



MURRAY-DARLING BASIN AUTHORITY ANNUAL REPORT





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Contact details:

email: engagement@mdba.gov.au telephone: 1800 630 114

Please address any requests and inquiries to the: Chief Operating Officer Corporate Strategy and Services MDBA GPO Box 1801 Canberra ACT 2601

Cover: A Sentinel-2 image of the

Barmah-Millewa Forest region as seen on the 13th May 2018. Sentinel provides an image of the Basin every 5 days and is capable of resolving features down to 10m in size. It provides an important information source for ongoing MDBA work programs including for environmental monitoring and evaluation, and compliance-related activities.





MURRAY-DARLING BASIN AUTHORITY ANNUAL REPORT

2017-18

Acknowledgement of Country

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

We greatly value and appreciate the guidance and support received from the Murray Lower Darling Rivers Indigenous Nations, the Northern Basin Aboriginal Nations and our many Traditional Owner friends and colleagues.

Aboriginal Nations of the Murray-Darling Basin

Barapa Barapa	Jarowair	Nari Nari	Wakka Wakka
Barkandji (Paakantyi)	Kambuwal	Ngarrindjeri	Wamba Wamba
Barunggam	Kamilaroi	Ngemba	Waywurru
Bidjara	Kunja	Ngintait	Wegi Wegi
Bigambul	Kwiambul	Ngiyampaa	Wergaia
Budjiti	Latji Latji	Ngunnawal	Wiradjuri
Dhudhuroa	Maljangapa	Nyeri Nyeri	Wolgalu
Dja Dja Wurrung	Mandandanji	Tatti Tatti	Wotjabaluk
Euahlayi	Maraura	Taungurung	Yaitmathang
Githabul	Mardigan	Wadi Wadi	Yita Yita
Gunggari	Murrawarri	Wailwan (Wayilwan)	Yorta Yorta
Gwamu (Kooma)	Mutti Mutti		

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

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Australian Government

Office of the Chief Executive

Trim Ref:D18/44861

The Hon. David Littleproud Minister for Agriculture and Water Resources Parliament House Canberra ACT 2600

Dear Minister Littleproud,

It is my pleasure to present the Murray–Darling Basin Authority (MDBA) annual report for the 2017–18 financial year.

During the year the MDBA has continued to:

- lead the implementation of the Murray-Darling Basin Plan in collaboration with communities, governments and industries of the Basin
- direct the sharing of water of the River Murray on behalf of Basin governments.

The report has been prepared in accordance with the *Public Governance, Performance and Accountability Act 2013* (Cwlth) (s. 46) and the *Water Act 2007* (Cwlth) (s. 214).

I certify that the MDBA has prepared fraud risk assessments, fraud control plans and practices, fraud prevention, detection, investigation, and reporting, and data collection in compliance with the Commonwealth Fraud Control Framework. I also certify that I have taken all reasonable measures to minimise the incidence of fraud in the MDBA.

I would like to acknowledge the commitment of MDBA staff and their contribution to achieving a healthy, productive Murray-Darling Basin.

Yours sincerely,

Phillip Glyde 3 October 2018

GPO Box 1801 Canberra ACT 2601 | Telephone 1800 230 067 | www.mdba.gov.au



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Murray-Darling Basin snapshot



40+

ABORIGINAL NATIONS



\$22 billion

ANNUALLY OF AGRICULTURE, \$7 BILLION OF IRRIGATED AGRICULTURE



9 200 IRRIGATED AGRICULTURAL BUSINESSES

Source: 2017 Basin Plan Evaluation, December 2017



95% OF DIVERSIONS USED BY AGRICULTURE

E 16

RAMSAR-LISTED WETLANDS



2.66 million PEOPLE LIVE IN BASIN

Chief Executive's review

I am pleased to present the Murray–Darling Basin Authority (MDBA) Annual Report for 2017–18. This year turned out to be another big year with a number of major planned and unanticipated activities coming to fruition.

Basin Plan amendments

During 2017–18 we recommended important changes to the Basin Plan. These received bipartisan agreement after considerable parliamentary debate and adjusted the sustainable diversion limits in both the southern and northern Basin. Finalising the amendments took longer than we anticipated. I would like to thank everyone involved in this complex process for all their hard work and patience. While there is much work still to do, the outcome has been supported by a broad range of stakeholders, and provides a more certain pathway in implementing the Basin Plan.

Compliance

The Murray–Darling Basin Water Compliance Review provided practical ways for governments and the MDBA to improve compliance across the Murray–Darling Basin. This work is essential to rebuilding trust in the Basin Plan. We recognise that ensuring compliance with water laws is an essential ingredient to a successful Basin Plan and an ongoing part of our role in the Basin.

2017 Basin Plan Evaluation

This year we completed the 2017 Basin Plan Evaluation, a vital health-check after five years, which measured progress to date in implementing the Basin Plan. The evaluation showed a lot of hard work has been completed and some major Basin Plan milestones achieved. Water recovery had reached 77% of the original target and a number of innovative on- and off-farm water saving measures had been implemented. Over 750 environmental watering events were held over the preceding four years. The foundations for the transition to sustainable diversion limits have been laid. The social, economic and environmental outcomes arising from the introduction of the Basin Plan in 2012 are promising, providing some assurance the Basin Plan is on track and working. The evaluation also noted that a number of actions were behind schedule and that challenges remain to ensure the Basin Plan remains on track and

the full benefits are realised. The evaluation gave a valuable benchmark of where we are after five years, and prepares important groundwork for the 2020 and 2025 evaluations.

Community engagement

We continued to expand our regional presence with offices now in Toowoomba, Albury–Wodonga and Adelaide. We also expanded our Regional Engagement Officers program after positive feedback from the pilot program. By the end of the year, 8% of our staff were placed in regional offices, enabling us to optimise local knowledge and capabilities and build partnerships.

We continue to work in partnership with the Aboriginal Nations in the Basin. In June 2018, the findings from the National Cultural Flows Research Project were launched. A culmination of seven years of work to increase knowledge about Aboriginal water interests, the project is thought to be the first robust legislative and policy framework for cultural flows anywhere in the world. It is a project the MDBA is proud to have supported.

People

During 2017-18 we restructured the organisation around three key elements – implement the Plan, run the river, run the business. The intent was to better equip us to deliver on longer-term priorities.

Financial

During 2017–18, we reported an operating surplus of \$16.2 million, which compared favourably with an approved operating deficit of \$2.7 million. This surplus, in the main, came about because of reduced expenditure in joint programs.

Looking ahead

We will continue to work towards achieving a healthy, working Basin. Our focus in 2018–19 will be on progressing water resource plans in partnership with Basin governments. We will also seek to improve our data, knowledge and analytical capabilities to better inform our decisions. We will continue to strengthen the culture of compliance across the Basin and within the MDBA. Underpinning all of these activities are transparency, genuine engagement and continuous improvement.

The forecast for the year ahead is for dry conditions across the Basin. We will continue to adapt to the ongoing challenges of climate variability as we implement the Basin Plan, run the river, and run our business.

Phillip Glyde, Chief Executive

About the Basin

The Murray–Darling Basin covers more than 1 million km² of south-eastern Australia. It is one of the flattest water catchment areas on earth and contains thousands of interconnected creeks and rivers. Beneath the land surface is an equally complex system of aquifers and groundwater.

The Basin contains Australia's largest river system and substantial groundwater resources, extending across some 14% of Australia's landmass. Overall, the Basin contains 77 000 km of rivers, with flows totalling some 35 000 gigalitres (GL) on average.

Almost 3 million people rely on water from the Basin. The rivers, lakes and wetlands are culturally significant to more than 40 Aboriginal Nations, and support a diverse range of ecosystems, plants and animals.

A complex and dynamic system, the Basin is one of Australia's most productive agricultural regions, producing more than one-third of the nation's food and \$22 billion in agriculture on average each year.

Significant sites/assets

The Basin water resources include over 30 000 wetlands, including several that are nationally significant in terms of their ecological value and cultural significance. Of these, 16 are recognised internationally under the Convention on Wetlands of International Importance (Ramsar Convention), which provides a framework for cooperation for the conservation of wetlands and their resources. The Basin also attracts people to visit for leisure and sport, and in 2017 it generated \$8 billion in tourism.

The health of the Basin's water resources is influenced by multiple factors, including climate, changes in demographics, mechanisation, land clearing, invasive species and factors affecting water quality.

This means the Basin needs careful planning and management to ensure the ongoing health of its water resources, so it can continue to support the full range of benefits to so many of Australia's people.

About the MDBA

The Murray–Darling Basin Authority (MDBA) is an independent, expertise based statutory agency that reports to the Commonwealth Minister responsible for water.

The MDBA has functions and powers needed to ensure the water resources of the Basin are managed in an integrated and sustainable way in the national interest. Its activities ensure:

- greater certainty for all water users of the Basin, which supports investment and growth in agricultural production, community infrastructure and small businesses
- fair and transparent sharing of the Basin's water for all users
- sustainable and integrated management of water resources of the Basin.

The MDBA works closely with other Australian Government agencies, Basin governments (QLD, NSW, VIC, SA, and the ACT), local governments, regional bodies, industry groups, landholders, environmental organisations, scientists, research organisations and communities, including Aboriginal people, and the broader Australian community.

Purpose

The MDBA's purpose is to achieve a healthy, working Basin by managing water resources for the long term benefit of the Australian community.

Role

The MDBA manages the River Murray system on behalf of the Australian Government and Basin states.

Through implementation of the Murray–Darling Basin Plan, the MDBA leads the planning and management of the Basin water resources in collaboration with Basin governments and the community.

The Basin Plan came into effect in 2012, with the next full review to be conducted in 2026 This will allow time for the Australian Government, Basin governments and communities to work together to manage the changes required for a healthy, working Basin.

Figure 1.1 Key roles of the MDBA



Preparing, implementing, monitoring and reviewing an integrated plan for the sustainable use of the Basin's water resource



Operating the River Murray system and efficiently delivering water to users on behalf of partner governments



Measuring, monitoring and recording the quality and quantity of the Basin's water resources and the condition of associated rivers, wetlands and floodplains



Supporting, encouraging and conducting research and investigations about the Basin's water resources and dependent ecosystems



Making available information about the Basin's water resources and dependent ecosystems



Engaging and educating the Australian community about the Basin's water resources

Legislation

The majority of the MDBA operations are governed by:

- the Water Act 2007 (Cwlth), including the Murray-Darling Basin Agreement
- the Basin Plan 2012.

The Water Act sets out the MDBA's role in developing a Basin Plan and performing functions under the 2008 Intergovernmental Agreement on Murray–Darling Basin Reform, in particular managing River Murray operations. The MDBA delivers its functions under the Murray–Darling Basin Agreement in conjunction with, and on behalf of, Basin governments – the Australian Government and the governments of the Australian Capital Territory, New South Wales, Queensland, South Australia and Victoria.

The Basin Plan is premised on the MDBA and Basin governments working together to manage the Basin as a whole. The MDBA has a particular role in developing and reviewing the Plan and ensuring it is complied with, through the MDBA's Office of Compliance. Agencies from the Basin state governments and the Australian Government are involved in implementing the Plan and associated water recovery programs.

Interdependencies/collaborations

The MDBA works with Basin governments under a range of governance arrangements to coordinate work programs and oversee the implementation of the Basin Plan and the Murray–Darling Basin Agreement.

Other Australian Government agencies also have important roles under the Water Act, such as the Department of Agriculture and Water Resources, the Commonwealth Environmental Water Office, the Australian Competition and Consumer Commission and the Bureau of Meteorology.

Basin governments and the Australian Government are all signatories to the Murray–Darling Basin Agreement, and contribute funding to the joint management of the River Murray. The MDBA also works with the state constructing authorities appointed by Basin governments to investigate, design, construct, operate, maintain and renew River Murray operations assets.

Basin communities are involved in managing the Basin through mechanisms such as advisory committees, which help guide Basin Plan work. Basin governments also have their own arrangements for community consultation, such as the New South Wales environmental watering advisory groups.

As the Basin Plan is progressively implemented, the MDBA engages and consults with all those involved, and shares information and data to support an informed and collaborative effort. The aim is to build a shared purpose and commitment towards a healthy and productive Murray–Darling Basin.





History of water management in the Basin

2004 The National Water Initiative is signed by all governments and aims to achieve a more cohesive national approach to the way Australia manages, measures, plans for, prices and trades water

2003 The Living Murray program is announced, which aims to use 500 gigalitres (GL) of water, and associated engineering projects, to improve the health of six icon sites along the River Murray

1974



1998 Basin governments agree to implement a strategy to manage increasing salinity

> **1997** The longest drought in Australia's recorded history begins (1997-2010)

1993

Thousands of years of continuous culture and history and use by Aboriginal nations **1987** The Murray–Darling Basin Agreement is signed establishing the Murray–Darling Basin Commission, replacing the River Murray Commission. The resource-sharing arrangements between the states are expanded to cover the whole Murray–Darling Basin

History of water management in the Basin | MDBA ANNUAL REPORT 2017-18 | 11

2007 (early) The Australian Government announces a \$10 billion plan to put water use within the Basin onto a sustainable footing. This includes new legislation and a substantial investment in water-efficient infrastructure

2007 (late) The *Water Act 2007* (Cwlth) implements key reforms for water management in Australia. It sets out the requirements for a Basin Plan that will set sustainable limits on the amount of surface and groundwater that can be taken from the Basin

2012 The Basin Plan becomes law providing for the first time a coordinated sustainable approach to water use across the Basin's four states and the ACT **2017** Marked 100 years of collaborative water management in the Basin – on 14 February it was 100 years since the Commissioners of the newly formed River Murray Commission met in Melbourne

100 years since the beginning of construction of Lock 1 in South Australia. This marked the start of joint construction work on the River Murray by South Australia, New South Wales, Victoria and the Australian governments

2015 Celebrated

2006 The drought gets worse. Lowest inflows into the River Murray since records began

2006

2008 The Murray–Darling Basin Authority takes over the functions of the Murray–Darling Basin Commission, as well as planning responsibility for the Basin's water resources, including groundwater

2010

SIGNIFICANT FLOODS AND DROUGHTS





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Accountable Authority's statement

Introductory statement

I, as the accountable authority of the Murray–Darling Basin Authority, present the 2017–18 annual performance statement, as required under the *Public Governance, Performance and Accountability Act 2013* (Cwlth) (PGPA Act) (paragraph 39(1)(a)).

In my opinion, this annual performance statement is based on properly maintained records, accurately reflect the performance of the entity, and complies with the PGPA Act (subsection 39(2)).

Phillip Glyde, Chief Executive 3 October 2018

Reporting approach

The *Public Governance, Performance and Accountability Act 2013* (Cwlth) (PGPA Act) sets out how corporate Commonwealth entities, such as the MDBA, must report.

The MDBA manages its performance against a single outcome, and the key deliverables and key performance indicators are measured against the five strategic goals in the Corporate Plan 2017–18.

The entity purpose (Outcome 1) is:

Equitable and sustainable use of the Murray–Darling Basin by governments and the community including through the development and implementation of a Basin Plan, operation of the River Murray system, and shared natural resource management programs, research information and advice.

The five strategic goals in the Corporate Plan 2017-18 were:

- **Strategic goal 1.** Lead the implementation of the Basin Plan to achieve a healthy, working Basin
- Strategic goal 2. Strengthen engagement with the community
- Strategic goal 3. Evaluate and report the social, economic and environmental outcomes of Basin water reforms
- Strategic goal 4. Operate the River Murray system efficiently for partner governments
- **Strategic goal 5.** Improve the knowledge base to support sustainable water resource management.

The MDBA tasks have differing timeframes and can be defined as:

- due on a certain date
- due annually
- ongoing (i.e. with no due date).

For this report, where a task performed is identified as 'ongoing' throughout the year, the result for the corresponding key performance indicator (KPI) is listed as 'achieved'.

Note that the MDBA has reviewed its goals and related KPI's for 2018–19 meaning a new approach for the 2018–19 financial year.

Summary of performance

Outcome 1

Equitable and sustainable use of the Murray–Darling Basin by governments and the community including through the development and implementation of a Basin Plan, operation of the River Murray system, and shared natural resource management programs, research information and advice.

Program 1.1 Equitable and sustainable use of the Murray–Darling Basin Strategic goals as specified in the Portfolio Budget Statements and Corporate Plan for 2017–18

Strategic Goal 1: Lead the implementation of the Basin Plan to achieve a healthy, working Basin

КРІ	Source	Results
1. Implement the MDBA responsibilities of the Basin Plan in accordance with legislative timeframes	Corporate Plan 2017-18	Compliant with all key obligations under the Basin Plan.
	Page 13	All key legislative timeframes have been adhered to in relation to the Water Act and Basin Plan. Key results include:
		 assessment of measures under the Sustainable Diversion Limit Adjustment Mechanism – completed
		Northern Basin Review – completed
		basin-wide review of compliance – completed
		 work is ongoing with Basin states who are developing water resource plans for Commonwealth accreditation. There is a risk that not all plans will be accredited by mid-2019 as required.

For analysis of performance, see pages 22 to 37

Strategic Goal 2: Strengthen engagement with the community			
КРІ	Source	Results	
2. Based on feedback through consultation, respond and adjust the MDBA's activities to improve effectiveness	Corporate Plan 2017-18 Page 14	Achieved Achieved The MDBA has consulted through the pilot Regional Engagement Officer program, opening regional offices in the Basin, community consultation, and through holding 640 meetings and responding to 752 public requests for information. During 2017-18, the MDBA received 3 200 submissions, which were passed on to Basin governments to help them determine the proposed adjustments to sustainable diversion limits.	
3. Informing and educating stakeholders and the community on the importance of sustaining a healthy, working Basin through a range of communications and education platforms	Corporate Plan 2017-18 Page 14	 Achieved The MDBA performed a public awareness project called 'Rivers. Worth it.' to inform the public of the value, complexities and science of the Basin. The campaign was targeted at key audiences, which resulted in an increase of website visits and social media engagement. The MDBA redesigned the education web pages around the topic 'water as a resource' to deliver water resource management talks to schools, and engaged in learning activities by presenting a range of exhibits at World Water Day at Questacon, as well as hosting activities for SciScouts during National Science Week 2017. 	

For analysis of performance, see pages 40 to 47

KPI Results Source 4. 100% of monitoring Corporate Plan Compliant with all key monitoring and and evaluation reviews 2017-18 evaluation reviews conducted within Page 15 Annual reporting required under Schedule 12 of the statutory requirements Basin Plan 2012 was completed on time. Monitoring and evaluation of Basin water reforms (without legislated due dates) is ongoing. The MDBA conducted a Basin Plan evaluation, published in December 2017. Amendments to the Basin Plan changed the timeframe for the comprehensive evaluation and report from 2017 to 2020.

Strategic Goal 3: Evaluate and review the social, economic and environmental outcomes of **Basin water reforms**

For analysis of performance, see pages 50 to 59

Stategic doar 4. Operate the River Montay system enciently for particle governments			
КРІ	Source	Results	
 5. River operations and programs are managed in accordance with: the Murray-Darling Basin Agreement the Service Level Agreement between the Murray-Darling Basin Ministerial Council and the MDBA 	Corporate Plan 2017-18 Page 16	Achieved pending independent report The MDBA has conducted an annual summary of river operations, which was provided to the Basin Officials Committee, the Ministerial Council and the Independent River Operators Review Group (IRORG). The summary did not receive any negative feedback from the jurisdictions or the IRORG. Preliminary discussions with the IRORG indicate that the MDBA can expect to receive a positive independent report when the independent review is finalised (not available at the time of writing).	
6. Build, maintain and improve the River Murray system assets to achieve best practice standards in accordance with the Murray–Darling Basin Agreement	Corporate Plan 2017-18 Page 16	Achieved The MDBA's ongoing inspection program ensured that all major infrastructure is managed in accordance with contemporary engineering practice. Routine maintenance operations have generally continued as planned. All assets are maintained to best practice standards. Dam safety is managed in accordance with the Australian National Committee on Large Dams (ANCOLD) guidelines. State constructing authorities routinely report on asset program delivery through quarterly Asset Management Advisory Panel meetings.	
 Maintain and improve the health of the Basin in accordance with the Murray-Darling Basin Agreement and the associated agreements 	prove Corporate Plan e Basin 2017-18 ith the Page 16 the ements	Achieved	
		River Murray water quality parameters for recreation, irrigation and drinking water needs were within acceptable limits.	
		The report <i>Icon site condition – The Living Murray</i> , published in May 2018, highlighted that sites which have received water for the environment in combination with the use of works are gradually improving in health.	
For analysis of performance, see pages 62 to 85			

Strategic Goal 4: Operate the River Murray system efficiently for partner governments

8. The MDBA will provide Basin-wide technical advice, analysis and evidence to governments, industries and the wider community to support better decision makingCorporate Plan 2017-18Image 171. Mathematical decision makingPage 17Through the 2017 Basin Plan Evaluation, the MDBA provided Basin-wide technical advice, analysis and evidence for the consideration of governments, industries and the wider community to support better decision makingThrough the 2017 Basin Plan Evaluation, the MDBA provided Basin-wide technical advice, analysis and evidence for the consideration of governments, industries and communities about the outcomes arising from the implementation of the Basin Plan to date. Improvements to the MDBA knowledge base in 2017-18 included the preparation of new datasets to inform the current and future monitoring, evaluation and review functions of the Authority (and its partner government agencies).The technical information underpinning the findings with regard to the changing economic, social, environmental and hydrologic conditions of the Basin in the 2017 evaluation, including the profiles of economic and social conditions, have been provided on the MDBA website.	КРІ	Source	Results
	8. The MDBA will provide Basin-wide technical advice, analysis and evidence to governments, industries and the wider community to support better decision making	Corporate Plan 2017-18 Page 17	 ☑ Achieved Through the 2017 Basin Plan Evaluation, the MDBA provided Basin-wide technical advice, analysis and evidence for the consideration of governments, industries and communities about the outcomes arising from the implementation of the Basin Plan to date. Improvements to the MDBA knowledge base in 2017-18 included the preparation of new datasets to inform the current and future monitoring, evaluation and review functions of the Authority (and its partner government agencies). The technical information underpinning the findings with regard to the changing economic, social, environmental and hydrologic conditions of the Basin in the 2017 evaluation, including the profiles of economic and social conditions, have been provided on the MDBA website.

Strategic Goal 5: Improve the knowledge base to support sustainable water resource management

For analysis of performance, see pages 88 to 95

Strategic goal 1

Lead the implementation of the Basin Plan to achieve a healthy, working Basin

Implementing the Basin Plan will lead to a healthy, working Basin to benefit all and deliver:

- communities with sufficient and reliable water supplies that are fit for a range of intended purposes, including domestic, industrial, recreational and cultural use
- productive and resilient water-dependent communities with confidence in their long term future
- healthy and resilient ecosystems with rivers and creeks regularly connected to their floodplains and, ultimately, the ocean.

Priorities for 2017-18

- Finalising the assessment of supply measure proposals under the Sustainable Diversion Limit Adjustment Mechanism (SDLAM), and working with Basin state governments to support the development of constraints measures under the mechanism
- Finalising the review of Basin Plan settings in the northern Basin, and working with New South Wales and Queensland governments to implement the proposed toolkit measures
- Strengthening our regulatory posture as per the MDBA Compliance and Enforcement Policy
- Supporting Basin governments to achieve accreditation of their water resource plans consistent with the Basin Plan
- Coordinating whole-of-Basin planning, prioritisation and use of water for the environment to maximise the benefits across the Basin
- Facilitating full implementation of all surface water and groundwater sustainable diversion limits (SDLs), and water quality and salinity management plans
- Facilitating efficient and effective water trading markets to improve the productivity of water use

Highlights

- Delivering the agreed amendments to the Basin Plan arising from operation of the Sustainable Diversion Limit Adjustment Mechanism, the Northern Basin Review and the review of three groundwater resources
- Completing the Murray–Darling Basin Water Compliance Review and implementation of recommendations, including establishment of the Office of Compliance and Independent Assurance Committee within the MDBA
- Agreement of the Murray-Darling Basin Ministerial Council to the Basin Compliance Compact (to be endorsed by the Council of Australian Governments)

- Establishing better working arrangements with Basin governments to support the preparation of water resource plans for assessment and accreditation, and streamlining processes to support future accreditations
- Delivering multi-year watering for the environment priorities
- Completing the 2017 Basin Plan Evaluation, which shows implementation of the Plan is essentially on track, and makes several useful findings to assist in the forward work

Analysis

The implementation of the Basin Plan continues to progress in line with expectations. The passage of the two amendments in relation to the SDL Adjustment Mechanism, the Northern Basin Review, and targeted reviews of groundwater represented the completion of several years of challenging work for the MDBA and partner governments. During the year the MDBA completed a substantial review of compliance issues in the Basin and set up a much improved foundation upon which its future compliance efforts will be based on.

There is a risk that not all of the 33 state water resource plans, scheduled to be accredited by the Australian Government Minister responsible for Water on advice of the MDBA, will achieve the 30 June 2019 timeline. This risk is most acute in New South Wales, and the MDBA is working with relevant governments to mitigate this risk.

While it will take many years to achieve a healthy and productive Basin, the 2017 Basin Plan Evaluation reported that, at this early stage, there are some good signs the Basin Plan is working and is on track in many areas. The 2017 Evaluation Report also noted some positive findings relating to desired social, economic and environmental outcomes.

Much remains to be done, but the key elements needed by 2019 and 2024 are underway.

Figure 2.1 Understanding how the elements and implementation of the Basin Plan work



Amendments to the Basin Plan

In the past 12 months, two critical amendments have been made to the Basin Plan, which were the result of five-year work programs for the MDBA, other Australian Government agencies and Basin governments.

- The Basin Plan Amendment (SDL Adjustments) Instrument 2017 (the SDLAM Amendment) amended the Basin Plan to adjust the long-term average SDL, taking account of supply and efficiency measures.
- The Basin Plan Amendment Instrument (No. 1) (the Northern Basin Review Amendment) implemented the findings of the Northern Basin Review on sustainable diversion limits, groundwater reviews and the Australian Government's response to the independent review of the *Water Act 2007* (Cwlth).

Bipartisan support for these two amendments led to announcement of a range of measures under the Basin Commitments Package. These include:

- ensuring full implementation of SDLAM through further efficiency measures, and linking payments to states under the national partnership agreement for the delivery of SDL supply measures to demonstrated cooperation with the delivery of efficiency measures as defined under the Basin Plan
- establishing a Northern Basin Commissioner to report annually on progress in the rollout of the toolkit measures
- ensuring increased transparency on SDLAM projects through technical workshops and public reporting on constraint measure progress
- supporting improved water information in the northern Basin
- providing funding to build capacity for Aboriginal groups to translate the findings of the National Cultural Flows Research Project into practical ways forward, and to support Aboriginal community investment in cultural and economic water investment.

Progress has already been made on a number of the commitments. On 28 June 2018, the MDBA convened a technical workshop on the package of SDL adjustment projects. The workshop was attended by peak interest groups, water experts and Basin government officials. The MDBA expects to report on Aboriginal involvement in environmental watering decisions publicly at the end of December 2019.

The Basin Plan comprises a range of measures designed to be operated together. As a collective, they represent an adaptive framework for whole-of-system water management. Along with the recovery of water for the environment, the Basin Plan is designed to underpin sustainable long-term outcomes for the environment, communities and industries.

2017 Basin Plan Evaluation, p. 23

Sustainable Diversion Limit Adjustment Mechanism

The Basin Plan included a mechanism that allowed SDLs to be adjusted in the southern Basin based on an arrangement that encourages further investment in efficient operation of the river system and irrigation systems both on- and off-farm. These investments are on the basis that equivalent environmental outcomes to those outlined in the Plan can be achieved, and that there are no negative social or economic impacts as defined in the Plan.

The Sustainable Diversion Limit Adjustment Mechanism (SDLAM) requires the implementation of a package of projects and works by 2024, which comprises two parts:

- 1. **Supply** projects, which aim to improve the delivery of water for the environment through infrastructure works or river operating rules. They allow equivalent environmental outcomes to be achieved using less water, which means that more water can remain in the system for extractive users, mainly irrigation. Many such projects will directly address constraints in the river system.
- 2. Efficiency projects, which improve water delivery systems, including on- and off-farm infrastructure. They allow more water to be returned to the environment, as long as there is no negative social or economic impact.

Throughout 2017–18, the MDBA continued to work with Basin governments to model the final package of supply measures. In September 2017, after operation of the SDLAM, a draft adjustment amount of 605 GL as a long-term average equivalent was determined. The subsequent public consultation process resulted in no change from the draft determination.

The MDBA's final determination of 605 GL in supply measures was delivered to the Australian Government Minister responsible for Water in December 2017. The SDLAM rules in the Basin Plan require that any supply measure determination above 5% (or 543 GL) of the SDL must be offset by efficiency measures. This means that 62 GL of efficiency measures (i.e. 605-543 GL) must be obtained by 30 June 2019 in order for the full 605 GL supply measure offset to be realised at that time.

Basin governments have until 2024 to implement the notified supply measures, and the Australian Government has until then to roll out the 450 GL efficiency measures program.

The MDBA will report regularly on progress with these measures and undertake a formal reconciliation of the mechanism in 2024 to ensure the required environmental outcomes will be delivered by the supply measure projects. Subject to final agreement with governments, the MDBA also expects to be involved through the joint venture arrangements in assisting with the implementation and operation of the measures.

Figure 2.2 Basin Plan timeline



'bridging the gap' commitment is completed

Northern Basin Review and toolkit

The Northern Basin Review was completed in 2016. Based on the review, the MDBA recommended a change to the SDLs in the northern Basin that would reduce the water recovery target from 390 GL to 320 GL.

As part of this decision, the New South Wales and Queensland governments agreed to implement a range of so-called toolkit measures aimed at improving the protection of environmental flows. The toolkit also involved a commitment to event-based mechanisms (such as market-based options like pumping into private storages for store-and-release) and improving the coordination and delivery of water for the environment. In the Gwydir, the toolkit also included measures to remove constraints and manage flows to the wetlands, and environmental works and measures to promote fish movement and habitat.

The toolkit measures were also complemented by measures in the Basin Commitments Package mentioned above. By the end of 2017–18, the MDBA actions included:

- working with the New South Wales and Queensland governments to put in place enduring arrangements for the protection of water for the environment, including the active management of events in unregulated rivers
- scoping out a water information platform to improve the availability of information about water for the environment
- collating hydrological model data for the Northern Basin Review modelling scenarios and conducting quality assurance checks
- finalising funding arrangements to support Northern Basin Aboriginal Nations (NBAN) and Murray Lower Darling Rivers Indigenous Nations (MLDRIN) to implement results from the National Cultural Flows Research Project
- working collaboratively with Basin states to deliver the full spectrum of toolkit measures
- consulting with Basin governments on tailoring reporting and assurance requirements for each jurisdiction to prepare the first assurance report, which is due on 31 December 2018.

Groundwater

The Basin Plan sets limits on how much groundwater can be taken from all groundwater resources of the Basin for the first time. This year, the recommendations from the groundwater reviews (completed in 2014–15) came into force as part of the amendments to the Basin Plan. These changes include an increase to the SDLs and added local management rules in four SDL resource units.

Other changes to groundwater management to enable effective and consistent implementation of the Basin Plan include:

- the compliance methodology
- adjustments to review provisions
- separating the provisions for the groundwater water quality management plans from those for surface water
- refining water resource plan area boundaries and SDL resource unit boundary definitions.

