The Senate

Select Committee on the Murray-Darling Basin Plan

Refreshing the Plan

March 2016

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(elected Chair on 13 August 2016)	
Senator Bob Day (SA, FFP)	10 August 2015
(elected Deputy Chair on 13 August 2016)	
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Terms of Reference

On 24 June 2015, the Senate resolved to establish the Select Committee on the Murray-Darling Basin Plan with the following terms of reference:

(1) That a select committee, to be known as the Select Committee on the Murray-Darling Basin Plan be established to inquire into and report, on or before 26 February 2016, on the positive and negative impacts of the Murray-Darling Basin Plan and associated Commonwealth programs on regional communities, with particular reference to:

(a) the implementation of the plan, including:

(i) its progress,

(ii) its costs, especially those related to further implementation,

(iii) its direct and indirect effects on agricultural industries, local businesses and community wellbeing, and

(iv) any evidence of environmental changes to date;

(b) the effectiveness and appropriateness of the plan‘s Constraints Management Strategy, including:

(i) the progress of identifying constraints and options to mitigate the identified risks, and

(ii) environmental water flows and river channel capacity;

(c) the management of the Coorong, Lower Lakes and Murray mouth, including the environmental impact of the locks, weirs and barrages of the Murray River; and

(d) any related matter.

Abbreviations and Acronyms

ACCC	Australian Competition and Consumer Commission
ADIC	Australian Dairy Industry Council
AHD	Australian Height Datum
ASX	Australian Stock Exchange
BoM	Bureau of Meteorology
BPIC	Basin Plan Implementation Committee
BSM2030	Basin Salinity Management 2030
CEWH	Commonwealth Environmental Water Holder
CLLMM	Coorong, Lower Lakes and Murray Mouth
CMA	Catchment Management Authority
CMS	Constraints Management Strategy
COAG	Council of Australian Governments
CSIRO	Commonwealth Scientific & Industrial Research Organization
CyHV-3	Cyprinid Herpesvirus-3
DAWR	Department of Agriculture and Water Resources
GAB	Great Artesian Basin
GL	Gigalitres
GMID	Goulburn-Murray Irrigation District
GMW	Goulburn-Murray Water
KHV	Koi Herpesvirus
MoU	Memorandum of Understanding
MDB	Murray-Darling Basin
MDBA	Murray-Darling Basin Authority
MDBC	Murray-Darling Basin Commission
MDBP	Murray-Darling Basin Plan
NBAC	Northern Basin Advisory Committee
NVIRP	Northern Victoria Irrigation Renewal Project
NWC	National Water Commission
NWI	National Water Initiative
RAMROC	Riverina and Murray Regional Organisation of Councils

SDLs	Sustainable Diversion Limits
SEFRP	South East Flows Restoration Project
SHTPL	Snowy Hydro Trading Pty Ltd
TBL	Triple Bottom Line
VFF	Victorian Farmers Federation

Executive Summary

This is the report of the Senate Select Committee on the Murray-Darling Basin Plan. The report considers the evidence the committee has gathered from submissions and hearings in the basin states. This evidence has provided the committee with a broad range of views on the impacts of the implementation of the Murray-Darling Basin Plan (the Plan) and associated Commonwealth programs on regional communities.

The Plan was legislated for in the *Water Act 2007*, and developed over several years by the Murray-Darling Basin Authority (MBDA). It was finalised and presented to the federal parliament on 26 November 2012.

The Plan is a significant reform to water management in the Murray-Darling Basin (the basin) which for the first time treats the basin as a single system rather than separate state-based systems. By returning water to the environment, it aims to deliver economic, social and environmental outcomes across the basin to ensure sustainable, productive communities and industries in the basin. The Plan sets an extraction limit of 2750 gigalitres (GL) of water to be recovered from consumptive use for the environment each year.

The committee supports the overarching principles of the Plan and acknowledges that some elements of implementation are producing and encouraging efficient water use and positive economic, social and environmental outcomes. However, the committee was concerned to hear that several elements of the Plan, and in some instances the way the Plan has been implemented, were having negative impacts on economies and communities in the basin. These issues were both broad and state-based, and are discussed in Chapters 3 and 4 of the report.

The committee considers the implementation of the Plan requires greater effort to minimise its negative impacts.

As the Plan is being implemented, work is occurring in various states to reassess the volume of water to be extracted for the environment. In this report, the committee has commented on methods that the MDBA and other agencies should use to improve outcomes for communities and industries in the basin. The committee has also made a number of recommendations about ways to improve the Plan and the manner in which it is implemented.

The committee wishes to thank all the individuals, organisations and state, territory and federal government officials who gave evidence to the committee.

Recommendations

Recommendation 1

3.53 The committee recommends that no further reductions in water entitlements occur until the Northern Basin review, and any subsequent assessments, have been completed.

3.54 The committee recommends that the review should also consider alternative means of water recovery, particularly in the Condamine-Balonne catchment, in order to minimise the economic and social impact of the Plan in the Northern Basin. This would include consideration of the following options:

- **recovery of water upstream of Beardmore Dam;**
- **use of private storages to more efficiently store environmental water and reduce evapotranspiration (the sum of evaporation and plant transpiration) losses;**
- **implementation of environmental works and measures to more efficiently delivery environmental water to key environmental assets; and**
- **temporary trade of water to make best use of Commonwealth water assets when environmental needs have been met.**

Recommendation 2

3.55 The committee recommends that the Murray-Darling Basin Authority, as part of its ongoing social and economic work, undertake and publish a thorough assessment of the estimated and actual social and economic impacts of the implementation of the Plan, including of pursuing the remaining water recovery for the Condamine-Balonne catchment and other similarly distressed areas.

Recommendation 3

3.68 The committee recommends that the MDBA address the existing over-recovery in the Macquarie Valley and other 'terminal' systems such as the Gwydir Valley, with a view to limiting recovery to amounts which address valley-specific environmental needs.

Recommendation 4

3.99 The committee recommends that federal and state governments examine options for securing Broken Hill's water supply as recommended by the Broken Hill City Council, including raising the trigger point for releases, and improving infrastructure and storage at Menindee Lakes.

Recommendation 5

3.100 The committee recommends that an environmental watering plan be developed for the Menindee Lakes, provided that Adelaide's water supply and that of South Australian irrigators and landholders dependent on the Murray, is secure (see paragraph 3.197).

Recommendation 6

3.143 The committee recommends the Commonwealth assume liability for damage to private property from environmental watering events, including to both landholders and third parties, except to parties who have given prior consent to such flooding.

Recommendation 7

3.144 The committee recommends that the MDBA and state governments address the issue of third party impacts from environmental watering events during the development of constraints proposals, and clearly communicate with landholders who are likely to be affected by such events.

Recommendation 8

3.146 The committee recommends that the MDBA review its communication methods, particularly with regard to projects still in development such constraints proposals, and improve its ability to incorporate the views of communities and landholders into decisions and reports.

Recommendation 9

3.179 The committee recommends the federal government work with the Victorian government to ensure adequate accountability and scrutiny of the Goulburn Murray Water Connections Project, by initiating a judicial inquiry into the operation of the Goulburn Murray Water Connections Project. Further, given the use of Commonwealth funds on the project, the committee recommends the Australian National Audit Office should consider an audit of the project.

Recommendation 10

3.200 The committee recommends the government evaluate the effect on irrigators and the environment of the SA government purchasing irrigation water on the water market while declining to use its desalination plant. The committee also recommends the government undertake a study of the cost of upgrading pipeline delivery of water to irrigators and livestock owners on both sides of the lower lakes.

Recommendation 11

3.274 The committee recommends that Bird Island be removed by the South Australian Government and MDBA to improve water flow through the Murray mouth.

Recommendation 12

3.275 The committee recommends the MDBA calculate the economic value of fresh water evaporated from the lower lakes.

Recommendation 13

3.277 The committee recommends the government undertake a detailed study to inform whether a reassessment of the Coorong's Ramsar listing from a fresh water system to an estuarine system is more appropriate.

Recommendation 14

3.284 The committee recommends the government undertake cost-benefit analyses of the following options for adapting the management of the Lower Lakes and Coorong, and their social, economic and environmental impacts throughout the basin:

- **removing all of the barrages;**
- **removing some of the barrages;**
- **modifying some of the barrages (such as Tauwitcherie and Mundoo);**
- **allowing the ingress of salt water into the Lower Lakes during periods of low flow; and**
- **investigating the construction of an additional lock at a location above Lake Alexandrina, such as near Wellington, SA, either in concert with the above options or as a single change.**

3.285 Should such analysis indicate that one or more of these leads to more positive social, economic and environmental outcomes than the current basin plan, the committee recommends the Plan be amended accordingly.

Recommendation 15

3.311 The committee recommends the government commission an independent feasibility and hydrology study into a connector between Lake Albert and the Coorong to assess the environmental and economic costs and benefits of the connector, and compare this to the current practice of lake cycling.

Recommendation 16

3.328 The committee recommends the government direct the Productivity Commission to investigate the value of foregone production and food processing due to reduced irrigation water under the Plan.

Recommendation 17

3.339 The committee recommends that the government assess the operation of the Snowy Mountains Hydro-electric Scheme to determine the priority of irrigation and energy production.

Recommendation 18

3.340 The committee recommends the operation of the scheme be assessed, and adjusted as required, to give more effect to social, economic and environmental considerations of local and downstream communities.

Recommendation 19

4.5 The committee recommends that the Commonwealth Government request the Productivity Commission to undertake a full cost-benefit analysis of the Murray Darling Basin Plan.

Recommendation 20

4.22 The committee recommends that state governments make every effort to promote SDL Adjustment Mechanism projects in their jurisdiction to achieve the 650GL target.

Recommendation 21

4.35 The committee recommends that no further buybacks of water occur and that action to recover the additional 450GL of water through efficiency measures is delayed until the SDL Adjustment Mechanism target is met and the socio-economic impacts of water recovery to date are known.

Recommendation 22

4.81 The committee recommends that the government investigate the costs and benefits of a real-time national water trading register, and whether private platforms provide or can complement such arrangements.

Recommendation 23

4.112 The committee recommends that the government coordinate with the basin state governments to undertake a comprehensive assessment of carryover rules and regulations and investigate the potential for amendment of the rules.

Recommendation 24

4.125 The committee recommends the government assess, objectively value and publish data on the various uses of water in the Murray-Darling Basin.

Recommendation 25

4.150 The committee recommends that the government amend the Water Act 2007 to make clear the equal standing of economic, social and environmental needs and outcomes.

Recommendation 26

4.210 The committee recommends that the MDBA, Commonwealth Environment Water Holder and basin states conduct greater monitoring, objective evaluation and communication of environmental watering activities, and that the MDBA collate and publicly report this information.

Recommendation 27

4.212 The committee recommends that the government fund the expansion of the Commonwealth Environmental Water Holder's existing Long Term Intervention Monitoring Project to include more sites around the basin and provide greater monitoring and evaluation of basin environmental watering activities.

Recommendation 28

4.253 The committee recommends the Victorian and NSW governments, as operators of the relevant storages, implement measures to mitigate cold water pollution that is undermining recovery efforts of native fish.

Recommendation 29

4.254 The committee recommends the MDBA conduct a review of the impact of cold water releases on native fish and develop risk assessments and mitigation strategies to ensure that cold water releases do not impact on native fish.

Recommendation 30

4.279 The committee recommends that the MDBA work with basin state governments to investigate the efficiency and effectiveness of salt interception schemes and combine their use and other complementary measures to manage salinity in the basin.

Recommendation 31

4.280 The committee recommends the Commonwealth fund and facilitate accelerated work on the restoration of surface flows from the south-east of South Australia into the lower Coorong, and undertake a feasibility study into the potential for redirecting all existing drainage discharges from the South East into the Coorong.

Chapter 1
Introduction

Introduction

1.1 On 24 June 2015, the Senate resolved to establish the Select Committee on the Murray-Darling Basin Plan to inquire into and report, on or before 26 February 2016, on the positive and negative impacts of the Murray-Darling Basin Plan ("the Plan") and associated Commonwealth programs on regional communities, particularly:

a. the implementation of the plan, including:
    i. its progress,
    ii. its costs, especially those related to further implementation,
    iii. its direct and indirect effects on agricultural industries, local businesses and community wellbeing, and
    iv. any evidence of environmental changes to date;
b. the effectiveness and appropriateness of the plan's Constraints Management Strategy, including:
    i. the progress of identifying constraints and options to mitigate the identified risks, and
    ii. environmental water flows and river channel capacity;
c. the management of the Coorong, Lower Lakes and Murray mouth, including the environmental impact of the locks, weirs and barrages of the Murray River; and
d. any related matter.[1]

1.2 On 2 February 2016, the committee's terms of reference were amended to extend the reporting date to 17 March 2016.[2]

Conduct of the inquiry

1.3 The committee received 399 submissions, as listed in Appendix 1. While many submissions had been received by the close of the submissions period, the committee continued to receive submissions beyond this date.

1.4 The committee held nine public hearings:

- Canberra—18 September 2015;
- St George, Qld—29 September 2015;
- Broken Hill, NSW—26 October 2015;

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1 *Journals of the Senate*, No. 101 – 24 June 2015, p. 2802.

2 *Journals of the Senate*, No. 135 – 2 February 2016, p. 3669.

- Griffith, NSW—27 October 2015;
- Echuca, Vic.—5 November 2015;
- Shepparton, Vic.—6 November 2015;
- Goolwa, SA—8 December 2015;
- Renmark, SA—9 December 2015; and
- Canberra—5 February 2016.

1.5 A list of witnesses for each public hearing is included in Appendix 2.

Report structure

1.6 The report addresses the committee's terms of reference and is divided into the following four chapters:

- Chapter one (this chapter) states the administrative arrangements for the inquiry.
- Chapter two provides background and history of the Murray-Darling Basin Plan, and associated frameworks.
- Chapter three examines Basin state issues identified by submitters and during hearings, and makes a number of recommendations.
- Chapter four discusses the value of water, its ownership its use, quality and management.

Scope of the inquiry

1.7 This inquiry follows several other parliamentary committee inquiries into the Murray-Darling Basin Plan and into the basin more broadly.[3]

1.8 A central aspect of this inquiry is the notion of the efficacy of the Plan across the economic, social and environment needs of the land and the communities that live and work within the basin. Examination of these three elements has often been referred to as the effects or impacts of the "triple bottom line" (TBL).

1.9 The TBL was a term that originated to describe the impact of the three Ps: profit, people and planet. Essentially aiming to measure not just the financial (profit) and social impact of an activity or policy, but also its environmental performance and impact over time.[4]

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3 Recent parliamentary committee inquiries include: Senate References Committee on Rural and Regional Affairs and Transport, March 2013, http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/Completed%20inquiries/2012-13/mdb/report/index; and House of Representatives Standing Committee on Regional Australia, June 2011 http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=ra/murraydarling/report.htm (accessed 15 March 2016).

4 Elkington, J., "Cannibals with Forks: the Triple Bottom Line of 21st Century Business", Capstone, 1997.

1.10 In some ways the TBL has become a de facto balanced scorecard in examining these outcomes. The key premise behind the principle is that you cannot manage what you don't measure, since what you measure is what you are likely to pay attention to.

1.11 However, a key issue with the application of the balance scorecard principle is that it is often difficult to add together the three separate elements effectively and meaningfully. For example, it is difficult to measure in economic terms the environmental cost vs the social impact of water deprivation or water scarcity over all factors.

1.12 Whether each of these elements has been fully and equally realised in the implementation of the Plan has been a key consideration for the committee.

1.13 The committee is concerned that there has never been a cost-benefit analysis of the Plan to assess alternative policy options such as estuary restoration or the opportunity costs of policy choices.

1.14 Evidence in submissions and from witnesses spanned a broad range of views, from those who were dissatisfied with the Plan and called for it to be stopped, others who felt that the environment was benefiting at the expense of the social fabric, and those who were very satisfied with the Plan and the positive effects it was having on restoring the environment.

1.15 Much of the evidence detailed the impacts of the Plan on industry and communities. This evidence has enabled the committee to digest a greater understanding of the uniqueness of different regions' issues and impacts of the Plan across the basin and the complexity of effectively managing the basin's water for ongoing, productive use.

Notes on references

1.16 References to submissions in this report are to individual submissions received by the committee and published on the committee's website. References to the committee Hansards are to the official transcripts from inquiry public hearings.

1.17 During the course of the inquiry, the federal responsibility for water management moved from the Department of the Environment to the Department of Agriculture and Water Resources (DAWR). As such, the Department of the Environment prepared a submission to the inquiry (Submission 50), and representatives from that department appeared at the committee's first public hearing in September 2015, but the (same) representatives at the committee's final public hearing were from DAWR.

Acknowledgments

1.18 The committee would like to thank the many individuals and organisations that made written submissions to the inquiry, as well as those who gave evidence at the public hearings.

Chapter 2
Background

Introduction

2.1 This chapter provides background and history of the Murray-Darling Basin, (MDB) the legislative frameworks that underpin water management in the basin, and the development, implementation and evolution of the Murray-Darling Basin Plan ('the Plan').

Background and history of the basin

2.2 The Murray–Darling Basin's streams and rivers sit in a shallow basin, which is very old, very flat, contains large stores of salt, and with respect to groundwater is very nearly blind in that it has no outlet to the sea.[1]

2.3 The MDB catchment covers an area of 1.06 million km^2 or 14 per cent of the Australian land area through Queensland, New South Wales, the Australian Capital Territory, Victoria and South Australia. The basin provides 'essential water for its 2.1 million residents including supplying another 1.3 million people outside the basin.'[2]

2.4 The economies of many regional centres rely on the basin, which produces one-third of all Australia's food from 20 per cent of Australia's farming land. The basin also has a significant historic and natural tourism industry.[3]

Table 2.1. Major land use activities in the MDB region by area[4]

Land use activity	Area (km2)	Total area (%)
Grazing	727,800	69
Dryland agriculture	133,300	13
Conservation and natural environments	107,600	10
Forestry	34,000	3
Irrigated agriculture	24,700	2
Urban	14,300	1
Water	12,400	1
Other intensive uses	1,200	<1
Mining	300	<1
Total	**1,055,600**	**100**

1 John William, Understanding the Basin and its Dynamics, Basin Futures Water reform in the Murray-Darling Basin, ANU Press.

2 MDBA, http://www.mdba.gov.au/discover-basin/people (accessed 12 February 2016).

3 MDBA, http://www.mdba.gov.au/discover-basin/people (accessed 12 February 2016).

4 Bureau of Meteorology, Murray-Darling Basin, Physical information, http://www.bom.gov.au/water/nwa/2012/mdb/contextual/physicalinformation.shtml (accessed 26 February 2016).

2.5 Prior to European settlement, the basin was home to numerous Indigenous groups, and some of their descendants continue to have a strong connection with the rivers and land within the basin.

2.6 European settlement of the basin commenced in the early 1800s with farming—both stock and agricultural production—enhanced by trade on the rivers, irrigation schemes and the Snowy Mountains Hydro-electric Scheme.

2.7 The basin and its rivers are significant in that they provide substantial support to the Australian economy and have major cultural, social, ecological and environmental significance to the nation.

Water management in the basin

2.8 Water management across the basin is a complex endeavour. Historically, water management was controlled by the individual basin states. This has evolved over the past decade, with the Commonwealth taking a more active role in promoting and leading a basin-wide management and reform of water resources.

2.9 Following concerns about increasing levels of surface and ground water extraction from the basin during the 1980s-90s, water regulation and water use reform became a national issue.

2.10 In 1994, the Council of Australian Governments (COAG) agreed to a water reform framework in recognition that management of Australia's water resources was a national issue that would require cooperation between the Commonwealth and basin states. A fundamental change with this agreement was the separation of entitlements to water from land titles and the separation of the functions of water delivery from regulation while still making provision for environmental water.

2.11 Following the agreement in 1995, a basin-wide cap was agreed limiting the volume of surface water to be diverted for consumptive use to 1993-94 levels.[5]

2.12 In 2004, the National Water Initiative (NWI) was agreed to by COAG to further improve Australia's water efficiency. From this, the Commonwealth–funded National Water Commission (NWC) was established to 'monitor and audit water reform policy implementation and management'.

2.13 The establishment of the NWI also saw the commencement of a commitment to recover 500 gigalitres (GL) of water for the environment, including making available $500 million of investment to enable this water recovery to occur.[6] This was the first time that water had been allocated solely for environmental purposes.

2.14 The commission was later abolished in 2014 as part of the Abbott Government budget measures.[7] A full chronology of key events in water management

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5 Department of the Environment, *Submission 50*, p. 1.

6 MDBA submission to the Productivity Commission's inquiry study into mechanisms to purchase water entitlements, September 2009 http://www.pc.gov.au/inquiries/completed/murray-darling-water-recovery/submissions/sub040.pdf, p. 1 (accessed 15 March 2016).

7 NWC, http://www.nwc.gov.au/organisation/closure-in-2014 (accessed 12 February 2016).

policy was provided by the Department of the Environment. This table is reproduced at Appendix 3.

Water Act 2007[8]

2.15 In early 2007, in response to the millennium drought, the Howard Government announced that $10 billion over ten years would be provided for the *National Plan for Water Security*.[9] As part of the commitment to this package, the basin states agreed to refer their powers to the Commonwealth.

2.16 Subsequently, the *Water Act 2007* was enacted establishing the Murray–Darling Basin Authority (MDBA) and providing for development of the Basin Plan ("the Plan"). Central to the Plan is the establishment of sustainable diversion limits (SDLs)—limits on the volumes of water available for consumptive water use to ensure there are sufficient water resources available to maintain key environmental assets.[10]

2.17 The *Water Act 2007* provides the legislative framework for major water management reforms. It marks the first time that the Commonwealth has had a dominant role in water management, as decisions were previously made by states and decisions on cross-jurisdictional issues required agreement from all states. The Act enables a basin-wide approach to setting sustainable limits on water that can be taken from surface and groundwater systems and sustainably managing water resources in the national interest.

2.18 The Act legislated for:

- the establishment of the Murray-Darling Basin Authority (MDBA) to manage basin water resources;
- the requirement for the MDBA to develop a national basin plan;
- the establishment of the Commonwealth Environmental Water Holder (CEWH) to manage Commonwealth environmental water and the restoration of environmental assets in the basin;
- the Australian Competition and Consumer Commission (ACCC) to develop and enforce water charge and water market rules; and
- the Bureau of Meteorology to have additional water information functions.[11]

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8 *Water Act 2007*, https://www.comlaw.gov.au/Details/C2015C00272 (accessed 12 February 2016).

9 The Australian, January 25, 2007, John Howard's full speech to the National Press Club, (accessed 24 February 2016).

10 Murray-Darling Basin Authority, http://www.mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits (accessed 16 March 2016).

11 Department of the Environment, https://www.environment.gov.au/topics/water/australian-government-water-leadership/water-legislation/key-features-water-act-2007 (accessed 12 February 2016).

2.19 The objects of the Act were to:

a) enable the Commonwealth, in conjunction with the basin states, to manage basin water resources;

b) give effect to international agreements relevant to the use and management of basin water resources;

c) promote the use and management of basin water resources 'in a way that optimises economic, social and environmental outcomes';

d) without limiting the previous two points,

   i. ensure the return to environmentally sustainable levels of extraction for water resources that are over allocated or overused;

   ii. protect, restore and provide for the ecological values and ecosystem services of the basin; and

   iii. subject to the above two points, 'maximise the net economic returns to the Australian community from the use and management' of basin water resources;

e) improve water security for all uses of basin water resources;

f) ensure the management of basin water resources is in accordance with the broader management of natural resources in the basin;

g) achieve 'efficient and cost effective water management and administrative practices' for basin water resources; and

h) provide for the 'collection, collation, analysis and dissemination' of information on Australia's water resources and the use and management of water in Australia.[12]

2.20 The Act was amended in 2008 by the *Water Amendment Act* following the 2008 *Intergovernmental Agreement on the Murray-Daring Reform* which set out the arrangements for implementing the 2007 Memorandum of Understanding between the Commonwealth and the basin states on the principles for co-operative management of the basin resources. This amendment subsumed the role and functions of the Murray-Darling Basin Commission into the MDBA, made some consequential changes to governance arrangements of MDBA, expanded the role of basin state governments in the development of the Plan, provided for the Plan to include 'arrangements for meeting critical human water needs' and broadened the role of the ACCC with regard to water charge and market rules.[13]

12 Section 3 of the *Water Act 2007*, https://www.comlaw.gov.au/Details/C2015C00272/Html/Text#_Toc422739796 (accessed 15 February 2016).

13 Department of the Environment, *Submission 50*, p. 3.

2.21 Two further amendments were brought forward in 2015. The Water Amendment Bill 2015 [Provisions][14] which proposed to:

- amend the *Water Act 2007* to impose a duty on the Commonwealth not to exceed the 1500GL limit on surface water purchases in the Murray-Darling Basin at the time of entering into a water purchase contract; and
- amend the Murray-Darling Basin Plan 2012 to provide increased flexibility in the recovery of 450GL of water through efficiency measures funded under the Water for the Environment Special Account.

2.22 Followed by the *Water Amendment (Review Implementation and Other Measures) Bill 2015* that proposes to amend the *Water Act 2007* in relation to: reviews and reporting requirements for the Plan; accreditation of first generation state water resource plans with further accreditations linked to Plan review outcomes; incorporation of Indigenous expertise and knowledge in the governance of the basin's water resources; trading by the CEWH; and the redundancy of the Murray-Darling Basin Water Rights Information Service; and technical and consequential amendments

2.23 This amendment makes the legislative changes required to implement the government's response to the *Report of the Independent Review of the Water Act 2007* (the Water Act Review). The provisions of the bill are still before the Senate.

Roles and responsibilities

2.24 Water management is now carried out by a variety of Commonwealth and state agencies that work collaboratively to manage the basin's water resources. The MDBA's submission to the inquiry included a table that detailed the roles and responsibilities for water reform in the basin.[15] This table is reproduced at Appendix 4. They are:

- the Minister for Water;
- the Department of Agriculture and Water Resources (DAWR);[16]
- the Murray-Darling Basin Authority;
- the Commonwealth Environmental Water Holder (CEWH); and
- the basin states.

2.25 As such, DAWR now provides policy advice and program implementation, and is responsible for the water recovery strategy and national partnership agreement for implementing the Plan.

2.26 The MDBA's key role is to oversee the implementation of the Plan at the basin scale and liaise with the basin states. The MDBA also carries out some river

14 Royal assent received 13 October 2015.

15 MDBA, *Submission 243*, p. 43.

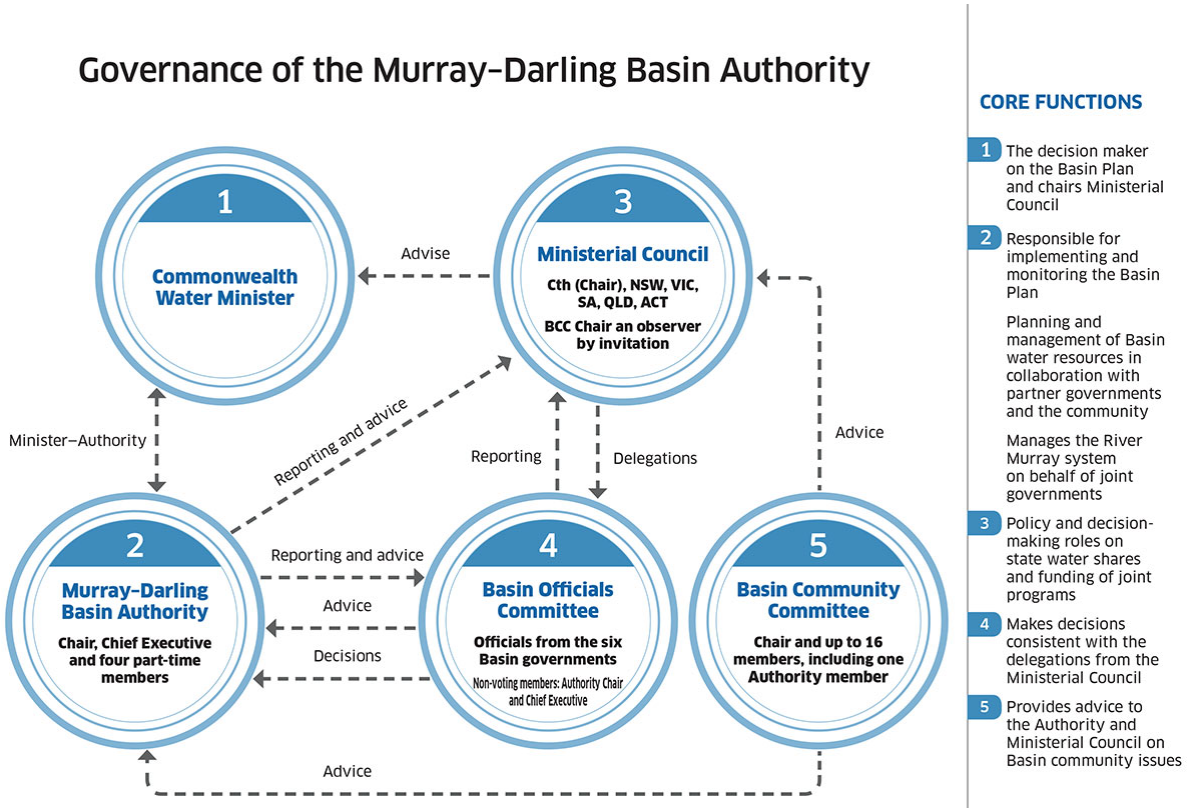
16 Previously water policy was located in the Department of the Environment.

operations functions, particularly in the southern basin, on behalf of state governments. The MDBA's governance structure is outlined in Figure 2.1 below.

2.27 The CEWH manages environmental water held by the Commonwealth.

2.28 The basin states have various responsibilities, including owning water, allocating it to entitlement holders, holding and delivering environmental water, and implementing the Plan in their own jurisdictions. This includes projects under the SDL adjustment mechanism and the constraints management strategy.[17]

Figure 2.1 Governance of the Murray-Darling Basin Authority[18]



2.29 The MDBA also supports a number of subcommittees that provide support and guidance; the Basin Officials Committee and the Basin Community Committee and the Northern Basin Advisory Committee.

2.30 The MDBA also manages the Basin Plan Implementation Committee (BPIC) that was established by the basin governments and the MDBA under the MDBP 2012 Implementation Agreement to help implement the Plan.

2.31 The BPIC overseas Working groups have been established to undertake tasks at the request of BPIC and to provide advice on particular aspects of Plan implementation.

17 MDBA, *Submission 243*, p. 10.

18 MDBA, http://www.mdba.gov.au/about-us/governance (accessed 3 March 2016).

2.32 These working groups are the:

- Water Resource Plan Working Group
- Environmental Watering Working Group
- Water Trade Working Group
- Monitoring and Evaluation Working Group.

The Murray-Darling Basin Plan

2.33 The Plan is the key instrument that implements the *Water Act 2007*. The Act requires the MDBA to develop the Plan and manage its implementation.

2.34 The Plan has two core requirements that differ from previous water management arrangements:

- sustainable limits on water extractions for all basin water resources; and
- whole-of-basin management to ensure a basin-wide approach to managing water resources.[19]

Need for the Plan

2.35 The MDBA's submission reasoned the need for the Plan is to ensure a sustainable basin that delivers social, economic and environmental outcomes. The aim of the Plan is to ensure a balance between these three competing demands to ensure triple bottom line outcomes are met, including:

> …to support productive industries, farmers and towns into the future, while leaving sufficient water in the basin's river system to ensure a healthy environment for the benefit of basin communities.[20]

2.36 The MDBA noted that the development, use and management of water in the past century have changed the pattern of flows in the rivers and had unintended consequences for the environment:

> Rivers in the southern basin once flowed more strongly in winter and spring; now their flows peak in summer and autumn to match the demands of irrigators. Changes to seasonal peaks can affect breeding and feeding opportunities for most of the water-dependent native animals in the basin, and seasonality of flooding is important for most flood-dependent vegetation. While very large floods can still occur, small to medium floods are commonly constrained, typically by in-stream dams in the more regulated south, or captured in large on-farm storages in the less regulated north. The reduction in smaller flood events adversely affects the basin environment, as these smaller floods are important in ensuring that the basin's environment is resilient and able to survive through drought years.[21]

19 MDBA, *Submission 243,* p. 1.

20 MDBA, *Submission 243,* p. 3.

21 MDBA, *Submission 243,* p. 3.

2.37 Gradual changes to water use and management have meant that some land and water resources in the basin are periodically under stress. The basin plan was developed to address these issues and to ensure that the environment could support productive, sustainable industries and communities.

Development of the Plan

2.38 The development of the Plan involved extensive consultation with governments, communities and industry.[22] Almost 12 000 submissions were received during the initial consultation period.[23] The MDBA conducted extensive community consultation as the Plan was developed, and incorporated feedback received into the various drafts of the Plan.[24]

2.39 Developed through several phases, the Plan commenced with the Guide to the proposed Basin Plan, released in October 2010. The Proposed Basin Plan was released in November 2011 and a revised draft released in May 2012. The ministerial council then provided comments to MDBA, and an Altered Proposed Basin Plan was released in August 2012. Further feedback was provided including by the then Commonwealth Minister, the Hon Tony Burke MP, and the Final Basin Plan was presented to Parliament on 26 November 2012.

Key features of the Plan

2.40 In addition to managing the basin as a single system, rather than as separate state-based systems, the Plan involves:

- implementing limits on surface and groundwater extraction, known as sustainable diversion limits (SDLs);
- coordinated environmental watering arrangements and water quality targets to optimise environmental outcomes;
- increased certainty for water users and entitlement holders through more transparent water resource planning;
- implementing reforms for a more flexible water market; and
- implementing a one-off adjustment process to improve economic and environmental outcomes (through the SDL adjustment mechanism and the northern basin review).[25]

2.41 The Plan includes a set extraction limit, which means that 2750GL of water has to be taken from consumptive use and made available to the environment each year.[26]

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22 MDBA, *Submission 243*, p. 8.

23 Department of the Environment, *Submission 50*, p. 5.

24 MDBA, *Submission 243*, p. 8.

25 MDBA, *Submission 243*, pp 4–5.

26 MDBA, *Submission 243*, p. 1.

2.42 The Plan also involves a seven-year transition period to enable time for adjustment across the basin, opportunities to review and improve the Plan during the implementation phase (including the SDL adjustment mechanism, a constraints management strategy, the Northern Basin review, and three groundwater extraction reviews).[27]

Implementation and ongoing work

2.43 The committee notes that the Plan is three years into a seven-year implementation period ending in 2019[28] and that the MDBA has completed preparatory work that includes the Plan's first environmental watering strategy, three sets of annual watering priorities, a constraints management strategy and a monitoring and evaluation strategy in this time.[29]

2.44 The committee also notes that as at 30 June 2015, 1951GL of the 2750GL per year recovery amount (due by 2019) has been recovered or contracted out by the Commonwealth and state governments for environmental use.[30] This amount equates to approximately 71 per cent of the required water environmental recovery.

2.45 As per the *Water Amendment Bill 2015*, the committee understands that Commonwealth water recovery purchases have now been capped at 1500GL and that any future environmental recovery volumes will primarily be achieved through infrastructure projects.[31]

2.46 The Department of Environment states in its submission that the current focus of Commonwealth programmes is on supporting irrigators to 'improve the operation of off-farm delivery systems and helping irrigators improve the efficiency of their water use on-farm.'[32] Off-farm programmes, the Department notes, are aimed at reducing loss of water from seepage, evaporation and other losses, and rationalising irrigation schemes, whereas on-farm programmes aim to modernise infrastructure in order to increase productivity and adjust to reduced water availability.

2.47 In addition to ensuring environmental outcomes,[33] the MDBA says it continues to monitor the social and economic effects of the Plan on basin communities and industries, noting that the Plan is just one of many factors that can impact on communities and industries, and that its effects can be both positive and negative in different areas.[34]

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27 MDBA, *Submission 243*, p. 1.

28 MDBA, *Submission 243*, p. 9.

29 MDBA, *Submission 243*, p. 11.

30 Department of the Environment, *Submission 50*, p. 8.

31 MDBA, *Submission 243*, p. 11.

32 Department of the Environment, *Submission 50*, pp 8–9.

33 MDBA, *Submission 243*, p. 12.

34 MDBA, *Submission 243*, p. 11. See also MDBA, http://www.mdba.gov.au/socio-economic-profile-murray-darling-basin (accessed 15 February 2016).

2.48 New water trading rules came into effect in 2014 to improve the operation and transparency of the water market. They remove barriers to trade and give water traders better access to market information. The MDBA indicated that an increasing number of people are participating in the water market.[35]

2.49 The SDL adjustment mechanism was included in the Plan at the request of state governments, and gives 'an opportunity to increase the water extraction limits in the Basin Plan if states could develop projects that can achieve equivalent environmental outcomes to the Basin Plan with less water'.[36] These are called supply measures and would lead to a reduction in the recovery target (i.e. amount removed from consumptive use). SDLs apply to both surface water and ground water. Early assessment of supply measures has indicated that the SDLs could be increased by up to 500GL.[37]

2.50 A constraints management strategy was also included in the Plan at the request of governments. Constraints are 'river rules, practices and structures that govern the volume and/or timing of regulated water delivery through the river system.'[38] The Plan is said to be capable of being delivered without any constraints, however addressing constraints can improve the effectiveness of environmental flows. The MDBA is involved in undertaking preliminary work on constraints in some areas.[39]

2.51 A review of the Northern Basin was built into the Plan to assess and amend, if required, the extraction limits for the Northern Basin, with a particular focus on the Condamine-Balonne and Barwon-Darling systems. This work is being conducted by the MDBA in concert with federal, state and local entities and is due to conclude in 2016.[40]

2.52 State governments also requested the Plan include reviews of sustainable groundwater extraction limits in three areas in NSW and Victoria. This work is ongoing and may lead to an amendment to the Plan in 2016.[41]

2.53 Furthermore, all basin states are developing water resource plans for accreditation by the Commonwealth, outlining their water management plans from 2019 to 2029.

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35 MDBA, *Submission 243*, p. 14.

36 MDBA, *Submission 243*, p. 14.

37 MDBA, *Submission 243*, pp 14–15. See also MDBA, http://www.mdba.gov.au/basin-plan-roll-out/sustainable-diversion-limits (accessed 15 February 2016).

38 MDBA, *Submission 243*, p. 15. See also MDBA, http://www.mdba.gov.au/basin-plan-roll-out/managing-constraints (accessed 15 February 2016).

39 MDBA, *Submission 243*, pp 15–16.

40 MDBA, *Submission 243*, p. 16. See also MDBA, http://www.mdba.gov.au/basin-plan-roll-out/northern-basin (accessed 15 February 2016).

41 MDBA, *Submission 243*, p. 16.

Chapter 3

Basin state issues

Introduction

3.1 This chapter examines issues relevant to specific basin states that were identified in submissions and during hearings. The chapter concludes with a number of related recommendations.

3.2 The basin is defined in Section 18A of the *Water Act 2007* and includes all water resources within or beneath the basin, but does not include groundwater that forms part of the Great Artesian Basin (GAB)[1] Under the Act, the Bureau of Meteorology (BoM) is responsible for compiling, maintaining and publishing water accounts known as the National Water Account.[2]

3.3 The National Water Account provides an 'account' of the previous years' water resources management for ten nationally significant water regions: Adelaide, Burdekin, Canberra, Daly, Melbourne, Sydney, Ord, Perth, South East Queensland and the Murray–Darling Basin (MDB).[3] Specifically, it provides information about water stores, water flows, water rights and water use. It also reports on the volumes of water traded, extracted and managed.

3.4 The Account's definition for the MDB region is:

> …[A]ll the surface water connected to the channel network and all the groundwater (excluding any water in the GAB) located within the geographical boundaries of the MDB specified by the Act, except:
>
> - the areas drained by the Snowy Mountains Hydroelectric Scheme storages that are located inside the legal MDB's boundaries
> - the towns of Port Elliot and Middleton in South Australia.
>
> Further, the following elements are not included in the MDB region water account:
>
> - off-channel water storages, such as landscape catchment storages (also known as farm dams) used to harvest runoff and floodwaters (these constitute water abstracted before it reaches the rivers or water owned by the users)

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1 Bureau of Meteorology, Murray-Darling Basin, Physical information, http://www.bom.gov.au/water/nwa/2012/mdb/contextual/physicalinformation.shtml (accessed 26 February 2016).

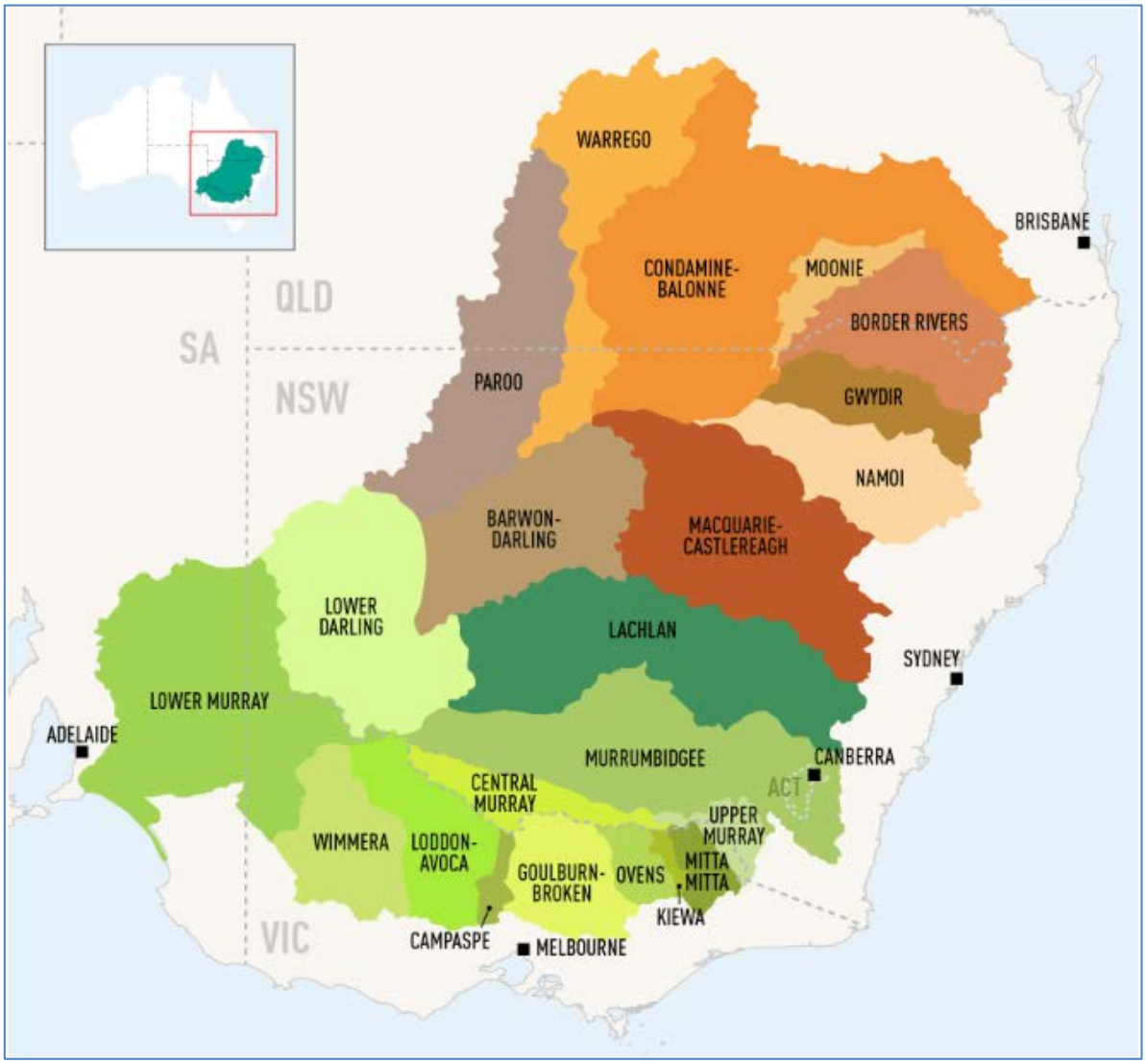
2 Water Act 2007, Water information, Part 7, Division 2—Functions and powers of the Bureau and Director of Meteorology, p. 183.

3 Bureau of Meteorology, The National Water Account, http://www.bom.gov.au/water/nwa/ (accessed 26 February 2016).

- urban water systems at utility level, irrigation systems and private water supply systems.[4]

3.5 The Account divides the basin into 19 surface water planning areas and 22 groundwater planning areas. Figure 3.1 illustrates the individual basin states with their corresponding catchment areas (groundwater planning areas).

