Australian Government

MURRAY–DARLING BASIN AUTHORITY

annual report 2012–13

About this report

This is the report of the Chief Executive of the Murray–Darling Basin Authority to the Australian Parliament on the performance of the MDBA in 2012–13. It reports our performance against our outcome, deliverables and key performance indicators as outlined in the Portfolio Budget Statements for 2012–13. We prepared our report in accordance with the *Requirements for annual reports 2012–13*, issued by the Department of Prime Minister and Cabinet and approved by the Joint Parliamentary Committee of Public Accounts and Audit.

Cover image: Family on the Namoi River, just upstream from Mollee Weir (photo by Josh Smith)

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FSC ISO CERTIFICATION ECF ELEMENTAL CHLORINE FREE

ARA AUSTRALASIAN REPORTING AWARDS

We received a silver Australasian Reporting Award for our 2011–12 report.

How to use this report

The *Murray–Darling Basin Authority annual report 2012–13* contains:

- a report on the MDBA's performance against the four outcome objectives specified in the Portfolio Budget Statements
- a report on MDBA corporate and governance activities
- MDBA financial statements
- appendixes and endmatter, including the MDBA's ecologically sustainable development and environmental performance, a glossary and a comprehensive index.

This report may contain photographs or quotes by Aboriginal people who have passed away. The use of terms 'Aboriginal' and 'Indigenous' reflects usage in different communities within the Murray–Darling Basin.

Acknowledgement of the Traditional Owners of the Murray–Darling Basin

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

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

Tom Trevorrow, Ngarrindjeri Elder (2010) (photo and quote from Murrundi Ruwe Pangari Ringbalin (*River Country Spirit Ceremony: Aboriginal perspectives on River Country*)

The Murray–Darling Basin Authority was deeply saddened to learn of Tom Trevorrow's passing in early 2013. He will be remembered as a strong and inspirational Ngarrindjeri Elder and leader. Tom's vision and ability to build relationships between Aboriginal and non-Aboriginal people made him one of the Murray–Darling Basin's most influential community leaders. Tom's family have given us permission to continue to use his words and image.

Australian Government

MURRAY–DARLING BASIN AUTHORITY

Office of the Chief Executive

TRIM Ref: D13/39524

Senator the Hon Simon Birmingham
Parliamentary Secretary to the Minister for the Environment
Parliament House
CANBERRA ACT 2600

Dear Parliamentary Secretary

It is my pleasure to present the annual report of the Murray–Darling Basin Authority (MDBA) for the year ended 30 June 2013.

This report has been prepared in accordance with the requirements for annual reports prepared by the Joint Committee of Public Accounts and Audit under s. 63 of the *Public Service Act 1999*.

The report provides an overview of this year's achievements which includes the adoption of the Basin Plan in November 2012. Good progress was also made on a number of early implementation tasks.

Under ss. 214(1) of the *Water Act 2007*, the Chief Executive must, as soon as practicable, prepare and give to the Minister and to each other member of the Murray–Darling Basin Ministerial Council, a report on MDBA operations during that year. This annual report must include contents listed under ss. 214(2) of the Water Act that includes the analysis of the effectiveness of the Basin Plan.

In accordance with the Commonwealth Fraud Control Guidelines 2011, I certify that MDBA has prepared fraud risk assessments and fraud control plans, and has in place appropriate fraud prevention, detection, investigation, reporting and data collection procedures and processes that meet MDBA's specific needs. I certify also that I have taken all reasonable measures to minimise the incidence of fraud in the MDBA.

Under subsection 214(3) of the Water Act you are required to table this annual report in each House of Parliament within 15 sitting days after the day on which you receive it.

I also take this opportunity to acknowledge the dedication of MDBA staff and their continuing commitment to supporting the government's objectives.

Yours sincerely

Rhondda Dickson
Chief Executive
/ 12/2013

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ABOUT US

Our vision

To achieve a healthy working Basin through the integrated management of water resources for the long-term benefit of the Australian community.

Our mission

We lead the planning and management of Basin water resources in collaboration with partner governments and the community.

Our role

The Murray–Darling Basin Authority (MDBA) was established under the *Commonwealth Water Act 2007*[1] as an independent, expertise-based statutory agency. We advise a six-member Authority, of which our Chief Executive is a member, about Basin-wide strategy, policy and planning.

The primary roles of the MDBA include:

- preparing, implementing and reviewing an integrated Murray–Darling Basin Plan
- measuring, monitoring and recording the quality and quantity of the Basin's water resources
- supporting, encouraging and conducting research and investigations about the Basin's water resources
- developing equitable and sustainable use of the Basin's water resources
- operating the River Murray System and delivering water to users in a fair and efficient way
- disseminating information about the Basin's water resources
- engaging and educating the Australian community about the Basin's water resources.

We work in collaboration with other Australian Government agencies, Basin state governments, local governments, regional bodies, industry groups, landholders, environmental organisations, scientists, research organisations and Murray–Darling Basin communities, including Aboriginal communities, and the broader Australian community.

1 Unless otherwise indicated, all Acts referred to in this publication are Commonwealth Acts.

Strategic planning and progress

The MDBA receives funding under the Australian Government's Portfolio Budget Statements; we manage our performance against a single outcome:

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

To provide a more accurate indication of our performance against this outcome, our deliverables and key performance indicators are measured against our four program outcomes:

- transboundary water management (pages 19 to 36)
- river and ecosystem health (pages 37 to 55)
- knowledge into action (pages 57 to 74)
- Managing River Murray assets (pages 75 to 100).

Our governance and agency structure

The MDBA is part of the Sustainability, Environment, Water, Population and Communities portfolio, and reports to its minister (as the Commonwealth Minister for Water).

The MDBA's governance comprises:

- the Commonwealth Minister for Water, as at 30 June 2013, the Hon. Tony Burke MP
- the six-member Murray–Darling Basin Authority
- the Murray–Darling Basin Ministerial Council
- the Basin Officials Committee
- the Basin Community Committee.

The relationship between these governance bodies is described in Appendix A.

The MDBA consists of the Chief Executive and MDBA staff. The Murray–Darling Basin is managed through a partnership of the Australian Government and the governments of New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory (the Basin states).

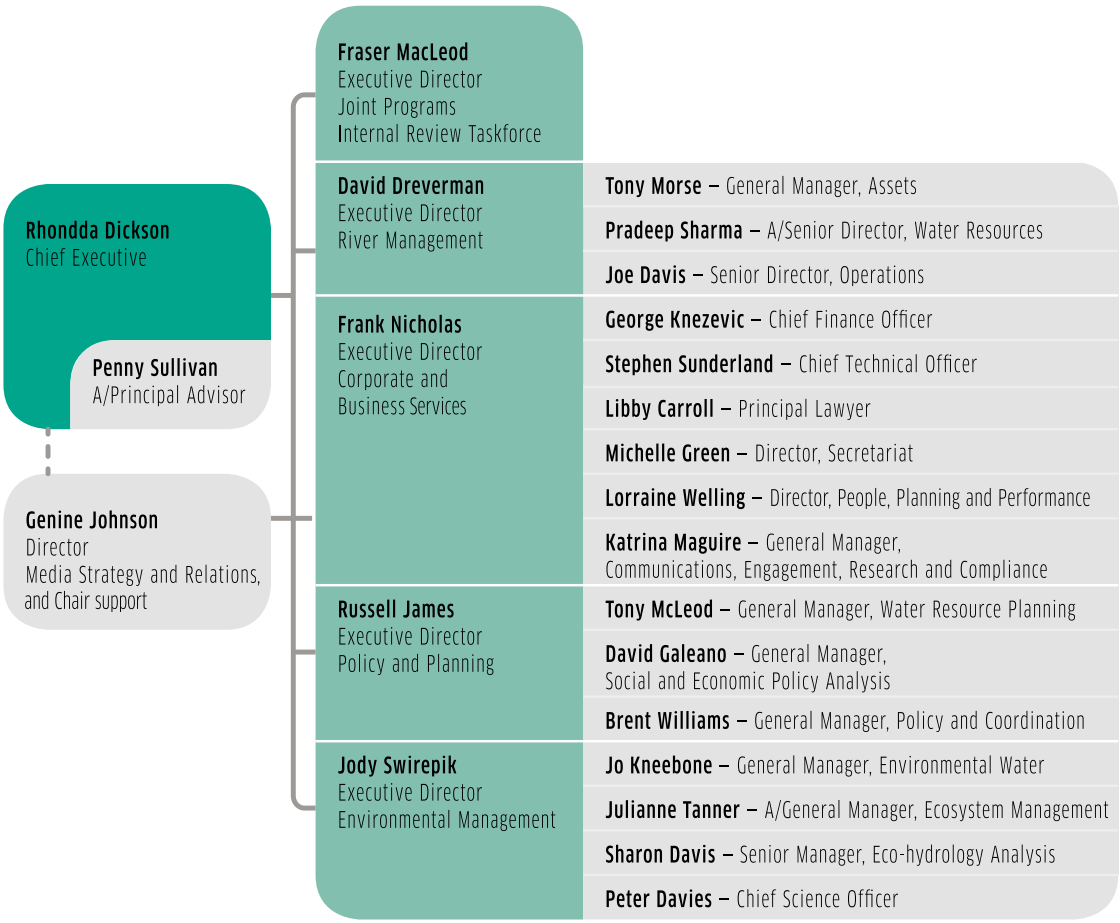
During 2012–13, the MDBA structure was based around the following key program areas (see Figure i):

- Policy and Planning Division
- Environmental Management Division
- River Management Division
- Corporate and Business Services Division.

Our staff

As at 30 June 2013 we had 289 ongoing and 25 non-ongoing staff. More information can be found in Chapter 5 'Management and accountability' pages 101 to 129.

Figure i. MDBA organisational structure as at 30 June 2013



1863

1863 the first intercolonial conference decides that improving the navigability of Australia's inland rivers would aid commerce and trade

1901 Federation leaves the constitutional powers relating to water resources in the hands of the states

1902 in response to the Federation drought (1895–1902) the state representatives meet in Corowa, NSW, to resolve competition for River Murray water

1914 the River Murray Waters Agreement sets out the shares of water available to each state; and establishes a commission to administer the agreement

1917 the River Murray Commission is established

1992 the Murray–Darling Basin Agreement establishes the Murray–Darling Basin Commission, to replace the River Murray Commission, and expands the resource-sharing arrangements between the states to cover the whole Murray–Darling Basin

1997 the longest drought in Australia's recorded history begins (c. 1997–2010)

2012

2003 one of Australia's largest river restoration programs is announced — The Living Murray Initiative — which aims to restore the health of the River Murray System

2004 the National Water Initiative achieves a more cohesive national approach to the way Australia manages, measures, plans for, prices and trades water

2007 the Water Act implements key reforms for water management in Australia. It sets out the requirements for a Basin Plan that will limit the amount of water that can be taken from the Basin

2008 the Murray–Darling Basin Authority takes over the functions of the Murray–Darling Basin Commission. For the first time a single agency is responsible for planning the integrated management of water resources across the Murray–Darling 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 A.C.T

CHIEF EXECUTIVE'S REVIEW

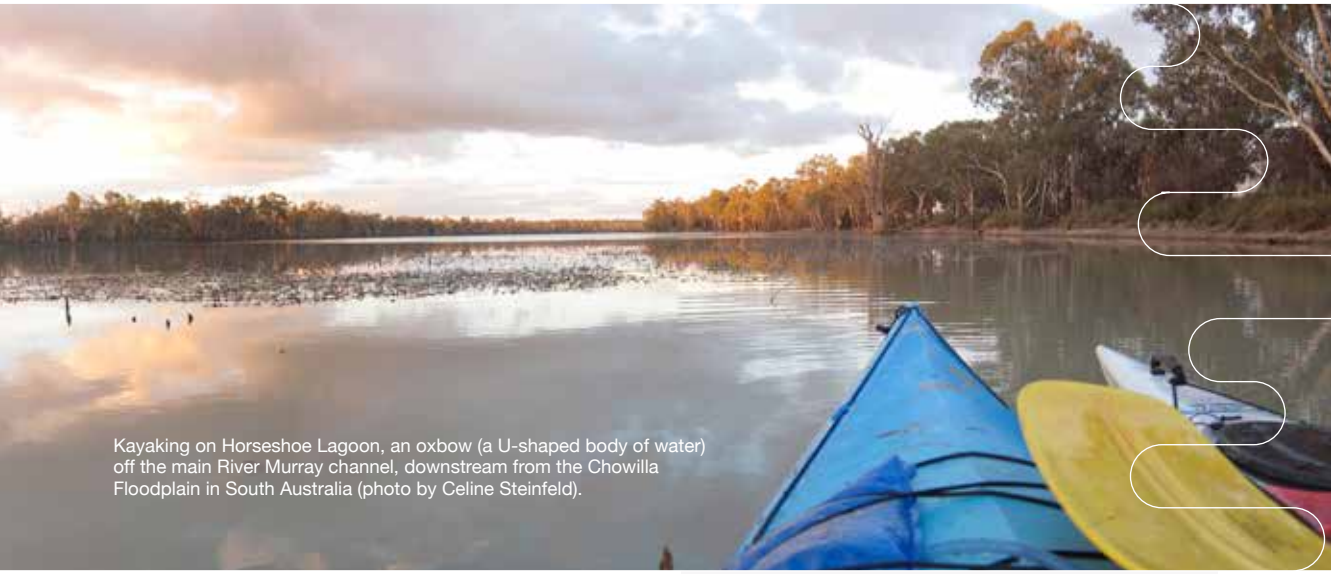
This year was significant because it was the year the Basin Plan was made. The Basin Plan was signed into law and commenced on 24 November 2012, providing — for the first time — a coordinated sustainable approach to water use across the Basin. Murray–Darling Basin Authority chair, Craig Knowles, presented at the United Nations in New York on this significant and world-leading achievement.

Since the commencement of the plan we have shifted our focus to working with people to implement the plan. There will be seven years to progressively roll out the plan, which will allow time for the Basin states, communities and the Australian Government to work together to manage the required changes. Since January 2013 we have held about 100 meetings throughout the Basin, to discuss the Plan roll out and begin working with local and regional groups on key activities such as the constraints management strategy and the economic and social work program.

Some early milestones this year in Basin Plan implementation included establishing the Northern Basin Advisory Committee in October 2012 to inform the Northern Basin program and publishing the first annual basin-wide environmental watering priorities at the end of June 2013 to guide environmental watering in 2013–14 to the sites and flows that need it most.

At the same time we made significant progress on the environmental management programs we manage on behalf of Basin governments. This year The Living Murray water portfolio contributed to a major collaborative environmental watering event. Combining water from other environmental water holders, the event was the largest managed delivery of environmental water ever to South Australia. The flow provided peak flows in late spring that facilitated native fish recruitment, improved the condition of temporary wetlands and supported bird-breeding events. Environmental water delivered to the Lower Lakes, Coorong and Murray Mouth helped to maintain salinity levels in Lake Alexandrina and the Coorong, leading to an increase in fish diversity in the south lagoon of the Coorong.

This year there were some significant achievements for the River Murray assets which the MDBA manages on behalf of Basin governments. The major engineering works at Koondrook–Perricoota Forest and Hattah Lakes icon sites were completed after seven years of work. The salinity interception scheme at Murtho in South Australia was also commissioned this year. We completed the new objectives and outcomes document for river operations which specifies the key decisions



Kayaking on Horseshoe Lagoon, an oxbow (a U-shaped body of water) off the main River Murray channel, downstream from the Chowilla Floodplain in South Australia (photo by Celine Steinfeld).

This photo was the winner, by popular vote, of the annual report photographic competition for MDBA staff. Other photos by MDBA staff are used throughout this report.

for operating the River Murray System. The document provides a transparent decision-making framework to balance the different outcomes the Basin governments want us to achieve in operating the river.

As a result of the Basin governments' decision to end some of the environmental management activities this year, we wound up two major programs. We published the last report for the Sustainable Rivers Audit, with the analysis of the past drought data to be undertaken in 2013–14. The funding for the Native Fish Strategy also ceased, and we completed a synthesis of the 10 years of research and development work from this award winning program; in 2012 the northern-most demonstration reach of the Native Fish Strategy, the Dewfish Demonstration Reach on the Condamine River, won the 2012 Australian Riverprize.

The ongoing uncertainty over the scope of future joint programs will be a significant challenge to manage over the next 12 months. We are preparing for a review of the joint arrangements in 2013–14 which will provide Basin governments with the information they need to make a decision and provide greater certainty into the future.

Key activities for implementing the Basin Plan over the next 12 months are already underway. We are developing a Basin-wide environmental watering strategy, with advice from the new Advisory Committee on Social, Economic and Environmental Sciences. The strategy will be finalised in November 2014.

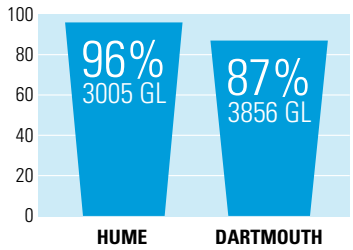
The constraints management strategy will be provided to governments in late November 2013. This strategy is the first formal step in ongoing work to understand and address constraints to delivering environmental water. While this will be challenging work for the next seven years to ten years, the potential benefits to the environment and to the way we operate rivers will be substantial.

I look forward to MDBA continuing to work with people on tackling the challenges and making the most of the opportunities that lie ahead.

2012–13 AT A GLANCE

July

Dam capacity in July:



Blanchetown Weir and Lock 1 staff are awarded the Collings trophy for 2011–12.

August

We publish the proposed Basin Plan which recommends that a long-term average of 2,750 gigalitres of water be returned to the environment to help restore the health of the Basin's rivers and wetlands. It also includes an adjustment mechanism to vary the sustainable diversion limit.

September

The Northern Basin Advisory Committee meets for the first time. It was established to provide independent strategic advice on how the Basin Plan could be implemented in the northern Basin.

11 MEMBERS

October

MDBA active storage in reservoirs is at 102%, the highest since 1990.

November

The Water Minister adopts the Basin Plan to become Commonwealth law — a significant occasion in the history of water reform in Australia.

> **The plan paves the way for us to rebalance water use and rebuild the health in one of Australia's most significant environmental and economic regions.**
>
> **Authority Chair, Craig Knowles**

The new Basin Plan successfully goes through parliament when a motion to disallow it is defeated by 95 votes to 5.

The Advertiser

Mighty win for the Murray

THE AUSTRALIAN

Restoring the Murray to health

The plan acknowledges the needs of the river and farming

Murray plan 100 years in the making

Tom Arup

THE Environment Minister, Tony Burke, has declared an end to more than 100 years of fighting over the Murray-Darling Basin after signing into law a long-awaited plan to save the river system.

But the plan still faces hurdles, with the Greens saying they will move to disallow it when it is tabled in Parliament next week, and NSW, the biggest basin state, expressing hostility to its final design.

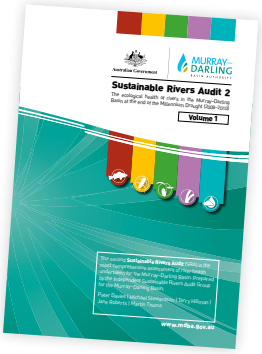
Speaking on Thursday, Mr Burke said Australia had been waiting for the reform since Federation.

"In my view, Australia has

December

We continue to coordinate the largest ever environmental water delivery event into South Australia, about 900 gigalitres water. The water will have a positive impact on the Lower Lakes, Coorong and Murray Mouth, while benefitting wetlands and river systems along the way.

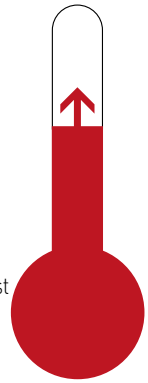
We publish the Sustainable Rivers Report 2 (three volumes), which gives an overview of the ecological health of the rivers in the Murray–Darling Basin at the end of the Millennium Drought (2008–2010). Only one catchment, the Paroo, is rated as in good condition.



We signed a funding agreement with the Northern Basin Aboriginal Nations.

Construction of water management structures commences at Hipwell Road, near the Gunbower Forest, Victoria.

January



A month of extremes with Australia's hottest month on record, accompanied by very low rainfall in the southern Basin. Later in the month there is record-breaking rainfall in the north of the Basin causing major flooding along several Barwon–Darling system tributaries.

Fisherman Henry Jones becomes the first community member to be awarded the River Murray medal. This is for his role, over many years, in raising awareness of community concerns about the health of the River Murray.

Very high demand for water continued with releases from Hume Dam exceeding 20,000 ML a day for 19 consecutive days.

The first in a series of meetings with Basin states was held to develop an Implementation Agreement for the Basin Plan, to set out responsibilities, timeframes and relevant standards for actions under the plan between now and 2019.

February

The Advisory Committee on Social, Economic and Environmental Sciences meets for the first time to provide the MDBA with strategic advice on science and knowledge to underpin the implementation of the Basin Plan.

March

We continue to meet with communities and local governments across the Basin to discuss the roll out of the Basin Plan, especially the constraints management strategy, environmental watering priorities, water trade guidelines and social and economic work.

April

Consultation continues — we meet with the Northern Basin Aboriginal Nations group and the Murray Lower Darling Rivers Indigenous Nations in Broken Hill.

The fishway at Lock 11 is completed, bringing the number of fishways completed for the Sea-to-Hume Fishway Program to 11, leaving only three more to be completed.

The new-look MDBA website goes live.

A pilot Basin Champions program was launched, linking schools around the Murray–Darling Basin through digital broadband.

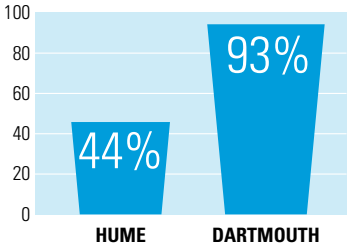
May

The Basin states provide us with their watering priorities to inform the development of Basin-wide priorities.

A new Basin Community Committee is announced, representing communities across the Basin.

The first meeting of an expert panel to review three specific groundwater sustainable diversion limits was convened. The focus of the meeting was on the Western Porous Rock aquifer in NSW. The reviews must be completed by late 2014.

Dam capacity in May:
Hume Reservoir down to 44% capacity.



June

We release the first Basin-wide annual watering priorities which will guide environmental watering activities across the Basin for 2013–14.

Construction of major engineering works is completed, including a salt interception scheme at Murtho, SA, and water management structures at Hattah Lakes and Koondrook–Perricoota Forest which will help deliver environmental water more effectively and efficiently to the icon sites.

It was estimated that 1,658 GL of the surface water recovery target was recovered across the Basin, as at 30 June 2013, representing 60% of the Basin-wide recovery target of 2,750 GL.

Both the Native Fish Program and the Sustainable Rivers Audit programs finished. More than 100 projects were completed under the Native Fish Strategy.

CHIEF FINANCE OFFICER'S REPORT

The MDBA's financial position at 30 June 2013 remained sound with total equity (net assets) of $106.1 million. The focus of financial stewardship continued to be directed to sustainability in financial operations and improved reliability in meeting approved budget targets.

Key challenges for the MDBA included:

- significantly reduced contributions revenue from the Basin states (down $16.475 million) and the accompanying requirement to reduce spending in joint-program activities and ongoing pressures from the Australian Public Service efficiency measures faced by the MDBA as a *Financial Management and Accountability Act 1997* (FMA Act) agency
- the potential for a sharp escalation in construction costs as the Environmental Works and Measures Program emerged from an extended period of significant underspending due to delays caused by major floods
- securing new funding to support the implementation of the Basin Plan.

Transitioning towards implementing the Basin Plan

As the MDBA moved to implementing the Basin Plan we revised our organisational structure and our focus in terms of high-level business, operations and project level planning. We also reviewed our ongoing financial resources.

For future years Commonwealth funding, in particular, needed to align with the demands of implementing the Basin Plan. During the year the MDBA was successful in securing additional funding to meet its key business priorities, including:

- $76.2 million over four years from 2013–14 for implementing the Basin Plan
- $39.4 million over eleven years from 2013–14 for assessing and implementing environmental works and measures projects associated with the adjustment mechanism for sustainable diversion limits
- $31.6 million over seven years from 2013–14 to achieve enhanced environmental watering outcomes through the analysis and progressive removal of constraints to efficient water delivery.

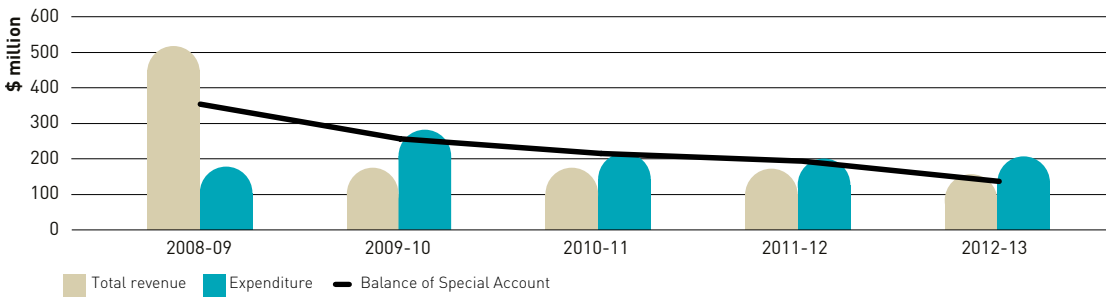
In addition, $155 million was provided to the MDBA over seven years from 2013–14 by way of administered funds, for the purposes of funding the South Australian Riverland floodplain integrated infrastructure projects.

The advent of administered funds was a first for the MDBA and provided yet another dimension to our already multi-faceted nature of reporting obligations and governance structures.

Financial results

Figure ii shows the relationship between the MDBA's financial performance and the balances in the Murray–Darling Basin Special Account since the inception of the MDBA. The relationship between operating deficits and net assets, while expected, is not necessarily indicative of poor financial performance.

Figure ii. MDBA financial performance and Murray–Darling Basin Special Account (2008–09 to 2012–13)



After the floods

In contrast to 2010–11 and 2011–12 when construction was delayed due to widespread flooding along the River Murray, in 2012–13 there was significant progress on the major construction projects, under the Environmental Works and Measures Program. This in turn increased expenditure. Current expectations are that the majority of the construction projects will be substantially completed in 2013–14, together with the construction of the spillway southern training wall at Hume Dam, part of the MDBA's dam safety program.

While the MDBA expenditure increased, its unique structure of asset accounting in relation to infrastructure assets does not translate conventionally in terms of the MDBA's financial performance indicators (see also 'General and special purpose reporting'). Reported operating results and net asset positions will increase if financial performance is deemed positive, or favourable. Progress on the environmental works and measures projects will, for at least the next two financial years, continue to translate as recurring financial operating deficits with consequent reductions in the MDBA's net assets position. This is because the MDBA does not control the assets created through this particular program.

For this reason projected budget deficits and a reduction in the Murray–Darling Basin Special Account balances should not be viewed negatively; rather they are likely to be a positive indicator of progress of this particular program. That is because the funds have been held in the Murray–Darling Basin Special Account since the MDBA's inception in order to fund works in relation to the Environmental Works and Measures Program. Spending on this program is funded through draw-downs on the Account, which has the simultaneous effect of reducing net assets and also increasing the MDBA's operating deficits.

When the Environmental Works and Measures Program finishes, these anomalies will largely disappear.

Contributions from the Basin states

The reduction in contributions to the joint programs was a significant financial challenge for the MDBA in 2012–13. Contributions fell by $16.475 million due mainly to the New South Wales Government's decision to reduce their contribution to the joint programs. In 2013–14 New South Wales and Queensland will be reducing their contribution further.[2]

The challenges faced by the MDBA (and also in turn the Basin states) will continue, until a long-term decision on the future of the joint programs and a sustainable funding base is agreed. The Ministerial Council has requested that the Basin Officials Committee advise on the proposed 2014–15 budget and longer term funding, and institutional governance arrangements by the end of 2013. The MDBA will provide input to the Basin Officials Committee to assist in the provision of this advice.

General and special purpose reporting

The MDBA's general-purpose financial report (see pages 131–181) sets out our objectives and refers to our economic dependency on the Australian Government's policy and parliamentary appropriations to administer the agency and its functions.

A key function of the MDBA is as asset manager for key infrastructure assets throughout the Basin. Infrastructure assets comprise $2.5 billion in River Murray Operations assets (e.g. Hume and Dartmouth dams and the locks and weirs on the River Murray). These assets are augmented by work-in-progress in relation to major construction projects covered under the Environmental Works and Measures Program. These projects will represent a distinct category of assets that will also need to be managed, as they have long economic lives.

We also manage $434.4 million in water entitlements through The Living Murray Initiative. The Living Murray assets were either acquired through on-market acquisition or created as a result of environmental water infrastructure projects. These projects are subject to valuation on an annual basis and are valued on a consistent basis to the water entitlement assets held by the

2 Excluding the amounts pertaining to Contributions from Jurisdictions for Dam Improvement, which ceased in 2012-13.

Commonwealth Environmental Water Office.

The River Murray Operations and The Living Murray assets do not form part of the MDBA's general-purpose financial report. They are reported separately in special-purpose financial reports on behalf of the unincorporated joint ventures that control these assets. These special-purpose financial reports do not form part of this annual report, but are audited annually by the Australian Auditor-General. In turn, the asset values reported in the special-purpose financial statements provide the formal basis for the Australian Government, and other asset controlling controlling governments, to reflect their controlling shares in these assets and report them in their respective general-purpose financial reports.

Internal controls

As part of our internal control framework we we reviewed our risk assessment regarding Section 83 of the Constitution (which relates to money which can be drawn from the Treasury under appropriation) following potential risks of breaches. This has been the focus of increased attention over the past two years, particularly from the Australian National Audit Office (ANAO). This also follows High Court decisions in a number of key legal cases, including *Williams v The Commonwealth* (2012) ALR 410.

Following advice received from the Department of Finance, the MDBA has included an appropriate disclosure note to the financial statements (refer Note 19). The ANAO has advised that the MDBA has appropriate financial controls in place and that these operated effectively and reliably during the past year. Similarly, no major issues have been identified by the MDBA's internal auditors.

Meeting different accountabilities

The MDBA has a relatively intricate governance model in place, one characterised by multi-tiered accountabilities extending beyond meeting the obligations under the *Financial Management and Accountability Act 1997* and other legislative and regulatory requirements.

It is anticipated that there will be future changes following the new *Public Governance, Performance and Accountability Act 2013,* which is expected to commence operation from 1 July 2014. This follows an extensive review to modernise the Australian Government's financial and performance framework. While much of the existing financial framework will be retained, the MDBA will need to have in place mechanisms to ensure that it is ready to adopt the new rules once they come into operation.

Some MDBA programs or elements of programs are implemented directly, while others are implemented through state government agencies, which manage the Basin in partnership with Australian Government agencies. The MDBA's governance structure and the overlapping tiers of accountability and reporting requirements exercise significant influence on the efficacy of the MDBA's budgetary and financial management framework.

While the MDBA's corporate plan is the primary conduit for internal planning and budgeting, these internal requirements are subject to the MDBA-approved expenditure authority, including the limit of any estimated annual deficits. These deficits may or may not include carryovers of expenditure from prior periods.

There was significant progress on the major construction projects (photo by Heather Peachey, MDBA).

Royal spoonbills at the Ramsar-listed Narran Lakes, northern NSW (photo by Tracy Fulford).

ABOUT THE MURRAY–DARLING BASIN

The Murray–Darling Basin extends through substantial areas of Queensland, New South Wales, Victoria and South Australia, and includes the entire Australian Capital Territory.

Covering over 1 million km², or 14%, of the Australian mainland, the Basin's floodplains, forests and wetlands provide habitats for diverse and unique native plant and animal species. It is Australia's most important agricultural area, yielding over 40% of our agricultural produce and generating around $15 billion per year for our national economy.

The Basin is home to more than 2 million people (see Figure iii) and its water resources directly and indirectly support millions more. The industries it supports provide regional jobs and high-quality food and fibre for Australians or for export.

For millennia, the Basin's waters and other natural resources have sustained the Aboriginal people who lived there, meeting their social, spiritual and cultural values.

From the start of European settlement of the Basin, our use of its resources has focused on securing water for human consumption and agricultural use, with little understanding of the needs of the environment.

Over time, overallocation of water to consumptive uses and river regulation caused the environmental health of the Basin and its dependent ecosystems to decline. In 1981 the mouth of the Murray closed for the first time in recorded history.

Plant and animal species that once thrived in the Basin are now listed as rare, and protected under Commonwealth and state legislation. The Murray cod, Australia's largest freshwater fish, is in severe decline, as are many other native fish species. During the Millennium Drought iconic species such as river red gums became severely stressed, with populations significantly declining in some parts of the Basin.

Governments and communities have worked together through the water reforms of the past two decades to restore the health and resilience of the Basin's river systems. In tandem with supporting our vital food and fibre production and providing water security for the towns and communities of the Basin.

Figure iii. The Murray–Darling Basin — *in 2012–13 we held meetings with communities across the Basin — in Mildura, Renmark, Griffith, Shepparton, Tocumwal, Deniliquin, Echuca, Broken Hill, Dubbo, St George, Tatura, Tumbarumba, Tumut, Howlong, Goondiwindi, Urana, Murray Bridge, Bullatale, Coleambally, Wagga Wagga, Hillston, Moulamein and Barmera — to name a few.*

Left to right: Dianne Davidson, Craig Knowles, Rhondda Dickson, Barry Hart, Diana Gibbs (photo by Brayden Dykes, MDBA).

THE AUTHORITY

The Murray–Darling Basin Authority (the Authority) consists of the Chief Executive, the Chair and four part-time members. Authority members are appointed by the Governor-General and each must have a substantial expertise in one or more fields relevant to the activities of the agency — for example, water resource management, hydrology, freshwater ecology, resource economics, irrigated agriculture, public sector management and financial management.

At 30 June 2013 Authority members were:

Craig Knowles

The Hon. Craig Knowles was appointed Chair of the Authority from 1 February 2011. Craig was a former minister in the NSW Parliament serving in the portfolios of Planning and Housing; Health; Infrastructure; Planning and Natural Resources; and Forests and Lands. Before entering parliament Mr Knowles worked in property, land management, planning and valuation, in both the private sector and for NSW public sector agencies. Craig serves as a director of a number of commercial, charitable, statutory and not for profit boards and associations, including the Black Dog Institute, Mental Health Council of Australia and he is the immediate past President of the Asthma Foundation of NSW.

Dianne Davidson

Dianne Davidson is an agricultural scientist and horticulturist, and has a strong management background in natural resources, particularly water and irrigated agriculture. She is a fourth generation farmer in the Lower Lakes region of the Basin and manages her own mixed agricultural business there, as well as carrying out consulting work throughout Australia and internationally.

Rhondda Dickson

Dr Rhondda Dickson has been the Chief Executive since June 2011. She led the development of a significant piece of national water reform — the Basin Plan — forging strong relationships with MDBA's partner governments and Basin communities. Before joining the MDBA, Rhondda was a Deputy Secretary of the Department of Agriculture, Fisheries and Forestry and has previously held senior executive positions at the Department of the Prime Minister and Cabinet and Department of Environment. Through her public service career Rhondda has worked across the full scope of practical natural resource management, including the development and implementation of the Natural Heritage Trust, the National Action Plan for Water Quality and Salinity, national forest policy, fisheries and national approaches to vegetation management.

Diana Gibbs

Diana Gibbs is a resource economist with post-graduate qualifications in environmental studies. She has been involved in resource development planning in Australia, Africa, the Middle East and South-East Asia, and has worked with communities throughout the Basin, particularly in New South Wales. She currently sits on the New South Wales Climate Change Council and is also a partner in a sheep/wheat farming operation in the Basin.

Barry Hart AM

Professor Barry Hart is an Emeritus Professor at Monash University and has over 35 years' experience in freshwater ecology and natural resource management. He also chairs a number of government scientific and strategic advisory committees, and is director of an environmental consulting company. In the 2012 Queen's Birthday Honours, Barry was made a Member of the Order of Australia for services to conservation and the environment.

Farewell

During the year we farewelled David Green whose appointment to the Authority ceased on 13 May 2013.

Details of Authority meetings and their outcomes are in Appendix A.

EXECUTIVE TEAM

Executive leadership of the Murray–Darling Basin Authority comprises:

Rhondda Dickson, Chief Executive

See page 15.

David Dreverman, Executive Director River Management

David Dreverman joined the Murray–Darling Basin Commission (MDBC) in 2000 as Manager Assets and was appointed General Manager River Murray Water in 2003. David transferred to MDBA in late 2008, when it subsumed the functions of the MDBC. David has worked in the consulting engineering industry with SMEC; the Hydro–Electric Commission of Tasmania; and Australian Power & Water. For more than 35 years he has been involved with large dam and hydropower projects, both in Australia and overseas, and, more recently, in the management of the River Murray System.

Russell James, Executive Director Policy and Planning

Russell James joined the MDBA in 2011, having worked with other Australian Government agencies on water reform, including developing the National Water Initiative and the *Water Act 2007*. Russell has worked extensively with state government agencies and community stakeholders to finalise the Basin Plan and develop strategies for its implementation. In addition to coordinating Basin Plan implementation across the MDBA, his Division also leads on water resource planning, social and economic analysis and advice, and policy development.

Fraser MacLeod, Executive Director Joint Programs Internal Review Taskforce

Dr Fraser MacLeod joined the MDBA in 2009 from the South Australian Department for Water, Land and Biodiversity Conservation. Fraser has over 15 years' experience in European agricultural and environmental policy, integrated rural development, research and information management and, more recently, in integrated natural resource management in Australia.

Frank Nicholas, Executive Director Corporate and Business Services

Frank Nicholas joined the MDBA as Executive Director Corporate Services in September 2008 following a short period with the Department of Environment, Water, Heritage and the Arts where he assisted with establishing the new Murray–Darling Basin Authority. Frank has 30 years' experience in the Australian Public Service in delivering and leading corporate support services.

Jody Swirepik PSM, Executive Director Environmental Management

Jody Swirepik joined the Murray–Darling Basin Commission in 2001 to develop the Sustainable Rivers Audit. She then worked on The Living Murray program, receiving a Public Service Medal for her work. Jody transferred to the MDBA in late 2008, when it took over the functions of the MDBC. Before 2001 Jody worked for the New South Wales Environment Protection Authority, implementing water reforms and developing the early environmental flows rules for inland New South Wales. Jody's qualifications are in applied science and focus on water management and freshwater aquatic ecology, with an Honours (First) on aquatic plants and a master's degree focusing on the impact of carp.[3]

MDBA senior staff and Authority members (photo by Lindi Heap).

3 Scientific names of plants and animals are on page 206.

Photo by Michael Bell

OBJECTIVE 1.0

CHAPTER 1 TRANSBOUNDARY WATER MANAGEMENT

Improving water security and access through transparent, statutory, Basin-wide planning arrangements for water management.

Photo by Michael Bell

TRANSBOUNDARY WATER MANAGEMENT

OVERVIEW

The outstanding achievement this year was the Australian Government's adoption of the Basin Plan in November 2012, following the lengthy consultation and drafting process, and an intense period of work with state governments after the public comment period closed.

The focus now is all about implementation — many would say 'now the hard work really begins...'. The MDBA is intent on making sure that implementation of the Plan builds on our efforts to engage the Basin community and to work closely with the states.

A draft implementation agreement has been prepared between the MDBA and states, as required in Chapter 1 of the Basin Plan. This sets out the key actions and responsibilities for implementing the Plan between now and 2019, and establishes the Basin Plan Implementation Committee and its working groups as the focal point for consultation with the states on implementation issues.

Good progress was made with a number of other early implementation tasks, including the constraints management strategy; the sustainable diversion limit adjustment mechanism; social and economic indicators; guidelines to assist states with developing water resource plans; guidelines on the water trade rules; cultural flows research; sustainable diversion limit reporting arrangements; and beginning the reviews of three groundwater sustainable diversion limits (two in New South Wales, one in Victoria).

Consultation with the community is ongoing. The new Northern Basin Advisory Committee was established and is putting in place a three year work program to examine Basin Plan requirements in the north. Depending on the outcomes, this work could lead to the MDBA recommending changes to the Basin Plan in 2016. Substantial consultation is occurring on the constraints management strategy and the development of social and economic indicators.

The Advertiser

Mighty win for the Murray

AFTER 120 years of intense bickering between the states, the end is in sight in the fight to save the Murray-Darling Basin.

Water Minister Tony Burke has signed into law a plan to save the ailing system.

The plan must survive 15 sitting days in Federal Parliament once it is tabled next week but, barring a major change of heart by the Coalition, it will pass.

To use football vernacular, the game is deep into the final quarter and the mighty Murray has charged away to a 10-goal lead.

Passage of the plan will not return the 4000 billion litres conservationists have long campaigned for, but the 3200 billion litres it promises is a significant step forward.

It also will be a win for all South Australians, who have long battled for the river to be returned to health, rather than compromised by upstream interests.

Murray plan 100 years in the making

Tom Arup

THE Environment Minister, Tony Burke, has declared an end to more than 100 years of fighting over the Murray-Darling Basin after signing into law a long-awaited plan to save the river system.

But the plan still faces hurdles, with the Greens saying they will move to disallow it when it is tabled in Parliament next week, and NSW, the biggest basin state, expressing hostility to its final design.

Speaking on Thursday, Mr Burke said Australia had been waiting for the reform since Federation.

"In my view, Australia has been putting this off for more than a century. That needs to end, that ends today," he said.

Laws to restore the river basin were introduced under the former Howard government.

HIGHLIGHTS

- Basin Plan commenced on 24 November 2012.
- Continued consultation with communities, experts, government agencies, industry and environment groups about implementing the Basin Plan.
- Continued work on the cultural flows research project.
- Established the Northern Basin Advisory Committee to inform the Northern Basin Program.

OUR PERFORMANCE

Program performance is measured against deliverables and key performance indicators in the *Portfolio Budget Statements 2012–13* of the Sustainability, Environment, Water, Population and Communities portfolio. A summary of MDBA's performance against the deliverables and indicators related to objective 1.0 is provided on page 21.

DELIVERABLES	KEY PERFORMANCE INDICATORS	RESULTS	PAGE[4]
A draft Basin Plan for consideration by the Minister for adoption	Adoption of the final Basin Plan	Basin Plan adopted by the Commonwealth Water Minister, and commenced on 24 November 2012	22
Well informed administrative guidelines to support the implementation of state water resource plan requirements and appropriate accreditation processes and decisions	Level of acceptance expressed by Commonwealth and state ministers for the Basin Plan Implementation Strategy	Water resource plan handbook drafted, in consultation with Basin states and Commonwealth Environmental Water Office. To be published in 2013–14 following further consultation	28
	Water users have increased certainty over water sharing arrangements	Following adoption of the Basin Plan, water sharing arrangements are now set out for the period to around 2029, and in doing so provides increased certainty	28
Development, coordination and reporting on a work program to inform the 2015 review of sustainable diversion limits in collaboration with partner governments and the community	Sustainable diversion limits review process provides public confidence that Basin Plan outcomes will be delivered effectively	The proposed 2015 review of sustainable diversion limits in the draft Basin Plan was replaced, at the request of Basin state ministers, with the sustainable diversion limit adjustment mechanism	26
		The Northern Basin Advisory Committee and the Northern Basin Intergovernmental Working Group have been formed and the MDBA has begun developing a work program to 2015, with their input	32
Independent audits of the Cap, salinity and The Living Murray undertaken in line with schedules to the Murray–Darling Basin Agreement	Through independent audit activities the public have confidence in the degree of compliance to water extraction limits in the Basin and operation of the Basin Salinity Management Strategy and The Living Murray	The Living Murray annual implementation report and audit of The Living Murray implementation 2011–12; the review of the Cap implementation for 2011–12; and the Annual implementation report for the Basin Salinity Management Strategy 2011–12 completed	47, 64, 194
Reviews undertaken as required by the agreement (clauses 142 and 152)	Murray–Darling Basin Ministerial Council supports recommendations of Murray–Darling Basin Agreement reviews	Clause 152 review completed, and review of clause 142 to be completed by November 2013, in consultation with the Basin Officials Committee	30

4 Some deliverables and key performance indicators go across objectives so some results will be found in other chapters.

DEVELOPING THE BASIN PLAN

The development of the Basin Plan has been informed by science and our understanding of the social and economic conditions in the Basin.

The draft Basin Plan was published in 2011, followed by a 20-week consultation period. In May 2012 we published a revised draft of the Basin Plan, along with a summary report of the nearly 12,000 submissions we received, and the changes we had made. The Murray–Darling Basin Ministerial Council then had six weeks to provide comments back to the MDBA on these documents.

To help us assess the ministers' comments, we sought advice from the Basin Community Committee, national peak bodies, key scientists and technical experts, Aboriginal representatives and local government representatives from areas most likely to be affected by the ministers' proposals.

We reported on our consultations with these stakeholders, including our views on the ministers' comments, and prepared an altered plan to go back to Ministerial Council, whose members then had three weeks to provide any further views to the Commonwealth Water Minister.

The MDBA published the proposed Basin Plan on 6 August 2012.

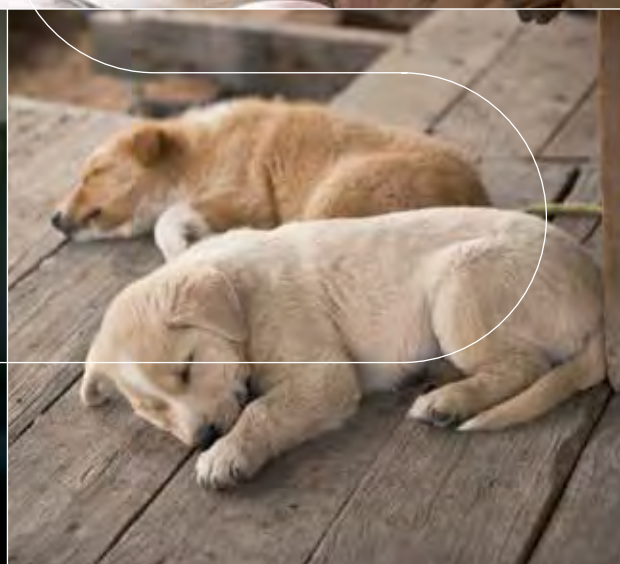
The Commonwealth Minister for Water then had 12 weeks to consider the Basin Plan, and either adopt the Plan or make suggestions back to the MDBA. The minister forwarded the consensus views provided to him by the Ministerial Council, and provided suggestions on the Basin Plan to the MDBA. The MDBA incorporated the views and suggestions and returned the plan to the minister.

The MDBA also prepared a Regulation Impact Statement for the Basin Plan to enable the minister, members of parliament, and the Australian community to be informed of the environmental, social and economic implications of the implementation of the Basin Plan. The Regulation Impact Statement formalised and presented evidence of the key steps taken during the development of the Basin Plan, and included an assessment of the costs and benefits of alternative sustainable diversion limit options, see page 31.

The Basin Plan commenced on 24 November 2012.

The vote in the House of Representatives on a motion to disallow the Basin Plan, on the 29 November 2012. The motion was defeated by 95 votes to 5 (photo by Colin Bettles, Fairfax Agricultural Media).

We met with people on verandahs, around kitchen tables, at barbecues, in pubs, on farms, in bowling clubs, in small planes, in RSL clubs and council offices (photos by Brayden Dykes, MDBA)



A BRIEF INTRODUCTION TO THE THE BASIN PLAN

In November 2012 the Basin Plan became law, a significant milestone in the history of water reform in Australia.

The Basin Plan aims to balance social, economic and environmental demands on the Basin's water resources, to ensure there are:

- strong and vibrant communities with sufficient water of suitable quality for drinking and domestic use (including in times of drought) as well as for cultural and recreational purposes
- productive and resilient industries that have long-term confidence in their future, particularly for food and fibre production
- healthy and diverse ecosystems with rivers regularly connected to their creeks, billabongs and floodplains, and ultimately the ocean.

At the heart of the Basin Plan is the need to reduce the amount of water which was being taken from the Murray–Darling Basin to ensure sufficient water for all users, including the environment.

To do this the plan reduces the amount of water that can be taken from the Basin by setting sustainable diversion limits (SDLs) for both surface water and groundwater for each water resource plan area in the Basin.

The total level of surface water diversions in the Murray–Darling Basin, at 2009 baseline conditions, was 13,623 GL a year.

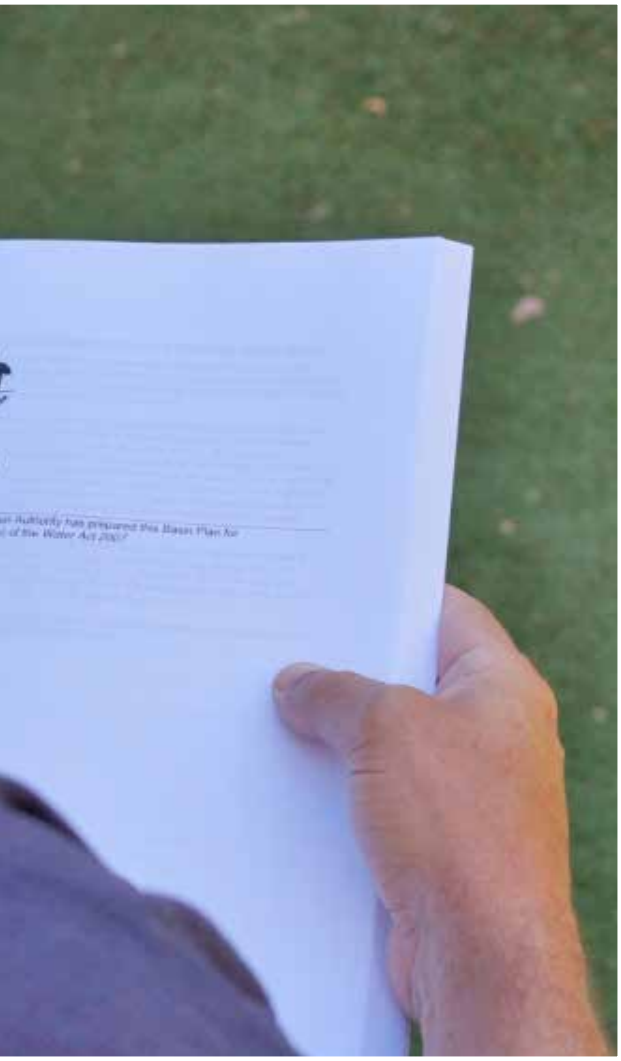
The MDBA determined that for water use to be sustainable:

- 10,873 GL of surface water could be taken (or diverted) from the Basin each year, and 3,324 GL of groundwater
- to achieve this the current level of surface water diversions needs to be reduced by 2,750 GL a year.