The MDBA continued to work with Basin governments to address a number of technical and policy issues. During 2017-18, the MDBA trialled arrangements to estimate and report actual and permitted groundwater take. These will support SDL compliance from the 2019-20 water year. To provide further guidance to Basin governments on how permitted take applies to groundwater and examples of methods that could be used, the MDBA published the report *Methods for determining annual permitted take (groundwater)* in June 2018.

This year, the three-year strategic research partnership with the National Centre for Groundwater Research and Training (NCGRT) was completed. Initiated in 2015, this strategic research examined critical science issues in three priority areas:

- groundwater and surface water interactions
- groundwater replenishment processes
- the impact of social and economic factors on groundwater management in the future.

The partnership has considerably enhanced the scientific and socioeconomic knowledge base of the MDBA and the NCGRT, and has delivered state-of-the-art modelling processes and integrated assessment tools for managing groundwater in the Basin. The final report on research findings will be available by the end of 2018.

Transition to SDL

The MDBA made good progress to facilitate the transition from the Murray–Darling Basin Cap on diversions (Cap) to the new SDL by July 2019. As part of the transitional period from 2012 to 2019, the MDBA:

- continued working with the Basin governments to implement the annual reporting requirements for SDLs set out in the Water Act
- published the second transition period water take report. The first and second reports cover the 2012-13 to 2015-16 and 2016-17 water years. The series of water take reports will provide data to support compliance decisions with Cap until 2019 (surface water only) and with SDL from 2019 onwards (both groundwater and surface water)
- considered how amendments to the Basin Plan affect the treatment of SDL reporting and compliance, especially in relation to groundwater, and how this will be reflected in future water take reports

- developed an SDL Reporting and Compliance Framework, to be published later in 2018. A summary of the draft framework is available on the MDBA website
- worked with Basin governments to update planning assumptions and the long-term diversion limit equivalence (LTDLE) factors. New South Wales published its updated LTDLE factors technical report in June 2018, and the MDBA engaged an independent review panel to review the methodology used by New South Wales.

The MDBA continued to assess Basin compliance with the Cap, given that this remains in force until SDLs come into effect next year. Cap reporting is up to date, and all states are compliant with the Cap on diversions. The Independent Audit Group completed its special audit of the Moonie Valley Cap in Queensland and found that the long-term Cap was not exceeded, requiring no action under the Cap arrangements.

Accreditation of water resource plans

Water resource plans (WRPs) are an important way of aligning state-based water resource management arrangements for catchments with the requirements of the Basin Plan. They set out the rules and arrangements for matters such as annual limits on water take, water for the environment, managing water during extreme events, recognising Aboriginal cultural values and strategies to achieve water quality standards.

WRPs are the vehicle through which the SDL set under the Basin Plan take legal effect under Commonwealth law.

In 2017–18 the MDBA prepared a comprehensive WRP assessment framework, policy guidance and templates, and continued to provide advice and support to Basin governments as they prepare their WRPs. All Basin governments are making progress towards accreditation, with Victoria and South Australia joining Queensland as states that have submitted their first WRPs for assessment. Over the course of the year, the MDBA advised Basin governments on draft plans and held forums to help them on a number of products (e.g. water quality management plans) that must be developed as part of their WRPs.

The MDBA also held the fourth Joint Aboriginal Workshop and fifth annual Water Planners Forum, with the theme 'Towards accreditation'. The MDBA has been working closely with Northern Basin Aboriginal Nations (NBAN) and Murray Lower Darling River Indigenous Nations (MLDRIN) to discuss and resolve WRP development issues of concern for Aboriginal people.

The Basin Plan requires that state WRPs are accredited by 1 July 2019. There is a risk that not all of the WRPs will achieve this timeline. The MDBA is monitoring this risk and will work with relevant states if needed to develop suitable contingency arrangements.

In response to the Murray–Darling Basin Water Compliance Review, the MDBA began reporting the status of WRP development publicly. These reports are released on the MDBA website on a quarterly basis.
Water compliance

Ensuring compliance with the Basin Plan is essential in implementing the Basin Plan and building confidence that communities, businesses and governments are fulfilling their obligations in sustainable water management. The MDBA is strengthening compliance and enforcement arrangements to underpin the integrity of the WRPs and SDLs – to protect all water users and to support a competitive water trading market.

Murray-Darling Basin Water Compliance Review

In 2017, the MDBA and an independent panel conducted the Murray–Darling Basin Water Compliance Review at the request of the Prime Minister, to assess the effectiveness of compliance frameworks and practices for water management across the Basin.

The review identified that there are significant variations across the Basin in relation to compliance, including the culture of compliance, the level of resourcing devoted to compliance activities, the transparency of reporting, the comprehensiveness and clarity of compliance policy frameworks and the challenges posed by monitoring and enforcing compliance.

The review made a series of recommendations for improvement for Basin governments. These include:

- implementing a 'no meter, no pump' policy and other measures to improve the accuracy of water data
- reviewing compliance policies, penalties and practices
- increasing transparency of compliance governance, decisions and activities
- implementing measures to improve the protection of water for the environment.

The review recommended that governments reiterate their commitment to developing WRPs that are compliant with the Basin Plan to meet the 30 June 2019 accreditation deadline. It also recommended that Basin governments agree to a Murray-Darling Basin Compliance Compact for implementing their compliance improvements.

The review also found that the MDBA should be more assertive in performing its compliance and enforcement role. The MDBA adopted the review actions and recommendations specific to the MDBA work, and implementing these was a strong focus for the remainder of 2017-18.

rigore 2.5 implementation of basin compliance review recommendation	Figure	2.3	Implemen	tation of	Basin	compliance	review	recommendations
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MURRAY-DARLING BASIN AUTHORITY	BASIN GOVERNMENTS
 DECEMBER 2017 Establish an MDBA Office of Compliance Establish an online register to report on the handling and progress of compliance matters reported to the MDBA Publish allegation escalation pathway JANUARY 2018 Publish Water Resource Plan Quarterly Report FEBRUARY 2018 Establish Independent Assurance Committee 	COMPLETED COMPLETED • Agree a Basin Compliance Compact
 30 JUNE 2018 ONWARDS Publish MDBA Compliance & Enforcement Strategy Publish SDL Reporting and Compliance Framework Publish guidelines on hydrometric networks and hydrological modelling Prepare guidelines for consistent reporting of compliance activities 	comprising Australian and state government implementation plans
DECEMBER 2018 • Publish Compact Progress report	 DECEMBER 2018 Publish state compliance strategies Publish meter improvement plans Review legislation and propose improvements Agree a timetable for delivering a comprehensive range of AS4747 meters
30 JUNE 2019	30 JUNE 2019
Accreditation deadline for state water resource plans	 Publish improvements program to hydrometric network Publish annual progress reports Publish/implement meter improvement plans with annual report

Revised compliance framework

During the year, the MDBA revised and released its Compliance and Enforcement Policy and established a dedicated Office of Compliance to ensure the MDBA meets its compliance objectives to:

- support the achievement of the outcomes sought by the Basin Plan by ensuring compliance with it
- strengthen the integrity of the Plan and associated Basin governments and Australian Government water management arrangements
- provide independent assurance of compliance with the Basin Plan.

The MDBA's water compliance framework has seven areas of focus:

- 1. Water resource plans
- 2. Sustainable diversion limits
- 3. Compliance and enforcement of illegal water take
- 4. Improving water metering and measurement of water take
- 5. Planning and protection of water for the environment
- 6. Water trade
- 7. Water quality and salinity.

Audit and assurance

The MDBA launched an audit program as part of its compliance functions, focusing initially on compliance and enforcement systems in the Barwon–Darling and on accurate reporting of water trade prices. The MDBA will publish the results of these audits on its website, along with subsequent audit reports as they are finalised.

An Independent Assurance Committee was set up to advise the MDBA on its approach to compliance and to provide external assurance on how well it is implementing this work. The committee was established under the Water Act (s. 203), and comprises four experts in compliance, enforcement and regulation. The MDBA publishes all advice received from the committee.

Water measurement

Good metering and measurement is essential for comprehensive water accounting and management. During the year, the MDBA established a small team to develop guidelines on good practice water measurement and to benchmark performance in each state.

In 2017-18 the MDBA:

- prepared quality assurance guidelines for hydrometric networks and hydrological modelling
- prepared a model improvement program for the MDBA's hydrological models
- developed public materials on SDL reporting and compliance arrangements.

Trade rules and water markets

The MDBA is the regulator of compliance with the Basin Plan's water trading rules. The Basin water markets help water move to the most productive use. They also help businesses adapt to changing economic and environmental conditions by providing more flexible options to meet water needs. The Basin Plan's water trading rules aim to reduce restrictions on trade, improve transparency and access to information, and improve confidence in the water market. Water markets are evolving and growing, so implementing the water trading rules is an ongoing task.

The MDBA continues to work with Basin governments to determine if trading restrictions in place are necessary. In 2017-18, the MDBA focused its efforts on allocation trade restrictions in the southern connected Basin, as these have the biggest impact on the function of Basin water markets.

Water markets are integral to modern water management in the Basin, providing irrigators and environmental water users with a vital tool for responding to variable water availability ... The water market is maturing and has become an important avenue for moving water to its most productive use.

2017 Basin Plan Evaluation, p. 10

Working with the Basin governments

The MDBA continues to work with the Basin governments by developing guidance materials and capacity building, as well as supporting intergovernmental initiatives and cooperative activities, such as audits and the development of the Murray–Darling Basin Compliance Compact. The compact sets out an agreed work plan for governments and the MDBA to ensure water rules are complied with and enforced.

Responding to stakeholder concerns about water compliance

On 24 July 2017 the ABC *Four Corners* program aired a segment titled 'Pumped: Who's benefitting from the billions spent on the Murray–Darling?' The program made a series of allegations about water theft and poor water management, compliance and enforcement activities in the Barwon–Darling river system.

While a number of agencies had a role in addressing the concerns raised, some stakeholders expressed a view that the MDBA should be more proactive in addressing allegations of non-compliance if a state was not doing so. The Prime Minister commissioned the MDBA and an independent panel to conduct the Murray-Darling Basin Water Compliance Review. The review considered the legislative, policy and practical compliance and enforcement arrangements across the Murray-Darling Basin.

The MDBA and independent panel released separate reports, proposing actions that the MDBA is implementing and recommendations for Basin governments to consider. By early 2018, the MDBA had established an Office of Compliance and an Independent Assurance Committee, with a supporting suite of strategies, policies and frameworks. The MDBA has increased its public reporting across a range of water compliance areas to achieve full transparency in this important aspect of Basin Plan compliance.

The MDBA also worked with Basin governments to develop the Murray–Darling Basin Compliance Compact, which comprises action plans for all Basin governments to improve water compliance. The compact benefited from independent input from Dr Wendy Craik AM.

There remains much to do, with some significant milestones to be achieved by June 2019. Public confidence in compliance and enforcement systems is fundamental to the continued implementation of the Basin Plan. The MDBA has learned from the various reviews and continues to work hard to implement all of the recommendations.

Watering priorities for 2017-18

Under the Environmental Management Framework, the MDBA and Basin governments are required to develop long- and short-term plans to guide water for the environment at the Basin and local scale. A long-term, whole-of-Basin watering strategy is now in place and state long-term watering plans will be finalised by June 2019. This year's water for the environment priorities extended across multiple years, and took into account watering actions under different climate conditions.

As part of the strategy to bring Aboriginal people's views into the long-term and annual planning for water for the environment, this year's Basin water for the environment priorities report included two case studies on Aboriginal environment outcomes. These case studies involve delegates from the Wayilwan (NSW) and Barapa Barapa (NSW/VIC) Nations.

At the beginning of the 2017–18 water year, the total volume of held water for the environment was about 2 871 GL (in long-term available water terms).

The 2017 Evaluation included an analysis of annual reporting from water holders. The analysis indicated that by 2016-17, over a third (37%) of all environmental watering events were coordinated events involving multiple water holders. The evaluation noted this increasing collaboration is seeing environmental water managers combine their water to achieve much larger events than would otherwise be possible.

2017 Basin Plan Evaluation, p. 34



Figure 2.4 Held environmental water (HEW) entitlements

The higher than average rainfall in 2016 resulted in much higher river flows and widespread inundation of wetlands and floodplains. These natural events watered many parts of the Basin's ecosystems. Environmental water holders and managers increased natural flows in some instances to ensure important breeding and recruitment cycles were completed.

The watering priorities for 2017-18 aimed to build on the gains made in a relatively wet year in 2016-17. They included:

- helping native fish populations recover by reinstating flows and connectivity, focusing on the southern connected Basin, the Barwon-Darling River, and the Basin as a whole
- improving the number and diversity of the Basin's waterbird populations, using watering strategies that improve habitat for foraging and roosting
- improving the condition of native vegetation like river red gum, black box and coolibah
- improving the condition and extent of Moira grass in the Barmah-Millewa Forest
- improving connections between freshwater, estuarine and marine environments, and improving habitat conditions in the Coorong.

Long-term water for the environment priorities 2017-18						
Focus	Objectives/priority					
Native fish Reinstate ecological process to support native fish recruitment, in particular to sustain and build on fish recruitment from earlier years, as well as to encourage new recruitment opportunities	 Support Basin-scale population recovery of native fish by reinstating flows that promote key ecological processes across local, regional and system scales for the southern connected Basin Improve flow regimes and connectivity to maximise the ecological function of the Barwon-Darling river system for native fish Support viable populations of threatened native fish and maximise opportunities for range expansion and the establishment of new populations 					
Waterbirds Improve the abundance and diversity of the Basin's waterbird population	 Avoid the loss of foraging and roosting habitat at refuge locations Maintain foraging and roosting habitat at refuge locations Support naturally triggered breeding Maintain waterbird breeding habitat in 'event ready' condition 					
	 Ingger and provide support for small scale breeding across functional feeding groups Trigger and provide ongoing support for small- to moderate-scale breeding across functional feeding groups Create a mosaic of wetland habitats suitable for functional feeding groups Improve the opportunities for large-scale breeding for colonial nesting waterbirds 					
Native vegetation Improve the condition of native vegetation to build on outcomes from flooding during 2016	 Inundate floodplains to enable recruitment of trees and support growth of understorey species within river red gum, black box and coolibah communities on floodplains that received overbank flooding during 2016 Improve the condition and extent of Moira grass in Barmah- Millewa Forest (rolling, multi-year priority) 					
River flows and connectivity Improve connectivity between freshwater, estuarine and marine environments	 Improve connectivity and improve habitat conditions in the Coorong by optimising and managing inflows through the Lower Lakes (rolling, multi-year priority) 					

Table 2.1 Long-term water for the environment priorities for 2017-18

Statement of commitment: Incorporating Aboriginal environmental values and outcomes into Basin water for the environment priorities

An important aspect of the Basin Plan and the MDBA's role is to foster connection across the Basin. This means promoting not only the physical connections to support a healthy river system, but also social and cultural connections. In June 2018, the MDBA published the Basin Environmental Watering Priorities for 2018–19. This strategic report contains a statement of commitment, written in partnership with MLDRIN and NBAN.

The following is an extract from the statement of commitment:

The MDBA recognises that Aboriginal peoples' knowledge of Country can contribute to better environmental water planning. Inclusion of Aboriginal cultural objectives in water planning will also support cultural continuity, contribute to Aboriginal people, and build capacity for managing and accessing water into the future. The MDBA is committed to incorporating Traditional Owner knowledge into environmental watering planning and management.

Independent, culturally authoritative and strategic input from Aboriginal people into environmental water planning can improve environmental watering decisions. Managing environmental water in ways that incorporate Aboriginal peoples' objectives for healthier rivers and wetlands will improve wellbeing and cultural resilience. Considering the local knowledge of Aboriginal people in environmental water planning decisions will also help to improve outcomes of environmental watering and the health of Country.

The Murray Lower Darling Rivers Indigenous Nations (MLDRIN) and the Northern Basin Aboriginal Nations (NBAN) are working with the MDBA on ways to integrate Aboriginal people's perspectives into annual and long-term environmental water planning, including the incorporation of Aboriginal environmental outcomes.

Aboriginal environmental outcomes describe tangible physical benefits that can be derived from environmental watering for Aboriginal people, such as improved populations of culturally significant fish species or improved health of important cultural landscapes.

When responsive to Traditional Owner objectives, environmental watering can provide complementary cultural benefits, but it is not able to provide all of the outcomes that cultural flows could provide. Cultural flows are water entitlements that are legally and beneficially owned by Aboriginal Nations of a sufficient and adequate quantity and quality to improve the spiritual, cultural, natural, environmental, social and economic conditions of those Nations. The statement outlines that the MDBA will:

- collaborate with NBAN, MLDRIN, environmental water holders and Basin government agencies to identify and consolidate information that provides guidance on the condition of Country and Aboriginal peoples' values of, and desired outcomes for, environments across the Basin
- partner with NBAN and MLDRIN to progress the inclusion of Traditional Owner objectives in environmental water planning
- begin to develop a framework that will meaningfully and transparently incorporate Traditional Owner input into policy
- incorporate Aboriginal environmental outcomes into the development of the 2019-20 Basin Environmental Watering Priorities.

Challenges and the year ahead

A key milestone for the Plan will be 1 July 2019. The majority of water recovery associated with the initial program should be finalised, with the remaining 450 GL efficiency measures program to be implemented by 2024. A major effort is required to meet the deadline of 30 June 2019 for the accreditation of all WRPs, with a particular risk for New South Wales. While continuing to work towards the target date, the MDBA is putting in place contingency arrangements in case the timeframes cannot be met.

The Basin Plan compliance framework will be fully operational and all Basin governments will be reporting progress on their commitments under the Compliance Compact. The new Northern Basin Commissioner will be on the job. advising governments on implementing their commitments. Also in the north, the toolkit measures recommended as part of the review, and other elements of the Basin Commitments Package, will continue to be rolled out. These represent an opportunity to improve protection of environmental flows and more transparent management arrangements, but also to improve the engagement of Aboriginal people in water management.

In the southern Basin, an ambitious five-year program to improve river operating arrangements to get better environmental outcomes with less water will commence through implementation of supply and constraints measures.

Strategic goal 2 Strengthen engagement with the community

Sustaining a healthy, working Basin is improved by effective engagement with the community to identify knowledge and common interests, formulate policy, ensure compliance and manage the rivers and its Basin assets

Priorities for 2017-18

- Expanding regional presence across the Basin and leveraging local knowledge
- Expanding the Regional Engagement Officers (REO) network, aiming to have eight REOs in priority regions across the Basin until at least 2021
- Providing information through a variety of communication and engagement channels, and ensuring this information meets the needs of all stakeholders
- Developing and delivering education strategies and activities to build understanding of the importance of sustaining a healthy, working Basin
- Continuing to implement the recommendations from the Indigenous Partnerships Program forum in providing water for the environment and supporting Aboriginal environmental outcomes

Highlights

- Completing the REO pilot program and releasing the evaluation report
- Supporting the Sustainable Diversion Limit Adjust Mechanism (SDLAM) formal consultation period through education and communication material and consultations with stakeholders
- Holding the MDBA's first annual SDLAM technical workshop to share information with stakeholders in June 2018
- Running the highly successful 'Rivers. Worth it.' campaign between March and May 2018
- Hosting activities for around 1 000 participants at a SciScouts event during National Science Week in August 2017

- Releasing the findings of the National Cultural Flows Research Project in June 2018
- Supporting the recruitment of 12 new members for the Basin Community Committee
- Completing the review of 10 years of the Indigenous Partnerships Program, which found that the joint government program has been effective in engaging Aboriginal people in providing water for the environment and supporting Aboriginal environmental outcomes
- Developing the MDBA's engagement strategy

Analysis

Building strong relationships with Basin communities is vital to implementing the Basin Plan effectively. The REO pilot showed the benefits of having local representation, and the establishment of regional offices enables the MDBA to build better local partnerships. The partnerships between the Aboriginal Nations in the Basin continue to provide a valuable way to share knowledge and involve Indigenous peoples in management of the Basin.

In 2017–18, the MDBA found new ways to respond to the need for targeted information with initiatives including new apps, the 'Rivers. Worth it.' campaign, and involvement in education activities. The ability to provide clear information and reach different audiences through different channels is crucial to encouraging audiences to engage with the Basin Plan. The MDBA's new knowledge frameworks will enable this to happen more efficiently.

Regional Engagement Officers and regional offices

During the year the MDBA continued to increase its presence in regional areas. By appointing REOs and establishing regional offices, the MDBA intends to strengthen relationships with stakeholders, optimising local knowledge and capabilities and building partnerships. The MDBA confirmed its commitment to the REO network, following a successful pilot program.

There are now staff established in offices located at Toowoomba (QLD), Albury–Wodonga (NSW/VIC) and Adelaide (SA). At the end of June 2018, about 8% of MDBA staff were in regional offices, with more underway. This is against our target of 10% by this time.

REO pilot program

The MDBA evaluated its 12-month pilot program to test the effectiveness of placing REOs in seven selected locations around the Basin in October 2017. The evaluation focused on the process of establishing REOs and the results of having them in place.

The key messages from the evaluation were positive. There was strong support for regional engagement and host agencies indicated the value of hosting an REO. Because REOs are part of the local community, most stakeholders found them to be an effective link between regional communities and the MDBA.

The evaluation, which focused on ways to improve the REO model, identified a few things that need to change. It recognised the potential for conflict of interest, but both the MDBA and host organisations indicated this was considered a manageable risk. Because REOs have a high degree of autonomy, the evaluation recommended clarifying the role and expected outcomes of REOs. The evaluation recognised that regional engagement would place more demands on the MDBA and that regional support should match the needs of each region.

The evaluation recommended the existing model be continued with modest expansion. Most importantly, REOs were recognised as a way to increase awareness of stakeholders and regional involvement within the MDBA.

Public consultation

As part of the MDBA's engagement strategy, stakeholders can contact the MDBA directly through email or through a 1800 number. The MDBA also runs engagement activities across the Basin.

During the year the MDBA:

- attended more than 640 meetings, nearly two-thirds of which were held outside Canberra
- received 752 public requests for information via email or phone.

The engagement strategy to support consultation on the SDLAM program in the southern Basin was one of the major engagement initiatives undertaken during the year. The supply measures proposed under the program are proposed by various state government agencies, who are primarily responsible for the public consultation. To supplement this, the MDBA held information sessions with stakeholders in September 2017 before it published details of the proposed SDL adjustments on the MDBA website on 3 October. Stakeholders then had until 3 November to provide input.

During this time the MDBA held:

- community meetings in Albury-Wodonga, Berri, Deniliquin, Finley, Goolwa, Griffith, Kerang, Menindee, Murray Bridge, Pooncarie and Shepparton
- 29 face-to-face meetings
- three public webinars.

The MDBA received more than 3 200 submissions, which raised a large range of views. These were passed on to Basin governments to help them determine the proposed adjustments to SDLs.

More open and transparent community engagement will be crucial to the successful implementation of the SDLAM projects, including an improved level of understanding and acceptance of these projects by the community.

2017 Basin Plan Evaluation, p. 43

Sustainable Diversion Limit Adjustment Mechanism (SDLAM) Technical Workshops

On 28 June 2018, the MDBA held the first of what is planned to be annual workshops with stakeholders to share technical information and build confidence in the projects that have been included in the SDLAM as they are implemented.

Communications

The priorities of the MDBA communications activities included supporting:

- SDLAM
- 2017 Basin Plan Evaluation
- Murray-Darling Basin Water Compliance Review
- use of water for the environment
- river operations
- water resource plans.

Murray-Darling Basin Authority website

The MDBA website received around 30 000 visitors every month during the year. This is an increase from the last financial year.

The website was a key source of information to support the SDLAM project. Using the website, the MDBA was able to explain the adjustment mechanism and work in partnership with Basin governments to communicate clear information about the 36 projects. The MDBA website was updated regularly when parliament was considering the SDLAM.

The 'Rivers. Worth it.' campaign

The highly successful 'Rivers. Worth it.' campaign was a 'hearts and minds' public awareness project. It informed audiences of the value of the Basin Plan and its management arrangements, while building understanding of the science and how it was used to make decisions.

The campaign had three components:

- value of the Basin
- complexities of the Basin
- science of the Basin.

The MDBA developed all communication products in-house. These products included new web content, creative advertising concepts for social media, printed material for engagement activities, and merchandise products. The communications team sent merchandise to caravan parks, visitor information centres, retail outlets, cafes, catchment management authorities, libraries, tourist icons and river ferries.

The following statistics highlight the project's success:

- Digital elements of the campaign reached 700 000 people across Australia.
- Over 500 000 people saw the Facebook posts at least once. The number of Facebook followers grew by 1 000.
- 7 000 users visited the 'Rivers. Worth it.' part of the MDBA website. Around 70% of these users were new to the MDBA website.

2017 Basin Plan Evaluation

The 2017 evaluation was a communications focus for the MDBA. The Communications team produced snapshots and shared them through social media and other channels before the evaluation was delivered. The evaluation received a high number of website visits and social media hits, and broad mainstream media coverage.

Education

During the year, the MDBA continued to develop education material to improve understanding of the Basin and the importance of managing it effectively.

Schools program

The MDBA carried out an audit of resources and an analysis of how the Australian curriculum relates to the MDBA business. The results are being used to develop themed units of work around the topic 'water as a resource', including water use and distribution, water quality, water availability and water security. To support these new products, the MDBA has redesigned the education web pages.

The MDBA also:

- delivered school talks to more than 100 students about water resource management
- attended a SciScouts event during National Science Week 2017, hosting activities for around 1 000 participants over a weekend. SciScouts is an innovative Australian Capital Territory program within the wider Scouts organisation.

Questacon

MDBA staff took over Q-lab at Questacon for a week in March and presented a range of exhibits centred on World Water Day. Over 13 000 members of the general public, including many school students, visited during the week. The MDBA partnered with a group from ACT Waterwatch, who contributed popular exhibits of an endangered green and golden bell frog from Frogwatch, and tanks of macroinvertebrates (such as insects, molluscs and worms).

Supporting the MDBA

The MDBA ran an internal training course and developed communications and educational materials to promote National Reconciliation Week and NAIDOC Week, and managed a successful market research project.

MDBA staff from across many areas of expertise willingly participated in and contributed to the success of the education@mdba program.

Apps

The ever-popular *Run the River* app was updated during the year, and downloaded 5 364 times. This is an 18% increase on last year. The more recently developed *Waterweed Wipeout* app was downloaded 591 times.

For many people the benefits of healthier rivers and wetlands, such as sense of place, wellbeing and local identity, are also important outcomes. The Basin's population has grown substantially in recent years, with many new residents likely to have been attracted by the amenity and lifestyle benefits on offer.

2017 Basin Plan Evaluation, p. 97

Committees

Basin Community Committee

The Basin Community Committee (BCC) is the main community advisory body guiding the management of the Basin. Committee members come from a range of Basin communities and contribute local insight into the concerns of those areas. The BCC also engages with other advisory committees on the implementation of the Basin Plan. Under its terms of reference, the BCC is required to form irrigation, water for the environment and Indigenous water subcommittees.

Advisory Committee on Social, Economic and Environmental Sciences

Members of the Advisory Committee on Social, Economic and Environmental Sciences (ACSEES) contribute their expertise and provide advice to the MDBA on a range of matters relating to the implementation of the Basin Plan.

Independent Assurance Committee

The Independent Assurance Committee was established by the MDBA to provide expert advice on the design, implementation and adequacy of the MDBA's compliance program.

See Appendix A for more information about membership of these committees and their key areas of business focus during 2017–18.

Aboriginal engagement

The MDBA works in partnership with the Murray Lower Darling Rivers Indigenous Nations (MLDRIN) and Northern Basin Aboriginal Nations (NBAN) on water matters across the Basin.

Indigenous Partnerships Program

A review of the Indigenous Partnerships Program, funded by the joint governments, was completed during 2017. The program, coordinated by the MDBA, aims to enhance Indigenous engagement at icon sites along the River Murray. Indigenous facilitators work with Traditional Owners at icon sites to improve the health of the River Murray by making the best use of water for the environment and incorporating cultural knowledge.

The review showed that the program effectively engages Aboriginal people and contributes to cultural, community, socioeconomic and environmental outcomes across the icon sites. This program's contribution includes assisting in the development and monitoring of long-term and annual watering plans for the sites. The reviewers, ARTD Consultants, described it as 'an impressive and effective model that is rarely encountered'.

Under the Basin Plan, environmental water holders must consider Indigenous values when using water for the environment. The Living Murray Indigenous Partnerships Project gives Aboriginal people the opportunity to have a meaningful role in the management of icon sites along the River Murray.

Traditional Owners are increasingly being involved in a range of water planning and management activities. Ongoing commitment and effort is required to ensure outcomes for Aboriginal people are realised.

2017 Basin Plan Evaluation, p. 104

National Cultural Flows Research Project

In June 2018, the findings from the National Cultural Flows Research Project were released with a launch at Old Parliament House in Canberra.

The launch was the culmination of seven years of work to increase knowledge about Aboriginal water interests. A key outcome was the development of an assessment methodology for cultural flows, allowing Aboriginal Nations to articulate an amount of water required for cultural values and other interests in water that they had identified.

The project is thought to be the first robust legislative and policy framework for cultural flows anywhere in the world. The MDBA was the key supporter and source of funding for this project.

Commonwealth commitments

The National Cultural Flows Research Project was one of several initiatives the Australian Government committed to fund in an announcement in May 2018. The project will receive an additional \$1.5 million for two staffing positions for the MLDRIN and NBAN for the next three years.

A program for Aboriginal investment in water entitlements for economic and cultural outcomes will receive \$40 million. The Australian Government also announced funding to support options to refurbish weirs at Wilcannia and Cunnamulla.

The MDBA is required to report publicly each year on how Aboriginal groups have been included in decision-making about planning and use of water for the environment.

Aboriginal Weather Watchers Project

During the year, work continued on the Aboriginal Weather Watchers Project. The project uses 'citizen science' to explore the impact of weather on Aboriginal people's lives. In turn, Aboriginal people share their knowledge about the weather and its impacts, and educate participants about weather data collection and analysis. In the data collection phase, data is gathered from 15 weather stations on Aboriginal-owned land across the Murray-Darling Basin. This is supplemented on a qualitative basis with interviews with Traditional Owners for on-the-ground insights into how the weather affects the local landscape.

International engagement

MDBA staff share information and represent the MDBA internationally. In 2017-18, staff:

- briefed government delegations from China, India, Sri Lanka, Vietnam, South Korea, New Zealand, Bangladesh, Nepal, Malaysia, Japan and Bhutan
- were invited to share their expertise at the 8th Water Forum in Brasilia, Brazil
- presented at and participated in a tour in China for the Melbourne University and Tsinghua University International Course on River Basin Management
- assisted the Government of Myanmar with technical knowledge and skills in hydrological modelling as part of the Ayeyarwaddy Murray–Darling Basin twinning relationship.

Challenges in the year ahead

Challenges the MDBA faces in meeting its goal of strengthening engagement with the community include:

- understanding that Basin governments and stakeholders are experiencing significant change, and adapting to these changes
- improving the Regional Engagement Officer program using findings from the Regional Engagement Officer pilot
- enhancing Aboriginal engagement in all aspects of the Basin Plan
- improving data and knowledge management capabilities so that stakeholders and the wider community have better access to information about the Basin
- expanding community consultation and education opportunities
- finding new ways to communicate the benefits of water for the environment to the community.

