling for submissions) and on our website (www.mdba.gov.au/BPamendments).

Table A1: Press advertisements calling for submissions, 22 November 2016 to 2 February 2017

Newspaper	Date	Newspaper	Date
Gazette advertisement	22 Nov	The Australian	9 Jan
The Australian	22 Nov	Queensland Country Life	12 Jan
The Weekly Times	23 Nov	Stock Journal	12 Jan
The Land	24 Nov	The Weekly Times	18 Jan
Queensland Country Life	24 Nov	The Land	19 Jan
Stock Journal	24 Nov	The Weekly Times	1 Feb
Stock Journal	8 Dec	Stock Journal	2 Feb
Queensland Country Life	8 Dec	The Australian	2 Feb
The Weekly Times	21 Dec	The Land	2 Feb
The Land	22 Dec	Queensland Country Life	2 Feb

Table A2: Press advertisements notifying extension for submissions, 6 February 2017

Newspaper	Date	Newspaper	Date
Gazette Ad	6 Feb	The Australian	6 Feb

The invitation for public submissions included:

- information about how a person could obtain a copy of the proposed Basin Plan amendments
- the preferred online lodgement address to which people could send their submissions on the proposed amendments to the Basin Plan
- the date by which submissions must be received (10 February 2017)
- information which stated that every submission would be published on the MDBA website.

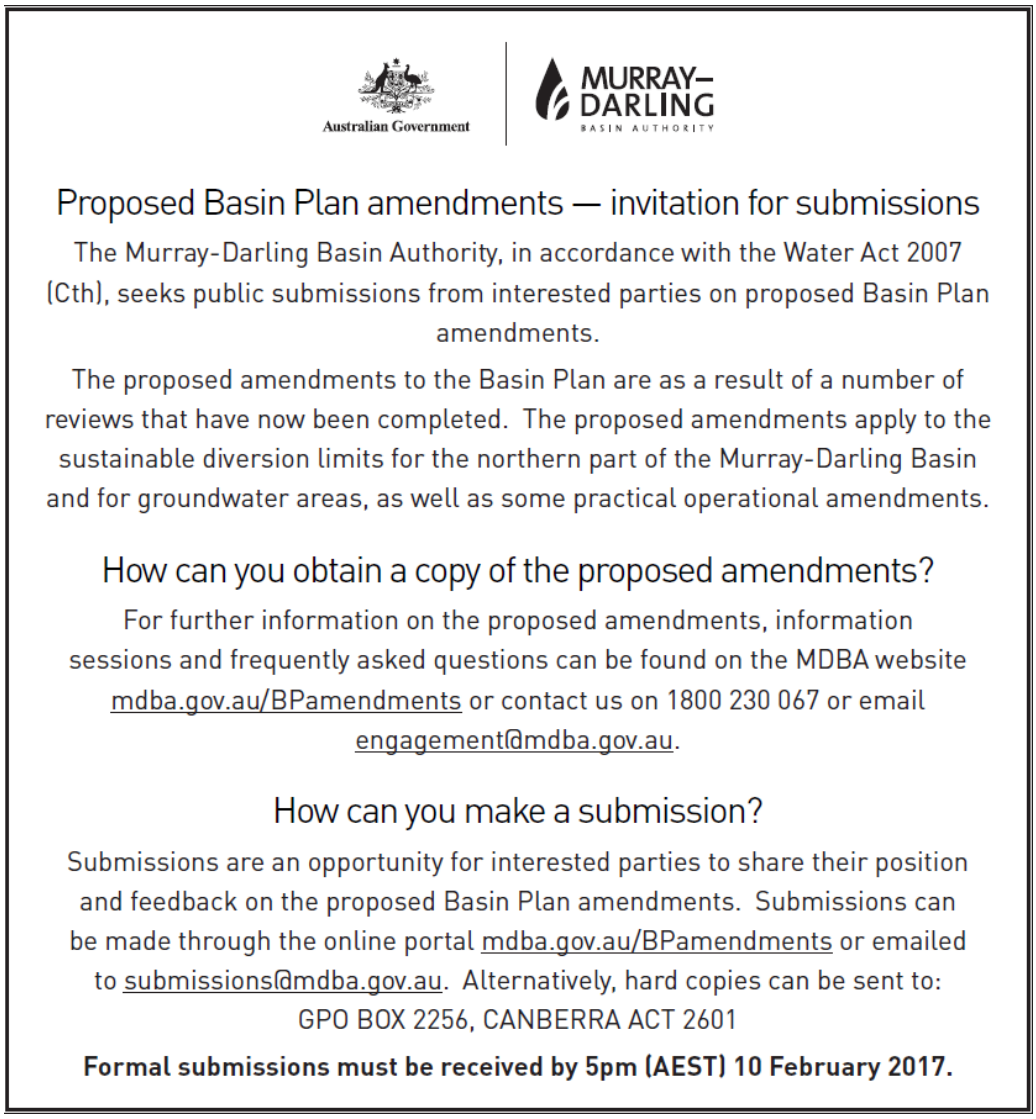
Our invitation also included information about lodging submissions by means other than the online system; provided more detail about the requirement to publish all submissions in their entirety (ie including personal and third-party information), unless otherwise requested by the