As at 30 June 2013, 1,658 GL (60% of the reduction target) have been recovered through investment in more efficient water delivery infrastructure, environmental measures and water purchases.

While the Basin Plan provides a framework, working with the Basin states, communities and key stakeholders will be crucial in achieving a sustainable Basin system.

The Basin Plan will be rolled out over seven years, allowing time for the Basin states, communities and the Australian Government to work together to manage the changes required.



The Basin Plan consultation process enabled us to incorporate Aboriginal values, uses and objectives for water management into the plan. Ongoing consultation will also help to determine the social and economic impacts of introducing the SDLs.

The plan consists of:

- overall management objectives and outcomes
- sustainable diversion limits — on how much water can be taken from the Basin
- sustainable diversion limit adjustment mechanism — allows the SDL to be adjusted under certain circumstances
- constraints management strategy to look at obstacles to delivering environmental water (draft strategy is due in late 2013)
- an environmental watering plan — to protect and restore the Basin's rivers and wetlands. The first list of Basin-wide priorities was published in June 2013 (a Basin-wide watering strategy is due in 2014)
- a water quality and salinity management plan that sets objectives and targets e.g. a minimum of 2 million tonnes of salt to be exported out the Murray Mouth each year
- requirements that state watering plans will have to comply with if they are to be accredited under the Basin Plan by 2019
- a mechanism to manage critical human water needs — the minimum amount of water needed by communities who are dependent on the Basin's water resources
- the rules for trading water
- identification of the risks to continued water availability in the Basin, and strategies to manage them
- a monitoring and evaluation program, including an annual report on the effectiveness of the Basin Plan (Appendix B).

BASIN PLAN CONTENT

The Basin Plan has a number of objectives and outcomes that will help ensure that the health of the Basin is restored and maintained into the future.

Sustainable diversion limits

One of the key objectives of the Basin Plan is balancing the water needs of communities, industries and the environment. The plan aims to do this by establishing new long-term average SDLs. Sustainable diversion limits are limits on the volumes of water that can be taken from groundwater and surface water sources for consumptive use, and are set at both a catchment and a Basin-wide scale.

Consumptive use is the use of water for irrigation, industry, urban, stock and domestic use, or for other private consumptive purposes.

Sustainable diversion limits were set out by the MDBA according to the provisions of the Water Act. Our work included refining the proposed SDLs to ensure equitable and sustainable use of the Basin's water resources, and developing requirements for accreditation and adoption of water resource plans.

The MDBA has determined that the Basin-wide long-term average SDL for surface water is 10,873 GL per year, representing a reduction of 2,750 GL/y from levels of use in 2009. Sustainable diversion levels will be fully implemented on 1 July 2019, following accreditation of all state water resource plans by the Commonwealth Water Minister.

Sustainable diversion limits adjustment mechanism

Recognising an opportunity to build further on the draft Basin Plan's environmental, social and economic outcomes, Basin water ministers requested that the final Basin Plan include provisions to enable the sustainable diversion limits to be adjusted.

This SDL adjustment mechanism added flexibility to the Basin Plan by allowing the MDBA to adjust the SDL in response to:

- environmental construction projects and changes to river operating rules that enable equivalent outcomes to be achieved with less water
- investment proposals to increase the amount of water that could be recovered for the environment, in ways that would have neutral or positive social and economic impacts (e.g. on-farm works to improve irrigation efficiency).

Sustainable diversion limits can be adjusted up or down but overall they cannot be adjusted by more than plus or minus 5%.

Ensuring equivalent environmental outcomes to those in the Basin Plan is a key requirement for any SDL adjustment. To evaluate whether this requirement will be met we needed to develop a method to assess SDL adjustment proposals.

In May 2013, we engaged a consortium, led by CSIRO, to develop the ecological elements scoring method. The project's key milestones were to develop a method for scoring the ecological elements and to implement the agreed method, including comprehensive testing. A draft method report was provided to the MDBA in June 2013 and circulated to Basin states for comment. The report was also provided to an independent review panel which we engaged to review the proposed method.

The Sustainable Diversion Limit Adjustment Assessment Committee was established by the Basin Officials Committee to enable close consultation with Basin states. The committee comprises representatives of all Basin states and is chaired by the Department of Sustainability, Environment, Water, Population and Communities. The MDBA participates as a non-voting member and provides secretariat and technical support.

The committee's primary roles are to assess and advise the Basin Officials Committee on proposed measures which could provide an opportunity to adjust the SDLs. The committee's work will be undertaken in three phases through to 2016, when the committee is expected to recommend a package of measures. The Basin Officials Committee is responsible for choosing the final proposals. We will then determine a likely

SDL adjustment amount before proposing any adjustments to the Commonwealth Water Minister who will make the final decision.

The Sustainable Diversion Limit Adjustment Assessment Committee met in March, May and June 2013, and also held a workshop as part of developing assessment guidelines for phase 1 (feasibility stage) of the SDL adjustment process.

Benchmark modelling project

In 2012–13 the MDBA began work on the 'benchmark' model scenario, which will provide environmental outcomes that could be achieved through combining the recovery of 2,750 GL/y of water for the environment and a Basin-wide environmental watering strategy.

Any proposed SDL adjustment project will be assessed against the benchmark scenario. A successful project will allow the volume of water recovered to be reduced, but will maintain environmental outcomes set in the benchmark scenario. Basin states have significantly contributed to the benchmark's development.

We expect to receive a large number of adjustment proposals for assessment and consideration in a relatively short space of time. An efficient, robust and fit-for-purpose benchmark model will be vital to meeting future SDL adjustment goals. The work is expected to be completed towards the end of 2013, to align with the completion of the ecological elements scoring method.

Surface water planning

Once the Basin Plan became law we began working with Basin states to develop monitoring and reporting templates to support their reporting obligations. Although SDLs will not come into effect until 1 July 2019, some reporting obligations begin immediately, so we have been working with Basin states to build on the current arrangements, under the Cap on surface water diversions, to also meet those that apply under the Water Act.

Preparation of the implementation agreement between the Basin states and the MDBA identified a need for a transition work program for surface water diversion limits. This program will address policy and technical issues associated with the transition from the Cap to SDLs, including methods for determining annual permitted and actual take. We are planning to develop the transitional work program by early 2014.

Take is the removal of water, or the reduction in flow of water, from a water resource.

To help us develop the work program, we commissioned independent reviews of the methods used in the Basin Plan to estimate various forms of take, as defined under the baseline diversion limit. Recommendations made by these reviews will help us develop methods for determining annual permitted and actual take, which Basin states must outline in their water resource plans and which will be used for determining compliance with the SDL from 1 July 2019.

An alpine stream in Namadgi National Park, ACT (photo by Andrew Beer, MDBA).

Groundwater planning

The introduction of the Basin Plan also means that for the first time groundwater is managed in an integrated way in all Basin states, with limits applied to all groundwater use across the Murray–Darling Basin.

To determine the groundwater SDLs we used a consistent Basin-wide approach to assess the impact of extraction on ecosystems that depend on groundwater, as well as the ability of aquifers to continue to be productive over time.

The Basin Plan requires us to review the SDLs and baseline diversion limits for three areas, and these are being progressed in consultation with the Basin states.

In consultation with the Basin states we are developing a technical report to identify the types of rules that could be incorporated in groundwater water resource plans to manage the local impacts of groundwater take, along with a framework on how to assess the need for rules.

During the past year we continued to work with state groundwater specialists through the Groundwater Technical Reference Panel and individual state expert panels to finalise and begin implementing the Basin Plan.

We also initiated four projects to support the improved management of groundwater in the northern Basin, including:

- an update of the Central Condamine Alluvium Groundwater Model
- a water balance study for the Border Rivers and Condamine Fractured Rock SDL resource units
- a hydrological assessment of the Upper Condamine Alluvium Tributaries
- a methodology for estimating the take of groundwater for stock and domestic purposes (Queensland).

Water resource planning

Water resource plans will be key drivers in implementing the outcomes of the Basin Plan. The Basin states already undertake water resource planning, and we continue to work with them to develop water resource plans that will meet Basin Plan requirements.

The Basin Plan sets out the specific requirements that water resource plans must meet to ensure consistency across the Basin by 2019. These requirements include giving effect to the SDLs in each water resource plan area as well as incorporating environmental watering and water quality measures. In addition, water resource plans must have regard to Aboriginal values and uses.

In preparing to implement these requirements we have:

- assisted Basin states and the Commonwealth Department of Sustainability, Environment, Water, Population and Communities to clarify how and when existing (transitional and interim) water resource plans will be revised to be consistent with the Basin Plan
- in consultation with Basin states, commenced preparing a plain English handbook for practitioners on meeting Basin Plan requirements
- begun developing a clear accreditation process enabling internal and external stakeholders to understand clearly the MDBA's role in advising and assessing water resource plans.

Preparation of the implementation agreement between the Basin states and the MDBA has enabled us to identify future priorities for implementing the new arrangements, this has included:

- developing a work program to progressively put in place new water resource plans, which are consistent with the Basin Plan, by June 2019
- establishing an annual water planners' forum and water planners' toolkit to share knowledge and experience, and to improve our collective understanding of water resource planning approaches
- improving understanding of the risks to water resources at the water resource plan area level, to inform the appropriate approach needed for each water resource plan.

During the next 12 months, we will put in place clear accreditation processes and continue to work with state water planners, when requested, to assist in developing new water resource plans.

Silverbeet crop irrigated by groundwater, near Toowoomba Queensland (photo by Arthur Mostead © MDBA).

Environmental watering plan

The environmental watering plan is a central component of the Basin Plan, its purpose is to achieve the best possible environmental outcomes using the increased, but still finite, amount of water made available by the Basin Plan.

The environmental watering plan outlines the MDBA's obligation to prepare Basin annual environmental watering priorities by 30 June each year. We satisfied this obligation by publishing the first set of priorities — for the 2013–14 water accounting period — on our website in June 2013. More information can be found in Chapter 2 'Restoring river and ecosystem health' pages 40 to 41.

Water quality and salinity management plan

The water quality and salinity management plan is a mandatory component of the Basin Plan. The Water Act requires that the plan identifies key causes of water quality degradation in the Murray–Darling Basin and includes water quality and salinity objectives and targets for the Basin's water resources. Specific information about managing Basin salinity is in Chapter 2 'Restoring river and ecosystem health', see pages 49 to 51.

Water trade

In 2012–13 we finalised the Basin Plan water trading rules, which will come into effect on 1 July 2014, and began developing guidelines to assist Basin states, irrigation infrastructure operators and individuals participating in the water market in complying with the rules. A guidelines workshop was held with Basin states in May 2013.

The MDBA also provides a coordination role that ensures consistency in the administrative processes for interstate water trade. We coordinated quarterly meetings of the Trade Working Group, and met with the Trade Operators Panel. We reported to the Basin Officials Committee, through the Natural Resource Management Committee, on interstate water market matters. We also completed a review of Schedule D of the Murray–Darling Basin Agreement — *Transferring Water Entitlements and Allocations* of the *Murray–Darling Basin Agreement* — which coordinates interstate trade in the southern-connected Basin, and completed an audit of interstate allocation trades for the 2010–11 and 2011–12 water years.

Critical human water needs

During the past year our work on critical human water needs moved to implementing the Basin Plan requirements and ensuring understanding of the close interaction between the Basin Plan and the Murray–Darling Basin Agreement. More information is provided in Chapter 4 'Managing River Murray assets', see page 79.

Monitoring and evaluation

The Basin Plan includes a program to monitor and evaluate the plan's effectiveness. During 2012–13, we began developing the guideline about requirements for Basin states and Australian Government agencies to report to us on implementing their obligations under the Basin Plan. We expect to finalise the guideline in 2013–14, following consultation with Basin states, the Commonwealth Environmental Water Office and the Department of Sustainability, Environment, Water, Population and Communities.

We also began developing a comprehensive evaluation framework, that explains the development of reporting indicators, our approach to assessing change from the Basin Plan, and benchmarks against which to assess change.

We continued working with the Basin states to develop a phased implementation of reporting, to be completed by 2017. Monitoring, evaluation and information coordinators have been employed for New South Wales, Queensland and South Australia, to coordinate and implement actions and to facilitate implementing the Basin Plan Monitoring and Evaluation Program. This includes developing inventories of relevant state monitoring, evaluation and information monitoring programs, and supporting the alignment of programs with the Basin Plan.

Review of the Murray–Darling Basin Agreement

Changes made to the Murray–Darling Agreement in 2008 included a requirement for the MDBA to review the Agreement, in consultation with the Basin Officials Committee, within 12 months of the Basin Plan coming into effect (at clause 142) and to review the Schedules to the Agreement before the Basin Plan comes into effect (at clause 152).

The clause 152 review of Schedules assesses the extent to which each of the Schedules is consistent with the Basin Plan and, if necessary, prepare recommendations to Ministerial Council that relevant changes be made. The review identified that while all Schedules are generally consistent with the Basin Plan, some specific matters in Schedule B (Basin salinity management) and Schedule D (transferring water entitlements and allocations) will require further assessment and consideration as the Basin Plan is implemented. The MDBA will continue to work on these Schedules in 2013–14.

The clause 142 review of the Agreement will evaluate and analyse, from a legal perspective, the extent to which the Agreement operates in logical harmony with, and does not contradict, the Basin Plan. The review will also identify any limitations on the manner in which the Agreement gives effect to, or provides the framework and powers for giving effect to, the Basin Plan. The review will begin in 2013–14 and be completed by November 2013.

Compliance and assurance

Throughout 2012–13 we continued to develop a balanced, integrated and risk-based approach to compliance and assurance to help all Basin states and government agencies carry out their Basin Plan obligations.

To support this approach, and the compliance assurance program generally, we continued to develop a compliance risk management framework and compliance audit policy and procedures.

The compliance risk management framework will enable us to identify and set priorities for compliance risk as required more broadly under the Basin Plan and the Water Act, as well as within specific areas such as the water trade rules. A compliance audit policy will provide transparency in how we determine what should be subject to an audit and when.

We also undertook an environmental scan that identified issues, trends and threats that may affect compliance. This forward looking approach will allow us to be proactive in identifying and addressing current and emerging compliance risks, and to develop strategic interventions to minimise their impact on the effectiveness of the Basin Plan.

Constraints management strategy

Basin state governments requested that the Basin Plan include a requirement for the MDBA to prepare a constraints management strategy that identifies constraints that affect, or have the potential to affect, the delivery of environmental water. Basin states also requested that this strategy include an examination of options, opportunities and risks associated with addressing key constraints and existing mechanisms that address any negative impacts. More information is provided in Chapter 2 'Restoring river and ecosystem health', see page 42.

A constraint is anything that affects the delivery of environmental water. It can include physical aspects such as low lying bridges, or river channel capacity, but can also include operational aspects such as river rules or operating practices. We can improve how effectively we manage and deliver environmental water by looking at how we can change some of these physical and operational constraints.

Social and economic analysis

As we finalised the Basin Plan, we also considered a wide range of social and economic information. In 2012–13 we completed three projects that assessed the plan's benefits in the Basin for primary producers on the floodplains, recreational boating industries, and fishing industries. This added to previous work on the benefits of the Basin Plan.

The MDBA drew upon social and economic analyses undertaken during 2012–13 and in previous years, as well as ecological and hydrological analyses undertaken in preparing the Regulation Impact Statement for the Basin Plan. The Regulation Impact Statement explained why there was a need for reform, and how the Basin Plan would address that need. It considered the benefits and costs of alternative sustainable diversion limit options, and assessed which option would best meet the objectives of the Water Act. The Regulation Impact Statement also described the consultation processes which had informed the development of the Basin Plan.

In considering the benefits and costs of alternative sustainable diversion limit options, the Regulation Impact Statement took into account the benefits to the community of increased environmental flows, including how those benefits can be of value to the economy. The impact statement also drew on the extensive body of social and economic work commissioned and conducted by the MDBA and other experts, between 2009 and 2012, which assessed the social and economic costs and impacts of the Basin Plan.

This work was described in detail in two documents released by the MDBA in 2011–12 — the November 2011 synthesis report *Socioeconomic analysis and the draft Basin Plan (parts A and B)* and the May 2012 report to the Ministerial Council The *socio-economic implications of the proposed Basin Plan*.

After the Basin Plan was adopted the focus of our work shifted to monitoring and evaluating how the plan is achieving its social and economic objectives in Basin communities, and industry, as well as ensuring that social and economic matters continue to be taken into account as the plan was implemented.

Input from Basin communities will ensure that our models better reflect the relationships between the Basin Plan and agricultural production, which will contribute to future planning and decision making. Cotton crop in northern NSW (photo by Josh Smith).

During 2012–13 we consulted with community and industry representatives on approaches to social and economic monitoring and evaluation, and sought views about appropriate social and economic effects. We will continue these consultations in 2013–14 to inform further work. We have also begun to incorporate social and economic considerations into implementing programs such as the constraints management strategy.

Social and economic analysis over the next few years will also inform the 2015 review of SDLs in the northern Basin. We will also be reporting on the social and economic impacts and outcomes of the Basin Plan in 2017.

Working in the northern Basin

In 2012 the MDBA established the Northern Basin Advisory Committee to inform our work in the northern Basin. The committee's first meeting was held in Canberra on 27 and 28 September 2012, and the committee has since met in Dubbo, Moree and St George. We produced and circulated a northern Basin newsletter following the Moree and St George meetings.

During its first year, the committee formed working groups that will address the following outcomes:

- achieving positive social and economic impacts
- identifying the best environmental science to achieve long-term sustainability
- achieving sensitive water recovery and effective use
- establishing reliable monitoring and evaluation methods
- ensuring communities have confidence in the implementation of the Basin Plan
- recognising cultural flows.

The committee is working with the MDBA, other Australian Government agencies and Basin states to develop and implement a three-year work plan for the northern Basin. This work plan will identify and prioritise key issues specific to the northern Basin, including areas for further research or modelling, water recovery options, and social and economic matters to be considered as the Basin Plan is implemented.

Our discussions with community representatives — particularly with farmers — helped us to develop our irrigated agricultural modelling.

IMPLEMENTING THE BASIN PLAN

The Basin Plan will be progressively implemented over the next seven years to allow time for the Basin states, communities and the Australian Government to work together to manage the changes required for achieving a healthy, working Basin. Key implementation steps are outlined in Figure 1.1.

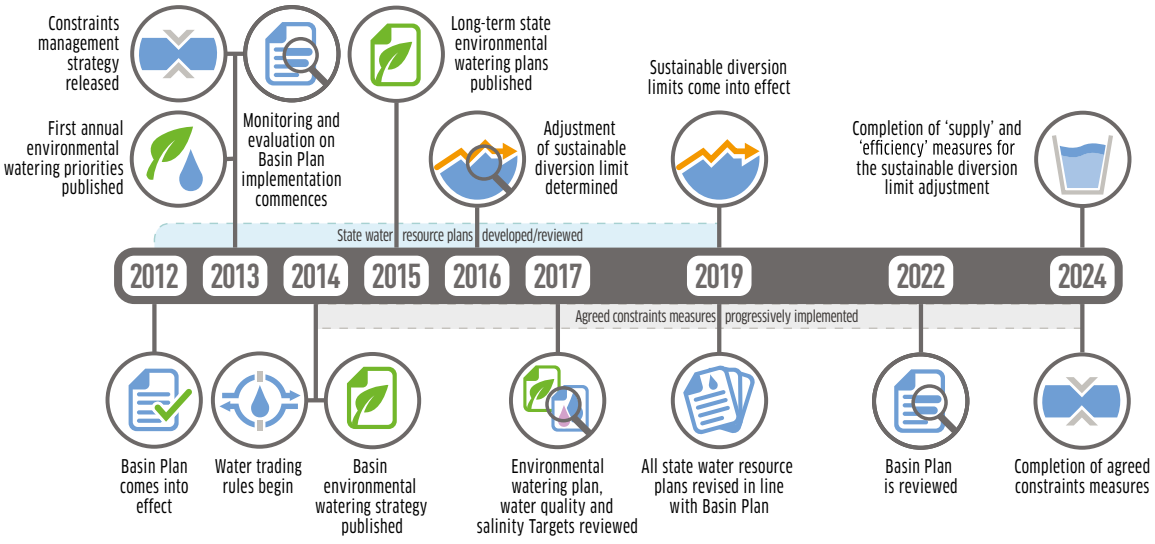
Engaging communities and stakeholders in implementing the Basin Plan

The MDBA worked with all levels of government, interest groups and communities to develop the Basin Plan. In 2013 we continued to work with these groups and communities to begin implementing the plan.

From January to June 2013 we held about 100 meetings throughout the Basin (see Figure ii, page 10), to give communities an overview of the Basin Plan and its implementation, and to hear their views on the specific technical issues that will need to be solved as the plan is put into practice.

For example, we organised meetings in the New South Wales Riverina, Sunraysia and South Australian Murray regions, with Regional Development Australia groups, council staff, irrigators, industry representatives and community leaders to discuss the social and economic work plan and to get their ideas on indicators and sources of data for the monitoring and evaluation program.

Figure 1.1. Implementation timeline for the Basin Plan



The Northern Basin Aboriginal Nations (NBAN) Executive team and Rhondda Dickson (photo by Emma Coates, MDBA).

Working with Aboriginal Nations

The MDBA worked closely with the Northern Basin Aboriginal Nations and the Murray Lower Darling Rivers Indigenous Nations who provided authoritative advice about Aboriginal cultural flows in the rivers of the Basin. The Murray Lower Darling Rivers Indigenous Nations also worked with the Indigenous icon site facilitators as part of The Living Murray Program, see pages 43–48.

We developed a funding agreement with the Northern Basin Aboriginal Nations which provides it with the funding and independence to do its work. The group opened an office in Canberra and is working with MDBA water planners to build understanding and share knowledge about cultural flows. A similar funding agreement, is being finalised with the Murray Lower Darling Rivers Indigenous Nations, and will begin in 2013–14.

The National Cultural Flows Planning and Research Program reviewed scientific literature on cultural flows and developed agreed criteria to identify case study sites in the Basin. This work will help to develop quantitative measures for Aboriginal cultural flows and identify suitable ways for Aboriginal people to be involved in managing the Basin's water resources.

Thanking Henry Jones

On 24 January 2013 Henry Jones, a commercial fisherman from Clayton near the Murray Mouth in South Australia, was awarded the River Murray Medal, the first time the MDBA had awarded the medal to a community member since the award's creation in 1853. In awarding him the medal the MDBA acknowledged his personal dedication and passion for restoring the health of the River Murray.

As a commercial fisherman for more than half a century, Henry has witnessed firsthand the declining health of the river system, and the disappearance of Murray cod, silver perch and catfish from the Lower Lakes and Coorong. For the past decade Henry has contributed his expert local knowledge as a member of The Living Murray Community Reference Group, Native Fish Strategy and, more recently, as a member of the Basin Community Committee.

Henry is one of many community members who helped to shape the Basin Plan.

Authority member Di Davidson congratulating Henry Jones on his award (photo courtesy of the Jones family).

The Complete Circuit Project has helped to ensure that Aboriginal interests are included in Basin water planning and decision-making, and has enhanced the relationship between Aboriginal people and the MDBA (photos by Jess Day (left) and Neil Ward, MDBA).

Cultural flows are water entitlements that are owned by the Indigenous Nations and are of a sufficient and adequate quantity and quality to improve the spiritual, cultural, environmental, social and economic conditions of those Indigenous Nations.[5]

Both the Northern Basin Aboriginal Nations and the Murray Lower Darling Rivers Indigenous Nations are represented on the national advisory committee for the cultural flows project, and will be directly involved in the field research. The research will help state water specialists to link this emerging research with existing MDBA and state water management programs.

Complete Circuit Project

During the consultation period for the draft Basin Plan, almost 480 submissions were received from Aboriginal people. In 2012–13 we undertook the Complete Circuit Project to revisit Aboriginal communities throughout the Basin to show them the impact of their submissions on the Basin Plan and to discuss implementing the plan.

The project also gave us the opportunity to carry out a social and economic survey to increase quantitative data about Aboriginal people in the Basin.

Implementation Agreement Group

The Implementation Agreement Group was formed in January 2013 to meet with the Basin states to develop an implementation agreement. Chaired by the MDBA, the group comprises senior government officials from the Basin states, the Commonwealth Environmental Water Office and the Department of Sustainability, Environment, Water, Population and Communities.

The implementation agreement will set out what must be done under the plan, when, where and by whom. It will be comprehensive, covering all obligations under the plan and should be ready to sign in the second half of 2013. Figure 1.1 on page 33 outlines the timeline for the Basin Plan's implementation.

5 This definition was developed by the Murray Lower Darling Rivers Indigenous Nations in 2007, and later endorsed by the Northern Aboriginal Nations.

STAFF SNAPSHOTS

Staff of the Murray–Darling Basin Authority are passionate about their work. For many, this passion is a result of significant experiences in the Murray–Darling Basin — whether it's a part of their personal history, a love for the environment, making a living from the land, or a combination of all three.

Meet Edwina

Edwina grew up in Nyngan in western New South Wales. Edwina's interest in geography and environmental science led her to Canberra and the Murray–Darling Basin Authority.

Edwina works in our water market team which helps to ensure that water is traded effectively by buyers and sellers between different locations in the Basin.

Meet Matt

Matt grew up in the Victorian town of Wangaratta and moved to Canberra in 2012 to start work with our graduate program. His interest in the natural environment led him to study science and law and pursue a career in water management.

Matt works in the constraints team which is developing a constraints management strategy which will look at obstacles to delivering environmental water.

OBJECTIVE 2.0

CHAPTER 2 RESTORING RIVER AND ECOSYSTEM HEALTH

To protect, restore or improve the ecological health and resilience of the Murray–Darling Basin's key rivers, wetlands and other ecosystems which depend on water.

OVERVIEW

The MDBA undertakes work on environmental and natural resource management issues, at a Basin-scale, both as cooperative arrangements between Basin governments, and under the framework of the Basin Plan.

2012–13 was an historic year with the Basin Plan becoming a key step in ensuring that the ecological health of the Basin's key rivers, wetlands and ecosystems will be protected and restored. We began to implement the environmental watering plan. Its importance to arrangements in the Basin will increase over the coming years as the Basin watering strategy is developed.

We continued to work with Basin governments to deliver The Living Murray water portfolio using a 'no borders' approach. The Living Murray, as an environmental water holder, worked closely with all other water holders in the southern Basin. This coordinated approach will become increasingly important in future years and will be facilitated by the cooperative arrangements being put in place to implement the Basin Plan.

Two programs were wound up due to a reduction in funding — the Native Fish Strategy and the Sustainable Rivers Audit. Considerable effort was dedicated towards capturing the legacy of the work of these programs.

Our challenges for 2013–14 include: scoping and developing the Basin-wide watering strategy with stakeholders; learning from the first set of annual watering priorities to frame future priorities; developing the constraints management strategy to improve environmental outcomes from the Basin Plan; establishing a process to test environmental equivalents for sustainable diversion limit adjustments; and transitioning The Living Murray and the Basin Salinity Management Strategy to reflect the changing investments by governments.

HIGHLIGHTS

- Published first Basin-wide annual environmental watering priorities, which are consistent with the Environmental Watering Plan (agreed as part of the Basin Plan in November 2012).
- Delivered the largest ever volume of environmental water to South Australia with a significant contribution from The Living Murray portfolio.
- Diverted about 322,686 tonnes of salt from the River Murray through the operation of salt interception schemes.
- Achieved the long-term Basin salinity target — an average daily salinity of less than 800 EC for at least 95% of the time at Morgan in South Australia.
- Published *Sustainable Rivers Audit Report 2 (an ecosystem health check for 2008–10*).
- Completed synthesis of 10 years' research and development work from the Native Fish Strategy, and the most northern demonstration reach, the Dewfish Demonstration Reach on the Condamine River won the 2012 Australian Riverprize.

OUR PERFORMANCE

Program performance is measured against deliverables and key performance indicators in the *Portfolio Budget Statements 2012–13* of the Sustainability, Environment, Water, Population and Communities portfolio. A summary of the MDBA's performance against the deliverables and indicators related to objective 2.0 is provided on page 39.

DELIVERABLES	KEY PERFORMANCE INDICATORS	RESULTS	PAGE[5]
Development of a conservation planning process to underpin environmental water delivery in line with the recommendation of the CSIRO-led review (2011)	Progress towards reducing the uncertainty around the identification of the environmentally sustainable level of take for the Basin and its valleys	Joint project undertaken with the Commonwealth Environmental Water Office on classification of aquatic ecosystems in the Basin. This provides the first step towards developing a long-term conservation planning process	74
Finalisation of the environmental watering plan and associated guidelines	Improved stakeholder confidence that the most effective and efficient use is being made of environmental water	The environmental watering plan was completed in November 2012 as part of the Basin Plan	40
	Improved stakeholder confidence in environmental water priorities	The first annual environmental water priorities were published on 28 June 2013	40
Development of guidance and tools as necessary to facilitate the development of long-term environmental water plans and annual environmental water priorities by jurisdictions		The guidelines for the method to determine priorities for applying environmental water were completed in November 2012	41
		Jurisdictional annual watering priorities were provided to MDBA by 30 May 2013	40
Reduced barriers in the efficient and effective utilisation of environmental water (including The Living Murray water) in the River Murray		Report on 'Impediments to environmental water management and delivery under the Murray–Darling Basin Agreement' provided to the Review of Agreement Taskforce	47
		The Basin Officials Committee agreed to the fourth consecutive multi-site environmental watering trial. The trials identify potential changes to current operational practices and the enabling instruments	47
		Began developing the constraints management strategy	31
Effective icon site environmental watering planning, management and monitoring	Annual watering plan agreed and priorities for monitoring agreed and contracted	The Living Murray annual environmental watering plan 2012–13 agreed before commencement of water year and the 2013–14 plan provided to the states for endorsement in June 2013	43
		Priorities for monitoring agreed, contracted and conducted	44
		Interim operating plans developed for the icon sites which will have new works commissioned in the next 12 months	43
Finalisation of the Water Quality and Salinity Management Plan and associated guidelines	Improved stakeholder confidence in the management of water quality and salinity	The Water Quality and Salinity Management Plan was finalised in November 2012 as part of the Basin Plan	29, 49
		Guidelines for implementing the water quality and salinity management plan were developed and included in the Basin Plan Schedule 12 reporting guideline, as well as in the 'Handbook for practitioners: water resource plan requirements', both of which will be funded later in 2013	29, 49
Development and coordinated implementation of cooperative strategies and programs for the protection and enhancement of the Basin's shared water and other natural resources	Satisfaction of investing governments of the delivery of agreed priorities and investment in programs for the protection and enhancement of the Basins shared water and other natural resources	Jointly funded programs were undertaken in line with agreed deliverables in the corporate plan	38

5 Some deliverables and key performance indicators go across objectives so some results will be found in other chapters.

ENVIRONMENTAL WATERING PLAN

Our major achievements during 2012–13 were:

- consulting on, and refining and finalising the environmental watering plan, as part of the Basin Plan
- developing and publicising the first Basin annual environmental watering priorities
- completing a review into current approaches to managing water for environmental benefit across the Basin
- establishing a network of eminent scientists and practitioners to investigate how we can incorporate ecological resilience thinking into implementing the Basin Plan
- scoping of the initial content for the Basin-wide environmental watering strategy — a component of the environmental watering plan due to be completed by November 2014.

During preparation of the environmental watering plan we consulted with scientists, practitioners and the community. The plan avoids being prescriptive about what must be watered, where and when. Instead, it is a legislated framework for decision making that will adapt to changing climatic conditions, new information and better ways of operating.

The environmental watering plan has a strong emphasis on setting overall objectives, and establishing principles and standards to guide the use of environmental water. The framework includes long-term planning and annual prioritisation at Basin and regional scales. The framework also sets out arrangements for consultation and collaboration.

Basin annual environmental watering priorities

The annual environmental watering priorities are designed to influence regional-scale environmental watering towards Basin-scale ecological outcomes and to promote coordinated environmental watering between environmental water holders and managers. Essentially the priorities consist of outcomes that we want environmental water managers to focus on and align with over the 12-month period from July 2013 to June 2014.

The 10 environmental watering priorities for 2013–14 were focused around two themes, 'Connecting rivers and floodplains' and 'Supporting in-stream functions'.

To complement the priorities we also developed a guiding philosophy for environmental water delivery — to maximise environmental outcomes by delivering environmental water in response to natural cues.

The priorities for 2013–14 are not an exhaustive list of the important environmental sites and processes in the Basin and don't exclude other priorities that take a more local perspective. They complement the more detailed planning done at a local scale by states and other environmental water holders.

Importantly, many priorities identified for 2013–14 will complement each other through co-ordinated actions where possible. This represents a fundamental shift in environmental water management within the Basin, by increasing emphasis on managing the Basin as one system.

The MDBA worked with Basin states, the Commonwealth Environmental Water Office and local environmental water managers to develop the priorities. We also convened a group of scientists and practitioners with environmental water experience to advise us on matters of Basin-scale significance that could impede or improve our ability to set priorities.

The MDBA has published 13 documents relating to the 2013–14 priorities, including:

- *Overview of the 2013–14 Basin annual environmental watering priorities* — which includes the 10 environmental watering priorities, a summary of recent and forecast climatic conditions in the Murray–Darling Basin, and the basis for selecting the priorities for the coming year
- *Preparing Basin annual environmental watering priorities for 2013–14* — a detailed explanation of the MDBA's process to develop the priorities
- *A rationale for the guiding philosophy* — background information for the inclusion of the guiding philosophy to complement the priorities
- *A separate rationale for each of the 10 priorities* — individual documents providing detail on why each priority was selected for the 2013–14 water year.

These documents are available on our website.

Modelling constraints

Basin Plan modelling showed that certain environmental flow objectives could not be satisfied within the existing system. This is partly because of constraints in the river system that affect how much environmental water can be delivered.

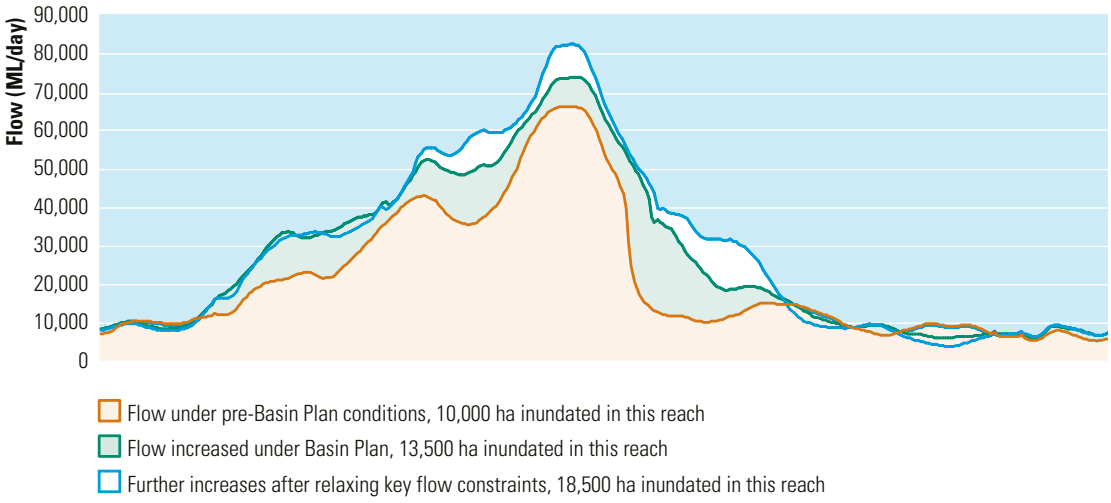
In the lead up to the finalisation of the Basin Plan we investigated whether addressing key constraints could improve the ability to deliver environmental flows. Nine key constraints across the southern connected system were 'relaxed' in the models to allow increased environmental flows.

Figure 2.1 shows an example of the modelled flows — recovering 2,750 GL/y of environmental water has increased the peak flow and duration of this event (shown in green), but relaxing the constraints has provided further significant increases (shown in blue).

Overall we found that the combination of 3,200 GL/y of environmental water and relaxing the constraints significantly improved the environmental outcomes, particularly in the lower Murray. The MDBA used this modelling to demonstrate the potential environmental benefits of addressing constraints, and in developing a constraints management strategy.

The Basin Plan aims to recover 2,750 GL of environmental water by working within current rules, however it also includes the development of a constraints management strategy to work towards getting the highest level of environmental outcomes.

Figure 2.1. Euston Weir environmental flow events under three modelled scenarios — demonstrating the improvements that can be made under the Basin Plan by addressing constraints



CONSTRAINTS MANAGEMENT STRATEGY

In 2012–13 we began developing the constraints management strategy, including:

- compiling a technical report, 'Preliminary overview of constraints to environmental water delivery in the Murray–Darling Basin', that summarises the main physical constraints in the Basin. This report will be published in July 2013 and will inform the development of the strategy. A separate report detailing other management and operational constraints is also to be prepared
- holding numerous meetings with landholders, community leaders and Aboriginal communities, as well as with representatives from industry, catchment management authorities, local governments, local councils and Basin state governments. We held meetings in the Hume to Yarrawonga region of the River Murray, and in the Edward–Wakool and Goulburn regions, as well as at Murray Bridge where we had a workshop with South Australian stakeholders. We will continue to meet with stakeholders throughout 2013 to inform development of the strategy.

While the constraints management strategy will be completed by November 2013, it represents only the first formal step in implementing the constraints management obligations in the Basin Plan. The strategy will provide information to governments and a pathway forward.

The Lower Lakes, Coorong and Murray Mouth, one of The Living Murray's icon sites (photo by Janna Randell, MDBA).

THE LIVING MURRAY RIVER RESTORATION PROGRAM

The Living Murray (TLM) program was initiated in 2002 in response to evidence of the declining health of the River Murray System. In November 2003 the Murray–Darling Basin Ministerial Council announced its historic The Living Murray First Step Decision. A critical component of this decision was the recovery of about 500 GL of water for the environment. An environmental works and measures program, to build water management structures, assists the delivery of this water to optimise environmental benefits.

The focus of The Living Murray is on achieving a set of agreed ecological objectives at six 'icon sites' along the River Murray using a combination of water delivery and targeted environmental works. The six icon sites are highly valuable ecological and cultural sites, they are:

- Barmah–Millewa Forest
- Gunbower–Koondrook–Perricoota Forest
- Hattah Lakes
- Chowilla Floodplain, and Lindsay–Wallpolla Islands
- Lower Lakes, Coorong and Murray Mouth
- River Murray Channel.

The Murray–Darling Basin Authority coordinates TLM activities such as planning and delivering environmental water, constructing water management structures and developing and reviewing policy to implement TLM objectives effectively and efficiently. Further information about the construction of TLM works is included in Chapter 4 'Managing River Murray assets', see pages 79–81.

TLM environmental watering

The MDBA coordinates the planning and delivery of TLM environmental water in consultation with the Environmental Watering Group, an advisory group with representation from all TLM partners. Throughout 2012–13 we coordinated a range of watering activities that helped to achieve icon site and system-scale ecosystem outcomes.

Environmental water planning

In July 2012 we published the *Annual Environmental Watering Plan 2012–13* to guide environmental water delivery over the following year. This plan was developed on behalf of the Environmental Watering Group in consultation with southern Basin states (NSW, Victoria and South Australia), River Murray operators and other environmental water holders.

In 2012–13 we began reviewing the ecological objectives of the River Murray Channel icon site. This significant work will refresh the ecological objectives of the *River Murray Channel Environmental Management Plan (2006–07)* and will provide an important link between the identification of flow requirements at all icon sites and the achievement of ecological outcomes along the River Murray Channel. Importantly the revised objectives will inform the planning process to optimise environmental outcomes in the River Murray Channel through the delivery of environmental water to other icon sites.

With major construction projects at three icon sites nearing completion, we contributed to the development of operating plans to inform the delivery of environmental and unregulated water to these sites. In collaboration with state governments and catchment management authorities, we finalised operating plans for the Koondrook–Perricoota Forest, Hattah Lakes, and Lindsay–Wallpolla Islands (including Mulcra Island). Operating plans for Gunbower Forest and Chowilla Floodplain are being developed.

In response to the risk of river salinity spikes, which can be caused when floodplain salts are mobilised by water delivery, we coordinated the development of a management framework to mitigate salinity risks during the planning and delivery of TLM environmental water, in accordance with Basin Plan requirements. The framework identifies any salinity risks associated with proposed watering actions and considers the appropriate mitigation measures, such as timelines for delivery, monitoring or dilution flows.

Environmental water delivery

In line with the 2012–13 annual environmental watering plan, five of the icon sites received a total of 292 GL of regulated TLM environmental water and 5.45 GL from TLM's unregulated entitlement.

Several years of good inflows meant that some icon sites implemented a drying regime to replicate natural wetting and drying cycles. While construction of water management structures continued, higher flows were not needed at some sites which reduced the requirements for environmental water in 2012–13. As a result the focus of water delivery shifted to the lower River Murray Channel; and the Lower Lakes, Coorong and Murray Mouth.

The Living Murray environmental water was delivered to the lower Murray system between November 2012 and February 2013 as part of a large combined watering event with other environmental water holders (see case study page 97). This resulted in the largest managed delivery of environmental water ever to South Australia. For the River Murray Channel this provided peak flows in late spring that facilitated native fish recruitment, improved the condition of temporary wetlands and supported bird-breeding events.

Environmental water delivered to the Lower Lakes, Coorong and Murray Mouth helped maintain flows over the barrages and fishways, supporting fish movement and recruitment and maintaining salinity levels in Lake Alexandrina and the Coorong. The lower salinity levels in the south lagoon of the Coorong led to an increase in fish diversity, with a total of eight species recorded. Continued flows over the barrages also led to improved foraging habitat for waterbirds in the Coorong mudflats.

Throughout 2012–13 TLM environmental water was also used to support a number of other important ecological events, including flows to:

- support the completion of a bird breeding event (500 nests) at Boals Deadwoods Wetland in Barmah Forest that included white ibis, straw-necked ibis and royal spoonbills
- provide base flows to Gunbower Creek to build the resilience of native fish populations
- support the recovery of vegetation and improve habitat for wildlife at Brandy Bottle Wetland, Chowilla Floodplain.

The delivery of TLM water in coordination with other environmental water holders in 2012–13 achieved considerable 'system wide benefits' for the southern connected system and built on the environmental benefits achieved over recent years.

Further information on TLM environmental water delivery can be found on our website.

TLM environmental monitoring

The Living Murray environmental monitoring program provides information about responses to environmental watering actions and the environmental condition of icon sites and the River Murray System.

The pouched lamprey was one of the fish species recorded after environmental flows to the Lower Lakes, Coorong and Murray Mouth. Lampreys swim between the estuary of the Coorong and the freshwater of the lower Murray to complete their life cycle so they were severely impacted by the drought (photo by SARDI Aquatic Sciences).

Hemispherical photographs used to assess forest condition in Gunbower Forest, with black box woodland on the left and river red gum forest on the right. Comparisons with previous years suggest that the condition of some areas of forest are improving, however about 40% of the forests in the site remain in moderate condition at best, with signs of the recent drought still apparent (photos by Kate Bennetts).

This information supports the evidence base for adaptively managing future TLM watering and management actions. It includes real-time information for managing watering events, and medium to long-term information to evaluate progress toward the icon site ecological objectives. Over time, knowledge derived from monitoring flow-ecology relationships will increase and strengthen the rationale behind environmental watering regimes developed to achieve TLM objectives.

Three main types of monitoring are conducted in partnership with the southern Basin states (New South Wales, Victoria and South Australia) — system-scale monitoring; condition monitoring and intervention monitoring.

River Murray System-scale monitoring

Monitoring at the River Murray System-scale is designed to determine whether the overall health of the system improves following implementation of The Living Murray Initiative. In 2012–13, River Murray system-scale monitoring projects included the floodplain tree-stand condition monitoring and a detailed analysis of the annual aerial waterbird surveys of icon sites.

Floodplain tree-stand condition monitoring

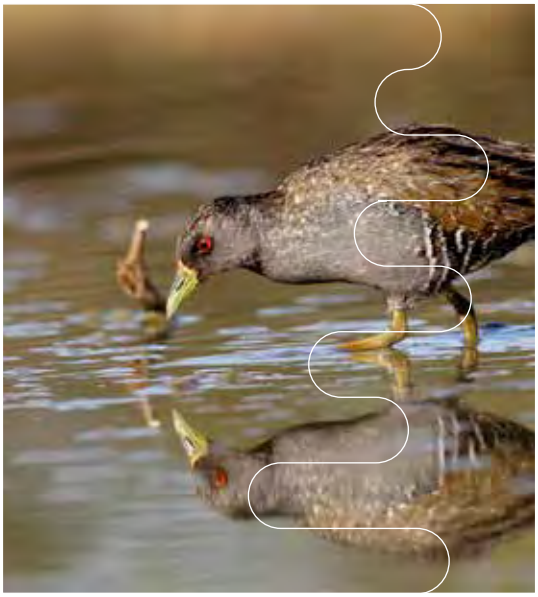
Now in its fifth year, the primary area of work for this project in 2012–13 was to adjust the assessment to a new type of remote sensing and then carry out the 2012 assessment. Key findings for the period January–May 2012 were:

- 73% of the area covered by river red gum, black box and mixed box communities in icon sites was under some level of stress in 2012
- the extent of stands in best condition increased from 21% to 27% between 2010 and 2012
- the extent of best condition stands increased in Barmah–Millewa and Gunbower–Koondrook–Perricoota Forest icon sites, but decreased in Hattah Lakes, Chowilla and Lindsay–Wallpolla Islands between 2010 and 2012
- the extent of poor and severely degraded condition stands remained stable at 36% between 2010 and 2012.

Annual aerial waterbird survey

In 2012–13, the aerial survey of waterbirds at TLM icon sites was part of a joint project with the Environmental Monitoring and Evaluation Program which surveyed the icon sites and hydrological indicator sites in the Basin. This enabled an assessment of the effectiveness of using waterbirds as an indicator of wetland and river health at different scales (Basin, catchment and individual wetland scales) to be carried out.

Now in its sixth year of monitoring, the aerial surveys of waterbirds at the icon sites estimated over 205,000 waterbirds across all icon sites — the third highest estimate in the six years the survey has been conducted (2007–12).



During the drought Australian spotted crakes were rarely seen in the Riverland, South Australia. After high flows the receding water left many swampy areas perfect for breeding. They were still found in good numbers on the Chowilla Floodplain during the summer bird survey in 2013 (photo by Helga Kieskamp).

Icon site condition monitoring

Icon site condition monitoring provides information about the environmental condition of individual icon sites including how it changes through time. Icon site condition monitoring focused on fish, waterbirds and vegetation consistent with icon site ecological objectives.

In 2013 icon site managers used icon site condition monitoring and other information to develop icon site synthesis reports for each site. These synthesis reports bring together the monitoring results at each icon site into a single document. The reports were used to compile a high level synthesis of monitoring findings across the whole of The Living Murray.

The 'system synthesis' report identified that overall the return of wetter conditions has been associated with improvements of TLM icon sites, particularly for waterbirds and vegetation. However, it is difficult to identify a trajectory of change at the icon sites resulting from TLM watering specifically, because other sources of environmental water and unregulated flows have also contributed to improvements.

Reports for icon site condition monitoring (and other TLM monitoring projects) can be found on the MDBA's Knowledge and Information Directory <www.mdba.gov.au/kid/>.

Intervention monitoring

Intervention monitoring projects are designed to assess the ecological responses to The Living Murray watering and management actions. Intervention monitoring provides the major link to understanding how specific environmental management actions result in changes at icon sites, allowing an adaptive-management approach to implementing The Living Murray Initiative.

In 2012–13 we established intervention monitoring projects to prepare for and monitor the commissioning and first operations of a number of TLM water management structures that will be commissioned in 2013–14. These projects began collecting pre-event data at both Mulcra Island and Hattah Lakes and will collect important data during and post-event in 2013–14.

During 2012–13 we conducted other significant intervention and compliance monitoring projects to support environmental watering and improve our understanding of icon site ecological processes. A key project involved developing a better understanding of blackwater risks and carrying out further modelling of them. This project developed three management tools to help optimise the benefits of return floodwater from floodplains while minimising the risk of downstream hypoxic blackwater. The tools can be used by icon site management staff to assist in planning future environmental watering events.

In 2013–14 The Living Murray environmental monitoring program will focus on:

- the requirements that are part of the approval conditions for the water management structures
- the risks involved with operating the structures
- the ecological responses to the watering operations.

More information about this program can be found on our website <www.mdba.gov.au>.