Strategic goal 3

Evaluate and review the social, economic and environmental outcomes of the Basin water reforms

Measuring the progress of the triple bottom line outcomes and the impact of the Basin water reforms is fundamental to gaining community confidence in the implementation process and supporting the reforms into the future. Building knowledge on whether the expected outcomes are being achieved allows the MDBA to:

- gain understanding of any unintended consequences
- address problems as these are identified
- adjust plans and programs accordingly

Priorities for 2017-18

- Completing and reviewing the results of the 2017 Basin Plan Evaluation
- Enhancing the environmental, social and economic monitoring and evaluation work

Highlights

- Publishing the 2017 Basin Plan Evaluation, showing that the Basin Plan is largely on track with positive findings on some early environmental outcomes
- Using the 2016 ABS Census data for social and economic outcomes, which enabled analysis of socioeconomic outcomes at a community level
- Completing the development of a whole-of-Basin and multi-year priority strategy for water for the environment, which was used to guide the 2017-18 watering priorities and allows environmental gains made in previous years to be built on
- Delivering a suite of native fish and vegetation projects through the Joint Venture Monitoring and Evaluation program, which produced collaborative and consistent monitoring outputs for use by Basin governments and the Australian Government
- Achieving the Basin salinity target for the ninth consecutive year, and meeting salinity and water quality targets at four sites out of five

Analysis

This year, the MDBA completed and published several comprehensive studies that assessed progress in implementing the Basin Plan as well as early environmental, social and economic outcomes. Some of these studies were based on the results of years of accumulated monitoring and data. This knowledge and data, coupled with the additional evaluation work, provide a solid foundation of information and analysis to support the future implementation of the Plan. This information also assists in adapting the approach to achieve the key milestones due on 1 July 2019, such as the transition from Cap to sustainable diversion limits (SDLs) and the implementation of water resource plans (WRPs). The 2017 Basin Plan Evaluation, while identifying a range of positive achievements against the social, economic, environmental and cultural outcomes, also identified some aspects of implementation that are at risk and will require a focused effort in the year ahead.

Collecting and analysing data in new formats, such as the ABS Census data, allows the MDBA and Basin governments to refine the evaluation and reporting program. Evidence also suggests improving the condition of the Basin's water dependent ecosystems has potential for broad, positive social and economic outcomes.

2017 Basin Plan Evaluation

In 2017–18 the MDBA conducted a Basin Plan Evaluation. The evaluation focused on progress in implementing the Basin Plan and the environmental, social, cultural and economic outcomes so far. It covered all elements of implementation, from water planning and management to the recovery and use of water for the environment. The evaluation looked at the actions of all Basin governments, the MDBA and the Commonwealth Environmental Water Holder in light of their roles in implementing the Plan.

The evaluation identified that progress was lagging in a few important areas, including water resource plans and compliance regimes, and recommended ways to improve the delivery of these and other Basin Plan elements. There were some positive signs that the Basin Plan is working and on track in many areas. Significant achievements include:

- a robust planning and management framework has been established, and this has been used to guide more than 750 watering events across the Basin
- more than 8 000 GL of Commonwealth water for the environment has been delivered since 2008, and there are early signs of environmental recovery, including signs of positive local responses by fish, birds and vegetation
- major obstacles to permanent water trade have been removed
- salinity targets have been met in four locations out of five, with the additional water flowing through the river system helping to flush salt into the Southern Ocean.

The evaluation presented a number of recommendations that the MDBA and Basin governments are addressing. The evaluation process has also been reviewed and the MDBA is taking findings into account when planning for the 2020 and 2025 evaluations.

Social and economic analysis

For 2017-18, the MDBA's social and economic analysis focused on the work for the 2017 Basin Plan Evaluation using the latest Census data. At the Basin scale the observed changes in social and economic conditions are consistent with those expected at this stage of Basin Plan implementation. Despite the recovery of water for the environment, the Basin population and economy have continued to grow.

The MDBA also used the recently released socioeconomic data from the 2016 Census to analyse Basin Plan impacts on 40 irrigation-dependent communities in the southern Basin. The new community-level analysis used changes in employment as a key indicator of community impact. This analysis separates the effects of Basin Plan water recovery on the social and economic conditions in Basin communities from the effects of other drivers of change.

As it was expected that the effect of the Basin Plan would vary substantially from community to community, the most recent analysis considered and identified these variations. They include:

- the scale, pace and method of water recovery
- the influences of temporary and permanent water trade
- changes in employment as a consequence of factors outside the Basin Plan
- the size and economic and demographic diversity of each community
- increasing or decreasing employment over the period examined.

The research also highlighted how the combined productivity benefits, associated with onand off-farm infrastructure investments have offset some of the impacts of Basin Plan water recovery.

Across the 40 communities examined, 12 are likely to have experienced quite small effects on employment from the Basin Plan water recovery. In the other 28 communities, the effects of water recovery range from modest and identifiable (18 communities) to quite large (10 communities).

The evaluation also assessed whether implementation of the Basin Plan is on track in relation to the expected benefits of returning water to the environment.

The evaluation found that the ecological condition of many Basin rivers and wetlands had improved over the last five or so years in response to a general improvement in Basin rainfall and an increase in flows associated with environmental watering. The improvement in environmental conditions is expected to have contributed to improved social and economic outcomes. Benefits include better amenity and recreation opportunities, job and income growth in the tourism sector, and benefits to farming and other consumptive water users from improved water quality.

Tourism statistics show visitor numbers and expenditure in the Basin have increased substantially in the last five years. Tourism is an important part of the Basin's economy. At the end of 2017, expenditure by overnight visitors to the Basin was worth around \$7.5 billion per annum – an increase of \$1.8 billion compared with five years ago.

The importance of amenity and recreation benefits can be seen in property values, which have been increasing in much of the Basin but especially in towns and regions that are closer to rivers and wetlands and have significant or growing tourism industries. The Basin's population also grew by more than 90 000 in the last five years, with many new residents attracted by the amenity and lifestyle benefits the Basin offers.

Overall, the evidence on recent changes in the Basin supports the view, outlined in a range of reports and assessments undertaken before the introduction of the Basin Plan, that there is the potential for many positive social and economic outcomes from improving the condition of the Basin's water ecosystems.

Figure 2.5 Basin social and economic conditions

Social and economic conditions across the Basin are important to understand how the Basin Plan is contributing to the changing social and economic conditions.



TOWNS AND RURAL COMMUNITIES

There have been population, demographic, and employment changes in towns across the Basin. Despite Basin Plan water recovery, the Basin's economy has continued to grow in line with expectations.

Population growth is occurring in larger regional centres, while there is population decline in smaller communities.

At the community level the impacts of water recovery have been different. Some have had little impact, some have adapted and grown, and some have found the transition difficult.



WATER AND PEOPLE

In some places, there are early signs that healthy rivers and lakes can provide benefits to tourism and recreation. These benefits are expected to grow as implementation continues.

ON-FARM INFRASTRUCTURE INVESTMENTS

Investments in on-farm savings have been shared between irrigators and the environment. This has helped minimise the impact of water recovery on irrigated industries and communities, and modernised irrigation networks.





IRRIGATION TRENDS

Despite Basin Plan water recovery, irrigated agriculture has remained a significant economic contributor to the Basin, valued at around \$7 billion per year.



ABORIGINAL OUTCOMES

Traditional Owners are increasingly involved in a range of water planning and management activities to get better social and cultural outcomes from Basin Plan implementation.

Effects of water for the environment from 2017 watering priorities

This year, water managers consolidated the positive environmental outcomes from previous years and delivered water to build system-scale resilience. In a relatively dry year, water managers and river operators delivered large coordinated flows (especially in the southern Basin) to align delivery of water for the environment with consumptive demands.

Highlights for the year include:

- over 220 GL of water for the environment reconnected numerous wetlands in the mid-Murrumbidgee – a site which had been listed as a Basin-scale priority for several years
- about 182 GL of water for the environment delivered in Barmah-Millewa Forest, in conjunction with operational water, triggering growth in Moira grass, a threatened species, and providing connectivity benefits through return flows – which also triggered a bird breeding event
- approximately 112 GL was pumped into Hattah Lakes, capitalising on previous watering, and enabling the lakes' water flows to reach black box trees that had not been inundated since 1993
- up to 75 GL of water for the environment was used in the Macquarie Marshes to support recruitment, improve the condition of wetland vegetation and provide movement opportunities for fish through the Macquarie River
- in the Lachlan, water was provided through anabranches to stabilise water levels and support successful Murray cod nesting, building on outcomes from high flows in 2016-17
- in the Border Rivers, where the Dumaresq and New South Wales Severn rivers were close to cease-to-flow conditions, New South Wales and Commonwealth water managers applied water for the environment to support native fish
- in the Severn, an environmental pulse was sent through the system to promote Murray cod breeding, while in the Dumaresq base flows were maintained using 3.2 GL of water to maintain habitat access for cod
- in the Gwydir, early-season productivity was promoted through a 10-day flow pulse in late winter. Further flows were provided in spring, with stable base flows aiming to promote fish movement along the upper stretches of the Gwydir River
- in the Lower Darling, water for the environment has made more habitats available for the juvenile Murray cod that spawned in 2016-17, increasing their chances of survival. After another successful spawning event in 2017-18, base flows were maintained to support habitat condition, food production and dispersal of young fish
- in South Australia, water for the environment has contributed to providing habitat at temporary wetlands along the River Murray and maintaining flows through the barrages. As these flows decreased over summer, additional water for the environment supported productivity and helped migratory fish move through the system.

Significant efforts to monitor and evaluate the environmental condition of the Basin are being made by governments and community groups. There are still many areas of this complex system that Basin governments need to know more about to continually become more efficient and effective with the use of environmental water.

2017 Basin Plan Evaluation, p. 36

The 2017 Basin Plan Evaluation reported positively on the outcomes against water for the environment priorities, noting that, so far, the Basin-wide environmental watering strategy, long-term watering plans, and annual Basin-wide and state watering priorities have been prepared or published within the legislated or agreed timeframes. The report further noted that each year, state and Commonwealth environmental water holders are consistently using these strategies and plans to inform their environmental watering activities. The outcome has been that, while the number of watering events has not changed much, the volume of water delivered in each watering event has increased as a result of improved coordination between the water holders.

Joint investment in monitoring and evaluation

In its third year of operation, in 2017–18 the Joint Venture Monitoring and Evaluation program successfully delivered a series of native fish and vegetation projects that produced collaborative and consistent monitoring outputs for Basin states and the Australian Government to use for evaluation and reporting. Work was completed to ensure that these, and future joint projects, align with common objectives across jurisdictions, with clear links to outcomes listed in the MDBA's Basin-wide environmental watering strategy.

The projects delivered in 2017-18 were:

- building the capacity to monitor fish movement by establishing an acoustic array, developing an acoustic database, buying acoustic and passive integrated transponder (PIT) tags, and establishing a PIT reader at Burtundy Weir on the Lower Darling
- establishing a fish genetics project to enable genetic testing of whether fish are spawned in the river or from hatcheries
- completing a Basin-wide water microchemistry map to trace fish movements throughout the Basin
- collecting data to contribute to the development of the stand condition assessment tool
- determining a prioritised list of sites for future data collection to develop the stand condition assessment tool through gap analysis.

In addition to the successful delivery of projects, the Joint Venture Steering Committee has also developed its investment plan for 2018–19. This will build on the 2017–18 investments, including for fish and vegetation priorities, and ensure the availability of consistent and collaborative monitoring outcomes for the 2020 evaluation and reporting requirements.

Watering the trees is good for the bees and almonds

The evaluation report addendum noted that terrestrial and aquatic ecosystems are interdependent and that farming enterprises of all types rely on a range of ecological processes. Many of these processes are partially or directly connected to the functioning of the rivers and wetlands in the Basin.

Commercial pollination services are essential for almond production in the Basin. This industry has grown very quickly over the last decade and is likely to expand further. At \$464 million, almonds were Australia's most valuable horticultural export in 2016–17. The almond industry is mainly located along the River Murray in the New South Wales Riverina, north-west Victoria and the neighbouring South Australian Riverland. Almond orchards currently use about 180 000 hives during the pollination season, which are mainly supplied by beekeepers based in New South Wales and Victoria.

According to industry sources, close to half of the beekeepers in Victoria and southern New South Wales depend on the floral resources of river red gums to maintain honey production and to keep their bees healthy following pollination services. The pollen that comes from red gums is also of exceptionally high quality, and contributes to honey production and to the overall business and earning capacity of apiarists.

In interviews conducted as part of the research for the evaluation, apiarists reported that more frequent flowering of river red gums in recent years had boosted honey production and assisted with maintaining the health of their bees and their capacity to provide commercial pollination services. These anecdotal reports are supported by MDBA assessments of the condition of river red gum forests in the lower Murray region.

The evaluation found that, while there is evidence of environmental water contributing to improved pollination services and honey production in the lower Murray region, further research is needed to quantify the contribution of environmental water to commercial pollination services. The evaluation suggested that this work should be done in conjunction with apiarists to understand the effects of both the volume and timing of environmental flows to support the flowering ecology on which honey bees and other pollinators depend.

Social and economic benefits of environmental watering, MDBA, December 2017, pp. 27-31

Basin water quality and salinity

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

- measures under water quality management plans in water resources plans (WRPs)
- flow management actions
- long-term Basin salinity planning and management (as per the Basin Salinity Management (BSM) 2030 Strategy – see Strategic goal 4).

The MDBA continues to support Basin governments to prepare water quality management plans as part of their WRPs. These plans must include measures to achieve water quality objectives aimed at ensuring the health of water-dependent ecosystems, usable irrigation water, and water for recreational use. The plans must also be consistent with relevant national water quality guidelines.

The impact of increasing salinity has long been recognised as a significant issue in the Murray–Darling Basin. The MDBA continues to coordinate the response to the salinity threat through partnership with the Australian Government and Basin governments (see also Strategic goal 4). Consistent effort by partners over the past 29 years (under various salinity strategies) has helped achieve the Basin salinity target at Morgan in South Australia. This target is to maintain salinity below 800 EC (electrical current) for 95% of the time, and it has had a positive impact on river salinity levels. Throughout 2017–18, salinity at Morgan was generally below 466 EC.

Period	Time interval	Average	Median	95th percentile	peak	% time >800 EC
1 year	July 2017-June 2018	359	370	438	466	0
5 years	July 2013-June 2018	327	315	509	732	0
10 years	July 2008-June 2018	350	336	552	732	0
25 years	July 1993-June 2018	444	421	724	1087	2

Table 2.2 Summary of salinity levels (EC) recorded at Morgan, South Australia*

* When hydrographically corrected data (mean daily values) were not available, operational data (daily readings taken at about 8 am) were used.



Figure 2.6 River Murray salinity at Morgan and impact of management strategies

Challenges in the year ahead

The evaluation and reporting program will need ongoing refinement and improvement to support the MDBA and Basin governments in assessing the progress of implementing the Basin Plan as the changes from Cap to sustainable diversion limits and accreditation of water resource plans occur from 1 July 2019. The work completed in 2017–18 forms a good base from which to assess results beyond 2019 and for preparing for the 2020 evaluation. Data from technical and modelling studies will continue to be collected and refined to support robust assessments after the water resource plans come into effect.

The MDBA aims to become a centre of excellence for knowledge on and science of the Murray–Darling Basin, and to collect and collate the best available data, knowledge and analysis to inform and support decisions. The MDBA will continue to maintain and build on a deep understanding of the social, economic, hydrological and ecological conditions of the Basin.

The MDBA and its partners will use this understanding to guide the implementation, monitoring, evaluation and reporting of the Basin Plan and to support continuous improvement.

Strategic goal 4 Operate the River Murray system efficiently for partner governments

The MDBA, in partnership with Basin governments, will ensure the efficient, cost-effective and transparent governance and delivery of the joint programs to safeguard the sustainable use of the Basin's water resources in a manner that protects the environment and benefits the communities and industries that depend on it

Priorities for 2017-18

- Building, operating, maintaining and improving River Murray system assets to achieve contemporary best practice standards
- Improving and maintaining a healthy river system through the implementation of joint natural resource management programs for partner governments

Highlights

- Continuing to plan and direct the operation of the River Murray to ensure the equitable and efficient sharing of water resources
- Transparently determining state water entitlements in accordance with the Murray-Darling Basin Agreement
- Operating the River Murray system to maximise water availability for all entitlement holders through a hot summer and autumn, including the hottest April on record
- Completing a geotechnical assessment of river banks along the Mitta Mitta River
- Largely completing the first phase of a review of water for the environment trials
- Updating and testing flood management manuals
- Developing, with the Victorian Government, an online tool that allows allocation trades subject to the Barmah Choke restriction to be automatically processed

- Constructing a new fishway at Tauwitchere Barrage, allowing fish to move between the Coorong and Lake Alexandrina
- Running a community engagement process involving public meetings and a formal submission period to consider a trial erosion management plan for the River Murray in the Corowa to Ovens River reach
- Receiving Ministerial Council agreement to the amendments to Schedule B to the Murray–Darling Basin Agreement
- Completing the inaugural audit under the Basin Salinity Management 2030 strategy (BSM2030)
- Maintaining River Murray water quality parameters for recreation, irrigation and drinking water needs within acceptable limits, with no major incidents throughout the year
- Publishing the *lcon site condition* report, which draws on over 10 years of ecological monitoring at key sites along the Murray

Analysis

The river operations and programs were managed in accordance with the Murray–Darling Basin Agreement and the Service Level Agreement between the Murray–Darling Basin Ministerial Council and the MDBA. The MDBA took into account seasonal and environmental factors influencing the River Murray System and the agreed priorities for the year.

After a wet year with significant flooding, the storages at the start of 2017-18 were reasonable, with 5 650 GL mostly held in Hume and Dartmouth. The healthy levels in these upper system storages provided relief from the dry winter and spring that followed, and supported reasonable opening allocations in New South Wales and Victoria, and a 100% allocation in South Australia.

August and December 2017 were wetter than previous months, providing some increased stream flows, which helped fill Lake Victoria and boosted water allocations. Although Hume and Dartmouth reservoirs did not fill, a small period of unregulated flows was declared in the lower Murray reaches in December because of high inflows from the Goulburn and Murrumbidgee rivers. At the same time, the storage level in Menindee Lakes fell below 480 GL, signifying the end of the MDBA's access to the lakes as the access threshold had been reached.

In late January, the River Murray downstream of Nyah experienced a long period of heatwave conditions, triggering a spike in demand. To ensure the river had enough water for this spike, the MDBA, in collaboration with Basin governments, enacted extra measures to increase flows in this reach.

Meeting large demands downstream of the Barmah Choke in summer and autumn continued to be a major challenge. These demands were met totally from the Murray and Goulburn sources, as there was no access to water in the Menindee Lakes, no access to Murray Irrigation Limited infrastructure to boost flows around the choke, and no ability to call on water from the Murrumbidgee Inter-valley Trade Account.

Since dry conditions continued into autumn, sustained high releases downstream of Yarrawonga and in the Goulburn River were maintained, also assisting to manage Lake Victoria towards the end-of-season target volume.

At the start of May, the MDBA began to draw down Lake Mulwala to reduce the build-up of an invasive water weed. Autumn sampling in the lake confirmed an increase in the growth and spread of the aquatic weed Egeria densa. To help control the weed, the lake was lowered through May and into June. This exposed the weed to drying and frost, which has proven to be an effective way to manage its spread. The water released from the drawdown was recaptured in Lake Victoria. In September 2017, the MDBA provided the Annual Summary of River Operations report to the Independent River Operations Review Group (IRORG). The report addressed performance against the objectives and outcomes for river operations in the River Murray system set by the Basin Officials Committee. The MDBA considers that in 2017-18 it met the objectives of maximising water available to the southern Basin states, minimising losses and delivering state water entitlements effectively and efficiently. Preliminary discussions with the IRORG indicate that the MDBA can expect to receive a positive independent report when the independent review is completed. This was not available at the time of finalising this annual report.

The MDBA's ongoing inspection program ensured that all major infrastructure was managed in accordance with contemporary engineering practices. The routine maintenance operations generally continued as planned throughout the year.

The River Murray water quality parameters were also met with respect to recreation, irrigation and drinking water needs. All results were within acceptable limits.

Rainfall, temperature and stream flows

The 2017–18 water year was hot and dry. Mean temperatures across the Basin were above average. In April, records were broken for daytime temperatures across the Basin.

Rainfall in the Basin for 2017-18 was below average to very much below average, with isolated patches of lowest-on-record rainfall in the northern Basin. Areas hardest hit were in central and western New South Wales and southern Queensland.

Total inflow to the River Murray system during 2017–18 was about 4 160 GL, which places it in the driest 12% of years on record. River Murray system inflows include inflows to Menindee Lakes, but exclude releases from the Snowy Mountains Scheme, inter-valley trades and managed water for the environment inflows. Inflow to Menindee Lakes during 2017–18 was effectively zero.



Figure 2.7 Mean temperature deciles from 1 July 2017 to 30 June 2018

Source: Bureau of Meteorology



Figure 2.8 Murray-Darling rainfall deciles, 1 June 2017 to 31 May 2018

Source: Bureau of Meteorology


Figure 2.9 Daily River Murray system inflows for 2017–18, excluding Snowy, Darling, inter-valley trade and environmental inflows

Available water resources

The MDBA active storage is the sum of the water stored in Dartmouth, Hume and Lake Victoria, excluding dead storage, plus any water in Menindee Lakes that is deemed a shared River Murray resource. At the start of July 2017, the MDBA active storage volume was 5 650 GL (66% capacity), spread across these four storage areas. This was about 100 GL above the long-term average storage level for that time of year.



Figure 2.10 MDBA active storage, 1 June 2000 to 30 June 2019 in Dartmouth and Hume Reservoirs, Lake Victoria and the Menindee Lakes

The MDBA active storage peaked in late September 2017 at 6 650 GL (77% capacity) before declining to 4 900 GL (57% capacity) by 30 June 2018. The MDBA could not call on water from the Menindee Lakes storage after mid-December, when the lake's storage volume fell below the 480 GL threshold for its use as a shared Murray system resource.

State water allocations, diversions and carryover

Water availability was high across the southern Basin at the beginning of the water year following high flows in 2016-17 that raised the major storages. Opening and closing allocations in 2017-18, as announced by state water agencies, are shown in Table 2.3.

	Opening allocation, %	Closing allocation, %
South Australian entitlement holders	100	100
Victorian Murray high reliability water shares	66	100
Victorian Murray low reliability water shares	0	0
Victorian Goulburn high reliability water shares	36	100
Victorian Goulburn low reliability water shares	0	0
NSW Murray high security water shares	95	95
NSW Murray general security water shares	17	45
NSW Lower Darling high security water shares	100	100
NSW Lower Darling general security water shares	100	100
NSW Murrumbidgee high security water shares	95	95
NSW Murrumbidgee general security water shares	17	45

Table 2.3 Opening and closing allocations in 2017-18

Total water use in the River Murray system for 2017–18, including use in the Lower Darling River, was estimated at 3 250 GL. By comparison, the total water use for 2016–17 was estimated at 2 950 GL.

The high water availability in 2017–18 and the persistent hot and dry conditions drove high demand.

Total water use reported here includes water diverted from the system for consumptive and environmental use, and water for the environment used along the River Murray itself, in the Lower Lakes and over the barrages.

Operating the River Murray system

The MDBA directs the river operations in the River Murray system in accordance with the objectives and outcomes set by the Basin Officials Committee. These are based on the themes of water storage, delivery and accounting, assets, people and communities, the environment, and information and communication.

Upper Murray

Dartmouth

Storage volume increased during 2017–18 and inflows peaked towards the end of August after widespread rainfall.

Storage volume at 1 July 2017	3 015 GL (78% capacity)
Storage volume at 30 June 2018	3 430 GL (89% capacity)
Inflows for 2017-18	574 GL (82% AEP*)
Peak inflow – August 2017	17 000 ML/day

Table 2.4 Storage and inflows at Dartmouth reservoir

*AEP – annual exceedence probability

No bulk transfers were required from Dartmouth to Hume given that Hume reservoir remained relatively high throughout the irrigation season. The MDBA monitored rainfall and stream flow forecasts provided by the Bureau of Meteorology and found that higher releases from Dartmouth for airspace management were not required.

AGL released entitlement water in July and September 2017 and the MDBA subsequently increased the release to improve lower Mitta Mitta River water quality and ecosystem function.

From mid-December, the release from Dartmouth was increased to 300 ML/day, above the normal minimum of 200 ML/day, to improve access for entitlement holders along the Mitta Mitta River downstream of the dam.

Hume

Table 2.5 Storage and inflows at Hume reservoir

Storage volume at 1 July 2017	2 116 GL (70.4% capacity)
Storage volume peak at 24 September 2018	2 744 GL (91.3% capacity)
Storage volume at 30 June 2018	1 296 GL (43.1% capacity)
Inflows for 2017-18	1 195 GL (88% AEP*)
Inflows for 2016-17	4 095 GL in 2016-17 (14% AEP)
Long-term average inflow	2 541 GL

*AEP – annual exceedence probability

Hume reservoir started with a relatively high storage level but as demands exceeded inflows in late September, the storage volume began to fall.

Releases from Hume reservoir to meet environmental, irrigation and other system demands during 2017–18 totalled 3 147 GL. The hot, dry summer and autumn drove persistent high releases from Hume well into April. By May, releases from Hume were reduced towards minimum to facilitate the drawdown of Lake Mulwala.

Mid-Murray

The release from Yarrawonga Weir remained below channel capacity in July and early August. During this period, environmental deliveries from Hume boosted winter base flows downstream of Yarrawonga. Several Barmah–Millewa Forest regulators were opened from 10 July 2017, which also provided low-level winter inundation of the Barmah–Millewa Forest.

In late August, a large natural inflow event from the Ovens and Kiewa rivers resulted in the release at Yarrawonga increasing to a peak of 34 000 ML/day and remaining high for a week. Water for the environment delivered from Hume reservoir was later used to slow the recession until flows returned to within channel capacity downstream of Yarrawonga from 2 September. With the forest regulators still open, water for the environment delivered from Hume continued to support winter and spring water activities, including continuation of the low-level inundation of the Barmah-Millewa Forest.

In early October, the MDBA began bulk transfers from Hume reservoir to Lake Victoria, partially supported by water for the environment deliveries from Hume until early December.

Unprecedented rainfall was forecast for the catchment upstream of Yarrawonga in early December. To prepare, the MDBA increased the release from Yarrawonga to create airspace in the weir pool. Rainfall and inflows were much lower than forecast. The delivery of water for the environment continued until late December, when the regulators to the forest were shut and the release from Yarrawonga reduced to within channel capacity.

Goulburn

The total flow in the Goulburn River passing McCoys Bridge for 2017–18 was 913 GL, made up of minimum flows, water for the environment deliveries, catchment runoff and inter-valley trade (IVT) deliveries.

Water for the environment deliveries totalled 344 GL, almost half of which were delivered as a flow pulse in July that peaked at 8 500 ML/day at McCoys Bridge, before continuing down the Murray to South Australia. Water for the environment was also used at other times to maintain higher base flows when IVT was not being delivered.

Following record-breaking rainfall, the Goulburn River peaked at just over 15 000 ML/day in early December. New daily rainfall records were achieved in Echuca and Euroa, where 123 mm and 149 mm respectively fell in a 24-hour period.

As conditions dried and temperatures rose at the start of 2018, the delivery of Goulburn IVT began, lasting until late April and reaching a record volume (305.4 GL) for the Goulburn system.

Edward-Wakool

The Edward escape was operated to meet the Wakool main canal demand periodically throughout the water year to manage the Lake Mulwala level and to increase the water available downstream of the Barmah–Choke.

WaterNSW and the MDBA continued to negotiate with Murray Irrigation Limited (MIL) to use MIL infrastructure to transfer water around the Barmah-Choke. An agreement between MIL and WaterNSW to use the Edward escape to pass water for Wakool Canal water users continued during 2017–18.

From October until February, Gulpa Creek offtake passed 500 ML/day, which is above the normal maximum operating level of 350 ML/day, for an environmental watering action in the Reed Beds wetland. Outside this period the Gulpa Creek flow rate was below 350 ML/day.

Murrumbidgee

Flow in the Murrumbidgee River past Balranald totalled 450 GL in 2017-18, compared to 2 500 GL in 2016-17.

The Murrumbidgee IVT account balance remained between 6 GL and 0 GL during the year. Therefore the MDBA was unable to call on any IVT from the Murrumbidgee River storage to meet Murray system demands.

Between 2013 and 2016, almost 200 flow events were delivered to provide benefits for Basin waterbirds. In total, over 2 600 GL of environmental water has specifically been targeted to provide foraging and roosting opportunities for waterbirds. Other flows delivered to support ecosystem function, fish and vegetation will have also indirectly benefited birds by improving food availability.

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Lower Murray

Following widespread rainfall in early December, the flow at Euston peaked around 20 370 ML/day on 20 December 2017, but fell to the minimum flow of 4 540 ML/day just a month later.

Downstream of the confluence of the Murray and Darling rivers, the flow at Wentworth followed a similar pattern:

- peak flow of 19 450 ML/day reached in late December
- minimum flow of 2 070 ML/day reached in late January
- flow averaged 8 300 ML/day.

Menindee Lakes, Lower Darling River and Great Darling Anabranch

There was no inflow to the Menindee Lakes system in 2017–18, in contrast to 2016–17, when there were high total inflows of about 1 811 GL (29% AEP). On 1 July 2017 the total combined volume of the lakes was 770 GL. Without inflows, the storage volume steadily decreased.

From the beginning of the water year, environmental water holders increased the release at Weir 32 to 400 ML/day, double the minimum operational requirement of 200 ML/day. It remained at this flow rate until late September, when it was increased to over 400 ML/day to help meet system demands and fill Lake Victoria.

Following an increase in system demands in October the release at Weir 32 was lifted to 1 800 ML/day for a week but was then reduced in response to forecast tributary improvements downstream of Hume which would help meet targets for Lake Victoria.

In early November, the state water managers and the MDBA, together with the Commonwealth Environmental Water Holder (CEWH), proposed further reducing the MDBA-directed operational release for ecological reasons. The CEWH underwrote the additional evaporative loss and reduced resource to the Murray system as a result of the reduced releases.

Substantial rainfall over the Murray River in mid-November and tributary inflows reduced the need to call on water from Menindee Lakes. The MDBA requested that operational releases from the lakes be reduced to the minimum flow for November of 300 ML/day, but environmental water holders requested an extra 400 ML/day from the lakes. Fish ecologists advised that flows of 700 ML/day in November and early December would be optimal for supporting Murray cod in the Lower Darling River. As the lake volumes fell, releases at Weir 32 were reduced in a recession pattern to reach a minimum of 200 ML/day when the combined volume of the Menindee Lakes reached 480 GL. The MDBA can no longer call on water from the lakes until the volume once again reaches 640 GL.

Lake Victoria

Transfers from Hume reservoir to Lake Victoria commenced at low rates within channel capacity in July and continued in September, October and November. Improved tributary inflows from widespread rainfall in December assisted in filling Lake Victoria ahead of the peak irrigation season. Subsequently, 22.2 GL of South Australian deferred storage in Lake Victoria and the pro rata portion of the planned deferral volume for December (19.6 GL) was delivered to South Australia in December. The storage level at Lake Victoria peaked at 674 GL (99.7% capacity) in late December, and a small period of River Murray unregulated flows was announced, as excess water moved through the system to South Australia.

In April 2018, the MDBA sought approval from the Murray–Darling Basin Ministerial Council to delay the normal end-of-season target volume of 350 GL for Lake Victoria to the end of June. The main driver for seeking approval to relax the end-of-May minimum reserve volume for Lake Victoria was to make better use of the 100 GL of water from the Lake Mulwala drawdown, which was due to arrive at Lake Victoria in June. The delay to the end-of-season target allowed for an earlier reduction of the near-channel capacity flows in the choke and the lower Goulburn River. Lake Victoria storage volume reached 350 GL by the end of June 2018.