submitter; and specified an 1800 telephone number for further information on making a submission.

In addition to the statutory requirements for advertising submissions, the MDBA publicised the submission process widely by conducting a press conference, issuing media releases and using other communication channels such as Twitter and Facebook.

Details on how to make a submission were also publicised on a specific 'make a submission' flyer as well as on the back of the plain English summary and other amendment publications. These materials were distributed through key stakeholder groups, information sessions, meetings and other community engagement activities held during the 13-week consultation period.

Figure A3: Newspaper advertisement



Australian Government

MURRAY–DARLING BASIN AUTHORITY

Proposed Basin Plan amendments — invitation for submissions

The Murray-Darling Basin Authority, in accordance with the Water Act 2007 (Cth), seeks public submissions from interested parties on proposed Basin Plan amendments.

The proposed amendments to the Basin Plan are as a result of a number of reviews that have now been completed. The proposed amendments apply to the sustainable diversion limits for the northern part of the Murray-Darling Basin and for groundwater areas, as well as some practical operational amendments.

How can you obtain a copy of the proposed amendments?

For further information on the proposed amendments, information sessions and frequently asked questions can be found on the MDBA website mdba.gov.au/BPamendments or contact us on 1800 230 067 or email engagement@mdba.gov.au.

How can you make a submission?

Submissions are an opportunity for interested parties to share their position and feedback on the proposed Basin Plan amendments. Submissions can be made through the online portal mdba.gov.au/BPamendments or emailed to submissions@mdba.gov.au. Alternatively, hard copies can be sent to: GPO BOX 2256, CANBERRA ACT 2601

Formal submissions must be received by 5pm (AEST) 10 February 2017.

Figure A4: Submissions Flyer

Making a submission

Read the submission information at mdba.gov.au/BPamendments

Make your submission before **5 pm AEST, 10 February 2017**

How to submit?

Online

To make a submission visit mdba.gov.au/BPamendments

Via email

Email your submission to submissions@mdba.gov.au

By mail

Send your submission to:

Basin Plan Amendment Submissions
Murray-Darling Basin Authority
GPO BOX 2256
CANBERRA ACT 2601

What happens next?

The Murray–Darling Basin Authority (MDBA) is required under the *Water Act 2007* to seek written submissions on any proposed amendment to the Basin Plan.

After all submissions are received, the MDBA will review them and use your information to finalise its recommendation to the Minister for Agriculture and Water Resources.

A report outlining any changes the MDBA will make to the proposed Basin Plan amendments will be prepared and made publically available. This may take several months.

Figure A5: Media release for the extension of submissions

MEDIA RELEASE

Australian Government

MURRAY–DARLING BASIN AUTHORITY

3 February 2017

Deadline extended for submissions to proposed Basin Plan amendments

The deadline for submissions about proposed amendments to the Basin Plan has been extended by two weeks until Friday, 24 February 2017.