TLM environmental water policy

During 2012–13 we worked on policy issues related to the delivery of TLM water which included:

- providing the Basin Officials Committee with a list of impediments to managing and delivering environmental water under the Murray–Darling Basin Agreement, for consideration as part of the committee's review of the agreement
- developing policy, operational and accounting approaches for environmental watering of River Murray sites
- coordinating an independent review of the 2011–12 multi-site environmental watering trial for the River Murray, and the annual implementation audit of The Living Murray program
- coordinating the 2011–12 report on the annual implementation of The Living Murray program.

We also supported the design of the 2013–14 multi-site watering trial by developing a range of evidence-based strategies to ensure that environmental water will be protected from consumptive diversion or re-regulation, and to mitigate the risk of unacceptable impacts on third parties.

The Living Murray Indigenous Partnerships Project

In 2012–13 The Living Murray Indigenous Partnerships Project continued to provide opportunities for Aboriginal people along the Murray to be involved in planning, protecting and managing the icon sites, including protecting their Aboriginal cultural heritage. This program has enabled Aboriginal communities to engage with icon site managers, water planners and others along the river on issues that are important for Aboriginal people.

Major highlights for 2012–13 included:

Barmah–Millewa Forest

Working with the Yorta Yorta Nation Aboriginal Corporation on the freshwater turtle monitoring project, which included interviewing Elders to record information about Creation stories, breeding and hunting areas.

Hattah Lakes Icon Site

Throughout the construction program, regular meetings were held with representatives from the constructing authority (Goulburn–Murray Water), cultural heritage advisor (Sinclair Knight Mertz), project management (Comdain Infrastructure), and other contractors and interested parties. These meetings were crucial to understanding the concerns and advice of Aboriginal stakeholders during the construction program.

Lindsay, Mulcra and Wallpolla islands

A major highlight this year was formalising a memorandum of understanding between Traditional Owner groups in north-west Victoria to ensure that Ngintait and Latji Latji would be consulted on TLM works in the Lindsay Island area. This was the culmination of more than five years' ongoing consultation and provided a clear direction for future consultation.

The Mallee Catchment Management Authority's TLM Indigenous facilitator led the process, with support from organisations that included the Native Title Services Victoria, Murray Lower Darling Rivers Indigenous Nations, Aboriginal Affairs Victoria, and Aboriginal stakeholder groups.

A geographic information system (GIS) was developed for Yorta Yorta country, including intellectual property provisions, in collaboration with Monash University, Brown University and the World Bank. Aboriginal scar tree in Barmah–Millewa Forest (photo by Denise Fowler, MDBA).

Community tour to inspect the construction work at Koondrook–Perricoota Forest (photo by Denise Fowler, MDBA).

Chowilla Floodplain, South Australia

The First Peoples of the River Murray & Mallee Region conducted site assessments of the potential heritage impacts of the proposed construction of monitoring towers to track Murray cod movement. They were also employed by SA Water to monitor construction activities on the Chowilla Floodplain.

Aboriginal people also carried out cultural heritage site protection works on the Chowilla Floodplain, including mapping and rabbit control work in sandy lunettes, where Aboriginal burial sites were at risk.

Lower Lakes Coorong and Murray Mouth

The Ngarrindjeri Regional Authority, Change Media, and the South Australian Department of Environment, Water and Natural Resources produced a video, *Flow*. Ngarrindjeri Regional Authority staff carried out the filming in December 2012, and were involved in developing and editing the story, which is about the Ngarrindjeri connection between country and culture. The film helps to promote The Living Murray and the relationship between western science and Ngarrindjeri knowledge see <www.changemedia.net.au/coorong-sa-january-2013/>.

The Living Murray South Australian staff presented to the World Indigenous Network Conference, in Darwin, about Aboriginal involvement in the implementation of The Living Murray program.

The South Australian Department of Environment, Water and Natural Resources worked with TLM and the Ngarrindjeri Regional Authority to produce an interpretive sign about Ngarrindjeri beliefs and connection with country and water. Ngarrindjeri Regional Authority member Clyde Rigney attended meetings in Goolwa, provided input and reviewed the concept designs. The signage is due to be completed in July 2013.

Telling people about The Living Murray

Throughout 2012–13 the MDBA continued to promote the use of The Living Murray water portfolio and the results of environmental water delivery, through our website, media, blogs, DVDs and other communication products.

MONITORING RIVER HEALTH

River Murray Water Quality Monitoring Program

Monitoring the quality of River Murray water is a statutory responsibility of the Murray–Darling Basin Agreement under Schedule 1 of the *Water Act 2007*.

During 2012–13 extensive sampling and analysis of physico-chemical parameters was carried out at 36 locations under the River Murray Water Quality Monitoring Program. We also began an update of the trend analyses of the data. We continued biological monitoring of the Murray and Mitta Mitta rivers throughout the year, providing data for use in assessing the effect of physico-chemical changes in water quality on river organisms.

We commissioned the Murray–Darling Freshwater Research Centre to:

- investigate the distribution and tolerance of macroinvertebrate taxa
- update the web-based guide to freshwater macroinvertebrates (bug guide)
- explore the potential for DNA bar coding to identify and detect organisms which will greatly improve taxonomic accuracy as public DNA databases continue to grow.

We also completed an analysis of the influence of sampling changes on the future capacity to detect trends in water quality, due to increasing budgetary pressures.

A monitoring workshop at Barmah–Millewa Forest (photo by Kerry Greenwood, MDBA).

Acid sulfate soils

The effects of re-wetted acid sulfate soils on water quality have persisted in several floodplains of the Lower Murray Reclaimed Irrigation Area since the return of high water levels to the lower Murray, after the record drought. The drainage water from this area, which is returned to the River Murray in order to keep saline water tables away from productive agricultural lands, was acidic and requires treatment.

The MDBA helped fund a South Australian project to improve understanding of the behaviour and impacts of acid drainage discharges in the lower Murray. This investigation monitored the water quality impacts and trialled remediation measures to protect aquatic ecosystems, water supplies and recreational users.

The project's achievements included innovative solutions such as a 3D hydrodynamic and geochemical model to simulate the impact of acid drainage discharges on river water quality. Remediation methods, such as drain treatment using lime-slurry dosing and irrigation and lime-spreading, successfully produced neutral discharge water with low metal concentrations.

In another innovative approach, the injection of lime using a mole plough appeared to speed the remediation process and showed considerable potential as a supplementary management technique.

Development referrals

Under the Water Act, Basin states need to refer any development proposals that may significantly affect the quality of River Murray water to the MDBA for assessment. About 50 proposals were referred during 2012–13 and we made representations where appropriate.

In certain cases, the standard of control adopted in light of these representations was higher than what was originally proposed. By pursuing best practice in the conditions controlling waste discharges, our representations continue to add value to state mechanisms for protecting water quality in the River Murray.

MANAGING SALINITY

Salinity has long been recognised as a significant problem in the Murray–Darling Basin. The Basin Salinity Management Strategy 2001–2015 was developed to limit the spread of salinity and its impacts on water quality, aquatic and terrestrial ecosystems, productive land, cultural heritage and infrastructure.

The MDBA coordinates the strategy on behalf of Basin state governments. Under the strategy, we aim to achieve agreed targets for in-river salinity and we maintain a set of accounts (credit and debit systems) for in-river salinity impacts of new and past land and water management actions and decisions.

The targets for salinity and salt loads in the River Murray and its major tributary valleys are set to achieve a Basin salinity target of less than 800 EC for 95% of the time at Morgan, South Australia. This target was achieved in 2010–11 and has been maintained since then. The in-river salinity outcome for past years is presented in Table 2.1.

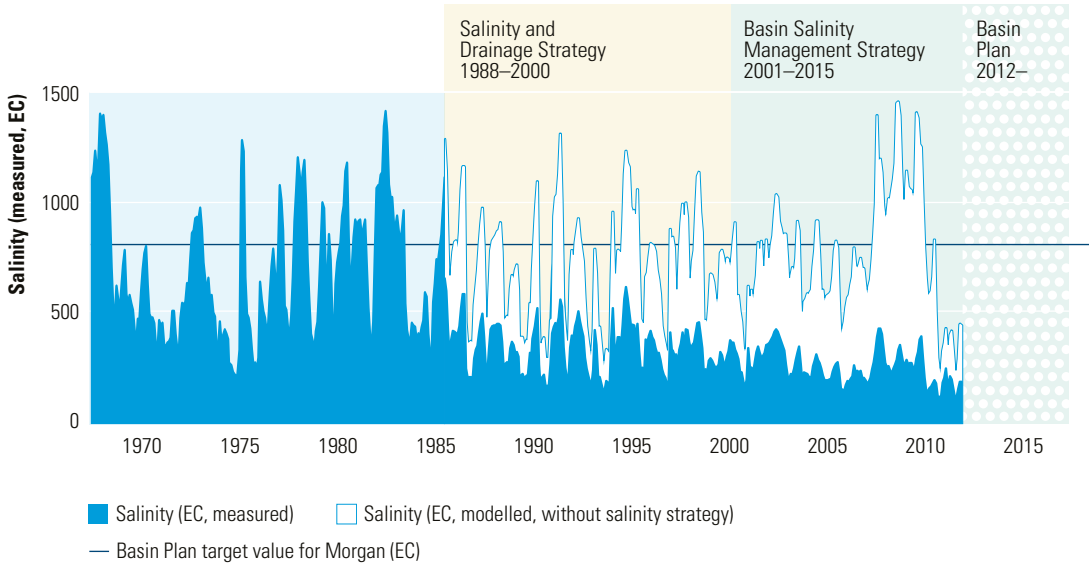
Water and soil salinity levels are measured by passing an electric current between the two electrodes of a salinity meter. Electrical conductivity (EC) is influenced by the concentration and composition of dissolved salts. Salts increase the ability of a solution to conduct an electric current, so a high EC indicates a high salinity level. Freshwater above 800 EC becomes marginal for drinking, above 1,600 EC it is brackish, and above 4,800 EC it is saline.

Table 2.1. Summary of salinity levels (EC) recorded at Morgan, South Australia

PERIOD	TIME INTERVAL	AVERAGE	MEDIAN	95TH PERCENTILE	PEAK	% TIME >800 EC
1 year	July 2012–June 2013	354	381	511	536	0%
5 years	July 2008–June 2013	372	352	597	687	0%
10 years	July 2003–June 2013	396	384	624	768	0%
25 years	July 1988–June 2013	487	458	780	1087	4%

An overview of the impact of salinity management strategies is shown in Figure 2.2.

Figure 2.2. River Murray salinity at Morgan over time, and impact of management strategies



Salt interception

A significant achievement of salinity management in the Basin has been commissioning strategically located salt interception schemes to divert hypersaline water from entering the River Murray System.

Under the Basin Salinity Management Strategy, a reduction of average salinity equivalent to 61 EC at Morgan, South Australia, will be delivered when all salt interception schemes are commissioned.

In 2012–13 salt interception schemes diverted about 322,686 tonnes of salt from the River Murray, see page 99.

Salinity registers

Under the Basin Salinity Management Strategy, actions that increase and decrease average river salinity are accounted as debits and credits and are recorded in salinity registers. For example, actions such as new irrigation developments may generate a debit on the register because in some areas they may increase salt loads to the River Murray. By comparison, actions such as commissioning salt interception schemes and improving irrigation practices may generate credits.

All register entries are reviewed every five years. The review covers significant salinity impacts arising from recent actions (Register A) as well from major historical land and water use decisions (Register B) in tributary valleys. Each year the Basin states inform the MDBA about reviews of existing register entries and new activities that have significant salinity effects.

The MDBA calculates the salinity cost of these activities and updates salinity registers for independent review by salinity auditors. In November 2012, the auditors confirmed that the contracting governments of New South Wales, Victoria and South Australia (the Australian Capital Territory and Queensland do not have significant salinity impacts) remained in net credit on the salinity register (Register A) and in the balance of registers A and B as required by the strategy.

The outcomes of the independent salinity audit were reported to the MDBA and the Murray–Darling Basin Ministerial Council and were published on our website.

RESTORING NATIVE FISH POPULATIONS

The Native Fish Strategy was approved in 2003 as a 10-year plan to rehabilitate native fish populations in the Murray–Darling Basin. The strategy had a number of long-term objectives regarding native fish populations. In 2012–13, the Native Fish Strategy drew to a close and considerable effort was dedicated towards capturing the legacy of the work undertaken through the strategy.

In 2012–13 we focused on highlighting the communication products and research outcomes of the past 10 years. More than 100 projects were completed under the Native Fish Strategy and a synthesis of this work was a major product delivered during the year. This work will be available on our website later in 2013.

Alien species management

The new research portfolio of the Invasive Animals Cooperative Research Centre was launched at Parliament House on 15 October 2012. The primary focus for MDBA remains the Inland Water Pests program. This program will:

- deliver products and strategies to detect new pest fish incursions, particularly tilapia, using new environmental DNA techniques
- complete the science to enable release of Australia's first carp biocontrol agent — the Koi herpes virus.

Highlights from the demonstration reaches

A new fishway was completed at the Brewarrina Weir in early 2013 allowing fish to move more freely along the Barwon River. The site has great cultural and historical significance because the Brewarrina Aboriginal fish traps are close by. Great care needed to be taken in designing and constructing the fishway to preserve this culturally significant site.

Monitoring the fish population in Holland's Creek, north-east Victoria, from 2008–2013 has shown significant increases in native fish including increases in the distribution, abundance and population structure of Macquarie perch and two-spine blackfish.

The Ovens River Demonstration Reach has inspired the creation of a local group, the Wangaratta Sustainability Network, which is promoting river activities through its newsletter '*Croaker*', and on local radio. The group works with schools on programs such as rubbish removal, replanting riverbanks and controlling the alien fish, eastern gambusia.

At the Upper Murrumbidgee Demonstration Reach the focus has been on assessing the condition of the region's Murray River crayfish, which are in a serious state of decline. The Katfish Demonstration Reach, in the Riverland region of South Australia, supports one of the Murray–Darling Basin's most endangered fish, the salt-tolerant Murray hardyhead. The Native Fish Strategy provided funding for fish monitoring and evaluation in the reach — the data collected will provide a baseline condition index by which future effects can be measured and assessed after major works scheduled for the area are constructed.

Spreading the word about native fish

In August 2012 the MDBA sponsored the National Recreational Fishing Conference which included a presentation by Victoria's Native Fish Strategy Coordinator. The conference attracted an excellent mix of delegates, including industry, government, managers, researchers, fishing media and young and old recreational fishers.

We also sponsored a series of Fishers for Fish Habitat forums in Queensland, South Australia and Victoria. The focus of the forums was engaging with the recreational fishing community on issues relating to fish habitat and its rehabilitation. The forums gave participants an opportunity to hear from other fishers about the work they are doing to bring native fish back.

The MDBA also sponsored a 'Bringing back native fish' edition of the magazine *Rip Rap*. The stories highlighted much of the great work done for native fish in the Murray–Darling Basin and other parts of Australia.

Demonstrating a difference

Demonstration reaches are large-scale river reaches or wetlands where a number of management interventions are applied to showcase the cumulative benefits of river rehabilitation on native fish populations. Seven demonstration reaches continued to operate across the Basin in 2012–13 — Condamine River, Namoi River, Barwon–Darling rivers, upper Murrumbidgee, Ovens River, Hollands Creek and the River Murray at Katarapko.

Dewfish Demonstration Reach — takes an awards hat-trick

The Dewfish Demonstration Reach on the Condamine River, near Dalby in southern Queensland received three major environmental awards in 2012–13:

- 2012 Australian Riverprize
- 2012 Banksia Environment Award in the water category
- 2013 United Nations Association of Australia World Environment Day Award for Biodiversity.

Hytrl's tandan (moonfish) was recorded in the reach for the first time in 15 years (photo by Noal Kuhl).

The Dewfish Demonstration Reach began in 2008, it covers 110 km of the Condamine River catchment in southern Queensland. In 2012–13, monitoring recorded Hyrtl's tandan (moonfish) in the reach for the first time in 15 years. Impressive increases in other native fish have been recorded in the reach including a 10-fold increase in golden perch, major increases in dewfish (freshwater catfish) and bony bream, and increasing numbers of Murray cod and spangled perch.

At the same time, carp numbers have decreased at the sites where intervention works have been undertaken. One of the initiatives of the Dewfish Demonstration Reach project was the installation of the Loudon Weir fishway, which has opened up 150 km of the river to fish passage.

The demonstration reach concept has been so successful that the Condamine Alliance is now looking to independently develop a second demonstration reach, with planning underway for the new Nikki Long Cod Demonstration Reach.

SUSTAINABLE RIVERS AUDIT

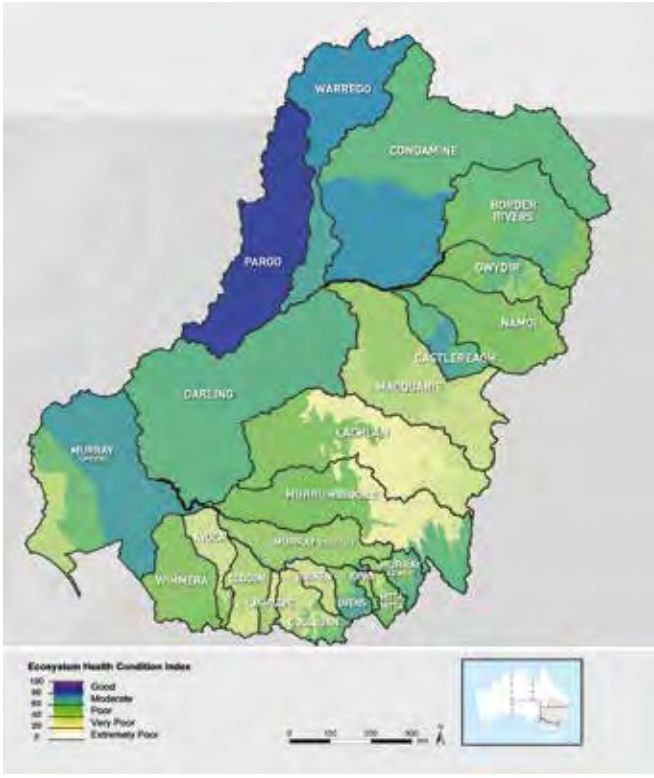
The Sustainable Rivers Audit Program of assessing Basin river health is run by the MDBA in partnership with the Basin states utilising an independent group of river ecologists, the Independent Sustainable Rivers Audit Group. The program uses ecological and environmental indicators, called themes, to assess the condition of key ecosystem components and to identify long-term trends in river ecosystem health.

In December 2012 the Independent Sustainable Rivers Audit Group completed its second river health report, *Sustainable Rivers Audit 2: The ecological health of rivers in the Murray–Darling Basin at the end of the Millennium Drought (2008–2010)*. This comprehensive report assessed the 23 valleys of the Murray–Darling Basin from 2008–2010, using five indicator themes — fish, macroinvertebrates, vegetation, physical form and hydrology.

Sustainable River Audit findings

Overall, the condition of the Basin in the last years of the Millennium Drought was poor — only the Paroo Valley was rated in good ecosystem health, and only the Warrego was rated in moderate ecosystem health. All other valleys were rated in poor or very poor ecosystem health. Figure 2.3 provides the ecosystem health condition ratings across the Basin and Table 2.2 shows the ecosystem health assessments by valley.

Figure 2.3. River ecosystem health ratings for all Basin zones assessed for the period 2008–2010



The Paroo was the only river valley in the Basin rated as good (photo by Tracy Fulford).

Table 2.2. Ecosystem health assessments by valley, 2008–2012

HEALTH RATING	VALLEY	GROUP RANK
Good	Paroo	1
Moderate	Warrego	2
Poor	Castlereagh, Condamine, Darling	3
	Border Rivers, Gwydir, Murray (upper, central, lower), Namoi, Ovens, Wimmera	4
	Avoca, Kiewa, Mitta Mitta, Murrumbidgee	5
Very poor	Campaspe, Loddon	6
	Broken, Goulburn, Lachlan, Macquarie	7

Sustainable Rivers Audit report 2 represents a major refinement and improvement of the methodology previously used to assess the status of the Basin's river ecosystem health. New measurements, improved metrics and a more robust way of combining indicator themes mean that SRA 1 and SRA 2 health rankings assessments are not directly comparable. However, these rankings appear similar because findings for two of the three themes are similar and these carry a considerable influence on the ecosystem health ratings.

A final cycle of collecting data for fish and macroinvertebrates has been completed which will provide three more years of data covering a much wetter phase in the Basin (2011–2013), giving a full Basin-wide picture of river health. The results will be analysed and reported in 2013–14.

This year marked the last year of the Sustainable Rivers Audit Program. Future monitoring activities will build on data, information and methodologies developed during the life of program, and will consider recommendations made by the Independent Sustainable Rivers Audit Group, the authors of the SRA reports.

The Lachlan valley was rated as very poor (photo by Denise Fowler, MDBA).

Paroo River (photo by Denise Fowler, MDBA)

OBJECTIVE 3.0

CHAPTER 3 KNOWLEDGE INTO ACTION

To establish the Murray–Darling Basin Authority as the authoritative information service for the Basin by providing communities, governments and industry with relevant information on the critical indicators, processes and characteristics of the Basin's natural resources for decision making and action.

OVERVIEW

Providing quality and timely information to the community, governments and industry about the condition of the Murray–Darling Basin's water resources, and surrounding ecosystems, underpins our business.

In the year the Basin Plan became law we maintained a strong focus on increasing our information resources and services. This included improving the accessibility of our information and increasing the amount of information available. We now have over 2,600 items on our knowledge and information directory which is accessible to the public.

We also redesigned our website and strengthened our communications including media, online initiatives and community and stakeholder engagement activities. We also provided information on the River Murray System, in cooperation with Basin state agencies, which was once again the most accessed information on our website.

We continued to invest in building and strengthening our partnerships and collaborations in research, education, and in innovative technologies to help inform better decision-making in all areas of our work — planning, policy and program delivery.

HIGHLIGHTS

- Launched a new website that improves access to and useability of our information.
- Delivered the pilot Basin Champions program, linking schools around the Murray–Darling Basin through digital broadband.
- Established the Advisory Committee on Social, Economic and Environmental Sciences.

OUR PERFORMANCE

Program performance is measured against deliverables and key performance indicators in the *Portfolio Budget Statements 2012–13* of the Sustainability, Environment, Water, Population and Communities portfolio. A summary of the MDBA's performance against the deliverables and indicators related to objective 3.0 is provided on page 59.

INFORMING JOINT DECISION-MAKING

The MDBA is responsible for providing the Murray–Darling Basin Ministerial Council and the Basin Officials Committee with advice and information that informs joint government decision-making about the Basin's water resources and related ecosystems.

Providing quality and timely information underpins our business.

DELIVERABLES	KEY PERFORMANCE INDICATORS	RESULTS	PAGE[6]
Partnerships developed with research institutions and agencies to give effect to the science and research strategy	Accessible and relevant information provided to stakeholders	Partnerships with research institutions and organisations were developed	72
		The Advisory Committee on Social, Economic and Environmental Sciences was established	72
		Over 2,600 items are now available on MDBA's publicly accessible Knowledge and Information Directory	60
		Strengthened communications through a redeveloped website, new Spillway e-publication, enhanced media and online initiatives	67
Development of economic indicators for evaluating the long-term social and economic impacts of the Basin Plan	Socio-economic modelling and analysis capability are accepted as established best practice	The MDBA has drawn on the expertise of a wide range of recognised experts to undertake social and economic analyses. The MDBA is continuing to work with experts, including in Basin communities, to establish a set of indicators which will track changes in the Basin over time	31
Water resource modelling to support the development and implementation of the Basin Plan	Scientific review of modelling methods supports approach	MDBA has continued to use best available models and scientifically reviewed modelling methods for developing and implementing the Basin Plan	62
Information co-ordination and collaboration arrangements to enhance MDBA's access to the best data, information and knowledge	Knowledge gaps are identified and priority gaps addressed	Collaborative head agreements were finalised with Geoscience Australia, Bureau of Meteorology, Australian Bureau of Statistics and the Department of Sustainability, Environment, Water, Population and Communities	60
Technical and operational guidelines and pilots for monitoring implementation of the Basin Plan	Monitoring information, results and evaluation contribute to policy, planning and improved management	Guideline for reporters developed in consultation with Basin states and the Australian Government. Phased implementation agreed as part of the draft implementation agreement, in consultation with the Basin states	30
Professional and timely secretariat support to MDBA members, Ministerial Council and Basin Officials Committee	Satisfaction of MDBA members, Ministerial Council and Basin Officials Committee with secretariat support	High quality and timely secretariat support and services were provided	109

6 Some deliverables and key performance indicators go across objectives so some results will be found in other chapters.

MEETING BASIN INFORMATION NEEDS

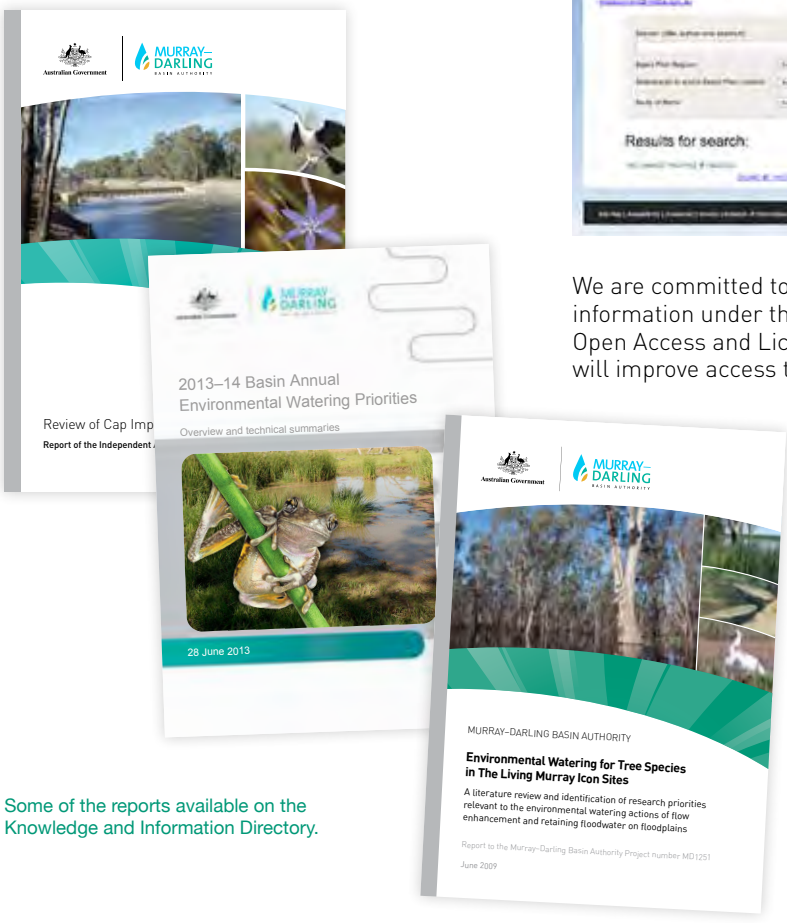
To improve access to externally held information and data, collaborative head agreements were finalised with Geoscience Australia, Bureau of Meteorology, Australian Bureau of Statistics and the Department of Sustainability, Environment, Water, Population and Communities.

These agreements encourage collaboration on spatial data access and development of the national water market system. For example, light detection and ranging (LiDAR) and Landsat datasets, have been accessed in collaboration with Geoscience Australia to provide the elevation basis for modelling Basin-wide flood inundation and assessing vegetation condition. Environmental accounting frameworks are being developed using international standards by the Bureau of Meteorology, Australian Bureau of Statistics and MDBA.

Knowledge and Information Directory

Key data, information and documents used for the Basin Plan, and other MDBA responsibilities (e.g. Sustainable Rivers Audit, Native Fish Strategy and The Living Murray) are publicly available using the MDBA's Knowledge and Information Directory <www.mdba.gov.au/kid/>. This directory will help ensure that the information resources will remain readily available in the future. In 2012–13 over 2,600 items were available in the directory.

We are committed to sharing knowledge and information under the Australian Government Open Access and Licensing Framework and we will improve access to information about the Murray–Darling Basin by building on the base provided by the Knowledge and Information Directory.



Some of the reports available on the Knowledge and Information Directory.

Modelling the Basin

The MDBA develops, operates and maintains river models to support river management, water sharing, salinity management and developing water resource policies, including the Basin Plan. Modelling is central to determining state water accounts and calculating state water shares through the water resources assessment.

During 2012–13, MDBA modelling supported river operations, in particular using our hydrographic data systems to account for environmental water deliveries. Modelling is central to long-established programs such as the Cap on water diversions and the Basin Salinity Management Strategy 2001–15.

Modelling also informed the work of other programs, including the Basin Plan and The Living Murray. During the year we continued to improve model capability and the tools used to analyse and present model results. We also continued to develop the MSM-Bigmod modelling suite and its associated tools. A significant development in 2012–13 included adding a suite of environmental accounts to our models.

Our modelling effort included extensive consideration of the use and accounting for environmental water and the implications for other water users. Specific study areas included losses, channel capacity constraints, carryover, water efficiency measures and water purchase options. The treatment of environmental water use under the Cap and the sustainable diversion limit was also examined.

Our modelling also informed the review of aspects of state water-sharing arrangements, including rights to airspace in storages and the Murray–Darling Basin Agreement's special accounting provisions. We also supported the Murray–Darling Basin Agreement Taskforce review and conducted studies into the Darling Water Savings Project and Lake Victoria operations.

We also continued to develop a new planning model of the Murray and lower Darling system within the SOURCE Integrated Modelling System. Partial models of the River Murray System were developed and tested during 2012–13. These are now incorporated in an operational model of the River Murray which is expected to be trialled in 2013–14.

These SOURCE models will eventually be the MDBA's primary River Murray management tool. We will continue our collaborative work with the Basin states on building new models to support water resource planning, with particular focus on building an integrated model of the southern connected Basin by mid-2015.

River Murray

We use models to assist in River Murray operations, including providing outlooks for future water availability and flows. We routinely use models to plan storage operations and to determine appropriate releases for storage airspace management.

Our modelled river flow outlooks are used extensively to refine plans for work under construction on the River Murray. The outputs are often used in determining if river conditions are likely to allow for the timely completion of the works.

During 2012–13 we provided modelling and analysis as part of the MDBA's relationship with Snowy Hydro Limited, including involvement in negotiating Snowy Water Licence amendments. We also provided support to aid the MDBA's management of releases from the Snowy Scheme with a focus on the development of new rules to respond to changes to the Snowy Water Licence relating to the River Murray Increased Flows.

By the end of 2012–13 the revised water resources assessment model was being used in the production environment. Work began on applying the new assessment model to estimate what flows would be on the River Murray without development.

Basin Plan

During 2012–13, we provided hydrological modelling support to developing and implementing the Basin Plan. This work included:

- evaluation of hydrological and environmental outcomes for different levels of water recovery, which resulted in the report '*Hydrologic modelling of the relaxation of operational constraints in the southern connected system: Methods and results*'
- modelling to inform the design and implementation of methods to assess SDL adjustment proposals, including the development of the benchmark
- support to the constraints management strategy
- evaluation of the hydrological and environmental outcomes of different management options in the northern Basin (for the Northern Basin Advisory Committee)
- continued collaboration with Basin states to develop and improve the models to support water resource planning and Basin Plan implementation in the future.

The Living Murray

We developed operational models for Koondrook–Perricoota Forest, Hattah Lakes, Mulcra Island and Chowilla Floodplain. These models will assist water managers to plan effective and efficient environmental water delivery to the icon sites and provide river operators with detailed data in real-time during environmental watering operations.

A blackwater model of the River Murray and Edward–Wakool rivers was developed in conjunction with the Murray–Darling Freshwater Research Centre and includes the major floodplains of Barmah–Millewa Forest, and Gunbower–Koondrook–Perricoota Forest. The blackwater model will assist prediction of downstream water quality during flood events to assist water managers and river operators to manage low dissolved oxygen during environmental water delivery.

Detailed hydrodynamic modelling of manipulation of the Lock 8 and Lock 9 weir pools demonstrated good environmental benefits for little water use and may be trialled as an operational strategy during the 2013–14 winter–spring period.

Extensive hydrodynamic modelling and mapping was undertaken for a range of operating strategies for the Barmah–Millewa Forest, and will assist water managers to prepare environmental water delivery plans and document environmental outcomes. The modelling will also assist implementation of more effective responses to 'rain rejection' events (i.e. when an irrigator cancels their order for water because of rain. This 'ordered' water remains in the river and can potentially cause unseasonal flooding).

Flood inundation modelling

Many planned environmental watering events aim to inundate the floodplain, to provide a variety of benefits for the combined river–floodplain system. As a general rule, higher flows inundate a larger area of floodplain, but the precise relationship between flow height and inundation area is unclear in some parts of the Basin. To provide more accurate information we initiated the Flood Inundation Modelling project.

Previously, the River Murray Flood Inundation Model provided flow height and inundation-area relationships for the River Murray from Hume to Murray Bridge. Now, in cooperation with the CSIRO, we are extending flood inundation modelling to include modelling for the Edward–Wakool, lower Murrumbidgee and lower Darling systems. This model will provide the extent of flooding that will occur in hectares with a flow resolution of 1,000 ML/d, and will permit the depth of inundation at each location to be determined.

This information is planned to be presented in map form and, when combined with the maps of the Australian National Aquatic Ecosystems Classification Framework project (see page 74), will provide insight into how much natural vegetation (such as river red gum forest and black box communities) has been inundated during each environmental watering event. It will also permit us to target specific vegetation communities to determine how much water is needed to achieve optimal watering.

Farewelling Andy Close

In March 2013 Andy Close left the MDBA after 29 years with the River Murray Commission, Murray–Darling Basin Commission and the Murray–Darling Basin Authority. During his time working in Canberra Andy played a major role in building and using high quality hydrometric models to answer questions asked by governments, as well as identifying solutions relating to a wide range of water quality and water management issues.

Andy's achievements included the development of the MDBA's MSM-Bigmod modelling suite and playing significant roles in developing the salinity and drainage strategy, the Basin Salinity Management Strategy and the Cap on diversions.

Andy was awarded the Public Service Medal in 2008 for 'outstanding public service in the development and use of computer-based systems to model water quality and water supply management within the Murray–Darling Basin'.

Andy's friends and colleagues farewelled him at a function in Canberra in March attended by many current and former state representatives. Among the goodwill messages and wishes extended to Andy was one from the Hon. Tony Burke MP.

When I referred to people who've spent the best part of their working life in Basin reform you were one of those I had in mind. Congratulations on a well-earned retirement. But more importantly congratulations on a lasting reform which has your fingerprints all over it.

The Hon. Tony Burke MP

Andy at the Billabong Creek—Edward River junction in 2013 (photo by Ying Li, MDBA).

Cap on water diversions

The Cap on water diversions refers to a cap on diversions of surface water from the Murray–Darling Basin. Established in 1995 to limit future increases in such diversions, its creation was seen as an essential first step in establishing management systems to achieve healthy rivers and sustainable water use.

Since the Basin Plan became law in November 2012, we have been working with Basin states to transition from current monitoring and reporting arrangements under the Cap on surface water diversions (as set out under the Murray–Darling Basin Agreement) to the reporting obligations set out in the *Water Act 2007*.

The annual Cap target varies from year to year, depending on inflow and rainfall. The annual Cap target for each valley is calculated by an MDBA-approved Cap model. The MDBA manages the Cap's implementation in each Basin river valley as set by Schedule E to the Murray–Darling Basin Agreement.

Cap audit 2011–12

Since 2007–08 we have reported on water use in our annual water audit monitoring report. Since then cumulative Cap diversions Basin-wide have been about 8% below the cumulative Cap targets.

Key findings of the Independent Audit Group Cap audit for 2011–12 were:

- diversions of 8,214 GL from the rivers in the Murray–Darling Basin were the eighth lowest since 1983–84
- diversions in all Cap valleys in New South Wales, Victoria, South Australia and Queensland where a Cap has been defined were within acceptable bounds for Cap management.

Accreditation of Cap models

Of the 23 Cap models required, 19 have been audited and 17 approved. Two models (Australian Capital Territory and Barwon–Darling) are undergoing the approval process. Of the remaining four models, three (lower Darling, New South Wales Border Rivers and Queensland Border Rivers) are under audit and one (Metro Adelaide) is expected to be submitted for audit early in 2013–14.

Delivering River Murray information

To successfully manage the River Murray System the MDBA, through the partner governments, operates and maintains a network of remote hydrometric monitoring stations. These monitoring stations span the length of the River Murray and the lower Darling River.

Data and information is collated to underpin key operational responsibilities, including:

- sharing the waters of the River Murray System between New South Wales, Victoria and South Australia in accordance with the Murray–Darling Basin Agreement
- storing, managing and delivering water to meet consumptive and environmental needs
- operating salinity mitigation schemes
- enabling navigation and supporting recreation and tourism.

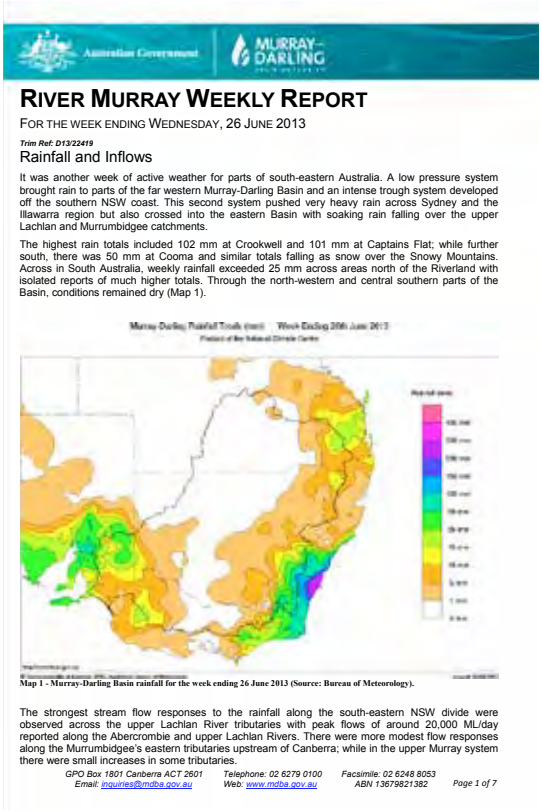
This information is also used to direct daily releases from a number of structures along the River Murray, working closely with state constructing authorities (whose staff physically control the structures) to deliver consistent operations and reliable water supplies for all users in a fair and efficient way.

The MDBA shares information with stakeholders in a number of ways, including:

- regular meetings with Basin state government authorities
- close liaison with the Bureau of Meteorology, particularly before and during floods
- online publication of various resources, including River Murray System daily, weekly and periodical data, see <www.mdba.gov.au>.

Daily updates

Live river data, including current storage levels and flow data.



Australian Government | MURRAY–DARLING

RIVER MURRAY WEEKLY REPORT

FOR THE WEEK ENDING WEDNESDAY, 26 JUNE 2013

Trim Ref: D13/22419

Rainfall and Inflows

It was another week of active weather for parts of south-eastern Australia. A low pressure system brought rain to parts of the far western Murray-Darling Basin and an intense trough system developed off the southern NSW coast. This second system pushed very heavy rain across Sydney and the Illawarra region but also crossed into the eastern Basin with soaking rain falling over the upper Lachlan and Murrumbidgee catchments.

The highest rain totals included 102 mm at Crookwell and 101 mm at Captains Flat; while further south, there was 50 mm at Cooma and similar totals falling as snow over the Snowy Mountains. Across in South Australia, weekly rainfall exceeded 25 mm across areas north of the Riverland with isolated reports of much higher totals. Through the north-western and central southern parts of the Basin, conditions remained dry (Map 1).

Map 1 - Murray-Darling Basin rainfall for the week ending 26 June 2013 (Source: Bureau of Meteorology).

The strongest stream flow responses to the rainfall along the south-eastern NSW divide were observed across the upper Lachlan River tributaries with peak flows of around 20,000 ML/day reported along the Abercrombie and upper Lachlan Rivers. There were more modest flow responses along the Murrumbidgee's eastern tributaries upstream of Canberra; while in the upper Murray system there were small increases in some tributaries.

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Email: inquiries@mdba.gov.au Web: www.mdba.gov.au ABN 13679821382 Page 1 of 7

Weekly updates

- Flow and salinity reports, issued every Tuesday, provide current and forecast flow and salinity levels in the River Murray System.
- Water storage reports, updated weekly, provide information about water in storage throughout the Murray–Darling Basin.
- River operations weekly reports, issued every Friday, summarise current weather, inflows and operations in the River Murray System.

Periodically

- Media releases concerning topical issues are released as required.
- Water quality bulletins are issued when a water quality issue is current, they summarise River Murray System events and conditions.
- State shares in storage reports are issued monthly and provide water accounting for the River Murray System, including the volumes each state holds in storage.
- River Murray System annual operating plan provides context for and describes how the river system may be operated under a number of assumed scenarios for the coming water year (1 June to 31 May). It is prepared and issued at the start of each water year and updated as required.

Library and geospatial services

Following a review in 2012, the MDBA's library services were reduced to core activities, with a greater focus on managing digital resources. Although the library is now closed to the public, library staff continue to meet requests for reference material and inter-library loans. Work is continuing on digitising our hardcopy historical collection — including over 200 MDBA reports — to make it more accessible.

The MDBA image gallery continues to be an important information resource. During the past year over 180 individual requests for images were received, most of which came from outside the agency. These requests resulted in the supply of about 730 images to MDBA staff for use in publications and the supply of over 640 images to people and organisations outside the MDBA.

In 2012–13, we completed 253 geospatial requests of which 169 were internal MDBA requests. We also completed 84 mapping requests from external customers and delivered 262 cartographic products for MDBA projects.

Significant geospatial-related highlights during 2012–13 included:

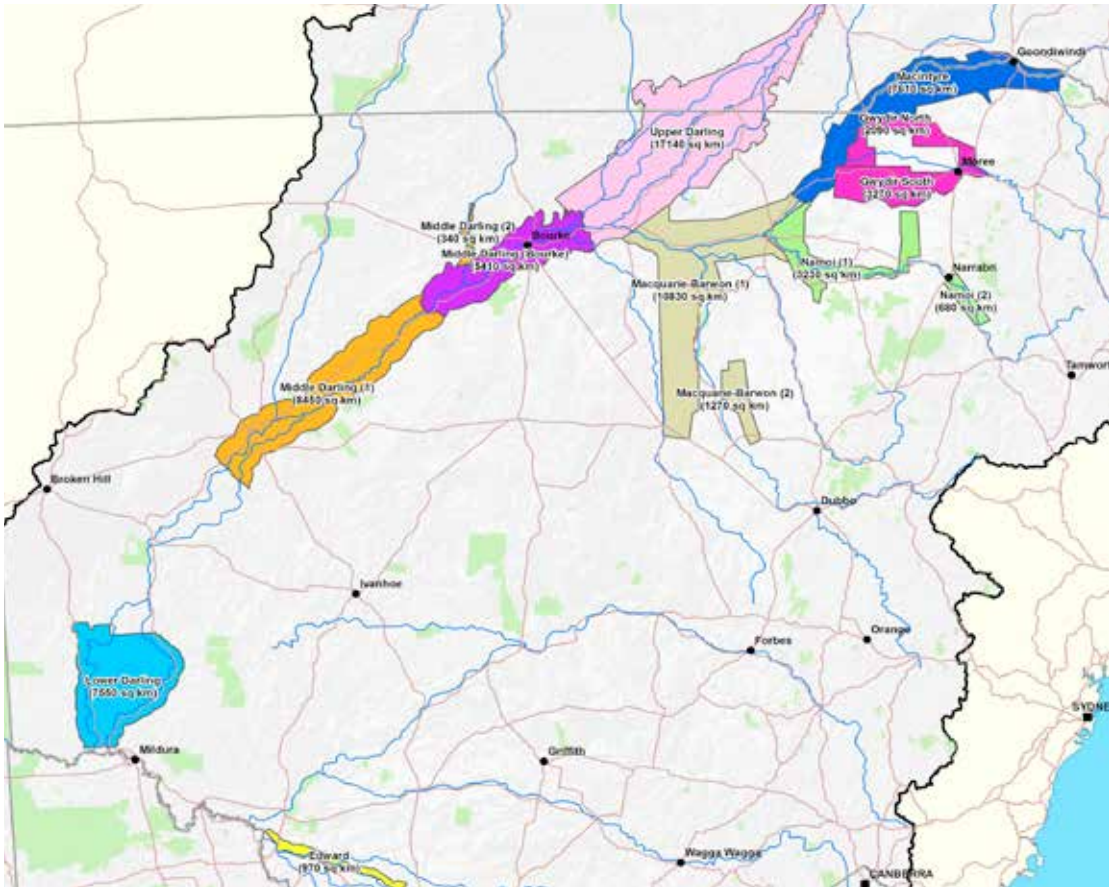
- collaborating with Geoscience Australia in the acquisition of over 65,000 km² of LiDAR, high resolution elevation data, over the major rivers of the northern Basin, enabling accurate modelling of environmental water flows and the consequent inundation of floodplains, as well as use in other applications, see Figure 3.1
- engaging the Cooperative Research Centre for Spatial Information to conduct a review and synthesis of current and future remote sensing capabilities to contribute to MDBA's information and business needs
- developing a tripartite initiative between the MDBA, Australian Bureau of Statistics and Bureau of Meteorology to explore an information architecture, based on an accounting framework, to support and facilitate efficient and effective use of Australian Government-held information.

Enterprise information strategy

The enterprise information strategy establishes the framework for the MDBA's information management and technology initiatives. The strategy outlines the capabilities and systems required to meet our information management, processing and archiving obligations under the Water Act.

During 2012–13 we successfully implemented all activities outlined in the enterprise information strategy for 2009–12. We began developing a new three year strategy in 2013, which will be finalised in 2013–14.

Figure 3.1. LiDar project acquisition areas



COMMUNICATIONS

Our continued work with the media is ensuring that our stakeholders are given the best possible access to information about key Basin issues (photo by Brayden Dykes, MDBA).

Media

Many of our stakeholders rely on the media, particularly their local or regional media, for the latest information on our work and activities.

The media also plays an important role in helping to provide important updates about River Murray operations to people who live along the river and whose businesses rely on it. During the year we began a regular spot on ABC local radio which has also given us an opportunity to provide operational updates and discuss our work.

Communication products

The quality of our annual report was again recognised with the 2011–12 report receiving a silver award at the Australasian Reporting Awards.

During 2012–13, we produced a large volume of information to support the development and adoption of the Basin Plan. We also developed communication products and services for a range of topics across the MDBA's operations. Materials created included research and other reports, online videos, books, brochures and fact sheets to supplement our primary source of information — the MDBA web site.

After the Basin Plan became law we produced communication material to explain the implementation processes, including how people can contribute local knowledge, and how they can access more information.

In October 2012 we launched *The Spillway*, a bi-monthly online publication to provide up-to-date information on Basin matters, including Basin Plan implementation activities, project updates (e.g. new infrastructure and environmental achievements), education events, sponsorships, conferences and little known or curious facts about the Basin.


Northern Basin Update
News from the Northern Basin Advisory Committee
Issue 2, June 2013
Welcome
Welcome to the second edition of the Northern Basin Update. In case you missed the first issue, the Northern Basin Advisory Committee was established by the Murray-Darling Basin Authority (MDBA) to provide independent strategic advice on key northern Murray-Darling Basin issues and priorities. The Committee is working with MDBA and other Commonwealth and state agencies to develop and implement a three-year work plan for the northern Basin. More information about the Committee is available at www.mdba.gov.au.
The Committee will prepare a Northern Basin Update after each of its meetings, to provide a summary of meeting outcomes and to provide information about recent and upcoming activities in the northern Basin.
Last Northern Basin Advisory Committee meeting
22-23 May 2013, St George, Queensland
Next meetings
10-11 September 2013, Bourke, NSW
26-27 November 2013, Canberra, ACT
Meeting at St George, May 2013
Message from Mal Peters, Committee Chair
A prime driver of the committee is to understand community concerns and wishes, so we aim to speak with community groups and local governments throughout the northern Basin in the coming months. We are eager to learn from our communities and invite people to contact us or participate in the meetings currently being planned, so that we can build on local knowledge and perspectives.
Regional communities rarely get an opportunity to influence decision making so this is a unique opportunity to influence the work program to ensure the end result is both healthy rivers and robust communities.
OUR VISION:
To support and influence the implementation of the Basin Plan in the northern Basin to achieve maintenance and enhancement of the environment and healthy communities.

At times, material was specifically developed for particular audiences such as the Northern Basin Advisory Committee newsletters, which summarise meeting outcomes and provide information about recent and upcoming activities in the northern Basin.

Five editions of *The Spillway* were published in 2012–13 and the subscriber base continues to grow (exceeding 1,200 subscribers by June 2013), demonstrating this publication's value as a source of information to the community. People can subscribe to the newsletter by signing up on our website.

In 2012 we supported the Australian River Restoration Centre to publish two editions of *Rip Rap* magazine — one with a focus on native fish, the other on environmental watering.

Website

Our website, <www.mdba.gov.au>, is our main communication vehicle and online source of information. A redeveloped website was launched in April 2013, with the aim of improving online accessibility for current users and attracting new users.

New features found on the redeveloped website include:

- a news carousel to highlight a range of new reports, media releases and news stories
- a people of the Basin section to highlight people living and working in the Basin
- a Basin Plan implementation section to provide updates on MDBA activities
- a Basin education section to provide resources for students and teachers.

Following the launch of the redeveloped site more users accessed our website and stayed on it for longer.