Figure 3.1 The Basin catchments and states



3.6 The MDB Account provides statements on groundwater and surface water assets for the whole basin and by the two geographic divisions: the Northern Basin and the Southern Basin[5] (see Figure 3.2 for an illustration of the Northern and Southern Basins). The boundaries for the two basins are determined by the physical

4 Bureau of Meteorology, Murray-Darling Basin, http://www.bom.gov.au/water/nwa/2011/mdb/ (accessed 15 March 2016).

5 Bureau of Meteorology, http://www.bom.gov.au/water/nwa/2014/mdb/notes/waterresourcesandsystems.shtml (accessed 26 February 2016).

geography of the basin, previous water management boundaries and the level of hydrological connectivity.

Figure 3.2 The Northern and Southern Basins

Northern Basin

3.7 The Northern Basin comprises the catchment area of the Barwon-Darling River and its tributaries upstream above the Menindee lakes. The Northern Basin includes the Balonne, Moonie, Border Rivers, Macquarie, Gwydir, Namoi, Warrego and Paroo systems. Figure 3.3 shows the catchments that comprise the Northern Basin and includes the MDBA assessed public storage capacity of the Northern Basin (4664GL) and the volume of water in storage (1017GL) as at March 2016.[6]

3.8 The river systems, land and water use, rainfall volumes and patterns, topography and climate in the Northern Basin differ considerably from the Southern Basin. The Northern Basin is much drier, having considerably less rainfall that mostly falls in the summer months compared to the Southern Basin which receives its rain in

6 Murray-Darling Basin Authority, http://www.mdba.gov.au/managing-water/water-storage/northern (accessed 16 March 2016).

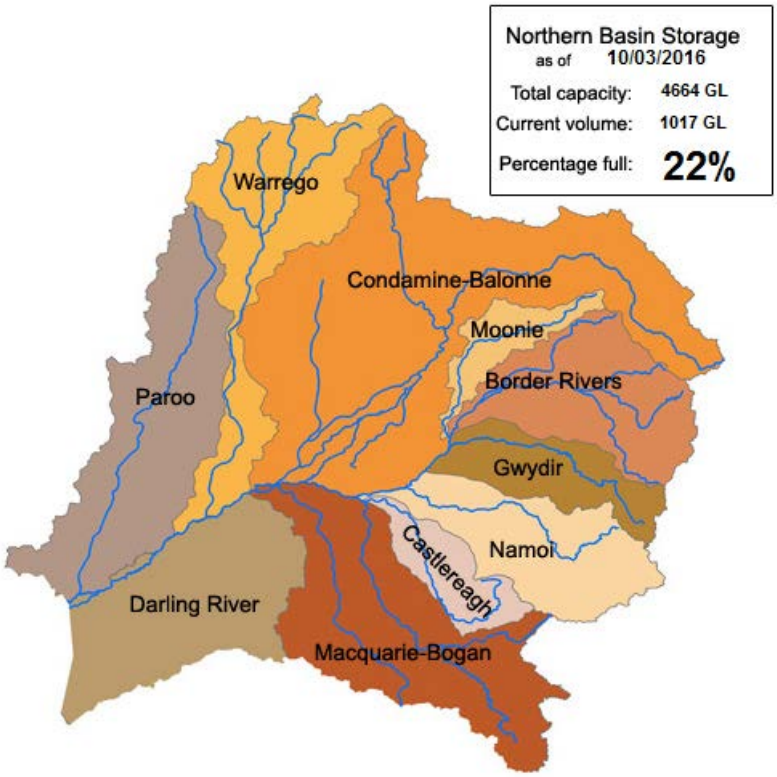
the winter time. The Northern Basin also has less regulation, less development, and uses less water than the Southern Basin.[7]

3.9 Northern Basin water management is also characterised by a different rules framework, fewer water storages, and more variable hydrological connectivity when compared with water management in the Southern Basin.

3.10 Furthermore, some rivers in the Northern Basin, including the Paroo and Gwydir, terminate in wetlands or swamps and only join major rivers in times of flood.[8] These are often referred to as 'closed' systems as they do not have continuous flow into the Barwon-Darling system, and then into the Murray.

3.11 The MDBA's submission stated that because of these issues, the management of the Northern Basin must also differ from that of the Southern Basin.[9]

Figure 3.3 The Northern Basin



Committee hearing

3.12 The committee held its first public hearing in St George, Queensland, in the Condamine-Balonne region of the Northern Basin. Witnesses shared their personal stories of the implementation of the Plan, particularly emphasising the effects of water

7 Murray-Darling Basin Authority, http://www.mdba.gov.au/basin-plan-roll-out/northern-basin (accessed 29 February 2016).

8 Murray-Darling Basin Authority, http://www.mdba.gov.au/discover-basin/catchments (accessed 20 January 2016).

9 Murray-Darling Basin Authority, *Submission 243*, p. 52.

buybacks in the valley and the flow-on effects on businesses, towns and communities. The key Northern Basin issues discussed were the Northern Basin review, buybacks in the Condamine-Balonne catchment, over-recovery of water in the Macquarie Valley and the management of the Menindee Lakes.

Northern Basin review

3.13 In 2012 the MDBA began a review of aspects of the Basin Plan in the Northern Basin as the data for determining the relevant SDLs was not as strong as the Southern Basin's data. The MDBA's submission states that the Plan included SDLs for the Northern Basin and set local and shared reduction amounts. The Plan determined extraction limits equal to a reduction of 390GL average use by 2019. This amount is made up of both local reductions in each valley and shared reductions, sourced from any valley in the Northern Basin.[10]

3.14 The MDBA's submission notes that the shared reduction amount for the Northern Basin is 143GL, stating that this is used to 'achieve environmental outcomes in the Barwon-Darling system.'[11]

3.15 The submission also noted that the review will assess whether the SDLs in the region could be altered by undertaking socio-economic assessments, environmental science projects and hydrologic modelling work.[12]

3.16 The two primary focuses of the Northern Basin review are:

- Should any of the SDLs change (with a focus on the Condamine-Balonne system and the northern zone shared reduction)?
- Should the apportionment of the northern zone shared reduction change from the default specified in the Basin Plan?[13]

3.17 The outcomes of the review will 'inform the water recovery program being managed by the Department of Agriculture and Water Resources.'[14] This may include the type and location of water entitlements to be recovered from the Northern Basin.

3.18 Consultation for the review is being undertaken with representatives from the Queensland and New South Wales state governments and with the Northern Basin Advisory Committee (NBAC), which comprises Northern Basin community members with knowledge and experience of the Northern Basin.[15]

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10 Murray-Darling Basin Authority, *Submission 243*, p. 52.

11 Murray-Darling Basin Authority, *Submission 243*, p. 52.

12 Murray-Darling Basin Authority, *Submission 243*, pp 52–53.

13 Murray-Darling Basin Authority, *Submission 243*, p. 52.

14 Murray-Darling Basin Authority, *Submission 243*, p. 52.

15 Murray-Darling Basin Authority, http://www.mdba.gov.au/about-us/governance/northern-basin-advisory-committee (accessed 20 January 2016).

3.19 The review is due to report in around April 2016, and will outline a range of SDL options. Should any amendments to the Plan be required, the committee notes that these would be subject to a formal statutory amendment process.

Northern Basin Advisory Committee (NBAC)

3.20 The Northern Basin Advisory Committee (NBAC) was established under the *Water Act 2007*. It provides the MDBA with 'independent advice on how an adaptive Basin Plan can be implemented in the Northern Basin.'[16] The committee meets five times per year and has several working groups.

3.21 Its terms of reference include advising on the following matters:

- development and implementation of the northern basin work program;
- proposals to achieve water savings and/or improve environmental outcomes in the northern Basin through possible changes to management and/or operational rules, including the need to address third party impacts;
- socioeconomic and cultural issues of concern to the communities living in the northern Basin, and
- any other matters relating to the implementation of the Basin Plan in the northern Basin.[17]

3.22 The NBAC's Chair, Mr Mal Peters, stated in evidence given at St George, that there is 'a huge diversity of opinion within [NBAC]'.[18] Mr Peters was confident that NBAC's relationship with the MDBA would lead to better assessments and modelling that would satisfy communities, and considered this was a critical element of engaging with the community:

> When the socioeconomic work comes out, if communities cannot say, 'Yes, that looks to me like it's fair dinkum,' it has been a waste of time. I am pretty confident that will happen.[19]

3.23 Mr Peters gave an example from the Namoi region, whereby NBAC's work with the MDBA had improved models and outcomes, and was therefore more likely to be accepted by the community:

> …[W]e worked pretty extensively with the authority and picked up some of the models that we have seen. In particular, there was a model that was developed in the Namoi community. We are pretty confident that, when

16 Murray-Darling Basin Authority, http://www.mdba.gov.au/about-us/governance/northern-basin-advisory-committee (accessed 8 February 2016).

17 Murray-Darling Basin Authority, http://www.mdba.gov.au/about-us/governance/northern-basin-advisory-committee (accessed 8 February 2016).

18 Mr Malcolm Peters, Chair, Northern Basin Advisory Committee, *Committee Hansard*, 29 September 2015, p. 38.

19 Mr Malcolm Peters, Chair, Northern Basin Advisory Committee, *Committee Hansard*, 29 September 2015, pp 41–42.

> they unfold their socioeconomic work, it will pass the pub test in the community.[20]

3.24 However, when the committee took evidence in Broken Hill the committee heard from Mrs Karen Page, President of Menindee Regional Tourist Association who stated that the Menindee region is not included in the Northern Basin review, and that NBAC does not have a representative from the Menindee region. Mrs Page indicated that the Menindee region was left out because it was caught in the middle:

> No. The Northern Basin Advisory Committee is supposed to go from right up the top right down to Menindee, but it does not actually include Menindee. Then you have got the lower community consultative basin group that are down around Wentworth and Merbein and beyond down to the Coorong, and they basically report on what is going on down there. As I just said, we are in the middle.[21]

3.25 The committee recognises that Menindee is [as per Figure 3.2] in the upper part of the Southern Basin. Nevertheless, this lack of consultation would appear to run contrary to the intent of the Plan to manage consultation across state borders.

Water recovery in the Condamine-Balonne catchment

3.26 Under the Basin Plan, the Condamine-Balonne catchment has a required local reduction of 100GL per year by 2019.[22] Approximately half of the 100GL reduction has already been achieved.

3.27 The MDBA's submission stated that during the preparation of the plan, the local reduction for the Condamine-Balonne catchment was initially proposed to be 150 GL. However, after further investigation, it was determined that environmental targets could be met with a local reduction of 100GL:

> …[A]dditional scientific assessment and analysis commissioned by the Queensland government together with remodelling by the MDBA showed that a local reduction of 100 GL would still be likely to water the catchment's key environmental assets such as Narran Lakes.[23]

3.28 In addition, 143GL per year is required to be recovered from the combined catchments in the Northern Basin, of which the Condamine-Balonne is part.[24]

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20 Mr Malcolm Peters, Chair, Northern Basin Advisory Committee, *Committee Hansard*, 29 September 2015, pp 41–42.

21 Mrs Karen Page, President, Menindee Regional Tourist Association, *Committee Hansard*, 26 October 2015, p. 20.

22 Murray-Darling Basin Authority, http://www.mdba.gov.au/discover-basin/catchments/condamine-balonne (accessed 21 January 2016).

23 Murray-Darling Basin Authority, *Submission 243*, p. 52.

24 Murray-Darling Basin Authority, http://www.mdba.gov.au/discover-basin/catchments/condamine-balonne (accessed 21 January 2016).

Water recovery through buybacks and efficiency projects

3.29 Since the implementation of the Basin Plan, businesses or individuals have been able to separate the water rights from land ownership, and sell the water rights if they no longer wished to use the water. The sale of water to the Commonwealth, colloquially called 'buybacks', has been one way that water can be recovered from catchments for environmental use.

3.30 In 2015, the Water Amendment Bill capped at 1500GL the amount of Commonwealth buybacks that could occur in any one year.

3.31 Water can also be 'recovered' through infrastructure projects that improve water efficiency, reducing the volume of water required to deliver the same crop or product.

3.32 Councillor Donna Stewart, Mayor of Balonne Shire Council, stated that in the Condamine-Balonne catchment, some people have sold their water and exited farming, while others have opted to improve infrastructure and water efficiency:

> Irrigators, of course, have had the opportunity to sell their water. A lot of them have taken that opportunity. Some have gone off and retired. Others have taken the opportunity to invest in healthy headwaters, which helps them to make their infrastructure more efficient, so in water efficiency projects. That is really good—it helps keep production on the farms and keeps those jobs.[25]

3.33 The Condamine-Balonne catchment has experienced significant water buybacks since the commencement of the Plan, about which witnesses at the committee's hearing in St George had a lot to say regarding the impact that this has had on local communities.

3.34 At the committee's final hearing, Dr Jacki Schirmer, an academic with the University of Canberra's annual Regional Wellbeing Survey, stated that although buybacks have been positive for two-thirds of irrigators selling water, they have been negative for about a quarter of irrigators. Dr Schirmer reported that a survey team was currently working on more detailed information to determine how different communities have been impacted by buybacks.[26]

Impact of water recovery on businesses in Dirranbandi and St George

3.35 The impact of water recovery in the Condamine-Balonne catchment was the central issue raised during the committee's hearing in St George. Witnesses stated that water recovery was having a significant impact on the economies of St George and nearby Dirranbandi, and that while farmers had the right to sell their water, the recovery of water did have severe, uncompensated impacts on others in the towns and surrounding areas.

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25 Cr Donna Stewart, Mayor, Balonne Shire Council, *Committee Hansard*, 29 September 2015, p. 2.

26 Dr Jacki Schirmer, private capacity, *Committee Hansard*, 5 February 2016, p. 2.

3.36 Businesses in the area reported that they had seen declines in revenue and sales as farmers made commercial decisions to sell their entitlements and farms and exited the industry. Mr Andrew McCosker, an employee at Dirran Ag Spares, shared his family's experience of the direct correlation between buybacks and revenue:

> We started in 1998 and it consecutively grew every year. We have only seen a decline in our revenue over the last two years and, to date, that is a 20 per cent decline in our revenue since the buybacks have happened. The district has lost, as a number, 30 per cent of our cotton growers. It is not hard to see why we have seen that decline.[27]

3.37 Mr McCosker stated that if buybacks continued, his family's business could possibly close:

> …if these buybacks continue like they have over the next two years, or if we lose another 30 per cent of our cotton growers, it is quite possible that we will actually go bankrupt.[28]

3.38 Businesses that directly support the local irrigation/farming industry face difficulty when buybacks or any other commercial decision is made by those that they have set their businesses up to service.

3.39 Mrs Samantha O'Toole, co-owner of Balonne Airwork, an aerial spraying business shared her experience of building up her business to a successful twelve-person, four-aircraft operation to service the surrounding irrigation crops. However, when the water rights for a large cotton irrigation farm, Balandool, were sold, Balonne Airwork lost 25 per cent of its activity, which had a major impact on her business:

> …[T]hen you get a call out of the blue from a farm owner saying they have sold their water licence and will no longer be growing cotton. That wipes 25 per cent off your business straight up, so you go home that day and fire four people. That has a huge impact on your business and on your long-term livelihood.[29]

3.40 Mrs O'Toole reported that Balonne Airwork had also undertaken significant long-term investment based on predicted future business, including purchasing and importing aircraft, which is now no longer required:

> We bought a very expensive piece of shiny equipment that is collecting dust at the moment—a 660 Thrush that we imported from the United States. We specifically bought that piece of aircraft because it was high capacity, it was designed to do high-volume work in big paddocks. It was perfect for Balandool. We specifically imported that machine to take on a contract at

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27 Mr Andrew McCosker, Employee, Dirran Ag Spares, *Committee Hansard*, 29 September 2015, p. 9.

28 Mr Andrew McCosker, Employee, Dirran Ag Spares, *Committee Hansard*, 29 September 2015, p. 9.

29 Mrs Samantha O'Toole, Owner/Operations Manager, Balonne Airwork Pty Ltd, *Committee Hansard*, 29 September 2015, p. 14.

> Balandool. But now that machine is just sitting there—an $800,000 dust collector for which we carry the debt for a long term.[30]

Impact of water recovery on the community in Dirranbandi

3.41 In addition to the impact on businesses, witnesses noted that the population of Dirranbandi is decreasing, and attributed this to the buybacks. Cr Stewart noted that enrolments at the local state school in Dirranbandi had decreased, as had the overall population of the town.[31]

3.42 Mr Bruce Connolly, a private farming contractor, moved to Dirranbandi as it began to boom in 1997 and shared how the town's population had risen and fallen over the years:

> I saw the town rise from a population of approximately 300 through to 1,200 to 1,500 during busy periods and then fall back to what it is now, which is a static population of roughly 400 or 450.[32]

3.43 Mr Connolly also commented on the social repercussions of the buybacks and a declining economy:

> The panel asked about suicide and depression and other social issues.
>
> …If you take away jobs and people's reason to get out of bed in the morning, it will not get better.[33]

Potential impact of additional shared reduction limit on the Condamine-Balonne catchment

3.44 Cr Stewart commented that the current impacts of water recovery in the catchment were difficult to bear, and questioned the ability of the catchment to recover the 100GL target, let alone contribute to a portion of the 143GL shared reduction limit:

> …100 gigalitres is our contribution. We are about halfway there and we also have to contribute to a further shared zone with the Goondiwindi region. That is about 143 gigs. We cannot do it—we are scrambling to get to 100. Our communities just cannot bear any more water buybacks in the Lower Balonne.[34]

3.45 Cr Stewart stated that water recovery seems to be focused on the area from St George downstream to the end of the catchment. Cr Stewart argued that the impact could be spread throughout the Condamine-Balonne catchment:

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30 Mrs Samantha O'Toole, Owner/Operations Manager, Balonne Airwork Pty Ltd, *Committee Hansard*, 29 September 2015, p. 14.

31 Cr Donna Stewart, Mayor, Balonne Shire Council, *Committee Hansard*, 29 September 2015, p. 6.

32 Mr Bruce Connolly, private capacity, *Committee Hansard*, 29 September 2015, p. 8.

33 Mr Bruce Connolly, private capacity, *Committee Hansard*, 29 September 2015, p. 8.

34 Cr Donna Stewart, Mayor, Balonne Shire Council, *Committee Hansard*, 29 September 2015, p. 2.

> There are opportunities to buy water from up the top. Up to 20 gigalitres have been identified. The travesty is that all the water so far has been bought from St George down. The Condamine-Balonne is probably 1,000 kilometres long in Queensland, so why should 200 kilometres make the whole contribution, and why should the communities down here bear the full impact of that water buyback?[35]

Committee view

3.46 The committee is keen to ensure that communities in the Northern Basin are adequately consulted during the Northern Basin review and any subsequent adjustments to water recovery requirements. The committee urges MDBA to consult clearly and broadly with communities during this period and following the review. In this vein, the committee notes that the NBAC provides a valuable conduit between Northern Basin communities and the MDBA.

3.47 However, the committee urges MDBA to ensure the Northern Basin review assesses the entire Northern Basin, and the adjoining regions (such as the Menindee region) that are highly dependent on the outcomes of upstream water management decisions. This should include representation from the Menindee region, whether in the review or on NBAC or both.

3.48 The committee is aware that buybacks can have significant and ongoing impacts on irrigators and the wider community.

3.49 The committee unequivocally upholds farmers' rights to sell their water. Nevertheless, the committee heard from many people whose families and businesses have struggled as a result of water buybacks, particularly around St George and Dirranbandi. While farmers have acquired monetary value for their water entitlement and are able to exercise the right to sell the entitlement, surrounding communities and businesses do not receive such support.

3.50 The committee is concerned that the Condamine-Balonne catchment has a very high recovery requirement, which it may not be able to meet, and which may have serious consequences for towns such as St George and Dirranbandi.

3.51 The committee is of the opinion that water recovery in the Northern Basin and within the Condamine-Balonne catchment could possibly be more equitably spread so as to prevent any further impacts on St George and Dirranbandi. Given the impacts of the buybacks on these towns, the committee is of the opinion that further buybacks should be approached with caution and a full awareness of the potential impacts on surrounding businesses and communities. This matter merits further investigation by the MDBA as part of the current Northern Basin review.

3.52 As such, the committee is of the view that any further reductions in water entitlements should not occur until the Northern Basin review, and any subsequent assessments to be made by MDBA and the Department of Agriculture and Water Resources, have been completed.

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35 Cr Donna Stewart, Mayor, Balonne Shire Council, *Committee Hansard*, 29 September 2015, p. 2.

Recommendation 1

3.53 The committee recommends that no further reductions in water entitlements occur until the Northern Basin review, and any subsequent assessments, have been completed.

3.54 The committee recommends that the review should also consider alternative means of water recovery, particularly in the Condamine-Balonne catchment, in order to minimise the economic and social impact of the Plan in the Northern Basin. This would include consideration of the following options:

- **recovery of water upstream of Beardmore Dam;**
- **use of private storages to more efficiently store environmental water and reduce evapotranspiration (the sum of evaporation and plant transpiration) losses;**
- **implementation of environmental works and measures to more efficiently delivery environmental water to key environmental assets; and**
- **temporary trade of water to make best use of Commonwealth water assets when environmental needs have been met.**

Recommendation 2

3.55 The committee recommends that the Murray-Darling Basin Authority, as part of its ongoing social and economic work, undertake and publish a thorough assessment of the estimated and actual social and economic impacts of the implementation of the Plan, including of pursuing the remaining water recovery for the Condamine-Balonne catchment and other similarly distressed areas.

Macquarie Valley

3.56 Water recovery is specified in the Plan on a valley-by-valley and whole-of-system basis, and therefore water extraction in some valleys will occur in greater volumes than the valley requirement in order to make up the whole-of-system requirement.

3.57 However, witnesses argued that the Macquarie Valley does not have significant flow through to the Murray River. Mr Ashley Wielinga, General Manager, Warren Shire Council, stated that the river is an example of a closed or terminal system, which has limited flow through to the Barwon-Darling and Murray systems:

> The Macquarie…it has only got about a 10 per cent throughput at the bottom end. It is basically to a large degree a terminal system…[36]

3.58 In these terminal or closed systems, while water recovery may benefit the valley and environment locally, it may not have a significant impact on the Murray River and the overall basin. Mr Egan, Chair of Macquarie River Food & Fibre also argued that this is the case for water recovered in the Macquarie Valley:

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36 Mr Ashley Wielinga, General Manager, Warren Shire Council, *Committee Hansard*, 27 October 2015, p. 7.

> The connectivity to the Barwon is, basically, one year in 10, so flows out of the dam do not count as far as getting water to the Darling.[37]

Over-recovery of water

3.59 The committee heard evidence of over-recovery of water in the Macquarie Valley. Mr Wielinga, General Manager, Warren Shire Council, a local government area in the Macquarie Valley, stated that there was an initial discrepancy in the water recovery figure for the valley:

> When the Basin Plan research was done, they put out a guide to the Basin Plan. For our valley, the guide to the Basin Plan said it needed 20 gigalitres in-valley. By the time the plan came out, it said 65 gigalitres. I had the opportunity to visit Canberra and went through the modelling with the authority. Guess what the modelling said? It said 19 gigalitres.[38]

3.60 Mr Wielinga indicated that despite the in-valley requirement for recovery of 65GL of water, far more than this has been purchased in the valley:

> …I believe the purchases are 48 gigalitres by the New South Wales state government and 126 gigalitres for general security by the Commonwealth Environmental Water Holder. So all up 174 gigalitres of general security water has been purchased by the Environmental Water Holder.[39]

3.61 Mr David Duncan, Consultant, Macquarie River Food & Fibre, stated that the water recovered is about 30 per cent of the total general security entitlement in the valley.[40]

3.62 Furthermore, the Macquarie Valley has been the primary focus of water recovery in its region. In particular, as in the Condamine-Balonne catchment, the majority of the water has been recovered from a small area of the catchment:

> All of the water that they needed to recover from, what they considered, out of the whole system—so if you look at that front map in the document you have, they have recovered all of the water from Narromine down to Marebone in the blue zone. Everything was covered out of that little area for that whole map. So we have been unfairly targeted, because they wanted regulated water only. All of the other river valleys were not included.[41]

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37 Mr Michael Egan, Chairman, Macquarie River Food & Fibre, *Committee Hansard*, 27 October 2015, p. 35.

38 Mr Ashley Wielinga, General Manager, Warren Shire Council, *Committee Hansard*, 27 October 2015, p. 3.

39 Mr Ashley Wielinga, General Manager, Warren Shire Council, *Committee Hansard*, 27 October 2015, p. 7.

40 Mr David Duncan, Consultant, Macquarie River Food & Fibre, *Committee Hansard*, 27 October 2015, p. 39.

41 Mr Michael Egan, Chairman, Macquarie River Food & Fibre, *Committee Hansard*, 27 October 2015, p. 39.

Potential impacts of over-recovery

3.63 Over-recovery of water has the potential to cause social, economic and environmental damage to local communities. Mr Egan argued that over-recovery in the Macquarie Valley provides little environmental benefit to the valley and the Macquarie Marshes:

> …There is not enough water left in the system, because we now have a low reliability—and environmentally we are actually loading the Macquarie Marshes up with salts. We are saying that we lose on all three accounts.[42]

3.64 Further, Mr Egan stated that while the purchase of water was positive for some landholders, the recovery of that water will have negative impacts for the environment:

> The cost on the temporary water market is about 15 mil. This is a direct transfer of wealth, fully government funded, at no cost to the beneficiaries. It is a short-term gain for a few rangeland graziers. But the extra salt loads in the marshes will create a long-term disaster.[43]

3.65 Mr Egan concluded that 'the only real solution is for the government to surrender over-recovered water.'[44]

Committee view

3.66 The committee is concerned that over-recovery of water in certain areas is a key issue while noting that recovery in some areas may need to exceed the valley-by-valley requirement in order to make up the whole-of-system requirement.

3.67 However, the committee is of the opinion that water recovery in areas with low connectivity to the Barwon-Darling and Murray Rivers may do more harm than good. The committee is concerned that this may be occurring in the Macquarie Valley, and other closed or terminal systems such as the Gwydir Valley.

Recommendation 3

3.68 The committee recommends that the MDBA address the existing over-recovery in the Macquarie Valley and other 'terminal' systems such as the Gwydir Valley, with a view to limiting recovery to amounts which address valley-specific environmental needs.

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42 Mr Michael Egan, Chairman, Macquarie River Food & Fibre, *Committee Hansard*, 27 October 2015, p. 36.

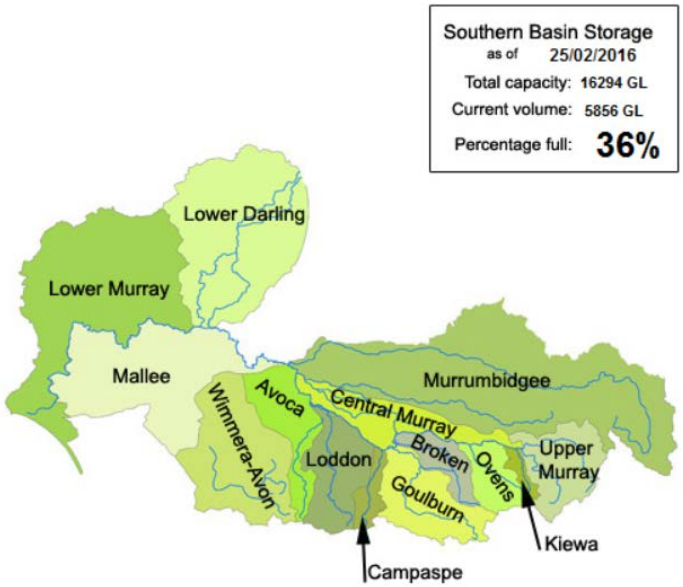
43 Mr Michael Egan, Chairman, Macquarie River Food & Fibre, *Committee Hansard*, 27 October 2015, p. 36.

44 Mr Michael Egan, Chairman, Macquarie River Food & Fibre, *Committee Hansard*, 27 October 2015, p. 36.

Southern Basin

3.69 The Southern Basin comprises the catchment area of the Lower Darling River, the Murrumbidgee, the Murray River and its tributaries (the River Murray catchment is split into 3 sections — upper, central and lower). Figure 3.4 shows the catchments that comprise the Southern Basin and includes the current MDBA assessed storage volume of the catchment at 25 February 2016 together with its expected total basin plan storage capacity of 16 294GL.[45]

Figure 3.4 Southern Basin



Committee hearing

3.70 The committee conducted its second public hearing in Broken Hill, NSW, near the Menindee Lakes, and flew over the lakes following the hearing to gather an aerial perspective. Witnesses at the hearing highlighted the economic, social and environmental importance of the lakes to the region particularly on the fresh water supply aspect of Lakes, which are fed by the Darling River from the Northern Basin.

3.71 The third hearing was held at Griffith in the heart of the Riverina irrigation district of NSW in the Murrumbidgee catchment.

Menindee Lakes

3.72 The Menindee Lakes is a system of seven large natural ephemeral lunette lakes in the Lower Darling catchment that were modified to allow for water storage in the 1960s. The water from the lakes is used for both urban supply in towns such as Broken Hill, and irrigation water for nearby landholders.[46] The lakes are also used recreationally by locals and are a tourism drawcard for the region.

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45 Murray-Darling Basin Authority, http://www.mdba.gov.au/discover-basin/catchments/lower-darling (accessed 21 January 2016).

46 Murray-Darling Basin Authority, http://www.mdba.gov.au/discover-basin/catchments/lower-darling (accessed 21 January 2016).

3.73 The lakes are shallow and located in a hot, windy and dry region, making them particularly susceptible to drought (leading to low inflow) and evaporation. It is estimated that they lose an average of 400GL of water per year, and even up to 560GL in dry, hot years. The MDBA's submission stated that:

> Even with only minimum releases from the lakes to meet downstream requirements, unless there are flows coming in from upstream, the lakes run out of water within three years.[47]

3.74 The water levels in the lakes are currently quite low. This is primarily due to low rainfall and low inflows into the lakes from further up the Darling catchment. Furthermore, one witness stated that long-term weather forecasts do not indicate any upcoming serious rains. Cr Dave Gallagher, Deputy Mayor, Broken Hill City Council, stated that the current situation is more severe than during the Millennium Drought:

> It is my understanding that the inflows are at their lowest level in the recorded history of these readings, even lower now than they were during the Millennium Drought, and there are still no significant rains as far as the long-term weather forecasts can tell us. So we are facing potentially a much more serious situation than we did then.[48]

Management of the lakes by NSW government

3.75 The Menindee Lakes water storage is owned by the NSW government and operated by Water NSW. The NSW government makes all decisions related to the operation of the lakes, and the storage and release of water. Water releases can occur from the lakes back into the Darling River once particular 'trigger' levels are reached.

3.76 The MDBA's submission outlined the role of the NSW government in relation water releases from the lakes:

> NSW has a longstanding agreement with Victoria, South Australia and the Australian Government to share some of the water in the lakes when they are above certain “trigger” levels. When the lakes volume rises above 640 gigalitres and until it drops below 480 gigalitres, the water can be shared to support the River Murray system.[49]

3.77 The MDBA's submission also outlined its own role with regard to water releases from the lakes:

> The MDBA, which operates the River Murray on behalf of the basin governments, is allowed to place orders for NSW to release water when trigger levels are exceeded. During those periods, NSW also releases water from the lakes to meet its own local needs.[50]

47 Murray-Darling Basin Authority, *Submission 243*, p. 19.

48 Cr David Gallagher APM, Deputy Mayor, Broken Hill City Council p. 2.

49 Murray-Darling Basin Authority, *Submission 243*, p. 19.

50 Murray-Darling Basin Authority, *Submission 243*, p. 19.

3.78 The MDBA's submission stated that any amendment to the current management arrangements would be a decision for NSW, in agreement with the other basin states.[51]

Broken Hill water supply

3.79 Menindee Lakes provides urban water supply to Broken Hill, and water security and quality is a key issue for residents. Councillor Marion Browne, from Broken Hill City Council, outlined the severe water supply problem that the city is facing due to a lack of water security:

> As a city of 19,000 people, we cannot survive without a secure water supply, and at the moment that security is in question. The lakes are in crisis. We are currently on level 2 water restrictions with a strong possibility that by summer this will have advanced to level 4.[52]

3.80 Broken Hill has relied on water from the Darling River, supplemented by water from local reservoirs in years with high rainfall. Councillor Browne expressed concern that emergency water supply measures, including bore water, and poor quality water from the lakes, might become permanent measures:

> It is a matter of great concern to many in the community that we now face the prospect in this emergency of having to use bore water, supplemented by increasingly saline water from those parts of the lakes where the remaining dwindling supplies have been stored. The council's position is that the bore water option is strictly an emergency measure and not acceptable as a permanent alternative.[53]

3.81 Cr Browne also commented on the importance of water in making the town more habitable for residents:

> We live in a lead-filled desert environment, so the prospect of not having water for parks, gardens, street trees or evaporative cooling is not to be contemplated.[54]

3.82 Furthermore, there have been discussions about a pipeline from another river, such as the Murray, to provide urban supply in Broken Hill and therefore reduce evaporation from water stored in the lakes. The committee heard that while this may improve water security for Broken Hill, Cr Brown stated that the lakes have both environmental and cultural importance to the region:

> They are an essential recreational outlet for Broken Hill people. They are important environmentally. They are important culturally to the Aboriginal people of the area, so to me that would be the risk with that option. We

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51 Murray-Darling Basin Authority, *Submission 243*, p. 19.

52 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 1.

53 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 1.

54 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 1.

> would need to have some guarantee that the nature of the lakes would not be drastically changed as a result of that. It is not a secondary importance—it is as important as the water supply itself.[55]

Measures to improve water security and the health of the lakes

3.83 The council put forward several recommendations to improve the Menindee Lakes and the water supply for Broken Hill, including:

- raising the trigger point for releases from the lakes;
- commencing already agreed-upon infrastructure works; and
- nominating the Menindee Lakes as a Ramsar [56] or iconic site.[57]

Raising the trigger point for releases from the lakes

3.84 As stated above, the current 'trigger point' for water releases, as agreed by the basin states and Commonwealth Government, is set at 640GL (and water can continue to be released until the level drops below 480GL).

3.85 However, Broken Hill City Council recommended that current trigger point be 'set at a minimum of 640GL for NSW control' and above 800GL before the MDBA can place orders for water releases with NSW.[58]

3.86 The council specified the 800GL figure as it is the amount used in Broken Hill and the amount that can be stored in the area – and therefore would secure Broken Hill's water supply.[59] The council stated that it had come to this figure by drawing on local knowledge and experience:

> It is from experience and from speaking to people about the options that we have, and from years and years of knowledge in that area—not from myself, but from other people.[60]

Commencement of already agreed-upon infrastructure works

3.87 The council discussed the need for infrastructure works to improve the holding capacity of the lakes and the ability for operators to move water between lakes as required. The council advised that a program of works had been agreed to in July

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55 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 8.

56 The Convention on Wetlands, called the Ramsar Convention, 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, http://www.ramsar.org/ (accessed 1 March 2016).

57 Broken Hill City Council, *Submission 287*, p. 2.

58 Broken Hill City Council, *Submission 287*, p. 2.

59 Cr David Gallagher APM, Deputy Mayor, Broken Hill City Council p. 4.

60 Cr David Gallagher APM, Deputy Mayor, Broken Hill City Council p. 7.

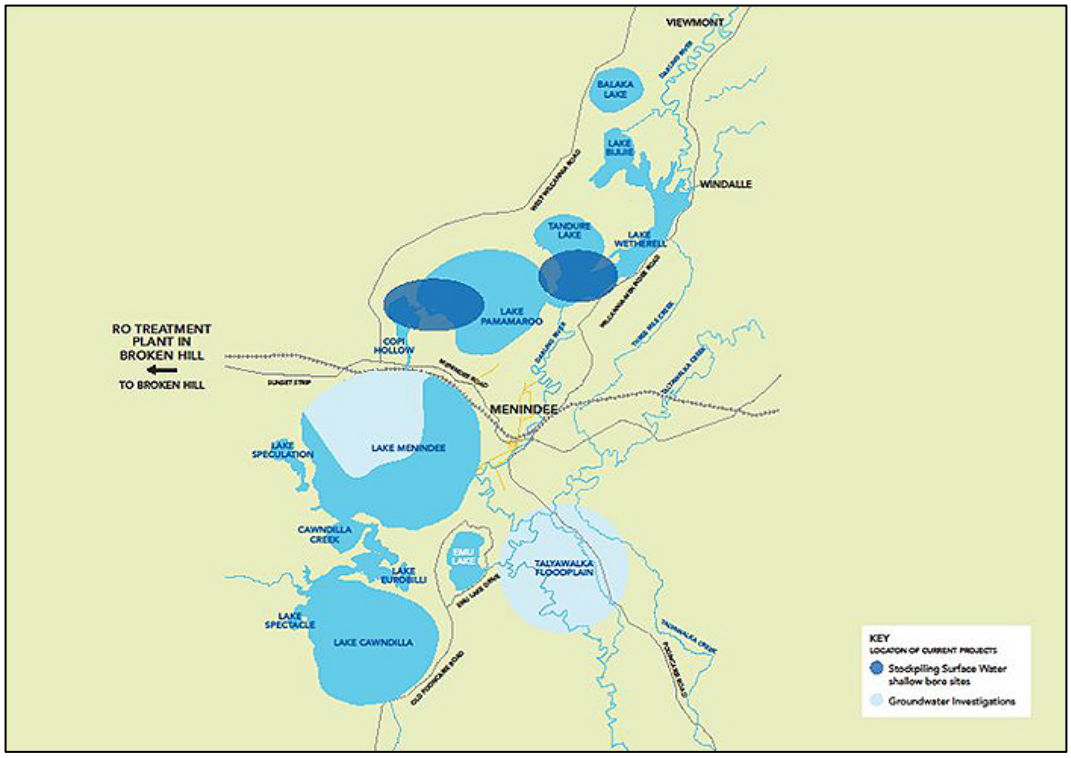
2010 in a Memorandum of Understanding (MoU) by the then Prime Minister Julia Gillard and the then Premier of NSW Kristina Keneally.[61]

3.88 These works would deliver an outlet regulator from Menindee and Block Dam between Lake Menindee and Lake Cawndilla. Although these key works were agreed to in the MoU, they have not yet commenced.

3.89 The council sought guarantees for the commencement of these works, as they would provide significant benefit to the lakes and the surrounding communities:

> The purpose of these engineering works would be to keep more control of the water in the lakes and to reduce evaporation losses by containing the water within a smaller area.[62]

Figure 3.5 Menindee lakes, NSW[63]



3.90 WaterNSW presently states that it is recommissioning the Broken Hill desalination plant to treat the remaining surface water supplies in Lake Menindee by November 2015:

> …Reverse osmosis will be required to treat the remaining surface water supplies in Lake Menindee by November 2015. Work is currently underway to recommission and upgrade the desalination facility in Broken

61 Broken Hill City Council, *Submission 287*, p. 2.

62 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 1.

63 WaterNSW, Water Security Projects, http://www.waternsw.com.au/projects/menindee/water-security-projects, (accessed 26 February 2016) (See regional scale map at Figure 3.2).

> Hill to extend the use of all available surface water sources from the Menindee Lakes.
>
> Desalination will not be needed if there are significant inflows from rainfall to replenish the Menindee Lakes system before this time. Up until then the surface water that remains in the Lakes will have increasing levels of salinity.
>
> The recommission and upgrade of the existing desalination plant in Broken Hill is now underway to extend the use of all available surface water sources. Reverse osmosis may also be required to treat water sourced from groundwater beyond 2015, if it is required.[64]

Ramsar or iconic site nomination

3.91 Further, the council and some other submitters sought the nomination of the Menindee Lakes as a Ramsar or iconic site, which would also lead to more water being retained in the lakes. Ramsar nomination is a state process and would need to be initiated by the NSW Minister for Water.[65]

3.92 Cr Browne noted that the lakes are very important to Menindee and its tourism, and therefore it is important that they continue to be well managed for multiple uses:

> For Menindee…the environmental aspect of the lakes is very important. Acknowledging the fact that it is not an entirely a natural site, it is still a very important site for Menindee tourism, as I am sure the Menindee people will say. The amenity of the lakes is a really important part.[66]

3.93 Furthermore, Cr Browne indicated that there are no iconic sites on the Darling River and argued that the river should be recognised for its environmental and recreational value:

> We are conscious that there are no iconic sites on the Darling River itself. It is our belief that the Darling River needs to be recognised as an important environmental asset as well as recreational in other senses.[67]

3.94 As such the Council stated that it would support the nomination of the Menindee Lakes as a Ramsar site:

> Council is certainly supporting the idea of recognition, which would give some priority to the environmental aspects of the lakes, and that is something we are pursuing.[68]

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64 WaterNSW, Water Security Projects, Recommission and upgrade of the current desalination facility in Broken Hill, http://www.waternsw.com.au/projects/menindee/water-security-projects (accessed 26 February 2016).

65 Broken Hill City Council, *Submission 287*, p. 3.

66 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 4.

67 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 4.

Committee view

3.95 The committee is cognisant that the issues raised by the Broken Hill City Council and other submitters with regard to the Menindee Lakes fall within the jurisdiction of state governments, in concert with the federal government where appropriate. Further, the committee acknowledges that lakes are owned by the NSW government and operated by Water NSW.

3.96 However, the committee views urban water supply security as crucial, and accordingly, is of the opinion that water security and infrastructure to improve the lakes are matters that should be urgently addressed. The committee therefore urges federal and state governments to examine options for securing Broken Hill's water supply, including raising the trigger point for releases and improving infrastructure and storage at Menindee Lakes. The committee notes that in examining options, governments would consider the possibility of less water flowing out of the lakes, and the potential impact this may have on downstream communities and environments.

3.97 The committee also acknowledges the importance of the Menindee Lakes as more than just water storage; the social, cultural and environmental benefits of the lakes are of considerable importance to the local communities. For this reason, the committee supports continued management of the lakes for these multiple uses.

3.98 The committee also urges MDBA to consider an environmental watering plan for the Menindee Lakes.

Recommendation 4

3.99 The committee recommends that federal and state governments examine options for securing Broken Hill's water supply as recommended by the Broken Hill City Council, including raising the trigger point for releases, and improving infrastructure and storage at Menindee Lakes.

Recommendation 5

3.100 The committee recommends that an environmental watering plan be developed for the Menindee Lakes, provided that Adelaide's water supply and that of South Australian irrigators and landholders dependent on the Murray, is secure (see paragraph 3.197).

New South Wales

Committee hearing

3.101 4.68 The committee conducted its third hearing in Griffith in the heart of the Riverina irrigation district of NSW in the Murrumbidgee catchment.

3.102 The key issues raised in the hearings were the impact of the removal of water for agriculture via water buybacks, as in St George, the impact this was having on the agriculture sector and associated service industries.

68 Cr Marion Browne, Councillor, Broken Hill City Council, *Committee Hansard*, 26 October 2016, p. 4.

3.103 Cr Hogan provided the committee with an overview of the nature of the region and its industries reliant on water from the region's main rivers:

> …[W]ater and irrigated agriculture is the lifeblood and key economic and social driver of our RAMROC[69] region. A large part of our region comprises irrigated food-and-fibre-production towns and communities in the river valleys of the Lachlan, Murrumbidgee and Murray.[70]

3.104 The Plan has had a significant impact on the RAMROC region, particularly the Commonwealth water buybacks Cr Hogan claimed:

> Communities in our region have been adversely impacted, both economically and socially, as a result of the Commonwealth Water Act 2007, which initiated significant issues. One of the largest ones is the Swiss-cheese style buyback of landholders' water entitlements and, subsequently, adopting the Murray-Darling Basin Plan, which provides for the diversion of 2,750 gigalitres of water currently used for productive purposes. You just cannot take that amount of water away from these valleys and not have an enormous impact.[71]

3.105 However, Cr Hogan did express satisfaction with the Water Act 2007 Amendments passed in 2015 and the recent amalgamation of Commonwealth departments with responsibility for water and agriculture:

> We are pleased that in recent months there have been two positive actions taken by the Commonwealth government. Firstly, there is the legislation to cap water buybacks at 1,500 gigalitres. Secondly, there is the most recent and common-sense decision, which is to merge the portfolios of agriculture and water resources under one ministerial portfolio.[72]

3.106 A number of individuals expressed dissatisfaction with the allocation of water for the environment. Many mentioned that they had all been through the process of water sharing before the advent of the MDB and now felt worst off.

3.107 The Chair noted these concerns and stated that 'there are two aspects that we are primarily zeroing in on. One is the loss of water to agriculture and the impact that that has…the other aspect of it is, to the extent that the environment has received a greater volume of water, has that actually benefited the environment?'