Murray–Darling Basin Authority (MDBA) Chief Executive, Phillip Glyde, encouraged people to use the extra time to complete a submission.

"Stakeholders asked for the extension so that they could have more time to analyse our reports and make suggestions on the changes.

"We are considering submissions as they are received so the extension should not affect the proposed amendment process timeframe."

The MDBA has held information sessions about the proposed changes in towns across the Basin to explain the amendments and to discuss broader Basin Plan issues.

"It's been great to travel and meet with community members over the past few months to discuss the amendments and hear their perspectives," Mr Glyde said.

"Our website has information about the proposed amendments. If people have further questions about what we have proposed they can contact us by email and phone."

People who make a submission are encouraged to put forward new information that may not have been considered during the three-year Northern Basin Review or ground water reviews which have instigated the proposed amendments.

The MDBA will then use the information to determine if the proposed amendments should be recommended to the Minister for Agriculture and Water Resources.

Submissions are open until Friday, **24 February 2017**, and can be made online, by email or via the post.

For more information about the Basin Plan amendment process or to make a submission go to www.mdba.gov.au/BPamendments

ENDS

For more information, contact the MDBA Media office at media@mdba.gov.au or 02 6279 0141

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Find us on Facebook: facebook.com/MDBAuth

B2. Administering submissions

Defining what constituted a submission

Because of legal requirements about how the MDBA was required to treat submissions (including the requirement to publish submissions and report on them), it was important to be able to clearly identify submissions from other items (such as correspondence).

General items

It was equally important that general items such as letters or emails were not treated as submissions and published on the website when that had not been the author's intention. Items that fell into this category included correspondence directed to the MDBA Chair or Chief Executive, as well as the Australian Government Minister for Water and other Australian Government ministers. As indicated in section A1 of this appendix, the invitation to make a submission on the proposed Basin Plan included the request that items sent to the MDBA outside the online system be clearly identified as submissions by the inclusion of 'Basin Plan amendment submission' in the document title, email subject line or in the body of the submission itself.

General submissions

General submissions were submissions lodged by individuals and organisations unaffiliated with a campaign or a petition. Submissions lodged by state agencies are included in this category.

During December 2016, January and February 2017, the Northern Basin Aboriginal Nations (NBAN) and the Murray Lower Darling Rivers Indigenous Nations (MLDRIN) hosted Aboriginal consultation meetings to inform Aboriginal communities about the proposed amendments to the Basin Plan and to assist as required to prepare a submission.

We worked with NBAN and MLDRIN to support the meetings. An independent facilitator directed the conversations and guided the community in making a submission. Murray–Darling Basin Authority staff gave presentations to explain the proposed Basin Plan amendments and were on hand to provide technical advice. Delegates from NBAN and MLDRIN provided general guidance and direction.

Petition submissions

In some cases submissions came in the form of petitions. We treated and reported petitions as single submissions with many signatories. Petitions were published on our website under the name of the person or entity that organised the petition or signed any covering documentation.

Campaign submissions

Some submissions contained identical text to others, and these were reported on as submissions sent as part of a campaign. We defined a campaign as:

... an explicit and organised action by a group or organisation to encourage people to send in submissions advocating a particular viewpoint or position.

Campaign organisers usually provided content for the submissions and encouraged submitters to send that content either as their complete submission or as part of their own submission.

We published submissions we considered to be part of organised campaigns with the name of the organisation running the campaign and the word ‘campaign’ included in the title.

We only published the first submission received as part of each campaign and included in the title a tally of the number of submissions received as part of the campaign.

In all other ways, campaign submissions were treated in the same way as other submissions.

Preparing submissions for publication

Receiving, managing and publishing submissions

Submissions were received by post, email and online form. An online submissions form was created on our community engagement website called ‘Get Involved’. The ‘Get Involved’ website is linked to our website and presents a seamless user experience.

A custom-built database was used to record, manage and track submissions. All submissions were manually entered directly into the submissions database by MDBA staff.