The most popular sections of the website continued to be those providing live river data and the river operations weekly reports.

We are continuing to improve our website — the next redevelopment phase will concentrate on improving discoverability of our publications, reports and images as well as reflecting a more regional/local interface.

Social media

In 2012–13 we continued using social media to engage with and provide timely information to our stakeholders. We increased our use of social media tools, demonstrating a more interactive and responsive online presence.

We endeavoured to create an open and welcoming environment — people do not need to register to participate in our blogs and their comments or questions are published immediately and without moderation.

Our use of Free Flow, the MDBA blog, gave us the chance to provide updates on our activities and programs, from World Water Day fun at Questacon to river operations updates, and giant wombat fossils found in the Koondrook–Perricoota Forest.

We used Twitter as our primary social media channel for news, updates and information. While continuing to use the micro-blogging platform to provide updates and answer stakeholders' questions, we have also used Twitter to give more of a behind-the-scenes view of our meetings and activities throughout the Basin.

Statistics during 2012–13 showed that the website received more than 532,000 visits, with the total number of pages viewed at 2,246,106, with a monthly average of 187,175 (compared to 144,900 in 2011–12) (photo by Larissa Solaiman).

We are increasingly using our Facebook page to highlight scenes from around the Basin. In 2012–13, we used Facebook to share everything from an information stand in Goolwa for World Wetlands Day to images from the Ringbalin River Spirit ceremony and even the MDBA Chair's appearance at a United Nations General Assembly Thematic Debate in May 2013.

education@MDBA

The year was characterised by innovation, collaborations, increased participation of MDBA staff in program delivery and continued alignment of our resources to the Australian curriculum.

Through our programs we came into direct contact with an estimated 12,000 people, with many more accessing current and refreshed online and printed resources through the new education@MDBA web pages.

Key areas of involvement of MDBA staff in the education program were:

- delivering World Water Week activities at Questacon — the National Science and Technology Centre in Canberra
- as mentors for the Basin Champions program
- participating in the Kids Teaching Kids week activities
- as scientists for the CSIRO Scientists in Schools program
- presenting at teacher professional association meetings and conferences.

Collaborations

During 2012–13 education@MDBA worked closely with Questacon on a range of initiatives, see 'Partnering with Questacon' on page 70.

We entered into a formal collaboration with Charles Sturt University to build a Murray–Darling Basin-focused natural resource management and environmental educator's network. This network provides vital and sustained opportunities for educators, from across, or servicing the Basin, to develop a Community of Practice to share ideas and resources.

We participated in the Geoscience Australia open day in Science Week. Around 6,000 people visited our hands-on demonstration and display-stand which included exhibits on salinity, salt interception schemes and aquatic ecology. The education team also worked in partnership with the Centenary of Canberra One River arts program to develop an education resource for teachers.

We also continued our commitment to delivering career-based education initiatives for upper secondary school students. The key initiatives were working with the National Youth Science Forum to run the speed networking event and expo day, and presenting at a Beyond School careers expo for Riverina high school students.

MDBA staff participating in speed networking with students from the National Youth Science Forum (photo by Janna Randell, MDBA).

The *Meet our Geeks* video series, promoted through our website and on our YouTube channel, allowed staff to share the experiences, education and career choices that led them to their current positions in the MDBA.

In January education@MDBA hosted an industry placement student through the Primary Industry Centre for Science Education program. This student undertook mini work experience sessions with 10 teams from across the organisation during her week-long placement.

We joined the steering group of the Australian Water Association Australian Curriculum project, an industry-wide project providing a means for the water sector to combine efforts and resources, and ensure quality water education messages are delivered across Australia.

The MDBA will continue working on concepts and on developing innovative education initiatives that emphasise the social, cultural and economic factors so important to water management in the Murray–Darling Basin.

Partnering with Questacon

During 2012–13 education@MDBA formed a strategic partnership with Questacon, Australia's National Science Centre, to develop and deliver initiatives to people in Canberra, as well as people throughout the Basin and Australia. The basis of the partnership is our need to connect with a range of audiences to deliver science-based educational content, using Questacon's role as a communication hub for science-based issues relevant to all Australians.

The Basin Champions pilot program linked schools throughout the Basin to investigate local water-based issues and examine how they impact on downstream ecosystems and communities. Fifteen schools participated in the pilot program, including Tamworth Primary (New South Wales), Barmera Primary (South Australia) and St. Mary's Rutherglen (Victoria).

The students presented a diverse range of high quality presentations to MDBA staff and other schools, through interactive videoconferencing or high-width broadband. The program is scheduled to take place again in 2014.

Our students enjoyed the opportunity to learn more about the MDBA and how we are part of the Basin. Thanks again, a fantastic unit.

Teacher, Basin Champions program

To take advantage of the large number of Basin and other Australian school groups that visit Questacon each year, education@MDBA started working with the Questacon science theatre troupe, *The Excited Particles*, to develop a water management in the Basin science show. When complete the show will be offered to school groups from the Basin who visit the centre; it will also be available to members of the public.

In the lead up to World Water Day (March 22), we had a display that included interactive experiences based on aspects of our work, such as salinity and salt interception schemes, native fish and hydrology. The display was set up in the Questacon hands-on discovery room Q-Lab. Around 4,500 students, teachers and members of the public visited the display and we received positive feedback from visitors as well as Questacon staff.

The Basin Champions program used Questacon's Schmidt digital studio to enable live video link-ups between staff and several Murray–Darling Basin schools (photo by Brayden Dykes, MDBA).

STRATEGIC ALLIANCES TO MEET SHARED NEEDS

International engagement

We received many requests during 2012–13 from international delegations to meet with us to discuss water management in Australia and the development and implementation of the Basin Plan. Meeting with the delegations gave us an opportunity to share our knowledge on water management issues and to gain new ideas from our visitors.

The MDBA has a strong focus on regions such as the Mekong sub-region, China, southern Africa and India.

Program highlights for 2012–13 included:

- hosting representatives of the Mekong River Commission during their visit to Australia in February 2013
- a presentation on the Basin Plan by our Chair, Craig Knowles, at the United Nations General Assembly Thematic Debate in New York
- developing our relationship with the Limpopo Watercourse Commission in southern Africa.

The Chair of the Authority, Craig Knowles, talking about the Basin Plan at the United Nations General Assembly Thematic Debate in New York.

Sponsorship

Sponsorship provides us with opportunities to support worthwhile initiatives, increase public awareness of our work and research, and align ourselves with critical partners.

During the past year we supported a variety of conferences, workshops and events across many sectors, including environment, education, science and research, community, industry, government and the arts.

Among the events and groups we supported in 2012–13 were the:

- Murray Darling Association's annual general meeting
- Ricegrowers' Association of Australia annual conference
- Australian River Restoration Centre workshop
- International River Symposium
- Ecological Society of Australia
- Murray Marathon
- Ringabalin (a Ngarrindjeri word for gathering of the tribes)
- Rotary Murray–Darling School of Freshwater Research
- Barmah–Millewa Forest Research Forum
- Northern Basin Research Forum
- Loddon Murray and Northern Mallee Leadership Group.

One of our major sponsorships was the One River project which was presented as part of the Centenary of Canberra celebrations in 2013. The project was a multifaceted and multi-state series of events based on the idea that the rivers of the Murray–Darling Basin are part of the nation's common wealth. It brought together scientists, Traditional Owners, artists and communities to explore the way in which Basin rivers connect people and promote discussions about common interests and experiences of rivers through community-based projects throughout the Basin.

Advisory Committee on Social, Economic and Environmental Sciences

The MDBA established the Advisory Committee on Social, Economic and Environmental Sciences to provide high-level, strategic advice on a range of scientific matters relevant to implementing the Basin Plan.

Members of the committee bring skills and eminence in fields of economics, hydrology, ecology and resilience, water governance and law, sociology and sustainable systems. The diversity of the members' skills provides a valuable opportunity to integrate across scientific disciplines and to help ensure that the work of the MDBA is based on the best possible scientific advice. Strategic advice from the committee will be critical in developing a coherent approach to prioritising research questions, aligning collective efforts, and identifying new ways to connect and communicate the complex technical issues that underpin a healthy working Basin.

The committee's inaugural meeting was in February 2013 and it met again in May 2013. Committee members focused their advice on the development of the environmental watering strategy and establishing social, economic and environmental monitoring.

Social and economic considerations are a core element of the committee's considerations in integrating multiple objectives.

Research partnerships

Many research institutions and organisations — including universities, state-based agencies and CSIRO — have contributed and continue to contribute to our scientific knowledge of the Basin and its diverse environments and communities.

The MDBA supports relationships and partnerships that develop, improve, and refine the scientific understanding of the Basin. There is considerable local knowledge within communities and institutions such as catchment management authorities and local governments. Tapping into this vast knowledge base is an ongoing priority for us.

Central to developing our scientific knowledge base is supporting the creation and development of research partnerships. Many research institutions are interested in continuing to develop, improve, and refine our scientific understanding of the Basin. We work closely with these institutions to align and maximise the benefits of collective effort, including:

Murray–Darling Basin Futures

The Murray–Darling Basin Futures Collaborative Research Network, based at the University of Canberra, is a partnership of universities, CSIRO, government departments and agencies.

These partners have lead responsibility in water management, research and policy, and in regional development. Thirteen collaborative research projects are under way covering topics such as environmental science, social and economic modelling, public policy, public health, and urban and regional planning. The MDBA supports some of these projects in various ways, including by guiding and supporting research projects; participating and contributing in workshops, seminars and public lectures; and facilitating exchanges with academic staff.

Murray–Darling Freshwater Research Centre

The MDBA is a joint venture partner with the Murray–Darling Freshwater Research Centre, along with CSIRO and La Trobe University. The research centre provides specialist skills and knowledge in riverine ecology in the southern Basin and the River Murray in particular. The research centre has provided us with core expertise in condition and intervention monitoring for The Living Murray program.

In 2012–13 the research centre carried out a system-scale synthesis of all The Living Murray monitoring undertaken to date. This work will add to our knowledge about the current state of The Living Murray icon sites.

The research centre also continued biological monitoring in the Murray and Mitta Mitta rivers under the River Murray Water Quality Monitoring Program. The centre has also developed a blackwater model and decision support tool that will help river and icon sites managers to anticipate and manage possible blackwater events; the model and tool will become operational in 2013–14.

Paul McInerney from the Murray–Darling Freshwater Research Centre collecting water quality data from the Mitta Mitta River, Victoria (photo courtesy of the Murray–Darling Freshwater Research Centre).

South Eastern Australian Climate Initiative 2005–2012

The South Eastern Australian Climate Initiative was established in 2005 as a joint program under the Murray–Darling Basin Agreement. It is a collaboration between the CSIRO and Bureau of Meteorology with the MDBA as a funding partner. The program ended in September 2012.

The initiative's first phase began in 2006 and its findings improved our understanding of the drivers of climate in south-eastern Australia, including the impact of global warming. Phase two built upon this knowledge, focusing on the causes of the Millennium Drought and its impacts on streamflow. This six-year collaboration has significantly increased our knowledge of climate drivers and their impacts on water availability.

Murray–Darling Basin Consortium

In 2012–13, eight leading universities in freshwater science signed a memorandum of understanding to work towards a more cooperative and coordinated approach to delivering the science needed for a healthy working Basin.

This consortium — the Murray–Darling Basin Consortium — aims to provide more effective ways to coordinate freshwater research activity in the Basin, giving greater focus to addressing broader Basin-scale management issues. The MDBA will work with consortium partners to develop a work program relevant to Basin policy. The consortium is still in its formative stages and will focus its early efforts in identifying strategic, long-term research priorities.

CSIRO

The MDBA has an ongoing relationship with CSIRO, primarily through the 'Water For A Healthy Country Flagship' which brings together scientists, industry, community groups, government and non-government organisations to build understanding and respond to national and international water management challenges. The flagship carries out diverse research within the Basin and is currently working with the MDBA on matters related to the development of the sustainable diversion limits adjustment mechanism.

eWater

eWater is a publically owned not-for-profit partnership committed to ecologically sustainable water management in Australia and around the world. It recently transitioned from a cooperative research centre and its main function is to support the implementation and use of the SOURCE Integrated Modelling System (IMS) as the new national hydrological modelling platform in Australia.

The MDBA and partner governments are supporting SOURCE IMS development through representation on the National Hydrological Modelling Platform Steering Committee and Technical Working Group. We are setting up a model for the River Murray and lower Darling system using this SOURCE IMS software. This implementation will replace the monthly time-step planning model for water sharing and accounting, and a daily flow and salinity routing model.

The model setup and calibration is planned for completion by 2015.

Aquatic ecosystem classification

The MDBA and the Commonwealth Environmental Water Office jointly commissioned Peter Cottingham & Associates to classify the Murray–Darling Basin's aquatic ecosystems using the recently completed Australian National Aquatic Ecosystem Classification Framework.

This framework uses a rules-based approach to determine the basis by which ecosystems are assigned to classes (e.g. pre-determined thresholds of salinity define freshwater, brackish and saline water bodies). This system contrasts with statistical classification approaches whereby statistical methods are used to define classes according to environmental similarities in attributes.

Based on classification outputs, the classification project developed a typology (a naming convention) that groups the many classes into a smaller number of ecologically meaningful types (e.g. permanent freshwater lakes, temporary woodland swamps and permanent lowland rivers).

The scale and coverage of available mapping and attribute data varies considerably across the Basin, so the project is considered an interim classification that will be updated and refined over time as new data becomes available or if the classification framework is modified.

As the classification is adapted and is combined with prioritisation and other systematic conservation planning methods, it will help address specific water management issues, such as Basin-wide environmental water planning, identifying environmental water use priorities and informing a comprehensive ecosystem monitoring and evaluation program.

One of the project's major benefits is the collation of Basin-wide and state mapping, and attribute data into a single repository.

OBJECTIVE 4.0

CHAPTER 4 MANAGING RIVER MURRAY ASSETS

To equitably, efficiently and effectively manage, operate and sustain River Murray assets to deliver states' agreed water allocations and environmental outcomes in the River Murray System.

OVERVIEW

- In contrast to the last two years, rainfall across most of the Basin was below average during 2012–13. Rainfall returned to a more typical long-term average pattern with good inflows during winter–spring 2012 and a return to hot, dry weather during the 2012–13 summer months.
- January 2013 was of particular note due to the contrasting extremes which affected most of the Basin. A record heatwave was accompanied by very low rainfall during what was Australia's hottest month on record. Later in the same month, the upper Condamine and Border rivers' catchments, in the north-east of the Basin, experienced record-breaking rainfall generated by ex-tropical cyclone Oswald. This event caused major flooding along several Barwon–Darling system tributaries during the second half of the 2012–13 summer.
- Total inflows to the River Murray System for 2012–13 (*including* inflows to the Menindee Lakes but *excluding* releases from the Snowy Mountains Scheme) were around 9,200 GL, placing the year very close to the long-term mean inflow. The total inflow was about 7,500 GL less than in 2011–12.
- Due to the return of more normal inflow patterns during 2012–13 River Murray Operations also returned to a more normal pattern. During the early part of the 2012–13 year, operations were being driven by on-going high inflows and, where appropriate, storages were being managed to maintain some airspace to mitigate potential flood events. As inflows receded, high water availability combined with increasingly warm and dry weather pushed irrigation demands to relatively high levels.
- In addition to the high irrigation demands, environmental demands were also very large with 900 GL of environmental water delivered to South Australia between November 2012 and June 2013. Due to the substantial volumes of water entitlements held by both Australian and state government agencies for environmental use the delivery of large volumes of environmental water will be an ongoing challenge for the management of River Murray assets.

HIGHLIGHTS

- Completed a major revision of the objectives and outcomes document for river operations.
- Developed specific objectives and outcomes which document the key high level decisions for operating the River Murray System, agreed by the Basin Officials Committee.
- Completed the construction of major engineering works at Koondrook–Perricoota Forest, Hattah Lakes and Mulcra Island.
- Coordinated the delivery of about 900 gigalitres of environmental water, including The Living Murray environmental water, resulting in the largest environmental flow ever delivered to South Australia.
- Completed the major construction for the salt interception scheme at Murtho, South Australia.

OUR PERFORMANCE

Program performance is measured against deliverables and key performance indicators in the *Portfolio Budget Statements 2012–13* of the Sustainability, Environment, Water, Population and Communities portfolio. A summary of the MDBA's performance against the deliverables and indicators related to objective 4.0 is provided on page 77.

DELIVERABLES	KEY PERFORMANCE INDICATORS	RESULTS	PAGE[7]
Annual planned maintenance and renewals program compliant with the Australian National Committee on Large Dams guidelines	MDBA has maintained River Murray System assets to a standard that satisfies the asset-controlling governments Annual budget and three year forecasts for the maintenance of River Murray System assets are prepared in accordance with the Agreement and to the satisfaction of Asset Controlling Governments	Report of Independent River Operations Review Group indicates satisfactory performance	78
Day to day operation of the River Murray System assets conducted in accordance with the objectives and outcomes set by the Basin Officials Committee	Water delivered to meet orders placed by states	All orders met	86
Hume Dam works progressed	The Dam Improvement Program is being implemented to the satisfaction of the asset controlling governments	On program for completion by end of 2013	82
Transparent determination of state water entitlements in accordance with the Murray–Darling Basin Agreement	Water accounts are maintained to satisfaction of three states	All accounts prepared	127
	Water availability assessments issued on time and with high stakeholder confidence	All water resource assessments completed	86
Existing salt interception schemes operated and maintained in accordance with agreed operating rules and operating and maintenance procedures	Positive annual performance report for all salt interception schemes	Annual reports completed	99
Environmental Works and Measures Program projects progressed and/or completed	Environmental Works and Measures specific projects completed	Substantial construction completed at Koondrook–Perricoota; Gunbower lower landscape; Hattah Lakes; and Mulcra Island. Steady progress at Chowilla Floodplain, Euston Weir and Lock 4	79
Effective planning, coordination and management of The Living Murray entitlements	The number of watering actions implemented is in line with the number of watering actions agreed	Watering actions implemented in line with the actions agreed except where there were delays with completing the works	43

7 Some deliverables and key performance indicators go across objectives so some results will be found in other chapters.

MAINTAINING AND IMPROVING ASSETS

River Murray Operations 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. By agreement of the four asset controlling governments, the MDBA manages the River Murray Operations assets in accordance with the functions, powers and duties set out in the Murray–Darling Basin Agreement.

State constructing authorities are appointed by the respective governments to carry out these duties. The state constructing authorities comprise:

- State Water Corporation (State Water NSW) (the NSW Office of Water also undertakes significant works relating to salt interception schemes, river improvement, hydrometric and water quality monitoring, and the environment)
- Goulburn–Murray Water (Victoria)
- South Australian Minister for the River Murray, including the operating agents South Australian Water Corporation (SA Water) and the South Australian Department for Environment, Water and Natural Resources.

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

Operations review

The River Murray System Operations Review was established in 2008 as a five-year program to assess existing river operations for the River Murray System against current and future requirements, including those provided in the Murray–Darling Basin Agreement. The program team has worked closely with river operators and jurisdictional managers to identify efficient and effective ways to deliver states' shares of water and environmental outcomes for the River Murray System.

During 2012–13 the operations review:

- supported the Review of the Agreement Taskforce (established under the Basin Officials Committee) to undertake a major review of the objectives and outcomes for River Operations in the River Murray System. The revised objectives and outcomes document was approved by the Basin Officials Committee in January 2013. The document provides a clear statement of what the Committee wants us to achieve in undertaking river operations
- developed a comprehensive set of specific objectives and outcomes. These document the key decisions for operating the River Murray System. Importantly they show how these decisions are relevant to the contemporary objectives and outcomes for river operations. In the future, all decisions made by the Basin Officials Committee about river operations should be reflected in a specific objective and outcome which will provide a transparent decision-making framework
- published the objectives and outcomes document, including the specific objectives and outcomes, on our website
- oversaw the preparation of the draft River Murray System operating environmental guidelines which are being established to capture key environmental learning gained by operations and to test specific environmental actions proposed for operating the River Murray System. Projects in 2012–13 included investigating options for variable flow releases from the Menindee Lakes storages and Hume Reservoir; and establishing a mechanism to monitor Murray cod populations in the Mitta Mitta River
- provided modelling support for setting up the SOURCE model for upper River Murray operations. A new resource assessment model for allocating water between states was also set up and tested.

The Operations Review was completed in June 2013. Key aspects of the program will be incorporated into a continuous improvement program within the River Operations area. Priorities include: continuing to modernise river operations practices, through the environmental guidelines process, and improving transparency by documenting current practice.

Critical human water needs

With the Basin Plan becoming law, work on critical human water needs moved to implementing the Basin Plan requirements and ensuring Basin states understand the close interaction between the Basin Plan and the Murray–Darling Basin Agreement.

Critical human water needs is the minimum amount of water required to meet the core requirements of communities dependent on Basin water resources, see glossary on page 208.

In 2012–13 work involved considering how to address risks to critical human water needs when developing the annual operating plan for river operations in the River Murray System, reflecting the provisions in the water resource assessment. In close collaboration with the states we also prepared a guideline to explain the communication processes for triggering and responding to periods of Tier 2 or Tier 3 water sharing arrangements during periods of extreme low water availability.

We published the guideline on our website in May 2013.

Environmental Works and Measures Program

The Environmental Works and Measures Program aims to improve the health of the River Murray System by building water management structures that deliver and manage water for The Living Murray's icon sites. For further information on The Living Murray program see Chapter 2 'Restoring River and ecosystem health' pages 43-48.

Overall, major works are proposed at six locations to assist in delivering environmental water to environmentally significant areas within the icon sites.

Construction progress

The winter–spring of 2012 saw further high flows in the River Murray which consolidated the ecological benefits of the 2011 flooding. Downsides to this flooding were continued delays to construction. Managing flood-related impacts was a key task during 2012–13.

Despite the challenges caused by the flooding we made significant progress throughout the year, including:

- completed construction at the Koondrook–Perricoota Forest. This project is the largest Environmental Works and Measures Program project and will be progressively commissioned over the 2013 and 2014 winters
- commenced construction for the Hipwell Road project at Gunbower Forest. The construction in Gunbower Creek is challenging because it can only be done in the irrigation shutdown period, between May and August. It is expected that the works will be completed in the 2014 shutdown period
- completed construction at Hattah lakes, including connecting a power supply to the pump station. Commissioning the works will begin in July 2013 followed by a small watering event to water Lake Bitterang, which has not received flows since 1993
- completed repair works at Mulcra Island (damaged in the 2011 floods). The structure will be commissioned over the July–September 2013 period with the commissioning running concurrently with a weir pool raising event
- commenced works at the upper Lindsay River. These works included completing detailed design of the replacement of the stone weir on Mullaroo Creek with a regulator and fishway. Construction is expected to begin in November 2013
- progressed the Chowilla works, with works on the western side of the main Chowilla regulator completed and the cofferdam removed. Works within the cofferdam on the eastern side of the main regulator were delayed because of issues with the contractor's temporary works. This affected the start of works at Slaney and Pipeclay weirs and these are now behind schedule, and completion will depend on winter flow levels. The works at Chowilla are still expected to be completed by April 2014, subject to high flows in the River Murray.

Work on the main Chowilla regulator continued. The cranes are installing the cofferdam to allow construction to begin on the eastern side of the regulator. The project is due to be completed in 2014 (photo by York Civil Pty Ltd).

Sea-to-Hume Fishway Program

The Sea-to-Hume Fishway Program is re-establishing opportunities for native fish to migrate over 2,000 km of the River Murray, by installing 16 new fishways and modifying one existing fishway. It is the first program anywhere in the world that allows fish passage for the majority of native species in a migrating fish community rather than focusing on only one or two species of economic or social significance.

Monitoring shows that millions of native fish are using the new fishways, passing as many as 10,000 per day, with high diversity (13 species) and a wide range of sizes (from 30 mm to over a metre in length).

The fishway at Lock 11 (Mildura) was completed in April 2012. This leaves three fishways still under construction — Lock 2 (Waikerie), Lock 4 (Bookpurnong), and Lock 15 (Euston), and all of these should be completed in 2013–14.

Detailed design has commenced for eight additional fishways at the Murray Mouth barrages as part of the Murray Futures Program. These fishways will provide enhanced connectivity between the Lower Lakes and the Coorong, allowing fish to move between fresh and estuarine areas, an important part of the breeding cycle for a number of native fish species.

New South Wales State Water completed fishways on barriers in the Edward–Wakool system. Combined with the Sea-to-Hume program, these fishways provide a comprehensive network of fish passage through this highly important river system. The Environmental Works and Measures Program funded the Edward River offtake and Stevens Weir fishways.

More information about managing native fish is in Chapter 2 'Restoring river and ecosystem health', pages 52–53.

Complementary environmental works

The Environmental Works and Measures Program has provided support and input to environmental works programs that will impact on River Murray assets. These works include:

- Katfish reach — the proposed works control flow into the creeks of the Katfish floodplain but are also critical to retaining the Lock 4 pool. The South Australian Riverine Restoration Program is seeking to increase the variability of flows in the creeks to achieve ecological outcomes, including increased fish connectivity with the River Murray
- South Australia weir pool manipulation — this project, led by the Department of Environment Water and Natural Resources, aims to use manipulation of the weir pools to achieve ecological benefits. The proposed operations build on knowledge gained in the works for Chowilla and Lindsay and Mulcra islands

- New South Wales weir manipulation — the NSW Office of Water proposes to use weir pool raising at locks 8 and 9 to deliver ecological outcomes, which links directly to the operation of the Mulcra works; a complementary operation of the two is proposed for winter–spring of 2013
- Carrs, Cappitts and Bunderoo creeks — the Murray Darling Wetlands Working Group Ltd and the Murray Catchment Management Authority on behalf of NSW Office of Water are undertaking an engineering feasibility study of existing structures near Lock 9. Project objectives are restoring flow, aquatic connectivity, ecological condition and fish passage. There are linkages with this project and the NSW weir manipulation project
- Victoria is developing a proposal for a major set of works across Lindsay and Wallpolla islands. Given the need for such works to integrate with the locks and weirs as well as the new works at Mulcra, upper Lindsay and Lake Wallawalla, our team has provided an overview and advice on the options as they have been developed.

Our team has provided advice to Victorian agencies who are developing a proposal for a major set of works across Lindsay and Wallpolla islands (photo by Mike Radajewski, MDBA).

IMPROVING THE PHYSICAL ASSETS BASE

Managing assets

Hume Dam

During 2012–13 significant progress was made on the dam safety upgrade program at Hume Dam. This work supplements the filter and drainage risk reduction works completed at the spillway southern junction in 2011–12.

In January 2012, site work began on a high priority project at Hume Dam — mass concrete buttress strengthening of the southern training wall to improve its capacity to withstand extreme earthquake loads.

Several significant milestones were achieved on the southern training wall buttress project during 2012–13, including:

- July 2012 — completing a major cofferdam to allow the site to be de-watered for construction of the buttress works to begin. The cofferdam was designed to protect the construction site against major flooding up to 120,000 ML/d. With the cofferdam in place, the contractor began constructing the mass concrete buttress, a task which required the placement of more than 20,000 cubic metres of concrete
- completing extensive foundation support works for the downstream part of the buttress. These were required to allow safe excavation to reach suitable foundation depths up to 18 metres below river level. Excavation for the foundations was carried out successfully and the placement of mass concrete for the foundations was completed in May 2013
- completing the first part of the buttress, founded on the existing spillway dissipator structure, was completed at the end of April 2013, with construction well underway on placing mass concrete in the downstream part of the buttress. The works completed to date have already significantly reduced risk, with a full risk reduction expected to be realised when the second part of the buttress is completed, around the end of 2013.

Hume Dam southern training wall buttress construction showing the completed upstream section (bottom left corner) and progress on the downstream mass concrete section (photo by Tony Morse, MDBA).

Dartmouth Dam

The annual dam safety inspection of Dartmouth Dam in May 2013 confirmed that the dam is in good condition and is performing as expected, although the need to increase spillway capacity to meet extreme floods was again noted.

The MDBA places a high priority on ensuring all its dam assets comply with contemporary standards including guidelines issued by the Australian National Committee on Large Dams. In 2012–13, detailed design was completed for the first stage of the flood capacity upgrade, which includes the refurbishment of the dam crest at Dartmouth Dam. Construction of the upgrade requires removal of part of the existing dam crest and so, to satisfy dam safety requirements, construction cannot be carried out until the storage falls to below half-full so the risks associated with construction do not exceed current risks. Funding for the construction of the upgrade is expected to depend on partner governments first addressing higher priority dam safety risks within their jurisdictions.

Construction of Hume Dam in the 1920s or 30s (MDBA historical images collection).

Lake Victoria

Two significant dam safety improvement projects were underway for Lake Victoria in 2012–13. A preferred concept was identified for remedial works at the outlet regulator and a preliminary design prepared. Detailed design of the remedial works began with the objective of constructing the priority stage 1 works in the first half of 2014. The stage 2 works which require construction of a major cofferdam will be undertaken when the funding and associated approvals have been obtained.

The second project at Lake Victoria involves remedial works at two creek crossings along the Frenchman's Creek inlet channel. Detailed design of risk reduction measures at the creek crossing with the highest business risk was completed in 2012–13 and construction is expected to be carried out in the first half of 2014.

At the second creek crossing the area requiring remedial works is much larger and so if similar risk reduction measures were used the environmental and cultural heritage impacts would be much greater. Alternative options for remedial works at the second creek crossing are being considered and a preferred option will be selected in 2013–14 for implementation.

Locks and weirs

The operation and maintenance of locks and weirs during 2012–13 saw recovery from the setbacks caused by high flows, that persisted to the end of the 2012 calendar year.

Major projects that benefited from lower flows in 2013 were:

- the navigable pass upgrade and fishway construction at locks 2 and 4
  - Lock 2 navigable pass upgrade and fishway — construction is scheduled to restart once the contractor has completed work at Lock 4. This scheduling is to accommodate the contractor's availability of plant, in particular barges, and skilled labour to work over water. The restart will be subject to acceptable river flow levels
  - Lock 4 — the contractor mobilised to site and completed the cofferdam for the navigable pass works. The fishway part of the project is nearly complete but the work program is dominated by the navigable pass upgrade with the overall construction at site, scheduled for completion in August 2013
- Lock 11 fishway — construction was completed and the fishway was operated briefly before being dismantled in preparation for the weir pull in May 2013 for maintenance work (a weir pull is where the weir is removed for maitenance or in high flows). A full commissioning, with fish trapping, is scheduled for the start of the fish migration season in September–October 2013
- Lock 15 — work on the weir upgrade and fishway resumed again in January 2013 and is scheduled for completion in August 2013. The placement of steel straps on the riverbed upstream and a sheet pile cut-off downstream are on track for completion before high winter flows arrive.

Driving sheet pile from a barge, downstream of Euston Weir and Lock 15. The works are to address downstream erosion as part of the overall Euston Weir upgrade (photo by Tony Morse, MDBA).

Barrages

The Tauwitchere Barrage deck replacement program continued in 2012–13. This ongoing program is expected to take a further 10 years to complete. Work included the remediation of corrosion to stainless steel anchor fittings cast onto the early replacement decks, using a special rotating stand designed and built by the Goolwa SA Water team.

Other works of note during 2012–13 included an upgrade of the facilities at Pelican Point.

Hume to Yarrawonga reach

We continued work on protecting river banks from erosion between Hume Dam and Lake Mulwala. New works in 2012–13 consisted of log revetment, rock beaching, willow control, fencing and revegetation. A number of log jams and log fences were also constructed to prevent anabranch capture, a process which could lead to anabranches enlarging and capturing a larger proportion of river flow from the main channel. This can have significant implications for the environmental values of the reach.

Common reed was used successfully at several sites to help stabilise river banks. This also assisted in enhancing environmental values along the reach.

The Hume to Lake Mulwala River Works Program is the largest of its kind in Australia, with over $20 million invested to date. It has resulted in a considerable body of knowledge ranging, from construction techniques, to working with landholders and prescribing works based on site characteristics. The work will be written up as a journal paper and form the basis of a construction manual for small river works.

The program also refurbished access to a number of floodplain properties which are impacted when anabranches flow all summer, as a result of regulated releases from Hume Dam.

Log revetment is when logs are used to help protect river banks from erosion. Since 2007 it has become the most utilised technique for reducing erosion between Hume Dam and Lake Malwala.

Mitta Mitta River channel improvements

Work continued to help mitigate bank erosion caused by moving large volumes of water between Dartmouth and Hume dams. The 2012–13 works program included rock armouring, removing willow blockages, relocating gravel bars, and works to prevent anabranch capture. Additional works included fencing and revegetation of river banks with native plants. These works will maintain channel capacity and minimise the risk of significant erosion, while enhancing environmental values along the reach.

Assessment of asset management

Each year senior MDBA staff inspect all River Murray Operations assets, specifically to assess the operational performance of the assets. Assessment criteria include:

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

The inspection of the assets for 2012–13 was very pleasing. The standard of maintenance across the assets is now consistently reaching the levels envisaged in the asset management plan with only one or two exceptions.

Senator Collings Trophy

The trophy is awarded to the team that has the most effectively maintained site on the River Murray. This is the first time for some time that a lock and weir has been awarded the trophy. The award recognises that locks and weirs are a major attraction for the public. Blanchetown Weir and Lock 1 staff won the award for 2011–12 because of their attention to detailed maintenance of the weir and lock, including the up-keep of grounds and lockages, as well as their support of the Sea-to-Hume Fishway Program. The winner of the Senator Collings Trophy for 2012–13 will be announced in late July 2013.

Staff at Blanchetown Weir and Lock 1 — Barry Cabot, Graham

Tregenza and Darren Davies — received the Collings Trophy for the best maintained asset in 2011–12 (photo by Phil Pfeiffer, MDBA).

Senator Joseph Silver Collings (1865–1955) was Minister of the Interior from 1941 to 1945 and President of the River Murray Commission.

DELIVERING WATER

Agreed water shares delivered to states

The following key actions are undertaken to deliver agreed water shares in the River Murray System to the Basin states, including in extreme conditions:

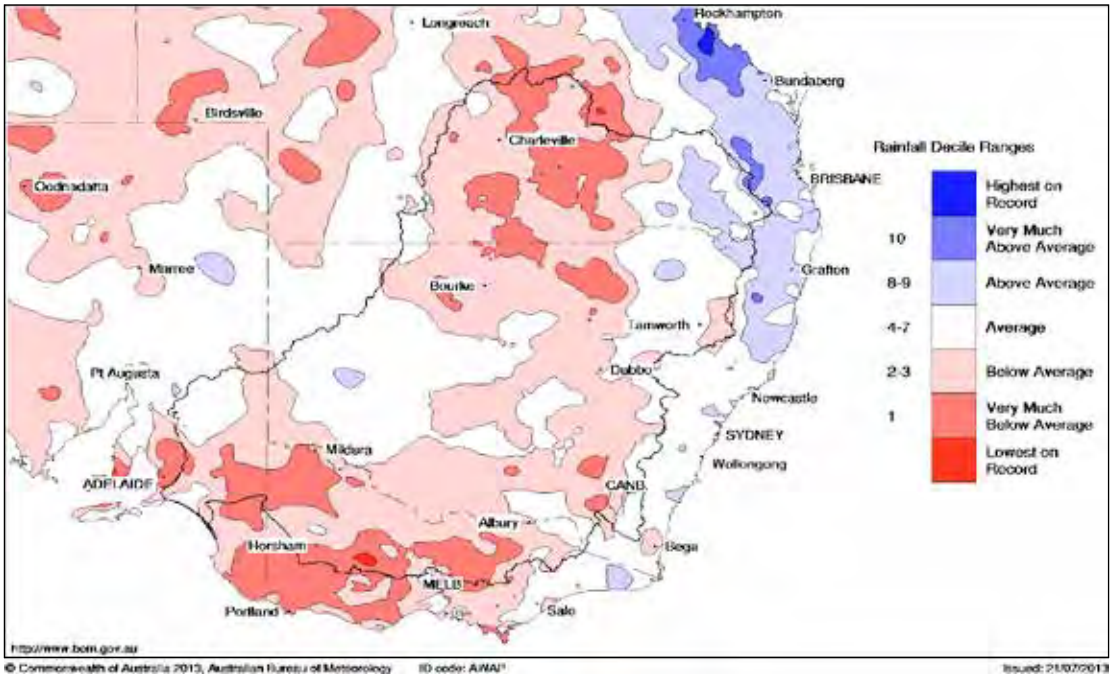
- regularly assess the water resources of the River Murray System to determine the volume of water available to each Basin state
- operate structures under the control of the MDBA and determine and review procedures for their efficient and effective operation
- establish, operate and maintain a system of continuous monitoring of the volumes of stored water, and of flows in the River Murray and from its tributaries
- liaise with state and Australian Government authorities on matters related to the River Murray System to provide an up-to-date and comprehensive flow of information.

Rainfall and inflows

Rainfall across most of the Basin was below average during 2012–13 (see Figure 4.1), which contrasted strongly with the previous two years when above average rainfall was recorded across most regions. The annual pattern of rainfall was also more typical of the long-term average for the region with a return to hot and dry weather during the summer months for most of the Basin.

However, during January 2013 contrasting extremes affected most of the Basin: a record heatwave was accompanied by very low rainfall during what was Australia's hottest month on record, and later in the month, the upper Condamine and Border rivers catchments in the north-eastern Basin experienced record-breaking rainfall generated by ex-tropical cyclone Oswald (see Figure 4.2). This event caused major flooding along several Barwon–Darling system tributaries during the second half of the 2012–13 summer.

Figure 4.1. Murray–Darling Basin rainfall deciles for 2012–13 (source: Bureau of Meteorology)



Remarkably heavy rain fell at some locations near the New South Wales–Queensland border, although a relatively steep gradient to lighter rain inland of the Great Divide meant that downstream flood peaks and volumes were mostly a lot smaller than those experienced during the Darling system flood events of 2010–12.

River Murray System inflows in 2012–13 broadly followed the long-term seasonal distribution. Wet catchments in the upper Murray system tributaries before winter 2012 resulted in good responses to rain events even though total rain during June and July was only about average. July 2012 inflows were the highest since 1995, and August 2012 inflows were also above the long-term average.

Subsequent drying caused by hot weather and low rainfall meant that inflows receded steadily during spring and summer, remaining largely below long-term averages. The six-month period from August 2012 to January 2013 was particularly dry across the Basin, with western and south-western areas most affected.

Although overall rainfall in the south of the Basin since February 2013 was around average, the distribution of the rainfall, and on-going above-average temperatures, meant that inflows from the River Murray System tributaries were generally below average. Periods of dry weather during autumn 2013 also limited catchment wetting, meaning headwater catchment responses were poorer and inflows were lower leading into the 2013 winter, compared with 2012.

Total inflows to the River Murray System for 2012–13 (*including* inflows to the Menindee Lakes but *excluding* releases from the Snowy Mountains Scheme) were around 9,200 GL, placing the year very close to the inflow median (annual exceedance probability (AEP) of 52%) (see Figure 4.3) and a little below the long-term mean. The total inflow was about 7,500 GL, less than in 2011–12.

Figure 4.2. Murray–Darling Basin rainfall deciles for January 2013 (source: Bureau of Meteorology)

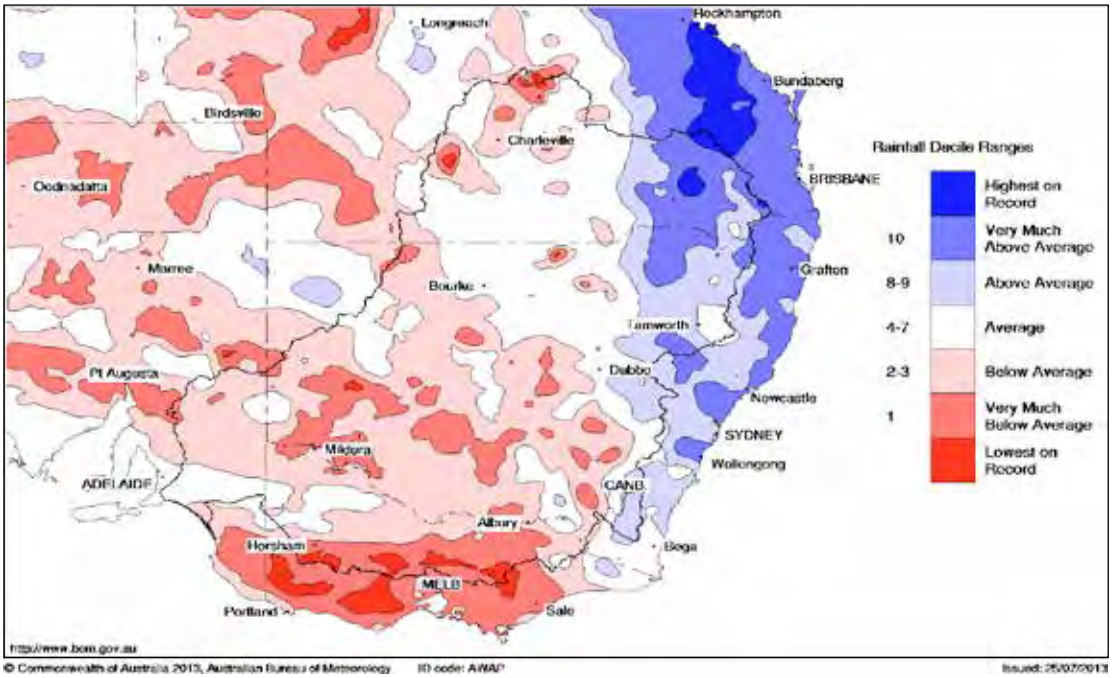
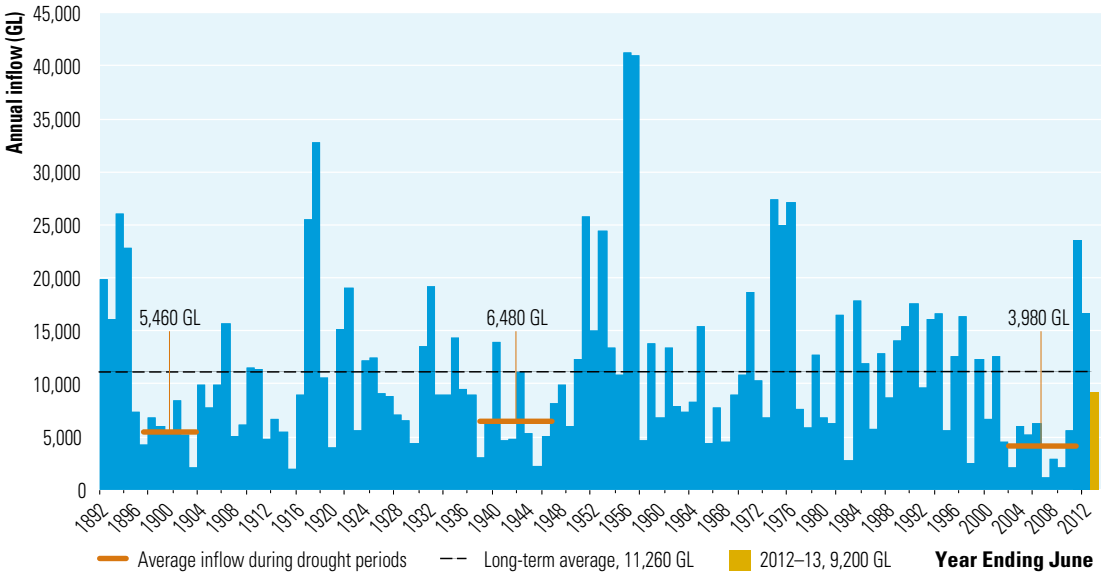


Figure 4.3. Historical River Murray System annual inflow from July 1891 to June 2013 (modelled current conditions, including inflows to Menindee Lakes and excluding releases from the Snowy Mountains Scheme)



For the whole Murray–Darling Basin the estimated surface runoff into rivers is 32,000 GL/yr (average for the 1895–2009 eriod). A significant portion of this runoff is lost through seepage and evaporation, diverted for consumptive use or retained in floodplain wetlands. The inflows shown in the Figure 4.3 shows the surface runoff that ends up in the River Murray and Menindee Lakes.

River Murray System inflows (*excluding both* the inflows to the Menindee Lakes and releases from the Snowy Mountains Scheme) totalled 7,700 GL during the year (AEP of 52%), compared with the long-term median of 8,200 GL and the 2011–12 total of about 11,500 GL.

Most of these inflows took place during the first three months of 2012–13 with about 4,700 GL occurring between 1 July and 30 September 2012 (see Figure 4.4). The annual figure also includes almost 500 GL of inflows resulting from environmental water releases along tributaries such as the Goulburn and Murrumbidgee rivers. This water — used mainly for in-channel benefits and to boost flows to South Australia — formed part of the largest ever volume of environmental water released into the River Murray System during a single year (see page 97).

Menindee Lakes were at surcharge levels with on-going flood operations during the winter and the first half of spring 2012, and so were under the day-to-day management of the New South Wales Government. The MDBA took operational control during October 2012 with releases to supplement flows in the River Murray beginning on 19 October. Total inflows to Menindee Lakes for 2012–13 were around 1,500 GL (AEP 35%) compared with the long-term median of 950 GL. At the end of June 2013, the total volume in storage was 1,250 GL (72% capacity).

Active storage

With lower than average rainfall and inflows and much higher demands than in recent years, water storages in the River Murray System at the end of June 2013 had decreased compared to one year ago. However, total MDBA active storage is now in its third consecutive year of levels above the long-term average and on 30 June 2013 MDBA active storage was 6,600 GL, including 770 GL in Menindee Lakes. The total is more than 1,000 GL above the long-term end-of-June average (see Figure 4.5).

Figure 4.4. River Murray System daily inflows (excluding both inflows to Menindee Lakes and releases from the Snowy Mountains Scheme) — past two years and long-term average

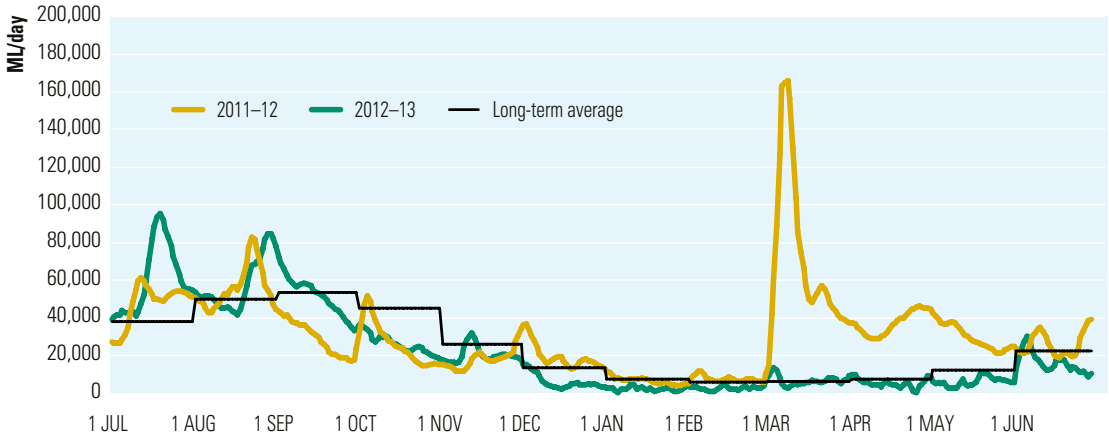
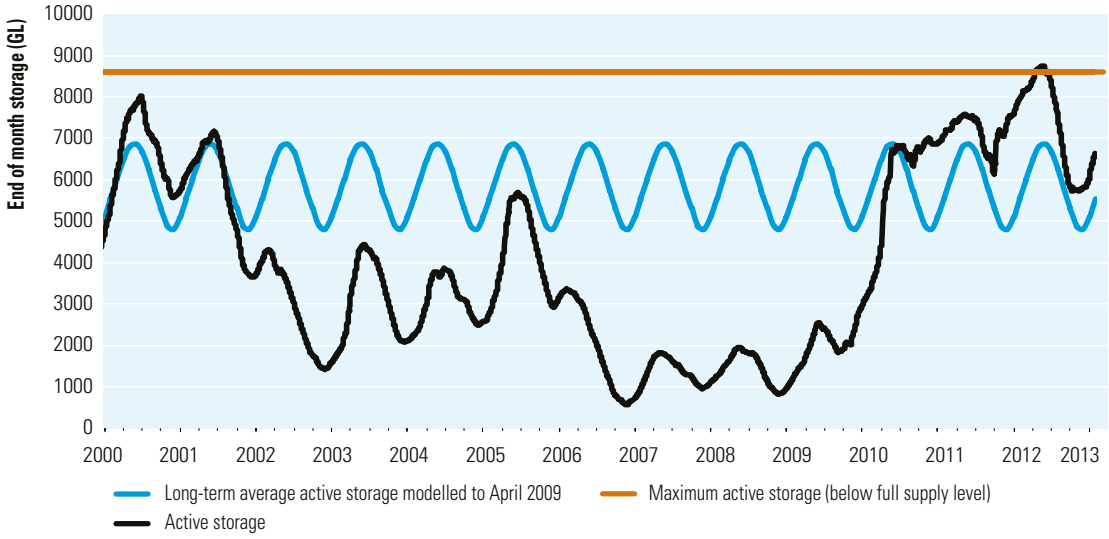


Figure 4.5. MDBA active storage, June 2000 to June 2013



The MDBA active storage was particularly high during October 2012 when the volume reached a peak of 8,750 GL (102%), the highest active storage volume since December 1990. In 1990, however, it was possible to surcharge the Menindee Lakes to levels well above those currently permitted; which effectively means that October 2012 active storage peak was as close to the maximum level it could now reach; under current storage configuration and operating protocols.