Flow to South Australia

The total annual flow across the South Australian border, including water for the environment and traded water, was 2 700 GL (76% AEP) in 2017–18. This comprised South Australia's full entitlement, water for the environment deliveries and any unregulated flows and trades, minus any water deferred by South Australia. This is lower than the 9 250 GL in 2016–17, to which unregulated flows made a major contribution.

Lower Murray and barrage operations in South Australia

Overall barrage releases this year totalled 952 GL this year. This was much less than in 2016–17, a year characterised by widespread flooding. A substantial volume of water for the environment was delivered to South Australia in 2017–18, which contributed to release at the barrages.

At the start of the water year, the level of the lower lakes was 0.67 mAHD (metres to Australian Height Datum), and reached a peak of 0.85 mAHD in early December. The level of the lower lakes was steadily lowered to reach a target level of 0.55 mAHD. The delivery of 150 GL of water for the environment traded for immediate delivery from Lake Victoria was used to maintain barrage releases throughout this time. The CEWH release was designed to continue until the lake levels increased to 0.536 mAHD or until the full 150 GL was delivered – whichever occurred first. The original water for the environment delivery target of 0.55 m was adjusted down slightly due to entitlement deferral in April.

Dredging of the Murray Mouth continued throughout the water year, maintaining the targets for connectivity.

Improved ecological flows in the Lower Darling

To operate the River Murray system efficiently, the MDBA often has to draw on water from downstream storages in the Menindee Lakes system instead of accessing water in upper storages.

Water in the Menindee Lakes is available to boost the River Murray until the volume of the lakes drops to 480 GL. Because the volume was higher at the start of the year, the MDBA drew on this resource – a decision triggered by the lack of decent winter and spring rains.

However, sometimes the water needs for different uses can conflict. The operational requirement for water release peaked at 1 800 ML/day in mid-October, and then reduced to 1 000 ML/day because the tributary inflow was expected to improve downstream, thereby meeting the storage targets for Lake Victoria.

Advice from fish ecologists warned that flow rates greater than 700 ML/day in the Lower Darling during November and December – typically the nesting time – are disruptive to native fish.

To enable flow rates to be adjusted for better ecological outcomes, the Basin governments, the MDBA and the CEWH came to an arrangement. The CEWH agreed to use some of its water portfolio in the Murray to offset the effect of the reduced flow on the Murray entitlement holders, in exchange for lower flow rates in the Lower Darling. A flow rate of 700 ML/day was maintained until the lakes reached 480 GL, after which the release from Weir 32 was reduced to a minimum.

Improving river operations

How the MDBA operates and manages the River Murray system is set out in two documents:

- 1. The governance and operational framework for River Murray system operations is set out in the Murray-Darling Basin Agreement.
- The objectives and outcomes for river operations in the River Murray system Objectives and Outcomes document (O&O document) provides a transparent and adaptable decision-making framework for operations. It is produced by the Basin Officials Committee and is available on the MDBA website.

The MDBA works closely with river operators and Basin government agencies to update the O&O document, by developing or amending specific objectives and outcomes to reflect contemporary practice. Work in 2017–18 included:

- continuing to assess risks to channel capacity and delivery shortfalls in the River Murray system and identify potential mitigation measures
- continuing to document evidence-based practices that improve environmental outcomes
 of river operations, such as a workshop on lessons learned at Lake Victoria and Rufus
 River during the 2016 hypoxic blackwater event, and the development of 'event ready'
 strategies for the future
- continuing to implement pre-requisite policy measures on behalf of Basin governments in the River Murray System by 30 June 2019
- completing a geotechnical assessment of river banks along the Mitta Mitta River to inform
 options for transferring water between the Dartmouth reservoir and the Hume reservoir
 to minimise riverbank erosion
- continuing to develop strategies and plans to combine seasonal variability in weir pool levels with water for the environment and river operations requirements and meet local, whole-of-reach and system-wide outcomes
- largely completing the first phase of a review of water for the environment trials that have been run every year since 2010–2011
- updating flood management manuals and testing them during flood training exercises with river operators
- responding progressively to recommendations of the Independent River Operations Review Group arising from its annual review of river operations in the River Murray system
- providing assistance across a range of projects, led by the MDBA and Basin governments, such as the water trade review, River Murray Increased Flows, the sustainable diversion limits adjustment mechanism and the review of Basin Plan reporting requirements for water quality
- supporting projects such as the National Carp Control Project
- liaising with the Bureau of Meteorology.

The Basin Officials Committee undertook an annual review of the O&O document in May 2018 and made only minor amendments.

Critical human water needs

The Murray–Darling Basin Agreement ensures that the southern Basin states set aside and deliver water for critical human water needs. It also establishes processes for managing periods when normal water-sharing arrangements would not provide enough water for critical human needs.

The Basin Plan sets triggers, or tiers, for changing water-sharing arrangements.

Tier 1 arrangements are normal water-sharing arrangements. Tier 2 arrangements apply during periods of very low water availability. Tier 3 arrangements are for extreme and unprecedented conditions.

In 2017–18, Tier 1 water-sharing arrangements were in place, meaning that critical human water needs were met, as well as conveyance water needs to ensure sufficient flow in the river system to meet those needs.

Maintaining and improving River Murray infrastructure

The River Murray operations assets include:

- Hume and Dartmouth dams
- Lake Victoria
- 14 weirs (with 13 locks)
- barrages at the Lower Lakes
- 13 salt interceptions schemes
- a range of regulating structures.

The assets are jointly controlled by the Australian Government and the governments of New South Wales, Victoria and South Australia. The governments' control is exercised through the Murray–Darling Basin Ministerial Council and the Basin Officials Committee. The MDBA manages the River Murray Operations assets by agreement of the four asset controlling governments, as set out in the Murray–Darling Basin Agreement.

Basin governments appoint state constructing authorities to investigate, design, construct, operate, maintain and renew River Murray operations assets. These authorities are:

- WaterNSW: The New South Wales Department of Industries Water (DOI Water) carries out work relating to salt interception schemes, river improvement, water quality monitoring, and land management
- Goulburn-Murray Water, Victoria
- the South Australian Minister for the River Murray, including the operating agents South Australian Water Corporation (SA Water) and the then South Australian Department for Environment, Water and Natural Resources (Department for Environment and Water since 1 July 2018).

A strong relationship has developed between the MDBA and state constructing authorities, ensuring that maintenance and renewal is proactive, decision-making is generally by consensus, and issues are raised sufficiently early to enable timely resolutions.

Environmental Works and Measures Program

The Environmental Works and Measures Program builds and operates water management structures that deliver and manage water for the environment at important target sites. Major structures have been constructed and tested at six locations to help deliver water to environmentally significant areas. In 2017, a major watering event (i.e. a controlled release of water) was completed at Hattah Lakes, using the works constructed under the Environmental Works and Measures Program. This watering event enabled commissioning activities for the works. Routine maintenance and operations were completed across the six sites.

Complementary environmental works

The MDBA also takes part in other environmental works programs that affect River Murray operations assets. Work has progressed on the \$155 million South Australian Riverland Floodplains Integrated Infrastructure Program (SARFIIP), which is funded by the Australian Government. This program will improve the health of the River Murray below locks 4 and 5. Structures built under SARFIIP will use the level of the weir pools to direct water onto the floodplains. In 2017-18, construction of the Bank J regulator was completed. Design work was also completed and construction contracts were awarded for the Pike floodplain inundation and salinity management projects. Design work for the Katarapko inundation project was also finished.

Improving the physical assets base

During the year the MDBA conducted the ongoing maintenance inspection program generally as was planned. All the assets were maintained in accordance with contemporary engineering practice, and improvements made where possible.

Hume Dam

Detailed seismic study of the embankments continued throughout the year to better understand the dam's performance under extreme earthquake loading. These investigations build on the work of previous years in examining the characteristics of extreme rainfall events and flood risk at Hume Dam, and will ultimately inform the priority and extent of further upgrade works.

Dartmouth Dam

The annual safety inspection of Dartmouth Dam in June 2018 confirmed that the dam and associated infrastructure are in good condition, well maintained and performing as expected. Inspections are carried out annually at each of the MDBA's major dams in accordance with guidelines issued by the Australian National Committee on Large Dams.

Lake Victoria

The protection of cultural heritage in accordance with the Aboriginal Heritage Impact Permit continued to be a major focus of water management and on-ground works at Lake Victoria in 2017-18. The operation of the lake is guided by the Lake Victoria Operating Strategy. The strategy encourages annual variability in lake levels to promote the growth of spiny sedge and other riparian vegetation, which stabilises the shoreline and helps protect cultural heritage sites.

The growing involvement of the Barkindji Maraura Elders Council members enhanced the management of Lake Victoria and surrounding properties. The council works with the SA Water cultural heritage team and New South Wales DOI Water management personnel. Surveys and inspections of the foreshore area found ongoing issues with soil erosion in some areas and significant vegetation growth in others. The MDBA and program partners will seek a new Aboriginal Heritage Impact Permit to replace the existing one, which expires in late 2020. The Lake Victoria Operating Strategy continues to guide the operations of the lake to maximise water storage and minimise any harmful effects on Aboriginal cultural heritage.

Locks and weirs

Planned maintenance at each lock and weir continued this year without major issue. Maintenance activities included lock refurbishment works at Lock 26 (Torrumbarry) and Lock 3 (Overland Corner). Works continued to repair erosion resulting from the 2016 high waters.

Hume to Yarrawonga river reach

A community engagement process involving public meetings and a formal submission period was held from late 2017 to early 2018 to consider a trial erosion management plan for the River Murray in the Corowa to Ovens River reach. The plan proposes that wake-enhancing boating be restricted within the reach. New South Wales Roads and Maritime Services will implement the plan, ideally to maintain boating numbers while removing the erosive effects of large wakes.

Erosion breakouts into the Millewa Forest were repaired and further works investigated to lessen the detrimental effects of long-term inundation to the forest and to ensure that the flow of water through the Barmah Choke could be maintained efficiently. The reliance on the River Murray for flows for requirements downstream of the Barmah Choke will continue to place stress on the natural levee of the Barmah–Millewa Forests.

Dredging the Murray Mouth

In conjunction with the South Australian Government, the MDBA routinely monitors the build-up of sand at the Murray Mouth. Tides, waves and currents cause natural movement of sand around the mouth of the River Murray. Over time, and as flows through the mouth have reduced due to river regulation and upstream extraction of water, the sand builds up, restricting the flow and reducing the tidal exchange of water between the sea and the Coorong. The Coorong ecosystem relies on cooler oxygenated water coming in from the sea on high tides. It takes a very large flood to scour significant amounts of sand from the mouth back out to sea.

In late 2014, so much sand had deposited in the river mouth that, without intervention, the connection between the Coorong and the sea would drop below the level needed to maintain a healthy system. It was also possible the mouth would close altogether.

Dredging began in January 2015 and two dredges have operated for most of the time since then. More than 3.1 million m³ of sand has been dredged from the mouth and pumped to the beach, where it is dispersed by the breaking waves. This has helped to maintain the exchange of water between the Coorong and the sea above the target level.

Reducing bank erosion along the Mitta Mitta River

Throughout the year a program of bank stabilisation, revegetation and fencing continued along the Mitta Mitta River. This program seeks to mitigate the effects of river regulation caused by the operation of Dartmouth Dam. This work was funded through the joint venture program overseen by the MDBA with on-ground delivery coordinated by the North East Catchment Management Authority.

Inspecting the assets – Senator Collings trophy

Each year, MDBA senior staff inspect all River Murray operations assets to assess their operational performance. Assessment criteria include:

- condition of the assets
- operations and maintenance documentation
- workplace health and safety documentation and performance
- achievement of the works program set for the year
- expenditure against the budget.

The Senator Collings trophy has been awarded annually since 1943 to the team that has the most effectively maintained site on the River Murray. The award was instituted by Senator JS Collings, the Minister for the Interior from 1941 to 1945 and President of the River Murray Commission at the time.

The award is keenly contested along the length of the river. The major dams and barrages have only been eligible for the award since 2003. The 2017 winner was Dartmouth Dam. The award recognised the efforts of local staff in renewing their public spaces, several years of upgrades to their works and exemplary maintenance of the asset. Dartmouth Dam is managed by Goulburn-Murray Water as the state constructing authority.

River Murray water quality

The River Murray water quality monitoring program was established in 1978 under the Murray–Darling Basin Agreement. In partnership with Basin governments, the MDBA implements this program, which covers some 2 500 km of the River Murray.

During 2017–18, sampling for physico-chemical properties was carried out at 28 sites, and phytoplankton (including blue-green algae) was surveyed at 12 sites.

River Murray water quality parameters for recreation, irrigation and drinking water needs were within acceptable limits, except for short-term low dissolved oxygen at some locations. Under the Murray-Darling Basin Agreement, the Basin governments and any public authorities need to refer any development proposals that may significantly affect the flow, use, control or quality of River Murray water to the MDBA for assessment. In 2017-18 the MDBA received 46 proposals from various councils in the Basin, none of which had a significant impact on the quality and quantity of River Murray water.

Salinity management

The MDBA, with Basin governments, continued to implement the Basin Salinity Management 2030 strategy (BSM2030).

Highlights of the achievements of BSM2030 implementation during 2017-18 include:

- under salinity Basin Plan reporting target achieved at four of the five sites
- Basin salinity target achieved for the ninth consecutive year
- amendments to Schedule B to the Murray-Darling Basin Agreement agreed to by the Ministerial Council
- substantial progress in developing the Basin salinity management procedures to update and replace existing operating protocols
- 21 reviews of salinity register entries completed
- inaugural audit under the BSM2030 strategy completed
- salinity forum held, bringing together almost 50 salinity managers, river operators and environmental water holders and managers
- continued to implement the trial of responsive management of salt interception schemes.

Salt interception

The River Murray salt interception schemes are a significant component of the BSM2030 strategy and help to achieve and maintain the agreed salinity levels in the River Murray. In 2017–18, salt interception schemes diverted about 484 586 tonnes of salt away from the River Murray system.

The BSM2030 includes a three-year trial of responsive management of salt interception schemes. The trial is investigating opportunities to reduce scheme operations during periods of low salinity, thereby saving on operating costs. The MDBA and state constructing authorities have progressed investigations to better understand the responsive management of salt interception operations in response to forecast river flows and salinity conditions.

Registering the impacts of actions on salinity

Under the BSM2030, actions that increase and decrease average river salinity are accounted as debits and credits and are recorded in a register. Actions such as new irrigation developments may generate a debit (negative impact on salinity) on the register because they may increase salt loads to the River Murray. Conversely, actions such as commissioning salt interception schemes and improving irrigation practices may generate credit (positive impact on salinity).

Each entry in the register covers salinity impacts on the river arising from recent actions (Register A), as well as from major historical land and water use decisions (Register B) in tributary valleys. Each year the Basin governments inform the MDBA about reviews of existing register entries and new activities that have substantial salinity effects.

The MDBA calculates the salinity debits and credits of these activities and updates the salinity registers. The summary of the registers is included in the BSM2030 status report. The 2017 salinity registers confirm that the contracting governments of New South Wales, Victoria and South Australia remained in net credit on the salinity register (the Australian Capital Territory and Queensland do not have significant salinity impacts). The MDBA reported these outcomes to the Murray-Darling Basin Ministerial Council and published them on its website.

Following the success of the first 15 year Basin Salinity Management Strategy, which finished in 2015, Basin governments committed to a new 15 year strategy that runs through to 2030. The new strategy commits governments to actions to achieve the objectives and targets in the Basin Plan.

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Coordination of water for the environment

In the context of a relatively dry year in 2017–18, water managers in the southern Basin consolidated positive environmental outcomes from previous years and delivered large coordinated flows to build system-scale resilience. Water managers worked with river operators to align water for the environment delivery with consumptive demands.

The highlights of the water for the environment delivered are:

- Water for the environment was delivered to the Barmah-Millewa Forest in conjunction with operational water to achieve multiple benefits for consumptive water supply as well as environmental outcomes. In response, Moira grass and river swamp wallaby grass, both threatened species grew – and there was increased waterbirds breeding. The water for the environment return flows provided connectivity and increased food to feed fish and other animals in the river.
- For the first time, the regulators in the Barmah-Millewa Forest were opened early in winter to allow a more natural inflow of water into the creeks as the river level rose during winter and spring. Large bodied fish, such as Murray cod and golden perch, were observed moving in and out of the forest. This is something forest managers had been advocating for over a number of years but was not possible to do until the accounting arrangements for water for the environment were confirmed.
- After a period of drying following the floods, remnant water in two key wetlands of the Gunbower Forest was pumped out and the remaining carp were physically removed. This was done as part of a trial to see if the removal of carp would improve the abundance and diversity of wetland plants following delivery of water for the environment.
- There was a large-scale watering of the Hattah Lakes using The Living Murray environmental works to inundate black box trees, which had not received flows since 1993. The action capitalised on the lakes' high level following the 2016 flooding, and a large proportion of the water pumped in was sourced from the return flows from upstream deliveries of water for the environment.
- Water for the environment was provided to reconnect numerous wetlands in the mid-Murrumbidgee, a site that had been listed as a Basin-scale priority for several years. The reconnection flow provided conditions for golden perch to breed. A conservative estimate of 500 000 juvenile golden perch was recorded in Yanga Lake in the lower Murrumbidgee.
- Water was provided in the Lower Darling to increase habitat for the large numbers of juvenile Murray cod that spawned in 2016–17, increasing their chances of survival. The water also helped to encourage more Murray cod breeding in the first part of the year. This was done using available allocations before access to Menindee Lakes storage was closed as it had dropped below the threshold level.
- Almost 50% of the flow across the SA border was water for the environment to provide longitudinal connectivity, cues for fish to move and breed, increase river productivity and allow continual connectivity between the lower lakes and the estuary.
- In the Lower Lakes, Coorong and Murray Mouth the recruitment of black bream was
 observed for the first time in a couple of decades. Water for the environment was
 delivered over summer and autumn to support connectivity between the Lower Lakes
 and the Coorong, and to ensure the lake levels were primed for a Goulburn connectivity
 flow that aimed to cue fish to swim up through the barrages and into the River Murray.

An emerging issue in 2017-18 was the release of River Murray Increased Flows by Snowy Hydro Limited into the River Murray that needed to be managed by environmental water holders. Under agreed water accounting arrangements Snowy Hydro had discretion to release this water, which was then stored in Hume dam. Environmental water holders were then faced with managing this water in conjunction with other water entitlements, including considering whether a portion should be carried over for use in the following year.

Icon site monitoring

As part of the water for the environment coordination program, individual icon sites along the Murray are monitored with funding from the Joint Venture Monitoring and Evaluation program. The monitoring includes:

- site condition monitoring to provide information about the health of icon sites, including how the condition changes over time. This monitoring focuses on fish, waterbirds and vegetation
- intervention monitoring to assess ecological and other responses to watering and management actions. This provides the major link to understanding how specific environmental management actions result in changes at icon sites.

Jurisdictions have delivered the 2017–18 icon site monitoring activities as approved by the Southern Connected Basin Environmental Watering Committee. This includes intervention monitoring undertaken in conjunction with water for the environment activities, as well as monitoring of the longer-term condition of icon sites.

In May 2018, the MDBA published on its website the Icon site condition report. The report draws on over 10 years of ecological monitoring at six icon sites to provide the public with an overview of the ecological condition of significant forests, wetlands and lakes along the River Murray. It traces trends over time, including where sites are improving and where they are not. The report shows the benefit of providing water for the environment to supplement the periods between natural flooding. This information is essential to support adaptive management at the site, system and Basin scales. The presentation and utility of the data will be refined over time.

To improve how monitoring is linked back into water planning at a site and system scale, icon site managers have prepared site-based asset report cards to inform southern connected Basin 2018-19 water for the environment planning processes. This will help incorporate lessons from monitoring back into the planning cycle, especially when prioritising and coordinating watering events at the system scale.

Looking ahead, during 2018–19 the Southern Connected Basin Environmental Watering Committee will continue to assess how The Living Murray monitoring activities align with the Basin Plan framework. To progress this, the MDBA has started a project to align the monitoring objectives of The Living Murray to the environmental objectives of the Basin Plan.

Figure 2.11 Results from environmental watering



BARMAH-MILLEWA FOREST

Moira grass growth in the Millewa floodplain, significant colonial waterbird breeding events and habitat for an estimated 200 Australasian bitterns. Also observed 230 pairs of royal spoonbills, 325 pairs of Australian white ibis, 430 pairs of straw-necked ibis, 65 pairs of eastern great egrets and little pied cormorants.



GUNBOWER FOREST

Improved wetland and floodplain vegetation condition following natural inundation. Improving Murray cod numbers in Gunbower Creek and forest through the targeted delivery of water through the creek over multiple years.



KOONDROOK-PERRICOOTA FOREST

Improved condition of wetland and floodplain vegetation due to extensive inundation. Increased numbers of small-bodied native fish. Return flows from the forest provided nutrients and carbon to the River Murray. At Pollacks Swamp, an estimated 1 000 colonial waterbird nests were observed—the largest breeding event in over 25 years.



HATTAH LAKES

Improved vegetation condition included inundation of black box communities at a higher elevation on the floodplain. Good numbers of large-bodied fish were observed in the lakes. A large scale waterbird breeding event occurred.



CHOWILLA FLOODPLAIN

A positive response by riparian and floodplain vegetation including black box communities at higher elevations. High numbers of native fish species were detected across wetlands and the floodplains including golden perch, bony bream, carp gudgeon, un-specked hardyhead, Australian smelt and flat-headed gudgeon, with flows through the anabranch returning carbon and nutrients to the River Murray channel.

LOWER LAKES, COORONG AND MURRAY MOUTH

At the Lower Lakes, improved health of fringing vegetation and animals occurred with colonial waterbirds nesting and the southern bell frog and threatened species (such as the southern pygmy perch and Murray hardyhead) detected. Significant all-year round flows through the barrages supported the migration of fish between the Coorong and Lower Lakes, with an estimated 1.5 million fish detected moving through the barrages. There was improvement in the cover and abundance of Ruppia tuberosa in the south lagoon.

Water trade – dual responsibility

The MDBA and the Victorian Government developed an online tool that allows allocation trades subject to the Barmah Choke restriction to be processed automatically. These improvements mean that people wanting to trade water across the Barmah Choke will have equal access and more accurate information.

The MDBA, in conjunction with Basin governments, is reviewing trade adjustment processes that support the current trade rules in the southern Murray–Darling Basin. These rules adjust state resources when water is traded between states. Since it began in the mid-2000s, interstate water trade has grown substantially, and trading patterns and water use have changed, while the rules have remained generally unchanged. This review will ensure the trade rules continue to support the efficient functioning of water markets as they mature.

The emergence of new water trade products, such as trading of unused carryover allowances, are helping farmers find new ways to adapt to their rapidly changing circumstances.

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Challenges in the year ahead

The River Murray system inflows during the 2017-18 water year were almost half the long-term median. This puts 2017-18 in the driest 12% of years on record. In some regards, the prospect of ongoing dry conditions increases the importance of Basin Plan work to integrate the management of the river for consumptive use with the delivery of water for environmental outcomes. The river operations are complex. Management of the river, as well as maintaining positive and productive relationships between water resource managers and environmental water holders, will continue to be important.

The MDBA's infrastructure program will include the construction of the major works packages on the Pike and Katarapko floodplains as part of SARFIIP, to start in the coming year. The work includes construction of large regulators and blocking banks to allow water stored by locks 4 and 5 to inundate large areas of the floodplain. A groundwater pumping scheme will be constructed to prevent more salt from entering, and to remove saline groundwater. It will progressively introduce fresher water lenses (freshwater layers above saline water) to the Pike floodplain. This work, combined with more regular inundation, is important to improve the health of vegetation across the floodplain.

Investigations will continue to resolve outstanding operational issues with environmental works at Gunbower Forest and Koondrook–Perricoota Forest.

Other challenges relate to improving the efficiency of the delivery arrangements for water for the environment, which is linked to the SDLAM and the Enhanced Environmental Water Delivery project. The predicted dry conditions will require careful consideration. The MDBA carefully plans the delivery of water each year in close consultation with states, scientists, landholders and other water users. The aim is to minimise loss of plants and wildlife living in or dependent on these rivers. Water for the environment supports the recovery of the environment following drought, and helps build resilience in preparation for the future droughts.

Strategic goal 5

Improve the knowledge base to support sustainable water resource management

To support sustainable water resource management across the Basin, the MDBA recognises that knowledge, data and evidence is crucial in assisting with Basin Plan implementation, River Murray operations, and informing evaluations, reviews and new policy development

Priorities for 2017-18

- Investing in new water resource knowledge, in partnerships with Basin governments, scientists and communities, to support better decision-making
- Building knowledge of emerging technologies and practices in the Basin's irrigated industries, to better understand future water demand and support Basin Plan evaluation and review
- Delivering integrated water resource modelling across the Basin
- Improving understanding of river health and the ecological response to water for the environment, to enable adaptive management

Highlights

- Using remote sensing to successfully track an environmental flow release down the Border and Gwydir Rivers to Menindee Lakes during an embargo period, to ensure no illegal take occurred during the event
- Establishing data outcomes and designing an initial data management framework, which includes architectural, governance, planning and management activities and controls
- Trialling sophisticated data integration and analysis systems, which will provide the capability to aggregate data sources
- Initiating the Northern Connectivity Event review to learn about and improve the compliance systems that are needed to protect water for the environment in the Barwon-Darling – the review will use technology such as satellite imagery provided by Geoscience Australia to verify compliance inspections

- Continuing to improve and refine flood inundation modelling
- Improving the Basin-wide stand condition assessment tool to allow more comprehensive assessments
- Conducting major testing and improvement of the Source Murray model to enable Basin governments to use it in implementing their water resource plans
- Receiving important results from the waterbird trajectories project, which showed that breeding frequency and opportunities are increasing, and that increasing the proportion of breeding individuals should be a priority
- Continuing ongoing joint projects to monitor, prevent and raise awareness about pest fish
- Completing a Basin-wide water microchemistry map to trace fish movements

Analysis

The MDBA has kept at the forefront of resource knowledge, data collection and modelling to ensure sustainable water resource management across the Murray–Darling Basin.

The Basin-wide stand condition assessment tool for river red gums, black box and coolibah has been improved to allow more comprehensive assessments. The MDBA has also significantly improved the Source Murray model over the last 12 months. This will help Basin governments to implement their water resource plans under the Basin Plan.

Integral to the MBDA's work is its partnerships with other jurisdictions and research partners. These have enabled sophisticated modelling and testing – for example, the links between flow and native fish, the maintenance of waterbird populations, and the prevention and management of pest fish incursions.

A central component of achieving a sustainable and healthy Murray–Darling Basin is a commitment to raising awareness across the Basin governments. Our partnerships with other jurisdictions to produce educational kits, videos and websites reflect this.

Data frameworks

Through 2017–18, the MDBA established data outcomes and designed an initial data management framework. This framework includes architectural, governance, planning and management activities and controls to ensure ready access to high-quality fit-for-purpose data to support business activities. The MDBA has begun to prioritise high-value data assets, and has drafted plans to bring these assets into a robust and well-defined data management framework.

Over the next 12 months, work on the initial data assets will be completed and the scope broadened to include additional datasets. The MDBA has begun to develop designs to provide more effective access to our data holdings, as well as to develop the capacity to source data from government and non-government partners. The MDBA has trialled sophisticated data integration and analysis systems that will provide the capability to aggregate data sources from across and outside the organisation. These will also allow the MDBA to extract additional value from the vast and growing data holdings, and to provide them in an open and consumable format.

Northern Connectivity Event

Various reviews, including the MDBA's Basin-Water Compliance Review in 2017, raised serious concerns with the adequacy of the compliance arrangements for the Barwon-Darling River.

The Northern Connectivity Event was announced in mid-April by the Commonwealth Environmental Water Office and the NSW Office of Environment and Heritage. This event provides for up to 30 GL of water for the environment to be released into the Barwon-Darling River.

The key objective of the review is to learn about and improve the compliance systems that are needed to protect water for the environment in the Barwon-Darling. The findings will be published on the MDBA website.

The MDBA is working with the New South Wales Government to review:

- the effectiveness of the governance and management arrangements in place for overseeing the event
- the operational processes and procedures to ensure compliance with the embargo.

The MDBA is undertaking the review using a range of tools and approaches, including:

- site visits (meter reads, irrigation infrastructure and farm storages inspections)
- satellite imagery and other relevant applications
- standard audit practices such as reviewing processes and documentation.

Science and knowledge to support decision-making

Flood inundation modelling and mapping

The MDBA maintains detailed hydrodynamic models to predict inundation extents at each of The Living Murray icon sites. The models are continually improved and refined using additional data collected during watering events. The MDBA gives mapping of the inundation after each watering to the jurisdictions using these models.

The MDBA is also using satellite data to track environmental flows down river systems, as a tool to check for any anomalies in order to target any possible compliance actions.

Basin-wide stand condition tool

The MDBA commissioned a Basin-wide spatial stand condition assessment tool for river red gums, black box and coolibah to use this in developing the Basin-wide environmental watering strategy in 2014. The MDBA refined this tool in 2017.

The tool defined the extent of these vegetation communities, using a predictive model. It identifies the condition by combining quantitative ground surveys, remote sensing from Landsat data, and modelling using machine learning. The ground surveys record the percentage of live leaf areas, plant area indexes and crown extent. These parameters have been identified as being reliable and objective indicators of stand conditions in floodplain forests.

When the MDBA published the environmental watering strategy, the assessment tool gave condition scores for river red gum and black box in the Lachlan, Murrumbidgee, Lower Darling, Murray, Wimmera-Avoca and Goulburn-Broken Basin regions. High confidence in the river red gum condition assessments enabled condition to be determined across five categories ('good' to 'severely degraded'). Lower confidence in the black box assessments meant they fell into either 'moderate to good' or 'severely degraded to poor'.

Data limitations in 2014 meant that it was not possible to specify the condition of coolibah, which occurs in the north. Since then, further field surveys, model improvements and validation have enabled the MDBA to assess coolibah condition, with more improvements expected as field work continues.

Source Murray Model

The Source Murray Model (SMM) is a planning and management tool for the River Murray that incorporates the arrangements of the Murray-Darling Basin Agreement and each Basin government's process for allocating water to their water users. The SMM allows water managers to test policy and management options and to observe the impacts these changes are likely to have on aspects of the system, such as reliability of supply to consumptive water users, delivery of water for the environment and river salinity.

The MDBA has done significant work over the last 12 months to test and improve the model, including options for use of water for the environment and its accounting. The MDBA has started working with partner governments to use this model to define their baseline diversion limit (i.e. the baseline conditions based on a best estimate) and the use of this baseline for development of their water resource plans for the New South Wales Murray and Lower Darling, the Victorian Murray and the South Australian Murray.

Waterbird trajectories

The Basin-wide strategy for water for the environment contains a number of goals for waterbirds, including increased abundance. Although this goal is set to be achieved from 2024, it is essential to monitor progress between now and then and use the results in directing water for the environment.

The waterbird trajectory project, completed by the University of New South Wales, tracks progress in two components.

The first mapped possible trajectories of waterbird abundance over the next 10 to 20 years. It developed different statistical models between waterbird abundance and annual flow volumes. Results showed that most models had a tendency to overestimate waterbird responses, and that waterbirds had a possibly diminishing capacity to respond to reduced water flow.

The second component developed a population model of straw-necked ibis, one of the Basin's major waterbird species. This component found that small and medium-sized breeding events have decreased, reducing the proportion of breeding individuals. This suggests that populations are unlikely to recover without an increase in breeding frequencies in multiple wetlands. The MDBA concluded that increasing breeding frequency and proportion, and opportunities for breeding individuals, should be a priority.