All attached text files were converted to PDF and attached to the submission for uploading to the website. Submissions were published on the ‘Get Involved’ website as soon as practicable and usually within 1–2 business days.

Legal issues

Once submissions were received and entered onto the database, we read them closely to determine whether they contained private, confidential, defamatory, legal or other sensitive material (e.g. health or financial details, or the names and locations of family members).

To protect the privacy of submitters, we removed personal contact details of individuals (e.g. phone number, email and postal address) from submissions before publishing them online.

Where a submission contained personally sensitive material, we contacted the submitters to confirm that they indeed wanted this material published online.

In accordance with s47(9) of the Act, where the submitter requested that we treat all or part of their submission confidentially, we reviewed and considered their submission in the same manner as other submissions, but did not publish their submission on the MDBA website.

B3. Consideration of submissions by the MDBA and actions taken

Reviewing and summarising submissions

The initial review of submissions involved identifying the issues raised and assigning categories according to the topics they addressed. We also recorded other information about submissions in the database to assist reporting on the feedback process. This information included:

- the Basin region (where applicable)
- postcode
- whether the submission was from an individual, business or organisation (government or non-government)
- sector of interest (for organisations).

Following the initial review and categorisation of submissions, the content was analysed to identify any technical issues.

Issues relating to the proposed amendments

When an issue related to the content of the proposed amendments was identified, we:

- considered the issue for the potential to inform a change to the proposed amendments
- determined what action to take, such as:
  - changing the proposed amendments (adding, removing or modifying a provision)
  - making changes to a MDBA policy or work program
  - making a recommendation to governments
  - deciding the issues required no action.

Issues not relating to the proposed amendments

When an issue was identified that was not related to specific content of the proposed amendments, we:

- considered the issues for the potential to inform other areas of water reform, including our own work
- determined what action to take, such as:
  - making changes to a MDBA policy or work program
  - making a recommendation to governments
  - deciding the issues required no action.

B4. Publishing submissions

All submissions received during the feedback period were published on our 'Get Involved' website, unless submitters requested confidentiality for all or part of their submissions. Submissions were published in PDF only.

B5. Outline of changes to the proposed amendments

Changes were made to the proposed amendments in response to issues raised in submissions. In deciding whether to make changes to the proposed amendments, we also considered information from other sources such as:

- MDBA engagement activities, including public meetings, round-table meetings and social media forums
- advice from the Basin Community Committee
- advice from other committees and working groups
- our own work.