Water shares for New South Wales and Victoria in MDBA storages at the beginning and end of 2012–13 are shown in Table 4.1. At the end of 2012–13, the following volumes are also available for use in the Murray in 2013–14:

- about 160 GL of water in inter-valley trade accounts in the Murrumbidgee and Goulburn valleys
- 329 GL of River Murray Increased Flow (RMIF) environmental water (stored in the Snowy Mountains Scheme)
- 212 GL of water in the Upper States Drought Account.

Table 4.1. Water shares for New South Wales and Victoria — end of June 2012 and June 2013

	STORAGE AT END OF JUNE 2012 (GL)A			STORAGE AT END OF JUNE 2013 (GL)A		
STORAGE	NSW	VIC	TOTAL	NSW	VIC	TOTAL
Dartmouth Reservoir	1,664	1,692	3,355	1,762	1,878	3,640
Hume Reservoir	1,434	1,434	2,869	811	1,073	1,884
Lake Victoria	241	241	481	283	248	531
Menindee Lakes[b]	959	959	1,918	678	574	1,253
Total[c]	4,296	4,323	8,619	**3,534**	**3,773**	**7,308**

a. Data relates to total storage.

b. Menindee Lakes releases at 30 June 2013 were being managed by MDBA. MDBA will cease to be able to call on water from Menindee Lakes when the storage volume next reduces to less than 480 GL.

c. Accounts are based on the best available data, which may contain some unverified operational data that could change in the future. Figures are rounded to the nearest GL and this is why some calculations in this table appear slightly incorrect.

State water allocations, diversions and carryover

Overall water availability at the start of 2012–13 was relatively high. Although some water allocations started out relatively low, significant volumes of carryover were available from the previous year.

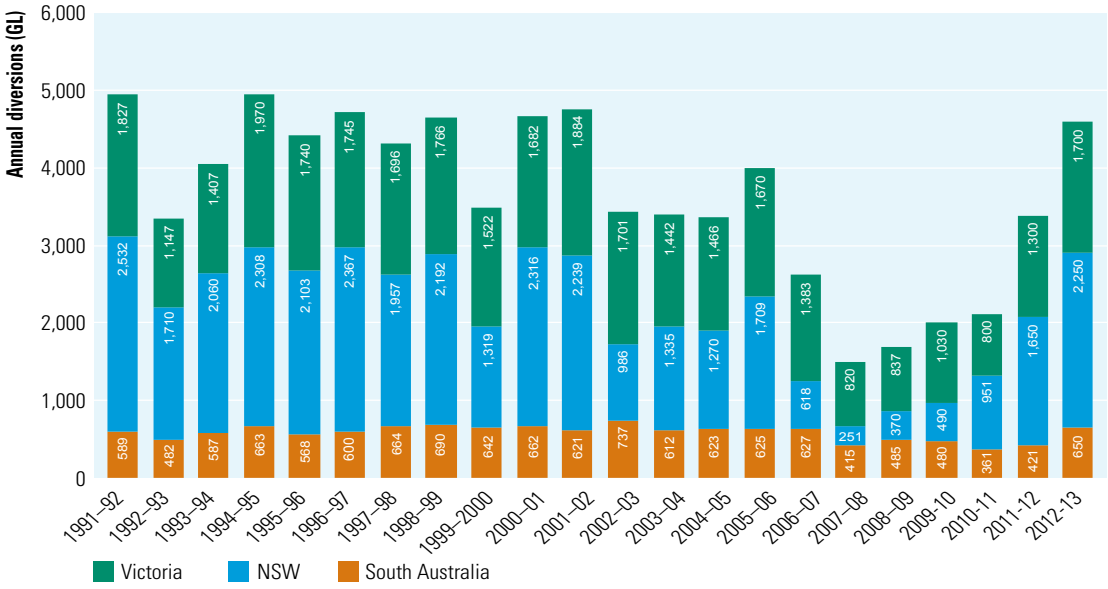
South Australia started the year with a 100% allocation for the second consecutive year. The New South Wales high security allocation started at 97% and New South Wales general security access licence holders started at 56%. The New South Wales general security licence holders also had access to, on average, about 45% allocation as carryover from the previous year.

In Victoria, high reliability water shares started with an allocation of 26% compared with a starting allocation of 21% for the previous year. Victorian licence holders also had access to, on average, about 104% allocation as carryover from the previous year. By early November 2012, allocations had increased to 100% for New South Wales high security and general security access licence holders and 100% for high reliability water shares in Victoria.

On the lower Darling River, both general and high security water holders had a 100% allocation for the whole of 2012–13.

With high water availability and early increases in allocations, total water diversions during 2012–13 for Victoria, New South Wales and South Australia increased to a volume of about 4,600 GL — the highest since 2001–02 (see Figure 4.6). Demands for crop and pasture water also increased during 2012–13 because of dry and very hot conditions across the southern Basin during much of the spring–summer period, which included the record heat event during December and January described above.

Figure 4.6. State diversions River Murray System: 1991–92 to 2012–13



Note: Diversions include the lower Darling and any inter-valley trade received by a state. 2012–13 figures are indicative only and may change as updated data becomes available.

Flow to South Australia

South Australia began the year with its full entitlement of 1,850 GL for the second consecutive year. Additional dilution flow, which was delivered to South Australia from 1 August 2010, came to an end on 7 January 2013 when the Menindee Lakes storage volume decreased below the required monthly trigger volume — 1,300 GL for January. (The other additional dilution flow requirement of a combined storage volume in Hume and Dartmouth reservoirs greater than 2,000 GL continued to be met.)

The 2012–13 year commenced with on-going 'unregulated flow' to South Australia following the very large rain event of February–March 2012.

Periods of unregulated flow are declared by the MDBA when it is forecast that flows in the River Murray System cannot be captured in Lake Victoria — because of operating rules, inlet capacity constraints or storage capacity constraints — and the flow passing through to South Australia will be in excess of its entitlement flow.

Rain events and responsive catchments during June and July increased River Murray System flows so that unregulated flows were further extended until 31 October. The system has remained in a fully regulated state from 1 November 2012 to the end of the water year. Between October 2012 and June 2013, South Australia's entitlement flow was further boosted by the addition of more than 900 GL of traded environmental water.

The total annual flow across the South Australian border, including additional dilution flow, unregulated flow, environmental water and traded water, was about 7,000 GL (AEP 38%) compared with 10,300 GL last year. The long-term median annual flow to South Australia is 5,200 GL.

The Murray component of the Snowy Mountains Scheme

The Snowy Scheme terms of operation are defined in the Snowy Water Licence, which sets a minimum release that must be achieved by the licensee (Snowy Hydro Limited) over the course of the Snowy water year, which runs from 1 May to 30 April.

The required annual release volume may change throughout the course of the Snowy water year and Snowy Hydro Limited is free to release volumes in excess of the required release. Factors affecting the required annual release through the course of 2012–13 were the dry inflow sequence volume and relaxation, which both reduce the required annual release.

The dry inflow sequence volume measures how much the inflows to the Snowy Scheme are below the level required to ensure a reliable supply through a repeat of drought conditions. Relaxation reduces Snowy Hydro Limited's release obligations in years when there are sufficient resources on the Murray to meet all requirements.

During the 2012–13 Snowy water year, the required annual release increased from a starting value of 322 GL to a maximum value of 811 GL at the start of March. Subsequently the required annual release was reduced (through relaxation) to a closing value of 549 GL.

The accounted release to the Murray was 1,167 GL comprising the 549 GL required annual release, 240 GL advanced on the 2013–14 required annual release and 377 GL of discretionary release by Snowy Hydro Limited (taken from holdings of above-target water). This was the first release of above target water since 38 GL was released in 2004 and was only the second release of above target water since corporatisation of the Snowy Scheme in 2002.

A discretionary release of above-target water is currently the primary mechanism for the delivery of River Murray Increased Flows to Hume Dam. The MDBA, in consultation with the states and environmental flow managers elected not to credit the 2012–13 release of above-target water to RMIF on the Murray, under RMIF rules. As a result, the RMIF held in the Snowy Scheme remains available for the future use of the environment.

Operating the River Murray System

River Murray System operations during 2012–13 were quite different to those of the previous two years when system demands were dampened by unusually wet summers. During the early part of the year, operations were being driven by on-going high inflows and where appropriate storages were being managed to maintain some airspace to mitigate potential flood events. As inflows receded, high water availability combined with increasingly warm and dry weather pushed demands to relatively high levels. The focus of operational outcomes was also altered by unprecedented environmental water demand that modified overall release and delivery patterns relative to previous years.

Upper Murray system

At the start of 2012–13, storage was 3,357 GL in Dartmouth Reservoir (87% of capacity) and 2,871 GL at Hume Reservoir (96% of capacity). High flows with minor flooding occurred along the upper River Murray System tributaries during July and August 2012; however these events were not sufficient to generate flows above minor flood level downstream of major River Murray System storages.

Storage in Dartmouth Reservoir increased to 99% capacity by October 2012 when the reservoir was considered to be 'effectively full'. Releases were increased above minimum (200 ML/day) from 25 October to pass inflows and maintain the storage volume at about 99% capacity, which meant the storage was 'effectively spilling'. The last time Dartmouth Reservoir was at 99% capacity or above was early in 1997.

Subsequent releases for water quality management and for harmony transfers to Hume Reservoir resulted in considerably more periods of above-minimum release during 2012–13 than in recent years. The total volume released from Dartmouth Dam during 2012–13 was close to 500 GL. By June 2013, the storage volume had decreased to 3,641 GL (94% of capacity).

The periods of above minimum release included:

- five entitlement releases for power generation by AGL Hydro between July and October 2013 and five more during May and June 2013
- an increase in release from 25 October 2012 to a peak of 3,500 ML/day on 10 November to pass inflows and keep the storage effectively full
- three periods of above-minimum releases that included short flow pulses during December and January for airspace and water quality management in the lower Mitta Mitta River
- on-going harmony transfer releases that began on 24 January and included several pulsed releases peaking up to 8,000 ML/day.

At Hume Reservoir peak releases to manage high inflow events occurred during July and August, with the storage effectively spilling until mid-October. The flow during this period peaked at 30,000 ML/day on 18 July. Releases to meet downstream demands began in late October with very high demand during late December 2012 and January 2013 when the release exceeded 20,000 ML/day for 19 consecutive days. A release in excess of 15,000 ML/day then continued until late February 2013.

Releases to meet environmental, irrigation and normal system demands from October to May resulted in Hume Reservoir being drawn down to 44% capacity by early May. The release was reduced to the seasonal minimum (600 ML/day) from mid-May 2013 and at 30 June 2013, the storage volume had risen to 1,889 GL (63 % capacity).

Mid-Murray

At Yarrawonga Weir, the release peaked at 53,000 ML/day on 22 July 2012, with another peak in excess of 40,000 ML/day during late August. Flows generally receded throughout the spring although two smaller peaks above channel capacity occurred during early October and early November.

To reduce the risk of undesirable overbank flooding in the Barmah–Millewa Forest, the target release from Yarrawonga Weir during the main irrigation period was generally 8,000 to 9,000 ML/day. However, because of rain events and hot weather the actual release varied between 6,000 and 11,000 ML/day.

The significant volumes of water available in Menindee Lakes and the flexible approach adopted for the delivery of environmental water meant that the Barmah Choke was not a major constraint on the delivery of water to downstream users during 2012–13. The rule preventing trade of allocations from above to below the 'choke' has been relaxed since September 2007. Although we review the relaxation fortnightly, it has remained uninterrupted.

Inflow from the Goulburn River totalled 1,700 GL for the year (AEP of 31%) measured at McCoys Bridge, with a peak flow during late July just above 20,000 ML/day, which is below the minor flood level. At Torrumbarry flow exceeded 25,000 ML/day between mid-July and mid-September, causing overbank flooding into the Gunbower–Koondrook–Perricoota Forest. A peak flow of 35,700 ML/day occurred on 7 August, and a peak of 33,700 ML/day on 30 August (minor flood level occurs at about 39,000 ML/day).

Flows along the Murrumbidgee River were considerably lower than in recent years, with inflow to the Murray (measured at Balranald) measuring about 1,250 GL (AEP 35%), which is very close to the long-term average of 1,270 GL and above the median of 890 GL. The flow peaked during early September at 9,900 ML/day.

At Euston, the flow exceeded 30,000 ML/day from mid-July to mid-October 2012 with a broad peak of about 48,000 ML/day at the end of August (minor flood level occurs at about 88,000 ML/day).

A flow indicator at Lock 9 (photo by Michael Radajewski, MDBA).

Foreshore of Lake Victoria (photo by Andrew Bishop, MDBA). This photo came second, by popular vote, in the MDBA's annual report photographic competition for staff.

Downstream of the confluence of the Murray and Darling rivers, the flow at Wentworth was boosted by releases from the Menindee Lakes and averaged over 20,000 ML/day for the year. The flow reached a peak in early September 2012 of 56,000 ML/day (minor flood level occurs at about 87,000 ML/day). The flow decreased to below 10,000 ML/day in early January and only exceeded this value for short periods between mid-January and the end of June 2013.

Lake Victoria

Operations at Lake Victoria throughout 2012–13 were consistent with the Lake Victoria operating strategy. From the beginning of July until mid-August the lake level was reduced as higher flows in transit from upstream meant the lake could be filled later. As conditions dried through late August and September, the lake level was increased from a low of 24.79 m Australian Height Datum (AHD) to just below the Full Supply Level by mid-October.

The lake storage peaked at 99.4% capacity (26.96 m AHD) in early November with some of the lake's storage capacity used to mitigate flow into South Australia to assist in protecting downstream construction works.

With high water availability and after several years of relatively high water levels, the opportunity was taken to lower the lake level during late 2012 and the first few months of 2013. The level was decreased to 22.45 m AHD by 10 April, the lowest the lake had been since 2009. The lower water levels provided a significant period of reduced inundation that allowed the further establishment of spiny sedge plants that had propagated during 2010–11 and 2011–12. These plants are a key element of cultural heritage protection on the, at times, exposed lake bed.

Refilling of the lake began in April 2013 and by the end of June, Lake Victoria had reached 79% capacity with the level boosted by water released from the Mildura Weir pool in May during a maintenance drawdown.

Menindee Lakes, Lower Darling River and the Great Darling Anabranch

Total inflows to Menindee Lakes between July 2012 and June 2013 were considerably lower than during the previous two years, although the total of about 1,500 GL (AEP 36%) was still higher than the long-term median annual inflow of about 950 GL.

The inflows were mostly generated by rain events over the upper Darling system tributaries during the 2012 winter and during late January 2013.

Storage levels at the Menindee Lakes began the year surcharged at 111% capacity and with an on-going requirement to manage airspace; operations were under the day-to-day control of the New South Wales Government. Persistent rainfall during July over the northern NSW catchments increased flows along the Gwydir and Namoi rivers to peaks that exceeded moderate flood levels at several gauges.

These flows caused a peak flow in the Darling River at Bourke during early August close to 16,000 ML/day and peak inflows to the Menindee Lakes of around 10,000–15,000 ML/day during late August that increased the storage volume to 2,037 GL (117%) — just below the full surcharge capacity of 2,050 GL.

The MDBA requested regulated releases from Menindee Lakes on 19 October 2012 to supplement flows in the River Murray and regulated releases continued until the end of May 2013. The highest regulated release rates occurred during December 2012 and April 2013 with a peak of about 9,000 ML/day and the storage volume fell to a low of about 50% capacity by March 2013.

Inflows receded to low levels during the period from spring 2012 to late summer 2013 before the year's second inflow event commenced in March 2013. The event was triggered by extremely heavy rainfall generated by ex-tropical cyclone Oswald over the upper Condamine and Border rivers catchments during January 2013. However, peak flows on the Darling River generated by this event were considerably lower than the flood events of 2010–12, with peaks measured at Bourke during March and April at less than 25,000 ML/day. About 950 GL flowed into Menindee Lakes between March and May 2013 from this event and at the end of June 2013, storage in the Menindee Lakes was relatively steady at about 1,250 GL (72% capacity).

Lower Lakes and barrage operation in South Australia

Relatively high lake levels have allowed releases through the barrages to continue throughout the year apart from during 'reverse flow' periods. These occur when downstream water levels in the Coorong exceed upstream water levels in Lake Alexandrina because of high tides and/or storms requiring certain barrage gates to be closed to limit the inflow of sea water.

An estimated 4,600 GL of water flowed to the Southern Ocean during 2012–13. While lower than in 2011–12, this volume was close to the estimated long-term average of 4,900 GL.

High releases occurred before the 2012 winter, with an average of around 50,000 ML/day during May and June. Flows receded during July, but increased again during August with a peak estimated at close to 70,000 ML/day. Flows above 20,000 ML/day continued until October. Although flows into South Australia decreased from mid-spring, they were boosted by the delivery of significant volumes of environmental water that continued for the remainder of the year. The Murray Mouth remained open throughout the year, enabling the export of significant volumes of salt.

Environmental water helped to maintain flows through the barrages at the Murray Mouth, which is critical for migratory fish and helped to improve salinity levels (photo by Adrienne Frears, SA Department of Environment, Water and Natural Resources).

In the winter and spring of 2012, water releases through the barrages were managed to vary the level of the Lower Lakes between 0.60 and 0.85 m AHD. This action aimed to improve salinity levels in Lake Albert, however at times it was difficult to implement because of high water levels in the Coorong caused by extremely high tides and the relative size of the Murray Mouth compared to the flow through the barrages.

The operation to vary the level in the lakes appears to have assisted in reducing the salinity in Lake Albert. For instance at Meningie, salinity has been slowly reducing, from around 4,500 EC units at June 2012 to about 3,000 EC units at the end of May 2013. The salinity at Milang Jetty in Lake Alexandrina at end May 2013 was about 560 EC units, after reaching a low of about 300 EC units in November 2012.

In November and December 2012, the level of the lakes was increased to around 0.8 m AHD to encourage greater mixing of water between the lakes to improve salinity levels in Lake Albert, maximise water security and inundate fringing wetlands.

Fish passage was targeted throughout the year supporting fish movement and recruitment. The fishways at Goolwa and Tauwitchere remained open and attractant flows were provided when conditions were suitable.

For much of the year, regulated releases were predominantly directed out the barrages at Tauwitchere to improve estuarine conditions downstream of the barrages in the southern lagoon of the Coorong and to provide suitable habitat for fish, invertebrate and waterbird communities.

Salinity levels in the southern lagoon of the Coorong have been rising since October 2012 (70,000 EC units) as earlier flood flows through the barrages reduced. The salinity at the end of May 2013 was above 100,000 EC units. Salinity in the South Lagoon, although high, is still within the target thresholds for key plants and animals.

Delivering environmental water

During 2012–13, the MDBA again assisted with the delivery of environmental water held by the Basin states, The Living Murray and the Commonwealth Environmental Water Office, to target a range of environmental outcomes.

The main operational challenge during 2012–13 was the delivery of a large volume of environmental water to the South Australian border, while also ensuring, to the extent practical, that the Barmah–Millewa Forest remained dry over summer and autumn. The previous two wet summers had provided extensive inundation in the Barmah–Millewa Forest and environmental managers were keen to give the forest a drying period in the summer of 2012–13.

To achieve this outcome, a range of strategies were implemented including:

- targeting releases from Yarrawonga Weir at flow rates less than channel capacity through the Barmah Choke to minimise the risk of unseasonal overbank flows caused by rainfall rejection events during the irrigation season
- NSW and Victoria delivering significant volumes of environmental water, destined for South Australia from tributaries downstream of the Barmah Choke
- adopting a flexible approach for the delivery of environmental water with the MDBA delivering what it could without impacting on other consumptive demands or the Barmah–Millewa Forest.

The overall approach was successful with more than 900 GL of environmental water delivered to South Australian between 1 November 2012 and June 2013, while the Barmah–Millewa Forest remained dry over summer and autumn.

The largest environmental water delivery to South Australia

The River Operations Group coordinated the delivery of 289 GL of The Living Murray environmental water into South Australia. Combined with contributions from other water holders, this contributed to the delivery of the largest every volume of environmental water — more than 900 GL — to South Australia, from November 2012 to June 2013.

- The Living Murray provided 289 GL of environmental water from the Goulburn, Campaspe, Murrumbidgee and Murray systems. The flows provided environmental benefits to these systems, as well as to two of The Living Murray's icon sites — the River Murray Channel, and the Lower Lakes, Coorong and Murray Mouth
- the Commonwealth Environmental Water Office, New South Wales Office of Environment and Heritage and the Victorian Environmental Water Holder also contributed significant volumes of water.

Coordinating the delivery of such large volumes of environmental water is a growing challenge for the MDBA. The delivery requires careful analysis, complex planning and regular meetings of environmental water holders, catchment management authorities, environmental managers, state water departments as well as MDBA and state operations staff to achieve the desired hydrological and ecological goals.

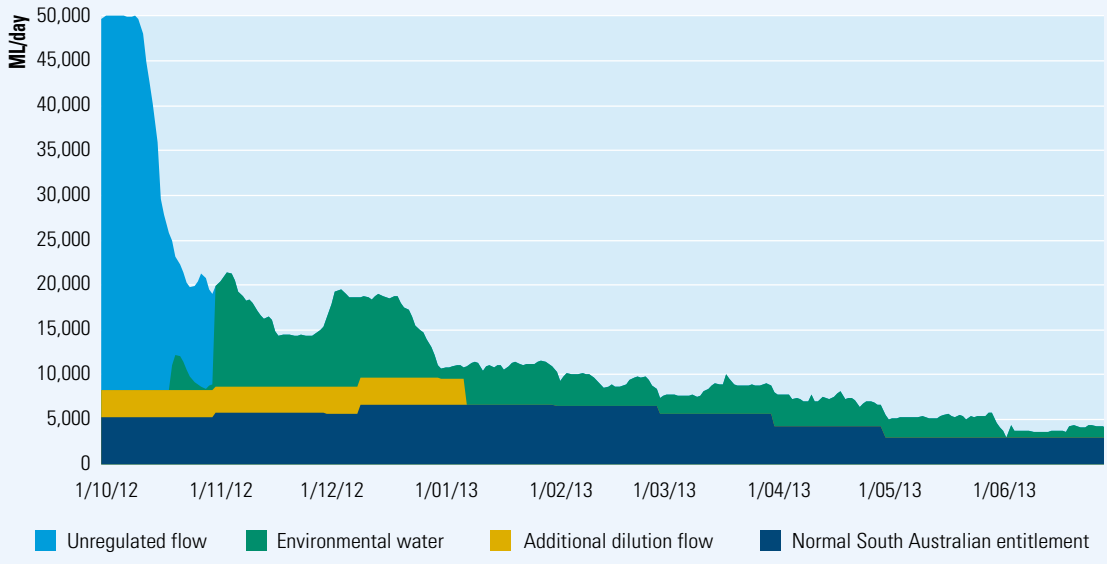
The growing level of sophistication and use of environmental water in the River Murray System also means that the balance of total system demands is changing and this will continue to modify river operations during the coming years.

The environmental water delivery helped to achieve system-wide benefits across the River Murray System (see Chapter 2 'Restoring river and ecosystem health', page 44).

Reading rivers

A hydrograph is a way of showing the flow at a point in a river over time. In a heavily regulated river such as the Murray the peaks are due to releases of water from storages, or rainfall and runoff from the catchments. This simplified hydrograph shows the flow of River Murray water into South Australia, from October 2012 to June 2013, which included the largest ever delivery of environmental water.

Figure 4.7. Hydrograph showing the different components of the flow to South Australia from October 2012 to June 2013

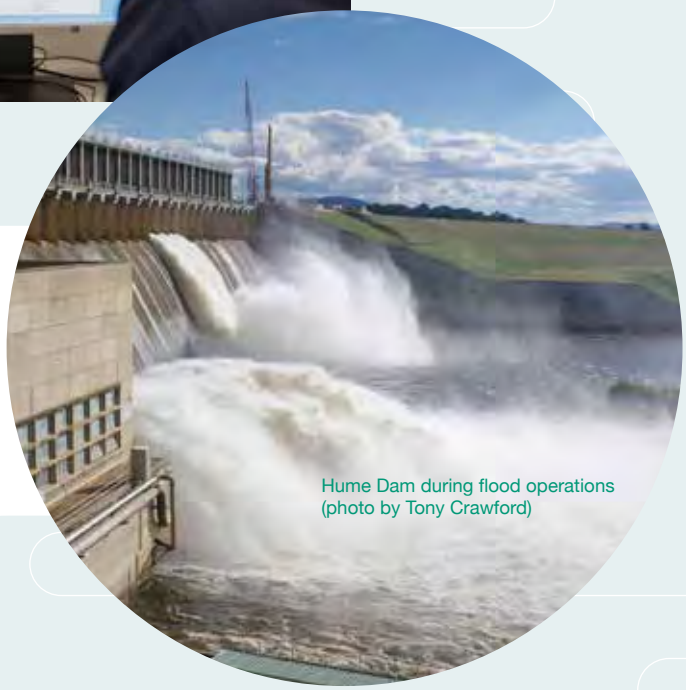


STAFF SNAPSHOT — MEET OUR RIVER OPERATORS

MDBA river operators (photo by Brayden Dykes, MDBA)

Each day our staff 'operate' the River Murray System by tracking and forecasting flows and directing storage releases. Releases must be managed to meet the required channel flows, level changes and a range of complex environmental targets; while always ensuring there is sufficient water for irrigation and other consumptive demands. During wetter periods, managing the risk of flooding becomes a priority.

To determine when and where to release water the river operators use complex computer simulation models that use a range of data — such as water levels and salinity — gathered across the system every day. The operators also consider the weather outlook and factor in the travel times from where the water is released to where it is needed. It takes about a month, for example, for water to travel from Hume Dam to the South Australian border.



Hume Dam during flood operations (photo by Tony Crawford)

River operators are necessarily competent in mathematics, but otherwise their scientific backgrounds are diverse, ranging from expertise in environmental science, hydrology, engineering and natural systems analysis.

As a river operator, there are always many 'balls in the air', but with a passion for understanding the complexities of the riverine environment, that's the way I like it.

Andrew

There is also an important communication element to the job that adds to the level of interest.

I might be attending a regional community meeting about river management one day and in a discussion with water policy leaders the next.

SALT INTERCEPTION SCHEMES

The River Murray salt interception schemes are a significant component of the Basin Salinity Management Strategy 2001–2015. By intercepting saline groundwater and drainage inflows before they reach the River Murray or its tributaries, these schemes are helping us achieve and maintain agreed salinity levels in the River Murray. In addition the schemes are operated to maximise environmental benefits to the Basin. About 322,686 tonnes of salt was diverted from the River Murray in 2012–13, Table 4.2.

There are 18 salt interception schemes (including five state-owned schemes) in operation, representing a significant achievement under the Basin Salinity Management Strategy. During 2012–13, the construction of the Murtho salt interception scheme in South Australia was completed, and the rehabilitation of the Mildura–Merbein salt interception scheme progressed.

More information about the Basin Salinity Management Strategy is in chapter 2 'Restoring river and ecosystem health', see page 50.

Table 4.2 Joint/shared salt interception scheme performance reporting 2012–13

SALT INTERCEPTION SCHEMES (ML)	VOLUME PUMPED (ML)	SALT LOAD DIVERTED (TONNES)	AVERAGE SALINITY (EC UNITS)	TARGET ACHIEVED (% OF TIME)	POWER CONSUMPTION KWH (TOTALS)
Pyramid Creek	1,097	27,933	43,260	60	212,794
Barr Creek	2,818	8,736	4,943	100	59,318
Mildura–Merbein (currently being rebuilt)	0	0	0	0	0
Mallee Cliffs	1,227	40,935	50,000	100	320,093
Buronga	2,167	61,650	42,500	100	582,818
Pike River	542	23,071	55,150	N/A	138,322
Bookpurnong	413	10,323	39,000	100	152,690
Loxton	694	6,346	15,743	100	211,777
Woolpunda	4,325.5	87,980	31,845	86	2,860,403
Waikerie	3,101	55,599	30,230	93	1,240,699
Rufus River	4.3	113		50	1,878
Total groundwater diversion	**4.3**	**113**			**1,878**
Total salt pumped during the year	**16,389**	**322,686**			

Pyramid Creek's low performance was due to the extensive rebuild required following 2011–12 floods.

Mildura–Merbein scheme currently decommissioned while scheme rehabilitation works are undertaken.

Pike scheme is still drawing down to target. Piezometers in the area currently being assessed for performance monitoring.

Woolpunda scheme shut down for 90 days during the year for major maintenance activities.

Rufus River was shut down for the first half of 2012–13 in accordance with the operating rules, but remained shut for the full year.

Construction

River Murray floods late in 2012 delayed completion of a number of floodplain components at the Murtho salt interception scheme in South Australia. However by the end of 2012–13 all construction activities had been completed. Commissioning of the bores and fine tuning the pumping regime will continue into 2013–14 as part of the scheme's ongoing operation.

The first phase of rehabilitating the Mildura–Merbein salt interception scheme in northern Victoria is nearing completion. As no agreement has yet been reached by partner governments on the disposal location, it has been decided to defer development of the phase 2 bore field as well as the disposal pipeline. Phase 1 bores will initially dispose to Wargan Basin via Lake Ranfurly.

Operations and maintenance

During the past year, operating and maintaining salt interception scheme assets continued to focus on minimising running costs. By careful monitoring, it was possible to maintain target groundwater levels while scheduling pumping times to coincide with periods of lower power tariffs.

A number of production bores located on the River Murray floodplain were shut down during the year because of floodwater inundation. Most bores have been restarted.

Although construction of the upper Darling salt interception scheme (30 kms downstream of Bourke New South Wales) was complete in 2011–12, commissioning of the works has been delayed pending clarification of required disposal volumes and the ability of the disposal basin to manage these volumes.

Farewelling Trevor Jacobs

In August 2012 Trevor Jacobs, Senior Director River Operations, retired after 30 years working on the Murray. Trevor began working at the River Murray Commission in 1982 and has been central to the operations of the River Murray System during periods of flood and record drought. He has overseen operations through critical periods, such as the 1996 drawdown of Hume Dam, and through the severe and prolonged Millennium Drought.

In the early 2000s Trevor was seconded to provide his expertise to the small team developing options for what is now The Living Murray program, which continues to improve the health of the River Murray System. Trevor also had direct responsibility for the River Murray weekly report which has been published continuously throughout his time with the organisation — a written legacy of more than 1,500 editions documenting and reporting on the River Murray System.

Trevor now has more time to pursue his other passions of running and cycling.

CHAPTER 5
MANAGEMENT AND ACCOUNTABILITY

OVERVIEW

During 2012–13 we continued to strengthen our corporate governance framework and our agency workplace culture by:

- enhancing our corporate policies and procedures
- refining our performance reporting
- updating key risk management, fraud control, business continuity disaster recovery and emergency response plans and procedures
- implementing changes driven by legislation.

Our corporate governance performance was recognised when:

- our 2011–12 annual report received a silver Australasian Reporting Award
- we achieved the best results since inception of the MDBA in the Comcover 2013 enterprise risk management benchmarking study — a score of 8.29 out of 10, entitling the MDBA to an 8.91% discount on our 2013–14 Comcover insurance.

HIGHLIGHTS

- Provided high quality and timely secretariat support and services to a total of 48 meetings of the Authority, Legislative and Governance Forum on the Murray–Darling Basin, and high level advisory committees.
- Announced a new Basin Community Committee, bringing together a diverse range of expertise and skills, and representing many of the Basin communities.
- Developed a risk management policy and 2013–14 risk management plan.
- Significantly revised and updated our:
  - business continuity policy
    - business continuity, pandemic business continuity, information communication technology (ICT), and disaster recovery plans
  - emergency response procedures.
- Began developing our 2013–14 fraud risk assessment and fraud control plan.
- Developed an on-line training module on fraud, conflict of interest and ethics.

SENIOR MANAGEMENT COMMITTEES

During the year senior management committees continued to provide advice and assurance to the Chief Executive and to manage cross-agency aspects of MDBA business. The committees and their activities during the year are described below.

Executive Committee

The MDBA's Executive Committee, chaired by the Chief Executive, is the main forum in which cross-agency issues on policy and corporate governance are discussed. The committee meets on a weekly basis and comprises the executive directors of our four divisions (Policy and Planning, Environmental Management, River Management, and Corporate and Business Services), Executive Director Joint Programs Internal Review Taskforce, the General Manager Communications, Engagement, Research and Compliance, and the Director Media Strategy and Relations.

During 2012–13 the committee considered strategic and critical management issues including:

- finalising the development of the Basin Plan
- commencing the Basin Plan implementation strategy
- oversighting MDBA input into the review of joint program delivery options for the Basin Officials Committee and Ministerial Council
- developing agency structural changes to facilitate better program delivery and staff changes, following a Ministerial Council decision to reduce joint program delivery
- continued high-level decision-making on strategic direction, risks and positioning
- oversighting agency statutory and accountability obligations.

Information Management Committee

The Information Management Committee is a subcommittee of the Executive Committee. It advises on, and provides strategic direction for, the MDBA's information management and information technology initiatives. It also discusses and endorses major projects with information management or information technology components or impacts.

The committee is chaired by the General Manager Policy and Coordination, Policy and Planning Division. Its membership comprises the Chief Information Officer and two additional senior executive service (SES) officers who have backgrounds in strategic ICT issues.

Notable activities during the 2012–13 year included:

- endorsing and coordinating the MDBA's current strategic activities to ensure our online information conforms with Commonwealth Web Content Accessibility Guidelines (WCAG 2.0)
- supporting and endorsing the 2012–13 MDBA updated mobile communications device strategy
- supporting and endorsing development of an enterprise information asset registration and discovery system, updated enterprise information intellectual property guide and associated initiatives and projects managed through the Information Stewards Team.

Health and Safety Committee

The Health and Safety Committee is a subcommittee of the Executive Committee and operates under the *Work Health and Safety Act 2011*.

The committee met quarterly to oversee work health and safety matters across the MDBA. In 2012–13 it met in July, October and December 2012 and March 2013. The committee chair during 2012–13 was the General Manager Policy and Coordination, Policy and Planning Division.

Committee members include health and safety representatives from MDBA work groups; a representative from the Employee Consultative Committee; the Director People, Planning and Performance; the Chief Emergency Warden and the Work Health and Safety Coordinator.

Working on the Hume Dam in the 1950s (MDBA historical images collection).

Work health and safety issues considered by the committee during 2012–13 included:

- arrangements to comply with the new work health and safety legislative framework
- new and revised policies, procedures and guidelines, including revised health and safety management arrangements
- rehabilitation issues and statistics
- strategies to reduce the incidence and impact of musculoskeletal disorders and psychosocial injury issues
- workplace inspections and workplace incident and injury reports

Workmen (and one daughter) involved in building Yarrawonga Weir (1920s or 30s)(MDBA historical images collection).

- statistics provided by the employee assistance provider
- reports from first aid officers, emergency wardens and harassment contact officers
- accommodation issues with work health and safety implications.

Employee Consultative Committee

The Employee Consultative Committee was established under the MDBA Enterprise Agreement 2011–14. The committee comprises an elected employee representative from each division, three elected employee organisation representatives (from the Association of Professional Engineers, Scientists and Managers, Australia; the Community and Public Sector Union; and the Media Entertainment and Arts Alliance), the Chief Executive and two other management representatives.

The committee met nine times during the year to communicate, consult and cooperate with employees on matters affecting the workplace and the operation of the Enterprise Agreement. The Employee Consultative Committee provides a forum for:

- staff consultation and input into the decision-making process for changing existing policies, guidelines or procedures or developing the new policies, guidelines or procedures referred to in the Enterprise Agreement
- provision of advice to the Chief Executive on matters arising from the operation of the Enterprise Agreement.

During the year, the committee reviewed MDBA policies, staff accommodation, organisational restructure, change management support programs and the process associated with the recommendations of the Review of the Joint Activities Taskforce.

Audit Committee

The Chief Executive is responsible for ensuring that the MDBA's broad control framework remains effective and continues to support the agency's objectives.

To carry out these obligations according to the *Financial Management and Accountability Act 1997* (FMA Act) and the Financial Management and Accountability Regulations, the Chief Executive established the Audit Committee. The committee reports directly to the Chief Executive and has the functions and responsibilities required by the FMA Act and regulations.

The committee's objective is to provide independent assurance and assistance to the Chief Executive on the MDBA's risk, control and compliance framework, and its financial statement responsibilities. In particular the committee is to ensure:

- a sound internal control framework is in place, including effective identification and management of business risks in the MDBA, with supporting procedures in place
- an appropriate fraud control plan, with supporting procedures
- reliable financial and management reporting systems
- compliance with applicable laws, regulation and government policies
- maintenance of an effective and efficient audit service.

The Audit Committee met four times during 2012–13 — on 3 September 2012, 15 February 2013, 24 April 2013 and 25 June 2013.

The committee's membership remained constant during the year, with the exception of the appointment of the General Manager, Communications, Engagement, Research and Compliance during the absence of the Executive Director Corporate and Business Services Division. The members and number of meetings attended are as follows:

- Paul McGrath (independent member and Chair) — four meetings
- Executive Director River Management Division (Deputy Chair) — three meetings
- Executive Director Environmental Management Division (member) — three meetings
- Executive Director Corporate and Business Services Division (member) — three meetings
- General Manager Water Resource Planning (member) — three meetings
- General Manager, Communications, Engagement, Research and Compliance (member 23 July 2012 to 1 October 2012) — 1 meeting.

All meetings considered:

- actions arising from previous meetings
- implementation of audit report recommendations
- development and progress with the annual internal audit plan
- internal audit reports
- reports from the Australian National Audit Office
- progress with the MDBA financial statements and Certificate of Compliance
- risk management, fraud control and business continuity issues.

The September 2012 meeting focused particularly on the 2011–12 financial statements and Certificate of Compliance to enable the committee to make recommendations to the Chief Executive regarding their sign off.

The committee also considered the internal audit reports which were finalised this year, see page 108, and examined the MDBA's progress with business improvement activities in the areas of project management, work health and safety, and workforce planning at its April meeting.

The sections on risk management, Comcover, fraud control, business continuity and ICT disaster recovery illustrate the range of work carried out by the Audit Committee.

Risk management

The MDBA operates in a complex environment in which it is responsible for managing a large assets portfolio and for developing and implementing a regulatory framework, under a high level of political scrutiny.

As a result the MDBA is subject to significant reputational and stakeholder risk, as well as risks to its finances and to achieving its environmental objectives. As a person conducting a business or undertaking under the *Work Health and Safety Act 2011*, the MDBA also has significant responsibilities (and associated risks) for the health and safety of its workers.

The MDBA aims to embed risk management and a risk management culture across all levels of the organisation. The MDBA also aims to actively identify, manage and report on risk throughout the organisation and to continuously improve its management of risk in a cost effective manner.

Diver at Lock 9 in the 1920s (MDBA historical images collection).

The MDBA's risk management framework includes a range of policies and procedures for managing risks, together with our Business Continuity Plan, ICT Disaster Recovery Plan and Pandemic Business Continuity Plan.

The Audit Committee monitors enterprise risks, implementation of risk treatments and development of risk management policies and procedures (including fraud and business continuity).

In 2012–13 a new MDBA risk management policy was developed and the MDBA Risk Management Plan was significantly updated. This plan focuses on risks that could affect achievement of key corporate objectives and most, if not all, MDBA functions and processes. It identifies six strategic risks that are monitored by the Executive as well as the Audit Committee, and eight operational risks that are monitored by the committee and reported to the Chief Executive.

Risk management was successfully incorporated into corporate and business planning and quarterly reporting in 2012–13.

Training in risk management was also provided to interested staff throughout the year.

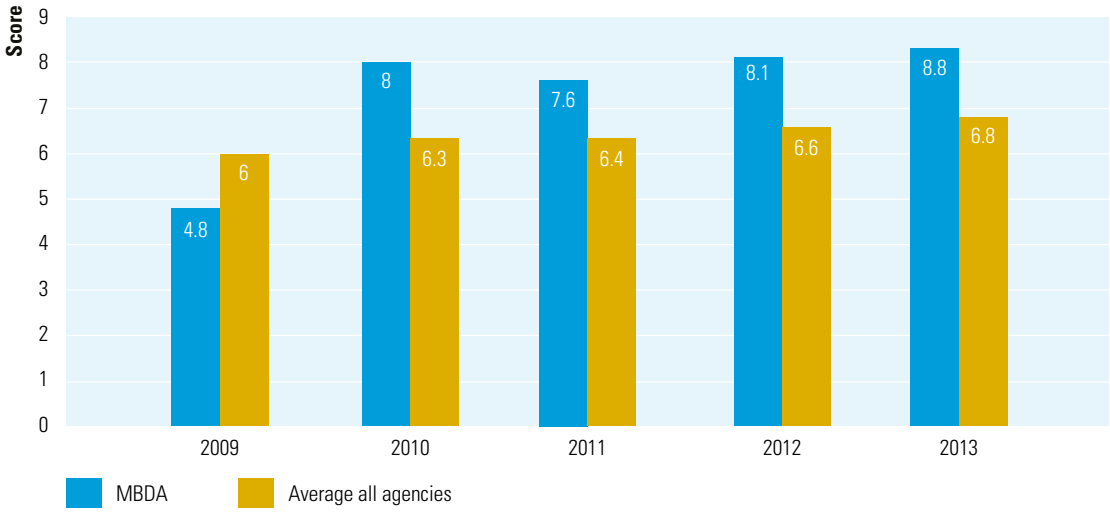
Comcover

The MDBA's insurable risks are identified as part of Comcover's insurance renewal process and are reassessed annually.

During 2012–13, the MDBA again took part in the annual Comcover Risk Management Benchmarking Survey. The survey included 143 Australian Government agencies (87% of Comcover's insurance portfolio), and the MDBA achieved its best result since it began participating in the survey in 2009 — 8.29 out of 10 in 2012 compared to 4.8 in 2009.

This result led to a reduction of 8.91% in our 2013–14 Comcover insurance premium. Comcover assessed the MDBA's overall risk performance as 'structured' in its maturity level, with our greatest strengths being our integration, positive risk culture and review and evaluation. Figure 5.1 compares the MDBA's survey scores over the five years from 2009 against the average of all survey participating agencies.

Figure 5.1. MDBA Comcover risk management benchmarking survey results 2009 to 2013



The MDBA is covered by Comcare for risks associated with injury to employees.

Fraud control and investigations

MDBA's fraud control policy is set out in our Fraud Control Plan 2011–13, on our intranet and external website and in our contract documents. In 2012–13 we began planning for the 2013–2015 fraud risk assessment and developing the Fraud Control Plan 2013–15. The Fraud Control Plan 2011–13 continued to be monitored by the Audit Committee at its quarterly meetings throughout the year.

All MDBA employees with financial delegations are required to address their compliance with the fraud control guidelines during the quarterly Certificate of Compliance process and to report any known instances of fraud or potential fraud-related occurrences.

On-line training module on fraud, conflict of interest and ethics

All new MDBA employees are given fraud awareness and Australian Public Service Code of Conduct training during their inductions.

During 2012–13, we developed an on-line training module covering fraud, conflict of interest and ethics. Available to all MDBA employees, this program aligns with training requirements in employees' performance management plans, as well as awareness and training requirements in the Commonwealth Fraud Control Guidelines 2011. We were able to track how many staff undertook training using the module.

Fraud investigations

No incidences of fraud were identified during 2012–13.

Business continuity and information communication technology disaster recovery plans

The MDBA business continuity plan describes arrangements to ensure the continuity of our key services after a significant, unexpected and disruptive incident. The MDBA ICT disaster recovery plan provides recovery procedures to address the potential loss of critical ICT resources (e.g. hardware, data and voice network equipment, and critical business data and systems).

In 2012–13 we significantly revised and updated our business continuity documents, including our business continuity policy; business continuity, pandemic business continuity and ICT disaster recovery plans; and emergency response procedures. The plans were underpinned by a new business impact assessment.

In 2012–13 KPMG began testing our business continuity framework. This will be accompanied by training for staff and managers who are involved in work on the framework.

Internal audit

Internal audit services during 2012–13 were provided by KPMG. The Internal Audit Plan 2012–13 was developed after the MDBA's enterprise risks were considered and following discussions with senior managers. The plan provides a balance between compliance and performance audits.

Internal audit reports were finalised in 2012–13 on the following:

- procurement and contract management
- management of contractors
- Protective Security Policy Framework
- Water Trade Program
- Native Fish Strategy Program closure
- long service leave.

No serious breaches were found in the audits.

By June 2013 our internal auditors, KPMG, were working on internal performance audits of environmental water and our internal audit framework (relating to water auditing): developing the business continuity framework testing; planning for the 2013–15 fraud risk assessment and developing the 2013–15 fraud control plan. The 2013–14 internal audit plan was also finalised at the end of 2012–13.

Implementation of internal audit report recommendations continued to be monitored by the Audit Committee at its quarterly meetings.

Certificate of Compliance

The MDBA online Certificate of Compliance system is the cornerstone of our wider corporate governance model and helps to improve understanding of the financial management framework, and strengthen agency processes. The system enables the Chief Executive to report on MDBA compliance with the Australian Government's financial management framework to the Minister for Sustainability, Environment, Water, Population and Communities (the Commonwealth Minister for Water) and the Minister for Finance and Deregulation, by 15 October each year.

Compliance performance is assessed against the:

- *Financial Management and Accountability Act 1997*
- Financial Management and Accountability Regulations 1997
- Financial Management and Accountability (Finance Minister to Chief Executives) Delegation 2007 (No. 2), as amended from time to time
- Australian Government's foreign exchange risk management requirements
- legal and financial requirements for the management of special accounts
- Australian Government's financial management policies.

All staff holding financial delegations, including senior executives, must complete regular compliance assessments. During 2012–13, the MDBA identified 77 reportable breaches. A review of compliance results indicated that most matters did not entail significant risk.

The system, was reviewed in May 2013 following the release of new guidance by the Department of Finance and Deregulation to take into account changes to the FMA Act and regulations, including the response to the High Court's decision in *Williams v Commonwealth* (2012) ALR 410 and the updated *Commonwealth Grant Guidelines*. Changes arising from the review are being incorporated into a new on-line tool for use in 2013–14; this tool will enable on-going, rather than quarterly, reporting and greater capacity to survey staff on financial management compliance and processes.

Secretariat services

During 2012–13 the Secretariat provided quality secretariat support to 48 meetings, which included the Authority, the Legislative and Governance Forum on the Murray–Darling Basin (which convenes as the Murray–Darling Basin Ministerial Council when making decisions under the *Water Act 2007* and Murray–Darling Basin Agreement), the Basin Officials Committee, the Basin Community Committee as well as other high level committees.

Support was also provided for two new advisory committees — the Northern Basin Advisory Committee and the Advisory Committee on Social, Economic and Environmental Sciences.

The Secretariat team provided logistical, operational and technical support services to ensure that these meetings were productive and well-managed. They also produced and controlled the quality of meeting agendas; compiled meeting papers, minutes, reports and decision registers for each committee; and distributed committee papers and responses to out-of-session decisions in a timely manner. The team met their key performance indicators and the support provided during 2012–13 was rated highly by committee members.

The team also processed claims and entitlements for committee chairs and members, and ensured that each member was aware of their responsibilities and obligations under legislation and Australian Government guidelines.

As part of its work the team has cultivated strong relationships within the MDBA, as well as with other Australian Government agencies, Basin state government agencies and community committees.

Appendix A includes a summary of committee meetings.

External scrutiny

Auditor-General reports

The Auditor-General carries out the annual audit of the MDBA's financial statements. The Audit Committee oversees the implementation of recommendations made in these audits. No additional audits undertaken by the Auditor-General involved the MDBA specifically in 2012–13.

The MDBA also actively reviews all cross-agency reports, better practice statements and guides issued by the Auditor-General. Where these reports were considered relevant to MDBA operations, we evaluated our policies and/or procedures with a view to possibly implementing report recommendations.

The Audit Committee oversees implementation of these recommendations.

Commonwealth Ombudsman

The Commonwealth Ombudsman made no formal reports relating to MDBA during 2012–13.

Parliamentary committees

House of Representatives Committee

On 29 May 2012, the Minister for Sustainability, Environment, Water, Population and Communities, the Hon. Tony Bourke MP, asked the House of Representatives Standing Committee on Regional Australia to inquire into and report on certain matters relating to the proposed Murray–Darling Basin Plan.

The committee handed down its report on 6 July 2012, which contained four recommendations, two of which relevant to the MDBA. The government response to the four recommendations in the report can be found on the Parliament of Australia website <www.aph.gov.au>.

Senate Committee

On 6 February 2013, the Senate Standing Committee on Rural Affairs and Transport References Committee inquiry into the management of the Murray–Darling Basin was granted an extension of time for reporting to parliament from 30 November 2011 until 13 March 2013.

The report was tabled on 13 March 2013 and contained 23 recommendations, 13 of which were directly relevant to the Murray–Darling Basin Authority. The government has not tabled a response to the report at the time of preparing the annual report.

Judicial decisions and tribunals

No judicial decisions or decisions of administrative tribunals relating to the MDBA were made during 2012–13.

Legal services

The MDBA's legal services are provided mainly through an in-house legal team. We also use legal services through the Legal Services Multi-use List established by the Attorney-General's Department including, accessing a parcelling arrangement established by the Department of Agriculture, Forestry and Fisheries.

During 2012–13, internal demand for legal services was associated with finalising the Basin Plan and issues related to its implementation. The Australian Government Solicitor was engaged to assist us with drafting services.