Improving knowledge about native fish outcomes

The MDBA has engaged scientists from government and independent organisations to run various projects investigating the links between flows and native fish. These projects will inform water management in the Basin for years to come.

Understanding the spatial scale of fish recruitment

The MDBA continues to invest in research projects that investigate the birthplace and population structure of golden perch, silver perch and Murray cod. This includes investing in research by the South Australian Research and Development Institute and the Arthur Rylah Institute for Environmental Research, as well as building on work funded by the Commonwealth Environmental Water Office. This information, combined with existing knowledge about fish movement, will help target appropriate flows to boost native fish recruitment. The MDBA's Basin watering priorities have used this information to guide water for the environment in the Basin.

Identifying fish flow needs in the northern Basin

The MDBA provided funding to the New South Wales Department of Primary Industries – Fishing to review the water for the environment requirements for native fish in the Namoi catchment. The review takes an approach similar to that used in the southern Basin, and will be expanded into other northern catchments in 2018–19. The review has grouped fish species by flow requirements and produced water for the environment requirements for managers and modellers to use to identify components of the flow regime that are important for native fish recruitment.

Refining native fish monitoring and evaluation

The MDBA worked with state government and independent fish scientists to refine the monitoring and evaluation strategy for native fish. The MDBA want to better monitor and evaluate native fish movement and population dynamics through tagging, investigating the use of DNA, and improving statistical analysis. This will improve native fish outcomes from water for the environment and the Basin Plan.

At this early stage of implementation ... what has been uncovered is a wide range of qualitative information and community feedback that highlights how important a healthy environment is to Basin communities. The range of potential flow on social and economic benefits includes tourism, recreation, amenity and services to agriculture.

2017 Basin Plan Evaluation, p. 96

Showcasing river rehabilitation – demonstration reaches

The MDBA's pest fish and demonstration reaches projects include short-term projects to manage alien fish (including tilapia and carp) and those that showcase how river environments are restored to benefit native fish populations (demonstration reaches).

Oven River demonstration reach - trout cod video

Victoria's Department of Environment, Land, Water and Planning, with support from the MDBA, has developed a fact sheet and a short video to celebrate the Ovens River demonstration reach, where successful breeding and recruitment have encouraged a sustainable trout cod population.

Katfish demonstration reach – educational resource kit

This project of South Australia's Department for Environment and Water, supported by the MDBA, has built on the children's book Upstream from the 2016–17 Katfish project. The kit includes a resource pack for teachers, a copy of Upstream and stuffed characters from the book. The kits were distributed to 73 primary schools, 40 kindergartens and childcare centres, and 328 libraries in the Murray–Darling Basin region.

Upper Murrumbidgee demonstration reach

This project continued to improve riparian rehabilitation through community and stakeholder engagement, with support from the MDBA and Bush Heritage Australia. Other activities included a community project to control willows and in-stream planting.

Finterest

The *Finterest* – *bringing back native fish* website, funded by the MDBA, has a new homepage banner and 'call to action' graphics. With its expanded social media presence, traffic to *Finterest* has doubled.

Queensland demonstration reach – dewfish project

The MDBA's Queensland demonstration reach project involves fitting self-cleaning irrigation pump screens to irrigation pumps to monitor the number of fish and species of fish passing through the screened and unscreened intakes, and to look for evidence of entrainment of fish on the screen. Due to technical issues with the electrofishing boats generator, this project is being completed in 2018–19.

Managing pest fish

Pest fish are a major threat to water quality and environmental, economic and cultural values of the Murray–Darling Basin. In addition to a broad range of data-related projects, the MDBA is working with Basin government and Australian Government partners to focus on the management of two key pest fish species: tilapia and carp.

Preventing tilapia incursions

Tilapia is one of the worst invasive freshwater pest fish threats to Australia's aquatic ecosystems. The MDBA is working with the Queensland and New South Wales governments and local partners to prevent incursions of tilapia into the Basin. The MDBA and its partners are also raising awareness in schools, community groups and recreational fishing clubs of the risk tilapia poses to the Basin.

National Carp Control Plan

The Fisheries Research and Development Corporation is developing a National Carp Control Plan to enable the Australian Government to make an informed decision on the release of the carp virus. The MDBA is involved in working groups to provide advice and information on water policy, river operations, stakeholder engagement and communication to help guide the development of the plan.

Stopping the spread of tilapia

Tilapia, described as the 'cane toad of our waterways' and one of the worst invasive freshwater pests in the world, threatens to invade the Murray–Darling Basin's aquatic ecosystems. The MDBA is working with the Queensland and New South Wales governments, local governments and local partners to prevent tilapia from becoming established in the Basin. If these fish do become established in the Basin, they will affect the ability to achieve Basin Plan objectives, targets and outcomes.

Tilapia are highly adaptive and invasive. They are able to switch feeding strategies to available food sources, mature and stunt (stop growing to put all their energy into breeding) during adverse conditions, and aestivate (become dormant under the mud) during drought conditions.

Tilapia badly affect aquatic ecology, reducing aquatic vegetation, dominating available food resources and reducing water quality. They have been linked to the extinction of native fish species in several countries, along with declines in fisheries productivity.

The highest risk of a tilapia incursion into the Basin is through humans transporting them there. Tilapia are mouth brooders, carrying live eggs and fry in their mouths, which means even moving dead tilapia into the Basin poses a risk.

The best way to protect the Murray–Darling Basin's aquatic ecosystems, water quality and native fish populations is to prevent the incursion of tilapia into the Basin.

The Tilapia – Raising Awareness in High Risk Areas of the Murray–Darling Basin project promotes:

- raising tilapia awareness through education to increase the Murray-Darling Basin community's awareness of issues, including the threat of a tilapia incursion and the potential harmful impacts of an established tilapia population in the Basin
- preventing the translocation of tilapia into the Basin by educating the Murray-Darling Basin community and its visitors through partnerships with stakeholders to cross-promote tilapia awareness
- monitoring the situation by training community members to identify and report tilapia, to aid early detection of a Murray–Darling Basin tilapia incursion.

The MDBA and its partners are raising awareness with school students, stakeholder groups, recreational fishing clubs and the Basin community of the risks tilapia poses to the Basin.

Challenges for the year ahead

The application of scientific knowledge to inform policy was tested thoroughly in the preparation of the 2017 Basin Plan Evaluation. While the scientific knowledge base has grown significantly, further monitoring and complementary research is required to understand how the Basin's environments are responding to water, as well as the relative influence of non-flow-related threats.

The MDBA's scientific knowledge was heavily scrutinised by external parties through processes such as the Northern Basin Review and the SDLAM. The key challenge for the year ahead will be to expand the MDBA's capacity for robust scientific analysis and to build its reputation as trusted experts in the water sciences.



Section 3 Management and accountability

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Governance

The Murray–Darling Basin Authority (MDBA) is a statutory authority of the Australian Government comprising a part-time Chair, full time Chief Executive, and four part-time members. The functions of the Authority are supported by an office, currently of around 285 full-time equivalent staff, based at several locations around the Basin, and led by the Chief Executive.

The MDBA's functions are prescribed by the *Water Act 2007* (Cwlth). Key functions include the development of a plan for the sustainable use of water resources across the Basin, and the provision of river operation, asset management and related services to the joint venture arrangements set out in the Murray-Darling Basin Agreement.

For Basin Plan matters, the MDBA is accountable to the Australian Government Minister for Agriculture and Water Resources, the Hon. David Littleproud MP. The Minister may direct the MDBA about the performance of its functions in certain respects and has an important role in key processes, including the making or amendment of the Basin Plan and in accrediting WRPs.

For matters under the Murray-Darling Basin Agreement, the MDBA is accountable to the Murray-Darling Basin Ministerial Council (Ministerial Council). The Ministerial Council is comprised of a Minister from each of the Basin state governments and is chaired by the Commonwealth Minister. The Ministerial Council has the power to set objectives and outcomes for the MDBA in relation to certain matters and there are a number of MDBA functions that require the approval of the Ministerial Council.

The Basin Officials Committee directs the MDBA in certain of its functions under the Murray–Darling Basin Agreement, and provides advice to the MDBA in respect of its role in preparing the Basin Plan.

The MDBA has 3 statutory advisory committees:

- Basin Community Committee (BCC)
- Advisory Committee for Environmental, Economic and Social Sciences
- Independent Assurance Committee.

The MDBA is also proud to work closely with, and support, two self-determining Traditional Owner organisations: the Murray-Lower Darling Rivers Indigenous Nations (MLDRIN) and the Northern Basin Aboriginal Nations (NBAN).

For more information about the committees, see Appendix A.



Figure 3.1 Governance of the Murray-Darling Basin Authority

CORE FUNCTIONS

- The decision maker on the Basin Plan and chairs Ministerial Council
- 2 Responsible for developing, implementing, evaluating and reviewing the Basin Plan
- 3 Manages the River Murray system on behalf of joint governments
- Olicy and decision-making roles on state water shares and funding of joint programs as per the Murray-Darling Basin Agreement
- 6 Makes decisions consistent with the delegations from the Ministerial Council and advises on the Basin Plan
- Provides advice to the Authority and Ministerial Council on Basin community issues

The Authority

Neil Andrew AO (Chair)

The Hon. Neil Andrew has chaired the Authority since January 2015. He was elected to the Australian House of Representatives in 1983 and served as a member of parliament until 2004. His achievements included appointments as Government Whip in 1997 and Speaker of the House of Representatives in 1998.

Since retiring from parliament, Neil has continued a lifelong association with the irrigation industry, particularly in horticulture and viticulture. He chaired a review of the South Australian citrus industry and was also Chair of the Crawford Fund in Australia, which provides agricultural research and training to farmers in developing countries. He has been a Fellow of the Academy of Technological Sciences and Engineering and a member of the National Capital Authority. He was appointed an Officer of the Order of Australia in 2008.

Phillip Glyde (Chief Executive)

Phillip Glyde joined the Authority as Chief Executive on 4 January 2016. Before this, Phillip was a deputy secretary at the then Department of Agriculture, where he was responsible for agriculture, fisheries and forestry policy; corporate and governance functions; international trade and market access; export certification services; and the research divisions of the Australian Bureau of Agricultural and Resource Economics and Sciences.

As a member of the Australian Public Service since 1980, Phillip has worked on natural resource management, industry and environmental policies in a number of departments, including Prime Minister and Cabinet, Environment, and Resources and Energy.

Phillip has also worked overseas with the Environment Directorate of the Organisation for Economic Co-operation and Development in Paris, and the Cabinet Office and the Department of Environment, Food and Rural Affairs in the United Kingdom.
Professor Stuart Bunn

Professor Stuart Bunn is the Director of the Australian Rivers Institute at Griffith University in Brisbane. Stuart's major research interests are in the ecology of river and wetland systems, with a particular focus on the science underpinning river management. This research includes more than 250 technical publications, most of which are refereed journal articles and conference proceedings. Stuart has extensive experience working with international and Australian government agencies on water resource management issues.

From 2008 to 2012, Stuart was National Water Commissioner. He previously served as Chair of the Scientific Advisory Panel for the Lake Eyre Basin Ministerial Forum and as a director of Land and Water Australia. He is currently Chair of the Science Committee for Healthy Land and Water and a member of the International Planning Committee for the Sustainable Water Future Programme.

Stuart was appointed Chair of the MDBA's Advisory Committee on Social, Economic and Environmental Sciences (ACSEES) in 2016. He was appointed to the Authority in May 2018 and continues to play an observational role for the ACSEES.

Joanna Hewitt AO

Joanna Hewitt was appointed to the Authority in May 2018. Joanna has worked at senior levels of the Australian Public Service in the areas of agriculture, foreign affairs and trade policy. This includes serving as Secretary of the former Department of Agriculture, Fisheries and Forestry (2004 to 2007) and Deputy Secretary of the Department of Foreign Affairs and Trade. She has also served on corporate, public sector and non-government boards.

Joanna is the Chair of the Scientific Advisory Group of the Department of Agriculture and Water Resources. She was Commission Chair of the Australian Centre for International Agricultural Research from 2011 to 2014. She has worked at the Agriculture Directorate of the Organisation for Economic Cooperation and Development and consulted internationally.

Joanna has a Bachelor of Economics (with First Class Honours) from the University of Western Australia and a Master of Science (Economics) from the London School of Economics. She is an Officer of the Order of Australia and has been awarded a Centenary Medal and an honorary doctorate in economics from the University of Western Australia.

Susan Madden

Susan Madden is an agricultural economist with international consulting firm GHD. She has more than 15 years of experience working in agricultural and natural resource management and a background in family farming. Susan has a First Class Honours degree in Agricultural Economics.

Susan lives in Dubbo in central-west New South Wales. Since March 2017, she has been Chair of the Central West Local Land Services. Previously, she was Executive Officer of regional farming group Macquarie River Food and Fibre. In this role she participated in major government planning reform, including the review of New South Wales water-sharing plans and development of the Basin Plan, as well as water pricing determinations carried out by the Independent Pricing and Regulatory Tribunal and the Australian Competition and Consumer Commission. Susan was appointed to the Authority in March 2016.

Susan's leadership capabilities and contribution to agricultural and natural resource management have been recognised through a number of industry awards and achievements. These include being a Fellow of the Peter Cullen Trust and a finalist in the 2013 Australian Cotton Industry Young Achiever of the Year Award.

George Warne

George Warne was appointed to the Authority in April 2014. George is a recognised leader in the rural sector and has worked in the water industry for more than 25 years, including as Chief Executive Officer of Murray Irrigation Limited and Managing Director of the New South Wales State Water Corporation (now WaterNSW). He has a strong understanding of rural communities, having lived most of his life within the Murray-Darling Basin.

Between 2011 and 2013, George was interim Chief Executive Officer of the Northern Victorian Irrigation Renewal Program and facilitated its transition to form part of Goulburn–Murray Water. He is a Senior Consultant with consulting firm RMCG and is Chair of Lipman P/L, a Sydney-based construction company.

This year, the MDBA farewelled two of its inaugural part-time members, Diane Davidson and Prof. Barry Hart. The contributions of both Di and Barry to the work of the MDBA over many years were greatly appreciated, and the MDBA wishes them well in future.

Name	Number of meetings	Executive status
Neil Andrew	9	Non-executive
Phillip Glyde	9	Executive
Susan Madden	9	Non-executive
George Warne	9	Non-executive
*Barry Hart	8	Non-executive
*Dianne Davidson	8	Non-executive
**Joanna Hewitt	1	Non-executive
**Professor Stuart Bunn	1	Non-executive

Table 3.1	Meetings	attended	and	member	status

*Outgoing members – last meeting 8 May 2018

**Incoming members – first meeting 19 June 2018

Structure of the MDBA





MDBA divisions

The MDBA carries out its work through five divisions:

- **River Management** manages the operation and maintenance of River Murray assets, and the sharing of River Murray water between state partners
- Office of Compliance monitors and enforces compliance with the Basin Plan through investigating allegations of non-compliance, maintaining an audit program, and developing projects and policies to improve compliance frameworks and practices across the Basin
- **Partnerships** enhances collaborative relationships to implement the Basin Plan, including advice to Basin states on the accreditation requirements of water resource plans, and the MDBA's communication and engagement program
- Science and Knowledge ensures best practice science and robust evaluation outcomes of the Basin Plan, and guides the collection and use of knowledge
- Corporate Strategy and Services runs the business of the MDBA and provides a range of strategic and support services, including secretariat support to high-level committees, to enable the MDBA to implement the Basin Plan and efficiently operate the river for partner governments.

The heads of each of these divisions and the Chief Executive make up the executive team.



The MDBA executive, left to right (back row) Andrew Reynolds, Carl Binning, Russell James, Colin Mues, (front row) Philip Glyde and Annette Blyton.

MDBA Executive

Phillip Glyde

Chief Executive

Refer to Phillip's biography on page 100.

Andrew Reynolds

Executive Director, River Management

Andrew Reynolds has been with the MDBA for five years, giving him a total of 24 years of experience in the water industry managing major water supply infrastructure. He has extensive knowledge in engineering and project management, dam safety and construction management. Before joining the MDBA, Andrew held various roles with Goulburn-Murray Water. His work included managing the headworks business responsible for 16 large dams and associated infrastructure, delivering several major dam safety upgrades, and leading the business's engineering and scientific resources.

Andrew has a Bachelor of Engineering (Agricultural) (Hons) from the University of Melbourne. He is currently Deputy Chair of the Australian National Committee on Large Dams.

Colin Mues

Head of Science and Knowledge

Colin Mues joined the MDBA in 2014. He has more than 10 years of experience with Murray–Darling Basin water reforms. Before joining the MDBA, he was responsible for designing and implementing the Murray–Darling Basin water buy-back program in the Department of the Environment and Energy. This program has provided more than half the water recovered for the environment in the Murray–Darling Basin.

From his time with the Australian Bureau of Agricultural and Resource Economics, Colin has considerable experience in economic analysis of natural resource management issues.

Russell James

Executive Director, Office of Compliance

Russell joined the MDBA in 2011 and his Division led the development of the Basin Plan. He has more than 25 years of natural resource management policy experience within the Australian Government, including the development of the National Water Initiative at the Department of the Prime Minister and Cabinet, the Water Act at the Department of Environment and Water Resources, and a range of reforms on Commonwealth fisheries, wetland conservation and native vegetation management. His early career as a commercial forester was in both Tasmania and New South Wales.

Carl Binning

Executive Director, Partnerships

Carl Binning joined the MDBA in September 2016 as Executive Director, Environmental Management Division.

Building on a family farm background near Yass in New South Wales, Carl has more than 25 years of experience in natural resource management, with executive roles in the government, research, not-for-profit, mining and consulting sectors. He brings a depth of experience and understanding of the social, economic and environmental drivers in Australia's landscapes, and is passionate about facilitating sustainable development. Carl brings extensive executive experience from the then Department of the Environment, the Department of the Prime Minister and Cabinet, CSIRO, Creating Communities, BHP Billiton and Greening Australia.

Annette Blyton

Chief Operating Officer, Corporate Strategy and Services

Annette Blyton has worked in a broad range of corporate areas since starting her public service career in 1986. Annette's various roles have been in corporate and business management, farm surveys, data, social research, finance, property, and major projects and procurements, including the machinery of government transition of water functions to the Department of Agriculture and Water Resources in late 2015. Annette was Corporate Manager of the Australian Bureau of Agricultural and Resource Economics and Sciences from 2002 to 2012. From 2012 to 2015 she worked at the Office of the Commonwealth Director of Public Prosecutions as their National Manager, People. In 2015 Annette moved to the Department of Agriculture and Water Resources with responsibility for the department's national property interests. Annette joined the MDBA as its head of Corporate Strategy and Services in June 2017.

Senior management committees

The MDBA's functions are supported by the following key committees:

- Executive Committee
- Information Management and Technology Committee
- Budget and Review Committee
- Health and Safety Committee
- Employee Consultative Committee
- Audit Committee.

Executive Committee

The Executive Committee is the key forum for cross-agency issues on policy and corporate governance. It comprises the:

- Chief Executive
- Executive Director, Office of Compliance
- Executive Director, River Management
- Executive Director, Partnerships
- Head of Science and Knowledge
- Chief Operating Officer, Corporate Strategy and Services
- General Manager, Partnerships, Engagement and Strategic Policy Branch.

In 2017-18 the Executive Committee dealt with key issues including:

- Sustainable Diversion Limit Adjustment Mechanism determination
- 2017 Basin Plan Evaluation
- the MDBA's stronger regulatory role
- the MDBA's restructure to better meet future challenges
- enhanced data and knowledge management capabilities
- the MDBA's regional presence, including the role of Regional Engagement Officers, to further engagement with Basin communities.

Information Management and Technology Committee

The Information Management and Technology Committee (IMTC) is responsible for:

- developing and implementing IT and information management strategies
- prioritising IT and information investments to maximise their benefit to the MDBA.

Annette Blyton, Chief Operating Officer, chairs the IMTC. Committee members include representatives from each division to ensure IMTC decisions meet the needs of the business. During 2017-18 the committee endorsed a revision of the ICT investment strategy. The strategy used a business capability framework to align and prioritise investments in data and information technology with business outcomes.

The IMTC's initiatives, including endorsing proof of concept using data lake technology as a way to integrate both internal and external datasets, demonstrates the MDBA's commitment to enhancing data management and discovery across business and government.

Budget and Review Committee

The Budget and Review Committee oversees the MDBA's budget management and financial reporting. It provides advice on key matters concerning the effective management and alignment of the MDBA's resources to strategic priorities. The members of this committee include the Senior Executive of the MDBA with the Chief Operating Officer and the Chief Finance Officer as advisers.

Health and Safety Committee

The MDBA's Health and Safety Committee operates in accordance with the *Work Health and Safety Act 2011* (Cwlth).

Its main functions are to:

- build cooperation between the MDBA and workers to ensure health and safety at work
- assist in developing standards, rules and procedures relating to health and safety.

The committee meets quarterly and has the following members:

- committee Chair
- health and safety representatives (or their Deputies) for each work group. Deputies are encouraged to attend the meetings as observers
- Chief Emergency Warden to represent workers in the MDBA's emergency management team
- an employee representative from the Employee Consultative Committee
- Director, People and Culture (or their delegate)
- committee Secretary (normally the Work Health and Safety Coordinator) as nominated by the Director, People and Culture.

Employee Consultative Committee

Established under clause 11 of the Murray–Darling Basin Authority Enterprise Agreement 2017–2020, the Employee Consultative Committee works with employees on matters affecting the workplace and the operation of the enterprise agreement.

The committee provides a forum for:

- involving staff in the decision-making process for changes to existing policies, guidelines or procedures, or development of new policies, guidelines or procedures referred to in the enterprise agreement
- getting staff consultation and agreement before the Chief Executive makes a formal variation under the *Fair Work Act 2009* (Cwlth) to any current conditions or entitlements in the enterprise agreement
- providing advice to the Chief Executive on matters arising from the operation of the enterprise agreement.

Membership of the committee consists of:

- an elected employee representative from each of the five divisions
- an employee representative from the relevant unions, including the Community and Public Sector Union and Professionals Australia
- two management representatives
- Chief Executive as Chair.

Audit Committee

Under the *Public Governance, Performance and Accountability Act 2013* (CwIth) (PGPA Act), the Audit Committee provides independent advice and assurance to the Chief Executive. This includes reviewing:

- financial reporting
- performance reporting
- risk management
- internal control.

During the year, the Audit Committee charter and the Audit Protocol were updated and the committee's membership changed. There was a focus on the MDBA's systems of internal control – including policies and procedures, delegations, authorisations and legislation – and activities to monitor compliance with the internal control framework.

From 1 July 2017 Andrew Reynolds replaced Colin Mues as Deputy Chair, and from 1 January 2018 Karen Hogan replaced Jenny Goddard as independent member.

The committee met six times during 2017-18: 15 August 2017, 12 September 2017, 3 October 2017, 22 November 2017, 5 March 2018 and 1 June 2018. Table 3.2 shows the number of meetings attended by each committee member.

The 15 August 2017 meeting considered the Joint Venture Special Purpose Financial Statements, while the 3 October 2017 meeting considered the MDBA's annual performance statements.

Table 3.2. Audit C	Committee membership	and number of	meetings attended
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Audit committee member	Number of meetings
Jenny Morison, Chair and independent member	6
Andrew Reynolds, Deputy Chair	6
Jenny Goddard, independent member	3
Karen Hogan, independent member	2
Carl Binning, advisory member *	2
Tony McLeod, advisory member*	5

* Advisory members not appointed under the PGPA Act

The committee continued to review internal audit reports and the implementation of audit recommendations.

Running the business

Highlights during 2017-18

- Organisational restructure of the MDBA around three key elements implement the Plan, run the river, run the business so it is better equipped to deliver its longer-term priorities
- In line with recommendations from the Whole-of-Government Shared and Common Services Programme, transition of the MDBA's payroll system and services from 7 September 2017. Payroll processing is now outsourced to the Department of the Treasury and Shared Services
- Improvements to information security, including the ongoing implementation of the ICT and information security initiatives. Key deliverables include the development of detailed document handling and drafting protocols, incident response processes and access to the Department of Agriculture and Water Resources protected environment for sensitive and security classified information
- Implementation of the new MDBA Enterprise Agreement 2017-2020
- Completion of a comprehensive review of the MDBA's risk management framework. It also reviewed and updated its Risk Management Guidelines, aligning the principles in the Risk Management Standard, ISO 31000-2018, with the MDBA's workplace culture and values. It conducted training for all MDBA staff in fraud, conflict of interest, ethics and the APS Code and Values
- Support from the Legal and Parliamentary Services team on key issues including the passage of legislative amendments for the Northern Basin Review and the SDLAM, and the MDBA's new compliance and enforcement functions
- Introduction of the Chief Executive Awards to recognise individuals and teams for outstanding performance and contributions to the MDBA's strategic outcomes, effective mentoring and role models, and knowledge-sharing with teams
- In the annual employee census, achieving an overall employee engagement score of 76%, which is 5% above the overall Australian Public Service score. Specifically, 83% of MDBA staff said they were proud to work for the agency, and 96% said they would 'go the extra mile' when required

Developments and improvements

- The establishment of the Governance, Risk and Audit team allows for building internal capacity and capability in this core area. A Risk Champion was also appointed from the MDBA Executive.
- In response to increased external scrutiny pressures, the MDBA has been working to increase the availability of information, and to make the processes for access more accessible and transparent.
- The MDBA significantly reduced its claims for workers compensation in 2017–18, which has resulted in a reduction in the Comcare premium.
- There were substantial improvements in automation of the MDBA's performance reporting systems and associated data collection. The new system integrates financial data, performance data and reporting.

Audit and risk

The MDBA continued to focus on effective risk management in 2017-18.

The Audit Committee and the Executive Committee monitor the risk management framework and how enterprise risk treatments are implemented across the whole of the MDBA. This includes monitoring the fraud control plan, which is informed by a risk assessment.

Risk management is also monitored at a sub-program level as part of quarterly corporate planning and reporting processes. For example, the Health and Safety Committee monitors health and safety risks for workers, ICT manages ICT security risks, and the Agency Security Adviser and Chief Risk Officer monitor physical and personnel security risks.

In 2017–18 all new employees and contractors received mandatory risk management induction and online training on ethics, fraud and conflict of interest (including managing sensitive water market information). A complementary, mandatory training program was also developed for existing staff with online training materials available through the MDBA intranet.

Comcover

Comcover provides the MDBA's insurance cover. The identification and assessment of insurable risks is done annually through Comcover's insurance renewal process. The MDBA is separately insured by Comcare for workers compensation for employees.

A key feature of the Comcover program is the annual risk management benchmarking survey. The survey measures Commonwealth agencies' risk management maturity. The 2018 survey found that the MDBA again achieved risk maturity at the 'advanced' level, which was above the average and in the top 36% of Australian Government entities. The survey showed that the MDBA's strengths in risk management are in defining responsibility for managing risk, establishing a risk management policy and embedding risk management into business processes. Areas identified for improvement were understanding and managing shared risk, communicating and consulting about risk, and developing a positive risk culture.

Fraud

The MDBA has fraud control arrangements that align with the Commonwealth Fraud Control Framework. The framework establishes the systems and processes for prevention, detection, monitoring, evaluation and reporting of, and responses to fraud within the organisation. The MDBA regularly reviews the fraud prevention and control measures, including fraud risk assessment and the fraud control plan.

There was one reported allegation of suspected fraud in 2017–18. The incident, relating to unauthorised disclosure, was finalised after investigation because no responsible party was identified. However, as a result, the MDBA reviewed and strengthened controls to minimise the risk of this type of event recurring.

Business continuity and ICT disaster recovery plans

The MDBA has three key documents outlining arrangements for recovering from a business disruption:

- River Murray system emergency action plan
- MDBA business continuity plan
- ICT disaster recovery plan.

Each of these plans was updated during the year. The ICT disaster recovery arrangements were tested at the desktop level.

Following a business interruption event during the year, the business continuity plan was reviewed again. Further updates will include lessons learned.

Internal audit

In 2017-18, the consultancy firm KPMG provided internal audit services. Internal audit plans were developed in consultation with senior managers and the risk management plan.

The internal audit reports finalised during the year were:

- Post Walkthrough Report ICT Disaster Recovery Plan
- Payroll Shared Services Transition Phase 3
- Legislative Obligations Phase 1 and 2. In 2017 a high-level assessment was undertaken of how the MDBA is fulfilling all its statutory obligations particularly under the Water Act. The objective of the review was to test the assessment of compliance with legislative obligation and was conducted in two phases based on prioritisation of the obligations

 Targeted Controls Reviews. These are a series of reviews, included in the MDBA's Internal Audit Workplan, to examine the MDBA's compliance with a selection of high-priority, routine controls in operations across the agency. These reviews assist to determine whether the MDBA is complying with the PGPA Act, other relevant legislation and public sector policy.

The reports did not raise any serious matters. The Audit Committee monitors the implementation of internal audit report recommendations.

Compliance reporting

The PGPA Act requires the MDBA to report significant non-compliance with finance law. Finance law includes:

- the PGPA Act
- the PGPA Rule
- instruments made under the PGPA Act (including Accountable Authority Instructions) and Appropriation Acts.

The compliance report process helps to identify and disclose instances of non-compliance with the PGPA framework as a basis for continuous improvement.

During 2017–18, the MDBA further refined its internal Resource Management Framework, improving internal controls and risk management.

The MDBA strives to operate on best practice, which incorporates the spirit of government policy guidance material issued by the Department of Finance, and mandatory aspects of finance law. It has tailored compliance requirements to business needs to attain a strong level of assurance while minimising processing requirements.

The MDBA uses a financial management compliance system to gather data and increase awareness of the Resource Management Framework. Under this system, all authorised officials complete a questionnaire. This information is then reviewed to ensure breaches are reported correctly.

There were no significant reportable breaches of the PGPA Act, the PGPA Rule or Australian Government policies in 2017–18.

Secretariat

The Secretariat team supports the six-member Authority, the Murray-Darling Basin Ministerial Council, the Basin Officials Committee and the committees that help deliver the MDBA's business. This includes several internal committees, including the Basin Plan Implementation Committee and the MDBA Audit Committee.

For more information about committees, see Appendix A.

In 2017–18, the Secretariat completed the rollout of meeting management software to all external and most internal committees. This is expected to result in greater efficiencies in providing meeting papers and reducing printing costs.

External scrutiny

Under section 17AG(3) of the PGPA Rule, the MDBA is required to report on external scrutiny of the MDBA by certain bodies. These include parliamentary committees, the courts and the Commonwealth Ombudsman.

Auditor-General reports

The MDBA's financial statements are audited by the Auditor-General.

In 2017–18 the Australian National Audit Office (ANAO) completed an independent performance audit titled *Efficiency through Contestability Programme*. The audit included consideration of the Review of Commonwealth Water Functions, a part of which was relevant to MDBA activities. The report provided general conclusions on the government's efficiency program and can be found on the ANAO website.

Commonwealth Ombudsman

The Commonwealth Ombudsman made no formal reports relating to the MDBA during 2017-18.

Parliamentary committees

The inquiry into the Water Amendment Bill 2018 by the Senate Standing Committee on Rural and Regional Affairs and Transport was completed on 12 June 2018. There has been no government response.

During the year, there were two other inquiries, both of which are ongoing:

- inquiry by the Senate Standing Committee on Rural and Regional Affairs and Transport into the integrity of the water market in the Murray–Darling Basin
- inquiry by the Senate Standing Committee on the Environment and Energy into the management and use of Commonwealth water for the environment.

No Australian Government responses to MDBA-related parliamentary committees were tabled during 2017–18.