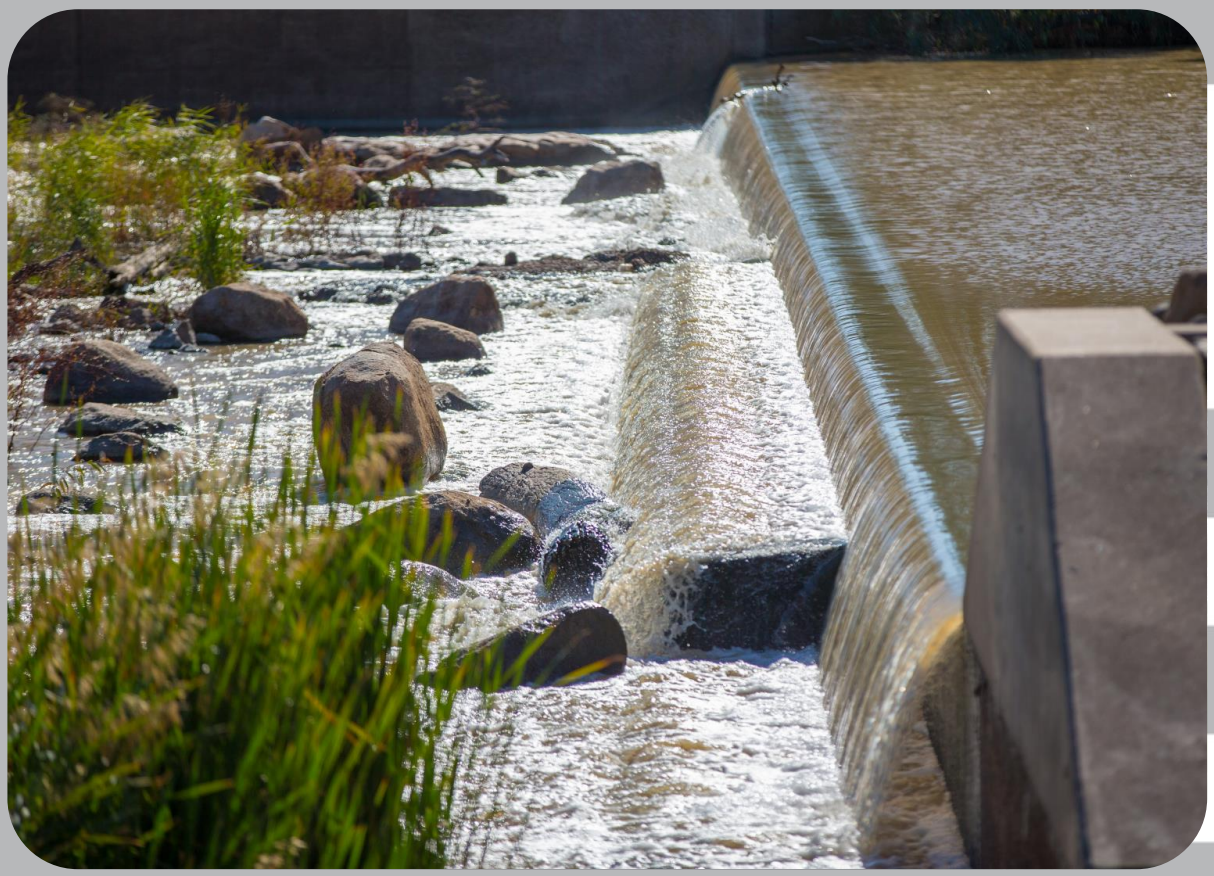
In accordance with s47(11) of the Act, an outline of the changes that have been made to the proposed amendment of the Basin Plan since the start of the consultation period is included in Appendix A of this report.

Australian Government

MURRAY–DARLING BASIN AUTHORITY

Appendix A

Outline of changes to the proposed Basin Plan amendment



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Accessibility

The Murray–Darling Basin Authority makes its documents and information available in accessible formats. On some occasions the highly technical nature of the document means that we cannot make some sections fully accessible. If you encounter accessibility problems or the document is in a format that you cannot access, please contact us.

Acknowledgement of the Traditional Owners of the Murray–Darling Basin

The Murray–Darling Basin Authority acknowledges and pays respect to the Traditional Owners, and their Nations, of the Murray–Darling Basin, who have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters. The MDBA understands the need for recognition of Traditional Owner knowledge and cultural values in natural resource management associated with the Basin.

The approach of Traditional Owners to caring for the natural landscape, including water, can be expressed in the words of the Northern Basin Aboriginal Nations Board:

> …As the First Nations peoples (Traditional Owners) we are the knowledge holders, connected to Country and with the cultural authority to share our knowledge. We offer perspectives to balance and challenge other voices and viewpoints. We aspire to owning and managing water to protect our totemic obligations, to carry out our way of life, and to teach our younger generations to maintain our connections and heritage through our law and customs. When Country is happy, our spirits are happy.

Cover image: The Darling River, near Bourke. Photo by Joshua Smith.

Contents

Broad outline of the changes to the proposed Basin Plan amendment

This document, which has been prepared in accordance with section 47(11) of the *Water Act 2007* (Cth), describes the changes that have been made to the proposed amendment after the start of the consultation period.

1. Sustainable diversion limit (SDL) resource unit shared reduction amount

Proposed change

Chapter 6 (section 6.05): changes that set out the process for Basin states to request any re-allocation of shared reduction amounts by 30 June 2018. Such a request would supersede the default shared reduction.