3.108 Cr Peter Laird, Mayor, Carrathool Shire Council, stated that in his opinion it had not:

> They jump up and down about the Cumbung Swamp but historically it is a drying lake for periods of time and then it gets flushed in other periods of

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69 Riverina and Murray Regional Organisation of Councils (RAMROC).

70 Cr Terence Hogan, Chairman, Riverina and Murray Regional Organisation of Councils, *Committee Hansard*, 27 October 2016, p. 2.

71 Cr Terence Hogan, Chairman, Riverina and Murray Regional Organisation of Councils, *Committee Hansard*, 27 October 2016, p. 2.

72 Cr Terence Hogan, Chairman, Riverina and Murray Regional Organisation of Councils, *Committee Hansard*, 27 October 2016, p. 2.

> time. The Lachlan does not flow into the system. Unfortunately some of the people at the time said, 'Well there is money coming from the federal government; let's grab the money and agree that it does flow in.' But historically the Murrumbidgee, when it is in flood, flows back into the Lachlan; the Lachlan does not flow into the Murrumbidgee. Our problem was that people were out to grab the money that was on offer rather than say we would not want to be part of the Murray-Darling Basin. And they over bought in the buybacks too.[73]

3.109 Cr Laird had previously mentioned the increased environmental flows in the Lachlan river:

> The volume of water that they send down the Lachlan is eroding the banks over time. It is just unbelievable…[74]

3.110 Significantly, over the course of the hearings the committee noted a familiar theme regarding suggestions to ameliorate the environmental flow issue—upper stream states would invariably suggest remedies for downstream states while downstream states would offer similar advice for their up stream counterparts.

3.111 Cr Dal Broi stated that:

> We believe that we have lost up to 30-odd per cent of our water from this area to the environment—totally unacceptable. [75]

3.112 Cr Hogan outlined what the main issues were for the RAMROC:

> (1) the need for the Commonwealth Act to be appropriately amended to fully enshrine the essential triple-bottom-line balance between the environment, social and economic criteria, and outcomes; (2) the lack of meaningful intent or progress that has been made by the Murray-Darling Basin Authority in assessing the social and economic impacts of the Basin Plan on communities, businesses and residents throughout the basin region; (3) the absence of measurable or quantifiable evidence, in relation to the environmental benefits that have been achieved, particularly the lack of any cost-benefit analysis of the environmental outcomes; (4) council and community concerns regarding the Basin Plan Constraints Management Strategy, particularly the potential adverse impacts on urban infrastructure, like businesses' downstream agricultural properties and landholder families; (5) environmental water flows and delivery thereof, river-channel capacity and over-bank flooding strategies—unfortunately, the authority has a fixation on the only way to get water into swamps or wetlands being an over-bank event; (6) the potential for improved water management of the Coorong, Lower Lakes and Murray Mouth to reduce high evaporation levels and, potentially, free-up more water for productive purposes.[76]

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73 Cr Peter Laird, Mayor, Carrathool Shire Council, *Committee Hansard*, 27 October 2016, p. 6.

74 Cr Peter Laird, Mayor, Carrathool Shire Council, *Committee Hansard*, 27 October 2016, p. 6.

75 Cr John Dal Broi, Mayor, Griffith City Council, *Committee Hansard*, 27 October 2016, p. 3.

76 Cr Terence Hogan, Chairman, Riverina and Murray Regional Organisation of Councils Councillor, *Committee Hansard*, 27 October 2016, pp. 2–3.

Victoria

3.113 The committee held two public hearings in Victoria, in Echuca and Shepparton. In Echuca, the committee heard from witnesses from both Victoria and New South Wales, including representatives from local councils, irrigators, landholders, businesses, food processors and the Murray Darling Association. In Shepparton, the committee heard from representatives of the local council, dairy industry, environmental groups, landholders and local businesses.

3.114 The key issues raised in the hearings were water distribution, and the Goulburn-Murray Water Connections Project. The most pressing issues raised by landholders and community leaders in Shepparton were the constraints management strategy, loss of water and the ongoing social and economic impacts (see Chapter 4).

Constraints management strategy–delivering environmental water

3.115 The MDBA released its Constraints Management Strategy (CMS) in November 2013 noting that the Basin Plan Sustainable Diversion Limits (SDLs) were determined based on the existing physical characteristics and river operations in the Basin:

> The SDLs return part of the water that was previously supplied for consumptive use (primarily for irrigation at regulated flow levels from spring to autumn) to the environment for use throughout the year in line with environmental water entitlement holdings. Environmental watering is delivered right across the year – not all at once, not all in one place. Water comes from all over the Basin, not just from one or two dams; and contributes to significant local and downstream outcomes.[77]

3.116 As such, the strategy 'identifies and describes the physical, operational and management of constraints that are affecting environmental water delivery'.[78] These constraints are river rules, practices and structures that not only govern the volume and/or timing of regulated water delivery through the river system but also look for continuous efficiencies that can improve the flow.

3.117 As indicated above, the Plan is said to be capable of being delivered within existing constraints; however state governments requested a constraints management strategy be included in the Plan:

> Governments requested a constraints management strategy be included in the Basin Plan – reflecting community concern about the importance of environmental water and being able to deliver it without adversely affecting landholders and communities.[79]

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77 Murray-Darling Basin Authority, *Constraints Management Strategy 2013-2024*, p. 2, http://www.mdba.gov.au/publications/mdba-reports/constraints-management-strategy (accessed 16 March 2016).

78 Murray-Darling Basin Authority, *Constraints Management Strategy 2013-2024*, p. v.

79 Murray-Darling Basin Authority, *Submission 243*, p. 15.

3.118 When the MDBA released the strategy in November 2013, it also released a report on feedback from community consultation and how this influenced the final CMS:

> The MDBA agreed to undertake the early investigation work required under the strategy on behalf of the state governments, including the consultation with communities and investigation of the target flows set by the states. This involved gathering local information through input from landholders about concerns and effects on their riverside land, as well as technical work on water flows and inundation, and identification of the mitigation options and their likely cost.[80]

3.119 In preparation of business cases on constraint areas, some state governments have taken the lead; others have requested the MDBA to complete this work. In all instances, any decisions taken 'to change river constraints will be collectively decided by the state and Commonwealth governments by 30 June 2016.'[81]

3.120 Consultation with communities has involved the preparation of draft reach reports in 2014 and final reach reports in 2015 for each of the seven key focus areas: Gwydir region, Murrumbidgee, Hume to Yarrawonga, Yarrawonga to Wakool Junction, River Murray in South Australia, Goulburn River, and Lower Darling.[82]

Community concerns about the impact of overbank flows on properties

3.121 Many submitters and witnesses were concerned about constraints management in the Goulburn River area, particularly the impact that overbank flows (i.e. flooding) would have on private landholders and their businesses. In particular, witnesses expressed concerns about the volume of the flows, and their timing and duration.

3.122 Mrs Jan Beer, representing the Upper Goulburn River Catchment Association, indicated that the proposed flows down the Goulburn River and its tributaries would have significant impacts on local landowners:

> The severe flooding is the 20,000 to 30,000 megalitres per day that the MDBA are proposing. They state that that is a small overbank flow and they have continually stated this in documents. They say it will not exceed minor flood levels. That is rubbish, as you have heard from people here. It is twice the channel capacity at Molesworth.[83]

3.123 Mrs Beer stated that flows of this level would damage properties:

> It completely inundates properties. The entire river flat component of many properties would be inundated. The floods come down; they rise very quickly; they fall very quickly. But, if they intend to make releases from

80 Murray-Darling Basin Authority, *Submission 243*, p. 15.

81 Murray-Darling Basin Authority, *Submission 243*, p. 33.

82 Murray-Darling Basin Authority, *Submission 243*, p. 33.

83 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, pp 40–41.

> Eildon and this goes on to the severe, frequent and prolonged, they are prolonging the flood, and that is what keeps it backed up over properties and particularly in the tributaries. There has been no work done on the tributaries at all to see what the impacts are.[84]

3.124 Mrs Karen Williamson expressed concerns about the extent of the impact of flows, stating that it has been difficult to determine the extent of the flows as MDBA mapping has not been regarded as accurate by local residents. Mrs Williamson also stated that there are some significant discrepancies between MDBA's maps and local knowledge and experience:

> It has only been in the last fortnight that the interactive maps which are supposed to solve all the problems have gone up. Andy and I have spent a lot of time doing comparisons. We have had farms in three different locations in the district and we have had local farmers tell us what happens at each level. We then went through the interactive maps and we did comparisons, and that is in the mapping you have there. Some of the mapping is more accurate than it was before, and you will notice that, where it is more accurate to the farmers, you are looking at up to 100 per cent inundation of their river flats. Where the mapping is very different—in the first couple—there are some properties that show no flooding at all in the interactive MDBA maps, whereas from photographs and local input those properties are also inundated.[85]

3.125 Mrs Williamson stated that it is not just her property that would be affected; rather farms throughout the district would be impacted. Mrs Williamson indicated that inaccurate mapping may mean that the impact of the flows are currently underestimated:

> What we would like to see is appropriate and correct map representation because, if the maps are wrong, the impact potential is wrong and the cost estimates are wrong. Unless the mapping is correct and the mapping includes the tributary behaviour, everything else is incorrect.[86]

3.126 The impact on Mrs Williamson's property has been correctly represented by the MDBA due to her persistence, however for other properties, the impact of tributaries has not been taken into account:

> …what they have not done is: the flooding that you see in these is lacking the tributary flooding, because when the Goulburn floods it pushes water upwards on the tributaries. Often what happens is that the tributaries cut off the farmers from being able to get their animals off the property. What you are seeing on their maps is just an expansion of the Goulburn River. But what you are seeing on the owners 'maps is how that expansion then leads into the drains, gullies, channels and tributaries and expands from different areas. You will also notice that on the maps where is only water on half of

84 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, p. 41.

85 Mrs Karen Williamson, private capacity, *Committee Hansard*, 6 November 2015, p. 37.

86 Mrs Karen Williamson, private capacity, *Committee Hansard*, 6 November 2015, p. 37.

> the map, the other half is hill country. So this is a complete inundation. It is not just an empty basin. It crawls around and creates currents, and then it fills in the middle bit, basically.[87]

3.127 Mrs Beer stated that there had been no study of the tributaries at all.[88] Where knowledge of volumes and/or mapping is incorrect or inconsistent, it is difficult to accurately assess the potential impacts of overbank flow events.

3.128 Furthermore, there appeared to be a lack of awareness among some farmers of the potential and impact of the flows.[89]

Consultation with MDBA

3.129 Witnesses also told the committee that consultation with MDBA was lacklustre and witnesses had trouble getting MDBA to acknowledge and correct errors in documentation.

3.130 One example of this was the suggested levels of overbank flows in documentation, which locals in the Upper Goulburn River region insisted would be high. Mrs Beer, representative of the Upper Goulburn River Catchment Association, stated that despite these levels being untenable for landowners, it was difficult to get this recognised by the MDBA. Mrs Beer indicated that MDBA had acknowledged that the highest level was too high:

> For the last two years, we have told them that 20,000 megalitres is untenable and asked: would they please remove it from the documents. They have acknowledged that it is untenable; I think they say that in the document.[90]

3.131 However, Mrs Beer stated that the information is then fed back to Canberra yet somehow is not included in future documentation, and the original figure still remains:

> It is edited; short notes and dot points are made. It goes eventually to the ministerial council, to the decision makers, but all the main information that we give them, our concerns, seems to be filtered out somewhere along the line, because, when the documents come back, there it is again.[91]

3.132 Mrs Beer reported that following community concern and pressure, the MDBA had rewritten the Goulburn River reach report:

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87 Mrs Karen Williamson, private capacity, *Committee Hansard*, 6 November 2015, p. 43.

88 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, p. 43.

89 Mrs Karen Williamson, private capacity, *Committee Hansard*, 6 November 2015, p. 48.

90 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, p. 41.

91 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, p. 41.

> That was only because we harassed them, argued for so many meetings and said, 'No, this is not right; you have to rewrite it.' To their credit, they rewrote it.[92]

3.133 However, Mrs Beer stated that the rewritten report still had figures she considered were too high, and did not take into account the water that would be provided from tributaries or how high flows would dissipate:

> It came back with 20,000 from Eildon to Molesworth and 30,000 from Killingworth down to Mitchelton. The Yea tributary comes into that 30,000 area, which means that the higher the Goulburn River is, the tributary is going to be backed up even more and it is not going to be able to escape the water and so it stays up. So we just do not seem to be able to get through, to be quite honest.[93]

3.134 At the committee's final hearing in Canberra, the Commonwealth Environmental Water Holder, Mr David Papps, affirmed that he was aware of these ongoing concerns, had met with people from the area and had reiterated that he did not order water if it would flood private land.[94]

3.135 Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, also affirmed that if a landholder did not permit overbank flows on their property, the water would not be released:

> If the landholder will not permit water to flow over their private property, then water would never be released. We would not do the relaxation of it in any event.[95]

Cost of overbank flows

3.136 Landowners also stated that overbank flows incurred significant costs on them by affecting their land and livestock.

3.137 In particular, for farmers whose land was primarily floodplain, the potential for inundation was catastrophic. Mr John Canny, a farmer from Molesworth, shared his situation whereby most of his property would be underwater and therefore unfarmable and impossible to sell:

> …my property is 85 per cent of flood plain. Forget all the mapping, we know that if we get 20,000, 85 per cent of my property is flooded… those

92 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, p. 41.

93 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, p. 41.

94 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, pp 33, 39.

95 Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, *Committee Hansard*, 5 February 2016, p. 33.

> flows will make our properties unfarmable. And, if we put easements over them, they will be unsaleable as well.[96]

3.138 In such events, farmers would have to agist their stock until the waters receded, at considerable expense, and commit further time and money to restoring pastures.[97]

3.139 Witnesses expressed concern that the funds set aside for constraints management was inadequate, and that compensation for inundated land has not been determined.[98]

Committee view

3.140 The committee notes that changes to river constraints will not be decided by state governments until 30 June 2016. This should be clearly communicated to individuals and communities who are concerned about proposed flows being discussed under the CMS.

3.141 The committee was concerned by evidence regarding the potential flooding of private land and expects the issue of liability for third party impacts from such events to be clearly addressed with landholders prior to any events taking place. There is also a possibility that environmental watering events may impact on third parties; in these circumstances, the committee expects the Commonwealth to assume liability for such impacts.

3.142 However, the committee is supportive of the commitment shown by the Department of Agriculture and Water Resources and the Commonwealth Environmental Water Holder in assuring landholders that their land will not be flooded without their consent.

Recommendation 6

3.143 The committee recommends the Commonwealth assume liability for damage to private property from environmental watering events, including to both landholders and third parties, except to parties who have given prior consent to such flooding.

Recommendation 7

3.144 The committee recommends that the MDBA and state governments address the issue of third party impacts from environmental watering events during the development of constraints proposals, and clearly communicate with landholders who are likely to be affected by such events.

3.145 Further, the committee notes that the MDBA is undertaking some consultation for the CMS on behalf of state governments and entities. While MDBA's consultation

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96 Mr John Canny, private capacity, *Committee Hansard*, 6 November 2015, p. 48.

97 Mr Rodney Ridd, private capacity, and Mr John Canny, private capacity, *Committee Hansard*, 6 November 2015, p. 48.

98 Mrs Jan Beer, Upper Goulburn River Catchment Association, *Committee Hansard*, 6 November 2015, pp 46–47.

with basin communities generally appears to have improved in recent years, it is still concerning that individuals are having difficulty identifying which level of government is responsible for particular aspects of the Plan and its implementation, accessing information from MDBA, and having their views heard and incorporated into MDBA planning.

Recommendation 8

3.146 The committee recommends that the MDBA review its communication methods, particularly with regard to projects still in development such constraints proposals, and improve its ability to incorporate the views of communities and landholders into decisions and reports.

Goulburn-Murray Water Connections Project

3.147 The Goulburn-Murray Water (GMW) Connections Project is the largest irrigation modernisation project in Australia. Through an investment of over $2 billion, it aims to 'create a more efficient automated water delivery network in the Goulburn-Murray Irrigation District (GMID) to deliver improved customer service levels.'[99]

3.148 The project originated in 2008 when the Victorian government committed funding to the GMID to modernise the network. At this time it was called the Northern Victoria Irrigation Renewal Project (NVIRP). In July 2012 the project was integrated into Goulburn-Murray Water as the GMW Connections Project.[100]

3.149 It is jointly funded by the Commonwealth and Victorian governments. The project is delivered by a dedicated project team that plans and designs the connection solutions, and led by a General Manager who reports to the GMW Managing Director.[101]

Objectives of the project

3.150 The GMID upgrade takes in northern Victoria between Swan Hill and Cobram, and the Goulburn and Murray systems, which is often referred to as the 'Food Bowl' of Australia. The project will automate much of the water delivery network, replacing ageing irrigation infrastructure.

3.151 The objectives of the project are:

- upgrading and automating backbone channels and meters
- reducing the size of the channel network
- reconnecting properties to the upgraded backbone channel system through individual and shared connections

99 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/conns-project-overview/ (accessed 19 January 2016).

100 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/project-overview/history/ (accessed 19 January 2016).

101 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/project-overview/about-gmw-connections/ (accessed 19 January 2016).

> • investigating and delivering special environmental projects
>
> • boosting regional economies, and
>
> • minimising the increase in GMW infrastructure whole of life costs and customer prices.[102]

3.152 For irrigators, the project aims to enable water to become available almost on demand, with consistent flow rates to assist in improving on farm productivity. The project also provides environmental opportunities and benefits through water savings.[103]

3.153 The project is required to deliver 429GL in water savings across the GMID by the end of the project.

Delivery of the project and independent review of stage 2

3.154 The project is being carried out in two stages, which are running in parallel. Stage 1 is largely funded by the Victorian government ($1.004 billion), involves largely backbone capital works, connections works and special modernisation projects. It has a water savings target of 225GL and a completion date of June 2018.

3.155 Stage 2 is largely funded by the Commonwealth government ($1.059 billion), involves the majority of connections works, as well as special backbone and environmental projects. It has a water savings target of 204GL and a completion date of June 2018.[104]

3.156 One condition of the Stage 2 contract with the Commonwealth government was for an independent review of this stage to be conducted by GHD. The key part of this review was to evaluate if the main assumptions for the project remain valid.[105]

3.157 GMW's website included the following summary of the review's findings:

> The independent GHD review has found fundamental changes are required to ensure the delivery of the Connections Project.
>
> It states the Commonwealth and Victorian governments, along with GMW, will need to agree on a mix of options for the success of the project.
>
> The review has found the reset needs to occur because the assumptions underpinning the project are no longer appropriate. For example: It was assumed about 3,000 landowners would choose to leave irrigated agriculture by terminating 45 per cent of delivery share in the GMID

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102 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/project-overview/about-gmw-connections/ (accessed 19 January 2016).

103 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/project-overview/about-gmw-connections/ (accessed 19 January 2016).

104 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/project-overview/history/ (accessed 19 January 2016).

105 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/about-the-goulburn-murray-water-connections-project-stage-2-mid-term-review/ (accessed 19 January 2016).

> however our experience to date indicates 14 per cent or about 1,000 landowners are likely to terminate;
>
> The review also found…less time has been available to deliver the project; securing landowner agreements has been more complex and the availability of suitably qualified resources in the GMID has been more challenging, and;
>
> The review also found GMW has made significant improvements to the project. Specifically on our introduction of Least Cost Methodology, End-to-End Project Managers, outsourcing SCP delivery, and creating shared connections. It also identifies areas for improvement in the delivery of the Project.
>
> Despite the above the project still met its targets until recently.[106]

3.158 There was no further elaboration on this summary.

Management of the project

3.159 The Victorian Farmers Federation (VFF) supported the project and its ongoing delivery, but commented that the original project parameters need to be altered to suit the current situation. The Chair of the VFF Water Council, Mr Anderson, noted the mid-term review of the project and ways that the project might be amended to better deliver its intended outcomes:

> We should be setting up a modern, efficient irrigation system into the future. There are other issues that have come up here this morning. It is all right spending $2.2 billion, but you must have the water to put through that system—otherwise, everyone has wasted their money. And it has to be affordable.[107]

3.160 Mr Anderson also noted that the project timelines are too tight, which inhibits the assessment of the best possible outcomes for irrigated agriculture:

> I think that project time lines—and we certainly made these representations to the mid-term review—are too tight. We are making decisions now and ticking boxes to meet a time line rather than looking at the best possible outcomes for irrigated agriculture in the north here.[108]

3.161 Mr Anderson stated that the first stage of the project involved changing meters to meet a national standard and modernising the channel control system, and was relatively easy to deliver. However, the second stage of the project is the more difficult part, as it involves negotiating with individual farmers:

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106 Goulburn-Murray Water, http://www.gmwconnectionsproject.com.au/about-the-goulburn-murray-water-connections-project-stage-2-mid-term-review/ (accessed 19 January 2016).

107 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 30.

108 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 31.

> …that is the bit where you are trying to negotiate with individual farmers to hook back into the main system. There were always going to be difficulties there. I have my own opinions on how well they have handled that, but having said that that is yesterday's news.[109]

Communication and consultation with stakeholders

3.162 Throughout the inquiry, Victorian farmers and irrigators expressed their concerns about communication with the project team and the availability of information from the team.

3.163 The Koyuga South Irrigators Group, a Victorian irrigation group, had experienced considerable back-and-forth with the Connections project team. The Chair of the group, Mr Snelson, outlined his experience of consulting with GMW:

> [Our group] was formed to address the so-called modernisation rules and practices on our community channels. It is interesting you have the words 'consultation' and 'modernisation' centred around the Goulburn-Murray Water authority. They have a different dictionary to most farmers. Their consultation is very limited. From what we have seen of it, it is just their way. We had to form a community group, and we have done that. We have asked for numerous details as to how the connections people are governing the rules around the outcomes and the so-called modernisation.[110]

3.164 Mr Snelson also stated that despite providing significant information to GMW, it was difficult to obtain information relating to their properties from GMW:

> I cannot give you the figures for the area. I have [asked] them for the figures, and they will not supply the figures of losses. They will not supply the area of irrigated area. We have developed all our farm plans. We have surrendered those plans to them, and we still cannot get any figures out of Goulburn-Murray Water or RPS, who are the connections company.[111]

3.165 A dairy farmer at Stanhope, Mrs Alison Couston, had also experienced difficulties in getting clear information about the project:

> I went to meetings, six or seven meetings of different strategic connection projects. The people in the room had been seen two years before and been told something totally different. They were being told something totally different again. Now they are changing again.[112]

3.166 Such confusion makes it difficult for farmers and irrigators to make sound business decisions. Mrs Couston stated that the options presented to her regarding the

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109 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 31.

110 Mr Stephen Snelson, Chairman, Koyuga South Irrigators Group, *Committee Hansard*, 5 November 2015, p. 77.

111 Mr Stephen Snelson, Chairman, Koyuga South Irrigators Group, *Committee Hansard*, 5 November 2015, p. 77.

112 Mrs Alison Couston, private capacity, *Committee Hansard*, 6 November 2015, p. 39.

Connections project, including the decommissioning of the irrigation supply channel that enabled her to farm, did not include viable options to continue farming:

> The options that were put forward in 2010 by NVIRP, when they had their meeting, was exit irrigation or exit irrigation.[113]

3.167 Mrs Couston stated that although she does own permanent water, the water would not be supplied so if she wanted to continue farming, she would have to switch to dryland farming:

> We have some permanent water. …Selling the water rights would be an optional thing for us to decide. …You did not have to sell your water but you would be a dryland farm or relocate.[114]

3.168 Furthermore, Mrs Couston also submitted freedom of information requests in an effort to gain information on the project:

> I have sought a lot of information—and that is one of the other things. In order to access the information, I am now required to make freedom of information requests to Goulburn-Murray Water. Individually, you are trying to run a business, you are trying to look after your family and then you have virtually got another full-time job trying to access the information you need to make business decisions.[115]

Political representations for review

3.169 These personal experiences were echoed by the Hon. Dr Sharman Stone MP, Federal Member for Murray, who noted the distress faced by many Victorian irrigators, and commented on the management of part one of the Connections project:

> It was so badly handled, so mismanaged, that the Ombudsman stimulated the abolition of the Northern Victoria Irrigation Renewal Project. Unfortunately, the culture of that program with the workers continued, as the people were simply re-seconded back into Goulburn-Murray Water.[116]

3.170 Dr Stone commented on the mid-term review of the project and called for an investigation into Goulburn-Murray Water:

> This mid-term review of Goulburn-Murray Water's Connections Project Stage Two says it like it is. We have got to have changes in that. I want it halted. I would like a royal commission into Goulburn-Murray Water—its business practices, the extraordinary relationships it has with some local businesses, the lack of tendering and value for money and the pure

113 Mrs Alison Couston, private capacity, *Committee Hansard,* 6 November 2015, p. 42.

114 Mrs Alison Couston, private capacity, *Committee Hansard,* 6 November 2015, p. 42.

115 Mrs Alison Couston, private capacity, *Committee Hansard,* 6 November 2015, p. 43.

116 The Hon. Dr Sharman Stone MP, Federal Member for Murray, *Committee Hansard,* 6 November 2015, p. 1.

> incompetency that the connections program is now associated with the monopoly state-owned, public-service run Goulburn-Murray Water.[117]

3.171 Dr Stone also noted that she had been unable to secure the release of the business case for the second stage of the project, despite freedom of information requests to the Victorian government, and had serious concerns about the management of the project. Dr Stone reported that she had heard of instances of mismanagement at GMW:

> I regularly have constituents in my office—farmers, contractors, subcontractors and others who are professionally engaged in the business of the Connections Project Stage 2—who tell me about, for example, about 60 or 80 kilometres of plastic pipeline given as a job to a particular firm, without tendering. I have been told about measuring devices that were found not to be effective when trialled, but that did not matter and they went ahead and bought them at about $25,000 each.[118]

3.172 Another Victorian politician with concerns about the project was the Hon. Peter Walsh MLA, Member for Murray Plains and leader of the Nationals in Victoria. Mr Walsh noted the complexity of the project, and stated that the NVIRP was not planned and costed prior to commencement:

> [NVIRP] was given a cheque for $1 billion and told to go and find some savings. There was no structure to it. The board went and recruited a CEO, who then went and recruited some staff. That is the arse-about way to spend $1 billion. You actually need the plan before you have the money, rather than get the money and then develop a plan. And there were concerns that people had been taking advantage of that project.[119]

3.173 In February 2011, Mr Walsh, as Water Minister, wrote to the Victorian Ombudsman requesting he investigate the NVIRP:

> From memory, I think the Ombudsman found there was a strong view that there were some people who were taking advantage of that particular project.[120]

3.174 Mr Walsh told the committee that after the Victorian Ombudsman reported his findings, there were no resultant prosecutions, and although some departmental staff 'who were involved in that left the department', they had subsequently 'resurfaced since the change of government'.[121]

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117 The Hon. Dr Sharman Stone MP, Federal Member for Murray, *Committee Hansard*, 6 November 2015, p. 2.

118 The Hon. Dr Sharman Stone MP, Federal Member for Murray, *Committee Hansard*, 6 November 2015, p.5.

119 The Hon. Peter Walsh MLA, Member for Murray Plains, Victoria, *Committee Hansard*, 5 November 2015, p. 72.

120 The Hon. Peter Walsh MLA, Member for Murray Plains, Victoria, *Committee Hansard*, 5 November 2015, p. 72.

121 The Hon. Peter Walsh MLA, Member for Murray Plains, Victoria, *Committee Hansard*, 5 November 2015, p. 73.

Committee view

3.175 The committee notes the significant dollar value of the project, and the need for accountability and greater transparency including value for money in the expenditure of public funds. The committee also acknowledges the concerns raised by submitters and witnesses regarding the Goulburn Murray Water Connections Project. Many of these concerns have now been substantiated by the conclusions of the Mid-Term Review of the Connections Project. Improved clarity and certainty around the project would address these concerns, particularly those regarding consultation and transparency.

3.176 However, the committee acknowledges that this is a state issue and decisions about the project are made by the Victorian government. As such, the committee urges the Victorian government to undertake measures to provide irrigators, businesses and communities with adequate detail on the project's objectives, timeframes and costs.

3.177 The committee is also of the view that an investigation into the management of the project is warranted in order to restore public confidence. Such an investigation might also address whether the project is the best mechanism to deliver the required outcomes.

3.178 Given that the project has also received federal funding and noting the issues that have been outlined above, the committee is of the view that the Australian National Audit Office (ANAO) should consider the project for inclusion in its audit program.

Recommendation 9

3.179 The committee recommends the federal government work with the Victorian government to ensure adequate accountability and scrutiny of the Goulburn Murray Water Connections Project, by initiating a judicial inquiry into the operation of the Goulburn Murray Water Connections Project. Further, given the use of Commonwealth funds on the project, the committee recommends the Australian National Audit Office should consider an audit of the project.

South Australia

3.180 The committee held two public hearings in South Australia, in Goolwa and Renmark. In Goolwa, the committee heard from landholders, councillors, representatives of local associations, academics, businesses, and indigenous representatives. In Renmark, the committee heard from irrigation representatives, primary producers, councillors, and an indigenous representative. Witnesses at both hearings consistently emphasised the importance of a secure and consistent supply of usable water, a stable SA economy and a healthy Murray River.

3.181 In Goolwa, Mr Paul Harvey, Member, River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group, stated that failing to fully implement the Plan will have severe impacts on the state:

> Failure to implement the Basin Plan in full will adversely impact on the economic, social and environmental outcomes of the whole region downstream of lock 1 and will threaten the water supplies to metropolitan

> Adelaide and regional areas such as the upper south-east, the Barossa Valley, the York Peninsula and the Adelaide Hills. In short, this could have severe impacts on the whole South Australian economy.[122]

3.182 In Renmark, Mrs Sharon Starick, Presiding Member, South Australian Murray-Darling Basin Natural Resources Management Board, also emphasised the importance of the Murray River to the South Australian economy, and the necessity of ensuring a healthy river to secure this:

> In South Australia, the basin is home to $2.2 billion worth of primary production, a $200 million tourism industry and a $7.3 million houseboat industry. …The River Murray is also critical to supporting the city of Adelaide, with a population of over 1.2 million people and the industries and businesses that are based there. A healthy river supports healthy business. That means healthy from the top end of the basin right through to the bottom end including the Murray Mouth.[123]

3.183 The key issues in South Australia were security of fresh water for Adelaide's urban water supply and SA stock and irrigation needs, the state of the Lower Lakes and the Coorong over time, and potential modifications to these environments.

Adelaide water supply

3.184 Adelaide takes some of its fresh water supply from the Murray River. This water must be suitable for urban water supply, that is, it must not be too saline. The major, and lowest, extraction point for Adelaide's water is at Murray Bridge, which is below Lock 1 at Blanchetown, SA.[124]

3.185 Secure urban water supply throughout Australia is of crucial importance. Mr Adrian Pederick, Member for Hammond in the SA parliament, called for equity throughout the system and ensuring that all basin-dependent water users are considered and their water supplies are secured:

> I think we have to have equity for everyone throughout the system. I certainly travelled through the northern basin and the southern basin to have a look at their issues, and there are issues throughout the basin. But we need to make sure that we service everyone. Adelaide might not be in the Murray-Darling Basin, but neither is Melbourne.[125]

3.186 Mr Pederick stated that Adelaide's water supply is crucial and reiterated that water extracted needs to be suitable for urban use. Mr Pederick stated that any ingress of sea water could compromise the quality of Adelaide's water:

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122 Mr Paul Harvey, Member, River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group, *Committee Hansard*, 8 December 2015, p. 35.

123 Mrs Sharon Starick, Presiding Member, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 31.

124 Murray-Darling Basin Authority, *Submission 243*, p. 17.

125 Mr Adrian Pederick, Local state member for Hammond, *Committee Hansard*, 8 December 2015, p. 26.

> There is also the really important matter of a million people in Adelaide. Their lowest off-take is at Murray Bridge. If you just let sea water flow in, it puts all of that at risk.[126]

3.187 The SA government's submission also reiterated the importance of a secure, reliable and good quality supply of river water for Adelaide and other water users.[127]

SA government desalination plant and purchase of water

3.188 With regard to securing Adelaide's water supply, witnesses commented that although the SA government has a desalination plant that could provide suitable water, it has also been purchasing water from the market.

3.189 Mr Paul Pierotti, President, Griffith Business Chamber, expressed frustration that the SA government was purchasing water on the market, stating that the SA government was removing this water from irrigators:

> The South Australian state government is now buying a massive parcel of irrigable water for Adelaide use. That is not productive use.[128]

3.190 Mr Pierotti argued that the SA government's purchase of water was not in the interests of Australia as a whole:

> But they do not need irrigation water. They have a desal plant; they have lots of other sources of water. They are not in need of water. So, their buying productive water out of the system is not for the good of Australia.[129]

3.191 Mr Tim Grieger, Executive Officer, South Australian Fresh Fruit Growers Association, stated that producers were concerned that Adelaide water should be primarily provided by the desalination plant:

> We feel that the desal in Adelaide should be operating at full capacity before any reduction in irrigation water to irrigators is made.[130]

3.192 The former Victorian Water Minister, the Hon. Peter Walsh MP stated:

> The particular issue with South Australia was, as I understand it, the Commonwealth put $300 million into their desal plant to take the pressure off the Murray. Their buying water is an absolute insult.[131]

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126 Mr Adrian Pederick, Local state member for Hammond, *Committee Hansard*, 8 December 2015, p. 26.

127 SA Government, *Submission 364*, p. 9.

128 Mr Paul Pierotti, President, Griffith Business Chamber, *Committee Hansard*, 27 October 2015, p. 11.

129 Mr Paul Pierotti, President, Griffith Business Chamber, *Committee Hansard*, 27 October 2015, p. 11.

130 Mr Tim Grieger, Executive Officer, South Australian Fresh Fruit Growers Association, *Committee Hansard*, 9 December 2015, p. 21.

131 The Hon. Peter Walsh MLA, Member for Murray Plains, Victoria, *Committee Hansard*, 5 November 2015, p. 74.

3.193 However, Professor Mike Young, addressing the committee in a private capacity, stated that the city of Adelaide does not require a significant volume of water. Prof. Young stated that there would not be a significant gain to irrigators or farmers if Adelaide did not take water from the Murray River:

> The City of Adelaide, in fact, does not take a lot of water. It is an emotional issue, but, if you work out the number of farms that you would gain if you disconnected Adelaide, it is not very much.[132]

3.194 Furthermore, Prof. Young stated that relying primarily on the desalination plant would be costly to South Australia:

> The economic costs to South Australia and to Australia are enormous from having a desalination plan[t] as its prime source.[133]

3.195 The SA government provided responses to questions from the committee regarding the use of its desalination plant. It stated that an independent review of the plant had concluded that the operating costs 'reflect a prudent and efficient approach to the management and operation' of the plant. The SA government also reaffirmed that when it has purchased temporary water, this had been done on the water market.[134]

3.196 The SA government also advised that River Murray usage figures for Metropolitan Adelaide and associated country areas for the years 2011–2015 ranged from 42 to 81 gigalitres per annum.

Committee view

3.197 The committee is of the opinion that Adelaide's water supply must be secure, whether through river water or desalinated water, and that this should be the primary consideration in any potential changes to SA water distribution. The committee is also of the view that irrigators and landholders with livestock must have secure access to usable water to maintain their businesses.

3.198 The committee strongly encourages the SA government to make use of its desalination plant for securing urban water supply, so as to reduce the burden of extraction on the Murray River.

3.199 The committee further believes that access to water on both sides of the lower lakes can be assured via pipes originating upstream, similar to Adelaide's water, and that once this is achieved there is no economic case for maintaining the lower lakes as fresh water.

Recommendation 10

3.200 The committee recommends the government evaluate the effect on irrigators and the environment of the SA government purchasing irrigation water on the water market while declining to use its desalination plant. The

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132 Prof. Mike Young, private capacity, *Committee Hansard*, 8 December 2015, p. 6.

133 Prof. Mike Young, private capacity, *Committee Hansard*, 8 December 2015, p. 6.

134 SA Government, responses to questions on notice, received 17 February 2016, p. 14.

committee also recommends the government undertake a study of the cost of upgrading pipeline delivery of water to irrigators and livestock owners on both sides of the lower lakes.

The Coorong, Lower Lakes and Murray Mouth (CLLMM)

3.201 Water flowing down the Murray River enters the Lower Lakes, Lake Alexandrina and Lake Albert, just south of Wellington, SA, and flows out towards the sea. Lake Alexandrina is the largest lake, and it is connected to both Lake Albert and the Coorong. Together, the bodies of water form the last part of the Murray River's flow until it reaches the sea at the Murray Mouth.[135]

3.202 The Coorong, Lower Lakes and Murray Mouth (CLLMM) region is approximately 142 500 hectares in size and has a variety of freshwater and marine environments. The region is managed by the South Australian government, and there is limited connectivity between the different bodies of water (see Figure 3.6).

3.203 The South Australian government states that Lake Albert is a terminal lake, connected to Lake Alexandrina 'by a narrow channel', and the Coorong is separated from the sea by a narrow sand peninsula, and also from the other lakes:

> Saline waters of the Coorong lagoons and Murray Mouth estuary are prevented from entering the lakes and the River Murray by a series of barrages built in the 1930s.[136]

3.204 The CLLMM region is the only point where fish can move between freshwater and marine environments. The Murray Mouth is also the point where salt from the Murray-Darling Basin can be discharged into the sea.[137]

3.205 The region has strong indigenous history, with the SA government reporting that Indigenous people have a strong connection to the land:

> Aboriginal people…have a strong spiritual and cultural connection to the land and are the Traditional Owners. There are many traditional and archaeological sites in the region.[138]

3.206 Following European settlement, the region developed irrigation and stock industries, and currently supports agriculture, viticulture, fishing, manufacturing and tourism industries.[139]

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135 SA Government, http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth (accessed 11 February 2016).

136 SA Government, http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth (accessed 11 February 2016).

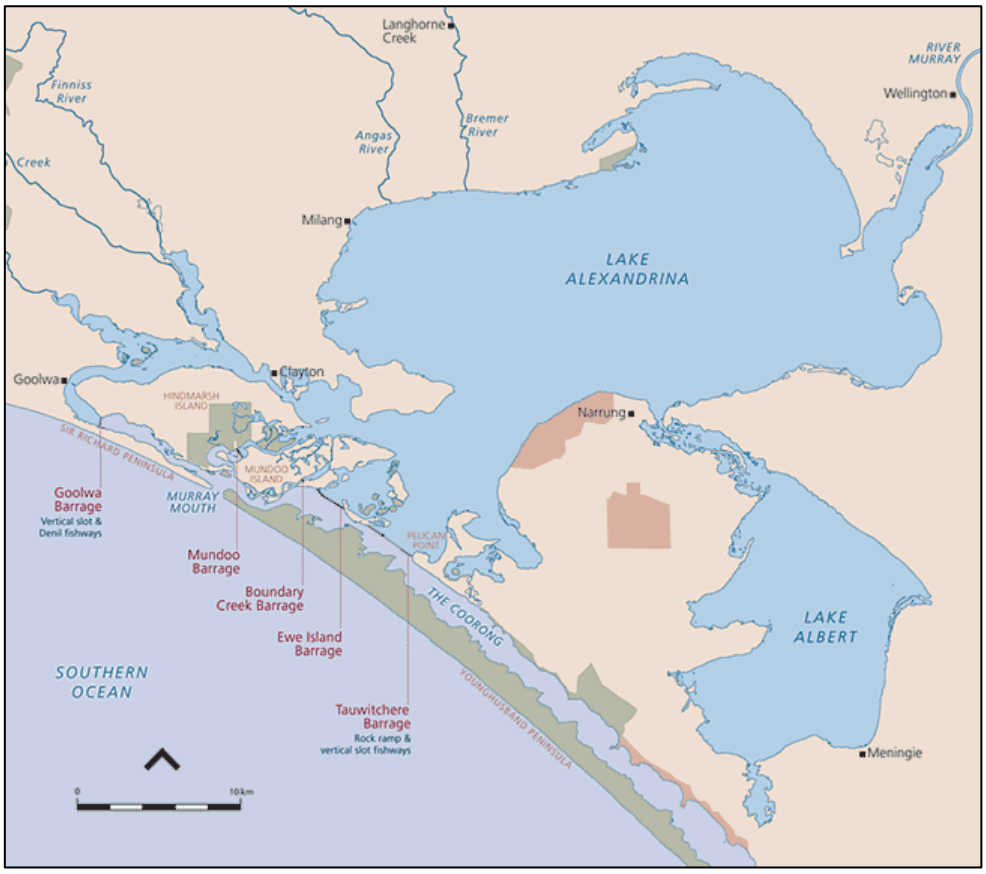
137 SA Government, http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth (accessed 11 February 2016).

138 SA Government, http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth (accessed 11 February 2016).

Construction of the barrages

3.207 The MDBA Factsheet, *All about the barrages*, on the evolution of the barrages notes that following a favourable report from the South Australian Parliamentary Standing Committee on Public works in 1933, the *River Murray Agreement* [an agreement between NSW, Victoria, and South Australia] was amended allowing for the commencement of the barrages.[140]

Figure 3.6 Lower Lakes Barrages[141]



3.208 Since then, a total of five barrages have been constructed: Goolwa, Mundoo, Boundary Creek, Ewe Island and Tauwitcherie. They separate the lakes from the Coorong, the Murray Mouth and the sea (see Figure 3.6).

3.209 The MDBA's submission states that a drought in the early 1900s was the catalyst for the construction of barrages, due to lower flows down the Murray River:

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139 SA Government, http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth (accessed 11 February 2016).

140 MDBA barrages fact sheet, *All about the barrages*, p. 2, http://www.mdba.gov.au/sites/default/files/pubs/FS_barrages.pdf (accessed 11 February 2016).

141 Murray-Darling Basin Authority, http://www.mdba.gov.au/sites/default/files/archived/annualreports/mdbc/ar0405/enlargement/chp2_lowerlakes.htm (accessed 27 February 2016).

> By 1902, during a major drought, there were already signs that the estuary was being affected by reduced freshwater flows.[142]

3.210 This was compounded by increased water use upstream, leading to reduced flows of fresh water in the lower lakes. This in turn impacted on the communities and industries, mainly agricultural, around the lakes. The SA government sought support to build the barrages to reduce the ingress of salt water into the lower lakes and provide fresh water security.

3.211 The MDBA stated that during the construction of the barrages salinity in Lake Alexandrina was higher than in the ocean, so the decision was made to create a freshwater lake system rather than for the lakes to become hyper-saline more frequently:

> In 1938, shortly before the barrages were finished…the salinity at Milang on the western shore of Lake Alexandrina peaked at more than 60,000 EC, which is saltier than the ocean. Governments were faced with a choice of either building the barrages to create a freshwater lake system or allowing the lakes to experience increasing periods of hyper-salinity.[143]

3.212 MDBA's factsheet also notes that aside from supporting the local farming community, the eventual goal was to ensure a freshwater supply to Adelaide:

> After construction of the barrages, South Australia finally had the confidence to connect Adelaide's water supply to the River Murray downstream of Lock 1.[144]

Water levels and quality in the Lower Lakes and Coorong

3.213 Water levels and quality in the Lower Lakes and Coorong have changed over time. They have been particularly affected by local weather, fresh and salt water flows, water extraction, and evaporation. The MDBA's submission indicates that salinity levels in Lake Albert and the Coorong in particular are 'mainly dependent on fresh water flows to South Australia and local weather.'[145]

3.214 The MDBA's submission acknowledges that there is a 'variety of views' on the water type, levels and quality in the lakes prior to European settlement. However, the submission contends that historical evidence demonstrates that the lakes were predominantly fresh:

> Historical material from the 1800s (including stories from the Ngarrindjeri people, explorers' diaries, information from sealers and herdsmen and

142 Murray-Darling Basin Authority, *Submission 243*, p. 17.

143 Murray-Darling Basin Authority, *Submission 243*, p. 17.

144 MDBA barrages fact sheet, *All about the barrages*, p. 2, http://www.mdba.gov.au/sites/default/files/pubs/FS_barrages.pdf (accessed 11 February 2016).