Important MDBA initiatives relating to legal services during the past year included:

- contributing to the development of regulations under the Water Act
- coordinating reviews required by the Murray–Darling Basin Agreement
- providing high-level legal services as part of developing the Basin Plan and its associated documentation
- ongoing training to MDBA staff on privacy and freedom of information obligations
- advising all MDBA divisions about program delivery and legislative obligations
- implementing business management systems for obtaining legal services from external legal service providers to ensure compliance with the Legal Services Directions 2005.

Privacy

The MDBA treats personal information in accordance with the *Privacy Act 1988*, including its information privacy principles that controls how we collect, store and use personal information. Our internet privacy notice is available on our website.

The MDBA registered with the Office of the Australian Information Commissioner as a partner in Privacy Awareness Week 2013 (28 April to 4 May 2013), the primary privacy and education event in the Asia–Pacific region. This year's theme of 'privacy law reform' reminded government agencies to start preparing for 2014, when a set of new and harmonised privacy principles for regulating handling of personal information will come into operation.

Freedom of information

The Freedom of Information Act 1982 gives individuals the right to view documents held by Australian Government ministers and agencies, with some exceptions.

During 2012–13, MDBA received eight freedom of information requests. Our freedom of information policies and procedures were updated in line with the Australian Information Commissioner's freedom of information guidelines.

Under the Freedom of Information Act, the MDBA must publish a range of information on our website as part of the Information Publication Scheme. This information includes our structure, functions, appointments, annual reports and consultation arrangements, and contact details for our freedom of information officer. Information released following freedom of information requests and information routinely provided to parliament is also published online. Our Information Publication Scheme Plan outlines our approach to the scheme and what we include in our entry and publish online. The MDBA's Information Publication Scheme can be found online at <www.mdba.gov.au>.

Documents we hold

The MDBA holds the following types of documents:

- representations to the Commonwealth Minister for Water and to the MDBA on various aspects of government activity
- working files, including correspondence, analysis and advice
- internal administrative records, such as personnel files, staffing and financial records and office procedures
- submissions and comments from the public and stakeholders
- papers relating to new and amending legislation, drafting instructions and draft legislation
- briefing papers and submissions prepared for the Commonwealth Minister for Water
- documents relating to meetings and committees (such as agenda, minutes and reports)
- copies of questions asked in parliament, together with related replies
- tender documents
- government (including agency) policy statements, communiqués, guidelines and media releases
- contracts
- educational materials
- reports on research, water audits and MDBA activities.

How to lodge a freedom of information request

Your request must:

- be in writing
- state that the request is an application for the purposes of the Freedom of Information Act
- provide information about the document(s) to assist us to process your request
- provide an address for reply.

Please note charges may apply.

More information

For more information, contact MDBA's freedom of information officer in one of the following ways:

FOI Officer
Murray–Darling Basin Authority
GPO Box 1801
Canberra ACT 2601

email: foi@mdba.gov.au
Phone: 61 + 2 6279 0429
Fax: 61 +2 6248 8053

Directions under section 175 of the Water Act

No directions were given by the Commonwealth Minister for Water under section 175 of the Water Act.

Advice to government

The MDBA advises the Commonwealth Minister for Water through briefings and the ministerial workflow system of the Department of Sustainability, Environment, Water, Population and Communities to ensure the minister receives timely advice. Table 5.1 sets out the volume of advice provided to the minister during 2011–12 compared to previous years.

Table 5.1. Volume of ministerial advice 2008–09 to 2012–13

TYPE OF ADVICE	2008–09	2009–10	2010–11	2011–12	2012–13
Ministerial correspondence	12	21	6	0	0
Briefs	34	87	34	32	11
Question time briefs	3	6	10	0	0
Senate Estimates questions on notice	15	27	45	199	68

OUR PEOPLE

Highlights

- We designed, developed and implemented e-Recruit, a fully automated on-line recruitment system.
- We enhanced the MDBA's human resource system (CHRIS21), including migration to a Windows platform and improved employee self-service options.
- We delivered a comprehensive learning and development program, including a suite of support training and information sessions associated with a major change initiative for the MDBA.
- We ensured ongoing delivery of the MDBA's flagship leadership program.
- We developed and implemented an MDBA-wide transition process resulting from a reduction in joint program funding.
- We implemented changes resulting from the *Work Health and Safety Act 2011*, including a mandatory on-line WHS training program for all employees, volunteers, secondees and workers contracted through a labour hire firm.

Learning and development

The MDBA continued to focus on learning and development through a mix of external and internal training programs (about 150 programs), supporting tertiary studies and internal seminars to ensure the ongoing development of its employees.

Australian Public Service Commission services were used by more than 28% of the workforce, covering areas such as report writing, influencing skills, strategic thinking skills, team management, leadership and career development. Developing information technology skills continued to be an area of focus, with at least 12% of MDBA employees undertaking training in either generic office packages such as Excel and Microsoft Word or packages specific to their roles.

During 2012–13, the MDBA provided guidance and support to employees as the organisation went through a major transition. With the reduction in joint program funded positions and the change in focus from developing to implementing the Basin Plan, the MDBA offered all employees a range of in-house training opportunities to assist with managing and coping with change. These seminars included: change management, building resilience and stress management, healthy living and Australian Public Service applications and interview skills.

Internal training courses were a major platform of the learning and development program. In 2012–13 these included courses on advanced writing skills, Senate estimates and parliamentary briefs, risk management, bullying in the workplace, and Australian Public Service values and code of conduct.

We continued to support staff undertaking tertiary studies, with 23 employees approved as students under our study assistance program, including two employees studying for doctorates. The most popular areas of tertiary study included business, integrated water management, accounting and business communications.

Leadership

During 2012–13, one cohort of executive level (EL) 1 employees and one cohort of EL 2 employees participated in the MDBA Leadership Development Program. This three-month program combined structured learning in a series of facilitated workshops with experiential learning in the form of on-the-job projects applicable to the MDBA's operational needs. Key objectives of the program were to:

- build a strong leadership cohort across the organisation with the flexibility to support a matrix workforce structure
- recognise and develop talented executive level staff for succession to senior executive service positions within the MDBA.

Over the next two years, all EL employees will participate in the program, which offers:

- EL1 employees the opportunity to prepare for future leadership within the MDBA by shaping their strategic thought and leadership style
- EL2 employees the opportunity to improve their own leadership capacity by exploring, as individuals and in cross-divisional groups, the concepts, values and strategic challenges of leadership with a view to driving cultural change throughout the organisation.

The MDBA also focused on senior executive staff (SES) leadership development, with a number of SES participating in leadership programs, including learning groups that bring together SES from agencies similar in size and nature to the MDBA to share ideas and issues.

Internal seminars

The MDBA seminar series has focused on supporting the professional development of our staff. The series created opportunities for discussion across team boundaries with internal and external subject matter experts. External presenters came from a range of different organisations, from a number of educational institutions, including the University of Tasmania and the University of Melbourne, through to regional groups such as the Moree Cotton Growers.

The seminars covered diverse topics, such as managing risk in irrigated agriculture, and cultural flows. Internal presenters focused on program achievements, sharing specialist knowledge, updates of corporate information and conference reports. The seminars are an important way for staff to share information and their expertise with the wider organisation. In 2012–13 the number of staff wishing to present increased.

Coaching program

Coaching is offered primarily to EL1 and EL2 employees as a tool to improve leadership capability and team management and to enhance effectiveness. Coaching also formed an integral component of the Leadership Development Program.

The Employee Coaching Program has been strengthened by engaging providers that comprise several professional organisations with various specialities. By building long-term relationships with coaching professionals, MDBA employees are able to gain confidence and enhance their individual effectiveness, team management and leadership skills.

Performance management

The MDBA's performance management framework — emphasising feedback, appraisal and development — provides the opportunity for biannual performance management reviews, learning needs analysis and career development focus.

In 2012–13, the MDBA conducted information sessions on performance management and workplace policies. Two workshops for staff were conducted on effective performance feedback and aimed to encourage staff to:

- understand their responsibilities in giving performance feedback
- develop strategies required for meaningful performance feedback conversations
- identify the value of feedback in building capability
- develop strategies and skills necessary when performance does not match the original performance management plan
- assist and provide advice in development needs and longer career aspirations.

The MDBA encourages employee participation in the performance management process. The human resources team actively supports and helps employees and managers to resolve conflict and maintain workplace relationships by ensuring disputes do not escalate or become protracted.

Engineers at Lock 9 in the 1920s (MDBA historical images collection).

OUR WORKFORCE

Workforce planning

Throughout 2012–13 the MDBA's human resources team continued to work with line managers to better understand operational workforce issues and implement workforce strategic plan actions.

During 2012–13 we implemented a revised organisational structure that took account of the transition from developing the Basin Plan to implementing it, as well as the reduction in jurisdictional contributions for joint program activities. We also successfully implemented a process that saw employees affected by the transition redeployed within the MDBA.

Work began on implementing professional job streams and/or broadbands within the MDBA. A small working group began developing work level standards across three professional job streams used in the MDBA — engineering and science; legal; and public affairs. The standards will be finalised in 2013–14.

We continued to strengthen our leadership capability through the delivery of our Executive-level Leadership Program, with two cohorts (EL2 and EL1) successfully completing the challenging and high-impact five-day program. The program included facilitated interaction and structured exercises, action learning projects, guest speakers, small group discussion, executive coaching and the use of a 360° leadership instrument. We also continued to develop our SES officers by their participation in a range of leadership development opportunities.

We also reviewed our performance development and management arrangements during 2012–13, with increased emphasis placed on leadership performance and development and an expanded rating scale to take account of employees who were new to a position.

During 2012–13 our employees participated in a range of learning and development opportunities aimed at widening and deepening our skill base. These opportunities included support for tertiary study, internal short-term development opportunities and over 150 in-house and external training programs.

Our entry-level cadetship and graduate programs continue to impact on our classification profile, with 2012–13 seeing a slight increase in the percentage of APS 3 and APS 4 level officers in the MDBA.

Australia Day achievement awards

The Australia Day awards ceremony is a celebration of achievements that recognises the contribution individuals and teams have made to the MDBA.

The MDBA recognises that building a culture that values its employees and recognises and rewards outstanding performance is a critical element in attracting and retaining the best people by improving job satisfaction and increasing staff motivation and productivity.

Awards were presented in January at an all-staff get together to celebrate Australia Day.

This year a total of 23 nominations were received — 10 individual nominations and 13 team nominations. Individual recipients were John Waterworth, Helen Templeton, Donna Peel and Andy Close. Team awards recognised the River Murray team, social club, Secretariat, Native Fish Program, and teams contributing to the Murray–Darling Basin Plan.

The MDBA social club was recognised in our Australia Day awards. One of the regular events organised by the social club is the children's Christmas party (photo courtesy of MDBA social club).

Determining senior executive service employee remuneration

The MDBA had 12 senior executive employees as at 30 June 2012, this does not include the Chief Executive who is employed as a statutory officer. Rates of pay for SES employees are set by the MDBA Chief Executive after consultation with individual employees and in accordance with the SES remuneration policy. All SES employees are covered by s. 24(1) Determinations.

Performance pay

Senior executive service and non-SES MDBA employees are not eligible for performance pay. However, a non-SES employee at the top or penultimate increment point in their salary range may be eligible for a one-off bonus as result of a superior performance rating.

Individual non-senior executive service terms and conditions

Where appropriate, special terms and employment conditions are provided to non-SES employees through individual flexibility agreements.

Enterprise agreement

The current enterprise agreement (EA) came into effect on 24 August 2011 and has a nominal expiry date of 30 June 2014. The EA was negotiated under the *Fair Work Act 2009* and the Australian Government Bargaining Framework 2011.

Under the current EA employees received access to enhanced provisions and entitlements, including 9% salary increase over the life of the agreement (4% July 2011; 3% July 2012 and 2% July 2013).

Staffing profile

The following tables summarise MDBA staffing statistics for 2012–13.

Table 5.2. MDBA staff by employment agreement as at 30 June 2013

CATEGORY	2011–12	2012–13
Enterprise agreement	306	287
Non-SES individual flexibility agreements	13	14
SES individual s. 24 (1) determinations	14	12
Chief Executive (CE)	1	1
Total	**334**	**314**

Note: The Chair and the other four part-time members of the Authority are not included.

Table 5.3. Salary range for MDBA employees, and gender, as at 30 June 2013

CLASSIFICATION	SALARY RANGE ($)	FEMALE	MALE	TOTAL
APS 1	42,458–46,208	2	0	2
APS 2	48,891–53,207	2	0	2
APS 3	56,231–61,088	10	1	11
APS 4	62,799–68,223	19	5	24
APS 5	70,511–77,602	26	13	39
APS 6	80,118–88,179	47	28	75
EL 1	95,948–105,555	46	46	92
EL 2	111,613–131,539	14	42	56
SES	187,132–259,350	4	8	12
CE	–	1	0	1
Total		**171**	**143**	**314**

Note: The Chair and the other four part-time members of the Authority are not included.

Table 5.4. Salary range for MDBA non-SES employees on individual flexibility arrangements as at 30 June 2013

CLASSIFICATION	SALARY RANGE ($)
EL 1	111,271–122,204
EL 2	134,170–190,000

Table 5.5. Age profile of MDBA staff as at 30 June 2013

AGE (YEARS)	ONGOING	NON-ONGOING	TOTAL
Under 25	11	0	11
25–34	72	8	80
35–44	93	7	100
45–54	71	8	79
55–64	38	2	40
65+	4	0	4
Total	**289**	**25**	**314**

Table 5.6. MDBA staff by equal employment opportunity group as at 30 June 2013

	FEMALE	NON-ENGLISH SPEAKING BACKGROUND	INDIGENOUS	PEOPLE WITH A DISABILITY
Ongoing	157	37	0	7
Non-ongoing	14	4	0	2
Total	171 (50%)	41 (13%)	0 (0%)	9 (3%)
Volunteered personal data	100%	99%	97%	95%

Recruitment

During 2012–13, the MDBA advertised 49 positions externally, attracting 1,530 applications, and 65 temporary vacancies, which were advertised internally.

In January 2013 we readvertised the MDBA non-ongoing register and over 250 candidates registered. The register was implemented as an alternative for managers to access quality non-ongoing candidates instead of relying on external recruitment agencies. This has resulted in a significant saving for MDBA.

During 2012–13 we implemented an upgrade of e-Recruit, the online recruitment system used by the MDBA. The upgrade has further streamlined current recruitment processes and helps us reduce the turnaround time in recruitment processes. The upgrade included moving to an online requisition process, which allowed the human resources team to better manage the recruitment process, including greater care and communication with internal and external candidates.

The upgrade also enabled us to produce more detailed and accurate management reports to monitor and further improve the recruitment process. The report functionality will reduce the need to maintain data outside the system and improve the quality of information provided for external reporting requirements.

The MDBA online induction program continued to provide new employees with a comprehensive introduction to the MDBA, which was enhanced during 2012 with a full and inclusive work, health and safety module, which all employees were required to participate in and complete successfully.

Graduate program

In 2012–13 we recruited eight graduates from a variety of backgrounds, two of whom came through from our cadetship program. Graduates are supported in their professional development through a mentoring program and additional training sourced from various professional bodies and training providers.

Graduates complete placements in three different areas and undertake a comprehensive development program — the Graduate Development Program — through the Australian Public Service Commission. This training is designed to equip graduates with the skills and knowledge they will need to make a meaningful contribution to the MDBA and the Australian Public Service.

In the second half of the year we started recruiting for the 2014 graduate intake and received 312 applications. We plan to recruit up to five graduates in 2014, including those cadets advanced through the MDBA cadetship program.

Cadet and trainee programs

The Murray–Darling Basin Authority Cadetship Program was continued in 2012–13 with four cadets employed. Of these, two cadets finished their studies in 2012 and were advanced through the cadetship program to the 2013 graduate program, while the others continued their studies and are due to finish at the end of 2013.

This program was implemented to address our demographic and classification imbalance and as a part of the workforce planning of the MDBA.

The MDBA is actively involved in all entry-level Australian Public Service Pathways entry level programs.

Graduates for 2013, their backgrounds include engineering, landscape architecture, science, international relations and law.

Diversity

The MDBA continues to support equity and diversity within the workplace through its Workplace Diversity Program, the Indigenous employment strategy and the disability strategy and action plan.

We are committed to being a high performance agency that embraces the principles of equity and diversity in our daily business. The workplace diversity strategy promotes strategies using the flexibilities in the enterprise agreement to provide an inclusive work environment by recognising, respecting and valuing individual differences, providing a fair, harmonious and safe workplace and offering opportunities for all employees to achieve their full potential.

During 2012–13, we participated in the Australian Public Service Commission's Pathways entry-level recruitment programs, including the Indigenous Graduate Program and Indigenous Cadetship Program which aim to assist and improve Indigenous representation within the MDBA. When advertising our Graduate Program we encourage applications from mature-age students and Indigenous people.

The MDBA continues to work in partnership with Aboriginal Nations throughout the Murray–Darling Basin.

Disability

The MDBA is committed to ensuring that people with disability are afforded the same access to information and opportunities to participate and contribute to our workplace and our programs as the rest of the community.

The MDBA's Disability Strategy and Action Plan identify strategies and support measures that assist people with disability to access our programs, policies and information. We aim to work together in an inclusive workforce and build a culture that is inclusive of people with disability. The Action Plan sets in place our strategies to do so.

The MDBA complies with the Australian Government accessibility requirements for online access and publishing, and in recruitment processes we are proactive in the use of assistive technology, furniture and equipment to assist employees with their duties.

Places we come from

MDBA staff come from around the Basin, around Australia and around the world. We come from more than 30 countries including: Sudan, Burma, Sri Lanka, New Zealand, Iran, Wales, Ghana, Ireland, Bangladesh, Zimbabwe, England, South Africa, Netherlands, Norway, Nepal, Canada, USA, Germany, Switzerland, Pakistan, India, Brazil, Papua New Guinea, China, Uganda, Taiwan, Romania, United Arab Emirates, Bahrain and Bhutan.

WORK HEALTH AND SAFETY

Executive commitment, work health and safety structure and oversight

Under the *Work Health and Safety Act 2011*, the MDBA comprises two 'persons conducting a business or undertaking' (PCBU): the six-member Murray–Darling Basin Authority (the Authority), established under s. 171 of the *Water Act 2007*, and the Commonwealth, represented by the MDBA, established under s. 206 of the Water Act. Both PCBUs have responsibilities under the Work Health and Safety Act for their workers, workplaces and visitors to their workplaces.

All parties to the MDBA Enterprise Agreement 2011–14 are committed to the safe operation of all equipment, safe working practices and a healthy work environment for all employees under applicable Work Health and Safety Act obligations.

The MDBA's health and safety management arrangements were revised and updated in 2012–13 to reflect the new work health and safety framework. This document includes Executive commitment to the maintenance of safe and healthy MDBA workplaces.

Effective communication and consultation

All MDBA officers and other managers are responsible for consulting and cooperating with workers on work health and safety. During 2012–13 work health and safety awareness, training, communication, consultation and coordination continued to be undertaken through:

- email, intranet, posters and signs as required
- mandatory induction and training courses, and MDBA-wide information sessions
- appropriate forums, in particular the health and safety committee
- consultations with health and safety representatives in each work group
- procedures to consult with PCBUs that share responsibility for workers with the MDBA.

The health and safety committee continued to be the major body for workplace consultation on work health and safety matters, including new or revised work health and safety policies, guidelines and procedures.

Initiatives ensuring workers' health and safety

In addition to mandatory on-line work health and safety training, we undertook initiatives to ensure workers' health and safety in 2012–13 including:

- regular workplace inspections
- offering influenza vaccinations to all employees
- providing an annual health and wellbeing allowance, and an annual health and wellbeing week
- health and safety posters in the workplace
- developing and updating internal policies and procedures and provision of this information on our intranet
- 80 workstation assessments by qualified occupational therapists and providing ergonomically suitable equipment recommended as part of these assessments
- providing an employee assistance program to assist employees and their families
- providing early intervention services to prevent development of chronic injury or illness
- maintaining and supporting a network of harassment contact officers, first aid officers, health and safety representatives and emergency wardens through paid training, dedicated work time and allowances.

In recognition of the growing cost and incidence of musculoskeletal disorders and psychosocial issues across Australian Government agencies, including the MDBA, Comcare was invited to address divisional meetings and provide training on preventing and managing musculoskeletal disorders. Further training on bullying and harassment as well as safe manual tasks is planned for 2013–14.

Health and safety outcomes achieved as a result of initiatives

Tracking hazard and incident reports and carrying out regular workplace inspections in designated work groups by trained health and safety representatives, resulted in identifying and following-up existing and emerging work health and safety issues. Almost all issues identified in MDBA workplaces were fixed during 2012–13.

Assessing 80 workstations has helped to ensure that workers are not injured because of poorly set up workstations, inadequate or inappropriate equipment and environments, or inappropriate work practices (e.g. not taking rest breaks).

By providing information and training about the new work health and safety requirements, we have ensured greater worker awareness of the new framework and responsibilities.

Statistics on workers compensation claims, contacts with the employee assistance provider and harassment contact officers have highlighted the importance of musculoskeletal and psychosocial issues as work health and safety risk factors. A number of measures were introduced to increase awareness and improve prevention and management of these.

An independent audit of MDBA's compliance with the new work health and safety framework will be undertaken in 2013–14.

Work health and safety statistics comparison

Table 5.7. Work health and safety statistics

	2010–11	2011–12	2012–13
Internal reports on workplace hazards and incidents	24	59*	50
Lost time caused by incident and injury not reported to Comcare (staff days)	10.5	2	8
Lost time caused by incident and injury reported to Comcare (staff days)	4	17	0
Incidents reported to Comcare	2 a rate of 6.6 incidents per 1,000 full-time equivalent employee	5 a rate of 16.7 incidents per 1,000 full-time equivalent employees	0
Lost time because of rehabilitation cases (staff days)	91.47 equates to 42.9 weeks per 1,000 full-time equivalent employees	47.47 equates to 31.81 weeks per 1,000 full-time equivalent employees	166 equates to 110.67 weeks per 1,000 full-time equivalent employees

*This increase was largely due to the opening of a new office for one MDBA division and extensive refurbishment of the main MDBA office and a high volume of repetitive keying tasks throughout the agency.

Comcare investigations conducted or notices issued

Comcare did not conduct any investigations or issue any notices to the MDBA under the Work Health and Safety Act during 2012–13.

Comcare premiums

During 2012–13, MDBA had four claims with Comcare, with a total cost of $105,682.38. The average cost of claims was $26,420.60 with a claim frequency of $830 per $1 million-payroll. In 2012–13, the Comcare premium was $628,621, the rate increasing to 1.92% of payroll from 1.39% in 2011–12.

Table 5.8. A comparison between Comcare claims and premiums

	2011–12	2012–13
Number of claims	5	4
Total cost of claims	$124,407	$105,682
Average cost of claims	$24,882	$26,421
Claim frequency per $1 million payroll	$804	$830
Comcare premium	$385,445	$628,621
Premium percent of payroll	1.39*	1.92

*This figure was reported as 1.38 in last year's annual report but was rounded up to 1.39 by Comcare

Accident and dangerous occurrence statistics

Table 5.9. MDBA incidents notified from 2009–10 to 2012–13

NOTICE TYPE	2009–10	2010–11	2011–12	2012–13
Deaths	0	0	0	0
Serious personal injury	2	2	5	0
Dangerous occurrences	0	0	0	0
Incapacity > 30 working days/shifts	0	0	0	0

OUR PLANNING AND FINANCES

Highlights

- Implemented new initiatives to improve procurement processes and outcomes.
- Refined internal financial and management reporting to the executive.
- Continued developing and refining key accounting and business related policies and guidance, including the Chief Executive Instructions and policies focusing on accounting for the infrastructure and intangible assets managed by the MDBA.
- Continued to enhance our electronic reporting systems, including the online Certificate of Compliance system.
- Designed, developed and implemented a new organisational level performance reporting framework.
- Redesigned and developed a restructured 2013–14 corporate plan that takes account of the Basin Officials Committee recommendations of the Review of the Joint Activities Taskforce.

Business planning

The MDBA's strategic plan articulates our strategic direction, goals and objectives as they relate to the MDBA's functions under the Water Act and the Murray–Darling Basin Agreement. The strategic plan provides the foundation for all our business planning processes and obligations including development of section-level business plans, the corporate plan and input into the Australian Government's Portfolio Budget Statements.

During the latter part of 2012–13 the MDBA implemented a revised organisational structure that took account of:

- proposed joint-program funding contributions from 2013–14
- new activities proposed to meet Basin Plan obligations for constraints management and a sustainable diversion limit adjustment mechanism
- closer alignment of Australian Government-funded activities to facilitate implementation of the Basin Plan.

Corporate plan

The MDBA corporate plan for 2012–13 to 2015–16 was approved in August 2013. The plan sets out the activities, including new capital works and operational maintenance programs, to be undertaken to achieve MDBA's outcomes and objectives as set and agreed by the:

- six-member Murray–Darling Basin Authority for Australian Government-funded activities
- Murray–Darling Basin Ministerial Council for joint-funded activities.

The 2012–13 corporate plan took into account a decision by New South Wales to reduce its joint program funding contribution in 2012–13 by $19.798 million, with a further reduction of $3.53 million from 2013–14, as well as decisions by Ministerial Council to cease all funding for the Native Fish Strategy and Sustainable Rivers Audit programs from July 2013.

In 2012–13 we continued to clarify, agree on and implement a strategic direction to align objectives and aspirations of joint funding partners and our obligations under the Basin Plan.

Review of the Joint Activities Taskforce

During 2012–13 the MDBA participated in the Review of the Joint Activities Taskforce. The taskforce was established by the Ministerial Council to investigate options for introducing more cost-effective arrangements for delivering agreed MDBA joint functions from 2013–14 in the context of the future Basin Plan, by using new:

- organisational, delivery and governance models
- arrangements of ownership, control, management and operation of relevant assets
- funding models, including extending the application of user pays principles.

The taskforce met throughout the year and focused on developing budget options for the 2013–14 financial year. The Basin Officials Committee provided advice to the Ministerial Council in April 2013 that proposed that jurisdictional funding for the joint programs in 2013–14 be maintained at the same level as 2012–13, with the exception of New South Wales which had already advised a further reduction in funding of $3.53 million. This advice was accepted, with one change — that Queensland would also reduce its contribution by $0.944 million, and formed the basis of the 2013–14 to 2016–17 Corporate Plan.

The Basin Officials Committee will develop advice for the Ministerial Councils consideration on the longer-term funding and institutional governance arrangements by the end of 2013.

Performance reporting

Performance reporting during 2012–13 included:

- monthly financial reporting provided to the MDBA Executive
- quarterly workforce statistics and project management reports provided to the Executive, with monthly reports provided to business managers
- quarterly reports provided to the Audit Committee on implementing the risk management, fraud control, business continuity and disaster recovery plans, and internal and external audit reports.

During 2012–13 we also began work on developing an on-line integrated planning and reporting system that will streamline process and facilitate improved reporting on meeting Basin Plan obligations and our progress against the corporate plan.

Project management framework

During 2012–13, we further embedded the project management framework, supported by the Project Registration and Reporting System which underwent minor enhancements during the year. Definitive system documentation was completed, and 155 projects have been approved in the reporting system since its inception in December 2010.

Individual mentoring and internal group project management training sessions, especially for graduate and leadership development programs, continue to promote awareness of the usefulness and capabilities of the project management framework.

Financial management

During the year, the focus remained on enhancing the standards of our reporting, monitoring and evaluation systems and on maintaining a robust internal control framework.

This included a full revision of the Chief Executive's Instructions and additional procedural rules to further improve guidance available to staff on financial management arrangements, updated financial delegations and continued enhancement of the monthly executive financial reporting.

Financial performance

Revenues

During 2012–13, the MDBA received $50.7 million ($52.8 million in 2011–12) in Australian Government appropriations.

This sum included $41.3 million for Basin Plan functions. Other revenues included $9.4 million in interest from funds held in the Murray–Darling Basin Special Account (see page 10).

Expenditures

The MDBA's total expenditure for 2012–13 was $204.7 million compared to $199.6 million in 2011–12. Table 5.10 outlines the main features of our financial performance.

Table 5.10. MDBA financial performance 2012–13

	MDBA	2010–11 ACTUALS $'000	2011–12 ACTUALS $'000	2012–13 ACTUALS $'000	2012–13 VARIANCE $'000
Outcome 1 and total departmental	Revenue	175,687	172,170	155,802	(16,368)
	Expenses	218,588	199,512	204,729	5,217
	Surplus (deficit)	(42,901)	(27,342)	(49,126)*	(21,784)*

* Includes share of surplus from joint ventures plus other comprehensive income.

Financial position

The MDBA's net equity position reduced in 2012–13 by $49.1 million, to $106.1 million. This reduction was caused by an operating deficit of $49.1 million, funded from equity. The operating deficit and reduction in cash resources reflects planned activity to complete Environmental Works and Measures Program projects (see page 11).

Assets and asset management

The MDBA's financial and non-financial assets at the end of 2012–13 were $142.3 million and $12.2 million, respectively. Our financial assets consist of cash and cash equivalents, trade and other receivables. Our non-financial assets consist of ICT infrastructure and office fit-out and equipment.

Liabilities

Liabilities administered directly by the MDBA at the end of 2012–13 amounted to $48.3 million. Our liabilities mainly consist of amounts owing to suppliers and provisions for employee entitlements.

Total equity

The MDBA ended the year with a total equity of $106.1 million (see Table 5.11), consisting mainly of cash resources, minor fixed assets offset by trade creditors and employee liabilities.

Table 5.11. MDBA equity at 30 June 2013

MEASUREMENT	2010–11 $'000	2011–12 $'000	2012–13 $'000
Assets	227,653	207,879	154,456
Liabilities	45,039	52,607	48,310
Total equity	182,614	155,272	106,146

Discretionary grant programs

The MDBA did not make any discretionary grants during 2012–13.

Managed assets: joint ventures

The MDBA is the appointed manager for the following classes of assets:

- River Murray Operations assets
- water entitlements under The Living Murray Initiative.

The assets are controlled through two unincorporated joint ventures established to hold jurisdictional assets. The joint ventures were established through two agreements between partner governments:

- Asset Agreement for River Murray Operations Assets
- Further Agreement on Addressing Water Overallocation and Achieving Environmental Objectives in the Murray–Darling Basin — Control and Management of The Living Murray Assets.

At 30 June 2013, the River Murray Operations assets joint venture held net assets of $2.5 billion. The Living Murray joint venture held net assets of $434.4 comprising gross investment in water recovery measures of $695.4 million and an impairment loss of $261 million.

Procurement, grants and contract administration activities

Procurement

The MDBA conducted procurement activities in 2012–13 in accordance with the Commonwealth Procurement Rules.

We follow a devolved procurement framework that places responsibility for procurement with the appropriate financial delegate. To support these delegates, the MDBA has in place a series of policies and guidance, including Chief Executive's Instructions, which have specific references for procurement. During the year the Procurement Unit updated the procurement guidance and contract templates to improve the level of information available and enhance the useability of the templates. Ongoing training was also provided to staff on the procurement process.

The MDBA's Procurements and Contracts Unit provides advice and assistance to staff conducting procurements, which ensures compliance with relevant Commonwealth Procurement Rules, Chief Executive's Instructions, other policies and processes.

The unit, which is part of the Finance and Administration Section, also advises MDBA staff on probity and on maintaining standard tender and contract templates.

Performance against core purchasing policies

During 2012–13 the MDBA complied with all mandatory procurement procedures in the Commonwealth Procurement Rules.

Tender opportunities were advertised using the AusTender website at <www.tenders.gov.au>.

The Annual Procurement Plan for 2012–13 was published on the AusTender site in June 2012 and was updated as required on an ongoing basis during the year.

Reporting

All contracts with a value of $10,000 or more were reported on AusTender during 2012–13. In addition, the MDBA met the relevant requirements to report on the Senate Order on Government Agency Contracts for the calendar year 2012 and the financial year 2012–13.

All contracts with a value of $100,000 or more are listed on our website at <www.mdba.gov.au/about-mdba/tenders-grants>. This included the requirement to report to the Department of Finance and Deregulation on authorisations to spend public money under Regulation 10 of the *Financial Management and Accountability Act (Regulations) 1997.*

Consultancy services

The MDBA procures consultancy services in accordance with the Commonwealth Procurement Rules and the Chief Executive Instructions (based on the Department of Finance and Deregulation model chief executive instructions). Consultants are selected using the value-for-money principle.

Expenditure on consultancy contracts

During 2012–13, we entered into 84 new consultancy contracts, involving total actual expenditure of $4.7 million. In addition to new contracts, 36 ongoing consultancy contracts were active during the year, with a total actual expenditure of $2.1 million.

Details of contracts let by MDBA in 2012–13 to the value of $10,000 or more are available on the AusTender website at <www.tenders.gov.au>.

The list of consultancy contracts let in 2012–13 to the value of $100,000 or more is on our website <www.mdba.gov.au/about-mdba/tenders-grants>.

If you cannot access this list, please contact the MDBA and we will provide it to you in a suitable alternative format. You can contact us via our website, <www.mdba.gov.au/contact-us> or in the following ways:

Address:
Level 4
51 Allara Street
Canberra ACT

Mail:
GPO Box 1801
Canberra ACT 2601

email procurement@mdba.gov.au

Phone: 02 6279 0100 (Australia),
+ 61 2 6279 0100 (international)

Fax: 02 6248 8053 (Australia)
+ 61 2 6248 8053 (international)

Information on expenditure on contracts and consultancies is also available on the AusTender website.

Exempt contracts

During 2012–13, no standing offers or contracts in excess of $10,000 (GST inclusive) were exempted by the Chief Executive from publication on AusTender under the *Freedom of Information Act 1982*.

Access by the Auditor-General

The MDBA's consultancy agreements comply with Australian National Audit Office (ANAO) requirements. The standard long-form consultancy agreement allows for ANAO access; the short-form agreement does not include a specific provision allowing ANAO access, but does provide for an MDBA nominee to conduct audits of those contracts. Other agreements may include a requirement for ANAO access depending on the nature of the services.

Accommodation

The MDBA has two offices in Canberra, located at 40 and 51 Allara Street, Canberra City. We also maintain small office locations at 213 Greenhill Road, Eastwood, Adelaide, South Australia and at 123 Margaret Street, Toowoomba, Queensland. The combined premises are managed to meet the MDBA's existing and foreseeable accommodation needs.

OUR INFORMATION RESOURCES

Highlights

- Introduced a new corporate internet content management and information sharing system.
- Completed a major upgrade to the MDBA core systems and servers.
- Implemented the enterprise information strategy recommendations for improved mobile and unified communications services across the organisation.

Information communications technology

During 2012–13 we implemented the major recommendations of the enterprise information strategy. These included improving the agency's information-sharing and management infrastructure and significantly upgrading our digital records management systems.

Key accomplishments included:

- redeveloping our website using a new information architecture and navigation scheme, with a new look and feel and an upgraded content management system
- migrating the MDBA intranet (Billabong) to new information sharing architecture using Microsoft SharePoint
- developing automated workflows to streamline key internal processes and reporting needs
- migrating corporate databases, legacy systems and modelling servers to the MDBA virtual server infrastructure, reducing the complexity and cost of our software licencing and increased systems reliability and efficiency
- deploying new mobile device technology for the secure distribution of digital documents and other information to the Executive and MDBA staff.

Records management

During 2012–13 we continued to upgrade our digital records management systems. The records management team also focused on developing procedures and user training for SharePoint records storage and content management tools. This will work in conjunction with our corporate records management processes and ongoing user training and support, to further improve our records management practices and security processes.

Flood marker at St George (photo by Denise Fowler, MDBA)

FINANCIALS

MURRAY-DARLING BASIN AUTHORITY

STATEMENT BY THE CHIEF EXECUTIVE AND CHIEF FINANCE OFFICER

In our opinion, the attached financial statements for the year ended 30 June 2013 are based on properly maintained financial records and give a true and fair view of the matters required by the Finance Minister's Orders made under the Financial Management and Accountability Act 1997, as amended.

Signed

Rhondda Dickson
Chief Executive

30 October 2013

Signed

George Knezevic
Chief Finance Officer

30 October 2013

Australian National
Audit Office

INDEPENDENT AUDITOR'S REPORT

To the Minister for the Environment

I have audited the accompanying financial statements of the Murray-Darling Basin Authority for the year ended 30 June 2013, which comprise: a Statement by the Chief Executive and Chief Finance Officer; Statement of Comprehensive Income; Balance Sheet; Statement of Changes in Equity; Cash Flow Statement; Schedule of Commitments; Schedule of Contingencies; and Notes comprising a Summary of Significant Accounting Policies.

Chief Executive's Responsibility for the Financial Statements

The Chief Executive of the Murray-Darling Basin Authority is responsible for the preparation of financial statements that give a true and fair view in accordance with the Finance Minister's Orders made under the *Financial Management and Accountability Act 1997*, including the Australian Accounting Standards, and for such internal control as is necessary to enable the preparation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on the financial statements based on my audit. I have conducted my audit in accordance with the Australian National Audit Office Auditing Standards, which incorporate the Australian Auditing Standards. These auditing standards require that I comply with relevant ethical requirements relating to audit engagements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Murray-Darling Basin Authority's preparation of the financial statements that give a true and fair view 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 Murray-Darling Basin Authority's internal control. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of accounting estimates made by the Chief Executive of the Murray-Darling Basin Authority, as well as evaluating the overall presentation of the financial statements.

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

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Independence

In conducting my audit, I have followed the independence requirements of the Australian National Audit Office, which incorporate the requirements of the Australian accounting profession.

Opinion

In my opinion, the financial statements of the Murray-Darling Basin Authority:

(a) have been prepared in accordance with the Finance Minister's Orders made under the *Financial Management and Accountability Act 1997*, including the Australian Accounting Standards; and

(b) give a true and fair view of the matters required by the Finance Minister's Orders including the Murray-Darling Basin Authority's financial position as at 30 June 2013 and of its financial performance and cash flows for the year then ended.

Australian National Audit Office

John Jones
Executive Director

Delegate of the Auditor-General

Canberra
1 November 2013

Statement of Comprehensive Income
for the period ended 30 June 2013

	Notes	2013 $'000	2012 $'000
EXPENSES			
Employee benefits	3A	**37,013**	35,838
Suppliers	3B	**165,477**	161,617
Depreciation and amortisation	3C	**2,179**	2,049
Finance costs	3D	**41**	32
Write-down and impairment of assets	3E	**19**	58
Total expenses		**204,729**	199,594
LESS:			
OWN-SOURCE INCOME			
Own-source revenue			
Contributions from jurisdictions	4A	**100,187**	116,662
Other revenue	4B	**4,888**	2,619
Total own-source revenue		**105,075**	119,281
Gains			
Sale of assets	4C	**1**	6
Other gains	4D	**72**	55
Total gains		**73**	61
Total own-source income		**105,148**	119,342
Net cost of services		**(99,581)**	(80,252)
Revenue from Government	4E	**50,654**	52,828
Share of surplus/deficit of associates and joint ventures accounted for using the equity method	3F	**(112)**	82
Deficit attributable to the Australian Government		**(49,039)**	(27,342)
OTHER COMPREHENSIVE INCOME			
Changes in asset revaluation surplus		**(87)**	-
Total comprehensive loss attributable to the Australian Government		**(49,126)**	(27,342)

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

Balance Sheet

as at 30 June 2013

	Notes	2013 $'000	2012 $'000
ASSETS			
Financial Assets			
Cash and cash equivalents	5A	**5,320**	3,721
Trade and other receivables	5B	**136,585**	197,955
Investments accounted for using the equity method	5C	**346**	459
Total financial assets		**142,251**	202,135
Non-Financial Assets			
Land and buildings	6A,C	**2,185**	2,544
Property, plant and equipment	6B,C	**849**	639
Intangibles	6D,E	**8,875**	2,312
Other non-financial assets	6F	**296**	249
Total non-financial assets		**12,205**	5,744
Total assets		**154,456**	207,879
LIABILITIES			
Payables			
Suppliers	7A	**33,133**	37,493
Other payables	7B	**5,321**	5,489
Total payables		**38,454**	42,982
Provisions			
Employee provisions	8A	**9,223**	9,027
Other provisions	8B	**633**	598
Total provisions		**9,856**	9,625
Total liabilities		**48,310**	52,607
Net assets		**106,146**	155,272
EQUITY			
Parent Entity Interest			
Contributed equity		**(11,199)**	(11,199)
Reserves		**-**	87
Retained surplus		**117,345**	166,384
Total parent entity interest		**106,146**	155,272
Total equity		**106,146**	155,272

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

Statement of Changes in Equity
for the period ended 30 June 2013

	Retained earnings		Asset revaluation surplus		Contributed equity/capital		Total equity	
	2013	2012	**2013**	2012	**2013**	2012	**2013**	2012
	$'000	$'000	**$'000**	$'000	**$'000**	$'000	**$'000**	$'000
Opening balance								
Balance carried forward from previous period	**166,384**	193,726	**87**	87	**(11,199)**	(11,199)	**155,272**	182,614
Adjusted opening balance	**166,384**	193,726	**87**	87	**(11,199)**	(11,199)	**155,272**	182,614
Comprehensive income								
Other comprehensive income	**-**	-	**(87)**	-	**-**	-	**(87)**	-
Deficit for the period	**(49,039)**	(27,342)		-			**(49,039)**	(27,342)
Total comprehensive income	**(49,039)**	(27,342)	**(87)**	-	**-**	-	**(49,126)**	(27,342)
Closing balance attributable to the Australian Government	**117,345**	166,384	**-**	87	**(11,199)**	(11,199)	**106,146**	155,272

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

Cash Flow Statement
for the period ended 30 June 2013

	Notes	**2013 $'000**	2012 $'000
OPERATING ACTIVITIES			
Cash received			
Appropriations		**50,654**	52,828
Drawdown from Special Account		**61,417**	22,385
Contributions from Jurisdictions		**100,187**	116,662
Net GST received		**16,997**	13,816
Other		**3,176**	4,899
Total cash received		**232,431**	210,590
Cash used			
Employees		**36,686**	33,950
Suppliers		**185,441**	172,080
Other		**111**	-
Total cash used		**222,238**	206,030
Net cash from operating activities	9	**10,193**	4,560
INVESTING ACTIVITIES			
Cash received			
Proceeds from sales of property, plant and equipment		**-**	28
Total cash received		**-**	28
Cash used			
Purchase of property, plant and equipment		**750**	1,025
Purchase of intangible assets		**7,844**	1,484
Total cash used		**8,594**	2,509
Net cash used by investing activities		**(8,594)**	(2,481)
Net increase in cash held		**1,599**	2,079
Cash and cash equivalents at the beginning of the reporting period		**3,721**	1,642
Cash and cash equivalents at the end of the reporting period	5A	**5,320**	3,721

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

Schedule of Commitments
as at 30 June 2013

	2013	2012
BY TYPE	**$'000**	$'000
Commitments receivable		
Net GST recoverable on commitments	**(1,682)**	(2,009)
Total commitments receivable	**(1,682)**	(2,009)
Commitments payable		
Capital commitments		
Property, plant and equipment	**88**	164
Total capital commitments	**88**	164
Other commitments		
Operating leases	**9,110**	11,950
Other	**9,407**	10,044
Total other commitments	**18,517**	21,994
Total commitments payable	**18,605**	22,158
Net commitments by type	**16,923**	20,149
BY MATURITY		
Commitments receivable		
Operating lease income		
One year or less	**(211)**	(918)
From one to five years	**(617)**	(1,091)
Total operating lease income	**(828)**	(2,009)
Other commitments receivable		
One year or less	**(794)**	-
From one to five years	**(60)**	-
Total other commitments receivable	**(854)**	-
Total commitments receivable	**(1,682)**	(2,009)
Commitments payable		
Capital commitments		
One year or less	**88**	164
Total capital commitments	**88**	164
Operating lease commitments		
One year or less	**2,327**	2,325
From one to five years	**6,783**	9,625
Total operating lease commitments	**9,110**	11,950
Other Commitments		
One year or less	**8,742**	7,964
From one to five years	**665**	2,080
Total other commitments	**9,407**	10,044
Total commitments payable	**18,605**	22,158
Net commitments by maturity	**16,923**	20,149

The MDBA in its capacity as a lessee held the following:

Leases and licences for office accommodation
Canberra, ACT
Commencing on 1 January 2007 a 10 year and 3 months lease was initiated in respect of premises at 51 Allara Street. Lease payments are subject to fixed annual increases of 3.5% on review date (January each year).

Commencing on 1 May 2011 a 5 year and 11 months lease was initiated in respect of premises at 40 Allara Street. Lease payments are subject to fixed annual increases of 4% on review date (May each year**).**

Eastwood, SA
Commencing on 20 June 2011 a 12 month lease was initiated in respect of premises at 213 Greenhill Road. A new lease agreement has now been entered into to extend the arrangement until 20 December 2013.

Operating leases and licences held by the MDBA are effectively non-cancellable.

Schedule of Contingencies
as at 30 June 2013

	2013	2012
	$'000	$'000
Contingent liabilities		
Claims for damages or costs	**5,200**	3,600
Total contingent liabilities	**5,200**	3,600
Net contingent (liabilities)	**(5,200)**	(3,600)

Details of each class of contingent liabilities and contingent assets listed above are disclosed in Note 20, along with information on significant remote contingencies and contingencies that cannot be quantified.

During 2012-13, the MDBA gave no financial guarantee.

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

Table of Contents - Notes

Note 1: Summary of Significant Accounting Policies

1.1 Objectives of the Murray-Darling Basin Authority

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

The Authority is structured to meet the following outcomes:

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, shared natural resource management programs, research, information and advice.*

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

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

Authority activities contributing toward these outcomes are classified as departmental while the Authority did not manage any administered activities during 2012-13, it will manage the South Australian Riverland floodplain integrated infrastructure projects as an administered item (also refer to Note 2 *'Events after the Reporting Date'*), from 1 July 2013. Departmental activities involve the use of assets, liabilities, income and expenses controlled or incurred by the Authority in its own right.

1.2 Basis of Preparation of the Financial Statements

The financial statements are general-purpose financial statements and are required by section 49 of the *Financial Management and Accountability Act 1997.*

The financial statements have been prepared in accordance with:

a) Finance Minister's Orders (FMOs) for reporting periods ending on or after 1 July 2011; and
b) Australian Accounting Standards and Interpretations 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 an alternative treatment is specifically required by an accounting standard or the FMOs, assets and liabilities are recognised in the balance sheet when and only when it is probable that future economic benefits will flow to the Authority, or a future sacrifice of economic benefits will be required and the amounts of the assets or liabilities can be reliably measured. However, assets and liabilities arising under executor contracts are not recognised unless required by an accounting standard. Liabilities and assets that are unrecognised are reported in the schedule of commitments or the schedule of contingencies.

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.

1.3 Significant Accounting Judgements and Estimates

In the process of applying the accounting policies listed in this note, the Authority has not made any significant judgements that will have a significant impact on the amounts recorded in the financial statements, other than employee provisions have been calculated based on the short-hand method as prescribed by the Finance Minister's Order and have been discounted using the 10-year government bond rate as at 30 June 2013.

Further, there are no accounting assumptions and estimates that have been identified that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next reporting period.

1.4 New Australian Accounting Standards

No accounting standard has been adopted earlier than the application date as stated in the standard.

Adoption of New Australian Accounting Standard Requirements

There were no changes, including new standards, revised standards, and interpretations and amending standards issued prior to the sign-off date, applicable to the current reporting period, and which had a financial impact on presentation and/or disclosure.

Future Australian Accounting Standard Requirements

The following new, revised or amending standards were issued by the Australian Accounting Standards Board prior to the sign-off date, and are expected to have a financial impact on the Authority for future reporting periods:

AASB 1055	*Budgetary Reporting*
AASB 119	*Employee Benefits*
AASB 13	*Fair Value Measurement*
AASB 9	*Financial Instruments*
AASB 2010-7	*Amendments to Australian Accounting Standards arising from AASB 9*
AASB 2011-8	*Amendments to Australian Accounting Standards arising from AASB 13*
AASB 2011-10	*Amendments to Australian Accounting Standards arising from AASB 119*

Finance Minister Orders

Finance Minister Orders for Financial Reporting (FMOs) apply to all reporting entities covered by section 49 of the *Financial Management and Accountability Act 1997* and form part of the financial reporting framework for Australian Government entities. Amendments to the FMOs issued prior to the sign-off date, which were applicable to the current reporting period and had an impact on presentation and disclosure on the Authority during 2012-13, included changes to:

- *Statement of Comprehensive Income,* revised sub-headings to discern between those items subject to, or not subject to, subsequent classification to net cost of services;
- *Director/ Executive Remuneration,* amending specific descriptions for Tables A, B and C, together with changes to the definitions of *Reportable Allowances*, *Reportable Remuneration* and *Reportable Salary*; and,
- *Note 17 Senior Executive Remuneration* was amended by increasing the remuneration threshold from $150,000 to $180,000.

1.5 Revenue

Revenue from the sale of goods is recognised when:

a) the risks and rewards of ownership have been transferred to the buyer;
b) the Authority retains no managerial involvement or effective control over the goods;
c) the revenue and transaction costs incurred can be reliably measured; and
d) it is probable that the economic benefits associated with the transaction will flow to the Authority.

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:

a) the amount of revenue, stage of completion and transaction costs incurred can be reliably measured; and
b) 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.

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 end of the reporting period. Allowances are made when collectability of the debt is no longer probable.
Interest revenue is recognised using the effective interest method as set out in AASB 139 *'Financial Instruments:*

Recognition and Measurement'.