- A re-allocation request must be made by 30 June 2018.
- Basin states must take into account the water recovery achieved to date by the Commonwealth and ensure the request has the effect of replacing the shared reduction amount with a value equal to or greater than zero.
- If the Authority receives a request it must publish the requested SDL shared reduction amounts on its website.
- Prior to a Basin state submitting a water resource plan for accreditation Basin states must request a re-allocation of the shared reduction amount, if this is before 30 June 2018.
- Once made a re-allocation request cannot be replaced.
- However, Basin states have an opportunity to request variations to the shared reduction volumes between 1 July 2018 and 31 December 2018. In this case the Authority may agree to the request only if the Authority and the Department consider it appropriate to accommodate changes in water recovery targets.
- Once published, the shared reduction amounts cannot be changed. The resulting SDLs are the SDLs that will used be in water resource plans for accreditation.

Chapter 7 (section 7.14A): changes enable Basin states to provide separate advice for the reallocation of the shared reduction amount for the purposes of the operation of the SDL adjustment mechanism, including:

- Section 7.14 has been included to allow Basin states to advise the MDBA of any reallocation of the shared reduction amounts by 30 June 2017. Such a request would supersede the default shared reduction or a request previously received under section 7.23 by 30 June 2016. This advice may be done in anticipation of the Basin Plan amendment, in the event that the amendment has not been registered by 30 June 2017.
- Notes have been added to clarify that these shared reduction requests are for SDL adjustment mechanism modelling purposes only.

- Notes have been added clarifying that in 2024, the shared reduction amounts adopted for the modelling of the SDL adjustment mechanism package will also be used in the reconciliation of the SDL adjustment mechanism in 2024.

Repeal Part 3: Section 7.22 and section 7.23.

Consequential amendments that remove references to Part 3 of Chapter 7.

Issue

Basin states, in responding to the proposed Basin Plan amendment, have indicated they would like more time (that is, after 30 June 2017) to determine any re-allocation of the shared reduction amount for an SDL resource unit within their Basin zone, in particular the Basin states said they wanted to know the supply outcome of the SDL adjustment mechanism prior to setting shared reductions. The shared reduction amounts form part of the water recovery targets, which give effect to the SDL.

Purpose

The intended outcome of the proposed changes to sections 6.05, 7.14A and 7.23 is to provide for reallocating the shared reduction amount for two purposes.

Firstly, it is to enable a Basin state to advise a reallocation of the shared reduction amount by 30 June 2017 for the purpose of allowing the MDBA to determine the SDL offset associated with the SDL adjustment mechanism. This will also provide certainty in the process if there is a reconciliation of SDL adjustment mechanism required in 2024. That is to say that the same shared reduction amounts will be used for the purpose of calculating initial adjustments in 2017 and any reconciliation in 2024.

The second purpose allows a Basin state to request a reallocation of the shared reduction amount up to 30 June 2018 for the purpose of settling SDLs for accreditation of the water resource plans, while also enabling the Australian Government to plan any remaining water recovery required to ‘bridge the gap’ by 30 June 2019.

Additional flexibility has also been provided by allowing Basin states to make a variation to the shared reduction volumes by 31 December 2018 in circumstances where the Authority and the Department consider it appropriate to accommodate changes in water recovery targets.

2. Water trading rules

Proposed change

- Sections 12.16 and 12.17: removed section 12.17 of the Basin Plan. This will in effect, consolidate sections 12.16 and 12.17. Reference to volumetric limits included in section 12.16(1).
- Section 1.07(1): the definition of restrict altered to explicitly include volumetric limits. Volumetric limit definition is updated to mean a limit whose purpose or effect is to cap the total volume of water that may be traded into or out of an area.
- Section 12.18: removed the proposed section 12.18(2)(d). Proposed change to section 12.18(2)(c) also not incorporated.

- Section 12.47: reworded to avoid introducing a new defined term — large scale operator. The definitions of customer and infrastructure service from the Water Charge (Infrastructure) Rules 2010 have been added.