145 MDBA, answer to question on notice no. 34, received 3 February 2016.

> parliamentary submissions by settlers) shows that the Lower Lakes were mainly fresh.[146]

3.215 The submission also seeks to support this hypothesis stating that scientific evidence (though not referenced) confirms that the lakes were predominantly fresh:

> Microscopic analysis of single-celled algae (Diatoms) also provides evidence that in the 7,000 years since they were formed, the Lower Lakes would have been mainly fresh with rare seawater inflows.[147]

3.216 The MDBA does however note that in times of low river flow and high evaporation, it is likely that sea water would have flowed into the lakes:

> It is likely that when river flows were very low, there would have been areas around the Murray Mouth and towards Point Sturt in Lake Alexandrina where sea water would have flowed back into the lakes.[148]

3.217 This would have resulted in 'periods of elevated salinity in the lakes.' However, MDBA notes that this would have been an irregular occurrence.[149]

3.218 The committee heard conflicting evidence on this matter. Dr Jennifer Marohasy, Spokesperson, Myth and the Murray Group, argues for the removal of the barrages, stating that the lakes were originally estuarine; that is, a mix of salt and fresh water. She referred to a map of the region produced after explorer Charles Sturt's first trip along the Murray River, indicating that the map characterised Lake Alexandrina as estuarine:

> …it clearly shows the headwaters as fresh and most of Lake Alexandrina as brackish. Then you can see that about a quarter to a third of Lake Alexandrina is described as comprising salt water. This map, as I said, was drawn in 1839. …it was an estuary—salt transitioning to brackish transitioning to fresh…[150]

3.219 One witness at the Goolwa hearing, did however state that his family's farm, close to the Murray Mouth and its main channel, had been able to draw fresh water from that end of the lakes for generations. Mr Colin Grundy, Director, Mundoo Pastoral Company Pty Limited, stated that his family had farmed in the area since

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146 MDBA barrages fact sheet, p. 2, http://www.mdba.gov.au/sites/default/files/pubs/FS_barrages.pdf (accessed 11 February 2016).

147 MDBA barrages fact sheet, p. 2, http://www.mdba.gov.au/sites/default/files/pubs/FS_barrages.pdf (accessed 11 February 2016).

148 MDBA barrages fact sheet, p. 2, http://www.mdba.gov.au/sites/default/files/pubs/FS_barrages.pdf (accessed 11 February 2016).

149 MDBA barrages fact sheet, p. 3, http://www.mdba.gov.au/sites/default/files/pubs/FS_barrages.pdf (accessed 11 February 2016).

150 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 3.

1876, using water for stock from creeks that ran from the lower end of the lakes onto Mundoo Island.[151]

3.220 Mr Grundy, like MDBA, also attributed the change in the composition of the lakes prior to the barrages as being due to lower flows coming down the Murray River into the lakes:

> The thing that has changed from 1876 is there is not as much water coming down the river. We have got weirs, locks and everything that was put up the river. The barrages were the last thing put in I understand. So that is what has changed. The water flow is not coming down.[152]

3.221 It would appear from this and other early accounts that Lake Alexandrina and Lake Albert had varying degrees of salinity depending on the season and weather patterns consistent with a natural large estuarine environment.

Water security

3.222 Mr Neil Shillabeer, private capacity, stated that some irrigators rely on the lakes for water as they do not have the option to draw water from a pipeline:

> The irrigation pipeline that comes to this area on the western side of the lakes is a private line. It is a corporate line that has been paid for by irrigators. There is no irrigation line on the eastern side of the lakes—Lake Albert and the eastern side of Lake Alexandrina. It was looked into through the drought and the cost was found to be astronomical with the volumes of water that were necessary—tenfold volumes of water for the type of irrigation required in those areas than what we have on this side of the lakes. The argument about a provision of irrigation water in lieu of quality lake water is only applicable at this point in time for the western side of the lakes system.[153]

3.223 Changes to the use of water along the Murray River and its tributaries, together with the addition and/or removal of structures to manage water have affected the flows and composition of the water in the lower lakes. These have also had an impact on evaporation from the lakes.

3.224 Presently, in addition to persistent calls to alter the freshwater state of the lakes, there are two more minor adaptions to flows that may impact water quality in the Lower Lakes and Coorong – the current South East Flows Restoration Project, and the potential for a connector between Lake Albert and the Coorong. These are discussed in greater detail following the sections below.

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151 Mr Colin Grundy, Director, Mundoo Pastoral Company Pty Limited, *Committee Hansard*, 8 December 2015, p. 29.

152 Mr Colin Grundy, Director, Mundoo Pastoral Company Pty Limited, *Committee Hansard*, 8 December 2015, p. 29.

153 Mr Neil Shillabeer, private capacity, *Committee Hansard*, 8 December 2015, p. 21.

Evaporation from the Lower Lakes and Coorong and salinity issues

3.225 Evaporation from the Lower Lakes has been an issue of contention throughout the inquiry. Many submissions, particularly from upstream water users, expressed frustration at water being sent down the Murray River only to evaporate from the lower lakes. This sentiment was particularly expressed when a submitter's water access had been reduced as a result of the plan. Closely tied to the issue of evaporation was the issue of salinity.

3.226 Mr Stan Dineen, a witness at Broken Hill, estimated the level of evaporation in the lakes to be approximately 750GL per year.[154] Cr Terence Hogan, Chairman, Riverina and Murray Regional Organisation of Councils (RAMROC), stated that the evaporation from the lakes was counterproductive and was removing water from productive use elsewhere in the basin:

> If we are challenged to increase food and fibre not only around the world but in this country, how can you afford, as I said, to have up to 1,000 gigalitres of water just evaporate annually?[155]

3.227 Further, Mr Ken Jury, a witness at Goolwa, stated that evaporation rates vary depending on the weather and estimated that the water that evaporated during drought years was worth millions of dollars:

> Of course in a drought they are going to be a lot more. I know in the millennium drought the figure of 1,150 gigalitres was floating around. In non-drought years it is something like 840. They are a bit flowery, but it is in that region. It is a variable system, as someone just said. If you rounded the figure for the Lower Lakes alone I would be quite happy and quite comfortable in saying it was worth $7 billion during the millennium drought.[156]

3.228 Furthermore, some witnesses noted that evaporation of salt water leaves an increased salinity problem, so if the lakes are more saline environmental issues would become more complex:

> …the evaporation rate means that, if you put salt water in, all you are left with is an increased salinity problem, so we cannot have that.[157]

3.229 Mr Colin Grundy, Director, Mundoo Pastoral Company Pty Limited, stated that salt levels have devastating impacts on farmers. Mr Grundy recalled the last drought and the impact it had on the stock on his property, which is right at the mouth of the Murray:

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154 Mr Stan Dineen, private capacity, *Committee Hansard*, 26 October 2015, p. 31.

155 Cr Terence Hogan, Chairman, Riverina and Murray Regional Organisation of Councils, *Committee Hansard*, 27 October 2015, p. 8.

156 Mr Ken Jury, private capacity, *Committee Hansard*, 8 December 2015, p. 30.

157 Cr Neville Jaensch, Mayor, Coorong District Council, *Committee Hansard*, 8 December 2015, p. 37.

> The salinity levels rose so much that the water was useless for our stock, for irrigation and for environmental purposes. The water level dropped two metres below the normal pool level, 1.5 metres below sea level, exposing acid sulfate soils, turning backwaters into battery acid and killing all that came in contact with them.[158]

3.230 Mr Grundy also stated that the highly saline water had a severe impact on the environment:

> We still had rain in this area, so we had feed for our cattle, but no suitable drinking water. With low water levels and the saline water the environment dried up and died. Things were dying all around us. We suffered large stock losses due to the high saline water.[159]

3.231 Indeed, the committee heard of similar impacts during the millennium drought that were experienced right through the basin.

3.232 Salinity is particularly an issue in the southern lagoon of the Coorong. Mr Garry Hera-Singh, Chairman, Southern Fishermen's Association, stated that sea water flow into the Coorong would not fix the salinity issue as it has a high evaporation rate:

> The evaporation rate of the south lagoon—it is a long, shallow basin—is 85 gigs in a normal year. If you get a hot year like the one we are about to experience, it will be 100 gigs a year. It is like a dog chasing its tail. It is massive.[160]

3.233 On the other hand, water users around the Lower Lakes stated that fresh water in the lakes was providing water for productive use as well as flushing salt from the basin out to sea and keeping the mouth of the river open. Mr Bill Paterson, Chairman, Coorong, Community Advisory Panel, stated that constant freshwater flows (rather than large flood events) to the lakes are essential:

> These freshwater flows are essential to flush salt and nutrient from the entire river system—and, as we have mentioned before, it is also important to keep the mouth open. If you do not have a flow out, that mouth will silt up.[161]

3.234 The Department of the Environment provided responses to questions on notice on this issue, and reiterated that the water is not just evaporating at the end of the system:

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158 Mr Colin Grundy, Director, Mundoo Pastoral Company Pty Limited, *Committee Hansard*, 8 December 2015, p. 14.

159 Mr Colin Grundy, Director, Mundoo Pastoral Company Pty Limited, *Committee Hansard*, 8 December 2015, p. 14.

160 Mr Garry Hera-Singh, Chairman, Southern Fishermen's Association, *Committee Hansard*, 8 December 2015, pp 24–25.

161 Mr Bill Paterson, Chairman, Community Advisory Panel for the Coorong, Lower Lakes and Murray Mouth, *Committee Hansard*, 8 December 2015, p. 34.

> One of the reasons that some people continue to focus on the Lower Lakes is that they believe that large volumes of water are being delivered just to the end of the river system. This is incorrect.[162]

3.235 Rather, the Department reiterated that the water flowing down the river provided benefits to the identified environmental sites prior to flowing into the lakes:

> The way the Basin Plan was developed was to determine the environmental water needs of important sites and functions over the length of the river system (from the top to the bottom states). If all those sites and functions receive sufficient flows, then there will be enough water travelling through to the end of the system. In other words, if you meet all upstream environmental water needs then you will also look after the Lower Lakes.[163]

3.236 However, the committee notes that meeting upstream environmental needs is only one of the objectives of the Plan.

Ramsar listing of the Coorong and Lower Lakes

3.237 The Ramsar Convention is the common name for the Convention on Wetlands of International Importance. It is an intergovernmental treaty that provides the framework for the conservation and use of wetlands and their resources.[164]

3.238 The Lower Lakes and Coorong area was listed as a Ramsar wetland in 1985. At the time of the listing, an ecological character description was submitted, which forms the baseline for measuring changes in the area.[165]

3.239 The lakes were listed as 'freshwater systems units', although it was noted that salinity levels increased during periods of low flow.[166]

3.240 There are two key obligations for the Commonwealth with regard to Ramsar sites. As explained by a representative from the Department of the Environment, the federal government must promote conservation and report on any changes:

> There are two relevant clauses within the convention itself: article 3, which requires us to promote the conservation of listed Ramsar sites, and article 3.2 requires us to report any change in the ecological character that occurs as a result of human induced interference. Then we put in a range of parameters, …as to how we measure that change. In essence, the site is listed in its state as at 1985 and we would be required to report to the

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162 Department of the Environment, responses to questions on notice (information provided by MDBA), received 2 October 2015, p. 9.

163 Department of the Environment, responses to questions on notice (information provided by MDBA), received 2 October 2015, p. 9.

164 Ramsar Convention, http://www.ramsar.org/about-the-ramsar-convention (accessed 10 February 2016).

165 Mr David Papps, Commonwealth Environmental Water Holder, Department of the Environment, *Committee Hansard*, 18 September 2015, p. 18.

166 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 11.

> convention any change from that state to the Ramsar Convention. They are the obligations that we have.[167]

3.241 The department's response to a subsequent question on notice stated that changing the lakes from a freshwater system to an estuarine one 'would be inconsistent with our international Ramsar Convention obligations.'[168]

3.242 Further, any proposal for changes to the freshwater nature of the lakes—to an estuary or hyper-saline system—would trigger the provisions of the federal environment legislation, the *Environment Protection and Biodiversity Conservation Act 1999*.[169]

3.243 Mrs Sharon Starick, Presiding Member, South Australian Murray-Darling Basin Natural Resources Management Board, emphasised the importance of Australia meeting its Ramsar obligations with regard to the Coorong and Lower Lakes:

> In terms of the Lower Lakes and the Coorong area, they are critically important, not only for the local economy that is based there, but also in terms of being a Ramsar listed site, which means we actually have international obligations to deliver. That does mean that, not only from South Australia's perspective, but also nationally we have obligations in looking after those sites…[170]

3.244 Mr Neil Schillabeer, a witness at Goolwa, also noted the importance of the Ramsar listing and the improvements in the region since the Plan commenced:

> The Basin Plan, since its inception in 2012, has already provided significant environmental improvement in the region. The benefits of more consistent flows, due to provision of environmental water, include improvement in salinity levels in the lakes due to better salt export conveyance, improved salinity levels in the Coorong by freshwater dilution, greater fish migration between river and sea due to continual fish passage flows, provision of food that drives the fishery and submerged vegetation and mudflat habitat—critical as a food source for international migratory waders that rely on this extensive Ramsar site.[171]

Potential impact of removing or modifying the barrages

3.245 Some witnesses advocated the removal of the barrages, or modifications to some of the barrages, to make the lower lakes estuarine or to enable the ingress of sea

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167 Mr Greg Manning, Assistant Secretary, Wetlands Policy and Projects Branch, Department of the Environment, *Committee Hansard*, 18 September 2015, p. 18.

168 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 11.

169 Department of the Environment, responses to questions on notice (information provided by MDBA), received 2 October 2015, p. 12.

170 Mrs Sharon Starick, Presiding Member, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 32.

171 Mr Neil Shillabeer, private capacity, *Committee Hansard*, 8 December 2015, p. 17.

water during drought periods and the egress of fresh water to flush the river during floods.

3.246 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray Group, argued that historically the lower lakes would have been naturally estuarine during periods of extended drought. She stated that remains of sea creatures indicated the presence of salt water in the lakes, particularly during periods of extended drought:

> Before the barrages, during periods of extended drought, the entire lagoon would fill with sea water. In 1914-15, the Southern Ocean pushed in, and right up at Wellington there are reports of dolphins, sharks in Lake Albert, and even pygmy whales.[172]

3.247 Dr Marohasy called for a return to a tidal system:

> …the restoration of the Murray River's natural estuary, that the tide return and that the Southern Ocean push in each autumn and for longer periods during drought. This would truly represent a return of natural environmental flows.[173]

3.248 The MDBA's submission clearly stated that a natural estuary is not the aim or intention of governments or the Plan. The submission stated that making the Lower Lakes estuarine would severely impact the basin's irrigation industry throughout the basin:

> The only way that a natural estuary could have been reinstated would have been to stop all irrigation in the basin. That was not an option considered in the 1930s, nor is it an option today.[174]

3.249 Some witnesses called for improved management of flows, including the modification of some of the barrages. Mr Ken Jury stated that one way to improve water management, flow and infrastructure would be to adapt some of the barrages. Mr Jury called for the Goolwa barrage in particular to be adapted:

> …[R]emove the Goolwa Barrage stop-logs and replace them with full-sized, thick-walled polyethylene tanks with a single pump to each. Current handling of single-concrete logs in each bay is both cumbersome and outdated. Water delivery is slow and it can be vastly improved…[175]

3.250 In concert with adapting the Goolwa barrage, Mr Jury stated that it would be essential to reduce the size of Bird Island, a sand island located close to the sea opening, which has grown significantly over time due to the lack of tidal influxes. Mr Jury argued that the island is now so large that it restricts the flow of water:

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172 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 3.

173 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 3.

174 Murray-Darling Basin Authority, Submission 243, p. 17.

175 Mr Ken Jury, private capacity, *Committee Hansard*, 8 December 2015, p. 13.

> …[I]t will be necessary to partially remove the obstructing Bird Island, previously a small sandbar located in the Mundoo Estuary directly opposite the ailing Murray Mouth.[176]

3.251 Other witnesses were strongly opposed to the removal or modification of the barrages and the ingress of sea water. Mr Neil Shillabeer stated at the Goolwa hearing that the removal of the barrages would make the lakes hypersaline, and would have negative environmental consequences for the lakes and the surrounding areas:

> …within a period—I said within 10 years—the lakes, if you remove the barrages, would go hypersaline. That means not supporting any vegetation at all.[177]

3.252 Mr Shillabeer argued that removing the barrages was in direct opposition to the Plan, and that therefore they should remain in place. However, Mr Shillabeer stated that if the barrages were proposed to be removed, this should be preceded by significant research on the consequences of the decision.[178]

Figure 3.7 Bird Island – Main Murray mouth channel[179]

3.253 Witnesses at Goolwa also emphasised the economic implications of removing the barrages – both in terms of the ingress of sea water and the fluctuation in water levels. Mr Thomas Chapman, Director, The Marina Hindmarsh Island, stated that a tidal lake would impact on tourism and recreation, particularly with regard to boating infrastructure:

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176 Mr Ken Jury, private capacity, *Committee Hansard*, 8 December 2015, p. 13.

177 Mr Neil Shillabeer, private capacity, *Committee Hansard*, 8 December 2015, p. 17.

178 Mr Mike South, private capacity, *Committee Hansard*, 8 December 2015, p. 19.

179 Satellite image of the Murray mouth, courtesy of Google Maps, (accessed 27 February 2016).

> Our infrastructure was built for a pool level of 0.75 AHD. It is just slightly below that today, to give you some idea. Changing this to a tidal facility would cost us millions of dollars and there would be many other operators in the same situation. Many of the boating facilities and destinations would no longer be available, the tourist industry would be totally changed, there would be absolute quantum change in where we go.[180]

3.254 The SA government also provided evidence on the damage that sea water ingress might cause, stating that during the last drought this option was considered:

> Whilst considered as a last resort option to manage acidification, the introduction of seawater would have had significant, negative consequences including degradation of the existing ecosystems, changing the ecological character of the Lakes. Adverse effects on water quality at major urban, irrigation and stock and domestic water supply off-takes below Lock 1 would have also needed to be addressed.[181]

3.255 The SA government stated that salt water was not required to flush the lakes as trigger-levels for acidification were not reached.[182]

3.256 Irrespective of the merits of the arguments of those who oppose returning the lower lakes to estuarine condition, the committee accepts that removal or adaption of the barrages would require further work upstream to protect the water supply for Adelaide and for other productive uses, including irrigation and stock supply on either side of the lower lakes.

Potential construction of a lock at Wellington

3.257 One issue, raised repeatedly by submitters and witnesses, was the potential for an additional lock on the Murray River before it enters Lake Alexandrina. A possible location for this lock was at or near Wellington, SA.

3.258 This lock was called Lock Zero by submitters and witnesses, and was often mentioned in the context of removing the barrages (thus enabling the ingress of sea water), as a way to protect water supply for Adelaide and productive use below the existing Lock 1 at Blanchetown, SA.

3.259 Some witnesses argued that a lock at Wellington would ensure fresh water supply for Adelaide and other downstream uses, while also enabling the Lower Lakes to be open to the sea. Mr Jury, a witness at Goolwa, stated that if the barrages were to be modified, a lock would be required at Wellington to conserve fresh water for productive use. Mr Jury thus called for the construction of Lock Zero at Wellington:

> …[L]ocate one more river lock, recognised locally as lock zero, to be placed upstream of Wellington and to be founded on recognised friction piling…[183]

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180 Mr Thomas Chapman, Director, The Marina Hindmarsh Island, *Committee Hansard*, 8 December 2015, p. 44.

181 SA Government, responses to questions on notice, received 17 February 2016, p. 8.

182 SA Government, responses to questions on notice, received 17 February 2016, p. 8.

3.260 Similar views on the need for an additional lock were heard upstream. In Griffith, Mr Ronald Pike, stated that an additional lock would increase the water available for irrigators upstream:

> What we can do is return them to an estuarine development and build lock zero—which you have talked about. We can make sure that we deliver the water to every single present user and in a greater volume than they have now—we can do that easily—and we can make sure it is at the right price. When we do that we have around a million megalitres of extra water back upstream.[184]

3.261 Mr Neil Eagle, a witness at Echuca, also argued in favour of Lock Zero. Mr Eagle stated that a location slightly upstream of Wellington might be more suitable for locating the lock, but argued that advanced engineering should make building a dam on unstable soil feasible:

> I do not know the South Australian areas well, but as I have had it explained to me there is a solid base in an area that is upstream of Wellington, but regardless of that, apparently, and I am not an engineer, with friction piling it can be built in unstable soils anyway, so it is nonsense that we cannot build a dam—or a reservoir!—somewhere near Wellington. It can be done, engineering-wise. With the new technologies now that is not a problem.[185]

3.262 Other witnesses indicated that a weir at Wellington would not be feasible as the river bed would not support such a structure. Mr Adrian Pederick stated that he had argued against the proposal during the last drought:

> There was talk of the infamous Wellington weir, which I railed against and the community railed against, which was a $200 million proposal that would have sunk because they sounded it when they built the other structures in the river.[186]

3.263 The practical difficulty in building a lock at Wellington was also covered by the MDBA. Mr David Dreverman, Executive Director, River Management Division, MDBA, stated that a site for a permanent weir below the offtake for Adelaide's water could not be found due to the nature of the river:

> They looked for a permanent weir site back in 1930s and did not find one, and we did not find one again in 2007-08. The river there is very deep—it is 17 metres deep—and it is founded on very soft, unconsolidated estuarine sediments.[187]

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183 Mr Ken Jury, private capacity, *Committee Hansard*, 8 December 2015, p. 13.

184 Mr Ronald Pike, private capacity, *Committee Hansard*, 27 October 2015, p. 51.

185 Mr Neil Eagle, private capacity, *Committee Hansard*, 5 November 2015, p. 61.

186 Mr Adrian Pederick, Local state member for Hammond, *Committee Hansard*, 8 December 2015, p. 26.

187 Mr David Dreverman, Executive Director, River Management Division, MDBA, *Committee Hansard*, 5 February 2016, pp 44–45.

3.264 The SA government stated that a temporary weir near Wellington has always been 'a measure of last resort' and that the government did not want to construct a weir 'unless it was absolutely necessary to protect the State's potable water supply.'[188]

3.265 Furthermore, the MDBA and the Plan do not support the construction of an additional lock or the return of the lower lakes and Coorong to an estuarine state.

3.266 While an additional lock might enable greater active management of water below the lowest existing lock, it might have the potential to impact on water users downstream. Cr Keith Parkes, Mayor, Alexandrina Council, stated that the construction of a lock at Wellington would degrade the system and reduce or stop primary production downstream, and suggested that this would replicate the existing situation in future:

> So let's block it off at an imaginary lock at Wellington, degrade the water in this part of the system and pump a bit more water out further upstream so that we can irrigate and grow more food while the food down here dies. After we have had a few years of going gung-ho at that, as we have been doing in the past, let's kill the next pond and go to Blanchetown and then start again beyond that.[189]

3.267 Cr Parke did not elaborate on how or why such degradation would occur.

3.268 The committee did however, receive evidence from Mr Peter Fraser, Manager of McConnell Dowell Constructors (Aust.) Pty Ltd in South Australia, who stated that its subsidiary company *Built Environs* had been involved in the construction of the Hindmarsh Island Bridge, and reconstructing several of the Murray River weirs and fishways during SA Water's campaign to upgrade and enhance those facilities. It stated that 'In relation to constructing a permanent weir near Wellington we confirm this is technically feasible'. Mr Fraser stated that an earth fill weir/lock structure could be developed for approximately $50 million at the site of lock zero near Wellington.

Committee view

3.269 The committee is cognisant of the complex interrelationships between the Murray River, the Lower Lakes, the Coorong, and other water bodies and aquifers that discharge at the end of the Murray-Darling Basin. Further, the committee is aware that changes to one part of the system can have sometimes unexpected impacts on other parts of the system. Accordingly, any changes should be approached with caution preceded by careful evidence-based research to ascertain the social, economic and environmental impacts of the proposed change.

3.270 With regard to the Coorong, Lower Lakes and Murray Mouth region, the committee notes the view of witnesses who demonstrated that the area was historically estuarine and had been altered by the construction of the barrages. A prime example of change since the construction of the barrages is the growth of Bird Island, the sand bar that has silted up the mouth of Murray River.

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188 SA Government, responses to questions on notice, received 17 February 2016, p. 6.

189 Cr Keith Parkes, Mayor, Alexandrina Council, *Committee Hansard*, 8 December 2015, p. 28.

3.271 The committee also notes the changing water levels and water quality in the region, and the varying evaporation rates and salinity levels from these bodies of water during different times of the year.

3.272 The committee does not accept arguments that returning the lower lakes to estuarine condition, assuming there is a lock at Wellington to prevent the upstream movement of brackish water during periods of low river flow, would necessarily have negative implications for current water users in South Australia.

3.273 The committee considers there is potential for enormous environmental, social and economic benefits to upstream communities as a result of returning the lower lakes to estuarine condition.

Recommendation 11

3.274 The committee recommends that Bird Island be removed by the South Australian Government and MDBA to improve water flow through the Murray mouth.

Recommendation 12

3.275 The committee recommends the MDBA calculate the economic value of fresh water evaporated from the lower lakes.

3.276 The committee is of the view that the Lower Lakes and Coorong are wetlands of international importance, and as such should be managed in accordance with the principles of the Ramsar Convention. However, the committee is of the view that the Ramsar listing of the Coorong as freshwater is inconsistent with historic and current salinity levels. As such the committee considers that a detailed study be undertaken to inform a reassessment of the Coorong's Ramsar classification.

Recommendation 13

3.277 The committee recommends the government undertake a detailed study to inform whether a reassessment of the Coorong's Ramsar listing from a fresh water system to an estuarine system is more appropriate.

3.278 Given the historically estuarine environment, the committee sees value in assessing potential options for the removal of some or all of the barrages or adopting adaptive management of the barrages to allow the ingress of salt water during periods of low flow.

3.279 The committee is of the view that returning the lakes to an estuarine environment may have significant benefits by allowing more water upstream to be utilised for productive agriculture and environmental watering, as well as reducing the loss of fresh water through evaporation in the lower lakes.

3.280 The committee considers that these benefits should be quantified in order to determine whether removal or alterations to the barrages would provide the most productive use of the fresh water in the basin.

3.281 The committee notes evidence that this could have negative effects on Lower Lake irrigators, landholders and the environment and recognises these aspects should be taken into account. Landholders who require fresh water for stock, irrigation or

other productive use should be adequately serviced by fresh water, through pipes or other means of supply, sourced sufficiently upstream to ensure it remains fresh.

3.282 Furthermore, should a greater estuarine environment be assessed as positive, the committee would support the construction of a lock where the river enters Lake Alexandrina to secure fresh water supply to towns, irrigators and landholders.

3.283 The committee is aware that these potential changes would constitute a major alteration to the Plan and the current understanding of the way the system operates. However, the committee sees value in assessing the potential costs and benefits of these options.

Recommendation 14

3.284 The committee recommends the government undertake cost-benefit analyses of the following options for adapting the management of the Lower Lakes and Coorong, and their social, economic and environmental impacts throughout the basin:

- **removing all of the barrages;**
- **removing some of the barrages;**
- **modifying some of the barrages (such as Tauwitcherie and Mundoo);**
- **allowing the ingress of salt water into the Lower Lakes during periods of low flow; and**
- **investigating the construction of an additional lock at a location above Lake Alexandrina, such as near Wellington, SA, either in concert with the above options or as a single change.**

3.285 Should such analysis indicate that one or more of these leads to more positive social, economic and environmental outcomes than the current basin plan, the committee recommends the Plan be amended accordingly.

South East Flows Restoration Project

3.286 Historically, fresh water from the south east region flowed into the southern end of the Coorong then in a north-westerly direction. Prior to European arrival the area behind the Coorong, the 'interdunal' corridors, were swamps that feed groundwater and drained into the Coorong from the south east through Salt Creek.[190]

> With the establishment of the SE Drainage Scheme during the 20th Century, the inter-dunal corridors were released for grazing and cultivation and huge areas of wetland habitat lost or radically altered. At the same time numerous drainage outlets cut through the coastal region to the sea: these

190 Natural Resources, SA, South East, Coastal action plan heritage and geology, 14 May 2014, p. 124.

> were significant modifications to the coastal geomorphology of the region.[191]

3.287 Dr Jennifer Marohasy stated in her submission that this land was progressively drained from the 1860s to the 1970s and has meant that 4000GL of fresh water has been diverted from the Coorong through drains and floodways to the sea:

> What those drains did was redirect that water, so now it goes straight out to sea. So 4,000 gigalitres of water is now going straight out to sea—water which once flowed into the Coorong—down the Coorong and then out the Murray Mouth. What happened was that drainage programs drained the underground aquifers.[192]

3.288 The SA Government's response to questions from the committee outlined that various programs have been undertaken in recent years to divert flows back into the Coorong.[193]

3.289 One of these programs is the South East Flows Restoration Project (SEFRP), a $60m investment by the Commonwealth and SA governments to 'assist salinity management in the Coorong South Lagoon, enhance flows to wetlands in the Upper South East and reduce drainage outflow at Kingston beach.'[194]

3.290 The project will use a variety of channels to divert water to the Coorong to reduce salinity:

> Using a combination of natural watercourses, newly constructed flood ways and existing drains, the South East Flows Restoration project aims to divert additional water from the Upper South East into the Coorong South Lagoon to help provide environmental benefits that would assist in maintaining a healthy South Lagoon ecosystem through lower salinity.[195]

3.291 The project's design and survey, environmental program, cultural heritage program, land acquisition, community engagement and program management aspects have all commenced and are ongoing or in progress. Construction delivery is scheduled to commence in spring 2016.[196]

3.292 Restoration of fresh water flows to the Coorong was supported by various witnesses in South Australia. Professor Peter Gell, Professorial Research Fellow,

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191 Natural Resources, SA, South East, Coastal action plan heritage and geology, 14 May 2014, p. 124.

192 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, pp 4–5.

193 SA Government, responses to questions on notice, received 17 February 2016, p. 3.

194 Natural Resources SA, http://www.naturalresources.sa.gov.au/southeast/projects/se-flows (accessed 10 February 2016).

195 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 10.

196 Natural Resources SA, http://www.naturalresources.sa.gov.au/southeast/projects/se-flows (accessed 10 February 2016).

Federation University Australia, stated that the Coorong is a naturally highly tidal system that 'would have received considerable volumes [of water] from the south-east', in addition to tidal inflows from the north.[197]

3.293 Professor Gell stated that historically, this combination of salt and fresh water inflows from different locations has been sufficient to keep the salinity level of the Coorong below that of the sea:

> …the Coorong was not more saltier than the sea; it was always less saltier than the sea and has as little as a 10th of the salinity of the sea. So there must have been a considerable volume coming from the upper south-east. With our work, we cannot reconstruct how much. Certainly for most of its time, it was around half the salinity of seawater, so there must have been a considerable shandying effect from the water from the upper south-east.[198]

3.294 Professor Gell stated that the Murray River itself has not generally contributed to the flows in the Coorong as it flows directly out to sea when the river floods:

> There were times when the river water may have contributed but, by and large, typical of estuaries, the river Murray goes straight out over the top when it is in flood and it does not contribute significantly to the Coorong.
>
> In fact, we found next to no river Murray algae in the Coorong record for the whole of the last 7,000 years.[199]

3.295 Mr Grant Rigney, Board Secretary, Ngarrindjeri Regional Authority, also concurred that change is required to the bottom half of the Coorong, stating that it is very saline at present:

> Set some change to the bottom half of the system; it is super saline on the moment.[200]

3.296 However, Mr Paul Harvey, Member, River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group, stated that while fresh water inflows from the south are important, they also need to be complemented by fresh water inflows from the northern end of the Coorong. Mr Harvey stated that the SEFRP project on its own will not have a significant impact on the health of the Coorong:

> Management of the South Lagoon in the long term will require both that project and river flows going in through the North Lagoon of the Coorong. They are both essential but the south-east drainage project does not really make a significant difference in terms of the amount of water, in fact it makes virtually no difference in terms of the amount of water that is still

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197 Professor. Peter Gell, Professorial Research Fellow, Federation University Australia, *Committee Hansard*, 8 December 2015, p. 7.

198 Prof. Peter Gell, Professorial Research Fellow, Federation University Australia, *Committee Hansard*, 8 December 2015, p. 7.

199 Prof. Peter Gell, Professorial Research Fellow, Federation University Australia, *Committee Hansard*, 8 December 2015, p. 7.

200 Mr Grant Rigney, Board Secretary, Ngarrindjeri Regional Authority, *Committee Hansard*, 8 December 2015, p. 43.

> needed in the Murray River system to be able to manage the South Lagoon of the Coorong.[201]

Lake Albert-Coorong Connector

3.297 There is no direct flow of water between Lake Albert and the Coorong. Both bodies of water are separately connected to Lake Alexandrina. As highlighted earlier, freshwater was discharged in the top north eastern end while water was flushed in from the Murray mouth end. However, the southern end of Lake Albert, west of Meningie, is only separated from the Coorong by a few kilometres of land.

3.298 Witnesses at the South Australian hearings discussed the possibility of a connector between Lake Albert and the Coorong. Councillor Neville Jaensch, Mayor, Coorong District Council, stated that a connector would improve flow between the two lakes:

> The Coorong connector is basically to allow flow from Lake Albert to the Coorong. It is a very short distance between the two at a certain point. The fact is that you have water coming in one end and it cannot get out the other.[202]

3.299 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, concurred, stating that the possibility of a connector had been discussed for some time, and would provide much better connectivity between the two bodies of water:

> …the connection between the bigger lake, Lake Alexandrina, and Lake Albert is very restricted, so it is very hard to get water exchange. That is the premise behind it—trying to get some through-flow.[203]

3.300 Ms Caren Martin, Chairperson, South Australian Murray Irrigators, stated that the connector would benefit communities, irrigators and the environment:

> It is triple bottom line. We in society want it, irrigators want it and the environment needs it—because, again, the do-nothing scenario in the northern south lagoon of the Coorong is not an option. It is dying.[204]

3.301 Mr Hopton noted that a connector, whether a channel or a pipeline, would need to be effective, so it would be imperative to ensure the connector would function well. Mr Hopton noted that one of the biggest issues is the velocity of the water travelling through the connector:

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201 Mr Paul Harvey, Member, River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group, *Committee Hansard*, 8 December 2015, p. 42.

202 Cr Neville Jaensch, Mayor, Coorong District Council, *Committee Hansard*, 8 December 2015, p. 37.

203 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 32.

204 Ms Caren Martin, Chairperson, South Australian Murray Irrigators, *Committee Hansard*, 9 December 2015, p. 42.

> The wind action brings a lot of sand into suspension and when the water slows going through the interconnector the sand can sediment and it is very difficult to clean it out.[205]

3.302 Mr Hopton also noted that there were significant cultural heritage issues depending on the location of the connector:

> There are also significant cultural heritage issues to with the range of alignments that have been discussed.[206]

3.303 Cr Jaensch argued that the Lake Albert scoping study options paper, which showed that the connector would be relatively uneconomic, did not measure all the benefits of the connector.[207] Cr Jaensch argued that a feasibility study would assess broader benefits:

> The amount of local pressure that we have and the fact that, irrespective, the movement of the water is of benefit. The other aspect I am aware of anecdotally is that, if water is released into the Coorong at the correct time of the year and in reasonable volumes, it promotes fish spawning and other things in that respect. So it does have other economic benefits to the region.[208]

3.304 Further, Mr Samuel Dodd, Chairman, Meningie and Narrung Lakes Irrigators Association, stated that the benefits of a connector to irrigation on the Narrung Peninsula would be minor and a side benefit, compared to the benefit to the environment. Mr Dodd argued that the primary benefit and intention of the connector would be to improve the environment:

> …increased production from the limited irrigation industry on the Narrung Peninsula. That is actually a gain from the Coorong connector, rather than the primary function of it. The primary function is for environmental outcomes. …Our five-point plan was an environmental plan that would give economic irrigation spin-offs, not the other way around.[209]

3.305 Many witnesses called for further investigation of the feasibility of a connector. The SA government's submission stated that options for a connector pipe or channel had been explored 'to address water quality issues and maintain ecological

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205 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 33.

206 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 33.

207 Cr Neville Jaensch, Mayor, Coorong District Council, *Committee Hansard*, 8 December 2015, p. 38; document tabled by Coorong District Council, available on the committee's website.

208 Cr Neville Jaensch, Mayor, Coorong District Council, *Committee Hansard*, 8 December 2015, p. 38.

209 Mr Samuel Dodd, Chairman, Meningie and Narrung Lakes Irrigators Association, *Committee Hansard*, 8 December 2015, pp 47–48.

health.' The submission noted that the options assessed were 'not considered suitable for various reasons, including cost and failure to maintain the ecology of the site.'[210]

3.306 Furthermore, the SA government's submission stated that the costs of a connector would outweigh the benefits:

> Modelling and engineering studies have found that the costs of connecting infrastructure between Lake Albert and the Coorong outweigh the benefits. In addition, with predicted Basin Plan environmental flows, it would not be needed to return Lake Albert salinity to its historical salinity range.[211]

3.307 The SA government's submission indicated that water cycling is currently taking place to improve salinity levels, and temporary pumping could be undertaken in future if required:

> Instead, the South Australian Government is cycling water levels in the Lower Lakes to remove higher salinity water from Lake Albert. Temporarily pumping water between Lake Albert and the Coorong could be considered if needed in a future extreme drought.[212]

3.308 Mr Dodd, however, argued that past lake cycling had actually increased salinity in the lakes. Mr Dodd also stated that a recent CSIRO report had also confirmed this:

> The reality is that it actually increases salinity. They trialled it in the 1980s. Rather than helping and being of benefit it increased salinity. We got a report in the last week from the local environment department in relation to another issue, which is a CSIRO report that they use for management of the Lower Lakes, and it clearly states that, if you drop lake levels, you bring saline water from groundwater into the lakes. It is actually getting the exact opposite to what they are trying to achieve.[213]

Committee view

3.309 The committee supports the South East Flows Restoration Project and urges the SA government to accept more responsibility for the environmental state of the Coorong. The committee encourages the SA government to implement management practices to improve the environmental state of the Coorong.

3.310 The committee heard evidence that a connector between Lake Albert and the Coorong has the potential to improve the flow of water between these two bodies, and that a connector would benefit the environment. The committee notes that some studies have already been undertaken into the feasibility of a connector; the committee supports an independent feasibility and hydrology study of a connector, including

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210 South Australian Government, *Submission 364*, p. 14.

211 South Australian Government, *Submission 364*, p. 14.

212 South Australian Government, *Submission 364*, p. 14.

213 Mr Samuel Dodd, Chairman, Meningie and Narrung Lakes Irrigators Association, *Committee Hansard*, 8 December 2015, p. 46.

environmental and economic costs and benefits, as well as a study into the current practice of lake cycling.

Recommendation 15

3.311 The committee recommends the government commission an independent feasibility and hydrology study into a connector between Lake Albert and the Coorong to assess the environmental and economic costs and benefits of the connector, and compare this to the current practice of lake cycling.

Other matters

3.312 Two other key matters arose during the inquiry: foregone agricultural production due to the implementation of the Plan, and the Snowy Mountains Hydroelectric Scheme.

Foregone agricultural production from implementation of the Plan

3.313 One of the indirect impacts of the implementation of the Plan is foregone agricultural production. Farmers and irrigators whose access to water was reduced under the Plan (or who must buy water from the trading market and are therefore subject to significant price fluctuations) are often unable to grow the same type, quantity or quality of crops, thereby reducing the volume and value of agricultural production in some regions.

3.314 It can be difficult to quantify the effect of a single factor such as the Plan on an industry that is affected by multiple factors. It can also be difficult to distinguish foregone agricultural production as cropping mixes and farming practices change over time.

3.315 In addressing the issue of the impact of the Plan on agricultural production, an official from the Department of Agriculture (now the Department of Agriculture and Water Resources) stated that there are many factors that affect agricultural production:

> …the Basin Plan, the weather, international markets, the price of the dollar and the price of farm inputs, the value of agricultural production in the basin has been increasing and the total amount of production has continued to increase. The other thing that also makes that difficult is that there have been changes in cropping mixes as people have moved from rice to cotton, for example, and there are changes in the efficiency of water use by farmers.

3.316 The Department indicated that despite varying local conditions and multiple factors, including the Plan, the value of agricultural production has continued to grow:

> It is quite a complex story but, to date, the value of production has continued to increase as a result of a whole range of factors. We cannot separate out the Basin Plan's impact or role as opposed to anything else. But as the Basin Plan was part of the overall Water Initiative, as we discussed

> earlier, the capacity for security entitlements and the trade of water has underpinned some of the development growth.[214]

Dairy

3.317 The increasing cost of water has also had an impact on the Australian dairy industry, which is a $13 billion farm, manufacturing and export industry. It is the largest irrigation based livestock industry in the Murray-Darling Basin, with around 1790 dairy farms producing 27 per cent of the Australian milk supply. Ninety eight per cent of these farms are family owned. There are 31 large and small milk-processing facilities providing manufacturing jobs for thousands of Australians.[215]

3.318 Dairy farmers not only rely on water to irrigate pastures used for milk production; water is also a necessity for fodder supplies and agistment. Overall, a lack of water and/or a lack of affordable water has meant that milk production is no longer growing, despite the potential to grow substantially over the next decade as a result of growing export markets. The Australian Dairy Industry Council (ADIC) indicated that:

> Milk production is significantly constrained compared to pre-drought levels. Production has not recovered but has now levelled out at below pre-drought levels.[216]

3.319 ADIC stated that although it supports the objectives of the Plan, the slow recovery of the milk production industry does appear to be due to the Plan:

> The dairy industry in the Murray dairy region, which incorporates southern New South Wales as well, before 2007 was producing an average of 2,800 megalitres of milk a year. After 2007 that went down as consequence of the drought, and it bottomed out at about 1,870 megalitres a year. Since then we have managed to recover back up to 2,300, but in the last three or four years we have seen that we are basically plateauing out at that level of milk production, and that seems to be the Basin Plan effect: without access to more water or water affordability or a very large change in farming production systems, or both, we are not going to get back to where we were pre-drought.[217]

3.320 Mr Paul Ingleby, director of Australian Consolidated Milk spoke of the uncertainty created by continuing loss of available water:

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214 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 26.

215 Mr Daryl Hoey, National Councillor, Chair, Natural Resources Policy Committee, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, p. 19.

216 Mr Daryl Hoey, National Councillor, Chair, Natural Resources Policy Committee, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, p. 19.

217 Ms Claire Miller, Manager, Policy Strategy, Dairy Australia, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, p. 24.

> We have a joint venture with Freedom Foods in a UHT dairy plant that we have invested $65 million in in the last couple of years. We employ more than 70 people. We have significant investment opportunities for these operations in northern Victoria, but these plans are now on hold until the availability and sustainability of water in the region is assured.[218]

3.321 Further, in the Goulburn-Murray irrigation district, reduced production is due to the sale of high-reliability water entitlements to the Commonwealth:

> …dairy farmers in the Goulburn-Murray irrigation district have sold 120 gigalitres of high-reliability water entitlement to the Commonwealth. An additional 289 million litres of milk could have been produced if those entitlements were still owned by dairy farmers, worth $144 million at the farm gate and $360 million in regional economic activity. This forgone production is not being offset by increased production or investment in other primary industries, so the effects will be long term.[219]

Food processors

3.322 This inability to produce crops and goods also has a secondary impact on food processors, which are unable to maximise production due to this supply constraint. Thus the reduction of water has considerable flow-on effects in the economy and the community.

3.323 In the food processing sector, Kagome Australia is a tomato grower and processor:

> …Kagome Australia is probably the most IT-enabled and most advanced tomato grower on the planet. We have advanced technologies that our competitors right around the world do not have. We produce product that we believe is world-class. We have invested about $150 million in this area and, since March, we started a new business in food service.
>
> …[W]e have recently stopped being a seasonal business, endeavouring to be a year-round business by starting a carrot and beetroot business.[220]

3.324 Kagome Australia's CEO stated that its existing processing plants currently have capacity for additional production:

> Without putting in any more installation and just having our existing operation, we could probably put on another 30 per cent. We have already almost tripled in the last three years.[221]

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218 Mr Paul Ingleby, Director, Australian Consolidated Milk, *Committee Hansard*, 6 November 2015, p. 20.

219 Mr Daryl Hoey, National Councillor, Chair, Natural Resources Policy Committee, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, pp 19–20.

220 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 21.

221 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 26.

3.325 This constraint is due to business risk factors, significantly, the availability and affordability of water.[222] Further significant expansion of food processing in northern Victoria is also stalling due to this constraint.

Committee view

3.326 The committee acknowledges that there are many factors that influence agricultural production. However, the committee contends that foregone agricultural production can be directly attributed to the implementation of the Plan.

3.327 The committee is of the view that any foregone agricultural production from the implementation of the Plan, and the subsequent impacts on businesses and communities, is a significant issue that needs to be quantified and addressed so as to reduce or reverse any negative effect the implementation of the Plan has on such areas.

Recommendation 16

3.328 The committee recommends the government direct the Productivity Commission to investigate the value of foregone production and food processing due to reduced irrigation water under the Plan.