Judicial decisions and tribunals

There were no judicial decisions or decisions of administrative tribunals relating to the MDBA made during 2017-18.

Legal services

The MDBA's Legal and Parliamentary Services team continued to provide high-quality and timely support during the year. Most of the legal services required were provided in-house. The MDBA also accessed external legal services through the legal services multi-use list established by the Attorney General's Department.

All internal and external advice was coordinated by the Legal and Parliamentary Services team.

Key areas of work during the year included:

- providing advice to MDBA divisions about the Water Act as part of implementing the Basin Plan
- providing advice to MDBA staff on program delivery, legislative obligations, and the agency's corporate functions. This included supporting functions under the *Freedom of Information Act 1982* (Cwlth) (FOI Act) and the *Privacy Act 1988* (Cwlth) (Privacy Act)
- providing advice to support the MDBA's compliance and enforcement functions
- contributing to the development of legislation, including amendments to the Water Act and the Basin Plan.

Privacy

The MDBA treats personal information in accordance with the Privacy Act and the Australian Privacy Principles, which set out how the MDBA must collect, store, use or disclose, and allow access to and correction of personal information.

In keeping with this, the MDBA published a privacy notice on its website and took active steps to implement the Australian Government Agencies Privacy Code. This includes refresher training for MDBA staff. The code requires agencies to take a best practice approach to privacy governance.

Freedom of information

Under the FOI Act, individuals have the right to access copies of documents held by Australian Government ministers and agencies. There are some exceptions.

During 2017–18, the MDBA received 16 freedom of information requests. It processed all requests in accordance with the statutory timeframes and met all reporting obligations under the FOI Act.

Under the FOI Act, the MDBA must publish a range of information on its website as part of the Information Publication Scheme.

This information includes:

- organisational structure
- what the MDBA does and how it does it
- statutory appointments

- annual reports
- consultation arrangements and other information held
- details of how to obtain information released after freedom of information requests
- information routinely provided to parliament.

The MDBA's approach is outlined in the Information Publication Scheme agency plan.

Directions under the Water Act (s. 175)

On 25 June 2018 the Minister made a direction under the Water Act (s. 175). It is available on the Federal Register of Legislation.

Ministerial and parliamentary business

The MDBA provides the portfolio minister with timely, evidence-based advice or information on key issues, through written briefs and meetings.

The preparation of responses to ministerial correspondence supports an important function of government. The MDBA attended Senate Estimates committee hearings and responded to questions on notice.

People and culture

The MDBA is committed to embracing the principles of equity and diversity. It aims to provide an inclusive work environment that is fair, harmonious and safe, and offers opportunities for all employees to achieve their potential.

Workforce planning

The MDBA strengthened workforce planning practices during 2017–18 by progressively implementing initiatives from the MDBA Strategic Workforce Plan 2016–26. The plan is ambitious, identifying priorities to deliver and address over the coming years. This will strengthen existing organisational capability and capacity and build a high-performing organisation.

Recruitment

The MDBA continues to attract the high-level candidates needed to achieve its objectives.

Recruitment practices support flexible working arrangements and embrace diversity, both in the employees and in the range of opportunities available to them. This approach allows the MDBA to provide a rewarding and stimulating work environment that values efficiency and encourages innovative work practices.

Entry-level programs

The MDBA delivers a Graduate Development Program which encompasses an 11-month learning and development program. In February 2018, seven graduates joined the MDBA. Applications for the 2019 program were advertised in May 2018.

The MDBA participated in the Indigenous Australian Government Development Program. One trainee successfully finished the program in December 2017 and one trainee started the program in September 2017.

Valuing staff

The MDBA prides itself on a workplace that encourages and values the contributions of all staff.

In 2017-18 the MDBA developed and supported staff through a variety of workplace initiatives. It continued the CREATE strategy, launched in 2016, to foster an engaged and proactive workplace culture. Each letter of CREATE represents a different positive workplace behaviour or value.

Figure 3.3 CREATE-ing change



Talent Management Program

The MDBA's Talent Management Program provides a development opportunity for APS 6 and EL1 employees. The six-month program helps participants to develop skills in leadership, engagement and collaboration, communication and project management.

During the program, employees have the opportunity to:

- develop, pitch and implement a project that delivers on strategic outcomes of the MDBA
- participate in a structured program of participant-led monthly (minimum) events where
 issues and topics identified by the course participants and the executive are examined in
 depth in an informal setting
- take part in three one-on-one coaching sessions to identify individual learning and development needs and give participants guidance and support.

Training and development

The MDBA continues to support employees who choose to do tertiary study. Twenty-one employees were approved to receive study assistance in 2017–18. Popular study choices were business, project management, law, and environmental management.

Courses held in-house during the year included:

- Cultural awareness
- Managing aggressive behaviour
- Personal safety
- Dealing with change
- Managing remote teams
- Unconscious bias
- Physiology of confidence
- Effective workplace conversations
- Project management
- Personal Efficiency Program (PEP) training.

Australia Day Awards

The MDBA recognises high performance by individual employees and teams throughout the year. Recognising and rewarding outstanding performance is seen as critical in attracting and retaining the best people. The Australia Day awards are among the MDBA's highest individual and team accolades. Hosted each year by the Chief Executive, they are a formal way to celebrate outstanding achievements and acknowledge employee performance.

In 2018, two Australia Day Awards were presented for employee contribution that resulted in significant achievements.

The MDBA also introduced the Chief Executive Award. This award recognises individuals or teams who have demonstrated outstanding performance and contribution towards the strategic goals, through effective mentoring and role modelling, or knowledge-sharing with teams. There were five team awards and one individual award in 2018.

Diversity and inclusion

The MDBA is committed to embracing the principles of equity and diversity in daily business. It aims to respect diversity by providing an inclusive work environment that is fair, harmonious and safe and offers opportunities for all employees to achieve their full potential. It values diversity by harnessing individual difference to enhance the overall performance of the MDBA.

In 2017-18, the MDBA continued to support equity and diversity in the workplace through a range of strategies.

MDBA Gender Equality Strategy

In 2017, a gender equality taskforce investigated the MDBA's 'gender context' to look at how to put gender on the agenda. The taskforce used information from staff surveys, focus groups, policy reviews and national assessment tools to prepare a Gender Equality Strategy for the MDBA that aligns with the Australian Public Service's Balancing the Future initiative. Figure 3.4 shows the current gender breakdown.

Figure 3.4 Gender breakdown of MDBA staff as at 30 June 2018



Flexible working arrangements

The MDBA is committed to providing a flexible approach to work arrangements for all employees to help them maintain a healthy work-life balance.

It has been able to implement flexible working arrangements by:

- adopting new working practices
- taking advantage of improved technological equipment and services
- moving to new accommodation designed to increase collaboration and flexibility.

Aboriginal and Torres Strait Islander staff

The MDBA has an active Aboriginal and Torres Strait Islander staff network that delivers major cultural events and helps promote reconciliation in the MDBA, and it works in partnership with Aboriginal Nations throughout the Murray–Darling Basin. Its vision is to play an active and meaningful role in reconciliation.

The MDBA's Reconciliation Action Plan, Strengthening Connections, is a strategic plan for all staff aimed at improving relationships, showing respect and increasing opportunities to deliver outcomes for Aboriginal and Torres Strait Islander peoples as part of the MDBA's business.

Staff with a disability

The MDBA's involvement in RecruitAbility is one way it shows commitment to increasing employment opportunities for people with a disability. The MDBA is a bronze member of the Australian Network on Disability.

LGBTI staff

The Workplace Diversity and Inclusion Program 2016–20 includes LGBTI awareness training for all staff and managers. It focuses on applying the requirements set out in the Australian Government Guidelines on the Recognition of Sex and Gender.

Multicultural staff

The MDBA is committed to supporting its multicultural workforce. Staff members come from more than 30 countries and speak a variety of languages including Arabic, Bengali, Burmese, Dutch, French, German, Hakka, Hindi, Italian, Japanese, Malay, Mandarin, Norwegian, Persian, Portuguese, Romanian, Spanish, Urdu and Pitjantjatjara.

MDBA champions

A number of Senior Executive Service officers have taken on roles as champions. These roles promote diversity in the workplace and raise awareness and understanding.

In 2017-18 the champions were:

- Phillip Glyde, Gender Equality Champion
- Russell James, Indigenous Champion
- Annette Blyton, Disability Champion.

Maintaining safe and healthy workplaces

During the year, the MDBA continued to strengthen work health and safety management systems. Reducing injuries and maintaining a healthy workplace continued to be a key focus.

Initiatives delivered in 2017-18 included:

- regular workplace inspections, risk assessments and monitoring by the Health and Safety Committee
- early intervention services to prevent and mitigate development of chronic injury or illness
 - annual flu vaccinations
 - workstation assessments by qualified occupational therapists
 - confidential support services through the Employee Assistance Program for employees and eligible family members
- programs to encourage health and wellbeing
 - lunchtime yoga
 - an annual health and wellbeing allowance
 - activities for the annual health and wellbeing week.

During 2017–18, there was only one notification of a dangerous incident. The MDBA's Rehabilitation Policy supports staff to minimise the impact of work-related and non-work related injuries on themselves and their colleagues. In 2017, an external audit of the Rehabilitation Management System was conducted. It found that the MDBA's compliance rate had increased to 100%, compared with 88% in 2016.

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Internal reports on workplace hazards and incidents	50	70	44	16	7	23
Lost time caused by incidents and injuries not reported to Comcare (staff days)	8	26.3	4.5	1.5	58	14.5
Lost time caused by incidents and injuries reported to Comcare (staff days)	0	0	10	0	0	3
Incidents reported to Comcare	0	0	1	0	0	1

Table 3.3 Health and safety statistics from 2012-13 to 2017-18

The MDBA maintained a low number of accepted claims: no claims in 2016–17 and only one claim in 2017–18. As a result, the indicative workers compensation premium for 2017–18 was reduced by \$13 000.

Table 3.4 Comparison between Comcare claims and premiums

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Number of new claims	4	4	1	0	0	1
Total cost of new claims (\$)	105 682	61 754	11 625	0	0	2 552
Average cost of new claims (\$)	26 421	10 292	11 625	0	0	2 552
Comcare premium (\$)	628 621	1 094 118	1 080 859	1 062 746	1 040 669	1 026 752

Employee arrangements

Senior Executive Service remuneration policy

The Chief Executive determines the remuneration of the agency's Senior Executive Service (SES) officers under the *Public Service Act 1999* (Cwlth) (s. 24 (1)), with regard to the Workplace Bargaining Policy 2018.

The MDBA's remuneration policy allows variations in remuneration between individual jobs, based on market and work-value considerations. This allows the MDBA to compete effectively for the best people in the employment market.

Non-salary benefits provided to SES employees as part of their remuneration package include superannuation and payment for car parking (where applicable).

More information about employee arrangements and SES remuneration is on the MDBA website.

Enterprise Agreement 2017-20

The MDBA's Enterprise Agreement came into effect on 10 July 2017, giving staff a 6% pay increase within 18 months of implementation.

The MDBA values staff input and feedback, and is committed to involving staff in policy development. All updated or new policies associated with the Enterprise Agreement have been circulated to staff for feedback as part of the staff consultation process.

Staffing profile

Table 3.5 provides more details on the ages of MDBA staff.

	Female	Male
<25	9	3
25-34	45	28
35-44	66	45
45-54	30	40
55-64	12	18
>65	5	6
Total	167	140

Table 3.5 Age of MDBA staff



Section 4 CFO report and financial statements

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Chief Finance Officer's report

During 2017-18 the MDBA reported an operating surplus of \$16.2 million. Significant fluctuations in spending against the budget are due to the impact of the complex nature of joint programs. This reflects a high level of inherent risk associated with the delivery of capital construction and environmental projects.

Programs were delivered costing \$163.4 million (compared to \$151.8 million in 2016–17). Contributions from jurisdictions were \$94.1 million (compared to \$88.3 million in 2016–17) and revenue from government was \$78.9 million (compared to \$59.7 million in 2016–17). This is due to funding for the South Australian Riverland Floodplains Integrated Infrastructure Project being \$36.5 million (compared to \$15 million in 2016–17). The MDBA continued to manage over \$4.9 billion (gross value) in assets comprising dams, weirs, locks and water entitlements used for achieving The Living Murray Initiative (LMI) objectives.

Other revenue received of \$6.6 million (compared to \$6.3 million in 2016–17) comprises interest, rent for land and cottages and royalty from hydropower generation.

The Public Governance, Performance and Accountability Act 2013 (Cwlth) (PGPA Act) has brought about significant changes to the way in which the MDBA approached its overall resource management. Consistent with 2016–17, the MDBA's operating account sits outside of the consolidated revenue fund.

The MDBA's closing equity (net assets) is \$79.4 million (compared to \$63.2 million in 2016–17). The increase in closing equity is due to comprehensive income attributable to the Australian Government of \$16.2 million (compared with \$2.4 million in 2016–17). This increase is due to lower than budgeted activity on the Murray Mouth Dredging Program and the Salt Interception Scheme.

Financial results

Figure 4.1 shows there has been an increase in contributions received from the jurisdictions since 2014–15 and there has been a steady level of revenue received from the Australian Government, which represents core funding for Basin Plan related functions.

Figure 4.2 shows revenue received, expenditure incurred and the available funds. On transition from the Murray–Darling Basin Commission to the MDBA during 2008, the available funds were \$441.5 million. A significant component of these funds have been applied for key River Murray operations (RMO) construction projects, including the Environmental Works and Measures Program; and the MDBA share in the acquisition of water entitlements for the LMI, which resulted in the declining cash reserves.

General and special purpose reporting

The MDBA financial statements are a general purpose financial report, and refer to the economic dependency on the Australian Government in order to administer the entity and its functions.

One of the key functions of the MDBA is to act as an asset manager for key infrastructure assets throughout the Basin. Infrastructure assets comprise \$2.6 billion (written down value) in RMO assets (such as the Hume and Dartmouth dams, and the locks and weirs on the River Murray).



Figure 4.1 MDBA revenue (2012-13 to 2017-18)



Figure 4.2 MDBA expenditure and special account (2012-13 to 2017-18)

Notes:

Available funds have been in decline due to the additional expenditure on the Environmental Works and Measures Program, the acquisition of water entitlements for LMI and other capital projects.

The MDBA became a corporate Commonwealth entity with the commencement of the PGPA Act. One implication was that the MDBA special account under the *Financial Management and Accountability Act 1997* (Cwlth) was abolished and the funds were drawn from the special account on 30 June 2014. Figure 4.2 includes previous balances of the special account and amounts now held in cash at bank for comparative purposes.

The Murray-Darling special account is not a special account for the purposes of the PGPA Act.

The MDBA also manages water entitlements worth \$632 million on behalf of Basin states and the Australian Government, as part of the LMI joint venture. These assets were either purchased from the market or acquired as a result of infrastructure improvement-based saving projects. These assets are subject to valuation on an annual basis and are valued (on a consistent basis) in accordance with Australian Accounting Standards (AAS).

River Murray operations and LMI assets do not form part of the MDBA's general-purpose financial statements. They are reported separately in special-purpose financial statements. These special-purpose financial statements do not form part of this annual report, but are independently audited on an annual basis.

Internal controls

The MDBA has appropriate financial controls in place and these operated effectively and reliably during the past year. Similarly, no major issues have been identified by the MDBA's internal audit process. There is a sound internal control framework in place, including effective identification and management of business risks and reliable financial and management reporting systems.

Compliance

The PGPA Act (s. 19) requires that accountable authorities of Commonwealth entities notify their responsible minister as soon as practicable of any significant issue that has affected the entity. Compliance surveys were carried out throughout the 2017–18 financial year to capture non-compliance with the PGPA Act, the PGPA Rule or Australian Government policies. There were no 'significant' breaches of the PGPA Act, the PGPA Rule or Australian Government policies for 2017–18.

Related entity transactions

The MDBA has entered into transactions with related parties as part of whole-of-government initiatives, and acquired goods and services from Comcover, Comcare, the Department of the Treasury and the Department of Finance to the value of \$2.8 million.

Financial management

During the year, the major focus has been on:

- re-engineering the MDBA's performance planning and reporting processes
- following the scoping study, commencing the project to transfer River Murray operations assets into the Financial Management Information System (FMIS)
- implementing an online spending proposal approval process within the FMIS as part of the 'red tape' reduction initiatives
- upgrading the FMIS to incorporate the new contract module.

The payroll function within the MDBA has been outsourced during the 2017-18 financial year.

Financial performance

Revenues

The MDBA receives revenue from three sources:

- funding from the Australian Government (for Basin Plan related functions)
- contributions from Australian, state and territory governments (for Murray–Darling Basin Agreement related functions)
- other miscellaneous revenue, including rent from land and cottages, royalty from hydropower generation and interest.

During 2017–18, the MDBA received revenues from the Australian Government totalling \$78.9 million (2016–17: \$59.7 million). In 2017–18, revenue from government included \$36.5 million (2016–17: \$15 million) for the South Australian Riverland Floodplains Integrated Infrastructure Project. Until 2015–16 this funding was classified as administered funding.

During 2017–18, contributions from jurisdictions totalled \$94.1 million (compared to \$88.3 million in 2016–17). The increase in contributions was due to the restoration of previously deferred maintenance and construction activities, and improvements to asset management processes.

Other revenue received of \$6.6 million (compared to \$6.3 million in 2016–17) comprises interest, rent for land and cottages, royalty from hydropower generation and grant funding.

Expenditures

The MDBA's total expenditure for 2017–18 was \$163.4 million (compared to \$151.8 million in 2016–17). The change is primarily due to the South Australian Riverland Floodplains Integrated Infrastructure Program. Table 4.1 outlines the main features of our financial performance.

Table 4.1 MDBA financial performance from 2012–13 to 2017–18

	MDBA	2012-13 Actuals	2013-14 Actuals	2014-15 Actuals	2015-16 Actuals	2016-17 Actuals	2017-18 Actuals
		\$000	\$000	\$000	\$000	\$000	\$000
Outcome 1	Revenue	155 802	137 434	127 058	164 136	154 218	179 548
and total departmental	Expenses	204 729	169 274	138 244	164 416	151 794	163 379
	Surplus (deficit)	-49 126	-31 876	-11 186	-280	2 424	16 169

Financial position

The MDBA's net equity position increased in 2017-18 by \$16.2 million to \$79.4 million. This increase is due to lower than budgeted activity on the Murray Mouth Dredging Program and the Salt Interception Scheme. Both projects are reliant on water flows to determine their workload for a period. The high water flows on the river during 2017-18 resulted in fewer dredging and salt interception projects.

Assets and asset management

The MDBA's financial and non-financial assets at the end of 2017–18 were \$101.4 million and \$8.3 million respectively. Financial assets primarily consist of cash and cash equivalents. Non-financial assets primarily consist of leasehold improvements, intangible assets and property, plant and equipment.

Liabilities

Liabilities administered directly by the MDBA at the end of 2017–18 amounted to \$30.3 million. Liabilities mainly consist of amounts owing to suppliers, provisions for employee entitlements and payables in relation to the lease incentive.

Total equity

The MDBA ended the year with a total equity of \$79.4 million, consisting mainly of cash resources, minor fixed assets offset by trade creditors, employee entitlements and the lease incentive payable. This is shown in Table 4.2.

Managed assets: joint ventures

Two joint ventures were established through separate agreements: the Asset Agreement for River Murray Operations Assets and the Further Agreement on Addressing Water Overallocation and Achieving Environmental Objectives in the Murray-Darling Basin – Control and Management of Living Murray Assets.

Under the agreements, the MDBA has responsibility for managing the following classes of assets:

- infrastructure assets to achieve the objective of RMO
- water entitlements acquired to achieve the objective of the LMI.

The assets are controlled and held by the two unincorporated joint ventures.

At 30 June 2018, the RMO joint venture held net assets of \$2.6 billion including the Hume and Dartmouth dams and the locks and weirs on the River Murray. As the larger construction projects have now been completed, the RMO infrastructure asset base remained fairly constant during 2017–18. This is reflected in a similar depreciation charge for 2017–18 of \$38.8 million (2016–17 was \$38.6 million). Assets acquired under the asset agreement comprise plant and equipment purchases of \$2.6 million and assets constructed and held in work in progress of \$8.1 million. The independent external revaluation resulted in assets being increased in value by \$12.2 million in 2017–18.

Measurement	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	\$000	\$000	\$000	\$000	\$000	\$000
Assets	154 456	108 038	96 695	88 648	95 837	109 678
Liabilities	48 310	33 768	33 611	27 853	32 618	30 290
Total equity	106 146	74 270	63 084	60 795	63 219	79 388

Table 4.2 MDBA equity from 2012-13 to 2017-18

The LMI joint venture held net assets of \$632.4 million, comprising gross investment in water recovery measures of \$695.9 million and accumulated impairment losses of \$63.5 million. The significant change in the LMI asset values during 2017–18 was the impairment reversal on water entitlements of \$9.4 million.

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Murray-Darling Basin Authority

STATEMENT BY THE ACCOUNTABLE AUTHORITY AND CHIEF FINANCE OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2018 comply with subsection 42(2) of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act), and are based on properly maintained financial records as per subsection 41(2) of the PGPA Act.

In our opinion, at the date of this statement, there are reasonable grounds to believe that the Murray-Darling Basin Authority will be able to pay its debts as and when they fall due.

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Russell James Acting Chief Executive 26 September 2018

Hann

Harish Madan Chief Finance Office 26 September 2018




INDEPENDENT AUDITOR'S REPORT

To the Minister for Agriculture and Water Resources

Opinion

In my opinion, the financial statements of the Murray-Darling Basin Authority for the year ended 30 June 2018:

- (a) comply with Australian Accounting Standards Reduced Disclosure Requirements and the *Public Governance, Performance and Accountability (Financial Reporting) Rule 2015*; and
- (b) present fairly the financial position of the Murray-Darling Basin Authority as at 30 June 2018 and its financial performance and cash flows for the year then ended.

The financial statements of the Murray-Darling Basin Authority, which I have audited, comprise the following statements as at 30 June 2018 and for the year then ended:

- Statement by the Accountable Authority and Chief Finance Officer;
- Statement of Comprehensive Income;
- Statement of Financial Position;
- Statement of Changes in Equity;
- Cash Flow Statement; and
- Notes to the financial statements comprising a summary of significant accounting policies and other explanatory information.

Basis for Opinion

I conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. My responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of my report. I am independent of the Murray-Darling Basin Authority in accordance with the relevant ethical requirements for financial statement audits conducted by the Auditor-General and his delegates. These include the relevant independence requirements of the Accounting Professional and Ethical Standards Board's APES 110 *Code of Ethics for Professional Accountants* (the Code) to the extent that they are not in conflict with the *Auditor-General Act 1997*. I have also fulfilled my other responsibilities in accordance with the Code. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Accountable Authority's Responsibility for the Financial Statements

As the Accountable Authority of the Murray-Darling Basin Authority the Chief Executive is responsible under the *Public Governance, Performance and Accountability Act 2013* for the preparation and fair presentation of annual financial statements that comply with Australian Accounting Standards – Reduced Disclosure Requirements and the rules made under that Act. The Chief Executive is also responsible for such internal control as the Chief Executive determines is necessary to enable the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Chief Executive is responsible for assessing the Murray-Darling Basin Authority's ability to continue as a going concern, taking into account whether the entity's operations will cease as a result of an administrative restructure or for any other reason. The Chief

> GPO Box 707 CANBERRA ACT 2601 19 National Circuit BARTON ACT Phone (02) 6203 7300 Fax (02) 6203 7777

Executive is also responsible for disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the assessment indicates that it is not appropriate.

Auditor's Responsibilities for the Audit of the Financial Statements

My objective is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the Australian National Audit Office Auditing Standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with the Australian National Audit Office Auditing Standards, I exercise professional judgement and maintain professional scepticism throughout the audit. I also:

- identify and assess the risks of material misstatement of the financial statements, whether due to
 fraud or error, design and perform audit procedures responsive to those risks, and obtain audit
 evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting
 a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may
 involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal
 control;
- obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control;
- evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Accountable Authority;
- conclude on the appropriateness of the Accountable Authority's use of the going concern basis of
 accounting and, based on the audit evidence obtained, whether a material uncertainty exists related
 to events or conditions that may cast significant doubt on the entity's ability to continue as a going
 concern. If I conclude that a material uncertainty exists, I am required to draw attention in my
 auditor's report to the related disclosures in the financial statements or, if such disclosures are
 inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to
 the date of my auditor's report. However, future events or conditions may cause the entity to cease
 to continue as a going concern; and
- evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Australian National Audit Office

S.Bucharan

Serena Buchanan Senior Executive Director

Delegate of the Auditor-General

Canberra 26 September 2018

Statement of Comprehensive Income

for the year ended 30 June 2018

				Original
		2018	2017	Budget
	Notes	\$'000	\$'000	\$'000
NET COST OF SERVICES				
Expenses				
Employee benefits	<u>1.1A</u>	36,636	37,052	34,511
Suppliers	<u>1.1B</u>	78,331	86,479	104,079
Grants	<u>1.1C</u>	46,220	26,181	36,500
Depreciation and amortisation	<u>2.2A</u>	1,640	1,768	2,322
Write-down and impairment of assets	<u>1.1D</u>	520	302	-
Finance costs	1.1E	32	12	-
Total expenses	_	163,379	151,794	177,412
Own-Source Income				
Own-source revenue				
Contributions from jurisdictions	<u>1.2A</u>	94,063	88,332	94,063
Grants	<u>1.2B</u>	-	1,632	-
Interest		2,160	1,256	-
Other revenue	<u>1.2C</u>	4,510	3,406	3,168
Total own-source revenue	_	100,733	94,626	97,231
Gains/(Losses)				
Other Gains/(Losses)	<u>1.2D</u>	(97)	(185)	-
Reversal of write-downs and impairment		-	38	-
Total Gains/(Losses)	-	(97)	(147)	-
Total own-source income	_	100,636	94,479	97,231
Net cost of services	_	(62,743)	(57,315)	(80,181)
Revenue from Government	<u>1.2E</u>	78,910	59,739	77,470
Surplus/(Deficit) attributable to the Australian Government	_	16,167	2,424	(2,711)
OTHER COMPREHENSIVE INCOME				
Changes in asset revaluation surplus		2		
Total comprehensive income	_	16,169	2,424	(2,711)
Total comprehensive income attributable to the Australian	_			
Government	_	16,169	2,424	(2,711)

The original budget comprises the Departmental budget as disclosed in the Portfolio Budget Statements (PBS) 2017-18.

The above statement should be read in conjunction with the accompanying notes.

Budget Variances Commentary

Statement of Financial Position

as at 30 June 2018

				Original
		2018	2017	Budget
	Notes	\$'000	\$'000	\$'000
ASSETS		• • • •		
Financial assets				
Cash and cash equivalents	2.1A	97,950	81,955	69,213
Trade and other receivables	<u>2.1B</u>	3,421	4,031	2,975
Total financial assets		101,371	85,986	72,188
Non-financial assets				
Leasehold improvements	<u>2.2A</u>	4,947	5,514	-
Property, plant and equipment	<u>2.2A</u>	1,856	2,298	1,306
Intangibles	<u>2.2A</u>	923	1,533	8,746
Other non-financial assets	<u>2.2B</u>	581	506	-
Total non-financial assets		8,307	9,851	10,052
Total assets		109,678	95,837	82,240
LIABILITIES				
Payables				
Suppliers	2.3A	12,859	15,532	16,031
Other payables	2.3B	5,856	5,660	1,571
Total payables		18,715	21,192	17,602
Provisions				
Employee provisions	<u>3.1</u>	10,335	10,218	10,003
Other provisions	2.4	1,240	1,208	248
Total provisions		11,575	11,426	10,251
Total liabilities		30,290	32,618	27,853
Net assets		79,388	63,219	54,387
EQUITY				
Contributed equity ¹		(11,199)	(11,199)	(11,199)
Reserves		2	-	-
Retained surplus		90,585	74,418	65,586
Total equity		79,388	63,219	54,387

The above statement should be read in conjunction with the accompanying notes.

1. Please refer to the Statement of Changes in Equity for more information.

Budget Variances Commentary

Statement of Changes in Equity

for the year ended 30 June 2018

			Original
	2018	2017	Budget
1	\$'000	\$'000	\$'000
CONTRIBUTED EQUITY/CAPITAL'			
Opening balance			
Balance carried forward from previous year	(11,199)	(11,199)	(11,199)
Closing balance	(11,199)	(11,199)	(11,199)
RETAINED EARNINGS			
Opening balance			
Balance carried forward from previous year	74.418	71.994	68.297
Adjusted opening balance	74,418	71,994	68,297
Comprehensive income			
Surplus/(Deficit) for the year	16,167	2,424	(2,711)
Other comprehensive income	-	-	
Total comprehensive income	16,167	2,424	(2,711)
Closing balance	90,585	74,418	65,586
ASSET REVALUATION RESERVE			
Balance carried forward from previous year	-	-	
Comprehensive income			
Other comprehensive income	2	-	
Total comprehensive income	2	-	
Closing balance	2	-	
TOTAL EQUITY			
Opening balance			
Balance carried forward from previous year	63,219	60 795	57 098
Adjusted opening balance	63,219	60,795	57,098
	· · · · · · · · · · · · · · · · · · ·		
Comprehensive income			
Surplus/(Deficit) for the year	16,167	2,424	(2,711)
Other comprehensive income	2	-	
Total comprehensive income	16,169	2,424	(2,711)
Closing balance	79,388	63,219	54,387

The above statement should be read in conjunction with the accompanying notes.

1. The negative contributed equity is a historical legacy relating back to the transition of the Murray-Darling Basin Commission (MDBC) to the Murray-Darling Basin Authority on 15 December 2008. As part of the transition arrangement, all cash held by the MDBC totalling \$441.488m was paid back to the Official Public Account (OPA) before being appropriated to the Authority. Once appropriated to the Authority these funds were recorded as revenue in the Authority's accounts.

Liabilities of \$19.180m and assets of \$7.981m were transferred to the Authority during the 2008-09 financial year. The excess of liabilities over assets of \$11.199m continues to be shown in the Financial Statements of the Authority as negative contributed equity.

Budget Variances Commentary

Cash Flow Statement

for the year ended 30 June 2018

				Original
		2018	2017	Budget
	Notes	\$'000	\$'000	\$'000
OPERATING ACTIVITIES				
Cash received				
Receipts from Government		78,910	59,739	77,470
Contributions from jurisdictions		94,063	88,332	94,063
Grants		-	1,393	-
Interest		1,798	1,268	-
Net GST received		8,386	9,126	10,422
Other		5,595	3,099	3,168
Total cash received		188,752	162,957	185,123
Cash used				
Employees		36,241	36 667	34 511
Suppliers		88,709	94,963	114,501
Grants		47,180	27.299	36,500
Other		-	133	-
Total cash used	-	172.130	159.062	185.512
Net cash received/(used by) operating activities	•	16,622	3,895	(389)
INVESTING ACTIVITIES				
Cash received				
Proceeds from sales		20	-	-
Total cash received		20	-	-
Cash used				
Purchase of property plant and equipment		402	2 365	2 2 2 2
Purchase of intangible assets		245	2,303	2,322
		647	2 003	
Not each used by investing activities		(627)	(2,903)	(2 322)
Net cash used by investing activities	•	(027)	(2,903)	(2,322)
Net Increase/(decrease) in cash held		15,995	992	(2,711)
Cash and cash equivalents at the beginning of the reporting period		81,955	80,963	71,924
Cash and cash equivalents at the end of the reporting period	<u>2.1A</u>	97,950	81,955	69,213

The above statement should be read in conjunction with the accompanying notes.