Issue

Discussions with the Australian Competition and Consumer Commission (ACCC) and the Department of Agriculture and Water Resources highlighted issues of clarity with the changes that were proposed to section 12.16, 12.17, 12.18 and section 12.47 of the Basin Plan water trading rules. Some submissions raised concerns that volumetric limits were no longer provided for as allowable restrictions due to the removal of section 12.17, which further supports the need to provide clarity about the changes.

Purpose

To improve clarity the Authority proposes to consolidate section 12.16 and 12.17, which leads to the removal of section 12.17. This change means that volumetric limits will still be prohibited as volumetric limits are still covered as a restriction under section 12.16. To provide further clarity that this is the case, the Authority proposes to alter the definition of restrict in section 1.07(1) to explicitly include volumetric limits. The definition of volumetric limit that was previously contained in section 12.17 will also be retained in section 1.07(1), and updated to make clear that volumetric limits also include limits that cap the total volume of water that may be traded into an area (as well as out of an area). For further clarity, a reference to volumetric limits has been included in section 12.16(1).

Following consultation, the Authority has elected to remove the proposed change to section 12.18(2)(d). The Authority considers that further investigations of the potential for trade along intermittently connected rivers need to be undertaken before making changes to the Basin Plan water trading rules. This will ensure rule changes to accommodate trade in intermittently connected systems are made in a holistic way that minimises the likelihood for unintended outcomes. This is consistent with recommendation 6-M of the ACCC Water Trading Rules Final Advice, March 2010.

As well as this, the Authority elects not to incorporate the proposed change to section 12.18(2)(c), which would have clarified that the subsection sets out an allowable restriction on trade within and between regulated systems. This change will not be incorporated so the option remains for this clause to apply if a valley account or state transfer account were established to facilitate trade in an unregulated system in the future.

For section 12.47 the changes maintain the policy intent contained in the previous drafting, but avoid introducing an unnecessary new defined term large scale operator and adds the definitions of customer and infrastructure service from the Water Charge (Infrastructure) Rules 2010. By adding the definitions for customer and infrastructure service it ensures that these terms retain their original meaning from the Water Charge (Infrastructure) Rules 2010.

3. Groundwater boundaries

Proposed change

- Section 3.06: definitions for NSW Border River Alluvium water resource plan area and Lachlan Alluvium water resource plan area corrected to remove unnecessary

reference to the NSW Murray–Darling Basin Porous Rock exclusion from these areas.

- Section 10.21A and Section 10.47A: clarifications that mandatory conditions (explained in section 10.21A(1), section 10.21A and 10.47A) will apply to Western Porous Rock SDL resource unit and the Eastern Porous Rock water resource plan area (comprised of the Gunnedah-Oxley Basin MDB and Sydney Basin MDB SDL resource units), but not the Oaklands Basin SDL resource unit. There is also a minor language correction for section 10.47A(b) where the word 'goals' will be changed to 'objectives' in order to be consistent with section 10.21A.
- Schedule 4: The definition of the Gunnedah-Oxley Basin MDB SDL resource unit (GS17) in item 23, NSW GAB Surat Shallow SDL resource unit (GS34) in item 54, NSW GAB Warrego Shallow SDL resource unit (GS35) in item 55 and NSW GAB Central Shallow SDL resource unit (GS36) in item 56 are all to be corrected following advice from New South Wales.

Issue

The New South Wales submission on the proposed amendment raised a number of issues that necessitate minor administrative changes, including changes to the definition of some groundwater boundaries in the Basin Plan.

Purpose

The changes are intended to align better with the New South Wales groundwater boundary definitions that are slightly different to the initial draft of the Basin Plan Amendment Instrument 2017 (No.1). Note that section 22 item 2 of the Water Act states that the water resource planning areas in the Basin Plan should be aligned, as far as possible, with the State water resource planning areas.

Definition changes are needed for the Gunnedah-Oxley Basin MDB, NSW GAB Surat Shallow, and NSW GAB Warrego Shallow SDL resource units, and the NSW Border Rivers Alluvium water resource plan areas, in order to fully align with the NSW horizontal and vertical groundwater source boundaries.