Snowy Hydro

3.329 The Snowy Mountains Hydro-electric Scheme (commonly referred to as Snowy Hydro) is a hydro-electric power scheme that collects and stores water that would normally flow east to the coast. The scheme diverts this water through trans-mountain tunnels and power stations and into the Murray and Murrumbidgee Rivers for irrigation.[223]

3.330 The scheme is operated and maintained by Snowy Hydro Limited, and comprises sixteen major dams, seven major power stations (two underground), a pumping station, 145kms of inter-connected trans-mountain tunnels and 80kms of aqueducts.

3.331 In addition to generating renewable energy, the scheme diverts water that underwrites over $3 billion in agricultural produce.[224]

3.332 The Commonwealth Parliament established the Snowy Mountains Hydro-electric Authority in 1949, which was the operating body of the scheme. In 1997, the NSW Government and State Electricity Commission of Victoria established Snowy Hydro Trading Pty Ltd (SHTPL), a joint venture to trade electricity generated by the

222 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 26.

223 Snowy Hydro Limited, http://www.snowyhydro.com.au/energy/hydro/snowy-mountains-scheme/ (accessed 18 January 2016).

224 Snowy Hydro Limited, http://www.snowyhydro.com.au/energy/hydro/snowy-mountains-scheme/ (accessed 18 January 2016).

scheme in the National Electricity Market. The Commonwealth became a shareholder in early 2000.[225]

3.333 In 2002, the Snowy Mountains Hydro-Electric Authority was corporatized, which resulted in the merger of the Authority and SHTPL to become Snowy Hydro Limited.[226]

3.334 A key priority for Snowy Hydro Limited is to balance and meet the twin needs of irrigation and renewable energy production, noting that it is currently not part of the Murray-Darling Basin Authority's remit.

3.335 The scheme diverts a significant volume and value of water to irrigation, which enables substantial agricultural production. The operation of the scheme can therefore have a major impact on agricultural production and on the levels of water in the Murray and Murrumbidgee Rivers.

Committee view

3.336 Given the high demand for both irrigation water and renewable energy, the committee is keen to ensure that the operation of the scheme meets the needs of the Australian community.

3.337 The committee is of the view that the scheme should seek to properly balance the priority of irrigation and energy production, and give effect to local and downstream social, economic and environmental considerations.

3.338 The committee is cognisant of the fact that the seasonal timing of water releases by Snowy Hydro is of vital interest to irrigators, and notes suggestions that the timing of such releases could be managed to better suit irrigators without adversely affecting the broader operations of Snowy Hydro.

Recommendation 17

3.339 The committee recommends that the government assess the operation of the Snowy Mountains Hydro-electric Scheme to determine the priority of irrigation and energy production.

Recommendation 18

3.340 The committee recommends the operation of the scheme be assessed, and adjusted as required, to give more effect to social, economic and environmental considerations of local and downstream communities.

225 Snowy Hydro Limited, http://www.snowyhydro.com.au/energy/hydro/the-history/ (accessed 18 January 2016).

226 Snowy Hydro Limited, http://www.snowyhydro.com.au/energy/hydro/the-history/ (accessed 18 January 2016).

Chapter 4
Basin-wide issues

Introduction

4.1 This chapter examines two broad basin-wide issues identified in hearings and by submitters. Each section concludes with a number of relevant recommendations. The chapter is divided by the following overarching subjects:

- value of water and its ownership; and
- use, quality and management of water.

The value of water and its ownership

The costs and benefits of taking action

4.2 The committee is of the view that the Plan has imposed costs on governments, primary producers and communities. It is a $13 billion investment by taxpayers in water efficiency and environmental outcomes which will have profound implications for decades to come. However, the committee considers that it has been introduced without a thorough understanding of the economic costs or value of environmental benefits. As such, the Commonwealth has failed to undertake a cost-benefit analysis of the Plan's implementation.

4.3 The committee heard from Professor Sinclair Davidson, Senior Fellow, Institute of Public Affairs (IPA) that:

> The MDBA talks about a triple bottom line, which basically looks at people, planet and profit…but they have not actually looked at the people and the profit. I think that is where the problem is. There has not actually been explicit, consistent and comprehensive analysis done of people and profit in this particular analysis.[1]

4.4 Mr Chris Berg, Senior Fellow, IPA stated:

> A cost-benefit analysis that assesses alternative policy settlements, such as estuary restoration, would also clarify the opportunity costs of policy choices forgone. [2]

Recommendation 19

4.5 **The committee recommends that the Commonwealth Government request the Productivity Commission to undertake a full cost-benefit analysis of the Murray Darling Basin Plan.**

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1 Professor Sinclair Davidson, Senior Fellow at the Institute of Public Affairs, *Committee Hansard*, 5 February 2016, p. 16.

2 Mr Chris Berg, Senior Fellow, Senior Fellow at the Institute of Public Affairs, *Committee Hansard*, 5 February 2016, p. 16.

Water recovery

4.6 As highlighted throughout the report, water recovery under the Plan is undertaken through purchases of water and investment in infrastructure. The MDBA's submission stated that 70 per cent of the water recovery target has been achieved and noted that since 2012–13, 'investment in infrastructure has greatly exceeded that for water purchases.'[3]

4.7 The MDBA's submission also noted the 1500GL cap on Commonwealth purchases on the water market and indicated that most of the remaining recovery amounts are planned to come through infrastructure projects.[4]

4.8 The submission from the Department of the Environment stated these parameters and stated that the Water Act and the Plan 'do not allow for any compulsory acquisition.'[5] The submission further stated that:

> All water entitlements recovered for Commonwealth-run programmes are acquired for value as the result of individual irrigators or individual irrigation infrastructure operators choosing to participate in Commonwealth programmes.[6]

Buyback scheme

4.9 The committee heard many times throughout the inquiry about the purchase of water from 'unwilling sellers', with witnesses arguing that they felt compelled to sell their water rights.

4.10 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, stated that water was only purchased from willing sellers, however sellers' financial situations may have influenced their decisions to sell their water:

> What I am aware of is that during the drought period some farmers possibly sold water because of their financial circumstances. The water was quite valuable, so it was very important for maintaining their bottom line, and they may well feel that drought conditions required them to sell water—for a very good price, as the price was quite high in many places at the time.[7]

4.11 The committee heard that a number of those who had agreed to sell permanent water rights did so in the expectation that they would be able to purchase water on the temporary market at reasonable prices. It heard many complaints about the price of water and its impact on farm viability.

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3 MDBA, *Submission 243*, p. 11.

4 MDBA, *Submission 243*, p. 11.

5 Department of the Environment, *Submission 50*, p. 6.

6 Department of the Environment, *Submission 50*, p. 6.

7 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 24.

4.12 The committee also received submissions from Northern Victorian submitters who felt that some farmers were 'forced' to sell entitlements due to the reconfiguration of irrigation schemes that left them with very high infrastructure costs due either to cost recovery or because there were few other irrigators remaining on the system. Some also claimed they were unable to receive their water entitlement even though it had not been sold.

Impact of buybacks

4.13 The committee heard evidence across the basin on the impact that sale of water had on communities and secondary industries, such as agricultural suppliers. In general, witnesses stated that buybacks reduced the size and scale of irrigation and farming, which meant there was less money in communities.

4.14 The committee heard about the enormous impact of the sale of water in the Condamine-Balonne catchment had on communities and farm suppliers. This was discussed in Chapter Three.

4.15 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, stated that negative impacts are associated with the movement of water:

> The negative impacts are associated with where water moves from one region to another and you end up with stranded assets or supply lines that have different costs. The trade will go to those who can pay the most, and it generates adjustment in the region, which always has local economic and social consequences.[8]

4.16 Witnesses also spoke of declining populations in areas where buybacks occurred and particularly noted the 'Swiss cheese' effect of buybacks. The Department of Agriculture stated that this meant that some irrigation systems became unviable once a large proportion of the water in the system has been sold. Mr Thompson acknowledged that this has sometimes included pressure to sell water:

> I am aware that changes in delivery arrangements meant that some farmers may have come under pressure to sell water or access to water as the price or the arrangements have changed.[9]

4.17 Former Victorian Water Minister, the Hon. Peter Walsh MLA stated in evidence that:

> A lot of farmers have significant water bills because of that purchase of permanent water from the Commonwealth. They now face those water bills but do not have water to make an income and cannot afford to buy temporary water to do that. So that buying of water by the Commonwealth

8 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 26.

9 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 24.

> has effectively undermined the viability of Goulburn Murray Water [the largest water distribution company in Australia] in the longer term.[10]

SDL adjustment mechanism

4.18 The Sustainable Diversion Limit (SDL) adjustment mechanism was included in the Plan at the request of state governments. The Plan provides for an SDL Adjustment Mechanism of 650GL (i.e. to reduce the amount recovered from consumptive use to 2100GL). The MDBA's submission states that the adjustment mechanism provides an opportunity to increase water extraction limits if environmental outcomes could be achieved with less water:

> …there would be an opportunity to increase the water extraction limits in the Basin Plan if states could develop projects that can achieve equivalent environmental outcomes to the Basin Plan with less water … This would mean less water would need to be recovered and would benefit irrigation industries and basin communities.[11]

4.19 The Department of the Environment's submission stated that adjustments to the SDLs can be achieved through two methods: supply measures and efficiency measures. Supply measures may include environmental works, changes to river operations and evaporative savings.[12]

4.20 Various witnesses and both the NSW and Victorian governments emphasised that achievement of the full 650GL under the SDL Adjustment Mechanism is a vital part of the implementation of the Plan.

4.21 Currently the amount by which the SDL can be reduced (SDL Adjustment Mechanism) stands at 508GL, leaving a shortfall of 142GL if the 650GL target is to be achieved.

Recommendation 20

4.22 **The committee recommends that state governments make every effort to promote SDL Adjustment Mechanism projects in their jurisdiction to achieve the 650GL target.**

Recovery of additional 450GL

4.23 The committee heard from the Department of Environment who stated that:

> Efficiency measures enable the recovery of an additional 450 GL of water for the environment. Both supply and efficiency measurers are the responsibility of the basin state governments. Efficiency measures may include water recovery 'through works to infrastructure and better irrigation water use efficiency on farms'.[13]

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10 The Hon. Peter Walsh MLA, Member for Murray Plains, Victoria, Committee Hansard, 5 November 2015, p. 66.

11 MDBA, *Submission 243*, p. 14.

12 Department of the Environment, *Submission 50*, p. 6.

13 Department of the Environment, *Submission 50*, pp 6–7.

4.24 Given current community concerns about the existing water recovery targets, some witnesses called for the recovery of the additional 450GL to be delayed until economic and social impacts of current water recovery, and the potential impacts of this additional recovery, have been assessed.

4.25 Mr Anderson, representing the Victorian Farmers Federation, stated that delay in recovering the additional 450GL is required to ensure a triple bottom line outcome is reached:

> We have made it very clear that that needs putting off for a bit of time, because we have not really seen the full effect of the environmental outcomes from the water that we have already got and that has already been recovered.[14]

4.26 However, Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, emphasised that the 450GL would primarily be aimed at 'infrastructure investment rather than buyback'.[15]

Committee view

4.27 The committee acknowledges that the aim of the Plan is to deliver economic, social and environmental outcomes in the basin. The committee does not dispute that the environment required more water in order to protect environmental values. The committee supports the principles of the Plan.

4.28 However, the committee notes the Plan was prepared during a severe drought and that many environmental indicators have improved since the drought broke. The committee considers that the economic, social and environmental impacts of the recovery volume already achieved should be assessed before any further recovery amount is determined or recovered.

4.29 In the same vein, the committee is of the view that the impacts of the SDL adjustment mechanism and the recovery of the additional 450GL should be assessed prior to any decisions being taken on whether these should proceed. The committee also considers that the apportionment of any further recovery, should it occur, should be equitably distributed between the basin states, taking into account contributions already made.

4.30 The committee also notes that some witnesses have stated that the modelled delivery of 2750GL to the environment within existing constraints is at odds with historical knowledge of river capacity. The committee urges MDBA to consult with local landholders when assessing river capacity to ensure that modelling matches historical knowledge.

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14 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 23.

15 Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, *Committee Hansard*, 5 February 2016, p. 31.

4.31 The committee is encouraged by the focus on engineering solutions to achieve better environmental outcomes with less water, and supports the recovery of water through infrastructure investment.

4.32 Accordingly, the committee urges further water recovery to come from infrastructure investment. Should recovery come from buybacks, the committee expects an assessment of the possible economic, social and environmental implications of such purchases should take place prior to the purchase occurring. In the event that negative outcomes would occur from water purchases, the committee expects that they would not proceed without further investigation, mitigation or compensation.

4.33 With regard to buybacks, as noted in the previous chapter, the committee unequivocally supports the rights of farmers to sell their water. However, the committee acknowledges the difficulty of balancing this right and the examples of the disproportionate social and economic impacts that uneven reductions in water availability have had on some communities.

4.34 The committee also would like to see a full investigation into involuntary loss of water to irrigators and supports measures that would return this water to irrigators.

Recommendation 21

4.35 **The committee recommends that no further buybacks of water occur and that action to recover the additional 450GL of water through efficiency measures is delayed until the SDL Adjustment Mechanism target is met and the socio-economic impacts of water recovery to date are known.**

Water trading market

4.36 At present, water trading in Australia occurs across several separate water markets, which are differentiated by water systems or administrative boundaries. Despite common perceptions of 'the water trading market' as a single entity, in reality there a number of water trading platforms. Water can only be traded between connected systems; trade cannot occur between non-connected areas.

4.37 The Bureau of Meteorology's (BoM) website states that water rights and water trading fall into the jurisdiction of states, so each state has its own legislative and administrative arrangements for water rights and water trading.[16]

4.38 The BoM states that an efficient water market depends on clear water rights, the ability to undertake transactions, and access to relevant market information. The website states that this is a responsibility of state and territory governments:

> Each State and Territory government has a water register for recording water access entitlements, including ownership details and transactions. Water trading relies on an efficient water register system in the same way that the property market relies on an efficient land titles register and the Australian Stock Exchange relies on an accurate share register. Efficient,

16 Bureau of Meteorology, http://www.nationalwatermarket.gov.au/about/index.html (accessed 1 March 2016).

> accurate and comprehensive water registers are critical to a flourishing water market.[17]

4.39 The MDBA's submission to the inquiry noted that new water trading rules commenced in 2014 and were designed 'to improve the operation and transparency of the water market by removing barriers to trade and giving traders better access to market information, regardless of which state they operate in.'[18]

4.40 The submission also stated that there is an ongoing upward trend of participation in the water market, indicating that irrigators are adapting their behaviour to suit the system:

> There is a continuing trend of an increasing number of people participating in the water market. This suggests more irrigators are adapting to the changing volumes of water in the market, rethinking planting decisions and being able to take a more informed approach to managing their business risks.[19]

4.41 Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, stated that Australia's water market is 'very highly developed' by international standards and is one of the largest water markets in the world:

> That is providing significant elements of investment strategy in the Australian water market and related agricultural markets. It has seen the expansion of some elements of agriculture in the basin because of that.[20]

4.42 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture stated that Australia's water trading market is world-leading:

> …internationally water trading is perceived as something that is an opportunity and an advantage and something that Australia has done very well. The security of rights that underpins water trading is important for investment security. In water security and water trading frameworks, Australia in many senses leads the world. We have had Californian irrigators out here recently trying to learn from Australia about how we allocate water.[21]

4.43 Mr Thompson stated that water trading gives irrigators flexibility throughout the year:

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17 Bureau of Meteorology, http://www.nationalwatermarket.gov.au/about/index.html (accessed 1 March 2016).

18 MDBA, *Submission 243*, p. 13.

19 MDBA, *Submission 243*, p. 13.

20 Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, *Committee Hansard*, 5 February 2016, p. 31.

21 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, pp 23–24.

> Water trading is something that irrigators do voluntarily, and they can take advantage of temporary trades to access water when they need it without having to spend capital money. They can also use it to trade water when they perhaps will not have enough and the price is high and they can use it to do other things.[22]

4.44 Mr Peter Gooday, Assistant Secretary, Farm Analysis and Biosecurity Branch, Australian Bureau of Agricultural and Resource Economics and Science, Department of Agriculture, added that water trading had enabled irrigators and other landholders to manage the basin's variable inflows:

> The water trading system that we have has allowed irrigators to maintain the value of production surprisingly well during the ups and downs, through water being able to be traded towards higher-value uses. In terms of being able to respond to climate variability, the water trading system has been particularly important.[23]

4.45 Mr Gooday added that a freer trading system was better than one with significant constraints:

> Probably the main advance that we have had has been to free up water markets and I am sure that all irrigators would say that it is much better to have a system of entitlements and allocations that are freely tradeable that maximises their value than one that has all sorts of constraints.[24]

4.46 As mentioned in Chapter Two, the Water Act legislated for the ACCC to develop and enforce water charge and water market rules.

4.47 On 24 November 2015, the ACCC released draft advice on amendments to the Commonwealth water charge rules to increase transparency, promote efficiency and reduce regulatory burden. These rules regulate the charges imposed on rural water users in the basin and have been in place for five years. The government asked the ACCC to conduct a review of these rules in December 2014, following a recommendation of the 2014 Independent Review of the Water Act.[25]

4.48 Two primary concerns were raised by witnesses with regard to water trading. The first was that water trading in the basin is not clear and transparent. The second is that market volatility is detrimental to irrigators and primary producers. The

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22 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, pp 23–24.

23 Mr Peter Gooday, Assistant Secretary, Farm Analysis and Biosecurity Branch, Australian Bureau of Agricultural and Resource Economics and Science, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 24.

24 Mr Peter Gooday, Assistant Secretary, Farm Analysis and Biosecurity Branch, Australian Bureau of Agricultural and Resource Economics and Science, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 24.

25 ACCC, http://www.accc.gov.au/media-release/accc%E2%80%99s-draft-advice-on-water-charge-rules-to-increase-transparency-promote-efficiency-and-reduce-regulatory-burden (accessed 1 March 2016).

committee heard evidence on both these points, particularly in Griffith and Echuca, near significant irrigation communities.

Transparency of water trading market

4.49 With regard to a lack of clear and transparent information surrounding the water market, the committee heard that it is difficult to find information on who is trading what volume of water. In Griffith, Mrs Helen Dalton, President, New South Wales Farmers Griffith District Council and Branch, stated that a lack of a national water register meant that she was unsure who was purchasing water:

> We do not actually know who is buying what, because there is no national water register, and that needs to be addressed straight off.[26]

4.50 In Echuca, Cr Leigh Wilson, Mayor, Campaspe Shire Council, stated that there was inadequate information for his organisation to make an informed decision on current water trading practices and how it might be improved:

> We would have liked to have been able to discuss speculative trading in some depth, but unfortunately there is no information available to be able to make an informed decision.[27]

4.51 Mr Stuart Brown, Milk Supply Manager, Tatura Milk Industries, also stated that there are also some trade restrictions in the southern connected basin which impede free trade of water, and called for fairer trading rules:

> There are a number of trade restrictions, including the Murrumbidgee restrictions and the Barmah Choke restrictions, that have resulted in the majority of temporary trade coming out of the Goulburn system. These trading rules must be unimpeded, fair and equitable.[28]

Volatility of the market

4.52 The volatility of the market was a key point of concern for many witnesses. Cr John Dal Broi, Mayor, Griffith City Council, stated that the price of water has increased significantly from when trading was first introduced:

> …when trading was first introduced, you could purchase water for $10 a megalitre—insignificant. We have seen it rise exponentially to this year anything from $200 to $350; it depends which valley you are in.[29]

4.53 Cr Dal Broi noted that once water reaches such high levels, farmers must make decisions about what crops to plant, or whether to plant a crop at all:

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26 Mrs Helen Dalton, President, New South Wales Farmers Griffith District Council and Branch, *Committee Hansard*, 27 October 2015, p. 50.

27 Cr Leigh Wilson, Mayor, Campaspe Shire Council, *Committee Hansard*, 5 November 2015, p. 1.

28 Mr Stuart Brown, Milk Supply Manager, Tatura Milk Industries, *Committee Hansard*, 6 November 2016, p. 21.

29 Cr John Dal Broi, Mayor, Griffith City Council, *Committee Hansard*, 27 October 2015, p. 10.

> At $40 to $50 a megalitre, irrigators can live with it. A lot of the issues are whether you can afford to purchase water, trade water and grow a whole crop. …With the way the water is, you would be working for nothing; you would not start your tractor. I have growers who are coming to me and saying: 'I have 300 megalitres left on my account, what will I do? Turn around and buy another 300 megalitres to grow a crop? Or do I sell 300 megalitres, get $200/$250 a megalitre for it, sit on my hands, not grow a crop, not start a tractor, not burn diesel and not wear tyres out?'[30]

4.54 Similarly, Mr John Bradford, Delegate, Southern Riverina Irrigators, argued that volatility on the water trading market was 'wrecking families', and that external influence in the market would make this worse:

> Well you have families, you are wrecking families. The thing is we have come from community farming, the issues that we see—
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> …We are individual landholders. We are not corporate farmers, we never have been. We are getting to the stage that we are getting bigger. The understanding that you are saying, is that it is a true market—[31]

4.55 Mr David Parker, Department of Agriculture and Water Resources, stated that there was an element of risk in selling permanent water entitlements and planning to purchase water from the temporary water market. Mr Parker noted that in some instances this would be beneficial to the irrigators, however in others it would be detrimental:

> In terms of irrigators who sold earlier entitlements, it could be observed that those irrigators who did that would have done very well during the period when water was abundant, in the last several years before the recent dry period, when allocations were in the tens of dollars per megalitre.[32]

4.56 Mr Parker acknowledged that the main factor driving water prices in recent times has been the availability (i.e. supply) of water. Mr Parker noted that one would expect the CEWH to have some effect on the market in principle, but other price fluctuations reflect seasonal patterns:

> Notwithstanding that, the moves in water market prices are not out of line with shifts in water prices that we have seen. As you, I think, implicitly mentioned, water prices have declined since November also. That is a fairly typical seasonal pattern. You reach a peak earlier in the year, particularly around planting time, and we have seen that. The prices are also not out of line with prices that we have seen in earlier dry periods.[33]

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30 Cr John Dal Broi, Mayor, Griffith City Council, *Committee Hansard*, 27 October 2015, p. 10.

31 Mr John Bradford, Delegate, Southern Riverina Irrigators, *Committee Hansard*, 5 November 2015, p. 41.

32 Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, *Committee Hansard*, 5 February 2016, p. 31.

33 Mr David Parker, Deputy Secretary, Department of Agriculture and Water Resources, *Committee Hansard*, 5 February 2016, p. 31.

Suggested changes to water trading

4.57 Witnesses offered various suggestions for improving water trading in the basin, particularly with regard to simplifying the water market and improving transparency and accountability.

4.58 In Echuca, Mr John Bradford, Delegate, Southern Riverina Irrigators, outlined one option whereby water could only be traded a limited number of times, to reduce speculation on price and limit purchases by non-water users:

> One suggestion could be that you tag that water and that it can only be traded two or three times. Each time it gets traded it gets a dot. Some of that water comes out looking like measles because it gets bought back and forth. You have people in Melbourne who have the ability to get an account with Murray irrigation and trade water and speculate. Anyone can have an account.[34]

4.59 In Shepparton, Mr Jeff Odgers, Director, Bega Cheese, suggested an even playing field was required between different irrigation regions:

> I think the first thing that we would do would be to make it an even playing field between irrigation regions and states. What is really hurting the Goulburn district in particular is that the water can be traded freely downstream. So our high-reliability water has been raided to a large extent by other interests.[35]

4.60 Witnesses also noted that there are different water registers in each state. The committee notes that basin states do have separate water registers, which provide public access to information about water licencing and trading. Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, compared this to a land titles register:

> The water register holds the details of their entitlements and who they are held by. It is no different to a land titles register in terms of who owns the entitlement. Any temporary or permanent movements in trade go through that register. Unbundling, which has been mentioned, has basically made water a property right in perpetuity. You deal in water shares the same as you deal with land and other commodities.[36]

4.61 Mr Anderson noted that all the states and territories' registers need to be compatible.[37]

4.62 Given the complexity of the current system, witnesses consistently advocated the consolidation of water trading platforms into a single national platform. Mr

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34 Mr John Bradford, Delegate, Southern Riverina Irrigators, *Committee Hansard*, 5 November 2015, p. 41.

35 Mr Jeff Odgers, Director, Bega Cheese, *Committee Hansard*, 6 November 2015, p. 28.

36 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, pp 28–29.

37 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 28.

Anderson suggested that a national platform for water trading would ensure transparency and accountability:

> Our position has always been that there should be a national trading platform. All brokers are brokers to the exchange.[38]

4.63 Mr John Brady, CEO, Kagome Australia, also called for the creation of a single national market:

> We are looking for one market: transparent, ASX regulated, an ACCC set-up—whatever you guys come up with, but we need something that people can rely on and can trust.[39]

4.64 Mr Brady stated that this would enable visibility of the amount of water for sale, and what is being traded, and argued that this would have an impact on price:

> …a centralised system that would at least make it more transparent to see what is available, potentially, for trade and what is being traded, I believe, simply because of the fact that it is centralised, would actually relieve the system—so much so that prices would come down.[40]

4.65 Mr Brady noted that this would also provide more clarity on who was trading significant volumes of water:

> …you see directors' sales and purchases; you would see, also, who the megatraders are and who has actually taken megatrades off the market and put them on the market. That would help, I think. It would help give a lot more transparency around who the larger players are and stop a lot of the peripheral noise around this issue.[41]

4.66 The National Farmers Federation advocated improving transparency in the water market, improving people's understanding of the market and providing up-to-date information about the market. Ms Jacqueline Knowles, Natural Resources Management Manager, NFF, stated that developing the skills and capabilities of farmers would enable them to better use the water market:

> …there is an opportunity to develop the skills and sophistication of many farmers in the basin so that they can develop the capacity and the capability to best utilise the water market for their own situation. That is a costly and expensive process that, to date, has largely fallen on industry associations—like it has on the members of NFF. There is a skills and capability gap that can mean that people can better understand and appreciate the benefits that the market emerging can bring.[42]

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38 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 28.

39 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 22.

40 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 22.

41 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, pp 27–28.

42 Ms Jacqueline Knowles, Natural Resources Management Manager, National Farmers' Federation, *Committee Hansard*, 5 February 2016, pp. 27–28.

4.67 Further, Ms Knowles urged caution with 'over-engineering' the market into a national trading platform:

> What we have seen in the market—this summer in particular—is that a fall of rain or a voice of confidence or no confidence in the local press has seen, for example, the market spike at an hourly or daily rate. What we need to be cautious of is over-engineering an ASX-like stock exchange. The total value of the water market and the total likely value of the water market is never going to be anything like the ASX, so we need to be cautious about how we proceed with that.[43]

Speculation

4.68 The committee heard comments at hearings across the basin about speculative traders and water prices being influenced by entities that held and traded water but did not use it.

4.69 At its final hearing, the committee heard from Waterfind, a water trading company, which stated that there are no 'water barons' holding water or influencing prices.

4.70 Mr Thomas Rooney, President of Waterfind Pty Ltd, agreed that there are speculators in the market and stated that these speculators had a positive influence on the market by stabilising pricing:

> There are speculators in the market. It is growing. The speculation in the market is growing. There is an increased quantity of people who are buying water rights as a pure investment instrument, and it is actually servicing the market. It is actually stabilising the pricing in the market.[44]

4.71 With regard to evidence heard about speculators in the market, Mr Alister Walsh, Chief Executive Officer, Waterfind stated that the largest speculators are actually irrigators, who buy, hold and sell water for productive use:

> We would say that the largest speculators in the market are irrigators themselves. By far the largest volumes are still held by irrigators for productive outcomes. They are using the market as and when it suits to engage and sell and buy water for their engagement. The other factor is that the underlying capacity for an irrigator to pay for water is based on the commodity and their output.[45]

4.72 Mr Walsh stated that the Commonwealth is the only entity that can really impact the market overall as it uses, holds and trades a much more significant volume of water compared to other traders:

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43 Ms Jacqueline Knowles, Natural Resources Management Manager, National Farmers' Federation, *Committee Hansard*, 5 February 2016, pp. 27–28.

44 Mr Thomas Rooney, President, Waterfind Pty Ltd, *Committee Hansard*, 5 February 2016, p. 7.

45 Mr Alister Walsh, Chief Executive Officer, Waterfind Pty Ltd, *Committee Hansard*, 5 February 2016, p. 7.

> Regardless of who owns the water, there is not a capability, apart from the Commonwealth, for somebody to have the sort of volume that impacts on the market, because it is quite spread and diverse—[46]

Foreign ownership of water

4.73 With regard to foreign ownership of water and foreign influences in the water trading market, the committee heard concerns from witnesses regarding the potential for foreign ownership of water and the implications this may have for the water market.

4.74 Although there was no definitive evidence on the level of foreign ownership or trade in water, this concern was expressed throughout the basin. For example, Mr Paul Pierotti, President, Griffith Business Chamber, stated that it is assumed that there are foreign interests involved in the water market:

> We can assume that that is the case because we have major investment portfolios that are playing into the market. Those major investment portfolios are international portfolios so we can assume that there is. I do not think that it is on a grand scale at this point in time but the fear is that with the limited resource that we have, and the value of that resource, someone could ultimately buy the entire amount.[47]

4.75 Mr Pierotti stated that although this is not a significant issue now, it has the potential to become a major national issue:

> There is no restriction on that so there is a huge risk to the nation because for us that is a lot of money but for a number of other countries it is not a drop in the ocean. And if you could control a resource like that you could control that nation.[48]

4.76 A representative of the Department of Agriculture stated at the committee's first public hearing in September 2015 that the government did not have a register of foreign-owned water.[49]

4.77 On 22 February, the Minister for Agriculture and Water Resources, the Hon Barnaby Joyce, issued a media release announcing the release of a consultation paper as a preliminary step to establishing a register of foreign ownership of water access entitlements.[50]

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46 Mr Alister Walsh, Chief Executive Officer, Waterfind Pty Ltd, *Committee Hansard*, 5 February 2016, p. 7.

47 Mr Paul Pierotti, President, Griffith Business Chamber, *Committee Hansard*, 27 October 2015, p. 13.

48 Mr Paul Pierotti, President, Griffith Business Chamber, *Committee Hansard*, 27 October 2015, p. 13.

49 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 26.

50 The Hon. Barnaby Joyce MP, Deputy Prime Minister and Minister for Agriculture and Water Resources, http://minister.agriculture.gov.au/joyce/Pages/Media-Releases/foreign-ownership-of-water-entitlements.aspx (accessed 26 February 2016).

4.78 The media release stated that the register would 'give greater oversight of the ownership of Australian water assets' and legislation to enact the register would be introduced by 1 December 2016.[51]

Committee view

4.79 The committee notes the complexity of the present multiple water markets and the concerns that witnesses have about the transparency and accountability of these markets. The committee also notes that states and territories provide water registers and detail on water trading, although it appears that some in the community are unaware of the information available in these formats.

4.80 The committee notes the historic and logical reasons for state and local water markets. However the committee is of the view that a single consolidated water market, with appropriate constraints on trade between non-connected areas, would provide a simpler and fairer trading system as it would enable buyers and sellers to view a transparent, live market and gain their information from a central system. Given this, the committee is of the view that consideration be given to a basin-wide or national water trading platform, comparable to the ASX.

Recommendation 22

4.81 **The committee recommends that the government investigate the costs and benefits of a real-time national water trading register, and whether private platforms provide or can complement such arrangements.**

4.82 Regardless, although the committee understands the frustrations of farmers with regard to non-water users trading water, the committee is of the view that restrictions on who can purchase and sell water would undermine Australia's fair trading policies. The committee unequivocally supports an unrestricted market.

4.83 The committee is heartened by evidence that water speculation is not a significant issue, but remains concerned about the potential for market manipulation and speculative trading. The committee would support the promotion of measures that increase market transparency.

4.84 The committee considers that further work should be done on possible measures to increase market transparency. This work could include assessing the following possibilities:

- licencing traders/brokers;
- preventing traders/brokers from receiving commissions from both buyers and sellers in the same transaction; and
- ensuring market speculators and water users pay the same charge (for instance, storage, infrastructure, delivery and other costs are paid by both

51 The Hon. Barnaby Joyce MP, Deputy Prime Minister and Minister for Agriculture and Water Resources, http://minister.agriculture.gov.au/joyce/Pages/Media-Releases/foreign-ownership-of-water-entitlements.aspx (accessed 26 February 2016).

irrigators and speculators regardless of whether or how the water is to be used).

4.85 The committee does not share witnesses' concerns about the foreign ownership of water but does not necessarily reject the government's moves to establish a register of foreign ownership of water access entitlements.

Carryover

4.86 Carryover refers to a provision that enables water holders to carry over their allocations from one year to the next. Water allocations are a state responsibility; similarly, carryover provisions are also determined by states.

4.87 The MDBA's submission reiterated that water entitlements and allocations are set by the states and that some types of entitlement permit the carryover of water from one year to the next:

> Each allocation announcement tells water entitlement holders how much of their entitlement they're allowed to take from the system over the course of the year. Where such a provision is available, irrigators can choose to carryover their allocations, as can state and Commonwealth environmental water holders.[52]

4.88 Carryover rules change over time, and can and do differ between and within states. In Victoria, for example, carryover rules vary according to the water system, with the smaller water systems such as the Broken, Loddon, Bullarook and Werribee systems being subject to different rules from the larger, regulated systems such as the Murray, Goulburn and Campaspe systems.[53]

4.89 During the inquiry, carryover was particularly discussed in the Southern Basin. In Echuca, witnesses compared the Victorian and NSW carryover systems.

4.90 Mr Guy Duncan, speaking in a private capacity, explained the Victorian system for water allocations and carryover provisions:

> You can carry over up to 100 per cent of your allocation, and once you are allocated it, next year it falls out the other side unless you have low-reliability water, which is something that has been paid for in tariff for the last 15 years and has never been allocated. That low reliability is effectively airspace in the dam for that megalitre, so you are paying a storage tariff on that, and that is where it goes into.[54]

4.91 However, Mr Duncan noted that as Victoria's allocations were historically highly reliable, carryover was less of an issue in the past.

4.92 On the other hand, Mr Eagle told the committee that the carryover system in NSW on the Murray system was initially trialled on a 10 per cent carryover basis, with

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52 MDBA, *Submission 243*, p. 20.

53 Victorian Water Register, http://waterregister.vic.gov.au/water-entitlements/carryover/carryover-rules (accessed 1 March 2016).

54 Mr Guy Duncan, private capacity, *Committee Hansard*, 5 November 2015, p. 63.

the condition that carryover water 'was the first water lost when Hume pre-released or spilt.' Mr Eagle stated that this meant that carryover water did not take up dam space:

> After a year or two, the irrigators realised that it did not take up dam space, provided it was the first water lost. Then it really does not matter a stuff whether it is 100 per cent carryover that is enabled or 10 per cent or 15 per cent or 30 per cent— provided, if the dam pre-releases or spills, it is the first water lost.[55]

4.93 Mr Eagle noted that there are current discussions about a cap as some water holders now do not want carryover to be the first water lost in the event of spillage.[56]

Impact of carryover for agriculture, irrigation and the environment

4.94 Witnesses had various views on carryover. Mr Duncan noted that carryover enabled farmers to have more flexibility in the way they managed their water:

> …a lot of it comes back to the individual farmer's financial position, their level of equity, the level of risk they are exposed to and how much they are prepared to gamble on what they are going to hold in and hold out, or whether they buy to carry over at the end of the season.[57]

4.95 However, Mr Duncan acknowledged that there was a wide variety of opinions and was of the view that generally, Victorian irrigators do not like carryover nor do they want the carryover system.[58]

4.96 Mr Rob Rendell, private capacity, stated that carryover has helped people in some instances in Victoria:

> It is interesting to see that in Victoria the introduction of carryover has helped individuals, but during the four years of the drought we actually saw about 800 gigalitres taken out by individuals to be collectively used.[59]

4.97 However, Mr Rendell noted that in wet periods, carryover from earlier dry periods was spilled:

> Unfortunately, for carryover people, in 2011-12 and 2012-13 we got a wet period where the water that was accumulated in the drought actually spilt and the environment got the benefit of it. So carryover is helping individuals, but, as a result of carryover, we actually have more spills. Carryover means we keep the dams fuller most of the time, which increases the spills.[60]

4.98 In Victoria, Mr Rendell noted that in Victoria this has led to more water for the environment from spills:

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55 Mr Neil Eagle, private capacity, *Committee Hansard*, 5 November 2015, p. 59.

56 Mr Neil Eagle, private capacity, *Committee Hansard*, 5 November 2015, p. 59.

57 Mr Guy Duncan, private capacity, *Committee Hansard*, 5 November 2015, p. 63.

58 Mr Guy Duncan, private capacity, *Committee Hansard*, 5 November 2015, p. 63.

59 Mr Robert Rendell, private capacity, *Committee Hansard*, 5 February 2016, p. 10.

60 Mr Robert Rendell, private capacity, *Committee Hansard*, 5 February 2016, p. 10.

> One of the things in Victoria is that, as a result of carryover, which is great and it is an important tool, the environment has had more water from spills, which has not been recognised.[61]

4.99 The committee heard further evidence that carryover was a system that meant more water was tied up in storage instead of being used for productive or environmental purposes. Mr John Bradford, Delegate, Southern Riverina Irrigators, stated that this meant that water could not be used for productive use. Mr Bradford outlined a possible compromise whereby environmental water could have been borrowed for productive use then returned later:

> Earlier this year, the Hume Dam was at 44 per cent and Dartmouth was at 68 per cent. A lot of that was carryover environmental water. We had magnificent crops; we have had the best year in 40 years. If we could have had some access negotiated and had a bit of ability to trade with the environmental water holder, we could have borrowed that water, watered the crop, made a lot of money for the community with what would have flowed through, and then paid it back later. But our hands are tied, and they do not understand that.[62]

4.100 Mr John Brady, CEO, Kagome Australia, stated that the carryover system was unfair and required reform as the carryover proportion is not standard across all entitlement holders:

> …we need a review of the whole carryover process. Some people have 100 per cent, some people have 10 per cent. It is not fair. It was not designed that way originally. The carryover process was to stop people wasting water, but it is not working that way.[63]

4.101 Furthermore, Mr Duncan and Mr Eagle were of the opinion that the first water that spilled out of a dam should be environmental water and not water that impacted on entitlements for irrigation or urban supply. Mr Duncan argued that the current situation was inequitable:

> …as far as banking against what the value is going to be in the use of the carryover for speculation and the holding up of valuable airspace in the dam—if you are going to do that, well, the first water that spills over the dam when the spill happens should be environmental water, because it is only going one place, and that is down the river. It should not be taken off irrigator or urban entitlements. It is a ridiculous proposition. If the water spills into the river, it is in the river. The river is the environment. That is its first allocation—whatever spills over that dam wall.[64]

4.102 Mr Eagle agreed, stating that the CEWH holds a significant volume of water that is protected against spillage:

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61 Mr Robert Rendell, private capacity, *Committee Hansard*, 5 February 2016, p. 10.

62 Mr John Bradford, Delegate, Southern Riverina Irrigators, *Committee Hansard*, 5 November 2015, p. 50.

63 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 22.

64 Mr Guy Duncan, private capacity, *Committee Hansard*, 5 November 2015, p. 59.

> …they are the biggest water holder. If they are sitting on a large amount of water and the dam pre-releases and spills, that water has not been lost. So it is taking up dam space now. It has become a very real issue as far as restricting the possibility of increases in allocation in any given year is concerned.[65]

4.103 However, the Victorian Farmers Federation (VFF) provided responses to questions on notice that stated that the Victorian system of carryover was appropriate for the system:

> The northern Victorian carryover model is based on the capacity in northern Victorian storages and the volume of entitlements issued. This methodology supports our strong water security and reliability regime. In Victoria high security water has enabled permanent plantings and high return dairying to be established.[66]

4.104 Given this, the VFF was of the view that the Victorian carryover system did not require amendment:

> The VFF does not believe that the Victorian carryover system needs to be changed.[67]

4.105 The VFF noted that NSW carryover rules differed due to the different circumstances in that state:

> NSW carryover rules are different because they have different storage capacity and have over-allocated volume of entitlements. In NSW general security water supports annual opportunistic crops like rice and cotton.[68]

Carryover by the CEWH

4.106 As evidenced above, carryover of environmental water was a matter of some discontent among witnesses. At the committee's final hearing, Mr Papps reported that the CEWH is subject to the same 'carryover rules and regulations that apply to various entitlements across the basin', that is, Commonwealth water entitlements are treated exactly the same as water entitlements held by others.[69]

4.107 The CEWH's submission stated that the volume of Commonwealth environmental water was a small percentage of the water stored in the basin:

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65 Mr Neil Eagle, private capacity, *Committee Hansard*, 5 November 2015, p. 59.

66 Victorian Farmers Federation, responses to questions on notice, received 11 December 2015, p. 2.

67 Victorian Farmers Federation, responses to questions on notice, received 11 December 2015, p. 3.

68 Victorian Farmers Federation, responses to questions on notice, received 11 December 2015, p. 3.

69 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 35.

> The volume of Commonwealth environmental water carried over into 2015–16 was the equivalent of approximately 2 percent of public storage capacity in the Basin.[70]

4.108 Further, Mr Papps stated that changing the carryover entitlements for the CEWH would be 'demonstrably a very bad idea'.[71] Mr Papps stated that even though carryover provisions were originally developed for irrigators, he considered they were of great benefit to the CEWH. Mr Papps explained that they were a mechanism for enabling the best use of environmental water:

> They are a very important mechanism that enables us to manipulate the use of environmental water to get the most effective and efficient use of that water. Irrigators say to me very often, quite properly, that in the same way they are driven constantly to look for more effective and efficient ways to produce their crops, I should also be driven to find more effective and efficient ways to utilise environmental water, and I am. We are constantly exploring those mechanisms.[72]

4.109 Mr Papps explained that carryover enabled the CEWH to produce greater environmental outcomes by providing flexibility in the timing and volume of water delivered for environmental events:

> Carryover is one of those. It gives us an opportunity to do things that we would not otherwise be able to do that produce significant ecological results. …[in one example] we were able to utilise carryover water to provide early season watering—that is, to replicate winter flows—as an enormous ecological benefit. It is a great way to make effective use of environmental water.[73]

Committee view

4.110 The committee acknowledges that carryover is a complex area and one that falls within the jurisdiction of the basin state governments. Indeed, there was some confusion among witnesses about the specific rules that governed carryover, and the ability of the CEWH to carry over water. As such, the committee is of the view that a discussion about carryover would clarify the current situation in each state and pave the way for potential future streamlining of carryover throughout the basin.

4.111 The committee considers that such discussions might include the following items:

- the impact that carryover has on allocation for the following year;

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70 CEWH, *Submission 45*, p. 2.

71 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 35.

72 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 35.

73 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 35.

- the implications of only allowing water users (environmental water holders and irrigators) to have the ability to carry over water, and a possible limit on their carryover amount as a percentage of their allocation; and
- the rules regarding spillage from dams and storages and the classification of this water as environmental water.

Recommendation 23

4.112 **The committee recommends that the government coordinate with the basin state governments to undertake a comprehensive assessment of carryover rules and regulations and investigate the potential for amendment of the rules.**

Value of water

4.113 Water is valued in different ways by different people. In addition to the value of water across the basin for agriculture, irrigation and food processing, the committee also heard evidence about water's value for recreation, tourism, ecology and the environment. Most of this evidence noted the necessity of meeting multiple outcomes from water use, demonstrating that water is valued for a variety of uses, often concurrently. This section shares some of the different viewpoints heard throughout the inquiry on the value of water.