Revenue from Government
Amounts appropriated for departmental appropriations for the year (adjusted for any formal additions and reductions) are recognised as Revenue from Government when the Authority gains control of the appropriation, except for certain amounts that relate to activities that are reciprocal in nature, in which case revenue is recognised only when it has been earned. Appropriations receivable are recognised at their nominal amounts.

Contributions from Jurisdictions
The Authority receives contributions from jurisdictions based on an agreed Contributions Model (the Model). The Model, which has been carried forward from the Authority's predecessor agency, the Murray-Darling Basin Commission, is based on a number of different requirements including specific provisions under the Murray-Darling Basin Agreement continues to operate. The jurisdictions and the Australian Government are reviewing the model during 2013-14 with a view to settling a longer-term arrangement. It is also noted that certain of the jurisdictions have, unilaterally, advised changes to the level of contributions, including during the 2012-13 financial year. Also refer to Note 2.

1.6 Gains

Resources Received Free of Charge
Resources received free of charge are recognised as gains when, and only when, a fair value can be reliably determined and the services would have been purchased if they had not been donated. Use of those resources is recognised as an expense.

Resources received free of charge are recorded as either revenue or gains depending on their nature.

Contributions of assets at no cost of acquisition or for nominal consideration are recognised as gains at their fair value when the asset qualifies for recognition, unless received from another Government entity as a consequence of a restructuring of administrative arrangements (refer to Note 1.7).

Sale of Assets
Gains from disposal of assets are recognised when control of the asset has passed to the buyer.

1.7 Transactions with the Government as Owner

Equity Injections
Amounts appropriated which are designated as 'equity injections' for a year (less any formal reductions) and Departmental Capital Budgets (DCBs) are recognised directly in contributed equity in that year. No equity injection was made during 2012-13.

Economic dependency
The continued existence of the Authority in its present form and with its present programs is dependent on Government policy and on continuing funding from by the Commonwealth and the State Governments of New South Wales, Victoria and South Australia for the Authority's administration and programs.

Other Distributions to Owners
The FMOs require that distributions to owners be debited to contributed equity unless it is in the nature of a dividend. No such distributions were made during 2012-13.

1.8 Employee Benefits

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 as net total of the present value of the defined benefit obligation at the end of the reporting period minus the fair value at the end of the reporting period of plan assets (if any) out of which the obligations are to be settled directly.

Leave
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 short-hand method prescribed by FMO division 43.71G. The liability for long service leave is recognised and measured at the present value of the estimated future cash flows to be made in respect of all employees at 30 June 2013. The estimate of the present value of the liability takes into account attrition rates and pay increases through promotion and inflation.

Superannuation
The Authority's staffs are members of the Commonwealth Superannuation Scheme (CSS), the Public Sector Superannuation Scheme (PSS) or the PSS accumulation plan (PSSap).

The CSS and PSS are defined benefit schemes for the Australian Government. The PSSap is a defined contribution scheme.

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 and Deregulation'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 of the superannuation entitlements of the Authority's employees. 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 year.

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.

1.9 Leases

A distinction is made between finance leases and operating leases. Finance leases effectively transfer from the lessor to the lessee substantially all the risks and rewards incidental to ownership of leased assets. An operating lease is a lease that is not a finance lease. In operating leases, the lessor effectively retains substantially all such risks and benefits.

Where an asset is acquired by means of a finance lease, the asset is capitalised at either the fair value of the lease property or, if lower, the present value of minimum lease payments at the inception of the contract and a liability is recognised at the same time and for the same amount.

The discount rate used is the interest rate implicit in the lease. Leased assets are amortised over the period of the lease. Lease payments are allocated between the principal component and the interest expense.

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

1.10 Borrowing costs

All borrowing costs are expensed as incurred.

1.11 Cash

Cash is recognised at its nominal amount. Cash and cash equivalents include:

a) cash on hand;
b) demand 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;
c) cash held by outsiders; and
d) cash in special accounts.

1.12 Financial Assets

The Authority classifies its financial assets in the 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.

Effective Interest Method

The effective interest method is a method of calculating the amortised cost of a financial asset and of allocating interest income over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash receipts through the expected life of the financial asset, or, where appropriate, a shorter period.

Income is recognised on an effective interest rate basis except for financial assets that are recognised at fair value through profit or loss.

Loans and Receivables
Trade receivables, loans and other receivables that have fixed or determinable payments that are not quoted in an active market are classified as 'loans and receivables'. Loans and receivables are measured at amortised cost using the effective interest method less impairment. Interest is recognised by applying the effective interest rate.

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

The Authority has not recognised any impairment of financial assets during 2012-13.

1.13 Investments in Associates

The Authority held no investments in Associates at 30 June 2013 or during 2012-13.

Any investment by the Authority in Associates would otherwise be accounted for using the equity method.

Under the equity method, investments in Associates would be carried in the Authority's balance sheet at cost as adjusted for post-acquisition changes in the Authority's share of net assets of the Associates. Goodwill relating to an Associate would be included in the carrying amount of the investment. After the application of the equity method, the Authority would determine whether it is necessary to recognise any impairment loss with respect to the net investment in Associates.

1.14 Jointly Controlled Entities

Since 2008, the Authority has participated in a number of joint ventures, including Cooperative Research Centres.

Cooperative Research Centres (CRCs)

A CRC is a research initiative of the Commonwealth Government established to pursue specific areas of research. A common deliverable of a CRC will be the creation of specific intellectual property, which may have commercial value. CRC participants will also often have a significant focus on research (e.g. CSIRO, universities and/or private sector bodies).

In 2012-13, the Authority contributed both cash and/or in-kind support to the CRC Program Funding Agreement, *Invasive Animals Ltd.*

The activities of the CRCs are no longer accounted for using the equity method due as these transactions are presently considered to be immaterial in relation to the Authority's financial statements.

Other joint ventures

In addition to the above CRC, the Authority is also a joint venture partner in Murray-Darling Freshwater Research Centre (refer also Note 5C)

1.15 Financial Liabilities

Financial liabilities are recognised and derecognised upon 'trade date'.

Other Financial Liabilities

Other financial liabilities, including borrowings, are initially measured at fair value, net of transaction costs. These liabilities are subsequently measured at amortised cost using the effective interest method, with interest expense recognised on an effective yield basis.

The effective interest method is a method of calculating the amortised cost of a financial liability and of allocating interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments through the expected life of the financial liability, or, where appropriate, a shorter period.

Supplier and other payables are recognised at amortised cost. Liabilities are recognised to the extent that the goods or services have been received (and irrespective of having been invoiced).

1.16 Contingent Liabilities and Contingent Assets

Contingent liabilities and contingent assets are not recognised in the balance sheet, but are reported in the relevant schedules and 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.

1.17 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.

1.18 Property, Plant and Equipment

Asset Recognition Threshold

Purchases of property, plant and equipment are recognised initially at cost in the balance sheet, 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

The Authority's non-financial assets are, with minor exceptions, subject to valuation under the 'cost model' (refer to AASB 116 *Property, Plant & Equipment* and AASB 138 *Intangible Assets* unless otherwise stated. That is, items of property, plant and equipment and intangible assets are carried at cost less any accumulated depreciation/ amortisation and any accumulated impairment losses. The Authority does not consider it cost-effective to revalue these classes of assets, having regard to relevant accounting concepts.

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 rates applying to each class of depreciable asset are based on the following useful lives:

	2012-13		2011-12	
	Years	**% pa**	Years	% pa
Motor Vehicles	**2-3**	**33-57**	2-3	33-57
Computers and IT equipment	**3-13**	**8-33**	3-13	8-33
Office Equipment	**2-13**	**8-57**	2-13	8-57
Furniture, Fixtures and Fittings	**3-20**	**5-20**	3-20	5-20
Leasehold Improvement	**6-10**	**11-15**	6-10	11-15
Software	**3**	**33**	3	33

There were no changes to the rates used from the previous financial year.

Leasehold improvements are depreciated on a straight-line basis over the lesser of the estimated useful life of the improvement or the unexpired period of the lease.

All heritage and cultural assets have indefinite useful lives and are not depreciated.

The Authority does not hold heritage or cultural assets that are material in amount.

Impairment
All assets were assessed for impairment at 30 June 2013. 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 to sell 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.

1.19 Investment Properties

The Authority does not hold any investment properties.

It does, however, receive economic benefits in the form of cottage rents, which form part of the revenues of the Authority (refer Note 4B). The assets which deliver these rents are jointly controlled by the jurisdictions and the Commonwealth, but the revenues earned from these assets have been assigned to the Authority.

Where an investment property is acquired at no cost or for nominal cost, its cost is deemed to be its fair value as at the date of acquisition.

Investment properties are derecognised either when they have been disposed of or when the investment property is permanently withdrawn form use and no future economic benefit is expected from its disposal. Any gains or losses on disposal of an investment property are recognised in profit or loss in the year of disposal.

1.20 Intangibles

The Authority's intangibles comprise internally developed software for internal use. These assets are carried at cost less accumulated amortisation and accumulated impairment losses (also refer paragraph 1.18).

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 2013.

1.21 Inventories

The Authority does not hold any material inventories.

1.22 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:

a) where the amount of GST incurred is not recoverable from the Australian Taxation Office; and;
b) for receivables and payables.

Note 2: Events After the Reporting Period

Departmental

From the 1 July 2013, the Authority will for the first time have an administered item that it will need to manage and report on. The South Australian Riverland floodplain integrated infrastructure project is a $155 million project that has an estimated duration of 7 years. The Authority will have key responsibilities in areas such as project management, governance and reporting. Separate administered financial statements will be prepared in respect of this project commencing in 2013-14.

While the Contributions Model (refer Note 1.5) continues to undergo review, there are no other events that merit disclosure in terms of funding announcements occurring after the reporting date.

Note 3: Expenses

	2013 $'000	2012 $'000
Note 3A: Employee Benefits		
Wages and salaries	**26,462**	25,870
Superannuation:		
Defined contribution plans	**2,678**	2,581
Defined benefit plans	**2,580**	2,430
Leave and other entitlements	**4,684**	4,957
Separation and redundancies	**609**	-
Total employee benefits	**37,013**	35,838
Note 3B: Suppliers		
Goods and services		
Expenditure by State Constructing Authorities *	**127,577**	118,591
Water Licence Fee	**3,313**	2,531
Consultants **	**14,788**	16,389
Communication & IT services	**1,209**	1,623
Other employment expenses	**1,458**	1,441
Committee expenses	**1,200**	1,948
Grants	**10,628**	13,120
Travel	**1,220**	1,685
Other provision of goods & services	**1,629**	2,233
Total goods and services	**163,022**	159,561
Goods and services are made up of:		
Provision of goods – related entities	**9**	-
Provision of goods – external parties	**535**	351
Rendering of services – related entities	**7,569**	7,933
Rendering of services – external parties	**154,909**	151,277
Total goods and services	**163,022**	159,561
Other supplier expenses		
Operating lease rentals – external parties:		
Minimum lease payments	**1,876**	1,711
Workers compensation expenses	**579**	345
Total other supplier expenses	**2,455**	2,056
Total supplier expenses	**165,477**	161,617
Note 3C: Depreciation and Amortisation		
Depreciation:		
Property, plant and equipment	**327**	396
Buildings	**571**	404
Total depreciation	**898**	800
Amortisation:		
Intangibles	**1,281**	1,249
Total amortisation	**1,281**	1,249
Total depreciation and amortisation	**2,179**	2,049
Note 3D: Finance Costs		
Unwinding of discount	**34**	32
Other interest payments	**7**	-
Total finance costs	**41**	32
Note 3E: Write-Down and Impairment of Assets		
Asset write-downs and impairments from:		
Impairment on financial instruments	**19**	-
Impairment of property, plant and equipment	**-**	58
Total write-down and impairment of assets	**19**	58
Note 3F: Share of deficit in the joint ventures accounted for using the equity method		
Share of deficit in the joint ventures accounted for using the equity method	**(112)**	82
Total other expenses	**(112)**	82

* Includes $2.3 million (2011-12 $7.9 million) in expenses incurred relating to unavoidable third party contractual commitments brought about due to interruptions attributable to flooding conditions. These expenses are not related to contracts in which the Authority is a direct party and are not recoverable through the Authority's existing insurance cover with Comcover.

** Includes contractors.

Note 4: Income

	2013	2012
OWN-SOURCE REVENUE	**$'000**	$'000
Note 4A: Contributions from Jurisdictions		
Australian Government	**19,320**	18,737
New South Wales	**16,230**	35,054
Victoria	**34,150**	33,224
South Australia	**29,145**	28,346
Queensland	**1,044**	1,012
Australian Capital Territory	**298**	289
Total Contributions from Jurisdictions	**100,187**	116,662
Note 4B: Other Revenue		
Hydropower generation	**2,023**	415
Contribution by State - Salinity program	**1,670**	1,391
Land and cottage rents	**369**	544
Other	**826**	269
Total Other Revenue	**4,888**	2,619
GAINS		
Note 4C: Sale of Assets		
Property, plant and equipment:		
Proceeds from sale	**1**	29
Carrying value of assets sold	**-**	(23)
Net gain from sale of assets	**1**	**6**
Note 4D: Other Gains		
Resources received free of charge	**69**	55
Other	**3**	-
Total other gains	**72**	55
REVENUE FROM GOVERNMENT		
Note 4E: Revenue from Government		
Appropriations:		
Departmental appropriations	**50,654**	52,828
Total revenue from Government	**50,654**	52,828

Note 5: Financial Assets

	2013 $'000	2012 $'000
Note 5A: Cash and Cash Equivalents		
Cash on hand or on deposit	**5,320**	3,721
Total cash and cash equivalents	**5,320**	3,721
Note 5B: Trade and Other Receivables		
Goods and Services:		
Goods and services - related entities	**17**	53
Goods and services - external parties	**475**	121
Total receivables for goods and services	**492**	174
Appropriations receivable:		
For existing programs	**131,318**	192,735
Total appropriations receivable	**131,318**	192,735
Other receivables:		
GST receivable from the Australian Taxation Office	**2,370**	4,202
Other	**2,424**	844
Total other receivables	**4,794**	5,046
Total trade and other receivables (gross)	**136,604**	197,955
Less impairment allowance account:		
Goods and services	**19**	-
Total impairment allowance account	**19**	-
Total trade and other receivables (net)	**136,585**	197,955
Receivables are expected to be recovered in:		
No more than 12 months	**136,604**	197,955
More than 12 months	**-**	-
Total trade and other receivables (net)	**136,604**	197,955
Receivables are aged as follows:		
Not overdue	**134,130**	197,845
Overdue by:		
0 to 30 days	**2,410**	-
31 to 60 days	**-**	-
61 to 90 days	**-**	17
More than 90 days	**64**	93
Total receivables (gross)	**136,604**	197,955

Credit terms for goods and services were within 30 days (2012: 30 days).

The impairment allowance account is aged as follows:		
More than 90 days	**19**	-
Total impairment allowance account	**19**	-

	2013 **$'000**	2012 $'000
Note 5C: Investments Accounted for Using the Equity Method		
Investments in jointly controlled entities:		
Murray-Darling Freshwater Research Centre	**346**	326
Invasive Native Animals Co-operative Research Centre	**-**	133
Total equity accounted investments	**346**	459
Investments in equity accounted investments are expected to be recovered in:		
No more than 12 months	-	-
More than 12 months	**346**	459
Total equity accounted investments	**346**	459

Details of investments accounted for using the equity method

		Ownership	
Name of entity	**Principal activity**	**2013 %**	2012 %
Jointly controlled entities:			
Murray-Darling Freshwater Research Centre		**33.33%**	33.33%

The activities of Invasive Native Animals Co-operative Research Centre are no longer accounted for using the equity method (refer Note 1.14).

Summarised financial information of jointly controlled entities:

	2013 **$'000**	2012 $'000
Balance sheet:		
Current assets	**2,765**	4,653
Non-current assets	**930**	1,064
Current liabilities	**2,416**	3,597
Non-current liabilities	**240**	307
Statement of comprehensive income:		
Income	**5,442**	18,926
Expense	**5,380**	20,382
Net surplus/(deficit)	**62**	(1,456)
Share of jointly controlled entities' net deficit:		
Share of net deficit before tax	**21**	(269)
Income tax expense	**-**	-
Share of jointly controlled entities' net deficit after tax	**21**	(269)

Dividends received from jointly controlled entities $0 (2012: $0).

Note 6: Non-Financial Assets

	2013	2012
	$'000	$'000
Note 6A: Land and Buildings		
Leasehold improvements:		
Fair value	**3,452**	3,240
Accumulated depreciation	**(1,267)**	(696)
Total leasehold improvements	**2,185**	2,544
Total land and buildings	**2,185**	2,544

No indicators of impairment were found for Leasehold improvements.

No Leasehold improvements were expected to be sold or disposed of within the next 12 months.

Note 6B: Property, Plant and Equipment		
Other property, plant and equipment:		
Fair value	**1,902**	1,379
Accumulated depreciation	**(1,053)**	(740)
Total other property, plant and equipment	**849**	639
Total property, plant and equipment	**849**	639

No indicators of impairment were found for property, plant and equipment.

No property, plant or equipment is expected to be sold or disposed of within the next 12 months.

Note 6C: Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment 2013

	Buildings $'000	**Total land and buildings $'000**	**Other property, plant & equipment $'000**	**Total $'000**
As at 1 July 2012				
Gross book value	**3,240**	**3,240**	**1,379**	**4,619**
Accumulated depreciation and impairment	**(696)**	**(696)**	**(740)**	**(1,436)**
Net book value 1 July 2012	**2,544**	**2,544**	**639**	**3,183**
Additions:				
By purchase	**212**	**212**	**539**	**751**
Depreciation expense	**(571)**	**(571)**	**(313)**	**(884)**
Disposals:			**(16)**	**(16)**
Other	-	-	-	-
Net book value 30 June 2013	**2,185**	**2,185**	**849**	**3,034**
Net book value as of 30 June 2013 represented by:				
Gross book value	**3,452**	**3,452**	**1,902**	**5,354**
Accumulated depreciation and impairment	**(1,267)**	**(1,267)**	**(1,053)**	**(2,320)**
Net book value 30 June 2013	**2,185**	**2,185**	**849**	**3,034**

1. Land, buildings and other property, plant and equipment that met the definition of a heritage and cultural item were disclosed in the heritage and cultural asset class.

Note 6C (Cont'd): Reconciliation of the Opening and Closing Balances of Property, Plant and Equipment 2012

	Buildings $'000	Total land and buildings $'000	Other property, plant & equipment $'000	Total $'000
As at 1 July 2011				
Gross book value	2,467	2,467	1,250	3,717
Accumulated depreciation and impairment	(292)	(292)	(388)	(680)
Net book value 1 July 2011	2,175	2,175	862	3,037
Additions:				
By purchase	773	773	253	1,026
Impairments recognised in the operating result	-	-	(57)	(57)
Depreciation expense	(404)	(404)	(396)	(800)
Disposals:				
Other	-	-	(23)	(23)
Net book value 30 June 2012	2,544	2,544	639	3,183
Net book value as of 30 June 2012 represented by:				
Gross book value	3,240	3,240	1,379	4,619
Accumulated depreciation and impairment	(696)	(696)	(740)	(1,436)
Net book value 30 June 2012	2,544	2,544	639	3,183

1. Land, buildings and other property, plant and equipment that met the definition of a heritage and cultural item were disclosed in the heritage and cultural asset class.

	2013 $'000	2012 $'000
Note 6D: Intangibles		
Assets in-use		
Software applications (including licenses):	**5,746**	5,092
Accumulated amortisation	**(4,254)**	(2,973)
Accumulated impairment losses	**-**	-
Total Intangibles in use	**1,492**	2,119
Work in Progress		
Software applications	**463**	193
Data Sets	**6,920**	-
Total Intangibles - Work in Progress	**7,383**	193
Total Intangibles	**8,875**	2,312

No indicators of impairment were found for intangible assets.

No intangibles are expected to be sold or disposed of within the next 12 months.

Note 6E: Reconciliation of the Opening and Closing Balances of Intangibles 2013

	Computer software internally developed $'000	Computer software purchased $'000	Total $'000
As at 1 July 2012			
Gross book value	**4,165**	**1,120**	**5,285**
Accumulated amortisation and impairment	**(2,579)**	**(394)**	**(2,973)**
Net book value 1 July 2012	**1,586**	**726**	**2,312**
Additions:			
By purchase or internally developed	**7,628**	**216**	**7,844**
Amortisation	**(1,030)**	**(251)**	**(1,281)**
Net book value 30 June 2013	**8,184**	**691**	**8,875**
Net book value as of 30 June 2013 represented by:			
Gross book value	**11,793**	**1,336**	**13,129**
Accumulated amortisation and impairment	**(3,609)**	**(645)**	**(4,254)**
Net book value 30 June 2012	**8,184**	**691**	**8,875**

Note 6E (Cont'd): Reconciliation of the Opening and Closing Balances of Intangibles 2012

	Computer software internally developed $'000	Computer software purchased $'000	Total $'000
As at 1 July 2011			
Gross book value	3,371	430	3,801
Accumulated amortisation and impairment	(1,455)	(269)	(1,724)
Net book value 1 July 2011	1,916	161	2,077
Additions:			
By purchase or internally developed	794	690	1,484
Amortisation	(1,124)	(125)	(1,249)
Net book value 30 June 2012	1,586	726	2,312
Net book value as of 30 June 2012 represented by:			
Gross book value	4,165	1,120	5,285
Accumulated amortisation and impairment	(2,579)	(394)	(2,973)
Net book value 30 June 2012	1,586	726	2,312

	2013 $'000	2012 $'000
Note 6F: Other Non-Financial Assets		
Prepayments	**296**	249
Total other non-financial assets	**296**	249
Total other non-financial assets - are expected to be recovered in:		
No more than 12 months	**281**	211
More than 12 months	**15**	38
Total other non-financial assets	**296**	249

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

Note 7: Payables

	2013	2012
	$'000	$'000
Note 7A: Suppliers		
Trade creditors and accruals	**32,915**	37,394
Operating lease rentals	**218**	99
Total suppliers payables	**33,133**	37,493
Suppliers payables expected to be settled within 12 months:		
Related entities	**1,194**	1,033
External parties	**31,939**	36,460
Total	**33,133**	37,493
Total suppliers payables	**33,133**	37,493

Settlement was usually made within 30 days.

Note 7B: Other Payables		
Wages and salaries	**907**	852
Superannuation	**139**	135
Lease incentive	**657**	831
Revenue Received in Advance	**3,618**	3,671
Total other payables	**5,321**	5,489
Total other payables are expected to be settled in:		
No more than 12 months	**5,321**	5,489
More than 12 months	**-**	-
Total other payables	**5,321**	5,489

Note 8: Provisions

	2013	2012
	$'000	$'000
Note 8A: Employee Provisions		
Leave	**9,064**	9,027
Separations and redundancies	**159**	-
Total employee provisions	**9,223**	9,027
Employee provisions are expected to be settled in:		
No more than 12 months	**3,137**	2,724
More than 12 months	**6,086**	6,303
Total employee provisions	**9,223**	9,027
Note 8B: Other Provisions		
Provision for restoration obligations	**633**	598
Total other provisions	**633**	598
Other provisions are expected to be settled in:		
More than 12 months	**633**	598
Total other provisions	**633**	598

	Provision for restoration	Total
	$'000	$'000
Carrying amount 1 July 2012	**598**	566
Unwinding of discount or change in discount rate	**35**	32
Closing balance 2013	**633**	598

The Authority currently has 2 (2011-2012: 2) agreements for the leasing of premises which have provisions requiring the entity to restore the premises to their original condition at the conclusion of the lease. The Authority has made a provision to reflect the present value of this obligation.

Note 9: Cash Flow Reconciliation

	2013	2012
	$'000	$'000
Reconciliation of cash and cash equivalents as per Balance Sheet to Cash Flow Statement		
Cash and cash equivalents as per:		
Cash flow statement	**5,320**	3,721
Balance sheet	**5,320**	3,721
Difference	**-**	-
Reconciliation of net cost of services to net cash from operating activities:		
Net cost of services	**(99,581)**	(80,252)
Add revenue from Government	**50,654**	52,828
Less share of deficit in joint venture	**(112)**	82
Adjustments for non-cash items		
Depreciation / amortisation	**2,073**	2,049
Net write down of non-financial assets	**19**	58
Gain on disposal of assets	**(1)**	(6)
Changes in assets / liabilities		
(Increase) / decrease in net receivables	**61,372**	21,212
(Increase) / decrease in share in joint ventures	**113**	(82)
(Increase) / decrease in prepayments	**(47)**	1,104
Increase / (decrease) in employee provisions	**196**	1,752
Increase / (decrease) in supplier payables	**(4,360)**	5,414
Increase / (decrease) in other payable	**(168)**	369
Increase / (decrease) in other provisions	**35**	32
Net cash from (used by) operating activities	**10,193**	4,560

Note 10: Senior Executive Remuneration

Note 10A: Senior Executive Remuneration Expenses for the Reporting Period

	2013	2012
	$	$
Short-term employee benefits:		
Salary	**3,028,321**	2,527,071
Annual leave accrued	**236,662**	200,952
Other allowances	**76,179**	100,871
Total short-term employee benefits	**3,341,162**	2,828,894
Post-employment benefits:		
Superannuation	**603,423**	464,914
Total post-employment benefits	**603,423**	464,914
Other long-term benefits:		
Long-service leave	**78,018**	236,110
Total other long-term benefits	**78,018**	236,110
Termination benefits	**180,969**	-
Total employment benefits	**4,203,572**	3,529,918

Notes:

1. Note 10A is prepared on an accrual basis.

2. Note 10A excludes acting arrangements and part-year service where total remuneration expensed for a senior executive was less than $180,000. The comparatives for 2012 have been restated to reflect the increased threshold from $150,000 in 2012 to $180,000 (and also includes an underpayment relating to 2012 paid in 2013 and a reclassification of some monies from Salary to Annual leave accrued).

Note 10B: Average Annual Reportable Remuneration Paid to Substantive Senior Executives During the Reporting Period

	2013					
Average annual reportable remuneration[1]	**Senior Executives No.**	**Reportable salary[2] $**	**Contributed superannuation[3] $**	**Reportable allowances[4] $**	**Bonus paid[5] $**	**Total $**
Total remuneration (including part-time arrangements):						
$180,000 to $209,999	**1**	**147,667**	**41,545**	**1,949**	**-**	**191,161**
$210,000 to $239,999	**4**	**191,786**	**33,053**	**1,949**	**-**	**226,788**
$240,000 to $269,999	**1**	**212,284**	**31,763**	**1,949**	**-**	**245,996**
$270,000 to $299,999	**2**	**225,026**	**45,662**	**14,659**	**-**	**285,347**
$300,000 to $329,999	**4**	**242,084**	**55,608**	**8,305**	**-**	**305,997**
$420,000 to $449,999	**1**	**362,621**	**63,663**	**1,949**	**-**	**428,233**
Total	**13**					

	2012					
Average annual reportable remuneration[1]	Senior Executives No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowances[4] $	Bonus paid[5] $	Total $
Total remuneration (including part-time arrangements):						
less than $180,000	3	49,935	7,314	-	-	57,249
$180,000 to $209,999	3	174,798	25,149	-	-	199,947
$210,000 to $239,999	4	187,086	33,402	-	-	220,488
$240,000 to $269,999	2	229,071	34,115	192	-	263,378
$270,000 to $299,999	2	239,239	47,129	-	-	286,368
$360,000 to $389,999	1	297,563	70,029	-	-	367,592
Total	15					

Notes:

1. This table reports substantive senior executives who received remuneration during the reporting period. Each row is an averaged figure based on headcount for individuals in the band.

2. 'Reportable salary' includes the following:
   a) gross payments (less any bonuses paid, which are separated out and disclosed in the 'bonus paid' column);
   b) reportable fringe benefits (at the net amount prior to 'grossing up' for tax purposes); and
   c) exempt foreign employment income; and
   d) salary sacrificed benefits

3. The 'contributed superannuation' amount is the average cost to the entity for the provision of superannuation benefits to substantive senior executives in that reportable remuneration band during the reporting period.

4. 'Reportable allowances' are the average actual allowances paid as per the 'total allowances' line on individuals' payment summaries.

5. 'Bonus paid' represents average actual bonuses paid during the reporting period in that reportable remuneration band. The 'bonus paid' within a particular band may vary between financial years due to various factors such as individuals commencing with or leaving the entity during the financial year.

Note 10C: Other Highly Paid Staff

		2013				
Average annual reportable remuneration[1]	**Staff No.**	**Reportable salary[2] $**	**Contributed superannuation[3] $**	**Reportable allowances[4] $**	**Bonus paid[5] $**	**Total $**
Total remuneration (including part-time arrangements):						
$180,000 to $209,999	**2**	**152,093**	**38,816**	**565**	**500**	**191,974**
$210,000 to $239,999	**3**	**175,280**	**44,447**	**950**	**-**	**220,677**
Total	**5**					

		2012				
Average annual reportable remuneration[1]	Staff No.	Reportable salary[2] $	Contributed superannuation[3] $	Reportable allowances[4] $	Bonus paid[5] $	Total $
Total remuneration (including part-time arrangements):						
$180,000 to $209,999	4	150,080	36,417	727	-	187,224
$210,000 to $239,999	2	166,545	48,360	700	-	215,605
Total	6					

Notes:

1. This table reports staff:
   a) who were employed by the entity during the reporting period;
   b) whose reportable remuneration was $180,000 or more for the financial period; and
   c) were not required to be disclosed in Tables A, B or director disclosures.

Each row is an averaged figure based on headcount for individuals in the band.

2. 'Reportable salary' includes the following:
   a) gross payments (less any bonuses paid, which are separated out and disclosed in the 'bonus paid' column);
   b) reportable fringe benefits (at the net amount prior to 'grossing up'for tax purposes); and
   c) exempt foreign employment income; and
   d) salary sacrificed benefits

3. The 'contributed superannuation' amount is the average cost to the entity for the provision of superannuation benefits to other highly paid staff in that reportable remuneration band during the reporting period.

4. 'Reportable allowances' are the average actual allowances paid as per the 'total allowances' line on individuals' payment summaries.

5. 'Bonus paid' represents average actual bonuses paid during the reporting period in that reportable remuneration band. The 'bonus paid' within a particular band may vary between financial years due to various factors such as individuals commencing with or leaving the entity during the financial year.

Note 11: Remuneration of Auditors

	2013	2012
	$'000	$'000
Financial statement audit services were provided free of charge to the entity by the Australian National Audit Office (ANAO).		
Fair value of the services provided		
Financial statement audit services	**69**	55
Other services	**53**	39
Total	**122**	94
Other Services provided by ANAO and paid by the Authority.		
Australian National Audit Office - Living Murray Initiative Joint Venture Special Purpose Financial Statements	**23**	18
Australian National Audit Office - River Murray Operations Joint Venture Special Purpose Financial Statements	**30**	21

No other services were provided by the auditors.

Note 12: Financial Instruments

	2013	2012
	$'000	$'000
Note 12A: Categories of Financial Instruments		
Financial Assets		
Loans and receivables:		
Cash and cash equivalents	**5,320**	3,721
Trade and other receivables	**492**	174
Accrued debtors	**2,424**	844
Carrying amount of financial assets	**8,236**	4,739
Financial Liabilities		
At amortised cost:		
Trade creditors and accruals	**32,915**	37,394
Revenue Received in Advance	**3,618**	3,671
Carrying amount of financial liabilities	**36,533**	41,065

Note 12B: Fair Value of Financial Instruments

All financial instruments are held at fair value.

Note 12C: Credit Risk

Credit risk represents the loss that would be recognised if counterparties failed to perform as contracted. The maximum credit risk on financial assets of which the Authority recognised is exposed is the carrying amount net of any impairment loss as indicated in the balance sheet. Due to the nature of the majority of the Authority's receivables are from Government Agencies, such risk is considered by the Authority to be low. MDBA holds no collateral to mitigate against credit risk.

The following table illustrates the entity's gross exposure to credit risk, excluding any collateral or credit enhancements.

	2013	2012
	$'000	$'000
Financial assets		
Cash and cash equivalents	**5,320**	3,721
Trade and other receivables	**492**	174
Accrued debtors	**2,424**	844
Total	**8,236**	4,739
Financial liabilities		
Trade creditors and accruals	**32,915**	37,394
Revenue Received in Advance	**3,618**	3,671
Total	**36,533**	41,065

In relation to the Authority's gross credit risk and the financial effect in respect of the amount that best represents the maximum exposure to credit risk. There is no collateral held by the Authority.

Credit quality of financial instruments not past due or individually determined as impaired

	Not past due nor impaired	Not past due nor impaired	**Past due or impaired**	Past due or impaired
	2013	2012	**2013**	2012
	$'000	$'000	**$'000**	$'000
Cash and cash equivalents	**5,320**	3,721	**-**	-
Trade and other receivables	**428**	64	**64**	110
Accrued debtors	**2,424**	844	**-**	-
Total	**8,172**	4,629	**64**	110

Ageing of financial assets that were past due but not impaired for 2013

	0 to 30 days	**31 to 60 days**	**61 to 90 days**	**90+ days**	**Total**
	$'000	**$'000**	**$'000**	**$'000**	**$'000**
Cash and cash equivalents	**-**	**-**	**-**	**-**	**-**
Trade and other receivables	-	-		**45**	**45**
Accrued debtors	-	-	-	-	-
Total	**-**	**-**	**-**	**45**	**45**

Ageing of financial assets that were past due but not impaired for 2012

	0 to 30 days $'000	31 to 60 days $'000	61 to 90 days $'000	90+ days $'000	Total $'000
Cash and cash equivalents	-	-	-	-	-
Trade and other receivables	-	-	17	93	110
Accrued debtors	-	-	-	-	-
Total	-	-	17	93	110

In 2012 this note aged all financial assets. This year the note only ages financial statements that are past due but not impaired.

Note 12D: Liquidity Risk

The Authority is appropriated funding from the Australian Government and jurisdictions and the Authority manages its budgeted funds to ensure it has adequate funds to meet payments as they fall due. In addition, the Authority has policies in place to ensure timely payment are made when due and has no past experience of default. The Authority has no derivative financial liabilities in both the current and prior year.

Maturities for non-derivative financial liabilities 2013

	On demand $'000	**within 1 year $'000**	**1 to 2 years $'000**	**2 to 5 years $'000**	**> 5 years $'000**	**Total $'000**
Trade creditors and accruals	**-**	**32,915**	**-**	**-**	**-**	**32,915**
Revenue Received in Advance	**-**	**3,618**	**-**	**-**	**-**	**3,618**
Total	**-**	**36,533**	**-**	**-**	**-**	**36,533**

Maturities for non-derivative financial liabilities 2012

	On demand $'000	within 1 year $'000	1 to 2 years $'000	2 to 5 years $'000	> 5 years $'000	Total $'000
Trade creditors and accruals	-	37,394	-	-	-	37,394
Revenue Received in Advance	-	3,671	-	-	-	3,671
Total	-	41,065	-	-	-	41,065

The Authority had no derivative financial liabilities in either 2013 or 2012.

Note 12E: Market Risk

The Authority holds basic financial instruments that do not expose the Authority to certain market risks. The Authority is not exposed to 'Currency risk' or 'Other past due' financial risks.

The Authority does not have any interest bearing liabilities at the period end.

Note 13: Financial Assets Reconciliation

		2013	2012
		$'000	$'000
Financial assets	**Notes**		
Total financial assets as per balance sheet		**142,251**	202,135
Less: non-financial instrument components:			
GST receivable from the Australian Taxation Office	5B	**2,370**	4,202
Investments accounted for using the equity method	5C	**346**	459
Appropriations receivable	5B	**131,318**	192,735
Total non-financial instrument components		**8,217**	4,739
Total financial assets as per financial instruments note		**8,236**	4,739

Note 14: Appropriations

Table A: Annual Appropriations ('Recoverable GST exclusive')

	2013 Appropriations								
	Appropriation Act			*FMA Act*				Appropriation applied in 2013 (current and prior years)	
	Annual Appropriation $'000	Appropriations reduced[1] $'000	AFM[2] $'000	Section 30 $'000	Section 31 $'000	Section 32 $'000	Total appropriation $'000	$'000	Variance $'000
DEPARTMENTAL									
Ordinary annual services	**50,842**		**-**	**-**	**401**	**-**	**51,243**	**51,055**	**188**
Total departmental	**50,842**	**-**	**-**	**-**	**401**	**-**	**51,243**	**51,055**	**188**

Notes:

1. Appropriations reduced under Appropriation Acts (Nos. 1,3 & 5) 2012-13: sections 10, 11, and 12 and under Appropriation Acts (Nos. 2, 4 & 6) 2012-13: sections 12,13, and 14. Departmental appropriations do not lapse at financial year-end. However, the responsible Minister may decide that part or all of a departmental appropriation is not required and request the Finance Minister to reduce that appropriation. The reduction in the appropriation is effected by the Finance Minister's determination and is disallowable by Parliament. On 5 August 2013, the Finance Minister issued a determination to reduce departmental appropriations following a request by the Minister for Department of Sustainability, Environment, Water, Population and Communities. The amount of the reduction under subsection 10(2) of Appropriation Act (No. 1) 2012-2013 was $0.188m.

2. As at 30 June 2013, there was an amount of $0.131 million in Appropriations Receivable, representing amounts yet to be drawn, but payable, from the MDB Special Account.

	2012 Appropriations								
	Appropriation Act			*FMA Act*				Appropriation applied in 2012 (current and prior years)	
	Annual Appropriation $'000	Appropriations reduced[1] $'000	AFM[2] $'000	Section 30 $'000	Section 31 $'000	Section 32 $'000	Total appropriation $'000	$'000	Variance $'000
DEPARTMENTAL									
Ordinary annual services	52,828	-	-	-	-	-	52,828	52,828	-
Total departmental	52,828	-	-	-	-	-	52,828	52,828	-

Notes:

1. Appropriations reduced under Appropriation Acts (Nos. 1,3 & 5) 2011-12: sections 10, 11, and 12 and under Appropriation Acts (Nos. 2, 4 & 6) 2012-13: sections 12,13, and 14. Departmental appropriations do not lapse at financial year-end. However, the responsible Minister may decide that part or all of a departmental appropriation is not required and request the Finance Minister to reduce that appropriation. The reduction in the appropriation is effected by the Finance Minister's determination and is disallowable by Parliament.

2. As at 30 June 2012, there was an amount of $0.193 million in Appropriations Receivable, representing amounts yet to be drawn, but payable, from the MDB Special Account.

Note 15: Special Accounts and FMA Act Section 39

Note 15A: Special Accounts (Recoverable GST exclusive)

	Departmental - Murray-Darling Basin Special Account	
	2013 $'000	2012 $'000
Balance brought forward from previous period	**196,456**	216,762
Increases:		
Appropriation credited to special account	**50,654**	52,828
Contribution from Jurisdictions	**100,187**	116,662
Other receipts	**2,965**	4,405
Total increases	**153,806**	173,895
Available for payments	**350,262**	390,657
Decreases:		
Departmental		
Payments made to employees	**36,686**	33,950
Payments made to suppliers	**176,938**	160,251
Total departmental decreases	**213,624**	194,201
Total decreases	**213,624**	194,201
Total balance carried to the next period	**136,638**	196,456

Departmental - Murray Darling Special Account
Appropriation: Financial Management and Accountability Act 1997 section 21
Establishing Instrument: *Water Act 2007* s 209
Purpose:
i) in payment or discharge of the costs, expenses and other obligations incurred by the Authority in the performance of the Authority's functions;
ii) in payment of any remuneration and allowances payable to any person under the Water Act 2007; and
iii) meeting the expenses of administering the Account.

Note 16: Compensation and Debt Relief

	2013 $	2012 $
Departmental		
No 'Act of Grace' expenses were incurred during the reporting period.	-	-
No payments were made under s73 of the Public Service Act 1999 during the reporting period.	-	-
No waivers of amounts owing to the Australian Government were made pursuant to subsection 34(1) of the Financial Management and Accountability Act 1997.	-	-
No payments were provided under the Compensation for Detriment caused by Defective Administration (CDDA) Scheme during the reporting period.	-	-
No ex-gratia payments were provided for during the reporting period.	-	-

Note 17: Reporting of Outcomes

Note 17A: Net Cost of Outcome Delivery

	Outcome 1		Total	
	2013	2012	**2013**	2012
	$'000	$'000	**$'000**	$'000
Departmental				
Expenses	**(204,729)**	(199,594)	**(204,729)**	(199,594)
Own-source income	**105,148**	119,342	**105,148**	119,342
Net cost/(contribution) of outcome delivery	**(99,581)**	(80,252)	**(99,581)**	(80,252)

Note 17B: Major Classes of Departmental Expense, Income, Assets and Liabilities by Outcome

	Outcome 1		Total	
	2013	2012	**2013**	2012
	$'000	$'000	**$'000**	$'000
Expenses				
Employee benefits	**37,013**	35,838	**37,013**	35,838
Supplier	**165,477**	161,617	**165,477**	161,617
Depreciation and amortisation	**2,179**	2,049	**2,179**	2,049
Finance costs	**41**	32	**41**	32
Write-down and impairment of assets	**19**	58	**19**	58
Total	**204,729**	199,594	**204,729**	199,594
Income				
Revenue from government	**50,654**	52,828	**50,654**	52,828
Own-source income	**105,075**	119,281	**105,075**	119,281
Gains	**73**	61	**73**	61
Share of surplus/deficit of associates and joint ventures accounted for using the equity method	**(112)**	82	**(112)**	82
Total	**155,690**	172,252	**155,690**	172,252
Assets				
Financial Assets	**142,251**	202,135	**142,251**	202,135
Non Financial Assets	**12,205**	5,744	**12,205**	5,744
Total	**154,456**	207,879	**154,456**	207,879
Liabilities				
Payables	**38,454**	42,982	**38,454**	42,982
Provisions	**9,856**	9,625	**9,856**	9,625
Total	**48,310**	52,607	**48,310**	52,607

Outcome 1 is described in Note 1.1. Net costs shown included intra-government costs that were eliminated in calculating the actual Budget Outcome.

Note 18: Net Cash Appropriation Arrangements

	2013	2012
	$'000	$'000
Total comprehensive loss less depreciation/amortisation expenses previously funded through revenue appropriations	**(49,126)**	(27,342)
Plus: depreciation/amortisation expenses previously funded through revenue appropriation	-	-
Total comprehensive loss - as per the Statement of Comprehensive Income	**(49,126)**	(27,342)

Note 19: COMPLIANCE WITH STATUTORY CONDITIONS FOR PAYMENTS FROM THE CONSOLIDATED REVENUE FUND

During 2012-13 additional legal advice was received that indicated there could be breaches of Section 83 of the Constitution under certain circumstances with payments for long service leave, goods and services tax and payments under determinations of the Remuneration Tribunal.

The Authority had previously performed a detailed risk assessment of the potential for breaches of Section 83 in respect of the 2011-12 financial year and having reviewed that previous risk assessment, has determined that there is a low risk of the certain circumstances mentioned in the legal advice applying to the Authority during 2012-13.

Further, the Authority is not aware of any specific breaches of Section 83 in respect of these items.

Note 20: Contingent Assets and Liabilities

	Claims for damages or costs		Total	
	2013	2012	**2013**	2012
Contingent liabilities				
Balance from previous period	**3,600**	-	**3,600**	**-**
New	**-**	3,600	**-**	**3,600**
Re-measurement	**1,600**	-	**1,600**	**-**
Liabilities recognised	**-**	-	**-**	**-**
Obligations expired	**-**	-	**-**	**-**
Total contingent liabilities	**5,200**	3,600	**5,200**	3,600
Net contingent liabilities	**(5,200)**	(3,600)	**(5,200)**	(3,600)

Quantifiable Contingencies

Claims:

The following contingent liabilities were estimated at 30 June 2013 and are reported against the relevant SCA:

	$'000	**No. of Claims**
State Water (New South Wales)	5,200	Not specified

Environmental water flows

The MDBA has received a letter claiming damages as a consequence of environmental water flows. The MDBA has denied any liability and will defend itself in terms of any potential costs arising from this matter. The information usually required by AASB137 Provisions, Contingent Liabilities and Contingent Assets has not been disclosed on the grounds that it may be expected to prejudice the outcome of the litigation.

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 MDB Agreement.

Native Title Claims

In 2003, the former Commission became a party to a Native Title Determination Application. It is not possible to estimate any liabilities arising out of this matter.

Significant Remote Contingencies

The Authority had no significant remote contingencies.

Note 21: Economic Dependency

The continued operation of the Authority in its present form and with its present functions is dependent on government policy and on continuing funding by the Commonwealth and State Governments of New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory (ACT).

Further to the funding cuts already announced by New South Wales during 2011-12, other significant developments include South Australia's statements that it plans to halve its contribution to the Authority, from $26.445 million in 2013-14 to $13.233 million in 2014-15 and Queensland reducing its contribution from 2013-14.

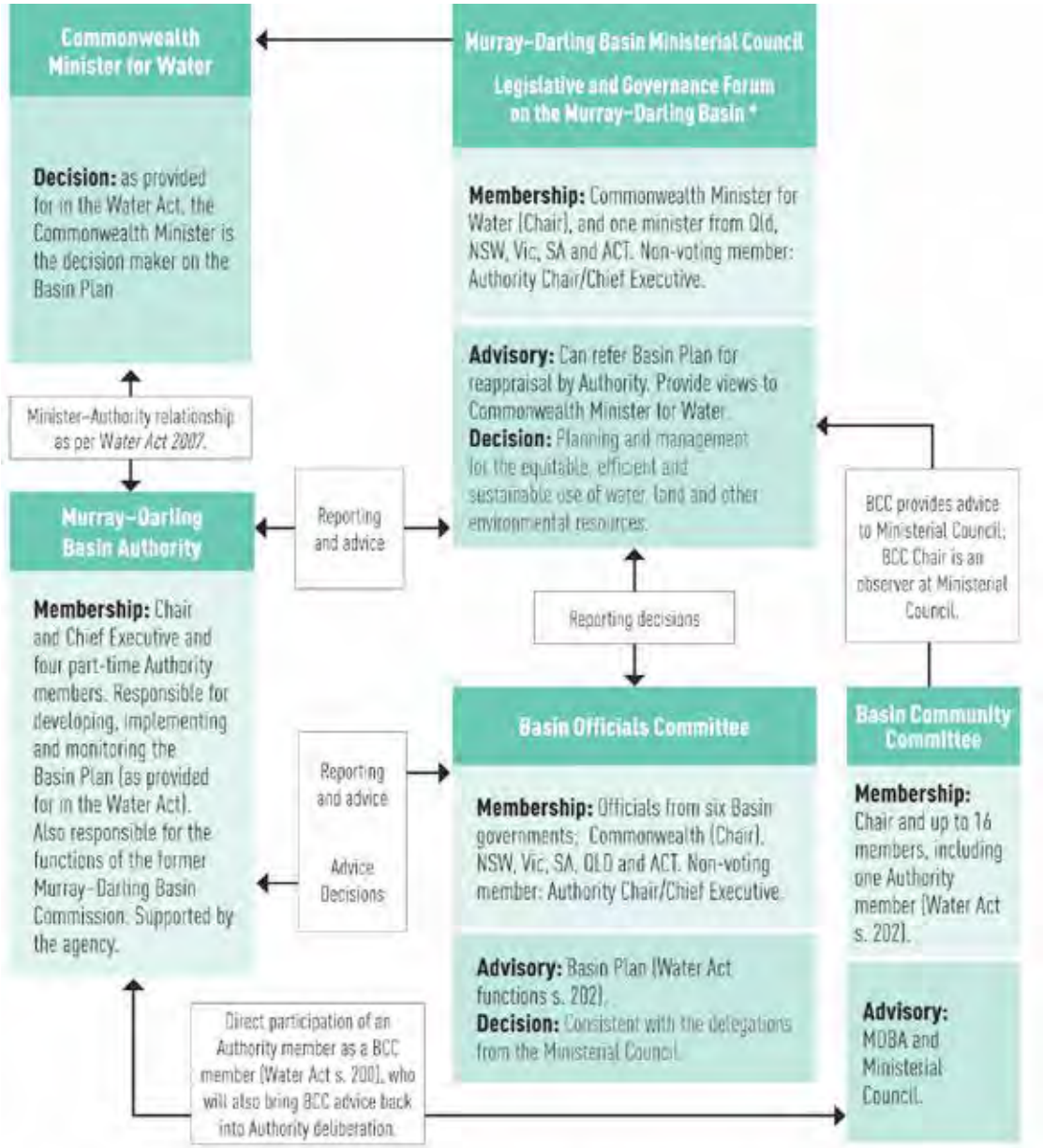
In the event of further reductions, particularly as they relate to Contributions from jurisdictions a revision in the delivery of services and/or alternative funding arrangements would be required. These financial statements have been prepared in accordance with the FMOs (refer Note 1.4) and contemplates the continuation of the Authority as a 'going concern'.


Murtho Salt
Interception Scheme
Australian Government
Sustainable Riv
Barmah–Millewa Forest Icon Site
Watering the largest river red gum forest in the world
Returning Water to Hattah Lak
MURRAY DARLING BASIN AUTHORITY
The Living Murray

APPENDIXES

GOVERNANCE BODIES MEETINGS AND OUTCOMES

Figure A.1. MDBA governance structure and relationships



* In February 2011 the Council of Australian Governments (COAG) established new arrangements for Ministerial Councils that support their work. One of the Ministerial Councils affected was the Murray–Darling Basin Ministerial Council which was re-established as the Legislative and Governance Forum on the Murray–Darling Basin.