Budget Variances Commentary

Overview

Objectives of the Murray-Darling Basin Authority

The Murray-Darling Basin Authority (the Authority) is an Australian Government controlled corporate Commonwealth entity established by the *Water Act 2007*. It is a not-for-profit entity. The principal objective of the Authority is to manage the Murray-Darling Basin's water resources in the national interest so that there may be an equitable and sustainable use of the Basin's resources.

The continued existence of the Authority in its present form and with its present programs is dependent on:

- Funding from Basin jurisdictions towards meeting the cost of Murray-Darling Basin Agreement functions; and
- Government policy and on continuing funding by Federal Government for the Authority's administration and
 programs relating to the Basin Plan and Murray-Darling Basin Agreement functions.

The Authority's activities are classified as departmental. Departmental activities involve the use of assets, liabilities, income and expenses controlled or incurred by the Authority in its own right.

From 1 July 2013, the Authority became responsible for the South Australian Riverland Floodplains Integrated Infrastructure Project (SARFIIP). SARFIIP aims to enhance the effectiveness of improved environmental flows to South Australia in particular at the Pike and Katarapko - Eckert's Creek (Katfish Reach) Floodplains and is expected to extend over 7 years, with an estimated cost of \$155 million. While these activities are not controlled by the Authority it exercises effective project oversight and funding on behalf of the Commonwealth. SARFIIP funding is recorded as revenue from government and expenses are recorded as a grant expense in the Authority's Statement of Comprehensive Income. Prior to 2014-15, the project was reported as an Administered item.

Basis of Preparation of the Financial Statements

The financial statements are general-purpose financial statements and are required by section 42 of the *Public Governance, Performance and Accountability Act 2013* (the PGPA Act).

The financial statements have been prepared in accordance with:

- a) Public Governance, Performance and Accountability (Financial Reporting) Rule 2015 (FRR) for reporting periods ending on or after 1 July 2017; and
- Australian Accounting Standards and Interpretations Reduced Disclosure Requirements issued by the Australian Accounting Standards Board (AASB) that apply for the reporting period.

The financial statements have been prepared on an accrual basis and in accordance with the historical cost convention except for certain assets and liabilities at fair value. Except where stated, no allowance is made for the effect of changing prices on the results or the financial position.

The financial statements are presented in Australian dollars and values are rounded to the nearest thousand dollars unless otherwise specified.

Unless alternative treatment is specifically required by an accounting standard, income and expenses are recognised in the Statement of Comprehensive Income, when and only when the flow, consumption or loss of economic benefits has occurred and can be reliably measured.

New Accounting Standards

All new, revised or amended standards and interpretations that were issued prior to the sign-off date and are applicable to the current reporting date did not have a material effect on the entity's financial statements.

Taxation

The Authority is exempt from all forms of taxation except Fringe Benefits Tax (FBT) and the Goods and Services Tax (GST).

Revenues, expenses and assets are recognised net of GST except:

- where the amount of GST incurred is not recoverable from the Australian Taxation Office; and
- for receivables and payables which are recognised inclusive of GST.

Overview - continued

Comparative Figures

Comparative figures are adjusted so that they conform with changes in the presentation of the financial statements where required.

Events After the Reporting Period

No matters or circumstances have arisen since the end of the financial year which significantly affected or may affect the operations of the Authority, the results of these operations or state of affairs of the Authority in subsequent years.

Financial Performance

This section analyses the financial performance of the Authority for the year ended 30 June 2018

Note 1.1: Expenses		
	2018	2017
	\$'000	\$'000
Note 1.1A: Employee Benefits		
Wages and salaries	26,078	26,655
Superannuation:		
Defined contribution plans	2,922	2,861
Defined benefit plans	1,999	2,118
Leave and other entitlements	5,135	4,445
Separation and redundancies	502	973
Total employee benefits	36,636	37,052
Accounting policy		
Accounting policies for employee related expenses are outlined in N	lote 3.1.	
Note 1 1B: Suppliers		
Goods and services supplied or rendered		
Expenditure by State Constructing Authorities	54,743	53,280
Water licence fee	3,457	4,572
Consultants and contractors	10,269	15,566
Communication & IT services	1,881	3,392
Other employment expenses	1,186	1,566
Committee expenses	854	1,135
Travel	1,344	1,507
Other provision of goods & services	1,482	2,524
Goods and services supplied or rendered	75,216	83,542
Goods and services are made up of		
Provision of goods	285	1 218
Rendering of services	74 931	82 324
Total goods and services supplied or rendered	75 216	83 542
		00,012
Other suppliers		
Operating lease rentals	2,062	1,870
Workers compensation expenses - government entity	1,053	1,067
Total other suppliers	3,115	2,937
Total suppliers	78,331	86,479

Note 1.1: Expenses - continued

Leasing Commitments

The Authority in its capacity as a lessee holds the following leases in Canberra, ACT.

Commencing on 31 March 2017 a 10 year lease was initiated in respect of premises at 33 Allara Street. Lease payments are subject to fixed annual increases of 3.75% on review date (April each year).

Commencing on 31 March 2017 a 2 year and 6 months lease option was exercised in respect of premises at 40 Allara Street. Lease payments are subject to fixed annual increases of 4% on review date (April each year).

Operating leases held by the Authority are effectively non-cancellable.

Note: Commitments are GST inclusive where relevant.

	2018	2017
	\$'000	\$'000
Commitments for minimum lease payments in relation to non-cancellable operating leases are payable as follows:		
Within 1 year	2,568	2,306
Between 1 to 5 years	9,401	9,519
More than 5 years	10,058	12,509
Total operating lease commitments	22,027	24,334

Accounting policy

Operating lease payments are expensed on a straight-line basis which is representative of the pattern of benefits derived from the leased assets.

Note 1.1C: Grants

Grants		
State and Territory Governments	8,340	8,564
SARFIIP	36,500	15,000
Private sector:		
Commercial entities	157	1,158
Non-profit institutions	1,207	1,403
Other	16	56
Total grants	46,220	26,181
Note 1.1D: Write-Down and Impairment of Assets		
Impairment of financial instruments	-	6
Impairment of intangible assets	142	-
Revaluation decrement of other property plant and equipment	378	296
Total write-down and impairment of assets	520	302
Note 1.1E: Finance Costs		
Unwinding of discount on make good provision	32	12
Total finance costs	32	12

Note 1.2: Own-Source Income

Own-Source Revenue	2018 \$'000	2017 \$'000
Note 1.2A: Contributions from Jurisdictions		
Australian Government	11,701	12,960
New South Wales	30,479	28,454
Victoria	28,685	27,068
South Australia	22,784	19,444
Queensland	104	102
Australian Capital Territory	310	304
Total contributions from jurisdictions	94,063	88,332

Accounting policy

The Authority receives contributions from jurisdictions based on an agreed contributions model (the model). The model is based on a number of different requirements including specific provisions under the Murray-Darling Basin Agreement.

Note 1.2B: Grants Received		
South Australia Barrage Fishways	-	550
NSW Constraints Business Case Development Project	-	1,082
Total grants received		1,632
Note 1.2C: Other Revenue		
Hydropower generation	2,132	1,194
Contributions by States - Salinity program	879	747
Land and cottage rents	336	333
Other	1,163	1,132
Total other revenue	4,510	3,406

Accounting policy

Revenue from rendering of services is recognised by reference to the stage of completion of contracts at the reporting date. The revenue is recognised when:

 \cdot the amount of revenue, stage of completion and transaction costs incurred can be reliably measured; and

 \cdot the probable economic benefits associated with the transaction will flow to the Authority.

The stage of completion of contracts at the reporting date is determined by reference to the proportion that costs incurred to date bear to the estimated total costs of the transaction.

Note 1.2: Own-Source Income - continued

Gains/(Losses)	2018 \$'000	2017 \$'000
Note 1.2D: Other Gains/(Losses)		
Gain/(loss) on movement in provisions	-	(28)
Additional expense not recognised through provision on settlement of		
restoration provision	-	(53)
Loss on disposal/write-off of assets	(97)	(104)
Total other gains/(losses)	(97)	(185)

Revenue from Government

Note 1.2E: Revenue from Government

Total revenue from Government	78,910	59,739
Project	36,500	15,000
- South Australian Riverland Floodplains Integrated Infrastructure		
- Basin Plan Activities	42,410	44,739
Departmental appropriations:		

The South Australian Riverland Floodplains Integrated Infrastructure Project (SARFIIP) aims to enhance the effectiveness of improved environmental flows to South Australia (SA) in particular at the Pike and Katarapko - Eckert's Creek (Katfish Reach) Floodplains. A budget of \$36.5 million for 2017-18 financial year was allocated for the SARFIIP project.

Financial Position

This section analyses the Authority's assets used to conduct its operations and the operating liabilities incurred as a result. Employee related information is disclosed in the People and Relationships section.

Note 2.1: Financial Assets

	2018	2017
	\$'000	\$'000
Note 2.1A: Cash and Cash Equivalents		
Cash on hand	97,950	81,955
Total cash and cash equivalents	97,950	81,955

Accounting policy

Cash is recognised at its nominal amount. Cash and cash equivalents include cash on hand and any deposits in bank accounts with an original maturity of 3 months or less that are readily convertible to known amounts of cash and subject to insignificant risk of changes in value.

Note 2.1B: Trade and Other Receivables

Goods and services receivable		
Trade Receivables	150	565
Net GST receivable from the Australian Taxation Office	2,239	2,577
Other Receivables	1,032	889
Total goods and services receivable (gross)	3,421	4,031
Total trade and other receivables (net)	3,421	4,031

Credit terms for goods and services were within 30 days (2017: 30 days). The Authority has not provided any loans (2017: no loans).

Accounting policy

Trade and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Receivables for goods and services, which have 30 day terms, are recognised at the nominal amounts due less any impairment allowance account. Collectability of debts is reviewed at the end of the reporting period. Allowances are made when collectability of the debt is no longer probable.

Note 2.1: Financial Assets - continued

Reconciliation of the Impairment Allowance

Movements in relation to 2017

	Goods and services	Total
	\$'000	\$'000
As at 1 July 2016	32	32
Increase recognised in net cost of services	-	-
Amounts written off	(32)	(32)
Total as at 30 June 2017	-	-

Movements in relation to 2018

	Goods and	Total
	services	Total
	\$'000	\$'000
As at 1 July 2017	-	-
Increase recognised in net cost of services	-	-
Amounts written off	-	-
Total as at 30 June 2018	-	-

Accounting policy

Financial assets are assessed for impairment at the end of each reporting period.

If there is an indication that receivables may be impaired, the Authority makes an estimation of the receivable's recoverable amount. When the carrying amount of the receivable exceeds the recoverable amount, it is considered impaired and is written down to its recoverable amount.

Note 2.2: Non-Financial Assets

Note 2.2A: Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment and Intangibles

Reconciliation of the opening and closing balances for 2018

			Intangible	assets	
		Other			
		property,			
	Leasehold	plant &	Computer		
	improvements	equipment	software ¹	Data sets	Total
	\$'000	\$'000	\$'000	\$'000	\$'000
As at 1 July 2017					
Gross book value	5,658	2,394	7,396	872	16,320
Accumulated depreciation, amortisation and impairment	(144)	(96)	(6,460)	(275)	(6,975)
Total as at 1 July 2017	5,514	2,298	936	597	9,345
Additions					
Purchased	-	518	138	-	656
Revaluation increment recognised in other comprehensive income	2	-	-	-	2
Impairment recognised in net cost of services	-	-	(142)	-	(142)
Revaluation decrements	-	(378)	-	-	(378)
Depreciation and amortisation	(569)	(465)	(297)	(309)	(1,640)
Other movements					
Disposals (Net Book Value)	-	(117)	-	-	(117)
Total as at 30 June 2018	4,947	1,856	635	288	7,726
Total as at 20 June 2040 removemented by					
Total as at 30 June 2018 represented by		4 95 4		070	45 004
Gross book value	5,083	1,954	7,392	872	15,301
Accumulated depreciation, amortisation and impairment	(136)	(98)	(6,757)	(584)	(7,575)
Total as at 30 June 2018	4,947	1,856	635	288	7,726
Total intangible assets			923		

¹ The carrying amount of computer software in-use only includes purchased software.

All non-financial assets have been assessed for impairment indicators. Where indicators have been identified due to physical damage, obsolescence or performance short falls, an impairment calculation has been performed.

There is no commitment or expectation to dispose or sell any leashold improvement, other property, plant & equipment or intangible assets within the next 12 months.

There is a capital commitment value of \$0.036m expected within the next 12 months (2017:0).

A revaluation of leasehold improvements, property, plant and equipment was undertaken as at 31 March 2018. This resulted in a decrement for PPE and an increment in Leasehold Improvements.

Note 2.2: Non-Financial Assets - continued

Accounting policy

Acquisition of Assets

Assets are recorded at cost on acquisition except as stated below. The cost of acquisition includes the fair value of assets transferred in exchange and liabilities undertaken. Financial assets are initially measured at their fair value plus transaction costs where appropriate.

Assets acquired at no cost, or for nominal consideration, are initially recognised as assets and income at their fair value at the date of acquisition, unless acquired as a consequence of restructuring of administrative arrangements. In the latter case, assets are initially recognised as contributions by owners at the amounts at which they were recognised in the transferor's accounts immediately prior to the restructuring.

Asset Recognition Threshold

Purchases of property, plant and equipment are recognised initially at cost in the statement of financial position, except for purchases costing less than \$2,000, which are expensed in the year of acquisition (other than where they form part of a group of similar items which are significant in total).

The initial cost of an asset includes an estimate of the cost of dismantling and removing the item and restoring the site on which it is located. This is particularly relevant to 'make good' provisions in property leases taken up by the Authority where there exists an obligation to restore the property to its original condition. These costs are included in the value of the Authority's leasehold improvements with a corresponding provision for the 'make good' recognised.

Revaluation

Following initial recognition at cost, property, plant and equipment is carried at fair value less subsequent accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

All leasehold improvements and property, plant and equipment assets were reviewed and assessed for fair value as at 31 March 2018 by Deloitte Touche Tohmatsu.

Revaluation adjustments are made on a class basis. Any revaluation increment is credited to equity under the heading of asset revaluation reserve except to the extent that it reverses a previous revaluation decrement of the same asset class that was previously recognised in the surplus/deficit.

Revaluation decrements for a class of assets are recognised directly in the surplus/deficit except to the extent that they reverse a previous revaluation increment for that class.

Any accumulated depreciation as at the revaluation date is eliminated against the gross carrying amount of the asset and the asset restated to the revalued amount.

Depreciation

Depreciable property, plant and equipment assets are written-off to their estimated residual values over their estimated useful lives to the Authority using, in all cases, the straight-line method of depreciation.

Depreciation rates (useful lives), residual values and methods are reviewed at each reporting date and necessary adjustments are recognised in the current, or current and future reporting periods, as appropriate.

Depreciation and/or amortisation rates applying to each class of asset are based on the following useful lives:

Asset Class	2017-18
Computers and IT equipment	3-7 years
Office equipment	6-9 years (2017: 2-5 years)
Leasehold improvements	Lease term
Data sets	3-20 years
Software applications	2-4 years (2017: 3-4 years)
Software licences	Length of licence but within range of 1-4 years

Impairment

All assets were assessed for impairment at 30 June 2018. Where indications of impairment exist, the asset's recoverable amount is estimated and an impairment adjustment made if the asset's recoverable amount is less than its carrying amount. The recoverable amount of an asset is the higher of its fair value less costs of disposal and its value in use. Value in use is the present value of the future cash flows expected to be derived from the asset. Where the future economic benefit of an asset is not primarily dependent on the asset's ability to generate future cash flows, and the asset would be replaced if the Authority were deprived of the asset, its value in use is taken to be its depreciated replacement cost.

Derecognition

An item of property, plant and equipment is derecognised upon disposal or when no further future economic benefits are expected from its use or disposal.

Intangibles

The Authority's intangibles comprise internally developed software; acquired data-sets for internal use and software licences. These assets are carried at cost less accumulated amortisation and accumulated impairment losses.

Software is amortised on a straight-line basis over its anticipated useful life. All software assets were assessed for indications of impairment as at 30 June 2018.

2018	2017
\$'000	\$'000
581	506
581	506
543	506
38	-
581	506
	2018 \$'000 581 581 543 38 581

No indicators of impairment were found for other non-financial assets.

Note 2.3: Payables

	2018 \$'000	2017 \$'000
Note 2.3A: Suppliers		
Trade creditors and accruals	12,859	15,532
Total suppliers	12,859	15,532

Generally, settlement terms are 30 days. The total represents Financial Liabilities measurement at amortised cost.

Note 2.3B: Other Payables		
Wages and salaries	582	306
Superannuation	40	38
Lease incentive	3,672	4,092
Prepayments received/unearned income	1,123	1,123
Other	439	101
Total other payables	5,856	5,660
Other payables expected to be settled		
No more than 12 months	2,211	1,805
More than 12 months	3,645	3,855
Total other payables	5,856	5,660

Accounting policy

The Authority's financial liabilities consist of trade creditors and accruals. These liabilities are recognised at their nominal amounts, being the amounts at which the Authority expects the liabilities will be settled. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

Unearned income represents assets received from another party in advance of the Authority fulfilling its contracted obligations. The Authority releases unearned income to revenue when the services required to be performed have been performed.

Note 2.4: Other Provisions

	2018	2017
	\$'000	\$'000
Note 2.4: Other Provisions		
Provision for make good	1,240	1,208
Total other provisions	1,240	1,208

	Provision for	
		T - 4 - 1
	restoration	lotal
	\$'000	\$'000
Carrying amount 1 July 2016	248	248
Unwinding of discount or change in discount rate	12	12
Amounts paid on settlement	(80)	(80)
Revaluation increment of provision	28	28
Additional provisions made	1,000	1,000
Closing balance 30 June 2017	1,208	1,208
	Provision for	
	restoration	Total
	\$'000	\$'000
Carrying amount 1 July 2017	1,208	1,208
Unwinding of discount or change in discount rate	32	32
Closing balance 30 June 2018	1,240	1,240

The Authority currently has 2 (2017: 2) agreements for the leasing of premises which have provisions requiring the Authority to restore the premises at the conclusion of the lease. The Authority has made a provision to reflect the present value of this obligation.

People and Relationships

This section describes a range of employment and post employment benefits provided to our people and our relationships with other key people.

Note 3.1: Employee Provisions

	2018	2017
	\$'000	\$'000
Note 3.1: Employee Provisions		
Leave	10,231	10,011
Separations and redundancies	104	207
Total employee provisions	10,335	10,218
Employee provisions expected to be settled		
No more than 12 months	3,428	3,555
More than 12 months	6,907	6,663
Total employee provisions	10,335	10,218

Accounting policy

Liabilities for 'short-term employee benefits' (as defined in AASB 119 *Employee Benefits*) and termination benefits due within twelve months of the end of reporting period are measured at their nominal amounts.

The nominal amount is calculated with regard to the rates expected to be paid on settlement of the liability.

Other long-term employee benefits are measured at the present value of the defined benefit obligation at the end of the reporting period.

<u>Leave</u>

The liability for employee benefits includes provision for annual leave and long service leave. No provision has been made for sick leave as all sick leave is non-vesting and the average sick leave taken in future years by employees of the Authority is estimated to be less than the annual entitlement for sick leave.

The leave liabilities are calculated on the basis of employees' remuneration at the estimated salary rates that will be applied at the time the leave is taken, including the Authority's employer superannuation contribution rates to the extent that the leave is likely to be taken during service rather than paid out on termination.

The liability for long service leave has been determined by reference to the shorthand method as per the *Public Governance, Performance and* Accountability (Financial Reporting) Rule (FRR) and Commonwealth Entity Financial Statements Guide. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Separation and Redundancy

Provision is made for separation and redundancy benefit payments. The Authority recognises a provision for termination when it has developed a detailed formal plan for the terminations and has informed those employees affected that it will carry out the terminations.

Superannuation

The Authority's staff are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS), the PSS accumulation plan (PSSap) or other employee nominated superannuation funds.

The CSS and PSS are defined benefit schemes for the Australian Government. The remaining funds are defined contribution schemes.

The liability for defined benefits is recognised in the financial statements of the Australian Government and is settled by the Australian Government in due course. This liability is reported in the Department of Finance's administered schedules and notes.

The Authority makes employer contributions to the employees' superannuation scheme at rates determined by an actuary to be sufficient to meet the current cost to the Government. The Authority accounts for the contributions as if they were contributions to defined contribution plans.

The liability for superannuation recognised as at 30 June represents outstanding contributions for the final fortnight of the reporting period.

The Authority also contributes to a number of complying funds to discharge the Authority's liability in regard to individual employees and the Superannuation Guarantee (Administration) Act 1992 as well as to facilitate the salary sacrifice options of employees.

Note 3.2: Key Management Personnel Remuneration

Key management personnel are those persons having authority and responsibility for planning, directing and controlling the activities of the entity, directly or indirectly, including any director (whether executive or otherwise) of that entity. The entity has determined the key management personnel to include the Commonwealth Minister of Agriculture and Water Resources, Authority members, the Chief Executive and Divisional heads within the Authority and any staff member who has acted in one of the divisional head roles for longer than 3 months. Key management personnel remuneration is reported in the table below:

	2018	2017
	\$'000	\$'000
Short-term employee benefits	1,803	1,721
Other long-term employee benefits	168	138
Post-employment benefits	318	240
Fotal key management personnel remuneration expenses ¹	2,289	2,099

The total number of key management personnel included in the above table is 16 (2017: 12).

^{1.} The above key management personnel remuneration excludes the remuneration and other benefits of the Portfolio Minister. The Portfolio Minister's remuneration and other benefits are set by the Remuneration Tribunal and are not paid by the entity.

Note 3.3: Related Party Disclosures

Related party relationships:

The Authority is an Australian Government controlled entity. Related parties to this entity are Key Management Personnel (as detailed in Note 3.2), Members of the Ministerial Council, the Living Murray Initiatives & River Management Operations joint ventures and other Australian Government entities.

Transactions with related parties:

Given the breadth of Government activities, related parties may transact with the government sector in the same capacity as ordinary citizens. Such transactions include the payment or refund of taxes, receipt of a Medicare rebate or higher education loans. These transactions have not been separately disclosed in this note. The Authority does not pay any member of the Ministerial Council for the services they provide to the MDBA under the Murray-Darling Basin Agreement.

The following transactions with related parties occurred during the financial year:

- A member of the Authority has an ownership interest in, and is a director of, a consulting company which provided services to the MDBA to the value of \$128,194. A balance of \$51,529 remained outstanding at year end along with a commitment for \$76,265. The services were provided under standard terms and conditions.

The following transactions with related parties occurred during the previous financial year:

- A member of the Authority has an ownership interest in, and is a director of, a consulting company which provided services to the MDBA to the value of \$118,000. There was nil balance outstanding at year end. The services were provided under standard terms and conditions.

Managing uncertainties

This section analyses how the Authority manages financial risks within its operating environment.

Note 4.1: Contingent Assets and Liabilities

There are no contingent assets or liabilities in current year or prior year.

Quantifiable Contingencies

There were no estimated contingent liabilities as at 30 June 2018.

Unquantifiable Contingencies

In addition to the above matters, there are a number of unquantifiable contingencies where it is not possible to estimate the amounts of any eventual payments.

These pertain to the former Murray-Darling Basin Commission (the Commission). Under Section 239F of the *Water Act 2007*, the liabilities of the Commission became liabilities of the Authority.

This included any liability, duty or obligation, whether contingent or prospective; but does not include a liability, duty or obligation imposed by:

- an Act; or
- · regulations or other subordinate legislation made under an Act; or
- the Murray-Darling Basin Act 1992 of New South Wales; or
- the Murray-Darling Basin Act 1993 of Victoria; or
- the Murray-Darling Basin Act 1996 of Queensland; or
- the Murray-Darling Basin Act 1993 of South Australia; or
- the former Murray-Darling Basin Agreement.

Accounting policy

Contingent liabilities and contingent assets are not recognised in the statement of financial position but are reported in the notes. They may arise from uncertainty as to the existence of a liability or asset or represent an asset or liability in respect of which the amount cannot be reliably measured. Contingent assets are disclosed when settlement is probable but not virtually certain and contingent liabilities are disclosed when settlement is greater than remote.

Note 4.2: Financial Instruments

	2018	2017
	\$'000	\$'000
Note 4.2A: Categories of Financial Instruments		
Financial Assets		
Loans and receivables		
Cash and cash equivalents	97,950	81,955
Trade and other receivables	1,182	1,454
Total loans and receivables	99,132	83,409
Total financial assets	99,132	83,409
Financial Liabilities		
Financial liabilities measured at amortised cost		
Trade creditors and accruals	12,859	15,532
Total financial liabilities measured at amortised cost	12,859	15,532
Total financial liabilities	12,859	15,532

Accounting policy

Financial Assets

The Authority classifies its financial assets in the following categories:

· held-to-maturity investments; and

· loans and receivables.

The classification depends on the nature and purpose of the financial assets and is determined at the time of initial recognition. Financial assets are recognised and derecognised upon trade date.

Loans and Receivables

Trade and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. The Authority did not have any loans during 2017-18. Receivables are measured at cost less impairment.

Impairment of Financial Assets

Financial assets are assessed for impairment at the end of each reporting period.

If there is an indication that receivables may be impaired, the Authority makes an estimation of the receivable's recoverable amount. When the carrying amount of the receivable exceeds the recoverable amount, it is considered impaired and it is written down to its recoverable amount.

Financial Liabilities

The Authority's financial liabilities consist of trade creditors and accruals, amounts owing to research providers and other payables. These liabilities are recognised at their nominal amounts, being the amounts which the Authority expects the liabilities will be settled. Liabilities are recognised to the extent the goods and services have been received (and irrespective of having been invoiced).

Note 4.3: Fair Value Measurements

Accounting policy

Following initial recognition at cost, property, plant and equipment is carried at fair value less subsequent accumulated depreciation and accumulated impairment losses. Valuations are conducted with sufficient frequency to ensure the carrying amounts of assets do not differ materially from the assets' fair values as at the reporting date. The regularity of independent valuations depends upon the volatility of movements in market values for the relevant assets.

The Authority's assets are held for operational purposes and not held for the purposes of deriving a profit. The current use of all nonfinancial assets is considered their highest and best use.

The Authority's policy is to recognise transfers into and transfers out of fair value hierarchy levels as at the end of the reporting period. There have been no transfers between level 1 and level 2 of the hierarchy during the year.

Note 4.3A: Fair Value Measurements

	Fair value meas	Fair value measurements	
	at the end of the	reporting	
	2018	2017	
	\$'000	\$'000	
ASSETS			
Assets measured at fair value			
Leasehold improvements	4,947	5,514	
Other property, plant and equipment	1,856	2,298	
Total assets measured at fair value	6,803	7,812	
Assets measured at other than fair value, but approximate fair value ²			
Cash and cash equivalents	97,950	81,955	
Trade and other receivables	3,421	4,031	
Total assets measured at other than fair value, but approximate fair value	101,371	85,986	
Assets measured at cost			
Intangibles	923	1,533	
Other non-financial assets	581	506	
Total assets measured at cost	1,504	2,039	
Total assets stated in the Statement of Financial Position	109,678	95,837	
LIABILITIES			
Liabilities measured at fair value			
Provision for restoration	1,240	1,208	
Total liabilities measured at fair value	1,240	1,208	
Liabilities measured at other than fair value, but approximate fair value ²			
Suppliers	12.859	15.532	
Other payables	5,856	5,660	
Total liabilities measured at other than fair value, but approximate fair value	18,715	21,192	
Liabilities measured at cost			
Employee provisions	10,335	10,218	
Total liabilities measured at cost	10.335	10.218	
Total liabilities stated in the Statement of Financial Position	30,290	32,618	

1. The Authority did not measure any non-financial assets at fair value on a non-recurring basis as at 30 June 2018 (2017: Nil).

2. These items carrying amount equate to their fair values.

Budget Variances

Note 5: Explanations of Major Budget Variances

Variances are considered to be 'major' if they are core to the Authority's activities and based on the following criteria:

• the variance between budget and actual is greater than +/- 10% of the original budget for a line item; and

 the variance between budget and actual is greater than \$1,000,000; or
 an item is below this threshold but is considered important for the reader's understanding or is relevant to an assessment of the discharge of accountability and to an analysis of the Authority's performance.

The budget is not audited.

Budget Variance Explanation	Affected statements and line
	items
The Authority has experienced significant fluctuations in its spending against budget due to the impact of the complex nature of joint programs, which reflect a high level of inherent risk associated with capital construction and environmental projects. A number of large programs are scalable depending on seasonal conditions and river and storage levels.	Statement of Comprehensive Income: - Suppliers - Grants
For example, some infrastructure is only accessible when water levels are low or may only be taken out of service at times of the year when the risk to water supply is low. With many assets located on floodplains in environmentally sensitive locations projects are often subject to lengthy investigation and statutory approval processes that can delay implementation.	Statement of Financial Position: - Cash and cash equivalents - Suppliers - Other payables
During 2017-18 this resulted in reduced expenditure on salt interception scheme due to flow conditions presenting a low salinity risk and Murray Mouth dredging and water entitlement usage in The Living Murray program. The Lake Victoria Outlet Regulator upgrade was delayed as previously unidentified asset and construction risks were evaluated. The Mildura trestle upgrade did not proceed following review of the safety risks and reassessment of the project requirements.	Cash Flow Statements: - Net GST received - Suppliers - Grants - Interest - Other cash received
The estimates for Leasehold Improvements, Property Plant and Equipment, and Intangibles were not known at the time of the preparation of the original budget. This included the recognition of the move to the new premises at 33 Allara St, changes to the data sets, and disposal of the old leasehold improvements. These were updated in the 2017-18 Portfolio Additional Estimates Statements.	Statement of Financial Position: - Leasehold improvements - Intangibles - other payables
	Cash Flow Statements: - Purchase of property, plant and equipment
	-
Interest revenue was not budgeted.	Statement of Comprehensive Income:
As a result of variances in the flow of water and the amount that is released from the system, there is a consequential impact on other revenue as represented by Hydropower generation fees. In the current year increased flows increased the actual revenue generation from Hydropower.	- interest - Other revenue
These were updated in the 2017-18 Portfolio Additional Estimates Statements.	Cash Flow Statements: - Other cash received



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An

Appendix A Governance bodies – meetings and outcomes

The Authority

The six-member Authority takes advice on Basin-wide strategy, policy and planning from the MDBA, and collaborates with government and community groups to secure Basin water resources.

Membership

Authority membership consists of:

- the Chief Executive
- a part-time Chair
- four part-time members.

The appointment process for members is set out in the:

- Intergovernmental Agreement on Murray-Basin Reform
- Water Act 2007 (Cwlth).

Authority members must have substantial expertise in fields relevant to the MDBA's activities. This includes water management, economics, the environment and agriculture.

The Authority met nine times in 2017-18.

The terms of inaugural Authority members, Professor Barry Hart and Diana Davidson came to an end. They both served for nine years on the Authority. The incoming members are Joanna Hewitt AO and Professor Stuart Bunn. Further details about members of the Authority are on pages 100–101.