Due to the creation of the NSW Murray-Darling Basin Porous Rock water resource plan area from four SDL resource units (Western Porous Rock, Gunnedah-Oxley Basin MDB, Sydney Basin MDB and Oaklands Basin SDL resource units) clarification is needed as to which of the SDL resource units are subject to the mandatory conditions in section 10.21A and 10.47A.

The mandatory conditions that are specified in section 10.21A(1) should only apply to the SDL resource units that were subject to groundwater reviews. These are the Western Porous Rock SDL resource unit and the Eastern Porous Rock water resource plan area (comprised of the Gunnedah-Oxley Basin MDB and Sydney Basin MDB SDL resource units).

The groundwater reviews did not apply to the Oaklands Basin SDL resource unit and neither should the mandatory conditions specified in section 10.21A and 10.47A. These amendments do not change the intent of the Basin Plan, nor alter the policy position of the MDBA.

4 Revised estimate of the Australian Capital Territory baseline diversion limit

Proposed change

- Schedule 2, Item 29, Column 2 which describes the SDL for surface water (currently proposed as 54.5 GL per year following The Living Murray amendment), is to be increased by 0.2 to 54.7 GL per year to reflect the revised estimates of Commonwealth water use.
- Schedule 3, Item 29, Column 2 which describes the baseline diversion limit for surface water. Paragraph (a) describes take from a watercourse, which is one component of the ACT's baseline. The amendment to paragraph (a)(i) provides clarity that take from a watercourse includes an adjustment to historic water use.
- Schedule 4, Item 1, Column 3 which describes the baseline diversion limit for groundwater, is to be increased by 0.566 GL per year to 2.27 from 1.70, to reflect the revised Commonwealth water use estimate. Note that this does not increase the sustainable diversion limit for groundwater.

Issue

The Australian Capital Territory has provided new information on historic Commonwealth water use (based on improved understanding). This is due to the enactment of the *ACT Water Management Legislation Amendment Act 2013* (Cth) which transferred the management of certain Commonwealth water resources to the ACT. The ACT now meters Commonwealth water use in the ACT. This new information has identified that there would have been higher level of Commonwealth water, than originally estimated under the Cap. This information supports further changes to the ACT's baseline diversion limits (ground water and surface water) and respective sustainable diversion limit for surface water.

Purpose

The proposed changes include amendment to the descriptions of the baseline diversion limits, and revision to the estimates of the baseline diversion limits and sustainable diversion limits for the ACT. The intent of these changes is to allow for Commonwealth water use based on an improved estimate.

5. Header text for section 10.44. Information relating to measuring take — water access entitlements

Proposed change

The header for section 10.44 is replaced with the term 'water access rights'.

Issue

For consistency with the rest of the section it is proposed the header for section 10.44 is replaced with the term 'water access rights'.

Purpose

The change is to make the language of the proposal consistent and does not change the policy intent of the amendments.

6. Timing of reviews

Proposed change

Commencement date: a new commencement date has been inserted for the provisions related to the timing of the reviews of the water quality and salinity targets in the water quality and salinity management plan and the environmental watering plan. This has led to consequential amendments to other items in the proposed amendment that relate to the commencement date of certain provisions.

Issue

There has been a change to the commencement date for items 54–59 of the proposed amendment, these items relate to the reviews of the water quality and salinity targets in the water quality and salinity management plan and the environmental watering plan. These provisions are consequent on the passage of the Agriculture and Water Resources Legislation Amendment Bill 2016. Due to this, their commencement date has been amended to the date after that Bill receives Royal Assent.

Purpose

The change allows items 54–59 of the proposed amendment to come into effect once the Agriculture and Water Resources Legislation Amendment Act 2016 comes into effect. Items 54–59 allow the relevant provisions of the Basin Plan to be amended and the reviews to be re-phased for completion in 2020, in line with the Australian Government response to the independent review of the *Water Act 2007*.

Issue

A separate issue is simply a correction to a typographical error. The amendment at section 13.10 (Review of the social and economic impacts of the Basin Plan) should be labelled 13.09A as it is intended as a new review process.