4.114 In Echuca, Mr Roger Knight, Farmer/Managing Farmer, Nyton Park Agriculture spoke of the value of water to the environment:

> On water relocation impacts, the Basin Plan, as you are well aware, aims to increase additional water flows for the connection of rivers and the flood plain, which will help native vegetation, water bird breeding and native fish numbers.[74]

4.115 However, Mr Knight noted that positive activities may also have unintentional 'negative environmental impacts when water is removed from the agricultural landscape.'[75] Mr Knight spoke of a balancing act required to enable complementary benefits for industry and the environment:

> However, these aims need to be balanced against negative environmental impacts when water is removed from the agricultural landscape. It is not going to be all positives; they need to be balanced—no need robbing Peter to pay Paul, so to speak, especially when there are opportunities for complementary benefits for improving both productive and environmental outcomes, a win-win for nature and production.[76]

74 Mr Roger Knight, Farmer/Managing Farmer, Nyton Park Agriculture, *Committee Hansard*, 5 November 2015, p. 24.

75 Mr Roger Knight, Farmer/Managing Farmer, Nyton Park Agriculture, *Committee Hansard*, 5 November 2015, p. 24.

76 Mr Roger Knight, Farmer/Managing Farmer, Nyton Park Agriculture, *Committee Hansard*, 5 November 2015, p.24.

4.116 In Broken Hill, witnesses spoke of the importance of the Darling River and the Menindee Lakes for multiple needs. Mr Christopher Rawlins, private capacity, emphasised the importance of the lakes as a water source and for other uses:

> The importance to the region of the Darling River and the lakes system is of immense tourism value and environmental importance and as a recreational venue. There are thousands of years of history and connection between the Aboriginal community and the rivers and lakes.[77]

4.117 In Griffith, Cr Mark Hall, Councillor, Lachlan Shire Council, stated that Lake Cargelligo, which is a wetlands and lakes system near the Lachlan River, is also valued for multiple reasons:

> …it was the most significant water fowl and bird wildlife refuge habitat during the millennium drought. …It has been used for thousands of years by our local brothers and sisters, the Wiradjuri tribe. We want to have that system there. We want to have it as a healthy wetlands system for the environment. We need it for tourism. We need the water assurance for our towns.[78]

4.118 Cr Hall was strongly critical of the absence from the Plan of a watering plan for Lake Cargelligo and a commitment to maintain its various uses.

4.119 The rivers of the basin and the Murray River in particular, also have significant tourism value. In South Australia, Mrs Sharon Starick, Presiding Member, South Australian Murray-Darling Basin Natural Resources Management Board, spoke of the $7.3m houseboat industry directly tied to the river, and the $200m tourism industry, supported in part by the river.[79]

4.120 Ms Anne Hartnett, Chairman of both the River Lakes and Coorong Action Group and the Point Sturt and Districts Landcare Group, outlined the importance of a healthy river to ensure tourism:

> Potentially, the river has a huge opportunity for tourism but, in its degraded state, it is not going to capitalise on that. If more could be put into making sure that the river banks were more amenable to tourism, then a lot of these dying towns along the river would be much better off…[80]

4.121 Councillor Kevin Myers, Spokesperson, Murray Mallee Local Government Association, referred in particular to the town of Morgan, stating that a healthy river improved people's spirits as well as increasing tourism:

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77 Mr Christopher Rawlins, private capacity, *Committee Hansard*, 26 October 2015, p. 23.

78 Cr Mark Hall, Councillor, E Ward, Lachlan Shire Council, *Committee Hansard*, 27 October 2015, p. 5.

79 Mrs Sharon Starick, Presiding Member, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 31.

80 Ms Anne Hartnett, Chairman, River Lakes and Coorong Action Group, and Chairman, Point Sturt and Districts Landcare Group Inc., *Committee Hansard*, 8 December 2015, p. 36.

> Yes, and I think it goes a little bit further than that, because 10 kilometres away from me is a town called Morgan, which, in the summertime, relies heavily on tourism. Without a clean river, there is no tourism.[81]

4.122 Furthermore, in Goolwa, Ms Margaret Gambling argued that water is worth 'everything'. Ms Gambling stated that the water that has returned to Lake Albert has multiple environmental, ecological and human value, and that it is impossible to give this a dollar value:

> The water is back in the lake. What is it worth? It is not worth so many billion dollars. It is worth frogs, fish, birds, waves, a reflection of a sunset—it is worth everything. You cannot put a price on water. You cannot put a price on this environment. It is ever changing. We are the driest state and the driest continent on Earth.[82]

Committee view

4.123 The committee is of the view that the value of water should be assessed in a more scientific and economic manner, and that priority should be given to the user who values it most or the sequence of uses which gains the most value from the water overall. However, the committee is cognisant that it would be difficult for all basin water users to agree on who values water most and what the most efficient and effective water uses are.

4.124 Despite the difficulty in determining the most valuable uses for water, the committee is of the view that it would be useful for water management purposes to calculate the value of water in various situations, including water in storage, evaporated, used for irrigation or agriculture, and used for the environment. This information would enable more informed decision-making about how water can be best used.

Recommendation 24

4.125 **The committee recommends the government assess, objectively value and publish data on the various uses of water in the Murray-Darling Basin.**

Optimising economic, social and environmental outcomes equally

4.126 One of the objects of the Water Act states that the use and management of basin water resources should occur in a way that 'optimises economic, social and environmental outcomes'.[83] The Act underpinned the development of the Plan and the management of the basin's water resources.

4.127 During the first public hearing, Dr Rhondda Dickson, then Chief Executive of MDBA, clearly stated that the objectives of the Plan equally focus on economic, social and environmental outcomes:

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81 Cr Kevin Myers, Spokesperson, Murray Mallee Local Government Association, *Committee Hansard*, 9 December 2015, p. 3.

82 Ms Margaret Gambling, private capacity, *Committee Hansard*, 8 December 2015, p. 31.

83 Section 3(c), Water Act 2007.

> The objectives in the Basin Plan, which should set out fairly clearly for you that it is a triple-bottom line, are about productive and resilient communities, about productive industries and about a restored and more functioning environment. So it genuinely is a triple-bottom-line plan.[84]

4.128 Officials from the then Department of Agriculture stated at the committee's first hearing that the Plan is a major part of the federal government's water reform agenda. Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, stated that the Plan is focused on economic, social and environmental outcomes:

> …it is aimed at economically efficient water use and sustainable resource management to maximise the triple bottom line for economics, social outcomes and the environment.[85]

4.129 Mr Thompson agreed that the economic and social aspects of water recovery and the Plan are important, and should be considered equally with the environmental aspects:

> The department believes that the socioeconomic aspects of water recovery are important and that it is essential that the implementation of the plan continues to adopt a triple bottom line approach for irrigators, basin communities, other affected stakeholders and the environment.[86]

4.130 However, Mr Thompson acknowledged that some stakeholders remain concerned about the impacts of water recovery and the future of irrigation:

> …farmer stakeholders remain concerned about the economic and social impacts of water recovery to date and in the future for irrigators and irrigation dependent communities throughout the basin. In this context it is very important that future water recovery continues to seek to optimise social and economic outcomes and demonstrate the environmental improvements that they are aimed at.[87]

Economic and social impacts of the Plan

4.131 Indeed, many submissions and witnesses argued that environmental outcomes were being prioritised above social and economic impacts, and particularly gave personal perspectives on negative economic and/or social impacts as a result of the Plan.

4.132 Mr John Lolicato, Chairman, Murray Valley Private Diverters, stated that the Plan has a triple bottom line aim though the primary focus is on the environment:

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84 Dr Rhondda Dickson, Chief Executive, MDBA, *Committee Hansard*, 18 September 2015, p. 7.

85 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 23.

86 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 23.

87 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 23.

> While there has always been ambiguity and debates surrounding a balanced triple bottom line, the evidence is stark: the environment has primacy over social and economic considerations. This is confirmed by the fact that with the huge amount of taxpayers' dollars being spent on the majority of the valuation and monitoring of the various projects under the Basin Plan, the reporting focuses on the benefits to the environment and the negatives and the benefit-cost ratios are virtually ignored.[88]

4.133 Cr Terry Hogan, Chairman, Riverina and Murray Regional Organisation of Councils (RAMROC) stated that the MDBA had been slow to assess economic and social impacts of the Plan, noting:

> …the lack of meaningful intent or progress that has been made by the Murray-Darling Basin Authority in assessing the social and economic impacts of the Basin Plan on communities, businesses and residents throughout the basin region…[89]

4.134 Mr Tom Chesson, Chief Executive Officer, National Irrigators Council, stated that he did not believe the current implementation of the Plan would achieve a balanced triple bottom line:

> I do not think it ever could. I think this is part of the myth, that somehow you can remove 30 per cent of a resource and not have an economic triple bottom line impact.[90]

4.135 Mr Chesson stated that the cumulative water reforms also impacted on industry and communities and these were not being assessed by the MDBA:

> One of the key problems that we have is that the Basin Plan, particularly around the social and economic issue, is looked at in isolation to the previous historic reforms that we have such as the cap and the Living Murray, which took a lot of water out of the basin as well. So we are not looking at the cumulative impact of those prior reforms on communities.[91]

4.136 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, acknowledged that it takes time to gather socioeconomic data, which inevitably leads to long lag times before the economic and social impacts are assessed:

> I would just add to the studies that have been done on the triple bottom line and the socioeconomic stuff that is being done by the MDBA. A lot of emphasis has been put on census information. Unfortunately, we only get it every seven years. So you are not going to see much of a result until you

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88 Mr John Lolicato, Chairman, Murray Valley Private Diverters, *Committee Hansard*, 5 November 20015, p. 39.

89 Cr Terry Hogan, Chairman, Riverina and Murray Regional Organisation of Councils (RAMROC), *Committee Hansard*, 27 October 2015, p. 1.

90 Mr Tom Chesson, Chief Executive Officer, National Irrigators Council, *Committee Hansard*, 9 December 2015, p. 10.

91 Mr Tom Chesson, Chief Executive Officer, National Irrigators Council, Committee Hansard, 9 December 2015, p. 10.

> have a number of those census periods being covered. That is a real flaw in some of the socioeconomic work that is being done.[92]

Balancing economic, social and environmental outcomes

4.137 Due to these concerns, some witnesses called for the Water Act to be amended to better reflect a balance between economic, social and environmental outcomes. Cr Hogan, representing RAMROC, argued for:

> …the need for the Commonwealth Act to be appropriately amended to fully enshrine the essential triple-bottom-line balance between the environment, social and economic criteria, and outcomes…[93]

4.138 Mr Mark McKenzie, Chief Executive, New South Wales Irrigators' Council, stated in Griffith that the Act needed to be amended for clarity:

> [the Act] needs to be amended to make it absolutely and blatantly clear that this plan was based on the triple bottom line approach—in other words, the environment was one factor but it could not be enhanced to the detriment of either the social impact on basin communities or the economic impact on irrigators, other users of water or those communities as well.[94]

4.139 This view was supported by Mr Neil Eagle, private capacity, who stated in Echuca that the Act in its existing form did not give equal weighting to these three outcomes, and argued that it should be amended or redrafted:

> …to give a triple bottom line of equal weighting to economic, social and environmental needs. The current act contravenes this basic principle which was laid down by COAG under the National Water Initiative.[95]

4.140 A number of submitters quoted the late Professor John Briscoe, who was an invited member of the MDBA High-Level External Review Panel. Professor Briscoe made a submission to the Senate Legal and Constitutional Affairs References Committee's 2011 inquiry into the provisions of the Water Act 2007.[96]

4.141 In that submission, Professor Briscoe stated that the Productivity Commission's interpretation of the Water Act prioritised environmental needs over economic and social needs:

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92 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 23.

93 Cr Terry Hogan, Chairman, Riverina and Murray Regional Organisation of Councils (RAMROC), *Committee Hansard*, 27 October 2015, p. 1.

94 Mr Mark McKenzie, Chief Executive, New South Wales Irrigators' Council, *Committee Hansard*, 27 October 2015, p. 46.

95 Mr Neil Eagle, private capacity, *Committee Hansard*, 5 November 2015, p. 54.

96 Submissions to the inquiry can be found on the Legal and Constitutional Affairs Committee's website: http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Legal_and_Constitutional_Affairs/Completed_inquiries/2010-13/provisionswateract2007/submissions (accessed 3 March 2016).

> The National Productivity Commission's interpretation of the Water Act (2007) is that "it requires the Murray-Darling basin Authority to determine environmental water needs based on scientific information, but precludes consideration of economic and social costs in deciding the extent to which these needs should be met".[97]

4.142 Professor Briscoe also noted that he was part of a review of the Plan which found that the Plan prioritises environmental needs over economic and social needs:

> Similarly, the High-Level Review Panel for the Murray Darling Basin Plan (of which I was a member) stated that "The driving value of the Act is that a triple-bottom-line approach (environment, economic, social) is replaced by one in which environment becomes the overriding objective, with the social and economic spheres required to "do the best they can" with whatever is left once environmental needs are addressed."[98]

Adjustment of SDLs based on economic or social factors

4.143 In addition to community concern about the Plan as a whole, the committee heard concerns about whether the significant economic and social impacts of the Plan would have any influence on SDLs.

4.144 In St George, Queensland, Mr Frank Deshon, Chair, Smartrivers, stated that although the triple bottom line is frequently discussed, it was unclear whether a significant negative economic or social impact would alter an SDL, or if there were environmental requirements that must be satisfied first. Mr Deshon stated:

> …the key issue is—as you quite rightly identified—that it is a triple bottom line but nobody has got their heads around whether it in fact shows that there is significant socioeconomic impact and what that is going to mean to an SDL. I do not know the answer to that is and I have not heard anyone else articulate it.[99]

4.145 Given community concern during the inquiry about the prioritisation of environmental outcomes, the committee sought clarification on whether economic or social factors alone might allow a change in the SDLs.

4.146 In responses to questions on notice following the committee's final public hearing, MDBA stated that this was possible, providing the change was consistent with the Act:

> The SDLs in the Basin Plan are based on a judgment by the Authority informed by a triple bottom line analysis of information available to the MDBA in 2012. This includes, economic, social and environmental factors. Any new information on any of these factors could inform a proposed

97 Professor Briscoe, Submission 2 to that inquiry, p. 4.

98 Professor Briscoe, Submission 2 to that inquiry, p. 4.

99 Mr Malcolm Peters, Chair, Northern Basin Advisory Committee, MDBA, *Committee Hansard*, 29 September 2015, p. 42.

change to the SDLs, provided the proposed change was still consistent with the relevant provisions of the Water Act 2007.[100]

Committee view

4.147 The committee agrees that the purpose of the Plan should be the optimisation of economic, social and environmental outcomes. The committee notes that these three outcomes are equally weighted in the objects of the Act. However, the committee is of the view that overwhelming emphasis in implementation of the Plan is placed on environmental outcomes, to the detriment of social and economic needs and outcomes.

4.148 The committee heard significant evidence that in practice, environmental outcomes have been prioritised over economic and social outcomes. The committee shares these sentiments and is concerned that future implementation of the Plan may also follow this pattern. The committee does not agree that environmental needs and outcomes should be met at the expense of economic and social outcomes.

4.149 The committee is of the opinion that in order to correctly balance economic and social needs and outcomes with environmental needs and outcomes, the Act should be amended to reflect the equal standing of these three needs and reflect the triple bottom line approach.

Recommendation 25

4.150 **The committee recommends that the government amend the *Water Act 2007* to make clear the equal standing of economic, social and environmental needs and outcomes.**

4.151 Further, the committee strongly emphasises the equal standing of economic, social and environmental needs and outcomes and expects that any assessments that indicate negative economic or social impacts should result in an adjustment to SDLs for the affected area.

Use, quality and management of water

4.152 Water is managed by various actors for various uses, and both the management and use of water can impact on the quality of water in the Murray-Darling Basin. The aim of the Plan is to recover and manage water for the purposes of restoring the basin environment to a more balanced state, thus enabling the basin to continue to support productive industry and communities into the future.

4.153 This section deals with the role of the Commonwealth Environmental Water Holder (CEWH), environmental watering, fish populations, and salinity in the basin.

Role of the Commonwealth Environmental Water Holder (CEWH)

4.154 The Commonwealth Environmental Water Holder (CEWH) is a statutory position established under the *Water Act* responsible for managing the Commonwealth's environmental water holdings. The current CEWH is Mr David

100 MDBA, responses to questions on notice, received 23 February 2016, p. 5.

Papps. The CEWH is supported by the Commonwealth Environmental Water Office, which sits within the Department of the Environment.[101]

4.155 The CEWH's submission to the inquiry stated that Commonwealth environmental water must be managed to protect and restore the rivers, wetlands and floodplains (and the native animals and plants they support) of the Murray-Darling Basin.[102] Commonwealth environmental water holdings are water entitlements, acquired by the Commonwealth from basin state governments, in two ways: through investments in infrastructure, and through purchases on the water market.[103]

4.156 The CEWH holds a mix of entitlements across 19 of the basin's catchments, and its entitlements are subject to 'the same fees, allocations, allocations, carryover and other rules as equivalent entitlements held by other water users.'[104] Amendments to the *Water Act* in 2015 introduced a cap of 1500GL on water that may be purchased by the CEWH under water purchase contracts, to partially limit the volume of water held by the CEWH.[105]

4.157 As outlined in its submission, the CEWH has three options for managing Commonwealth environmental water:

- delivering water to a river or wetland to meet an identified environmental demand;
- leaving water in storage and carrying it over for use in the next water year (referred to as 'carryover'); and
- trading water, that is, selling water and using the proceeds to buy water in another catchment or in a future year.[106]

4.158 The CEWH monitors each environmental watering action and publishes information on watering or trading decisions and outcomes, monitoring and outcome reports, monthly volumes of water available and delivered by the CEWH, quarterly trading intentions and annual reports on the management of environmental water.[107]

Calls for flexibility for the role of the CEWH

4.159 The CEWH's role is limited to water purchase, storage and release. Although this gives the CEWH a clearly defined role and confines its actions purely to

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101 Note that this has *not* changed with the movement of water management from the Department of the Environment to the Department of Agriculture and Water Resources in late 2015. The CEWH and CEWO still remain within the Department of the Environment.

102 Commonwealth Environmental Water Holder, *Submission 45*, p. 1.

103 Commonwealth Environmental Water Holder, *Submission 45*, p. 1.

104 Commonwealth Environmental Water Holder, *Submission 45*, p. 1.

105 *Water Amendment Act 2015*, https://www.comlaw.gov.au/Details/C2015A00133 (accessed 17 February 2016).

106 Commonwealth Environmental Water Holder, *Submission 45*, p. 1. For more detail, see p. 2 of the submission.

107 Commonwealth Environmental Water Holder, *Submission 45*, pp 2–3.

environmental water management, it does limit the CEWH's ability to contribute to the construction, upkeep and management of water infrastructure where Commonwealth environmental water may be stored. It also prohibits the CEWH from undertaking works and measures to deliver environmental outcomes.

4.160 The committee heard evidence that the CEWH's current powers are limited, as funds from the sale of water can only be used to buy more water. Mr Michael Murray, General Manager, Cotton Australia, stated that this constrained the CEWH's ability to deliver environmental outcomes:

> At the moment, effectively he has to say that he has absolutely used all the water he possibly can on environmental outcomes at the present time, he has no foreseeable use for it, and any proceeds of the trade can only be used to buy water again. In my opinion, he is Australia's largest irrigator, if you like. He or she should pretty well be given freedom to trade, with the only stipulation being that, at the end of his day, he has to be able to justify that he is getting maximum environmental outcome.[108]

4.161 Mr Murray suggested that the CEWH could use profits generated through the sale of water to improve infrastructure and enact other water efficiency measures to deliver environmental outcomes. For example, Mr Murray suggested that feral animal control might deliver better outcomes than the release of water that would have a neutral or negative environmental outcome:

> …it may be much more sensible for the CEWH to trade 10,000 megs of water, get $20 million or whatever, and spend it on pig control across the basin than to go down to another catchment and buy $20 million worth of water to release cold out of a dam and not breed any fish. It would just make it a lot more flexible.[109]

4.162 Mr Murray stated that this approach would allow the CEWH to approach situations with more flexibility and to 'devote the proceeds to whatever he believes is best for the environment.'[110]

4.163 On the other hand, other witnesses expressed concern that giving the CEWH the ability to use water sale funds for works and measures may have unintended consequences. Dr Arlene Harriss-Buchan, Healthy Rivers Campaigner, Australian Conservation Foundation, stated that while the idea is sensible in theory, it may lead to other entities withdrawing from their responsibilities to implement works and measures:

> We are worried in terms of that thin edge of the wedge—a one-off example, 'Well, you know, the local CMA does not have any cash, we'll just do it in

108 Mr Michael Murray, General Manager, Cotton Australia, *Committee Hansard*, 29 September 2015, p. 34.

109 Mr Michael Murray, General Manager, Cotton Australia, *Committee Hansard*, 29 September 2015, p. 34.

110 Mr Michael Murray, General Manager, Cotton Australia, *Committee Hansard*, 29 September 2015, p. 34.

> this case and we'll put in the fish ladder.' That would be fine, but it happens once and it ends up setting a precedent and the next thing you know state governments and others withdraw all their funding from existing programs that are intended to fund those works and measures and it falls on the CEWH.[111]

4.164 Some witnesses expressed concern that the CEWH was not contributing towards the cost of water storage and delivery. Mr Stuart Brown, Milk Supply Manager, Tatura Milk Industries, stated that he was under the impression that the CEWH was not contributing in a proportional manner to infrastructure used to transport environmental water. Mr Brown argued that this cost should be divided equitably among users:

> As productive water leaves the prescribed districts, the cost for our remaining irrigators increases. We believe that the CEWH and disassociated users—that is, water holders who do not have land—should contribute proportionately towards the irrigation infrastructure, either in delivery shares or some other form. We believe that is not currently being done.[112]

4.165 At the committee's final hearing, the CEWH affirmed that it does pay the same costs as other entitlement holders:

> …the Commonwealth Environmental Water Holder has the same storage and infrastructure costs as equivalent entitlement holders and always has. If an irrigator is paying a certain fee to store his or her water, and then to distribute it through the private infrastructure or public infrastructure, we pay the same fees.[113]

4.166 Mr Papps explained that even though delivery of water is done in partnership with state agencies, the CEWH pays for the cost of water delivery:

> …we do not hold delivery rights in states. They are held by the relevant state agency. There are charges associated with those. We provide funding to the state agencies in proportion to the amount of water they are delivering on our behalf. That is a long-winded way of saying that our activities are not subsidised.[114]

Water Amendment (Review Implementation and Other Measures) Bill 2015

4.167 As mentioned in Chapter 2, a bill to amend the Water Act is currently before the federal parliament. Among a suite of amendments arising from review of the

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111 Dr Arlene Harriss-Buchan, Healthy Rivers Campaigner, Australian Conservation Foundation, *Committee Hansard*, 6 November 2015, p. 13.

112 Mr Stuart Brown, Milk Supply Manager, Tatura Milk Industries, *Committee Hansard*, 6 November 2015, pp 20–21.

113 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 29.

114 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, pp 29–30.

Water Act, the bill proposes to amend the abilities of the CEWH so it can sell water allocations and 'use the revenue to invest in environmental activities, and/or purchase water' where this is likely to achieve greater environmental objectives than retaining the water.[115]

4.168 This would enable the CEWH to invest in works and measures to complement environmental watering. The Explanatory Memorandum for the bill specifies 'environmental activities' as a range of investments that could include infrastructure such as 'fish-ways or carp exclusion screens that support the delivery of water to off-river wetlands.'[116] The Explanatory Memorandum states that such investments could improve environmental watering and outcomes over the long term:

> By selling a small volume of allocations in one year to fund the construction of such works, it could improve the effectiveness of larger volumes of environmental water delivered over several years, thereby improving environmental outcomes.[117]

4.169 Further, the bill does not define what would constitute environmental activities, so as to enable the CEWH to have the flexibility to invest in whichever environmental activities 'provide the best environmental outcomes possible based on conditions at the time.'[118]

Committee view

4.170 The committee heard significant evidence regarding the role and responsibility of the CEWH, including different perspectives on the impact of the CEWH's role on the basin environment and communities.

4.171 The committee acknowledges the calls for greater flexibility for the role of the CEWH, including the ability of the CEWH to undertake works and measures to

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115 Water Amendment (Review Implementation and Other Measures) Bill 2015, Explanatory Memorandum, p. 16 http://parlinfo.aph.gov.au/parlInfo/download/legislation/ems/r5595_ems_6f238abc-acd0-4842-bb7a-8ff9bef80594/upload_pdf/504425.pdf;fileType=application%2Fpdf (accessed 18 February 2016).

116 Water Amendment (Review Implementation and Other Measures) Bill 2015, Explanatory Memorandum, p. 17 http://parlinfo.aph.gov.au/parlInfo/download/legislation/ems/r5595_ems_6f238abc-acd0-4842-bb7a-8ff9bef80594/upload_pdf/504425.pdf;fileType=application%2Fpdf (accessed 18 February 2016).

117 Water Amendment (Review Implementation and Other Measures) Bill 2015, Explanatory Memorandum, p. 17 http://parlinfo.aph.gov.au/parlInfo/download/legislation/ems/r5595_ems_6f238abc-acd0-4842-bb7a-8ff9bef80594/upload_pdf/504425.pdf;fileType=application%2Fpdf (accessed 18 February 2016).

118 Water Amendment (Review Implementation and Other Measures) Bill 2015, Explanatory Memorandum, p. 17 http://parlinfo.aph.gov.au/parlInfo/download/legislation/ems/r5595_ems_6f238abc-acd0-4842-bb7a-8ff9bef80594/upload_pdf/504425.pdf;fileType=application%2Fpdf (accessed 18 February 2016)

deliver environmental outcomes. Accordingly, the committee supports this proposal in the Water Amendment (Review Implementation and Other Measures) Bill 2015.

Environmental watering

4.172 Environmental watering aims to return water to rivers, wetlands and floodplains in order to restore the environmental health of the basin. Environmental watering activities are undertaken by the CEWH in accordance with the environmental watering strategy and environmental watering priorities for the basin.

4.173 The MDBA is responsible for preparing a basin-wide environmental watering strategy in accordance with the environmental watering plan, which is detailed in chapter 8 of the Basin Plan. The MDBA is also responsible for publishing annual environmental watering priorities, facilitating coordination of environmental watering activities and monitoring and evaluating environmental outcomes at a basin scale.[119]

4.174 The MDBA produced the first basin-wide Environmental Watering Strategy in November 2014. This strategy identifies four key components of the basin's water-dependent ecosystems and approaches to managing them to achieve environmental objectives. The four components are river flows and connectivity, native vegetation, waterbirds and native fish.[120]

4.175 Mr Colin Mues, Executive Director, Environmental Management Division, MDBA, outlined the development of the Plan and emphasised that the outcomes were feasible within the constraints that existed at that time:

> Once the Basin Plan was finalised, we developed the Basin-wide environmental watering strategy, which went to quantifying the environmental outcomes that would be achieved under the plan, within the existing constraints as they stood at the time.[121]

4.176 The MDBA's submission stated that 'long-term commitment is required to deliver improved environmental outcomes' through environmental watering.[122] The submission also stated that although environmental watering so far has had a positive environmental effect, it is likely that the full benefits will not be revealed in the monitoring for some years.[123]

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119 MDBA, *Submission 243*, p. 13.

120 MDBA website http://www.mdba.gov.au/publications/mdba-reports/basin-wide-environmental-watering-strategy-2014 (accessed 22 February 2016).

121 Mr Colin Mues, Executive Director, Environmental Management Division, MDBA, *Committee Hansard*, 5 February 2016, p. 50.

122 MDBA, *Submission 243*, p. 27.

123 MDBA, *Submission 243*, p. 27.

4.177 The MDBA is also responsible for developing annual watering priorities which 'build on local, regional and state priorities'. Four of the 2015-16 priorities support the four key components of the environmental watering strategy.[124]

4.178 The MDBA's submission stated that the best results from environmental watering come from listening to local communities, mimicking natural patterns, working to ensure watering events are coordinated to deliver maximum impact, and taking a holistic approach to use water for multiple benefits (such as both irrigation and environmental uses) wherever possible.[125]

4.179 The CEWH emphasised that the same volumes of environmental water can be used to deliver multiple ecological outcomes. The CEWH gave a recent example of a water release from the Hume Dam that had multiple benefits as it flowed through the basin:

> …the so-called winter watering that we did out of Hume delivered outcomes in the Barmah-Millewa, it delivered outcomes in the northern Victorian rivers, it delivered outcomes in the main stem of the Murray River, and it delivered a range of environmental outcomes in all of those areas before it got to the Lower Lakes. Then it did its ecological job in the Lower Lakes, the Coorong and the Murray Mouth.[126]

4.180 The committee heard evidence of successful watering activities and concerns regarding environmental watering and unsuccessful watering activities. These are explored in more detail in the following sections.

4.181 At the committee's first hearing, the CEWH stated that although environmental watering has primarily environmental outcomes, environmental water can deliver social and economic benefits. For example, Mr Papps stated:

> …we all appreciate that a healthy environment underpins a healthy economy. There are specific social and economic benefits, for example. The water that we put into environmental assets supports a burgeoning tourism and recreational use industry in the basin. Those of you who have been in the basin a lot will understand, for example, the widespread popularity of recreational fishing. Environmental watering is a major supporter of recreational fishing, therefore tourism, therefore the economy.[127]

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124 http://www.mdba.gov.au/publications/mdba-reports/basin-annual-environmental-watering-priorities-2015-16 (accessed 22 February 2016).

125 MDBA, *Submission 243*, p. 30.

126 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 37.

127 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 18 September 2015, p. 12.

4.182 Furthermore, Mr Papps noted that environmental water also reduces salinity, which is a 'direct cost saving for state agencies, who do not otherwise have to manage salinity.'[128]

Monitoring and evaluation of environmental watering

4.183 The MDBA's submission states that the basin-wide environmental watering strategy details the quantified environmental outcomes expected from the full implementation of the Plan, and notes that monitoring and evaluation of environmental watering activities is 'directly connected' to these outcomes.[129]

4.184 Environmental reporting, monitoring and evaluation activities are carried out by the MDBA, CEWH and basin states. The MDBA focuses on the basin-scale, the states focus on catchment and wetland sites, and the CEWH focuses on the impacts of its watering activities.[130]

4.185 Additionally, the CEWH undertakes operational monitoring for each watering action. This includes the collection and analysis of 'on-ground data about the environmental water delivery action such as volumes, timing, duration, location, flow rates and river heights.'[131]

4.186 The CEWH also undertakes intervention monitoring, which investigates the environmental response to a watering action. The CEWH's submission stated that it has invested $30 million in the Long Term Intervention Monitoring Project. The submission explains the focus of the project:

> Under this Project, consortium teams, led by Australian research institutions and involving locally based land and water managers, have been engaged to develop and implement detailed 5-year monitoring and evaluation plans for seven selected areas within the Basin. The seven areas are: Junction of the Warrego and Darling rivers; Gwydir river system; Lower Lachlan river system; Murrumbidgee river system; Edward-Wakool river system; Goulburn River; and Lower Murray River.[132]

4.187 At the committee's final hearing, Mr Papps stated that the first year's results of the project were soon to be released. Mr Papps indicated that this project included both a record of the environmental outcomes achieved from environmental watering activities and an assessment of these outcomes against the expected outcomes:

> …it is also an evaluation—in other words, an assessment of what we said we expected to emerge from that watering, what actually happened and then

128 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 18 September 2015, p. 13.

129 MDBA, *Submission 243*, p. 28.

130 CEWH, responses to questions on notice, received 2 February 2016, p. 2.

131 CEWH, *Submission 45*, p. 2.

132 CEWH, *Submission 45*, p. 3.

> what we are going to do in subsequent waterings on the basis of that knowledge. It is adaptive management.[133]

4.188 The results of the project are published on the CEWH's website.[134] Mr Papps reported that the scientific reports for each of the seven areas demonstrated that environmental watering is having a positive impact on the basin:

> …the results from the latest monitoring demonstrated that the right volume of environmental water at the right time, and in the right place, is having a positive effect on the rivers, floodplains and wetlands of the Murray-Darling Basin.[135]

4.189 Further, Mr Papps stated that the reports state that environmental watering during 2014-15 has contributed to positive outcomes for native fish, birds and frogs.

Successful environmental watering activities

4.190 The committee heard evidence regarding the success of environmental watering activities and ways to increase the benefit of these activities. Ms Juliet Le Feuvre, Healthy Rivers Campaign Manager, Environment Victoria, stated that environmental watering in the Goulburn River had improved fish stocks:

> Recent watering here in the Goulburn has been timed to encourage Murray cod and yellow-belly to spawn and breed, and fishing is better than it has been in years.[136]

4.191 Ms Le Feuvre also elaborated on the broader environmental benefits of the recent watering in the Goulburn River:

> Environmental water flowing out of the Goulburn travels downstream and can be used to water red gums at Gunbower…fill the lakes at Hattah and keep salinity levels in check in the Coorong.[137]

4.192 Other witnesses noted the possibility for investing in infrastructure to improve environmental outcomes. At the committee's public hearing in Renmark, Councillor Kevin Myers, Spokesperson, Murray Mallee Local Government Association, stated that infrastructure can be beneficial to managing environmental watering:

> …we are virtually imitating what would have been a natural cycle. So, with the use of these environmental flows, they can open up a regulator, fill a wetland and then shut it. Therefore, even if the natural event only lasted a couple of days, we can actually make it last a lot longer.
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> …we can imitate a natural cycle with these engineering things.[138]

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133 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 32.

134 CEWH, http://www.environment.gov.au/node/40825 (accessed 22 February 2016).

135 CEWH, http://www.environment.gov.au/node/40825 (accessed 22 February 2016).

136 Ms Juliet Le Feuvre, Healthy Rivers Campaign Manager, Environment Victoria, *Committee Hansard*, 6 November 2015, p. 12.

137 Ms Juliet Le Feuvre, Healthy Rivers Campaign Manager, Environment Victoria, *Committee Hansard*, 6 November 2015, p. 12.

4.193 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, stated in Shepparton that works and measures such as pumps at the Hattah Lakes can improve environmental outcomes. Mr Anderson stated that in recent dry years, this infrastructure has been beneficial:

> That has been a platform; we have always had that platform in terms of works and measures. It is in these dry years, and we have already seen examples of it this year, when we have not had those high rainfall events and there is not a lot of water available that we see the benefits of those works and measures. The Hattah Lakes pumps are a really good example of what can be done.[139]

4.194 Further, Mr Gavin McMahon, Chief Executive Officer, Central Irrigation Trust, stated at Renmark that there are various examples of infrastructure in SA that improve environmental outcomes, including at Chowilla and Katarapko. Mr McMahon stated that there are a variety of ways to deliver environmental outcomes, and these should be investigated further:

> If you look laterally and work harder to find an outcome to the solution there are a number of solutions around that can give you the outcomes that you want. To replace those small floods, that is where you are looking for river red gum regeneration, black box regeneration, lignin regeneration on the flats. If you cannot get it—and that is still a question be answered—if you cannot do it with natural flows, then let's work out a way we can get it.[140]

Criticisms of environmental watering activities

4.195 The committee also heard evidence critical of environmental watering activities, including the need to address the risk of blackwater events and the potential that environmental watering is changing the ecological makeup of some areas.

4.196 Mr Roger Knight, Farmer/Managing Farmer, Nyton Park Agriculture, raised the risk of blackwater events, which deplete fish populations. Such events can have significant impacts on native fish. Mr Knight noted that such events in his local area mostly occurred during flooding, not during environmental watering, in 2010-11. However, he stated that these risks need to be addressed to ensure watering events do not 'wipe out' native fish populations.[141] Mr Knight stated:

> Blackwater risk, which I have been raising, is identified as one of the key environmental risks of environmental water delivery. There is no use

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138 Cr Kevin Myers, Spokesperson, Murray Mallee Local Government Association, *Committee Hansard*, 9 December 2015, p. 4.

139 Mr Richard Anderson, Chair, Water Council, Victorian Farmers Federation, *Committee Hansard*, 6 November 2015, p. 23.

140 Mr Gavin McMahon, Chief Executive Officer, Central Irrigation Trust, *Committee Hansard*, 9 December 2015, p. 40.

141 Mr Roger Knight, Farmer/Managing Farmer, Nyton Park Agriculture, *Committee Hansard*, 5 November 2015, p. 25.

> breeding up fish and then wiping them out. It is a waste of water. It puts great stress on our communities. I have submitted information about that. It has been a frustrating process to get risks acknowledged and have input into that process.[142]

4.197 Another Echuca witness, Mr John Lolicato, Chairman, Murray Valley Private Diverters, stated that one risk of environmental watering activities is that the ecological makeup of the site may be changed. Mr Lolicato stated that the Hattah Lakes are an example of this:

> The amount of water that is being poured into that place—what it is doing is turning a black box-lignum community into something that it is not: a red gum community.[143]

4.198 The CEWH stated that comments from individuals or landholders about environmental watering activities are taken seriously and investigated:

> We are learning from that; we will continue to learn from that. I do hear comments publicly quite a bit along the lines of, 'You've done it at the wrong time of year in the wrong place,' and so on. We take those comments seriously. We are always keen to investigate that, particularly if there is some strong local knowledge involved, and, where there is good evidence from local knowledge, we will deploy it.[144]

4.199 The CEWH noted that it was aware that some commenters state that watering is occurring at the wrong time of year. Mr Papps stated that often in this situation, people are observing consumptive water and not environmental water flowing through the system:

> In many cases the observations are made not about environmental watering, but about movement of consumptive water through the system which is assumed to be environmental water. So of course it is at the wrong time.[145]

4.200 Mr Papps also stated that given the focus on fish breeding and spawning, people sometimes observe environmental flows and express concern that the environmental watering is occurring at the wrong time of year as the fish are not breeding or spawning at that time. However, Mr Papps stated that fish populations also require suitable conditions prior to breeding and that some water releases are for this purpose:

> …when we put water into the system, for example, to support golden perch breeding, there is an assumption that it is the wrong time because they are

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142 Mr Roger Knight, Farmer/Managing Farmer, Nyton Park Agriculture, *Committee Hansard*, 5 November 2015, p. 24.

143 Mr John Lolicato, Chairman, Murray Valley Private Diverters, *Committee Hansard*, 5 November 2015, p. 50.

144 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 32.

145 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 32.

> not breeding or spawning now. No, they are not. As I said before, we will try to create the antecedent conditions to promote breeding, so sometimes those flows are for that purpose. So we can see and we concede a challenge to continue to inform the communities on what we are doing.[146]

4.201 Mr Papps noted that community awareness and comprehension of the scope and timing of environmental watering was an ongoing challenge.

Environmental watering at the Barmah-Millewa Forest

4.202 One example of environmental watering is at the Barmah Millewa Forest. In response to a question from the committee, the Department of the Environment provided detail from the MDBA stating that the forest required medium to large floods and the frequency, size and duration of these events have reduced as a result of river regulation and water extraction from the Murray River.[147]

4.203 The response stated that environmental watering has occurred at this site since 2009-10, with varying volumes of water each year depending on natural flows. Ecological monitoring of the forest in 2013-14 stated that 94 per cent of the river red gum forests and woodlands were in 'Good or Moderate' condition, increased from 89.5 per cent 'prior to significant natural flooding in 2010.'[148]

4.204 This flooding event caused a blackwater event; the response stated that monitoring of native fish has shown increasing spawning, although pest species still dominate the population.

4.205 Further, while Moira grass has been regrowing, it still represents less than five per cent of the area mapped in the 1940s and growth 'has been from existing plants, rather than new plants germinating from seed'. The response stated that 'this vegetation community is still under considerable threat.'[149]

4.206 However, the response also noted that two significant waterbird breeding events have occurred at the forest, with a variety of nesting birds present.[150]

Committee view

4.207 The committee heard mixed evidence on environmental watering, with some witnesses stating that it was delivering significant ecological benefits, and others concerned that it was negatively impacting on the environment and in some cases the broader community or economy.

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146 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 32.

147 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 6.

148 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 6.

149 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 6.

150 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 6.

4.208 The committee is of the view that environmental watering activities must be carefully measured and objectively monitored to ensure adequate environmental water management occurs. This would also provide clear scientific information on the short, medium and long-term benefits of environmental watering activities.

4.209 The committee notes that the MDBA, CEWH and basin states all take a role in monitoring and evaluation, and encourages closer collaboration to enable clearer reporting of the aims, plans and outcomes of environmental watering. The committee also encourages consistent measurements of the social, economic and environmental impacts of environmental watering activities. Together, these components should be clearly communicated to basin communities to provide greater awareness and understanding of the objectives and outcomes of environmental watering.

Recommendation 26

4.210 **The committee recommends that the MDBA, Commonwealth Environment Water Holder and basin states conduct greater monitoring, objective evaluation and communication of environmental watering activities, and that the MDBA collate and publicly report this information.**

4.211 Further, the committee encourages greater long-term monitoring, evaluation and communication to the public of ecological sites, for example through the CEWH's Long Term Intervention Monitoring Project. The committee urges an expansion of this project to provide greater certainty in environmental watering aims, practices and outcomes.

Recommendation 27

4.212 **The committee recommends that the government fund the expansion of the Commonwealth Environmental Water Holder's existing Long Term Intervention Monitoring Project to include more sites around the basin and provide greater monitoring and evaluation of basin environmental watering activities.**

4.213 With particular regard to the Barmah-Millewa Forest, the committee notes the restoration of some aspects of the forest due to environmental watering and natural flooding, as well as the negative impacts of the natural flooding and the likely slower than anticipated regrowth of native grass.

4.214 The committee acknowledges that environmental watering outcomes are complex and that environmental watering and natural weather events can have varying impacts on ecological systems. However, the committee is of the view that a minimum standard for improvement should be investigated and implemented, and environmental watering activities that are therefore not producing results should be reconsidered.

Native fish strategy

4.215 One of the aims of environmental watering is the rehabilitation of native fish populations in the basin. One witness, Dr Arlene Harriss-Buchan, Healthy Rivers Campaigner, Australian Conservation Foundation, stated that native fish and their

habitats were in rapid decline by 2007. Dr Harriss-Buchan stated that this situation required a different approach:

> By that time, very large swathes of the basin were hurtling towards ecological collapse. Ninety per cent of the wetlands were gone. Ninety per cent of the native fish were gone, with fish biologists concerned that, if things did not change, that would be 95 per cent gone.[151]

4.216 The Murray-Darling Basin Commission (MDBA's predecessor) developed the Native Fish Strategy for the Murray-Darling Basin 2003-2013, which was endorsed by the Murray-Darling Basin Ministerial Council in 2003. The goal of this strategy was to bring native fish numbers 'back to 60 per cent of their estimated pre-European settlement levels after 50 years of implementation.'[152]

4.217 In response to questions on notice, the Department of Agriculture and Water Resources advised that $92 million had been spent on development and implementation of the Native Fish Strategy.

4.218 The strategy stated that key threats to native fish populations included flow regulation, habitat degradation, lowered water quality, man-made barriers, non-native species, fisheries exploitation, the spread of diseases and the translocation and stocking of fish. The strategy also noted that fish populations had declined since European settlement and, at the time the strategy was prepared, populations were at about 10 per cent of their pre-European settlement levels.[153]

4.219 The strategy had 13 key objectives, which included repairing and rehabilitating habitats, improving water quality, modifying flow regulation practices, enabling passage of native fish between waterways, protecting and managing native fish populations and controlling alien fish populations. These objectives were to be met by rehabilitating and protecting fish habitat, managing riverine structures, controlling alien fish species, protecting threatened native fish species and managing fish translocation and stocking.[154]

4.220 The strategy was to be reviewed after five and ten years, and a 2013-2023 strategy was to be developed.[155] However, funding for the strategy ceased in 2013 and

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151 Dr Arlene Harriss-Buchan, Healthy Rivers Campaigner, Australian Conservation Foundation, *Committee Hansard*, 6 November 2015, p. 11.

152 Native Fish Strategy 2003-2013, via MDBA website, p. 1, http://www.mdba.gov.au/publications/mdba-reports/native-fish-strategy-murray-darling-basin-2003-2013 (accessed 19 February 2016).

153 Native Fish Strategy 2003-2013, via MDBA website, p. 1, http://www.mdba.gov.au/sites/default/files/pubs/NFS-for-MDB-2003-2013.pdf (accessed 19 February 2016).

154 Native Fish Strategy 2003-2013, via MDBA website, p. 1, http://www.mdba.gov.au/sites/default/files/pubs/NFS-for-MDB-2003-2013.pdf (accessed 19 February 2016).