The Authority

The six-member Authority met 16 times during 2012–13 focusing mainly on the development of the Basin Plan, its submission to the Commonwealth Minister for Water, the Hon. Tony Burke MP for adoption, and the start of its implementation.

Significant outcomes included:

- finalising and approving the Basin Plan, including:
  - approving the proposed Basin Plan on 3 August 2012
  - submitting the proposed Basin Plan to members of the Murray–Darling Basin Ministerial Council on 6 August 2012 for comment
  - submitting the Basin Plan to the Commonwealth Minister for Water, on 21 November 2012
- guiding development of Basin Plan implementation strategies, including:
  - developing the Implementation Agreement
  - considering and approving the Basin annual environmental watering priorities, including developing methods and processes for setting the priorities, and communication products
  - developing the sustainable diversion limits adjustment mechanism and the constraints management strategy including a conceptual framework, consultation meetings and technical reports
  - considering the proposed approach to developing a monitoring and evaluation framework
  - developing the social and economic work program, including monitoring and evaluating the social and economic impacts of the Basin Plan
  - three groundwater sustainable diversion limit reviews
  - implementing water resource plans under the Basin Plan and discussing amendments to transitional and interim water resource plans
- establishing the Advisory Committee on Social, Economic and Environmental Sciences to provide strategic advice about the science and knowledge underpinning the implementation of the Basin Plan
- appointing the Basin Community Committee for its second term, to commence on 1 July 2013
- participating in Northern Basin Advisory Committee meetings
- oversighting provision of information to the Ministerial Council's requested review of the joint programs, following reductions in state contributions to the programs
- attending meetings, workshops and conferences with stakeholders to explain the content of the final Basin Plan and to discuss and seek input to the implementation processes and key bodies of work.

Legislative and Governance Forum on the Murray–Darling Basin

In 2011 the Council of Australian Governments established new arrangements for the ministerial councils that support COAG's work. As part of these arrangements the Murray–Darling Basin Ministerial Council was re-established as the Legislative and Governance Forum on the Murray–Darling Basin.

The Legislative and Governance Forum on the Murray–Darling Basin comprised the Australian Government minister (the Hon. Tony Burke MP) and Basin state ministers with responsibility for the Murray–Darling Basin, as at 30 June 2013:

- the Hon. Katrina Hodgkinson MP (New South Wales)
- the Hon. Peter Walsh MP (Victoria)
- the Hon. Ian Hunter MLC (South Australia)
- the Hon. Andrew Cripps MP (Queensland)
- Mr Simon Corbell MLA (ACT).

When exercising their powers and functions under the Murray–Darling Basin Agreement (established under Schedule 1 to the *Water Act 2007,* as amended) these ministers convene as the Murray–Darling Basin Ministerial Council.

As set out in the agreement, Ministerial Council has a decision-making and policy role in regards to state water shares as well as in funding and delivering natural resource management programs. The Murray–Darling Basin Authority prepares an annual corporate plan on these matters for approval by Ministerial Council.

Ministerial Council also has a decision-making and policy role relating to critical human water needs as provided for in the Water Act, which also provides for a complementary role for the Basin Plan.

Ministerial Council is able to direct and seek advice from Basin Officials Committee about its powers and functions under the agreement.

Ministerial Council had an advisory role in the preparation of the Basin Plan, the plan, which commenced on 24 November 2012, and incorporated Ministerial Council's suggestions for a mechanism to provide greater flexibility in the volume of water recovered for the environment, while improving environmental, social and economic outcomes.

Meetings and outcomes

The Legislative and Governance Forum on the Murray–Darling Basin, incorporating the Ministerial Council, met in November 2012, and a communiqué from this meeting is available on the MDBA website. They achieved a number of significant outcomes during 2012–13, both in and out of session.

In relation to the joint government programs, council:

- approved the MDBA corporate plan for 2012–13 and three out-years
- noted the Independent Audit Group's *Review of Cap Implementation 2011–12* report and its recommendations
- endorsed the release of the second Sustainable Rivers Audit — *Sustainable Rivers Audit 2: The ecological health of rivers in the Murray–Darling Basin at the end of the Millennium Drought (2008–2010)* — and supporting information
- endorsed release of *The Living Murray annual implementation report 2011–12 and Audit of The Living Murray 2011–12*
- agreed to 2013–14 funding and program delivery arrangements for joint government programs
- directed the Basin Officials Committee to advise by the end of 2013 on proposed 2014–15 budget and longer term funding and institutional governance arrangements for the joint government programs.

In relation to the Basin Plan, council:

- considered the proposed Basin Plan and provided comments to the MDBA
- discussed the next steps in progressing implementation of the Basin Plan, including the inter-governmental agreement.

Basin Officials Committee

The Murray–Darling Basin Officials Committee is established by the Murray–Darling Basin Agreement, Schedule 1 to the Water Act.

The committee facilitates cooperation and coordination between the Australian Government, the MDBA and the Basin states in funding works and managing the Basin water and other natural resources.

Membership of the committee comprises officials from the six Basin governments, and the committee is chaired by the Commonwealth committee member. The Authority Chair and MDBA Chief Executive are non-voting members of the committee.

The committee is responsible for providing advice to the Murray–Darling Basin Ministerial Council, and for implementing policy and decisions of the council on matters such as state water shares and the funding and delivery of natural resource management programs.

The committee has high-level decision-making responsibilities for river operations, including setting objectives and outcomes to be achieved by the MDBA in River Murray operations.

As at 30 June 2013, committee membership comprised:

Chair
Mr David Parker

Members
Mr David Harriss (New South Wales)
Dr Jane Doolan (Victoria)
Mr Tim Goodes (South Australia)
Mr Lyall Hinrichsen (Queensland)
Ms Dorte Ekelund (Australian Capital Territory)

Meetings and outcomes

The Basin Officials Committee held eight meetings during 2012–13, and achieved the following significant outcomes:

- considered various amendments to the MDBA corporate plan 2012–13 and considered the draft MDBA 2013–14 corporate plan
- advised the Murray–Darling Basin Ministerial Council on options for delivery of joint government programs for 2013–14 following reductions in jurisdiction contributions to the joint programs
- approved the Specific Objectives and Outcomes for River Operations in the River Murray System
- noted the MDBA River Management Division's monitoring of lessons learned from the Wivenhoe flood and the Queensland Floods Commission's interim and final reports on the matter, and the resulting changes made to river operations.

Reviews:

- agreed that a final report on Stage 2 of the Review of the Murray–Darling Basin Agreement be prepared
- noted progress on the review of the Murray–Darling Basin Agreement and Murray–Darling Basin Ministerial Council decisions
- received regular updates on the River Murray System Operations Review, including the technical work undertaken on the Lindsay River allowance.

Reports:

- agreed to present the final versions of *Sustainable River Audit report 2: The ecological health of rivers in the Murray–Darling Basin at the end of the Millennium Drought (2008–2010)* and scorecard brochure to the Murray–Darling Basin Ministerial Council
- noted the MDBA response to the Independent River Operations Review Group 2011–12 report
- recommended that the MDBA refer recommendations from the review of the 2011–12 multi-site environmental watering trial to The Living Murray Committee and/or the Water Liaison Working Group to identify appropriate forums for progression of the issues.

In regard to environmental watering:

- noted the Independent River Operations Review Group report on the review of the 2011–12 multi-site environmental watering trial
- recommended that the Murray–Darling Basin Ministerial Council approve the outfalls at Koondrook–Perricoota Forest, Gunbower Forest and Hattah Lakes
- noted development of detailed water accounting procedures for the environmental watering sites
- agreed to permit a fourth large-scale environmental watering trial on the River Murray System in 2013–14, which will be subject to an independent review by the Independent River Operations Review Group.

In regard to river management:

- agreed that MDBA continue to pursue with the Basin states an amended strategy for River Murray Increased Flows (RMIF) that includes the option to credit state RMIF accounts by substitution
- approved the sales of a residence and land in Victoria
- agreed to the draft 2013 'Strategy for River Murray Increased Flows'
- with regard to management of downstream environmental releases in 2012–13, noted the current significant delivery of environmental water to South Australia, and noted the limitations on the event designed to minimise the potential for impacts on state water entitlements shares and water supply.

In regard to the Basin Plan implementation:

- received updates on the development of the proposed Basin Plan, including regular reports from the Basin Plan Working Group
- received a briefing from the MDBA on the sustainable diversion limit adjustment mechanism and a proposed approach to verifying the contribution of works and measures to bridging the gap between current and sustainable diversion limits
- agreed that the MDBA, in consultation with partner governments, should develop high-level principles for use in determining when a sustainable diversion limit offset may be appropriate

- convened a workshop to gain an understanding of the interrelationship of the work being undertaken by the Basin Plan Working Group, Basin Strategy Working Group and review of the Murray–Darling Basin Agreement
- discussed the collaboration required by all parties to implement the Basin Plan and the wider Basin reform agenda.

Basin Community Committee

The Basin Community Committee comprised 14 members, whose role includes providing advice to the MDBA about the performance of its functions, including:

- engaging the community in the preparation of each draft of the proposed Basin Plan
- community matters relating to the Basin water resources
- matters referred to the committee by the Authority.

The role of the committee relates to water and other natural resources of the Murray–Darling Basin.

The Basin Community Committee advises the Murray–Darling Basin Ministerial Council on the Murray–Darling Basin on its functions under the Murray–Darling Basin Agreement, which may include matters such as delivery of natural resource management programs.

In carrying out these functions, the committee liaises with the broader Basin community, by convening meetings with regional Basin stakeholders during the implementation process for the Basin Plan and undertaking suitable liaison activities to help provide advice to the Authority and the Murray–Darling Basin Ministerial Council.

At 30 June 2013, committee membership comprised:

Chair
Ms Joan Burns, Mildura (NSW)

Members
Ms Danielle Anderson, Wellington (NSW)
Ms Cheryl Buchanan, Cunnamulla (Qld)
Professor Ian Falconer AO, Canberra (ACT)
Ms Mary-Lou Gittins, Allora (Qld)
Mr Les Gordon, Barham (NSW)
Dr Arlene Harriss-Buchan, Melbourne (Vic)
Mr Henry Jones, Clayton (SA)
Ms Sarah Nicholas, Wandiligong (Vic)
Mr Jeff Parish OAM, Barmera (SA)
Mr Russell Pell, Wyuna (Vic)
Ms Kathryn Ridge, Sydney (NSW)
Dr Guy Roth, Narrabri (NSW)
Mr Rory Treweeke, Lightning Ridge (NSW)

Meetings and outcomes

The Basin Community Committee held four meetings during 2012–13 and achieved the following significant outcomes:

- consistently provided strategic advice to the MDBA on its functions from a community perspective
- provided advice and assistance to the MDBA engagement team with coordinating and facilitating community meetings
- attended community meetings
- provided written advice and feedback to the MDBA on the proposed Basin Plan
- received briefings and presentations on policy and technical issues relating to the proposed Basin Plan including the *Sustainable Rivers Audit report 2*
- provided advice to the MDBA on implementing the Basin Plan.

The Basin Community Committee also advised the MDBA on: the draft Legislative Instrument, localism, groundwater, cultural flows, sustainable diversion limits, baseline diversion limits, and the monitoring and evaluation framework.

The MDBA announced the committee's second term membership on 28 May 2012. The committee's second term began on 1 July 2013.

Committee membership comprises:

Chair
Rory Treweeke, Lightning Ridge (NSW)

Members
Russell Pell, Wyuna (Victoria)
Joanne Pfeiffer, Murray Bridge (SA)
Grant Rigney, Meningie (SA)
Jason Wilson, Dubbo (NSW)
Joan Burns, Mildura (Victoria)
Paul Harvey, Adelaide (SA)
Karen Hutchinson, Hanwood (NSW)
Howard Jones, Dareton (NSW)
Christopher Joseph, Dalby (Qld)
Anthony Martin, Merbein (Victoria)

BASIN PLAN EFFECTIVENESS REPORT 2012–13

Making the Basin Plan work

The Basin Plan became law in November 2012.

The key objectives of the Basin Plan are to establish a long-term adaptive management framework for the management of Basin water resources, and to balance the water needs of communities, industries and the environment.

The Basin Plan provides a high level framework that sets standards for the Australian Government, Basin states and the Murray–Darling Basin Authority to manage the Murray–Darling Basin's water resources in a coordinated and sustainable way, in collaboration with the community.

The Murray–Darling Basin Authority is responsible for ensuring the plan is implemented by Basin states, the Australian Government and the MDBA. Figure 1.1, on page 33, indicates when each element of the plan will be implemented in the period to 2024.

This report, the Basin Plan effectiveness report, describes progress made during the first seven months of the Basin Plan's annual operation to 30 June 2013, for the purpose of s. 214(2)(a) *Water Act 2007*. In future years the Basin Plan effectiveness report will include more detail on the achievement of the environmental, social and economic objectives of the Basin Plan.

The *Water Act 2007* – Basin Plan 2012 can be found on the Australian Government's ComLaw website <www.comlaw.gov.au/Details/F2012L02240>. Supporting information about the Basin Plan and its implementation can be found on the MDBA website's Basin Plan web pages, <www.mdba.gov.au/what-we-do/basin-plan>.

Basin Plan objectives and outcomes

The management objectives and outcomes of the Basin Plan are listed in chapter 5 of the plan. The chapter covers the Basin Plan as a whole, the environment, water quality and salinity, long-term sustainable diversion limits and water trading.

In the Basin Plan, these objectives and outcomes are linked to the more detailed objectives in the environmental watering plan (chapter 8) and the water quality and salinity management plan (chapter 9). Chapter 5 provides the outcomes to be monitored and reported on to assess Basin Plan effectiveness as set out in the monitoring and evaluation program (chapter 13).

Working with stakeholders

An essential component of implementing the plan is the MDBA's collaboration with the Basin states, Basin communities and other key stakeholders.

The Basin Plan's success will ultimately largely depend on how well we work with communities and how willing we are to use local knowledge and expertise as well as the best available social, economic and environmental science.

Results from the monitoring and evaluation program will help the MDBA and other water managers understand the effects of the Basin Plan and, over time, adapt decisions to gain improved outcomes.

The Basin Plan is based on an adaptive management approach. This concept is hard-wired into the Basin Plan's environmental management framework, which establishes environmental watering planning at both Basin and regional scales, annually and over the long term.

Implementing the Basin Plan 2012–13

To implement the Basin Plan, the MDBA must:

- balance social, economic and environmental considerations
- consider the views of local communities (localism) and cultural needs
- work on an implementation agreement between the MDBA, Basin states and the Commonwealth Environmental Water Office
- develop a strategy to address environmental watering constraints
- commence the transition to sustainable diversion limits
- develop a Basin-wide environmental watering strategy and set annual watering priorities
- commence implementation of the water quality and salinity management plan
- help to improve the science and knowledge underpinning the plan

- continue to develop and review monitoring and evaluation methods.

In this first year of the plan's operation, the MDBA has been working towards setting these planning and management arrangements in place, including by working closely with Basin states to develop an agreement and guidelines for implementation.

Between now and 2019, when the SDLs take legal effect, implementation of the Basin Plan will be in a number of stages. Projects approved as part of the SDL adjustment mechanism need to be completed by 2024, when outcomes are reconciled.

Highlights of progress with implementing the Basin Plan from its commencement in November 2012 to 30 June 2013 are described below.

Consulting with stakeholders

During this reporting period a priority has been placed on talking to and seeking advice about the more immediate pieces of work from key community members and stakeholder groups. The plan's success relies on the MDBA working cooperatively with everyone who has an interest in the Basin's social, economic and environmental health.

MDBA staff have met with stakeholders ranging from Basin state governments to local communities, from scientists to agricultural organisations and catchment management authorities. These discussions have included topics as diverse as social and economic indicators, environmental watering priorities and managing The Living Murray icon sites.

From February 2013, members of the Murray–Darling Basin Authority and senior MDBA staff held various meetings throughout the Basin, re-engaging with key stakeholder groups at the national and regional level to discuss implementation arrangements. These set out the context of the Basin Plan's implementation before more technical and targeted meetings on specific issues such as the constraints management strategy, Basin annual environmental watering priorities, the Basin-wide environmental watering strategy and our socio-economic work program.

The MDBA produced plain English information about the scope and scale of various elements of the Basin Plan such as the constraints management strategy and Basin annual environmental watering priorities.

Basin Plan Implementation Agreement

Together with the Basin states and the Commonwealth Environmental Water Office, the MDBA has developed a draft implementation agreement to meet the requirements of Chapter 1 of the Basin Plan. The draft agreement sets out the key requirements of the Plan, who is responsible for meeting them and when, and where appropriate, relevant standards or guidelines. The agreement also establishes a new Basin Plan Implementation Committee chaired by MDBA, with state and Australian Government membership, to provide advice to the MDBA on implementation matters.

Transitioning to sustainable diversion limits

The Basin Plan balances the water needs of communities, industries and the environment by establishing new long-term average sustainable diversion limits that reflect an environmentally sustainable level of water use or 'take'. The SDLs are limits on the volumes of water that can be taken for consumptive use (including domestic, urban, industrial and agricultural use) and are set at both a resource unit and a Basin-wide scale.

The SDLs will commence in 2019, by which point they will be incorporated in water resource plans (see chapter 10). Sustainable diversion limit compliance will be determined for each SDL resource unit in each water accounting period following commencement on 1 July 2019.

The Basin Plan sets an SDL of 10,873 gigalitres (GL) per year, which represents a reduction from 2009 levels of use of 2,750 GL/y.

The Basin Plan allows for sustainable diversion limits to be adjusted up or down but overall they cannot be adjusted by more than plus or minus 5%. Sustainable diversion limits can be increased provided the new SDLs can achieve equivalent environmental outcomes. Similarly, they can be reduced provided any changes result in neutral or improved social and economic impacts.

This SDL adjustment mechanism allows the MDBA to adjust the SDL in response to:

- environmental construction projects and changes to river operating rules that enable equivalent environmental outcomes to be achieved with less water
- investment proposals to increase the amount of water that could be recovered for the environment, in ways that would have neutral or positive social and economic impacts (e.g. on-farm works to improve irrigation efficiency).

The MDBA has two main roles associated with the SDL adjustment mechanism. The first is to advise and assist the jurisdictions as they develop proposals for adjustment. This is being done through the Sustainable Diversion Limit Adjustment Assessment Committee, where MDBA participates as a non-voting member and provides secretariat support.

The second role is to calculate the proposed SDL adjustments when the states submit their final proposals to the MDBA in 2016. The MDBA may then propose an amendment to the Basin Plan to the minister. In order to do this, the MDBA must develop ways to assess the projects brought forward by the states to ensure they can achieve equivalent environmental outcomes to those in the Basin Plan. To do this the MDBA has engaged a consortium, led by CSIRO, to develop an ecological scoring method. This work is currently underway and is being undertaken in consultation with Basin states. It is expected to be completed by late 2013.

MDBA, in consultation with Basin states, is also developing a 'benchmark' model to enable adjustment proposals to be assessed against a Basin Plan scenario. A successful project will allow the volume of water recovered to be reduced, whilst maintaining environmental outcomes set in the benchmark scenario. The benchmark model is expected to be completed towards the end of 2013, to align with the completion of the ecological elements scoring method.

It is estimated that 1,658 GL of the surface water recovery target had been recovered across the Basin at 30 June 2013, representing 60% of the Basin-wide recovery target of 2,750 GL, see Figure B.1.

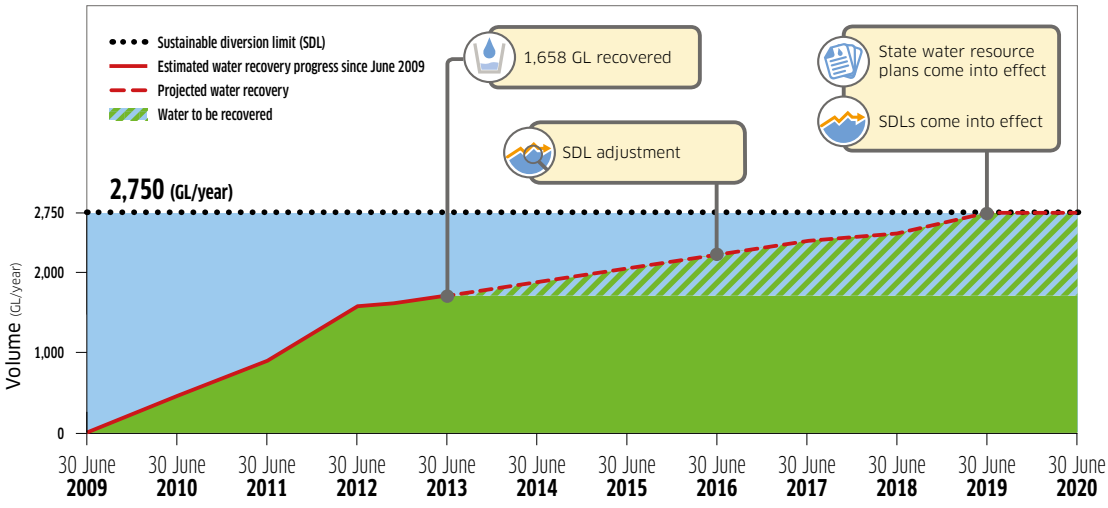
Reviewing groundwater sustainable diversion limits

The Basin Plan requires the MDBA to review the SDLs for the Western Porous Rock SDL resource unit (NSW), the Eastern Porous Rock water resource plan area (NSW) and the Goulburn–Murray: Sedimentary Plain SDL resource unit (Victoria). Up to two years will be allowed for completion of these reviews.

The review of the Western Porous Rock SDL resource unit began in February 2013. The Western Porous Rock review panel met twice during the reporting period and has made recommendations to the Authority.

It is expected that the review of the Eastern Porous Rock water resource plan area and the Goulburn–Murray: Sedimentary Plain SDL resource unit will commence in 2013–14.

Figure B.1. Surface water recovery effort



Northern Basin Review

The Basin Plan includes a commitment that the MDBA intends to conduct research and investigations (by 2015) into the basis for the long-term average SDLs in the northern Basin and in doing so will draw on local community input.

The Northern Basin Advisory Committee was formed to give independent advice on the northern Basin review and more broadly on how an adaptive Basin Plan can be implemented in the northern Basin. They held five meetings during 2012–13. A northern Basin Intergovernmental Working Group has also been formed (endorsed by the Basin Officials Committee in December 2012), and the MDBA has worked collaboratively with both the advisory committee and the working group on developing and implementing the northern Basin work program. The MDBA, in conjunction with the advisory committee, has also consulted with a number of stakeholder groups across the northern Basin on issues to consider in developing the work program.

A draft work program was progressed during the year including commencement on a science review project to review the scientific basis of the long-term average sustainable diversion limits in the northern Basin with a focus on the Condamine–Balonne local reduction and the northern Basin shared reduction for which most of the remaining water recovery is still to occur.

Several other projects and activities were also progressed including:

- scoping studies of watering requirements for floodplain vegetation species in the lower Balonne and fish recruitment in the Barwon–Darling
- hydrogeological assessments of the SDL resource units of Queensland Border Rivers Fractured Rock, Condamine Fractured Rock and the Upper Condamine Alluvium (tributaries)
- model update for the Upper Condamine Alluvium (Central Condamine Alluvium) SDL resource unit
- the northern Basin component of the LiDAR acquisition project
- developing an approach to social and economic assessments for the northern Basin work program.

Constraints management strategy

The Basin Plan requires the MDBA to develop a constraints management strategy for the Murray–Darling Basin, which will set out a 10 year program for addressing constraints to improved environmental outcomes within the Basin.

This constraints management strategy will identify and describe known constraints to environmental water delivery, including physical, operational and management constraints, and will identify priority actions to address those constraints for consideration by Basin governments. This work will be supported by the $200 million available from 2014–15 through the Australian Government's Water for the Environment Special Account to address key constraints.

In 2012–13, the MDBA has:

- consulted extensively with stakeholders and communities throughout the Basin
- looked at ways in which Basin state governments could overcome or reduce key constraints without third-party impacts
- continued work on determining possible benefits from reducing key constraints
- completed a draft technical report, 'Preliminary overview of constraints to environmental water delivery in the Murray–Darling Basin', in consultation with Basin states.

Following further consultation, the constraints management strategy will be published in late 2013.

Environmental watering plan and annual priorities

The Basin Plan's environmental watering plan includes criteria for identifying priority environmental assets and priority ecosystem functions and their watering requirements, and the targets to measure progress towards the overall objectives for water-dependent ecosystems.

The environmental watering plan is a strategic framework for the management of the environmental water in the Basin and seeks, for the first time, to coordinate environmental watering at a Basin scale, and across borders in order to protect and restore environmental assets and biodiversity dependent on Basin water resources, and achieve other environmental outcomes for the Basin as a whole.

The Basin Plan will identify and set aside an increased, but still finite, amount of water to achieve the best possible environmental outcomes.

The environmental watering plan aims for sustainable ecosystems that can retain their ecological integrity so that they are healthy and resilient to future stressors.

Given the inherent variability within the Basin, the environmental watering plan is not prescriptive about what must be watered, where and when. Such a plan would inevitably lead to sub-optimal outcomes. Rather, the plan is a statutory framework for decision making, and adapting to new information and better ways of operating, in the context of climatic and other variables.

As a strategic framework, the environmental watering plan has a strong emphasis on setting overall objectives and establishing principles to guide decision-making on the use of environmental water. The framework sets out the way environmental watering will be managed, including Basin- and regional-scale planning and Basin- and regional-scale annual prioritisation. The framework also sets out arrangements for consultation and coordination to ensure that the overall objectives for the Basin's water-dependent ecosystems can be achieved.

To manage uncertainty successfully, the environmental watering plan also requires periodic reviews to ensure that the best practices and knowledge are being used. These reviews are built into the Basin Plan and are consistent with the practice of adaptive management.

In 2012–13, the process to establish the first Basin-wide annual environmental watering priorities was developed. The Basin states provided their annual priorities for each water resource plan by the end of May and the Authority published the first Basin-wide annual environmental watering priorities on 28 June 2013.

The MDBA has also commenced work on a Basin-wide environmental watering strategy, due by November 2014. In the second half of 2013, we will work closely with landholders and with environmental water holders and managers to prepare a draft of this strategy by early 2014. Basin states have until November 2015 to prepare regional long-term environmental watering plans for their water resource plan areas.

More information can be found on our website, <www.mdba.gov.au>.

Water quality and salinity management plan

The water quality and salinity management plan sets out water quality objectives and targets for Basin water resources, including for salt export. The plan also:

- identifies agencies responsible for considering those targets as part of their operational roles
- provides for inclusion of water quality measures in state water resource plans
- contributes to the Basin Plan's outcome that the Basin's water resources be fit-for-purpose.

River operators — the Authority, Basin Officials Committee and agencies of Basin states — must have regard to the targets set out in the water quality and salinity management plan, when making decisions relating to the management of water flows. This obligation began with the commencement of the Basin Plan in November 2012.

During 2012–13, the achievements for water quality and salinity management include the following:

- procedures were established and implemented to ensure the obligation to have regard to targets for managing water flows was met
- salinity levels at 95% of the time (non-exceedance) were analysed and assessed for the reporting sites over 2012–13 and the previous 4 water accounting periods (Table B.1)
- an approach was developed and implemented for estimating salt export from the River Murray System into the Southern Ocean. For 2012–13 the salt export was estimated to be about 2.9 million tonnes per year (averaged over the preceding three years). The estimated salt export is greater than the indicative figure of 2 million tonnes per year.
- projects were completed to help manage risks caused by changes in water quality, including to improve our capacity to manage blackwater events in the southern Murray–Darling Basin and to improve the modelling of flood recession salinity impacts
- long-term salinity planning and management was implemented through the Basin Salinity Management Strategy. The 2011–12 annual implementation report can be found on our website, <www.mdba.gov.au>.

Table B.1. Salinity levels at the reporting sites over the period 1 July 2008 to 30 June 2013, compared to the target values

REPORTING SITE	SALINITY AT 95% OF THE TIME (NON-EXCEEDANCE) (EC) (µS/cm)*	TARGET VALUE (EC) (µS/cm)
River Murray at Murray Bridge	735	830
River Murray at Morgan	597	800
River Murray at Lock 6	350	580
Darling River downstream of Menindee Lakes at Burtundy	613	830
Lower Lakes at Milang	5,685#	1,000

*Salinity levels compiled from best available data (daily mean values derived from continuously logged data).

Salinity at Milang increased markedly during the extended drought due to the low inflows and evapoconcentration effects. Lake Alexandrina water level returned to normal around October 2010 resulting in decreased Milang salinity. Over 2012–13, salinity at 95% of the time (non-exceedance) was about 590 EC.

Water resource plans

The Basin Plan sets out the requirements that water resource plans must meet to be accredited or adopted under the *Water Act 2007*. The water resource plan requirements provide a framework to establish a consistent Basin-wide approach to the management of Basin water resources. They are balanced between accommodating the wide variability of conditions across the Basin, in both bio-physical and management terms, while being sufficiently robust to deliver the intent of the Basin Plan.

The requirements have been developed in consultation with state officials responsible for water resource planning and aim to build on existing water planning processes. The requirements outline what is necessary for water resource plans to contain so that they can be accredited by the Commonwealth Minister for Water.

While water planning currently carried out by the Basin states already takes into account the views of the community, the water resource plan requirements provides for these views to inform development of the water resource plans. The requirements also specifically establish a process to involve Aboriginal representatives in water resource planning.

In preparing to implement these requirements MDBA has:

- assisted the Basin states and the Australian Government, to clarify how and when existing (transitional and interim) water resource plans will be revised to be consistent with the Basin Plan
- in consultation with Basin states, prepared a plain English handbook for practitioners on meeting Basin Plan requirements
- commenced development of an accreditation process enabling internal and external stakeholders to understand clearly the MDBA's role in advising and assessing water resource plans.

Preparation of the implementation agreement between the Basin states and the MDBA has enabled the MDBA to identify future priorities for implementing the new arrangements, this has included:

- developing a work program to progressively put in place new water resource plans, which are consistent with the Basin Plan, by June 2019
- establishing an annual water planners' forum and a water planners' toolkit to share knowledge and experience, and to improve our collective understanding of water resource planning approaches
- improving understanding of the risks to water resources at the water resource plan area level, to inform the appropriate approach needed for each water resource plan.

Water trading rules

The Basin Plan sets out the rules for the trading of water rights relating to Basin water resources.

The Basin Plan water trading rules will come into effect on 1 July 2014. Guidelines are being developed to assist Basin states, irrigation infrastructure operators and individuals participating in the water market in complying with the rules.

The water trading rules will provide greater clarity and consistency around the operations of the water market in the Murray–Darling Basin. A well-functioning water market enables water to move to its highest value use by giving irrigators and environmental water holders the flexibility to decide how and when to use water.

The water trading rules will apply to the trade and transfer of water access rights, irrigation rights and certain types of water delivery rights that are tradeable under state water management law within the Murray–Darling Basin.

The rules aim to ensure free trade in surface water, except where there are defined allowable restrictions. The rules also aim to increase the level of information available in the market, as access to information facilitates transparency and allows participants to make informed decisions.

A range of rules already exist at the state and local level governing trade. In many instances, the requirements under the water trading rules will simply reflect current approaches already operating within the Basin.

In some instances, the Basin Plan will introduce new requirements and obligations which are currently addressed inconsistently, or not at all, in existing state and local rules. This is the case where existing (or lack of existing) arrangements are contrary to the achievement of the water market and trading objectives of the Water Act.

Clarity and certainty around the operation of a market enhances the confidence of market participants and their willingness to participate in the market. Consistency in the rules governing trade will ensure that all market participants have the same rights and are confident of their rights regardless of where they are trading within the Basin.

The water trading rules will not replace state level rules, which will continue to apply. However, in the event of an inconsistency between state water trading rules and the Basin Plan water trading rules, the Basin Plan water trading rules will generally prevail, except where interim and transitional water resource plans have been recognised under the Water Act.

Basin Plan monitoring, evaluating and reporting

The MDBA is preparing a draft evaluation framework technical document, for consultation with stakeholders in early 2014. This will describe how the MDBA intends to evaluate the effectiveness of the plan against its intended environmental, social and economic outcomes, objectives and targets. It will include a description of indicators, methods and phased implementation of Chapter 13 (the program for monitoring and evaluating the effectiveness of the Basin Plan).

The MDBA will report annually on the effectiveness of the Basin Plan, building to five-yearly evaluations and reviews from 2017. Implementation of this framework will inform key elements of the plan and the Water Act, including:

- reviewing the environmental watering plan and water quality and salinity management plan targets every five years
- advising on Basin Plan impacts after five years of implementation
- reviewing the Basin Plan on a 10 yearly basis
- any reviews of sustainable diversion limits.

The MDBA's primary roles are to inform and/or meet these obligations by:

- undertaking and publishing periodic evaluations of effectiveness of the Basin Plan against the objectives and outcomes in chapters 5, 8 and 9, by reference to the matters listed in schedule 12 of the plan
- leading and coordinating ongoing monitoring of the Basin Plan implementation and progress towards its targets and objectives
- consulting with states, the Australian Government and other relevant stakeholders

- carrying out its functions consistently with the principles outlined in chapter 13 of the plan
- setting and administering reporting requirements for state and Australian Government agencies
- publishing guidelines on monitoring, evaluation and reporting
- assessing and recommending improvements to monitoring and evaluation capability across the Basin
- to the extent possible, publishing all information and reports.

The primary role of Basin state and Australian Government agencies (including MDBA in some instances) is to provide information in accordance with the reporting requirements set in chapter 13. These requirements concern reporting on matters relevant to implementation and outcomes of the Basin Plan, as well as informing MDBA's work in monitoring and evaluating the Basin Plan. States and the Australian Government will also be guided by the principles in chapter 13, for example by working collaboratively with MDBA to implement monitoring and evaluation, to the extent relevant to their responsibility for each matter.

This first Basin Plan annual effectiveness report identifies implementation highlights for 2012–13. However, from October 2014, Basin states and relevant Australian Government agencies will supply the key data and information that will be used to evaluate the effectiveness of the plan.

AGENCY RESOURCE STATEMENT AND RESOURCES FOR OUTCOME 1

The annual report must include an agency resource statement table providing information about the various funding sources that the agency may draw upon during the year.

The agency resource statement has been designed to allow agencies to reconcile the final usage of all resources in cash terms, by declaring the actual available appropriation for 2012–13 (including carried forward cash balances and further adjustments such as section 32 transfers under the *Financial Management and Accountability Act 1997* and advances to the Finance Minister) and comparing this to the actual payments made.

Additionally, for departmental appropriations and special accounts, information about any remaining balance that will be carried over to the next financial year must also be reported.

Table C.1. MDBA agency resource statement 2012–13

	ACTUAL AVAILABLE APPROPRIATION FOR 2012–13 $'000 (A)	PAYMENTS MADE 2012–13 $'000 (B)	BALANCE REMAINING 2012–13 $'000 (A)–(B)
Ordinary annual services			
Departmental appropriation[1]	50,654	50,654	-
Total	**50,654**	**50,654**	**-**
Administered expenses			
Outcome	-	-	-
Total	**-**	**-**	**-**
Total ordinary annual services	**50,654**	**50,654**	**-**
Other services			
Administered expenses			
Specific payments to states, ACT, NT and local government			
Outcome			
Total			
New administered expenses			
Outcome			
Total			
Departmental non-operating	**-**	**-**	**-**
Equity injections	-	-	-
Total	**-**	**-**	**-**
Administered non-operating	-	-	-
Administered assets and liabilities	-	-	-
Payments to CAC Act bodies non-operating	-	-	-
Total	**-**	**-**	**-**
Total other services	**-**	**-**	**-**
Total available annual appropriations and payments	**50,654**	**50,654**	**-**
Special appropriations			
Special appropriations limited by criteria/entitlement			
Special Appropriation Act			

	ACTUAL AVAILABLE APPROPRIATION FOR 2012–13 $'000 (A)	PAYMENTS MADE 2012–13 $'000 (B)	BALANCE REMAINING 2012–13 $'000 (A)–(B)
Special Appropriation Act			
Special appropriations limited by amount			
Special Appropriation Act			
Total special appropriations	**-**	**-**	**-**
Special Accounts			
Opening balance	196,456		
Appropriations receipts	50,654		
Appropriation receipts — other agencies	103,152		
Non-appropriation receipts to Special Accounts[2]			
Payments made		213,624	
Total Special Account			**136,638**
Total resourcing and payments	400,916	264,278	136,638
Less appropriations drawn from annual or special appropriations above and credited to special accounts and/or CAC Act bodies through annual appropriations	50,654	50,654	-
Total net resourcing and payments	**350,262**	**213,624**	**136,638**

Expenses for outcome 1

Outcome 1: Equitable and sustainable use of the Murray–Darling Basin by governments and the community including through development and implementation of a Basin Plan, operation of the River Murray System, shared natural resource programs, research, information and advice

	BUDGET 2012–13 $'000 (A)	ACTUAL 2012–13 $'000 (B)	VARIATION 2012–13 (A)–(B)
Program 1.1: Equitable and sustainable use of the Murray–Darling Basin			
Departmental appropriation	50,842	50,654	(188)
Special Accounts	133,410	151,877	18,467
Total for Program 1.1	**184,252**	**202,531**	**18,279**
Outcome 1 Totals by appropriation type			
Departmental appropriation[1]	50,842	50,654	(188)
Special Accounts	133,410	151,877	18,467
Total expenses for Outcome 1	**184,252**	**202,531**	**18,279**

	2010–11	2011–12	2012–13
Average staff level (number)	295	295	305

ADVERTISING AND MARKET RESEARCH

This table of expenditure for 2012–13 is presented in accordance with the reporting requirements in s.311A of the *Commonwealth Electoral Act 1918*. Expenditure was in the media advertising category only.

MEDIA ADVERTISING AGENCY	PURPOSE	EXPENDITURE $ (EXCL GST)
Adcorp	Recruitment advertising	19,617
Adcorp	Non-recruitment advertising	3,924
Total		**23,541**

ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL PERFORMANCE

Ecologically sustainable development is the core of MDBA activities and business. Along with other requirements, the *Water Act 2007* also requires the MDBA to take into account the principles of ecologically sustainable development. These are:

- 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
- the principle of intergenerational equity — that 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 our core business activities, which include:

- developing and implementing the Basin Plan, which will help to ensure that the environmental health of the 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 which will help to maximise environmental outcomes and contribute to the conservation of biodiversity and ecological integrity within the Basin
- using The Living Murray's environmental water portfolio to meet the environmental objectives of the icon sites, which includes Australia's largest river red gum forest, and internationally significant wetlands. In 2012–13 TLM environmental watering included contributing to the largest ever environmental watering to South Australia
- completing the construction of major water management structures at two icon sites to ensure that environmental water will be delivered more efficiently and effectively. All construction undertaken by the state constructing authorities conformed to approved construction environmental plans
- constructing fishways, including the Sea to Hume Fishway Program, to allow for greater movement of native fish
- funding strategies to reduce alien fish species in the Basin
- commissioning salt interception schemes to divert salt from the River Murray.

Internal operations

In our internal operations, the MDBA also follows the principles of ecologically sustainable development and has implemented a number of initiatives.

Recycling

- we operate a paper, plastic and organic waste recycling program
- we continue to use 100% recycled or partially recycled stock for all print publications
- we recycle printer cartridges
- we use recycled paper products in all bathrooms.

Reducing

- we minimise our paper and toner use by default setting printers to double-sided, black and white printing
- we publish only in electronic format unless a need for print copies is identified
- careful planning of print runs, has significantly reduced our excess stock
- we use water saving flushes in all bathrooms, and low flow taps where possible, to reduce water consumption.

Reducing our power consumption

- we installed energy efficient T5 lighting in our Canberra offices
- we have implemented server virtualisation to reduce power usage
- computers are turned off automatically overnight to save power
- we use power-efficient centralised multi-function devices instead of distributed desktop printing
- we monitor desktop computer power usage so that the success of power-saving initiatives can be measured
- our lighting is operated through movement sensors in all work spaces, so that lights are switched off when areas are not in use
- we purchase energy-saving whitegoods and ICT equipment
- we direct heat water where possible
- we have installed secondary glazing on windows where heat loss is significant.

Figures D.1 and D.2 show a reduction in our energy use over the past two years as a result of implementing energy efficient initiatives.

Figure D.1. MDBA energy use (kW/h) in 2011–12 and 2012–13

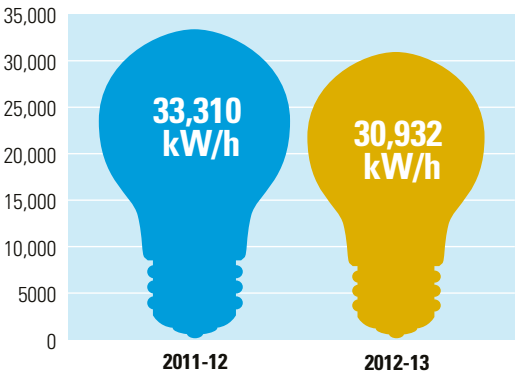
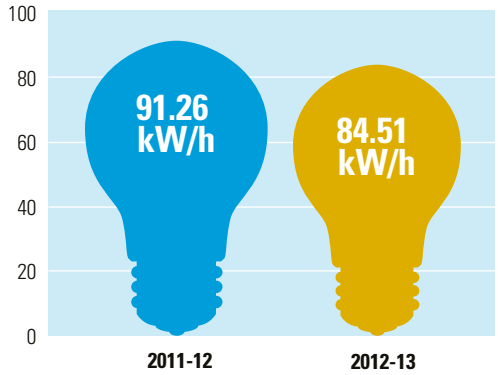


Figure D.2. MDBA's average daily energy use (kW/h) in 2011–12 and 2012–13



Travel

- interstate travel is mimimised by utilising teleconferences, skype and videoconferencing, although in 2012–13 there was extensive travel throughout the Basin due to consultation with Basin communities
- the MDBA actively supports staff who cycle to work by providing secure bike storage, lockers and showers.

We continue to look at further opportunities in our internal operations and in our premises to further minimise our impact on the environment.

MDBA COMMUNICATION PRODUCTS

The Murray–Darling Basin Authority produces a range of communication products each year, in printed and electronic formats.

Publications

(MDBA publication number)

A review of domestication effects on stocked fishes, strategies to improve post stocking survival of fishes and their potential application to threatened fish species recovery programs in the Murray–Darling Basin (48/12)

Analysis of Lake Victoria vegetation and shoreline monitoring data (87/12)

Annual environmental watering priorities 2013–14 (13/13)

Environmental watering for food webs in The Living Murray icon sites (11/12)

Environmental watering for tree species in The Living Murray icon sites (12/12)

Environmental watering for understorey and aquatic vegetation in The Living Murray icon sites (10/12)

Environmental watering for waterbirds in The Living Murray icon sites (9/12)

Flood management at Hume Dam (12/13)

Hydrologic modelling of the relaxation of operational constraints in the southern connected system: methods and results (76/12)

Lake Victoria annual compliance report 2011–12 (4/13)

Murray–Darling Basin Authority annual report 2011–12 (85/12)

Review of Cap implementation 2011–12 (84/12)

River Murray floodplain salt mobilisation and salinity exceedances at Morgan (53/12)

Salinity annual implementation report 2011–12, summary (3/13)

Salinity annual implementation report 2011–12 (2/13)

Salinity Independent Audit Group report 2011–12 (1/13)

Strategies to improve post release survival of hatchery-reared threatened fish species (135/11)

Sustainable Rivers Audit 2: The ecological health of rivers in the Murray–Darling Basin at the end of the Millennium Drought (2008–2010), volumes 1, 2 and 3 (72, 73 and 74/12)

Sustainable Rivers Audit 2: The ecological health of rivers in the Murray–Darling Basin at the end of the Millennium Drought (2008–2010), summary (75/12)

The Living Murray annual environmental watering plan 2012–13 (66/12)

The Living Murray annual implementation report 2011–12 and Audit of The Living Murray 2011–12 (86/12)

The Living Murray watering the icon sites — a snapshot 2011–12 (77/12)

Brochures

Murtho salt interception scheme

DVDs

Barmah–Millewa Forest icon site, watering the largest river red gum forest in the world

Returning water to Hattah Lakes, episode 1

eNewsletters

The Spillway (October, January, March, April, June)

ENDMATTER

ABBREVIATIONS AND ACRONYMS

AEP	Annual exceedance probability
AHD	Australian height datum
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EC	electrical conductivity unit
GL	gigalitre (a billion litres)
LTCE	long-term Cap equivalent
MDBA[1]/the Authority[2]	[1]Murray–Darling Basin Authority: the agency; [2]the six member Authority
ML	megalitre (a million litres)
ML/d	megalitre per day
MLDRIN	Murray Lower Darling Rivers Indigenous Nations
Ministerial Council	Murray–Darling Basin Ministerial Council
NBAN	Northern Murray–Darling Basin Aboriginal Nations
PAES	Portfolio Additional Estimates Statements
PBS	Portfolio Budget Statements
RMIF	River Murray Increased Flows
SDL	sustainable diversion limits
TLM	The Living Murray

SCIENTIFIC NAMES OF PLANTS AND ANIMALS

Australian spotted crake	*Porzana fluminea*
Black box	*Eucalyptus largiflorens*
Bony bream	*Nematalosa erebi*
Carp	*Cyprinus carpio*
Common reed	*Phragmites australis*
Dwarf flat-headed gudgeon	*Philypnodon macrostomus*
Eastern gambusia	*Gambusia holbrooki*
Freshwater catfish	*Tandanus tandanus*
Golden perch	*Macquaria ambigua*
Hyrtl's tandan (moonfish)	*Neosilurus hyrtlii*
Macquarie perch	*Macquaria australasica*
Murray cod	*Maccullochella peelii*
Murray hardyhead	*Craterocephalus fluviatilis*
Murray River crayfish	*Euastacus armatus*
Pouched lamprey	*Geotria australis*
Rabbit	*Oryctolagus cuniculus*
River red gum	*Eucalyptus camaldulensis*
Royal spoonbill	*Platalea regia*
Silver perch	*Bidyanus bidyanus*
Spangled perch	*Leiopotherapon unicolor*
Spiny sedge	*Cyperus gymnocaulos*
Straw necked ibis	*Threskiornis spinicollis*
Tilapia	*Oreochromis spp.*
Two spine blackfish	*Gadopsis bispinosus*
White ibis	*Threskiornis moluccus*

GLOSSARY

Acid sulfate soils

Soils formed naturally when sulfate-rich water mixes with sediments containing iron oxides and organic matter.

Additional dilution flow

This is an extra entitlement that South Australia receives when certain conditions are met within MDBA storages.

Airspace

The difference between the capacity of a reservoir and the volume of water currently in storage.

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.

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 the Australian continent. 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

The Australian National Committee on Large Dams Incorporated is 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

For the purposes of the Basin Plan, the Basin states are defined in the Water Act as New South Wales, Victoria, Queensland, South Australia and the Australian Capital Territory.

Basin water resources

Under the *Water Act 2007*, Basin water resources are within or beneath the Murray–Darling Basin, but do not include water resources within or beneath the Basin that are prescribed by the regulations, or 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 draft Basin Plan, the Cap will be 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.

Cofferdam

A cofferdam is a temporary enclosure built within a body of water and constructed to allow the enclosed area to be pumped out, creating a dry work environment for the major work to proceed.

Connectivity

Connections between natural habitats, such as 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

A constraint is anything that affects the delivery of environmental water. It can include physical aspects such as low lying bridges, or river channel capacity, but can also include operational aspects such as river rules or operating practices that impact on when and how much water can be delivered. We can improve how effectively we manage and deliver environmental water by looking at how we can change some of these physical and operational constraints.

Consumptive use

Use of water for irrigation, industry, urban, stock and domestic use, or for other private consumptive purpose.

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.

Entitlement (or water entitlement)

The volume of water authorised to be taken and used by an irrigator or water authority; 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 event of flow in a river; sometimes required to achieve one or more 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).

Inflow

Source of the water that flows into a specific body of water; for a lake, inflow could be a stream or river, and inflow for a stream or river could be rain.

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

A confederation of Indigenous Nations from the southern part of the Basin, comprising representatives of the Wiradjuri, Yorta Yorta, Taungurung, Barapa Barapa, Wamba Wamba, Mutti Mutti, Wadi Wadi, Latji Latji, Wergaia and Ngarrindjeri Nations.

Northern Basin Aboriginal Nations

NBAN was formed in April 2010 and comprises 22 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.

NBAN comprises Traditional Owner nominated representatives from the following Nations: Barkindji (Paakantyi), Githabul, Mandandanji, Barunggam, Gunggari, Mardigan, Bidjara, Jarowair, Murrawarri, Bigambul, Gwamu, (Kooma), Ngemba, Budjiti, Kunja, Ngiyampaa, Euahlayi, Kambuwal, Kwiambul, Wailwan, Gamilaroi, Maljangapa, and Wakka Wakka.

Ramsar Convention

The Convention on Wetlands of International Importance is 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 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 inflowing to 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 after having risen to the surface naturally from underground (see s. 4 of the Water Act).

Sustainable diversion limit

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

Allows the sustainable diversion limit to be adjusted under certain circumstances.

Take

Take is the removal of water from, or the 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 accounting applies Australian Water Accounting Standards

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 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 after having 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 (or hydrologic 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 streamflow and other hydrologic data.

LIST OF REQUIREMENTS

The location of information provided in accordance with the Requirements for Annual Reports for Departments, Executive Agencies and FMA Act Bodies, issued by the Department of the Prime Minister and Cabinet in June 2013.

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