Focus and outcomes

Key areas of work during the year included:

- finalising the Northern Basin Plan amendments, which were tabled in parliament in February 2018. Parliament disallowed the amendment to the Basin Plan affecting the northern Basin and other matters
- overseeing the 2017 Basin Plan Evaluation that was released in December 2017 to evaluate progress on the implementation of the Plan

- overseeing work on the Murray–Darling Basin Water Compliance Review released on 25 November 2017. The review was requested by the Australian Government after the ABC Four Corners program 'Pumped: Who's benefitting from the billions spent on the Murray–Darling?' exposed compliance issues with water allocations. The review included reports by the MDBA and an independent panel of experts led by Allan Holmes
- finalising the sustainable diversion limits adjustment mechanism (SDLAM) determination for recommendation to the Australian Government minister responsible for water. The determination proposes the Basin Plan be amended to reduce the water recovery target in the southern Basin by 605 GL. This adjustment is expected to benefit Basin communities and deliver results for the environment. During the consultation period over 3 000 submissions from the public were received
- working with the Basin Community Committee and the Advisory Committee on Social, Economic and Environmental Sciences to recruit new members and refine the roles of these committees
- monitoring the delivery of water resource plans and the development of a framework for more streamlined assessment of water resource plans. The framework will help Basin states provide information the MDBA needs to confirm that the plans meet the Basin Plan requirements
- supporting the Regional Engagement Officer program for its success in broadening the MDBA's community outreach and building strong links with Basin communities.

Murray-Darling Basin Ministerial Council

The Ministerial Council has a policy and decision-making role. It was established under the Murray–Darling Basin Agreement (Schedule 1) of the Water Act. Membership comprises the Australian Government Minister for Agriculture and Water Resources and ministers from each of the Basin states.

Committee member	Who they represent
Hon. David Littleproud (Chair)	Commonwealth
Hon. Niall Blair MP	New South Wales
Hon. Anthony Lynham MP	Queensland
Hon. David Speirs MP	South Australia
Hon. Lisa Neville MP	Victoria
Mr Mick Gentleman MLA	Australian Capital Territory

Membership (as at 30 June 2018)

Focus and outcomes

The council met twice in 2017-18. Key areas of business discussed included:

- welcoming the increased commitment of all jurisdictions to work with Aboriginal people on all aspects of water management
- agreeing to the Murray-Darling Basin Compliance Compact, which commits all Basin governments and the MDBA to a range of actions to improved compliance, including regular public reporting of progress. The Compact is to be considered for signing by Basin First Ministers at the next Council of Australian Governments meeting
- noting that the Commonwealth will soon launch a new Basin-wide infrastructure program. This will help to recover the remaining gap-bridging water needed by June 2019. It will also help to recover water through efficiency measures with neutral or positive socioeconomic outcomes
- confirming Basin governments are committed to funding and delivering the SDLAM projects, in consultation with local communities, between now and 2024.

Basin Officials Committee

The Murray–Darling Basin Officials Committee was established under the Murray–Darling Basin Agreement (Schedule 1) of the Water Act. The committee gives advice to the Murray–Darling Basin Ministerial Council and implements council policy on matters such as state water shares. It also has high-level responsibilities for river operations, including settling objectives and outcomes for the MDBA to achieve in River Murray operations and providing advice to the Ministerial Council on the joint programs part of the Corporate Plan.

Membership comprises representatives from the six Basin governments. The Chair is the Australian Government member. The Authority Chair and MDBA Chief Executive are non-voting members of the committee.

Committee member	Representing
Malcolm Thompson (Chair)	Commonwealth
Paul Morris (Deputy Chair)	Commonwealth
David Wiskar	Queensland
Helen Vaughan	Victoria
Rachel Connell	New South Wales
Ben Bruce	South Australia
Ian Walker	Australian Capital Territory

Membership (as at 30 June 2018)

Focus and outcomes

The committee met 10 times in 2017-18 and achieved the following significant outcomes:

- recommending to the Ministerial Council a review of governance arrangements as outlined in the Murray–Darling Basin Water Compliance Review
- agreeing to the funding and delivery of SDLAM projects, in consultation with local communities, between now and 2024
- agreeing to publish the Cap register for the 2016-17 water year on the MDBA website
- recommending amendments to the Murray-Darling Basin Agreement Basin Salinity Management Regulations 2018 to the Ministerial Council
- agreeing to more commitment from all jurisdictions to engage, work with and actively involve Aboriginal people in all aspects of water management.

Basin Plan Implementation Committee

The Basin Plan Implementation Committee (BPIC) is a high-level body established to monitor, review and make decisions associated with the Basin Plan Implementation Agreement.

Committee member	Representing
Carl Binning (Chair)	MDBA
Stewart Chapman	Australian Capital Territory
Peter Hyde (alternative member: Beth Overton)	New South Wales – Department of Primary Industries
Derek Rutherford	New South Wales – Office of Environment and Heritage
Rozi Juniper (alternative member: Melinda Stuart Adams)	Victoria
John Ritchie and Audrey van Beusichem	Queensland
Dan Jordan (alternative member: Diane Favier)	South Australia
Jody Swirepik (alternative member: Mark Taylor)	Commonwealth Environmental Water Office
Margaret Allan (alternative member: Matthew Kemp)	Department of Agriculture and Water Resources

Membership (as at 30 June 2018)

Focus and outcomes

The BPIC met four times during the year and focused on the following key items:

- progressing the delivery of the Register of Take for surface water and groundwater compliance
- supporting the development of the sustainable diversion limits Reporting and Compliance Framework
- identifying and addressing risks to Basin Plan implementation tasks
- supporting the delivery of the interim 2017 Basin Plan Evaluation
- supporting the development of water resource plans including the implementation of a new assessment framework
- identifying and addressing risks to meeting the June 2019 timeframe for accreditation in consultation with the Water Resource Planning Working Group
- undertaking an evaluation of the working groups and the BPIC and ensuring that their structure and focus are aligned with the future implementation tasks.

River Murray Operations Committee

The River Murray Operations Committee (RMOC) provides support and advice to the Basin Officials Committee on River Murray operations (RMOs). It oversees RMOs, which the MDBA manages on behalf of the contracting governments in accordance with the provisions of the agreement.

Focus and outcomes

The committee met five times in 2017-18. Business included providing advice to the contracting governments through the Basin Officials Committee on:

- policy relating to asset use, construction and planned maintenance
- policy relating to delivering and accounting for the water available to the contracting governments under the agreement
- cost-sharing arrangements for RMO assets
- risks and issues
- proposals for the future development of RMOs.

The RMOC also provided advice to the MDBA on developing work plans for RMOs, managing the River Murray system infrastructure, and preparing and amending asset management plans.

Basin Community Committee

The Basin Community Committee (BCC) plays a key role in advising the MDBA and other governance committees about matters that affect the Basin communities. This includes water resource, environmental, cultural and socioeconomic aspects. To assist in its advisory role, the BCC is required to form irrigation, water for the environment and Indigenous water subcommittees.

BCC members are key local contacts for the Authority. Towards the end of the financial year, the MDBA recruited 12 new members for the committee. They will join four continuing members and will start work early in the next financial year.

Committee member	Representing
Rory Treweeke (Chair)	Lightning Ridge, New South Wales
Di Bowles	Cohuna, Victoria
Paul Harvey	Adelaide, South Australia
Karen Hutchinson	Griffith, New South Wales
Howard Jones	Dareton, New South Wales
Christopher Joseph	Dalby, Queensland
Anthony Martin	Merbein, Victoria
Russell Pell	Wyuna, Victoria
Joanne Pfeiffer	Murray Bridge, South Australia
Grant Rigney	Meningie, South Australia
Jason Wilson	Walgett, New South Wales

Membership (as at 30 June 2018)

Focus and outcomes

During the year the BCC met four times. It provided strategic advice to the MDBA on:

- its engagement with communities during the Murray–Darling Basin Water Compliance Review and the SDL and Northern Basin Review disallowance outcome
- the 2017 Basin Plan Evaluation
- the southern Basin socioeconomic analysis outcomes, monitoring and evaluation, cultural flows and Aboriginal engagement.

The BCC also gave advice to the Authority and the Murray–Darling Basin Ministerial Council on water reform community engagement. The committee endorsed the appointment of the pilot Regional Engagement Officers program.

Advisory Committee on Social, Economic and Environmental Sciences

The Advisory Committee on Social, Economic and Environmental Sciences (ACSEES) was established under the *Water Act 2007* (Cwlth) to provide strategic advice on science to assist the Basin Plan's implementation. The committee has a particular focus on scientific advice on science and knowledge.

Membership (as at 30 June 2018)

Committee member
Professor Stuart Bunn (Chair)
Professor Kate Auty
Professor David James
Professor Michael Stewardson
Professor Poh-Ling Tan
Professor Steve Hatfield-Dodds

Committee Chair Professor Stuart Bunn was appointed to the six-member Authority in May 2018. He will continue as an observer on ACSEES. Professor Kate Auty resigned from her position on 30 June 2018. ACSEES is undergoing a membership renewal process with new committee members to be appointed in the next year.

ACSEES business

Committee meetings and workshops focused on the MDBA's priorities including:

- the Basin Plan Evaluation
- the MDBA's Knowledge Acquisition Framework
- the Sustainable Diversion Limit Adjustment Mechanism.

Independent Assurance Committee

The Independent Assurance Committee (IAC) was established in 2018 to support the MDBA's compliance responsibilities. The IAC's role is to provide expert advice on the design, implementation and adequacy of the MDBA's Basin Plan compliance program.

The IAC consists of four independent experts:

- Allan Holmes (Chair)
- Lisa Corbyn
- Garry Smith
- Martin Dolan.

All have expertise in relevant fields including water and natural resources policy and management, regulation and compliance.

The IAC provides advice to the MDBA, which is published on the MDBA website.

The IAC supercedes the Regulatory Governance Committee.

Appendix B Agency resource statement

These tables show the funding sources the Murray–Darling Basin Authority has drawn upon during 2017–18.

	Actual available appropriation for 2017-18	Payments made 2017-18	Balance remaining 2017-18
	\$000	\$000	\$000
	(A)	(B)	(A)-(B)
Ordinary annual services ¹			
Departmental appropriation			
Transfer of special account balance ²	81 955	(15 995)	97 950
Departmental appropriation	78 910	78 910	-
Own-source income ³	100 733	100 733	-
Total ordinary annual services	261 598	163 648	97 950
Total available annual appropriations	261 598	163 648	97 950
Total net resourcing for the MDBA	261 598	163 648	97 950

Table B.1 MDBA agency resource statement 2017-18 (excluding GST)

- 1. Appropriation Bill (No. 1) 2017-18.
- 2. On 1 July 2014, the MDBA ceased to be an agency under the *Financial Management and Accountability Act* 1997 (Cwlth) and became a corporate Commonwealth entity for the purposes of the *Public Governance, Performance and Accountability Act* 2013 (Cwlth) as amended.

One of the outcomes associated with this change was that the MDBA elected to fully draw down the cash balance of \$91.427 million and transfer these monies to the MDBA's bank account. This was to facilitate the subsequent transfer of these funds on 1 July 2014 to a new operating account that functions outside of the official public account. The value of the bank balance at 30 June 2018 is \$97.950 million.

3. Own-source income comprises mainly the jurisdictions' contributions to the Murray–Darling Basin Agreement functions.

The MDBA did not receive a Departmental Capital Budget in 2017-18.
Agency resources for Outcome 1

Table B.2 Staffing levels for Outcome 1

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Average staff level (number)	305	295	289	286	291	278

Table B.3 Budgeted expenses for Outcome 1

	Budget 2017-18	Actual 2017-18	Variation 2017-18
Program 1.1 Murray-Darling Basin Authority	\$000	\$000	\$000
Revenue from Government			
Ordinary annual services (Appropriation Bill No. 1)	77 470	78 910	(1 440)
Payment from related entities	11 701	11 701	-
Expenses not requiring appropriation in the budget year	2 711	(16 169)	18 880
Revenues from other independent sources	85 530	88 937	(3 407)
Total for program 1.1	177 412	163 379	14 033

Outcome 1 totals by resource type					
Ordinary annual services (Appropriation Bill No. 1)	77 470	78 910	(1 440)		
Payment from related entities	11 701	11 701	-		
Expenses not requiring appropriation in the budget year	2 711	(16 169)	18 880		
Revenues from other independent sources	85 530	88 937	(3 407)		
Total for Outcome 1	177 412	163 379	14 033		

1. The variance of \$1.440 million relates to funding provided by the Department of Agriculture and Water Resources during 2017-18 to carry out the Basin-wide Compliance Review.

2. Revenue from other independent sources includes contributions from jurisdictions for Murray–Darling Basin Agreement functions, other miscellaneous revenue and funds drawn from the Murray–Darling Basin special account. The Murray–Darling Basin special account is not a special account for the purposes of the *Public Governance, Performance and Accountability Act 2013* (Cwlth).

Appendix C Advertising and market research

This table of expenditure for 2017-18 is presented in accordance with the reporting requirements in the *Electoral Act 1918* (CwIth) (s. 311A). Expenditure was in the media advertising category only.

Agency	Purpose	Expenditure, \$ (including GST)
Mitchell and Partners Australia Pty Ltd	Recruitment advertising	36 152
Orima Research Pty Ltd	Market research	206 157
Facebook	Advertising	18 371
Total		260 680

Table C.1 Advertising and market resear	ch expenditure for 2017-2018
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Appendix D Ecologically sustainable development and environmental performance

Ecologically sustainable development is at the core of our activities and business. The *Water Act 2007* (Cwlth) requires the MDBA to take into account the principles of ecologically sustainable development.

The principles of ecologically sustainable development include:

- Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
- If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- Intergenerational equity the present generation should ensure that the health, biodiversity and productivity of the environment is maintained or enhanced for the benefit of future generations
- The conservation of biodiversity and ecological integrity should be a fundamental consideration in decision-making; improved valuation, pricing and incentive mechanisms should be promoted.

The MDBA takes into account these principles as part of its core business activities:

- developing and implementing the Basin Plan, which will help to ensure that the environmental health of the Murray-Darling Basin is maintained for future generations. Decision-making processes have included extensive consultation to ensure that economic, environmental, social and equitable aspects are considered
- developing an environmental watering management plan and annual watering priorities that will help to maximise environmental outcomes and contribute to the conservation of biodiversity and ecological integrity within the Basin
- using The Living Murray's water for the environment portfolio to meet the environmental objectives of the target sites, which include Australia's largest river red gum forest and internationally significant wetlands
- constructing and operating fishways, including the Sea to Hume Fishway Program, to allow for greater movement of native fish
- funding strategies to reduce pest fish species in the Basin
- commissioning salt interception schemes to divert salt from the River Murray.

Internal operations

The MDBA follows the principles of ecologically sustainable development in internal operations and has implemented a number of internal sustainability initiatives, including:

- Recycling by:
 - operating a paper, cardboard, battery, coffee pod, comingled and organic waste recycling program
 - using 100% recycled or partially recycled stock for all print publications
 - using toilet paper supplies from a company that uses 100% renewable resources and donates 50% of their profits to help build toilets for those in need.
- Reducing by:
 - minimising paper and toner use by setting printers to double-sided, black-and-white printing
 - publishing only in electronic format unless a need for print copies is identified
 - carefully planning print runs, which has significantly reduced our excess hard copy stock
 - using water-saving flushes and low-flow sensor-operated taps in bathrooms using low-flow taps in all kitchen areas.
- Reducing power consumption by:
 - implementing server virtualisation for the IT network, enabling the MDBA to host a number of virtual servers (approx. 10) per each physical server. This reduces the MDBA's physical footprint by about 80%, in turn reducing the power bill. The MDBA has also moved its onsite data centre to a commercial provider
 - enabling computer monitors to turn off overnight to save power
 - using power-efficient centralised multi-function devices instead of distributed desktop printing
 - operating lighting through movement sensors, daylight harvesting and timers in all work spaces, so that lights turn off when areas are not in use
 - purchasing energy-saving whitegoods and ICT equipment
 - directly heating all hot water and using blade hand dryers to reduce waste paper in washrooms
 - achieving a 5.5 star NABERS Energy Tenancy rating for the MDBA's main office space.

Travel

In 2017–18, MDBA staff travelled 143 136 km by car (an average of 519 km per employee), and 2 003 512 km by plane (an average of 7 259 km per employee) and worked away from home for a total of 1 934 nights.

The MDBA actively supports staff who cycle to work by providing secure bike storage, lockers and showers. Around 40% of staff regularly cycle to work.

Glossary

Airspace

The difference between the actual volume of water in storage and the volume when full. The airspace is used to capture a proportion of the peak inflow during a flood event.

Allocation

The water to which the holder of an access licence is entitled from time to time under licence, as recorded in the water allocation account for the licence.

Antecedent condition

How wet or dry a catchment is before rain. This can have a very significant effect on the flow responses of rivers during wet weather.

Australian height datum

In 1971 the mean sea level for 1966–68 was assigned the value of zero on the Australian height datum at 30 tide gauges around the coast of Australia. The resulting datum surface, with minor modifications in two metropolitan areas, was termed the Australian height datum and was adopted by the National Mapping Council of Australia as the datum to which all vertical control for mapping is to be referred. Elevations quoted using this datum are normally followed with the acronym 'AHD'.

Australian National Committee on Large Dams

An incorporated voluntary association of organisations and individual professionals with an interest in dams in Australia.

Barmah Choke

A narrow section of the River Murray that constrains the volume of water that can pass during major floods. During floods, large volumes of water are temporarily banked up behind the Barmah Choke, flooding the Barmah-Millewa Forest wetland system.

Barrages

Five low and wide weirs built at the Murray Mouth in South Australia to reduce the amount of sea water flowing in and out of the mouth due to tidal movement, and to help control water levels in the Lower Lakes and River Murray below Lock 1 (Blanchetown, South Australia).

Baseline

Conditions regarded as a reference point for the purpose of comparison.

Basin states

New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory.

Basin water resources

Water resources within or beneath the Murray-Darling Basin, except for resources that are prescribed by the regulations and groundwater that forms part of the Great Artesian Basin.

Cap (the Cap on diversions)

A limit, implemented in 1997, on the volume of surface water that can be diverted from rivers for consumptive use. Under the Basin Plan, the Cap is replaced by long-term average sustainable diversion limits.

Carryover

A way to manage water resources and allocations that allows irrigators to take a portion of unused water from one season into the new irrigation season.

Connectivity

Connections between natural habitats, such as between a river channel and adjacent wetland areas. Connectivity is a measure or indicator of whether a water body (river, wetland, floodplain) has water connections or flow connections to another body.

Constraints

Anything that affects the delivery of water for the environment. Constraints can be physical, such as low-lying bridges and river channel capacity; or operational, such as river rules or operating practices that affect when and how much water can be delivered.

Consumptive use

Use of water for irrigation, industry, urban, stock, and domestic and other private consumptive purposes.

Conveyance water

The water needed to physically run the river system. Extra water must then be supplied on top of the conveyance water in order to meet deliveries along the river system. The conveyance reserve is water set aside for the next year to minimise the risk of not having enough conveyance water. Water is set aside water for conveyance and critical human needs to safeguard fundamental water requirements during a drought more severe than the millennium drought.

Critical human water needs

Under the Water Act, the minimum amount of water required to meet core requirements of communities dependent on Basin water resources. The definition also includes non-human requirements that, if not met, would cause prohibitively high social, economic or national security costs.

Cultural flows (or cultural water flows)

Water entitlements legally and beneficially owned by the Aboriginal Nations of the Murray–Darling Basin. They are of sufficient and adequate quantity and quality to improve the spiritual, cultural, environmental, social and economic conditions of Aboriginal people.

EC

Electrical current. Water and soil salinity levels are measured by passing an electrical current between the two electrodes of a salinity meter. EC is influenced by the concentration and composition of dissolved salts. Salts increase the ability of a solution to conduct an electric current, so a high EC indicates a high salinity level. Fresh water above 800 EC becomes marginal for drinking; above 1 600 EC it is brackish; and above 4 800 EC it is saline.

Efficiency measure

Provide more water for the environment by making water delivery systems for irrigation more efficient. This can include replacing or upgrading on-farm irrigation, or lining channels to reduce water losses within an irrigation network.

Entitlement (or water entitlement)

The volume of water authorised to be taken and used by an irrigator or water authority. It includes bulk entitlements, environmental entitlements, water rights, sales water and surface water and groundwater licences.

Environmental flow

Any river flow pattern provided with the intention of maintaining or improving river health.

Environmental water

Water used to achieve environmental outcomes, including benefits to ecosystem functions, biodiversity, water quality and water resource health.

Environmental water requirements

The amount of water needed to meet an ecological or environmental objective.

Fishway

A structure that provides fish with passage past an obstruction in a stream.

Flow

The movement of water – the rate of water discharged from a source, given in volume with respect to time.

Flow event

A single occurrence of water flow in a river, sometimes required to achieve environmental targets. A series of flow events comprises a flow history.

Flow regime

The characteristic pattern of a river's flow quantity, timing and variability.

Groundwater

Water occurring naturally below ground level (in an aquifer or otherwise).

Held environmental water

Water that is available under a water access right, a water delivery right or an irrigation right for the purpose of achieving environmental outcomes.

Inflow

Source of the water that flows into a specific body of water. For a lake, inflow could be a stream or river; for a stream or river, inflow could be rain.

Joint governments

The Australian Government and the governments of New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory.

Modelling

Application of a mathematical process or simulation framework (e.g. a mathematical or econometric model) to describe various phenomena and analyse the effects of changes in some characteristics on others.

Murray Lower Darling Rivers Indigenous Nations (MLDRIN)

Confederation formed in 1998 of Indigenous Nations from the southern part of the Basin. It comprises representatives of the Barapa Barapa, Barkindji (Paakantyi), Dhudhuroa, Dja Dja Wurrung, Latji Latji, Maraura, Mutti Mutti, Nari Nari, Ngarrindjeri, Ngintait, Nyeri Nyeri, Tatti Tatti, Taungurung, Wadi Wadi, Wamba Wamba, Waywurru, Wegi Wegi, Wergaia, Wiradjuri, Wolgalu, Wotjabaluk, Yaitmathang, Yita Yita and Yorta Yorta Nations.

Northern Basin Aboriginal Nations (NBAN)

Confederation formed in April 2010 that comprises Aboriginal Nation representatives from the northern part of the Basin and representatives from the New South Wales Aboriginal Land Council, the Queensland Murray–Darling Committee, the Condamine Alliance and South West Queensland Natural Resource Management. It comprises Traditional Owner nominated representatives from the Barkindji (Paakantyi), Barunggam, Bidjara, Bigambul, Budjiti, Euahlayi, Gamilaroi, Githabul, Gunggari, Gwamu (Kooma), Jarowair, Kambuwal, Kunja, Kwiambul, Maljangapa, Mandandanji, Mardigan, Murrawarri, Ngemba, Ngiyampaa, Wailwan and Wakka Wakka Nations.

Ramsar Convention

The Convention on Wetlands of International Importance, an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

Regulated

A water system in which water is stored and/or flow levels are controlled through the use of structures such as dams and weirs.

Salt interception scheme

Large-scale groundwater pumping and drainage projects that intercept saline groundwater flowing into rivers, and dispose of the saline waters by evaporation and aquifer storage at more distant locations.

Surface water

Includes water in a watercourse, lake or wetland, and any water flowing over or lying on the land after having precipitated naturally or risen to the surface naturally from underground – Water Act (s. 4).

The maximum long-term annual average quantities of water that can be taken, on a sustainable basis, from the Basin water resources as a whole, and the water resources, or particular parts of the water resources, of each water resource plan area.

Sustainable Diversion Limit Adjustment Mechanism

Basin Plan provision that allows for adjustment of the Sustainable Diversion Limit under certain circumstances.

Take

Removal of water from, or reduction in flow of water into, a water resource.

Water accounting

A systematic process of identifying, recognising, quantifying, reporting and assuring information about water, the rights or other claims to water, and the obligations against water.

Water allocation

The specific volume allocated to water entitlement holders in a given season, often quoted as a percentage of the volume of each entitlement. For example, a 20% allocation in a particular season allows a water user with a 100 ML entitlement to take 20 ML of water.

Water for the environment

Water used to achieve environmental outcomes, including benefits to ecosystem functions, biodiversity, water quality and water resource health.

Water for the environment requirements

The amount of water needed to meet an ecological or environmental objective.

Water resource

Of groundwater, water that occurs naturally beneath the ground level (whether in an aquifer or otherwise), or water that has been pumped, diverted or released to an aquifer for the purpose of being stored there. Murray–Darling Basin groundwater resources exclude groundwater in the Great Artesian Basin.

Of surface water, includes water in a watercourse, lake or wetland, and any water flowing over or lying on land after having precipitated naturally or risen to the surface naturally from beneath the ground level.

Water resource plans

Statutory management plans developed for particular surface water and groundwater systems, currently known by different names throughout the Murray–Darling Basin (e.g. 'water sharing plans' in New South Wales and 'water allocation plans' in South Australia).

Water trading rules

A set of overarching consistent rules enabling market participants to buy, sell and transfer tradeable water rights.

Water year

A continuous 12-month period starting from July, or any other month as prescribed under the water regulation or a resource operations plan but usually selected to begin and end during a relatively dry season. Used as a basis for processing stream flow and other hydrologic data.

Abbreviations

ADF	additional dilution flow
AEP	annual exceedance probability
AHD	Australian height datum
AHIP	Aboriginal Heritage Impact Permit
AWA	Aboriginal Waterways Assessment initiative
BCC	Basin Community Committee
BMEC	Barkindji and Maraura Elders Council
BOAG	Barrage Operating Advisory Group
BoM	Bureau of Meteorology
BPIC	Basin Plan Implementation Committee
Сар	Murray-Darling Basin Cap on diversions
CEWH	Commonwealth Environmental Water Holder
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAWR	Department of Agriculture and Water Resources
DO	dissolved oxygen
DPI Water	New South Wales Department of Primary Industries
EC	electrical conductivity unit
EWN	Early Warning Network
HEW	held environmental water
GL	gigalitre (a billion litres)
IVT	Inter Valley Trade

JVM&E	Joint Venture Monitoring and Evaluation program
mAHD	metres in Australian height datum
MDBA / the Authority	Murray–Darling Basin Authority: the agency / the six-member Authority
ML	megalitre (a million litres)
ML/day	megalitres per day
MLDRIN	Murray Lower Darling Rivers Indigenous Nations
Ministerial Council	Murray-Darling Basin Ministerial Council
NBAN	Northern Basin Aboriginal Nations
O&O document	'The objectives and outcomes for river operation in the River Murray system'
PIT	passive integrated transponder
REOs	regional engagement officers
RMIF	River Murray Increased Flows
SARFIIP	South Australian Riverland Floodplains Integrated Infrastructure Program
SDL	Sustainable Diversion Limit
SDLAM	Sustainable Diversion Limit Adjustment Mechanism
SMM	Source Murray model
S0&0	Specific Objective and Outcome
WRP	water resource plan
WQM	water quality management

Annual report requirements

Content requirements	Section	Pages
Principles underlying annual report requirement	nts	
Report written in plain English	Yes	
Report to align with the overall Commonwealth resource management framework, PGPA Act, PGPA Rule and, the enhanced Commonwealth performance framework	Yes	
Commonwealth performance framework		
Annual report to identify MDBA's purposes, which include its objectives, functions and role	Section 1 – About the MDBA	6-9
PGPA Act requirements		
Annual performance statement	Section 2 – Annual performance statement	14-19
Financial statements	Section 4 – CFO report and financial statements	136-161
Approval requirements		
Annual report to be approved and	Section 1 – Introduction	V
signed by the Chief Executive	Section 2 – Annual Performance Statement	4
Parliamentary standards and clear design		
Use of clear design (for example through headings and adequate spacing)	Yes	
Acronyms and technical terms to be defined in a glossary	Glossary and abbreviations	177-183
Use of tables, graphs, diagrams and charts	Yes	

Content requirements	Section	Pages
Enabling legislation		
Details of the legislation establishing the MDBA, i.e. the <i>Water Act 2007</i>	Section 1 – About the MDBA	8
Summary of the objects and functions of the MDBA as set out in the legislation	Section 1 – About the MDBA	6-8
Details on the purposes of the MDBA as included in the MDBA 2017-2018 Corporate Plan	Section 2 – Annual performance statement	15-19
Responsible Minister		
The names of the persons holding the position of responsible Minister or responsible Ministers during the period	Section 3 – Management and accountability	98
Ministerial directions and government policy o	rders	
Any directions given to the MDBA by a Minister under an Act or instrument during the period	Section 3 – Management and accountability	117
Any government policy orders that applied in relation to the MDBA during the period under section 22 of the Act	N/A	
Particulars of non-compliance if, during the period, the MDBA has not complied with a direction or order referred to in the items above	N/A	
Significant non-compliance issues with finance	laws	
A statement of any significant issue reported to the responsible Minister under paragraph 19(1)(e) of the Act that relates to non- compliance with the finance law in relation to the MDBA	N/A	
An outline of the action taken to remedy the non-compliance	N/A	

Content requirements	Section	Pages	
Information about the accountable authority			
The name of the accountable authority	Section 3 – Management and accountability	100-102	
The qualifications of the accountable authority	Section 3 – Management and accountability	100-102	
The experience of the accountable authority	Section 3 – Management and accountability	100-102	
Number of Authority meetings attended per member	Section 3 – Management and accountability	102	
Member status – executive or non-executive	Section 3 – Management and accountability	102	
Organisational structure and location			
An outline of the organisational structure of the MDBA (including subsidiaries of the MDBA)	Section 3 – Management and accountability	103	
An outline of the location (whether or not in Australia) or major activities or facilities of the MDBA	Section 1 – Introduction	2	
Statement of governance			
Information in relation to the main corporate governance practices used by the MDBA during the period	Section 3 – Management and accountability	98-99	
Related MDBA transactions, PGPA Rule, 17BE C	ontents of annual report		
The decision-making process at the MDBA if:			
 the decision is to approve the MDBA paying for a good or service from another Commonwealth entity or a company, or providing a grant to another Commonwealth entity or a company 	Section 4 – CFO report and financial statements	129	
 the value of the transaction, or if there is more than one, the aggregate value of those transactions, is more than \$10 000 (inclusive of GST) 	Section 4 – CFO report and financial statements	129	
Significant activities and changes affecting the MDBA			
Any significant activities and changes that affected the operations or structure of the	Section 1 – About the MDBA Chief Executive's review	3-4	
MDBA	Section 2 – Annual performance statement	20-27	

Content requirements	Section	Pages
Judicial decisions and reviews by outside bodie	25	
Particulars of judicial decisions or decisions of administrative tribunals made during the period that have had, or may have a significant effect on the operations of the MDBA. Particulars of any report on the MDBA by:		
the Auditor-General	Section 3 – Management and accountability	115
a Committee of either House, or of both Houses of Parliament	Section 3 – Management and accountability	115
the Commonwealth Ombudsman	Section 3 – Management and accountability	115
• the Office of the Australian Information Commissioner	Section 3 – Management and accountability	115
Obtaining information from subsidiaries		
If the accountable authority has been unable to obtain information from a subsidiary of the entity that is required to be in the annual report, an explanation of the information that was not obtained and the effect of not having the information on the annual report	N/A	
Indemnities and insurance premiums		
Details of any indemnity that applied during the period to the accountable authority, any member of the accountable authority or officer of the entity against a liability (including premiums paid, or agreed to be paid, for insurance against the authority, member or officer's liability for legal costs)	Section 3 – Management and accountability	112
Index of annual report requirements		
An index identifying where the requirements are to be found	Annual Report requirements	184-187
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Work Health and Safety statement in accordance with the Work Health and Safety Act 2011	Section 3 – Management and accountability	121-122
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Connect with us.

The MDBA has offices in Adelaide, Albury-Wodonga, Canberra, Toowoomba, Goondiwindi (from late 2018), and regional engagement officers around the <u>Basin</u>.

1800 630 114

engagement@mdba.gov.au

mdba.gov.au