155 Native Fish Strategy 2003-2013, via MDBA website, p. 2, http://www.mdba.gov.au/sites/default/files/pubs/NFS-for-MDB-2003-2013.pdf (accessed 19 February 2016).

native fish management is now one of the four key components of the MDBA's basin-wide environmental watering strategy.[156]

Native fish population recovery

4.221 Some witnesses noted that environmental flows have increased native fish and other aquatic populations. Cr Leigh Wilson, Mayor, Campaspe Shire Council, stated that this had been the case in the Campaspe River:

> I have noticed an increase in turtle and platypus activity and, in conjunction with our very active angling clubs in the area, some restocking. There is certainly an increase in native fishes along the Campaspe River.[157]

4.222 The CEWH reiterated that native fish breeding is one of the four key elements of the environmental watering strategy, and that creating conditions conducive to spawning was an important part of restoring native fish populations:

> Fish are a target of that monitoring because they are one of the four areas of focus in the environmental watering strategy, which sets quite specific targets for me. We are very interested in the spawning of fish since we want to grow the populations, particularly of endangered fish, so we pay particular attention to that.[158]

4.223 However, the CEWH outlined that fish spawning is only one aspect of restoring native fish populations. Mr Papps stated that environmental watering activities also focused on creating conditions required prior to spawning, and creating an environment for fish to grow to adulthood:

> Spawning is only the start of the journey for the recovery of fish populations. Our environmental watering also takes into account the conditions that you need before spawning. Fat, happy fish breed better, and so we try to create the conditions before breeding time to ensure that breeding is maximised, and then after breeding you of course have to create the conditions in the wetlands, rivers and flood plains to give those fish the best chance to grow into adults to breed, and so you grow the population.[159]

Impact of cold water releases on native fish

4.224 The committee heard evidence that releases of cold water for environmental flows could have severe impacts on native fish, including preventing them from breeding. The MDBA stated that cold water pollution can be an issue where water is

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156 A technical report assessing the key outcomes of the strategy was prepared for the MDBA by the Institute for Applied Ecology at the University of Canberra, http://www.finterest.com.au/wp-content/uploads/2014/06/NFS-Technical-Report-FINAL-April-2014.pdf (accessed 22 February 2016).

157 Cr Leigh Wilson, Mayor, Campaspe Shire Council, *Committee Hansard*, 5 November 2016, p. 2.

158 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 32.

159 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 32.

discharged from the bottom of dams or water storages. The MDBA advised the committee that the operation of dams is the responsibility of basin states and as such cold water pollution is a responsibility of basin state governments.[160]

4.225 Mr Michael Murray, General Manager, Cotton Australia, stated that this had occurred in the Gwydir Valley, with cold water being released from Copeton Dam:

> In the Gwydir Valley, where there is an interest in trying to enhance fish breeding, they go to release water out of Copeton Dam for fish breeding, but there is no multi-level off-take on Copeton Dam, so they are releasing cold water into the Gwydir River and it is too cold to breed anyhow.[161]

4.226 Mr Murray argued that this was a waste of environmental flows, as the water was not delivering the expected outcome of fish breeding:

> So they are using water and getting nothing. In that valley, the Commonwealth have spent something in the order of a quarter of a billion dollars on buying water but nothing on environmental works.[162]

4.227 This view was also put forward by Dr Jennifer Marohasy, Spokesperson, Myth and the Murray group, who stated that cold water pollution was a major problem in the Murrumbidgee and Murray rivers, and impacted on the recovery of native species such as the Murray cod.[163]

4.228 The CEWH responded to the committee's concerns about cold water pollution, agreeing that 'it is a legitimate issue under certain circumstances, and there are engineering responses available'.[164] Mr Papps assured the committee that there are ways to deliver environmental water without causing cold water pollution:

> …there are some mechanisms or strategies available to us in the application of environmental water to avoid the impacts of cold water pollution, which we exercise. In the assessment of all our environmental watering activities we look at the risk of cold water pollution and then ensure that we mitigate it to the extent possible. Some of those strategies are pretty self-evident and common sense—for example, using environmental water where we are going to get a good environmental outcome but at the time of the year when

160 MDBA, responses to questions on notice, received 3 February 2016, p. 3.

161 Mr Michael Murray, General Manager, Cotton Australia, *Committee Hansard*, 29 September 2015, p. 34.

162 Mr Michael Murray, General Manager, Cotton Australia, *Committee Hansard*, 29 September 2015, p. 34.

163 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 10.

164 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, pp 31–32.

> there is less stratification in the dam and therefore less impact from cold water.[165]

4.229 The CEWH gave further detail on its watering activities in responses to questions on notice, outlining the best times of year to deliver environmental water:

> The main step the Commonwealth Environmental Water Holder can take to manage cold water pollution is through the timing of a watering action. The risk of cold water pollution is much lower at cooler times of year (winter and early spring) when dam water temperatures are not stratified. Environmental watering typically targets this time of year (particularly in the southern Basin), to align with natural cues including those for native fish spawning. Other options include timing releases with downstream tributary flows, which will dilute the cold water, and releasing water at a rate and/or volume unlikely to cause a significant risk in receiving water temperatures.[166]

4.230 The CEWH says it supports and participates in action to address cold water pollution in collaboration with state governments and water authorities.[167]

4.231 The MDB Ministerial Council Native Fish Strategy lists cold water pollution as a threatening process. Yet despite funding of $92 million committed to the Strategy, only one water storage facility, Burrendong dam, has been modified to mitigate cold water pollution.

Cold water releases from the Hume Dam

4.232 Dr Marohasy also raised the issue of cold water releases from the Hume Dam, stating that this led to cold water pollution in the Murray River. Dr Marohasy argued that the Native Fish Strategy for the basin from 2003 to 2013 gave a solution to cold water pollution in the Murray:

> …the most cost-effective, tangible, achievable, easiest thing to do right away…was retrofitting of the Hume Dam with multilevel outlets and also including artificial de-stratification of the water in the dam.[168]

4.233 The CEWH provided information from the MDBA stating that adapting the Hume Dam would be difficult due to local weather conditions:

> Hume Dam is extremely exposed to prevailing south easterly winds and as such wave action immediately upstream of the dam can be significant. This

165 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, pp 31–32.

166 CEWH, responses to questions on notice, received 2 February 2016, p. 1.

167 CEWH, responses to questions on notice, received 2 February 2016, p. 1.

168 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 10.

> means that suspended curtains to limit outflow to surface layer or floating turbines to mix water would be extremely difficult to moor.[169]

4.234 Furthermore, this information stated that the 'only likely viable option' would cost approximately $40 million:

> The only likely viable option to eliminate any temperature differential at Hume Dam would be a substantial concrete structure upstream of the power station inlets and probably also covering the irrigation intakes.[170]

4.235 Furthermore, Dr Marohasy stated that the construction of the barrages had led to a decline in saltwater fish, such as mulloway, in the South Australian Lower Lakes. Dr Marohasy said that the mulloway fishery declined after the barrages were sealed:

> Of course the mulloway fishery was decimated, totally decimated when the barrages were sealed in 1940.[171]

4.236 Dr Marohasy stated that following the implementation of the barrages, the saltwater fish have been replaced by freshwater fish, predominately European carp:

> In fact, there is a Charlie Carp industry that has built up around the harvesting of this pest species in the Lower Lakes.[172]

4.237 Further, Dr Marohasy argued that if the barrages were removed and the Lower Lakes became an estuarine environment, saltwater fish such as the mulloway would return. Dr Marohasy stated that this would improve the fishing industry in the region:

> If the lakes became estuarine, unfortunately [the carp] industry would go out of business but, hey, we would have a return of higher value fish and better fishing fish and native fish including the mulloway, for example. We would be rid, simply by letting the sea water in, of the carp in the Lower Lakes and we would have a return of the mulloway.[173]

4.238 This view was also held by Mr Neil Eagle, a witness at Echuca, who stated that an estuarine environment would lead to a productive fishing industry:

> The productivity and health of the Lower Lakes could be restored with re-establishment of the Mulloway fishing industry, which was a big industry before the barrages were constructed. The productivity of the Basin in South Australia and the upper states could be secured in the national interest.[174]

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169 CEWH, responses to questions on notice, received 2 February 2016, p. 1.

170 CEWH, responses to questions on notice, received 2 February 2016, p. 1.

171 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 10.

172 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 10.

173 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, p. 10.

174 Mr Neil Eagle, private capacity, *Committee Hansard*, 5 November 2015, p. 54.

Impact of European carp

4.239 Native fish have to compete with introduced or alien species in the basin's rivers. The most populous introduced fish in the basin is European carp. The committee heard that European carp were a big problem in rivers in the basin. Witnesses spoke of the damage that carp are causing to rivers and riverbanks and how carp cause turbidity in rivers, which affects water quality. Cr Peter Laird, Mayor, Carrathool Shire Council, stated that carp are doing incredible amounts of damage to the Lachlan River:

> The damage that carp are doing to the Lachlan is unbelievable. They are burrowing under the banks and I am told by people who swim in it that they can hang onto the edge and swing their legs right back up in under. That is how the fish burrow on the banks. The red gums are falling in and it has become an absolute disaster—the amount of timber.[175]

4.240 Cr Laird also argued that the effect that carp have on waterways stymies the positive impact of environmental flows, and stated that the removal of carp can lead to positive environmental outcomes. Cr Laird recounted a story of Willandra Creek, which was filled with carp from 1975 to 2011. However, once the carp disappeared, plants originally displaced by the carp reappeared:

> The minute the carp moved in in 1975, it absolutely ruined the creek. In 2011 we had a downpour of rain and the opportunity of fresh water. Within one month the ribbon weed was back. Nature, amazingly, takes care. It had not been there for 37 years and all of a sudden the ribbon weed was back. This is the effect that carp has on the waterways. It does not matter how much water you pour down that Lachlan River for the environment; the carp are just ruining it.[176]

4.241 Mr Anthony Wass, Committee Person, Macquarie Marshes Environmental Trust, also indicated that carp were damaging rivers in his region, although not to the extent that Cr Laird had experienced:

> The carp damage in the river is very, very significant. That riverine weed comment is illustrative. There is a lot of damage caused by carp.[177]

4.242 Given the destructive effects of carp, witnesses such as Mr Mike Dalmau, in a private capacity at Shepparton, called for the eradication of carp, and argued that this was imperative to the success of the Plan:

> The other thing that needs to be put on the agenda is that you can talk all you want about the environmental water coming down the river, but the greatest percentage of it will be wasted unless you eradicate carp. The carp

175 Cr Peter Laird, Mayor, Carrathool Shire Council, *Committee Hansard*, 27 October 2015, p. 17.

176 Cr Peter Laird, Mayor, Carrathool Shire Council, *Committee Hansard*, 27 October 2015, p. 17.

177 Mr Anthony Wass, Committee Person, Macquarie Marshes Environmental Trust, *Committee Hansard*, 27 October 2015, p. 30.

> attack the basic microsystems of whole environment of the system. Until you get rid of carp all the other benefits can never be achieved.[178]

European carp control measures

4.243 Witnesses supported measures to reduce, control and potentially eradicate the European carp population. In particular, witnesses noted that CSIRO is currently developing a carp herpes virus to manage carp numbers.

4.244 Mr Anthony Wass, Committee Person, Macquarie Marshes Environmental Trust, stated that the prospect of a disease to prevent carp breeding was positive:

> I have heard of a program called the daughterless carp program, which was designed to put some sort of disease within the carp population which was benign to other fish species so that you would have a breeding program so that they bred themselves out of existence.[179]

4.245 Mr Michael Murray, General Manager, Cotton Australia, concurred that a release of the carp herpes virus would reduce the number of carp in the river and improve the health of the river system.[180]

4.246 Mr Colin Mues, Acting Executive Director, Environmental Management Division, MDBA noted the complexity of eradicating carp, and stated that present management of environmental water took into account the risks associated with carp and tried to undertake measures that were advantageous to native fish where possible:

> …carp is one of those feral pests that are in our system and are going to be extremely hard to eradicate, if at all. Environmental water managers are acutely aware of the risks that carp pose to our environment, and they manage that water as diligently as they can while managing the risk. There are some mechanisms they have got to advantage native fish over carp but they are somewhat limited…

4.247 However, Mr Mues noted that the carp herpes virus would make a considerable difference in controlling the carp population but that a possible release of the virus is still two to three years away:

> …that is why there is such considerable attention being focused on the carp herpes virus and the potential it presents for a large-scale control mechanism. As I understand it, the herpes virus is going through the last stages of testing—I think the New South Wales Department of Primary Industries is leading the work necessary to get those last trials done—but that is I think two to three years off maybe from release.[181]

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178 Mr Mike Dalmau, private capacity, *Committee Hansard*, 6 November 2015, p. 45.

179 Mr Anthony Wass, Committee Person, Macquarie Marshes Environmental Trust, *Committee Hansard*, 27 October 2015, p. 30.

180 Mr Michael Murray, General Manager, Cotton Australia, *Committee Hansard*, 29 September 2015, p. 28.

181 Mr Colin Mues, Executive Director, Environmental Management Division, MDBA, *Committee Hansard*, 5 February 2016, p. 58.

4.248 Scientists from CSIRO are testing a virus called *cyprinid herpesvirus-3* (CyHV-3) or *koi herpesvirus* (KHV) to determine the 'safety and suitability of the virus for controlling carp'.[182] The CSIRO reported that research has shown that the virus does kill carp and does not develop in any other native or introduced fish. However, CSIRO will continue testing before a release of the virus is considered:

> Over the next few years we'll continue to test the susceptibility of other fish and amphibian species to CyHV-3 and address questions regarding the safety of possible widespread distribution of the virus, both for people and other animal species. This work is supported by the Invasive Animals Cooperative Research Centre and the release program is led by the New South Wales Department of Primary Industries.[183]

4.249 The SA government, in response to questions from the committee, stated that in considering whether or not the carp herpes virus should be released, significant analysis of the costs, risks and benefits would be required:

> A full analysis of all risks and benefits would be required before any decision is made to release the virus into waterways to ensure there would be no unintended adverse consequences. For example, it will be very important to ensure there is no risk of infecting other fish and animal species. It will also be necessary to understand the effects on the aquatic food web of quickly removing large numbers of carp which provide an important food source for other species.[184]

4.250 Furthermore, Mr Russell James, Executive Director, Policy and Planning Division, MDBA, stated that the release of the virus would need to be accompanied by a strategy to ensure ongoing removal of dead carp from waterways:

> I might just say it is one thing to get the virus to the right safety level, if you like, that it is not going to impact on other species, but the strategy you need to have in place to release it is quite massive because you think of dead carp up and down the river system, you need to have systems in place to deal with that and that is going to be a massive effort.[185]

Committee view

4.251 The committee heard evidence pointing out the importance of native fish to the basin's ecosystems. Witnesses stated that native fish populations were in decline, and noted the work done under the native fish strategy to rehabilitate these populations. Again, the committee heard mixed evidence on the regeneration of native fish populations and the impact of environmental watering activities.

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182 CSIRO, http://www.csiro.au/en/Research/BF/Areas/Managing-the-impacts-of-invasive-species/Biological-control/Biocontrol-of-carp (accessed 18 February 2016).

183 CSIRO, http://www.csiro.au/en/Research/BF/Areas/Managing-the-impacts-of-invasive-species/Biological-control/Biocontrol-of-carp (accessed 18 February 2016).

184 SA Government, responses to questions on notice, received 17 February 2016, p. 16.

185 Mr Russell James, Executive Director, Policy and Planning Division, MDBA, *Committee Hansard*, 5 February 2016, p. 58.

4.252 The committee notes the positive impact of environmental watering activities, including the promotion of spawning, breeding, and growth of native fish. The committee also notes the instances and negative impacts of cold water releases on native fish. The committee encourages MDBA to review these incidents and implement risk assessments and mitigation strategies to ensure they are not repeated.

Recommendation 28

4.253 **The committee recommends the Victorian and NSW governments, as operators of the relevant storages, implement measures to mitigate cold water pollution that is undermining recovery efforts of native fish.**

Recommendation 29

4.254 **The committee recommends the MDBA conduct a review of the impact of cold water releases on native fish and develop risk assessments and mitigation strategies to ensure that cold water releases do not impact on native fish.**

4.255 The committee also noted the decline of saltwater fish in the Lower Lakes and the associated decline of the fishing industry and considers that this matter would be resolved if the management of the Lower Lakes is altered.

4.256 Further, the committee notes the damaging impact of European carp on rivers and the development of a control measure in the form of carp herpes virus. The committee supports the ongoing testing of this virus. Should this testing determine that the virus has no unintended adverse consequences, the committee would support its release.

4.257 Overall, the committee is cognisant of the fact that native fish health is one of the four key indicators of basin health, and expects native fish monitoring and evaluation to continue throughout the implementation of the Plan.

Salinity levels

4.258 Salinity is the concentration of dissolved salts in water or soil. Salt is a natural feature of the basin, however human alteration of the basin landscape for irrigation and land clearing can increase the mobilisation of salt, which can lead to salt concentration in some areas of the basin landscape. Salinity is an issue throughout the basin, not just in the Lower Lakes and Coorong.

4.259 The origin of the salt in the basin is multifaceted. There is the underlying salt that resides in the basin sediments as a result of sea incursions thousands of years ago and there is considerable evidence of aeolian (wind-blown) salt deposits together with salts from the gradual erosion and dispersion of bedrock minerals.

> In the south-eastern uplands of the Murray-Darling Basin, a common conception has been that salt is sourced from the whole landscape, being present in the overall geology or groundwater systems. This includes connate salts coincident with deposition (as in marine sediments) or salts derived from subsequent weathering processes. More recently, it has become accepted that salts have been introduced to the landscape rather than being derived in situ from bedrock. This can be by rainfall accessions with evapotranspiration causing accumulation of oceanic cyclic salts in the

> soil profile. Salts can also be associated with silty clay deposits derived from wind-blown sources…[these are] significant for the south-eastern margins of the Murray-Darling basin. Such surficial deposits can be the dominant source of salt in these catchments and when saturated or mobilised become a driver for dryland salinity [186]

4.260 Coupled with these sources is the constant deposition of salt laden ground water that resides in aquifers alongside the river systems. In some regions of the Pliocene Sands aquifer north of Renmark SA the groundwater is hypersaline:

> Towards the end of the south-west directed groundwater flow path, [south across the basin toward Renmark] the watertable is relatively shallow (< 30 m) and the Pliocene Sands represent the shallow watertable aquifer. Groundwater salinities commonly exceed sea water concentrations (35,000 mg/L) and may become hypersaline (>100,000 mg/L) under salt lakes. The groundwater in the aquifer can also be highly stratified.[187]

4.261 This salt is slowly released into the river system due to a variety of reasons – soil degradation, removal of vegetation, raising water tables, seeps along the edges of aquifers etc. This salt must eventually be flushed out of the basin down the Murray River and out through the Murray Mouth to the sea.

4.262 The MDBA's website states that if salinity is not managed appropriately, it 'has serious implications for water quality, plant growth, biodiversity, land productivity and the supply of water for critical human needs.'[188]

4.263 Mr David Dreverman, Executive Director, River Management Division, MDBA stated that a large proportion of the salt in the system comes from the landscape in South Australia:

> Typically the salinity will double—the salt load will double—between the South Australian border and Morgan, which is the reference point we use in South Australia, so probably about half.[189]

4.264 However, a fair proportion of the salt coming over the border originated in the Mallee region of Victoria due to its levels of salt:

> But, of the salt that enters the Murray in South Australia, a fair part comes from groundwater systems that are primed from country in the Mallee in Victoria. That is really ancient salt that has been moving through that

186 P.N. Bierwirth and R.S. Brodie, Bureau of Rural Sciences, *Developing a salt source model for the Murray-Darling Basin from natural soil-radioactivity and geological data*, 2004, pp.4–5.

187 Geoscience Australia, *Assessment of groundwater resources in the Broken Hill region*, Professional opinion 2008/05, prepared for the Australian Government Department of the Environment, Water, Heritage and the Arts, September 2008, p. 51.

188 MDBA, http://www.mdba.gov.au/managing-water/salinity (accessed 17 February 2016).

189 Mr David Dreverman, Executive Director, River Management Division, MDBA, *Committee Hansard*, 5 February 2016, p. 45.

> landscape for thousands of years, because the travel in a year is maybe less than 10 metres.[190]

4.265 Salinity levels have been one of the key factors in securing additional water for the rivers in the basin, and strategies to manage salinity and water quality have been in effect from the 1980s.[191]

4.266 The MDBA's submission stated that coordinated, cross-jurisdictional salinity management has improved salinity in the southern river reaches of the basin:

> The important improvements in salinity and water quality already observed in the southern river reaches are a further demonstration of the success that comes from years of coordinated management by multiple governments. Salinity has been gradually reduced through cooperation between governments, land management and smart engineering, such as salt interception schemes.[192]

4.267 Further, the MDBA explained that various measures including salt interception schemes and improving farming practices had dramatically improved salinity in the lower reaches of the basin:

> Yes, it is one of the really good news stories of joint action by governments over the last 30 years, not only salt interception schemes but also all the things that people have done in improving irrigation and irrigation districts and improving drainage. There is also the combination with the drought. The salinities for the last year and a half have been about 300 EC at Morgan [SA]. Back in the 1980s there were times when it was consistently over 1,200 EC.[193]

4.268 However, salinity requires ongoing management. In response to questions from the committee, the SA government stated that the basin salinity management program:

> …continues to successfully manage the salinity threat across the Murray-Darling Basin to protect the environment, irrigated agriculture, industry and critical human water supplies from adverse effects of high salinities.[194]

4.269 The SA government noted the General Review of Salinity Management in the Murray-Darling Basin undertaken in 2014, which 'showed that salinity remains an ongoing risk requiring a continued joint government management response.'[195]

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190 Mr David Dreverman, Executive Director, River Management Division, MDBA, *Committee Hansard*, 5 February 2016, p. 45.

191 MDBA, *Submission 243*, p. 4.

192 MDBA, *Submission 243*, p. 32.

193 Mr David Dreverman, Executive Director, River Management Division, MDBA, *Committee Hansard*, 5 February 2016, p. 45.

194 SA government, responses to questions on notice, received 17 February 2016, p. 7.

195 SA government, responses to questions on notice, received 17 February 2016, p. 7.

4.270 This review recommended the development of the now active Basin Salinity Management 2030 (BSM2030) strategy, which was released in November 2015.[196] This strategy builds on previous salinity management practices to manage salinity as the Plan is implemented and includes the continuation of salt interception schemes.

4.271 The strategy also builds on the findings of the Report of the Independent Audit Group for Salinity 2013-14, also released in 2015.[197] This report concluded that salinity management was a key issue that required continuing management through various water management mechanisms including environmental watering and salt interception schemes.[198]

Salt interception schemes

4.272 In addition to ensuring water flows through the system, the MDBA coordinates salt interception schemes to keep salinity at agreed levels.[199] Mr Dreverman stated that it was imperative to continue running salt interception schemes and ensure the management of the basin kept salinity levels in check:

> All of our recent studies indicate that it is only that good because of not only all the things that we have done in those 30 years and the investments made but also the fact that we continue to operate all those salt schemes.[200]

4.273 Furthermore, the Independent Audit Group for Salinity report recommended that when developing the BSM2030 strategy, consideration be given to a risk-based, responsive approach to the management of such schemes, while still aiming to meet salt reduction targets.[201]

4.274 This included:

- the efficiency of schemes and the consequences of closing systems down for periods of time
- the costs of running the scheme versus its effectiveness in reducing salinity impacts
- the costs and timeliness of restarting systems versus the potential impacts over time of not operating the system
- the practicality of running [the schemes] in a responsive way.[202]

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196 Basin Salinity Management 2030 (BSM2030), p. vii, via MDBA website: http://www.mdba.gov.au/publications/mdba-reports/basin-salinity-management-2030 (accessed 17 February 2016).

197 Independent Report, via MDBA website, http://www.mdba.gov.au/sites/default/files/pubs/IAG-Salinity-report-2013-14.pdf (accessed 18 February 2016).

198 Basin Salinity Management 2030 (BSM2030), pp 7–10.

199 MDBA, *Submission 243*, p. 4.

200 Mr David Dreverman, Executive Director, River Management Division, MDBA, *Committee Hansard*, 5 February 2016, p. 45.

201 Basin Salinity Management 2030 (BSM2030), p. 8.

202 Basin Salinity Management 2030 (BSM2030), p. 8.

4.275 The BSM2030 strategy also noted that even with current successes and the additional benefit of environmental water as a result of the Plan, salt interception schemes will still be required. However, the strategy states that the management of salt interception schemes can be modified to respond to forecast river salinity:

> Nonetheless, the modelling suggests that it may be possible to vary the operation of salt interception schemes in response to forecast river salinity. This would involve running the salt interception schemes at full capacity only in periods of high salinity risk or when salinity is forecast to be a problem.[203]

Committee view

4.276 The committee recognises that salinity levels are an issue throughout the basin, not just in the Lower Lakes and Coorong. The committee is aware that salinity levels were one of the key drivers in securing additional water for rivers in the basin.

4.277 The committee notes the improved salinity levels and supports ongoing management of salinity in the basin.

4.278 The committee is not persuaded that the best means of dealing with salinity in the south-east of South Australia is to drain saline water into the river system and then dilute it through increased flow of fresh water. In addition, it considers there are options to increase surface flows from the south-east of South Australia directly into the lower Coorong (a 'Coorong Surface Inflows Restoration Project') which could avoid at least some of these effects.

Recommendation 30

4.279 **The committee recommends that the MDBA work with basin state governments to investigate the efficiency and effectiveness of salt interception schemes and combine their use and other complementary measures to manage salinity in the basin.**

Recommendation 31

4.280 **The committee recommends the Commonwealth fund and facilitate accelerated work on the restoration of surface flows from the south-east of South Australia into the lower Coorong, and undertake a feasibility study into the potential for redirecting all existing drainage discharges from the South East into the Coorong.**

203 Basin Salinity Management 2030 (BSM2030), p. 6.

Senator David Leyonhjelm
Chair

Dissenting Report
Australian Greens

1.1 In the course of this inquiry, many experts made submissions affirming what is required to preserve the Murray Darling Basin (MDB). The Chair's report for this Senate inquiry conducted by the Select Committee on the Murray-Darling Basin Plan fails to accurately reflect the views expressed by these experts. The Chair's report lists 31 recommendations, many of which will be detrimental to the long term health and sustainability of the MDB. Without a healthy river system, the environmental, economic and social impacts for rural communities will be catastrophic.

1.2 It is also questionable whether this inquiry was necessary given the extensive community consultation undertaken over the last decade to legislate the *Water Act 2007*, develop the Murray Darling Basin Plan (MDBP) and for the review of the *Water Act* last year. In 2007 the *Water Act* was enacted and the Murray Darling Basin Authority (MDBA) was established. As outlined in the MDBA's submission to this inquiry, the MDBP was developed to ensure a sustainable basin that delivers social, economic and environmental outcomes.

1.3 The formation of the MDBP included undertaking an incredibly comprehensive community consultation process resulting in almost 12 000 submissions. The final MDBP was endorsed in November 2012 and was agreed to by all MDB states and the Commonwealth government, a truly momentous achievement that provided a framework to ensure the long term health of this iconic Australian river system.

1.4 Furthermore, an independent review of the *Water Act* was recently undertaken and concluded that significant progress has been made to implement the MDBP.

Major concerns

1.5 The Australian Greens have serious concerns about many of the recommendations made in the Chair's report and the likely negative impacts they could have on the long term health and sustainability of the MDB. This would have knock on effects for the environmental, social and economic elements of the MDB.

1.6 One example is Recommendation 13 which calls on the government to investigate changing the Coorong's Ramsar listing from a freshwater system, to an estuarine system. The Coorong has been listed by the Convention on Wetlands of International Importance as a freshwater system for over 30 years. The MDBA's submission states that the historical evidence demonstrates that the lakes were predominantly fresh. Pushing for this change of status blatantly disregards the value of the Lower Lakes and Coorong ecosystems and ignores the negative impacts this change would have on local fishing and tourism industries.

1.7 Another example is Recommendation 14, which calls for a cost-benefit analysis of removing or adapting the barrages. This is not in the best interests of the health of the MDB, particularly the Lower Lakes and Coorong. Many submissions

including from the SA government, MDBA and Alexandrina Council highlight these concerns.

1.8 Recommendation 15 provides a third example which calls for an 'independent feasibility and hydrologic study of a connector between Lake Albert and Coorong'. A scoping study on this issue was completed by the SA government in 2014 and found that even without considering the potential negative ecological impacts on the Coorong, the connector failed on cost-benefit grounds. This study also outlined that the traditional owners of the land, the Ngarrindjeri people 'do not support any engineering intervention'.[1]

1.9 Recommendation 19 is particularly concerning, and would have detrimental impacts to the river system basin-wide. This recommendation calls on the government to have the Productivity Commission undertake a cost-benefit analysis of the MDBP. The MDBP was only finalised in November 2012 with many outcomes of the MDBP still in the process of implementation. Conducting such a review would be costly, time consuming and would stymie the substantial progress that has been achieved with the MDBP over the last 3 years.

1.10 Another example is Recommendation 20 that grossly misrepresents the 650GL value by labelling it as a target. This is not a target that forms part of the current MDBP. It is critical that the sustainable diversion limits adjustment mechanism is conducted on the basis of robust, independent science and is subject to third party review. The focus must instead be on achieving agreement between all states by June 2016 on the addition 450GL committed to by the Commonwealth government. Without the additional 450GL the health of the Lower Lakes and Coorong will be under risk of severe degradation.

Provisional support for some recommendations

1.11 Although The Australian Greens have serious concerns with regards to the majority of the recommendations, the party provisionally supports the following:

- Recommendation 9 in relation to the initiation of a judicial inquiry into the operation of the Goulburn Murray Water Connections Project. This inquiry should include a cost-benefit analysis of recovering water through irrigation projects compared to water buybacks.
- Recommendation 27 in relation to providing the Commonwealth Environmental Water Holder with greater capacity to conduct monitoring, objective evaluation and communication of environmental watering activities.
- Recommendations 28 and 29 in relation to implementing measures that support recovery efforts of native fish.

1 Department of Environment, Water and Natural Resources (2014), *Lake Albert Scoping Study Options Paper*, Government of South Australia, p. 69.

Closing remarks

1.12 Many submissions to this inquiry concluded that the full and timely implementation of the MDBP is critical to securing a healthy long-term future for the MDB. The Australian Greens agree with this assessment and will fight to ensure the 3200GL water target committed to by the Commonwealth government is achieved in a timely fashion. The Australian Greens will not support any changes to the *Water Act* or MDBP that reduce this target or compromise the long term health and sustainability of the MDB.

Senator Robert Simms

Australian Greens Senator for South Australia

Dissenting Report
Australian Labor Party

Overview – Basin Plan origins and purpose

1.1 There has been conflict about the use of water along the Murray-Darling for longer than Australia has existed as a nation. The Basin has seen years of tensions between states and their competing claims for water for different communities, economic interests and environmental concerns. The Murray-Darling Basin Plan was adopted by the Australian Parliament in 2012 with the support of all Basin States. This was a historic achievement.

1.2 The Murray-Darling Basin Plan embodied a more balanced approach to water management than had been historically in place. For most of the last century, the focus was on developing the river for economic benefit. As more water was diverted for human consumption, flow through the river decreased by 75% on average.[1] This caused significant degradation of natural assets along the river system, including soil and water quality. There has been a loss of around 70% of floodplain vegetation, as well as a significant reduction in the numbers of native fish and waterbirds.[2]

1.3 This level of water use was unsustainable. The aim of the Murray-Darling Basin Plan was:

> …not to return freshwater ecosystems to a 'natural' state – rather to deliver a healthy working river system. This means one that supports the social and economic needs of people, while continuing to maintain the health of important ecosystems requiring periodic water flow.[3]

1.4 Although the Murray-Darling Basin Plan aims to strike a balance between the competing claims on the river system, there is ultimately a limited supply of water. This means that no particular claimant is likely to have their interest entirely satisfied.

Rollout

1.5 The Murray-Darling Basin Plan contains a number of interlocking features. The Murray-Darling Basin Authority explains the key elements as follows:

> The Basin Plan builds on the state governments' long standing water management arrangements and introduces two key new requirements:
>
> 1. sustainable limits on water extraction for all water resources in the basin

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1 Murray-Darling Basin Authority, *Watering Strategy 2013-2014*, p. 1.

2 Murray-Darling Basin Authority, *Supplementary Submission 243.1*, p. 1.

3 Murray-Darling Basin Authority, *Watering Strategy 2013-2014*, p. 2.

2. whole-of-basin management to ensure a basin-wide approach is taken to managing the connected river system across jurisdictional borders

…

As a result of community input and state requests, the 2012 Basin Plan water reform package was adjusted to include:

- a seven-year transition period to reach the new settings in the plan, giving communities and industries time to adjust
- opportunities built into the Basin Plan for adjustment and review, to improve the triple bottom line benefits, notably:
  - the 'SDL adjustment process': to look at potential projects that can reduce the amount of water needing to be recovered provided equivalent environmental outcomes can be achieved and social and economic outcomes are maintained or improved
  - the Constraints Management Strategy: to investigate improvements to the effectiveness of environmental water use, which is supported by $200 million Commonwealth funding to mitigate impacts
  - the Northern Basin Review: to revisit some of the settings in the north once more robust science and a better understanding of the potential social and economic effects on some more vulnerable communities is available
  - three groundwater reviews to assess the potential to increase sustainable groundwater extraction in three areas
- Commonwealth government commitment to prioritise infrastructure investment over purchasing water on the market, to achieve the new sustainable limit.[4]

1.6 Importantly, the Murray-Darling Basin Plan includes an extraction limit for the basin as a whole, meaning that 2750 gigalitres per year has to be recovered from consumptive use for the environment.[5]

Current issues

1.7 Labor Senators consider that the evidence given to the committee, when taken as a whole, shows that the Murray-Darling Basin Plan is delivering results.

Environmental outcomes

1.8 Labor Senators affirm the importance of environmental outcomes to the Murray-Darling system on both economic and environmental bases. The Basin Watering Strategy contains a comprehensive framework for allocating environmental

4 Murray-Darling Basin Authority, *Submission 243*, p. 1.

5 Murray-Darling Basin Authority, *Submission 243*, p. 1.

water. This framework sets out clear environmental objectives that are based on contemporary scientific understanding.[6]

1.9 This Committee received evidence that the implementation of this framework has been effective in providing some environmental outcomes to date.[7] Labor Senators accept this evidence, whilst acknowledging that that there are further environmental outcomes that will only be realised over time.[8] Reversing over a century of ecological degradation will take some years, however the early indications are positive.

1.10 In particular, this Committee heard evidence that the Basin Plan has had success in the application of environmental water to generate fish breeding events, extend water bird breeding events, and improve the quality and extent of riparian vegetation.[9]

1.11 Australia is recognised as a world leader in water management. The key to this is adaptive management. Adaptive management means a cycle of monitoring, evaluation and modification as water managers learn the relationships between particular strategies and the environmental outcomes they produce.[10] Labor Senators accept the evidence that the Commonwealth Environmental Water Holder is acting in accordance with best practice adaptive management strategies, and is a diligent, responsive and prudent operator.[11] Although particular water management strategies may sometimes produce differing levels of success, this is to be expected and is accommodated by the responsiveness of adaptive management.[12]

Economic impacts

1.12 Labor Senators acknowledge that the reduction in availability of water requires both producers and communities to make adjustments. A package associated with the plan is being rolled out to support producers and communities.

1.13 The majority report sets out some of the moving evidence this Committee has heard from communities who are experiencing economic adjustment.

1.14 The introduction of water trading triggered changes in the economic viability of many water-use activities – it is clear that some communities are struggling to adjust.

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6 Murray-Darling Basin Authority, *Watering Strategy 2013-2014*, p. 9.

7 Murray-Darling Basin Authority, *Supplementary Submission 243.1*, p. 6–7.

8 Murray-Darling Basin Authority, *Watering Strategy 2013-2014*, p. 8.

9 Commonwealth Environmental Water Holder, *Supplementary Submission 45.1*, Case Studies.

10 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, pp 32–36.

11 Commonwealth Environmental Water Holder, *Supplementary Submission 45.1*, p. 2.

12 Mr David Papps, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment, *Committee Hansard*, 5 February 2016, p. 32.

1.15 It is not clear, however, that all of the difficulties being experienced by communities have been caused by the introduction of the Basin Plan. Instead, social research produces a more complex picture. There is evidence that disadvantage and dislocation has affected communities across rural Australia, and not just in the basin. This evidence suggests that many basin communities are experiencing economic and social decline for reasons that are not correlated with the operation of the Basin Plan.[13] Labor Senators do not believe that this makes the evidence we heard from some of those communities any less moving. However, it does influence whether the correct policy lever is to be found in the Murray-Darling Basin Plan or through some other government mechanism.

Community Engagement

1.16 The implementation of the Murray-Darling Basin Plan represented a significant change for many Basin communities. Community engagement is enormously significant for any change process. It is important that all government agencies work to engage the Australian community transparently, consultatively, and where possible collaboratively.

1.17 Labor Senators note the evidence given about the investment Murray Darling Basin Authority has made in community engagement.[14] Labor Senators encourage the Authority to energetically pursue community engagement, given the significance of the change to local communities. The Basin Plan represents an opportunity to demonstrate best practice.

Committee process and report

1.18 The Murray Darling Basin Plan was an important reform of Australia's water policy, and continues to be a significant driver of social, economic and environmental outcomes in the region. Labor Senators support continued engagement by Australian parliamentarians with this issue.

1.19 Labor Senators commend the Chair and Deputy Chair for their commitment to pursuing issues and engaging with Basin community. There are some in the Basin community who are unhappy with how the Basin Plan operates, and the Labor Senators acknowledge that the majority report seeks to reflect some of this evidence.

1.20 However, Labor continues to support the implementation of the Murray-Darling Basin Plan, recognising that the long term health of Basin communities is dependent on a healthy, working river. The critical foundation for the Murray-Darling Basin Plan was (and remains) bipartisan support in the Australian parliament, along with support of all Basin jurisdictions.

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13 Dr Jacki Schirmer, *Submission 211*; Murray-Darling Basin Authority, *Submission 243*, Appendix 5; Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 25.

14 Mr David Dreverman, Executive Director, River Management Division, Murray-Darling Basin Authority, *Committee Hansard*, 5 February 2016, pp 44–45.

1.21 Labor Senators believe that there may be some valid concerns about the operation of the Murray-Darling Basin Plan raised in the evidence heard by this Committee, and in the majority report itself. However the evidence that has been heard does not provide the scientific or technical basis for making highly specific recommendations that may disturb the stability and operation of the plan. The Basin Plan operates as a whole. There are complex interlinkages between the different elements, and there are significant risks in modifying particular elements of the Plan on an ad hoc basis in the absence of an overall strategic approach. Labor Senators have concerns that this inquiry has not put this Committee in a position to be able to avoid or minimise those risks. Accordingly, Labor Senators are not able to support the majority of recommendations set out in the majority report.

Senator Jenny McAllister

Australian Labor Party Senator for New South Wales

Dissenting Report

Senator John Madigan

1.1 Deep suspicion remains across the Murray Darling Basin about the Murray Darling Basin Authority (MDBA), its operation and the perceived perfunctory nature of its attempts to liaise and listen to local communities.

1.2 Communities exhausted by challenging economic conditions, with dwindling farming and irrigation sectors, remain convinced the MDBA is proceeding on its own agenda while paying 'lip service' to consultation.

1.3 I note that in the 2011 House of Representatives Inquiry into the Guide to the Murray Darling Basin Plan, the committee was highly critical of the MDBA's community engagement program.

1.4 Additionally that same committee articulated concerns about the MDBA's modelling, assumptions and data gathering.

1.5 Four years later, local communities have given vent to similar complaints.

1.6 During the current Senate inquiry I saw little perception from communities across the Basin that the operations of the MDBA had changed in response to the first report.

1.7 Basin people are suspicious, frightened and angry about an organisation they see as all-powerful and non-responsive. I take seriously evidence that the MDBA's modelling has been proven wrong, that the organisation is not responsive to criticism and in some cases has forced constituents to resort to Freedom of Information requests to obtain data.

1.8 I remain deeply concerned that the MDBA is a well-funded and diverse bureaucracy dedicated to its own self-preservation with little real accountability to the government or the Parliament, and certainly not to the thousands of rural and regional Australians who are impacted by its operations and decisions.

1.9 I remain troubled that this organisation, like many government bureaucracies, is insincere in its pronouncements of regard for local expertise.

1.10 I see the Murray Darling Basin Plan as one of the largest negative man-made impactors on our farming communities in the history of this country. More significantly, much if not all of the negative impact of the MDBP is ignored by governments and ignored or rationalised by the authority.

1.11 Many witnesses were adamant that the Plan must be paused to undertake a more thorough and detailed stocktake of our water resources and their effective management. Others are more hesitant, saying such action would create additional uncertainty.

1.12 Water resource management is now exceedingly complex, controlled by a growing number of bureaucracies and administered by the Commonwealth and relevant state governments.

1.13 It's clear to many – and I share their view – the Plan is not working. The destructive impact on the farmers, irrigators and communities who live and work in our food bowl is considerable. Water is our most precious resource.

1.14 For the thousands who have been fighting this plan and this bureaucracy for years now, it will be a tragedy if this report is shelved without appropriate and clear government response and action.

1.15 Additionally I make the following recommendations.

Recommendation 1

1.16 The Commonwealth *Water Act 2007* must be amended to indisputably give equal balance to the triple bottom line i.e. social, economic and environmental values.

Recommendation 2

1.17 The *Water Act 2007* must be amended to remove reference to the 450GL and links to the Sustainable Diversion Adjustment mechanism. The $1.77 billion must be redirected to meet other objectives arising from the Basin Plan.

Recommendation 3

1.18 We must review the MDBA's Regulatory Impact Statement (2012) to account for omissions and inclusion of relevant information evident in the implementation phase of the Murray Darling Basin Plan.

Recommendation 4

1.19 We must amend/extend current timeframes and project eligibility for the Sustainable Diversion Limits (SDL) adjustment mechanism.

Recommendation 5

1.20 We must have an allowance within the scope of 650GL of SDL projects to enable adaptive management and the development of further project options to deliver environmental outcomes that may not be fully explored or developed prior to the June 2016 deadline.

Recommendation 6

1.21 The Murray Darling Basin Plan's focus on flow objectives to the Lower Lakes must be reviewed to avoid massive third party impacts (social, economic and environment) on Basin communities. The Plan must incorporate the physical realities of the Murray, Edward and Wakool and Goulburn river systems and acknowledge that the Murray Darling Basin Authority's proposed flow targets to the SA border are unachievable.

Recommendation 7

1.22 Federal, New South Wales, Victoria and South Australian governments should be encouraged to investigate the development of localised projects in South Australia to deliver environmental benefits for the Coorong, Lower Lakes and Murray Mouth. Federal investments should be on the condition that SDL credits generated help offset the shared downstream targets for the Murray (971GL.) (The Coorong Connector should not be considered unless part of a broader package of measures.)

Recommendation 8

1.23 We need an independent investigation of the accountability, performance and independence of the MDBA with emphasis on the basis and validity of its conclusions and recommendations to government in the development and implementation of the Murray Darling Basin Plan.

Recommendation 9

1.24 The MDBA must be instructed and made accountable to facilitate open access and transparency on all of its models and assumptions used in decisions associated with the Plan.

Recommendation 10

1.25 The MDBA's roles, responsibilities and future functions must be reviewed and restructured to incorporate regional decisions in all aspects of the Basin Plan – social, economic, environment.

Recommendation 11

1.26 The Federal Government must cease acquisition of further productive water (except for strategic benefits which is agreed to by relevant parties) until there has been a full analysis of social and economic impacts, an evaluation of environmental benefits achieved with water already acquired and it is evident there will be no adverse third party impacts on irrigation and private property.

Recommendation 12

1.27 Federal and state governments must be completely transparent and ensure full consultation with affected parties and stakeholders on all Murray Darling Basin Plan implementation decisions. This includes the Sustainable Diversion Limits adjustment mechanism, the Constraints Management Strategy and any proposed river or storage dam operational changes to ensure decisions do not undermine the reliability of irrigation supplies or property rights of private landholders or cause detrimental environmental impacts.

Recommendation 13

1.28 The Constraints business cases must provide a realistic, compelling case, developed in full consultation with affected stakeholders, and establish that proposed measures will be achievable and will deliver the expected outcomes. The cases must provide a positive case for investment before any decisions to proceed are made.

Recommendation 14

1.29 Impacts on all upper tributary catchments must be acknowledged and investigated so that the focus is not only on the main stems of the Murray, Goulburn and Murrumbidgee rivers when delivering environmental flows.

Recommendation 15

1.30 Government agencies must clearly establish timing, frequency, duration and extent of proposed environmental flows in order for stakeholders to make informed decisions in the development of the business cases on constraints.

Recommendation 16

1.31 The MDBA must address how the Constraints Management Strategy can proceed considering Upper Goulburn Catchment landowners have refused to negotiate easements to mitigate flooding impacts, and the Federal and State governments have stated they will not forcibly acquire easements or intentionally flood private property without consent.

Recommendation 17

1.32 Federal and state governments must avoid manipulation of water markets or water use through references to high value crops or preferred industries.

Recommendation 18

1.33 I strongly object to overseas entities being permitted to trade in our water.

Recommendation 19

1.34 Monitoring and evaluation of the Basin plan and environmental flows must include both negative and positive impacts to enable full evaluations.

1.35 After this inquiry I remain steadfast in my belief and support of the people of the Murray Darling Basin. I admire their courage and creativity, their strength and fortitude in the face of enormous challenges. The future of this country is integral to their future. Much is riding on our ability to get things right.

Senator John Madigan

Independent Senator for Victoria

Dissenting Report

Senator Nick Xenophon

1.1 I commend my colleague, Senator John Madigan, for being the primary driver of this inquiry being established – a review of the Murray Darling Basin Plan is of course welcome – given the incredible importance of the basin to the nation's environmental health and economic wealth.

1.2 However, I cannot support many recommendations in the Chair's report; in particular recommendations 12, 13, 14 and 21 are most problematic.

1.3 The basin plan evolved across a number of years under both Coalition and ALP Governments. It is not perfect, but the perfect should not be the enemy of the good.

1.4 I am a strong supporter of farming communities in my home State of South Australia. Those communities that rely on irrigation water from the Murray deserve both certainty and a healthy river system from which to draw their water. Environmental flows are essential to maintain the health of the river, both in terms of salinity and blue green algae, for instance.

1.5 The recommendations in the Chair's report that discuss moving barrages, allowing ingress of salt water into the lake and an additional lock above lake Alexandrina would have disastrous environmental and socials consequences for the lower regions of the Murray.

1.6 I note the submission of Professor Mike Young of the University of Adelaide to this Inquiry. He drew attention to the difference between "gross" take and "net" water use. He stated in his submission:

> Investment in measures that improve the efficiency of water use makes sense IF AND ONLY IF this results in an increase in the "net" efficiency of water use. In particular, full account needs to be the quantities of water that following irrigation pass through a root zone to an aquifer and/or drain back to a river.[1]

1.7 There have recent developments in respect of the MDBP that ought to be noted.

1.8 On 11 March 2016 the Murray Darling Basin Ministerial Council met in Melbourne to discuss how to progress the implementation of the Basin Plan.

1.9 A core aspect to the plan is the sustainable diversion limit (SDL) adjustment mechanism. The SDL adjustment mechanism is a key process for improving the socio-economic and environmental outcomes of the Basin Plan. During the meeting Ministers discussed the projects state governments are developing to implement the

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1 Professor Michael Young, *Submission 348*, p. 1.

Plan, including supply measures. These are measures that deliver equivalent environmental outcomes using less water and are commonly referred to as ‘down water’ projects.

1.10 The projects accepted under the plan are backed by science and by protocols as to how that science is to be implemented. However, I understand there are concerns some states are developing down water projects which they claim will achieve environmentally equivalent outcomes, but these projects are not adhering to the scientific basis and protocols previously agreed to.

1.11 It is particularly important for South Australia’s river system that upstream states meet their end of the bargain when it comes to upholding the Murray Darling Basin Plan. Each of the states that are party to the plan set these rules. It was done so by consensus, based on the science and must not be undone.

1.12 Finally, of course, the plan must be subject to regular and robust scrutiny. However to undo the plan, as a number of the recommendations suggest, would be retrograde step – destructive to both the farmers and the environment.

Senator Nick Xenophon

Independent Senator for South Australia

Appendix 1

Submissions and additional information received by the committee

Submissions received

1	Mr Ian Rowan
2	Mr David Lashbrook
3	Murrabit Advancement Association
4	Goulburn River Trout Pty Ltd
5	Ms Jan Beer
6	Mr Alan Gilmore
7	Mr Stuart Gilmore
8	Mr William Drysdale
9	Mr David Boyd
10	Mr Peter Ryrie
11	Mr Rodney Ridd
12	Mr David Mold
13	Mr Ken Jury
14	Mr Ron Pike
15	Broken Hill, Menindee Lakes: We Want Action
16	Upper Goulburn River Catchment Association
17	Mr Peter Millington
18	Ms Muriel Perry
19	Mr Graeme Pyle
20	Mr & Mrs Les and Marg Ridd
21	Mr & Mrs William & Heather Morgan
22	Conservation Council SA
23	Mr Robert Danieli
24	Mr Adam Wettenhall
25	KAGOME
26	Mrs Pam Wettenhall
27	Mr John Ibbotson

28	Mr Peter Gilmour
29	Menindee Regional Tourist Association
30	Mr Aaron Taylor
31	Mr and Mrs Stuart & Debbie Buller
32	Border Rivers Food and Fibre
33	Mr Jonathan Sear
34	River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group
35	Name Withheld
36	Ms Anne Hartnett
37	Ms Marilyn Danieli
38	Mr and Mrs John and Joanne Petterson
39	Mr Graham Cleary
40	Mr Hector Brown
41	Mr Ian Wright
42	Mr Andrew Seamer
43	Mr and Mrs Michael and Barbara Rowland
44	David and Simon Ettershank
45	Commonwealth Environmental Water Holder
46	Griffith Business Chamber Incorporated
47	Southern Alexandrina Business Association
48	Molesworth Recreation Reserve and Caravan Park
49	Point Sturt and Districts Landcare Group Inc
50	Department of the Environment (now Department of Agriculture and Water Resources)
51	Mrs Shelley Scoullar
52	Miss Emma Hand
53	Coorong District Council
54	Mr and Mrs Donald and Ann Bull
55	Ms Gloria Jones
56	Mr Ian Thomson
57	Sunraysia Branch of the Victorian Farmers Federation
58	Mr and Mrs Terry and Marie Martin

59 Mr and Mrs N & J Thomas
60 Mr Rodger Bassham
61 Ms Laurie Beer
62 Mr Neil Gorey
63 Mr and Mrs DJ and SE Pearse
64 Mr Gerard Lahy
65 The Marina Hindmarsh Island
66 Mr Barry Purvis
67 Mr John Knight
68 Dirranbandi Rural Transaction Centre
69 Mr Stan Dineen
70 Mr Darren De Bortoli
71 Mr Anthony Thomas
72 Mr Ian Hickey
73 Little Merran Creek Water Trust
74 Mr John Larin
75 Goulburn Valley Environment Group
76 Ms Linda Chalmers
77 Mr Ron Chalmers
78 Mr Rodney Dunn
79 Mr Paul Dunn
80 Ms Mary Holland
81 Mr Con Boerma
82 Mr Wes Hare
83 Mr Patrick Connolly
84 Inland Rivers Network
85 Ms Tammie Edwards
86 Ms Viv McGee
87 Fiona and Stephen Waters
88 Mr & Mrs Laurel and John Dunmore
89 Mr Tom Crook
90 RAMROC Councils
91 Mr Simon Perrin

92 Wakool Shire Council
93 Balonne Shire Council
94 Mr Paul Edwards
95 Warren Shire Council
96 Mr John Bradford
97 River Country Campaign of Friends of the Earth
98 Mr Terry Court
99 Mr Christopher Rawlins
100 Mr Keith Greenham AM
101 Mr Hayden Lunn
102 Mr Dale Hadenfeldt
103 Mr & Mrs Billy and Annie Carson
104 The Linen Cupboard
105 Mr Greg Nicol
106 AgForce Queensland
107 Mr Andrew McCosker
108 Crothers Brothers
109 Mr Brenton Hall
110 Mr Bruce Connolly
111 Queensland Farmers' Federation
112 Mr & Mrs Jason and Samantha O'Toole
113 Smartrivers
114 Mr Desmond Knight
115 Mr Ben Suttor
116 Queensland Government Department of Natural Resources and Mines
117 National Irrigators' Council
118 Cotton Australia
119 Environmental Farmers Network
120 West Corurgan Private Irrigation District
121 Mr Adam Dellwo
122 Central West Environment Council
123 Mr David Goldman

124 Mr Paul Harvey
125 Mr & Mrs John and Judith Hand
126 Wumbulgal Agriculture Pty Ltd
127 Cadell Construction Joint Water Supply Scheme
128 Mr Wayne Murray
129 Mr & Mrs Andrew and Jillienne Russell
130 Ms Madelaine Landini
131 Alexandrina Council
132 Murray and Mallee Local Government Association
133 Mundoo Pastoral Co Pty Ltd
134 Kerang Lakes Land & Water Action Group
135 River Murray Advisory Committee
136 Mr Chris Bagley
137 South Australian Wine Industry Association Incorporated
138 Mid Murray Council
139 Mr James Blacker
140 Mr Rex Oswin
141 Mr Garnet Robinson
142 Mr John Pettigrew
143 Southern Riverina Irrigators
144 Ms Lynanne Butturini
145 Tungkillo Landcare Group
146 Balranald Shire Council
147 Australian Conservation Foundation and Environment Victoria
148 Australian Consolidated Milk and Pactum Dairy Group
149 Mrs Tanya Ginns
150 Dr John Schutz
151 Ms Mary Browne
152 Mr & Mrs Robert and Johanna Wettenhall
153 Ms Judy McGuiness
154 Mr Tim Coote
155 Confidential
156 Name Withheld

157 Brian, Judy, Timothy and Mark Colvin
158 Mr & Mrs Neville & Brooke Hollins
159 Mr Adam & Breeanna Gray
160 Mr Robert Caldwell
161 Mrs Rosa Merlino-Hillam
162 Mr & Mrs Mick and Lesley Fischer
163 Lakes Coaches
164 Mr Greg Sandford
165 Mr Tim McKindlay
166 Dr Anne E Jensen
167 Mr John Warren
168 Wakool Landholders Association
169 Mr David May
170 Ms Liz Yelland
171 Mr John Lolicato
172 Mr Daniel Pinnuck
173 Mr John Yelland
174 Mr Jim Muirhead
175 River Lakes and Coorong Action Group
176 Mr Denis Wilson
177 Ms Alison Glenn
178 Griffith City Council
179 Ms Dionne Devlin
180 Murrindindi Shire Council
181 Mr Paul Webster
182 Mr & Mrs Michael & Kate Hawkins
183 SA Dairyfarmers Association Inc
184 Mr Luke Keogh
185 Mr & Mrs Paul & Nicole Fitzpatrick
186 Mr & Mrs Jeremy & Renee Morton
187 Mr Mark Martin
188 Mrs Sue Martin
189 Ms Fiona Mertz

190 Mrs Karen Macdonald

191 The Community Advisory Panel for the Coorong, Lower Lakes and Murray Mouth

192 Ms Monique White

193 Mr James Homewood

194 Ms Jennifer Knight

195 Ms Kate Orr

196 Lake Meran Diversion Licence Holders Group

197 Griffith District Council for NSW Farmers

198 Mr & Mrs John & Natarsha Canny

199 BR&C Agents

200 Silver Moon

201 Ms Nicole Fitzpatrick

202 Mr Rodney Bryan

203 Hon Peter Walsh, Member for Murray Plains

204 NSW Irrigators' Council

205 Mr Rand Wilson

206 Ms Jenny James-Bryan

207 Rural Funds Management Ltd

208 Mr Andrew Kassebaum

209 Auscott Limited

210 Mr James Sides

211 Ms Jacki Schirmer

212 Mr Doug Thomas

213 Mr & Mrs David & Faye Gibbs

214 Mr Peter Chalmers

215 Mr Michael Chalmers

216 Ms Sally Richards

217 Mr David J Lindsay

218 KM & WM Kelly & Sons

219 Murray River Accounting Pty Ltd

220 Hay Shire Council

221 Ms Mary Chandler

222 Mr & Mrs Russell & Noelene Henderson
223 Mr Keith Loeser
224 Murray Irrigation
225 Carrathool Shire Council
226 SA Murray-Darling Basin NRM Board
227 Mr Tom Condon
228 St George and District Chamber of Commerce
229 Mr Phill O'Neil
230 Mr Michael Pisasale
231 Mr Leon Ash, Mark Haydon, Russell Gillie, David Glass, Darren Ash, Steve Snelson
232 Elders
233 Murray Lower Darling Rivers Indigenous Nations (MLDRIN)
234 EDOs of Australia
235 Mr Charles T Arthur
236 Mrs Edwina Arthur
237 Mr Phil Snowden
238 Mr Clive Henderson
239 Deniliquin Freighters
240 Abarue Pty Ltd
241 Cindy McLeish MP, Eildon District, Victorian Parliament
242 Ngarrindjeri Regional Authority
243 Murray–Darling Basin Authority
244 Victorian Farmers Federation (VFF)
245 Mr Bruce Simpson
246 Mr Christopher Brooks
247 Mudgee District Environment Group
248 Nature Foundation SA
249 Nyton Park Agriculture
250 Riverland Wine
251 Mr Tony Ellwood
252 Ms Rachel Henderson
253 Twynam Agricultural Group

254 Mr Brad Perry, Tim Whetstone MP, Member For Chaffey
255 Mr Don Lawson
256 Confidential
257 The committee of the Meningie Narrung Lakes Irrigators Association
258 Ms Genevieve Martin
259 Ms Leanna Loughridge
260 Mr Peter McDonald
261 Ms Kate Redfearn
262 Mr & Mrs Colin, Gail & Stuart Grinter
263 Mr Darcy Hare
264 Mrs Gabrielle Coupland
265 Mr Sam Dodd
266 Mr Lindsay Schultz
267 Lipp's Bulk Super Pty Ltd
268 Mr Roger Reynoldson
269 Mr Gary Hare
270 Mr M J Hare
271 Murray Darling Fisheries
272 Mr Jono Alexander
273 Citrus Australia SA Region (CASAR)
274 Mr Malcolm Holm
275 Mr Peter Kaylock
276 Mr & Mrs Andrew & Kellie Crossley
277 Mr John Girdwood
278 Mr Mark Brear, Riverina Crop Care Pty Ltd
279 Gwydir Valley Irrigators Association
280 Mr Andrew Hermiston
281 Lachlan Shire Council
282 Southern Fishermen's Association
283 Ms Nicole Alexander
284 Mr Glenn Rotaro
285 Murray River Action Group Inc.

286 Dr Jennifer Marohasy, Myth and the Murray Group

287 Broken Hill City Council

288 National Farmers' Federation

289 NSW Farmers' Association

290 Leeton Shire Council

291 Ms Emily Bryan

292 Mr Jim Lindsay

293 Murray River Group of Councils

294 Regional Development Australia - Riverina

295 Murrumbidgee Irrigation

296 Mr Joe Dal Broi

297 Murray-Darling Basin Authority - Basin Community Committee

298 Murray Darling Association Inc.

299 Mr & Mrs Joe & Lorraine Leese

300 Name Withheld

301 Lachlan Valley Water

302 Name Withheld

303 Mr Bert Schultz

304 Dr Kerri Muller

305 Mrs & Mr Joanne & Barry Pfeiffer

306 Mr & Ms Robert Kay & Rose-Marie Stoneham

307 Murray Local Land Services

308 Moira Private Irrigation Disrtict

309 Murrumbidgee Valley Food and Fibre Association Inc (MVFFA)

310 Macquarie River Food & Fibre

311 Australian Dairy Industry Council

312 Tatura Milk Industries (A Bega Cheese Company)

313 Shire of Campaspe

314 Murray Valley Private Diverters

315 RDA Murraylands & Riverland Inc (RDAMR)

316 Hon Niall Blair MLC, NSW Government - Minister for Primary Industries, Minister for Lands and Water

317 Ms Wendy McDonald

318 Ricegrowers Association of Australia
319 Ms Sally J Dye
320 Mrs Meredith Whykes-Tasker
321 Ms Louise Burge
322 Mr Roger Knight
323 Mr Neil J Eagle
324 Hon Dr Sharman Stone
325 Mr Andrew Burge
326 Ms Sophie Burge
327 Murray Darling Association Inc.
328 Mr & Mrs John & Clare Sinclair, Nutfield Partnership
329 Murray Goulburn Co-operative Co. Limited (Devondale Murray Goulburn)
330 Mr & Mrs Andrew & Karen Williamson
331 Mr Ron MacSherton
332 Mr Richard Walters
333 Mr & Mrs Ron & Val McWhae
334 Mr Rob Foster
335 Mr Bill Bagley
336 Mr Rob Locke
337 Mr Neil Shillabeer
338 Mr Steve Briggs
339 Mr Alan Rothacker
340 Ms Jacqui Pasquale
341 Mr Mike South
342 Ms Helen Fischer
343 Mr Peter Lording
344 Mr & Mrs Andrew & Carole Turner
345 Mr Chris Hogendyk
346 Mr Paul Connellan, Narwie Partners
347 Mr Trevor Harden
348 Prof Michael Young
349 Wakool River Association

350 Bonlac Supply Company
351 Fonterra Australia
352 Confidential
353 Mr Shaun Creighton
354 Ms Shirley Smith
355 Professor Richard Kingsford
356 Ms Anne Hare
357 Mr Ken Crossley
358 Ms Jeanine Bird
359 Yenda Producers Co-operative Society Ltd
360 Mr David Evans
361 Mr Bruce W Thompson
362 Mr Sean D Murphy
363 Family First South Australia
364 South Australian Government
365 Macquarie Cotton Growers Association
366 Ms Caren Martin
367 Murrumbidgee Private Irrigators Inc
368 Mrs Virginia Tropeano
369 Mr Geoff May
370 Mr Wade Northausen
371 Shooting Sports Council of Victoria
372 Hon Lisa Neville MP
373 Ms Margaret Gambling
374 Mr Vern Leng
375 Mr Rob England
376 Mr David Thomson
377 Mr & Mrs Stephen & Elizabeth English
378 Ms Kylie Kilroy
379 Mr Lindsay Leake
380 Mr Ian Lockhart
381 Mr & Mrs Gary & Yvette Frahn, Yhlpa Rescources Pty Ltd
382 Ms Judith Graham

383 Ms Anita Brown

384 Ms Maria Riedl

385 Mrs Frances Pietroboni

386 Mr Garry Baker

387 Ms Alison Couston

388 Mr Dean Smith

389 Mr Peter Gell, Federation University Australia

390 Hon Brian Chatterton

391 Australian Environment Foundation

392 Country Mayors Association of NSW

393 Mr Adrian Pederick MP

394 Goulburn-Murray Irrigation District Water Leadership Forum

395 Goulburn-Murray Water

396 Mr David Allen

397 McConnell Dowell Constructors (Aust.) Pty Ltd

398 Mr Malcolm Hill

399 Mr Daryl McDonald

Answers to questions on notice

1 Answers to Questions on notice by Dept of the Environment at a Public Hearing held in Canberra, ACT on 18 September 2015 (1)

2 Answers to Questions on notice by Dept of the Environment at a Public Hearing held in Canberra, ACT on 18 September 2015 (2)

3 Answers to Questions on notice by Murray–Darling Basin Authority (MDBA) at a Public Hearing held in Canberra, ACT on 18 September 2015

4 Answers to Questions on notice by Commonwealth Environmental Water Office (CEWH) at a Public Hearing held in Canberra, ACT on 18 September 2015

5 Answers to Questions on notice by Balonne Shire Council at a Public Hearing held in Canberra, ACT on 18 September 2015

6 Answers to Questions on notice by Hay Shire Council at a Public Hearing held in Echuca, VIC on 5 November 2015

7 Answers to Questions on notice by Victorian Farmers Federation at a Public Hearing held in Shepparton, VIC on 6 November 2015

8 Answers to Questions on notice by Australian Dairy Farmers Ltd at a Public Hearing held in Shepparton, VIC on 6 November 2015

9 Answers to Questions on notice by Mr Chris Bagley at a Public Hearing held in Goolwa, SA on 8 December 2015

10 Answers to Questions on notice by Dr Jacki Schirmer at a Public Hearing held in Canberra, ACT on 5 February 2016

11 Answers to Questions on notice by the Department of Agriculture and Water Resources at a Public Hearing held in Canberra, ACT on 5 February 2016

12 Answers to Questions on notice by the Commonwealth Environmental Water Office (CEWH) at a Public Hearing held in Canberra, ACT on 5 February 2016

13 Answers to Questions on notice by the South Australian Government at a Public Hearing held in Canberra, ACT on 5 February 2016

14 Answers to Questions on notice by Waterfind at a Public Hearing held in Canberra, ACT on 5 February 2016

15 Answers to Questions on notice by the Murray-Darling Basin Authority at a Public Hearing held in Canberra, ACT on 5 February 2016 (1)

16 Answers to Questions on notice by the Murray-Darling Basin Authority at a Public Hearing held in Canberra, ACT on 5 February 2016 (2)

Tabled documents

1 Document Tabled by Murray-Darling Basin Authority at a public hearing held in Canberra, ACT on 18 September 2015 (1)

2 Document Tabled by Murray-Darling Basin Authority at a public hearing held in Canberra, ACT on 18 September 2015 (2)

3 Document Tabled by Murray-Darling Basin Authority at a public hearing held in Canberra, ACT on 18 September 2015 (3)

4 Document Tabled by Mr Christopher Rawlins at a public hearing held in Broken Hill, NSW on 26 October 2015

5 Document Tabled by Ms Karen Page (Menindee Regional Tourist Association) at a public hearing held in Broken Hill, NSW on 26 October 2015

6 Document Tabled by Regional Development Australia Riverina at a public hearing held in Griffith, NSW on 27 October 2015

7 Document Tabled by Murrumbidgee Irrigation at a public hearing held in Griffith, NSW on 27 October 2015

8 Document Tabled by Darren De Borteli at a public hearing held in Griffith, NSW on 27 October 2015

9 Document Tabled by Macquarie River Food & Fibre at a public hearing held in Griffith, NSW on 27 October 2015

10 Document Tabled by Lachlan Shire Council at a public hearing held in Griffith, NSW on 27 October 2015

11 Document Tabled by Lake Meran Diversion Licence Holders Group at a public hearing held in Echuca, VIC on 5 November 2015

12 Document Tabled by Mr Neil Eagle at a public hearing held in Echuca, VIC on 5 November 2015

13 Document Tabled by Mr Roger Knight at a public hearing held in Echuca, VIC on 5 November 2015

14 Document Tabled by Raelene Peel - Kerang Lakes Land & Water Action Group at a public hearing held in Echuca, VIC on 5 November 2015

15 Document Tabled by Murray Valley Private Diverters at a public hearing held in Echuca, VIC on 5 November 2015

16 Document Tabled by Murray Darling Association at a public hearing held in Echuca, VIC on 5 November 2015

17 Document Tabled by Moira Private Irrigation District at a public hearing held in Echuca, VIC on 5 November 2015

18 Document Tabled by Mr Lindsay Schultz at a public hearing held in Echuca, VIC on 5 November 2015

19 Document Tabled by The Hon Dr Sharman Stone MP at a public hearing held in Shepparton, VIC on 6 November 2015

20 Document Tabled by Mr Stuart Brown (Bega Cheese and Tatura Milk Industries) at a public hearing held in Shepparton, VIC on 6 November 2015

21 Document Tabled by Mrs Karen Williamson at a public hearing held in Shepparton, VIC on 6 November 2015

22 Document Tabled by Ms Alison Couston at a public hearing held in Shepparton, VIC on 6 November 2015

23 Document Tabled by Prof. Mike Young at a public hearing held in Goolwa, SA on 8 December 2015 (1)

24 Document Tabled by Prof. Mike Young at a public hearing held in Goolwa, SA on 8 December 2015 (2)

25 Document Tabled by Prof. Mike Young at a public hearing held in Goolwa, SA on 8 December 2015 (3)

26 Document Tabled by Prof. Mike Young at a public hearing held in Goolwa, SA on 8 December 2015 (4)

27 Document Tabled by Dr Jennifer Marohasy at a public hearing held in Goolwa, SA on 8 December 2015

28 Document Tabled by Mr Ken Jury at a public hearing held in Goolwa, SA on 8 December 2015

29 Document Tabled by Coorong District Council - at a public hearing held in Goolwa, SA on 8 December 2015

30 Document Tabled by The Marina Hindmarsh Island at a public hearing held in Goolwa, SA on 8 December 2015

31 Document Tabled by Ngarrindjeri Regional Authority at a public hearing held in Goolwa, SA on 8 December 2015

32 Document Tabled by Mr Peter Gell at a public hearing held in Goolwa, SA on 8 December 2015

33 Document Tabled by Mr Trevor Harden at a public hearing held in Goolwa, SA on 8 December 2015

34 Document Tabled by Ms Anne Hartnett at a public hearing held in Goolwa, SA on 8 December 2015

35 Document Tabled by National Irrigators' Council at a public hearing held in Renmark, SA on 9 December 2015

36 Document Tabled by Dr Jacki Shirmer at a public hearing held in Canberra, ACT on 5 February 2016

37 Document Tabled by Waterfind at a public hearing held in Canberra, ACT on 5 February 2016

38 Document Tabled by Mr David McKenzie at a public hearing held in Canberra, ACT on 5 February 2016

Appendix 2
Public Hearings

Canberra ACT, 18 September 2015

Committee Members in attendance: Senators Canavan, Day, Leyonhjelm, Madigan, McAllister, Ruston.

Witnesses

COSTELLO, Mr Steve, Assistant Secretary, Policy, Community Engagement and Portfolio Management Branch, Department of the Environment

DICKSON, Dr Rhondda, Chief Executive, Murray-Darling Basin Authority

DREVERMAN, Mr David, Executive Director, River Management Division, Murray-Darling Basin Authority

FOSTER, Mr John, Acting Assistant Secretary, Environmental Water Use Branch, Department of the Environment

GALEANO, Mr David, General Manager, Social and Economic Policy Analysis, Policy and Planning Division, Murray-Darling Basin Authority

GOODAY, Mr Peter, Assistant Secretary, Farm Analysis and Biosecurity Branch, Australian Bureau of Agricultural and Resource Economics and Science, Department of Agriculture

LAUDER, Ms Michelle, Assistant Secretary, Water Infrastructure Branch, Sustainable Agriculture and Fisheries Division, Department of Agriculture

MANNING, Mr Greg, Assistant Secretary, Wetlands Policy and Projects Branch, Department of the Environment

MUES, Mr Colin, Acting Executive Director, Environmental Management Division, Murray-Darling Basin Authority

PAPPS, Mr David, Commonwealth Environmental Water Holder, Department of the Environment

PARKER, Mr David John, Deputy Secretary, Department of the Environment

SLATYER, Mr Anthony James, First Assistant Secretary, Water Division, Department of the Environment

THOMPSON, Mr Ian George, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture

TOWNSEND, Mr Phil, Manager of Social and Economic Integration, Policy and Planning Division, Murray-Darling Basin Authority

WILLIAMS, Mr Brent, General Manager, Constraints Management Taskforce, River Management Division, Murray-Darling Basin Authority

St George QLD, 29 September 2015

Committee Members in attendance: Senators Canavan, Day, Leyonhjelm, Madigan.

Witnesses

ANDERSON, Mr Mark, Owner, Dirranbandi Motor Inn

BROWN, Councillor Raymond Claude, Mayor, Western Downs Regional Council

BURNETT, Mr Stephen Victor, Private capacity

BURRELL, Mr Jonathan, Private capacity

CONNOLLY, Mr Bruce, Private capacity

CONNOLLY, Mrs Tanya, Private capacity

CROTHERS, Mr Donald, Secretary, Smartrivers

DESHON, Mr Frank, Chair, Smartrivers

FESSEY, Mr Edward, Chair, Lower Balonne Floodplain Association

GOUDIE, Mr Steve, Manager, Water Services, Department of Natural Resources and

HINRICHSEN, Mr Lyall, Acting Deputy Director-General, Policy and Program Support, Department of Natural Resources and Mines

McCOSKER, Mr Andrew Thomas, Employee, Dirran Ag Spares

McDOUGALL, Councillor Richard John, Goondiwindi Regional Council

MORRIS, Mr Errol, Private capacity

MURPHY, Mr Grant, Sole Proprietor, Grant Murphy Pty Ltd

MURRAY, Mr Michael Bernard, General Manager, Cotton Australia

NAPIER, Mr Timothy Robert, Executive Officer, Border Rivers Food & Fibre

NICOL, Mr Gregory, Private capacity

O'NEIL, Councillor Cameron, Maranoa Regional Council

O'TOOLE, Mrs Samantha, Owner/Operations Manager, Balonne Airwork Pty Ltd

PETERS, Mr Malcolm, Chair, Northern Basin Advisory Committee, Murray Darling Basin Authority

PRESCOTT, Mr Chad, Member, Smartrivers

QI, Mr Col, Sole Proprietor, Dirranbandi Foodstore

RITCHIE, Mr John, Acting Director, Murray-Darling Program, Department of Natural Resources and Mines

SCHULTZ, Mr Jason Carl, Service Manager, St George, SunWater Limited

STACEY, Mr Phillip Albert, Partner, Dirranbandi Bakery

STEPHENS, Mr Patrick John, Private capacity

STEWART, Councillor Donna Sheryl, Mayor, Balonne Shire Council

SUTTOR, Mr Ben, Regional Manager, Queensland Cotton

TODD, Mr Ian, Chairman, Smartrivers

TRAVERS, Mr John, St George & District Chamber of Commerce

TREWEEKE, Mr Rory, member, Lower Balonne Floodplain Association

VAUGHAN, Mr Dave, Private capacity

WATERS, Mr Ronald, trustee, Kamilaroi Land Trust

WILSON, Mrs Karen Lynn, Owner/Manager, The Linen Cupboard

Broken Hill NSW, 26 October 2015

Committee Members in attendance: Senators Day, Leyonhjelm, Madigan, McAllister, Williams.

Witnesses

BROWNE, Councillor Marion, Broken Hill City Council

CLIFTON, Mr Darryn Lee, Founder, Broken Hill, Menindee Lakes: WE WANT ACTION Facebook Group

DINEEN, Mr Thomas Stanley (Stan), Private capacity

GALLAGHER, Councillor David William, APM, Deputy Mayor, Broken Hill City Council

O'HALLORAN, Councillor Stephen, Balranald Shire Council

PAGE, Mrs Karen Lynne, President, Menindee Regional Tourist Association Inc.

RAWLINS, Mr Christopher John, Private capacity

Griffith NSW, 27 October 2015

Committee Members in attendance: Senators Day, Leyonhjelm, Madigan, McAllister, Williams.

Witnesses

BULLER, Mrs Debbie, President, Murrumbidgee Valley Food and Fibre Association

DAL BROI, Councillor John, Mayor, Griffith City Council

DAL BROI, Mr Joseph, Private capacity

DALTON, Mrs Helen Jennifer, President, New South Wales Farmers Griffith District Council and Branch

DAVEY, Ms Perin, Policy, Communications and Compliance Manager, Murray Irrigation Ltd

De BORTOLI, Mr Darren, Managing Director, De Bortoli Wines Pty Ltd

DUNCAN, Mr David, Consultant, Macquarie River Food & Fibre

EGAN, Mr Michael John, Chairman, Macquarie River Food & Fibre

HALL, Councillor Mark, Councillor, E Ward, Lachlan Shire Council

HOGAN, Councillor Terence Noel (Terry), Chairman, Riverina and Murray Regional Organisation of Councils

HOGENDYK, Mr Chris John, Chair, Macquarie Marshes Environmental Trust

HOWARD, Associate Professor Jonathon Leigh, NPA Board Representative, Inland Rivers Network

HUTCHINSON, Mrs Karen, Customer Service Manager, Murrumbidgee Irrigation Limited

JOHNSTON, Mr Phil, Manager, Tourism and Development, Bourke Shire Council

KIRKUP, Mrs Gillian, Chairman, Murrumbidgee Irrigation Limited

LAIRD, Councillor Peter Archibald, Mayor, Carrathool Shire Council

LEWIS, Councillor Andrew, Mayor, Bourke Shire Council

MAYTOM, Councillor Paul, Mayor, Leeton Shire Council

McKENZIE, Mr Mark de lacy, Chief Executive, New South Wales Irrigators' Council

PIEROTTI, Mr Paul, President, Griffith Business Chamber

PIKE, Mr Ronald Keith, Private capacity

RENEHAN, Mr Michael, Chief Executive Officer, Murray Irrigation Ltd

RITCHIE, Mr Mark William, Executive Officer, Regional Development Australia, Riverina

SIMPSON, Mr Bruce, Chairman, Murray Irrigation Ltd

STOTT, Mr Richard Joseph, Chairman, New South Wales Irrigators' Council

STUBBS, Mr Raymond Oscar, Executive Officer, Riverina and Murray Regional Organisation of Councils

WASS, Mr Anthony Edward, Committee Person, Macquarie Marshes Environmental Trust

WIELINGA, Mr Ashley Peter, General Manager, Warren Shire Council

Echuca VIC, 5 November 2015

Committee Members in attendance: Senators Day, Leyonhjelm, Madigan, Marshall, McKenzie.

Witnesses

BARLOW, Mr Luke, Chairman, Moira Private Irrigation District

BRADBURY, Ms Emma Ruth, Chief Executive Officer, Murray Darling Association

BRADFORD, Mr John, Delegate, Southern Riverina Irrigators

BRADY, Mr John, CEO, Kagome Australia

BURGE, Ms Louise, private capacity

CONDELY, Mr Norman James, Representative, Lake Meran Diversion Licence Holders Group

DUNCAN, Mr Guy, Private capacity

EAGLE, Mr Neil James, Private capacity

KNIGHT, Mr Alister Edward, Farmer/Managing Farmer, Nyton Park Agriculture

KNIGHT, Mr Alister Edward, Private capacity

LOLICATO, Mr John, Chairman, Murray Valley Private Diverters

MAY, Mr David Greig, Chairman, Wakool Landholders Association

OBERIN, Mr Donald, Private capacity

PATTISON, Mr Kenneth William (Ken), Private capacity

PEEL, Mrs Raelene Marie, Secretary, Kerang Lakes Land and Water Action Group

PIKE, Mr John Robert, Chairperson, Lake Meran Diversion Licence Holders Group

SCHULTZ, Mr Lindsay Gordon, Private capacity

SIMMS, Mr Stuart Frank, Chair, Kerang Lakes Land and Water Action Group

SNELSON, Mr Stephen Douglas, Chairman, Koyuga South Irrigators Group

TERBLANCHE, Mr Jack, Director of Community Development, Hay Shire Council

TOLL, Mr Gregory Lloyd, National President, Murray Darling Association

WALSH, The Hon. Peter, MLA, Member for Murray Plains, Victoria

WHYKES-TASKER, Ms Meredith, Owner/Director, Taskers Garage

WILSON, Councillor Leigh, Mayor, Campaspe Shire Council

Shepparton VIC, 6 November 2015

Committee Members in attendance: Senators Day, Leyonhjelm, Madigan, McAllister, McKenzie.

Witnesses

ANDERSON, Mr Richard, Chair, Water Council, Victorian Farmers Federation

BEER, Mrs Jan, Upper Goulburn River Catchment Association

BLACKMORE, Mr David, Private capacity

BROWN, Mr Stuart Arthur, Milk Supply Manager, Tatura Milk Industries

CANNY, Mr John James, Private capacity

COURT, Mr Terry, Goulburn Valley Environment Group

COUSTON, Mrs Alison Maree, Private capacity

DALMAU, Mr Mike, Private capacity

DANIELI, Mr Robert, Private capacity

DANIELI, Mrs Marilyn Dianne, Private capacity

EVANS, Mr David, Chair, Upper Catchment Water Committee

HARRISON, Mr Chris, Private capacity

HARRISS-BUCHAN, Dr Arlene, Healthy Rivers Campaigner,

Australian Conservation Foundation

HOEY, Mr Daryl, National Councillor, Chair, Natural Resources Policy Committee,

Australian Dairy Industry Council

INGLEBY, Mr Paul, Director, Australian Consolidated Milk, Director, Pactum Dairy Group

LE FEUVRE, Ms Juliet, Healthy Rivers Campaign Manager, Environment Victoria

MEGGITT, Mr Edward John, Director, Goulburn River Trout Pty Ltd

MILLER, Ms Claire, Manager, Policy Strategy, Dairy Australia, Australian Dairy Industry Council

NORTHAUSEN, Mr Wade, President, West Goulburn Branch, United Dairyfarmers of Victoria,

Victorian Farmers Federation

ODGERS, Mr Jeff, Director, Bega Cheese

PATTISON, Mr Ken, Private capacity

PETTIGREW, Mr John Maurice, Water Spokesman, Environmental Farmers Network

RIDD, Mr Lesley John, Private capacity

RIDD, Mr Rodney James, Private capacity

RUSSELL, Mrs Jillienne Mary (Jill), Private capacity

SINCLAIR, Mr John Richard Hilliard, Private capacity

STONE, the Hon. Dr Sharman Nancy, Member for Murray, Commonwealth Parliament

WALSH, Mr John, Councillor, Murrindindi Shire Council

WILLIAMSON, Mr Andrew, Private capacity

WILLIAMSON, Mrs Karen, Private capacity

YOUNG, Mrs Julie, Private capacity

Goolwa SA, 8 December 2015

Committee Members in attendance: Senators Canavan, Day, Edwards, Leyonhjelm, Madigan, Simms, Urquhart, Xenophon.

Witnesses

BAGLEY, Mr Chris, Private capacity

CHAPMAN, Mr Thomas Lincoln, Director, The Marina Hindmarsh Island

CLARK, Mr John Russell, Committee Member, Southern Alexandrina Business Association Inc.

DODD, Mr Samuel Michael, Chairman, Meningie and Narrung Lakes Irrigators Association

FEATHERSTON, Councillor Barry, Private capacity

FISCHER, Mrs Lesley, Private capacity

GAMBLING, Ms Margaret, Private capacity

GELL, Professor Peter Andrew, Professorial Research Fellow, Federation University Australia

GRENFELL, Mr Simon, General Manager, Engineering and Environment, Alexandrina Council

GRUNDY, Mr Colin Jack, Director, Mundoo Pastoral Company Pty Limited

HARDEN, Mr Trevor John, Private capacity

HARTNETT, Ms Anne, Chairman, River Lakes and Coorong Action Group, and Chairman, Point Sturt and Districts Landcare Group Inc.

HARVEY, Mr Paul, Member, River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group

HENSHALL, Mr Bill, Private capacity

HERA-SINGH, Mr Garry, Chairman, Southern Fishermen's Association

JAENSCH, Councillor Neville, Mayor, Coorong District Council

JURY, Mr Kenneth James, Private capacity

KOOLMATRIE, Mr Mark, Private capacity

LEESE, Mrs Lorraine, Private capacity

LYONS, Mr Kenneth Gordon, Chief Executive Officer, South Australian Dairyfarmers' Association Inc.

MacDONALD, Mr Neil, Executive Officer, Southern Fishermen's Association

MANN, Ms Shen, Environmental Strategy Officer, Alexandrina Council

MAROHASY, Dr Jennifer Joyce, Spokesperson, Myth and the Murray

MARTIN, Mrs Caren, Chairperson, South Australian Murray Irrigators

McDONALD, Mr Daryl, Private capacity

PARKES, Councillor Keith, Mayor, Alexandrina Council

PATERSON, Mr Bill, Chairman, Community Advisory Panel for the Coorong, Lower Lakes and Murray Mouth

PEDERICK, Mr Adrian Stephen, Private capacity

PYLE, Mr Graeme, Private capacity

REEDY, Mr Richard, Private capacity

REX, Miss Suzanne, Private capacity

RIGNEY, Mr Grant, Board Secretary, Ngarrindjeri Regional Authority

ROWAN, Mr Ian, Private capacity

SCHMIDT, Mr Grantley Preston, Private capacity

SHILLABEER, Mr Neil H, Private capacity

SMITH, Mr Peter, OAM, Private capacity

SOUTH, Mr Michael Lawton Harrington, Private capacity

YOUNG, Professor Mike, Private capacity

Renmark SA, 9 December 2015

Committee Members in attendance: Senators Canavan, Day, Edwards, Leyonhjelm, Madigan, Simms, Urquhart, Xenophon.

Witnesses

BYRNE, Mr Christopher, Executive Officer, Riverland Wine

CHESSON, Mr Tom, Chief Executive Officer, National Irrigators Council

DUGGIN, Mr Peter, Presiding Member, Renmark Irrigation Trust

GISHEN, Mr Mark, Environmental Project Officer, South Australian Wine Industry Association Inc.

GRIEGER, Mr Tim, Executive Officer, South Australian Fresh Fruit Growers Association

HOPTON, Mr Hugo, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board

MARTIN, Ms Caren, Chairperson, South Australian Murray Irrigators

MARTINSON, Mr Neil, Mayor, Renmark Paringa Council

McMAHON, Mr Gavin, Chief Executive Office, Central Irrigation Trust

MYERS, Councillor Kevin Paul, Spokesperson, Murray Mallee Local Government Association

NORTON, Mr Trevor, Member, District Council of Loxton Waikerie

PERRY, Mr Darren, Chairperson, Murray Lower Darling Rivers Indigenous Nations

ROBERTSON, Mr James, Owner, Chowilla Station

STARICK, Mrs Sharon, Presiding Member, South Australian Murray-Darling Basin Natural Resources Management Board

Canberra ACT, 5 February 2016

Committee Members in attendance: Senators Canavan, Day, Leyonhjelm, Madigan, McAllister.

Witnesses

BERG, Mr Chris, Senior Fellow, Institute of Public Affairs

COLREAVY, Ms Mary, Assistant Secretary, Water Acquisition and Markets, Department of Agriculture and Water Resources

COSTELLO, Mr Steve, Assistant Secretary, Southern Water Use, Aquatic Science and Community Engagement Branch, Commonwealth Environmental Water Office, Department of the Environment

DAVIDSON, Professor Sinclair, Senior Fellow, Institute of Public Affairs

DREVERMAN, Mr David, Executive Director, River Management Division, Murray-Darling Basin Authority

FISHER, Mr Tim, Assistant Secretary, Water Policy, Department of Agriculture and Water Resources

GALEANO, Mr David, General Manager, Social and Economic Policy, Policy and Planning Division, Murray-Darling Basin Authority

GLYDE, Mr Phillip, Chief Executive, Murray-Darling Basin Authority

HARGREAVES, Mr Scott, Senior Fellow, Institute of Public Affairs

JAMES, Mr Russell, Executive Director, Policy and Planning Division, Murray-Darling Basin Authority

JOHNSON, Ms Genine, Acting General Manager, Partnerships and Engagement, Corporate Division, Murray-Darling Basin Authority

KNOWLES, Ms Jacqueline, Natural Resources Management Manager, National Farmers' Federation

McKENZIE, Mr David Ernest, Member, Goulburn Murray Irrigation District Water Leadership Forum

McKENZIE, Mr Mark, Water Taskforce Member, National Farmers' Federation

MUES, Mr Colin, Executive Director, Environmental Management Division, Murray-Darling Basin Authority

PAPPS, Mr David, Commonwealth Environmental Water Holder, Commonwealth Environmental Water Office, Department of the Environment

PARKER, Mr David, Deputy Secretary, Department of Agriculture and Water Resources

RENDELL, Mr Robert, Private capacity

ROONEY, Mr Thomas, President, Waterfind Pty Ltd

SCHIRMER, Dr Jacki, Private capacity

SHEED, Ms Suzanna, MP, Chairperson, Goulburn Murray Irrigation District Water Leadership Forum

TAYLOR, Mr Mark, Assistant Secretary, Wetlands, Policy and Northern Water Use Branch, Commonwealth Environmental Water Office, Department of the Environment

TOWNSEND, Mr Phillip, Senior Adviser, Economic Analysis, Policy and Planning Division, Murray-Darling Basin Authority

WALSH, Mr Alister, Chief Executive Officer, Waterfind Pty Ltd

WILLIAMS, Mr Brent, General Manager, Constraints Management Taskforce, River Management Division, Murray-Darling Basin Authority

Appendix 3

Recent history of basin water reform[1]

1988 - To support the Murray-Darling Ministerial Council, the Murray-Darling Basin Commission was established, under the Murray-Darling Basin Agreement, to manage the water of the River Murray and lower Darling River, advise on management of the Basin's environmental resources and oversee implementation of policies and programs aimed to help achieve sustainable use.

1988 - Murray-Darling Basin Ministerial Council adopts the Salinity and Drainage Strategy, including salt-interception scheme construction and an accountability system of salinity credits and debits.

1994 - COAG Water Reform Framework adopted to address over-allocation and included the separation of land and water property rights.

1995 - Basin governments agreed to 'cap' surface water diversions at 1993-94 levels of development.

2000 - Revised Basin Salinity Management Strategy agreed, incorporating end-of-valley targets.

2004 - In conjunction with the signing of the National Water Initiative, The Living Murray program commenced with a funding commitment to recover 500 gigalitres of water for the environment.

2007 - $1 O billion National Plan for Water Security announced to address over-allocation, improve water efficiency and introduce institutional and governance reforms, particularly in the Basin.

2007 - Passage of the Water Act 2007 (Cwth) allowed the Australian Government to take a more prominent role in coordinating management of Basin's water resources. Also established MDBA.

2008 - Memorandum of Understanding signed between Basin States and Commonwealth setting out principles for co-operative, efficient and effective management of Basin's water resources.

2008 - Basin States signed Intergovernmental Agreement on Murray-Darling Basin Reform, setting out arrangements to implement the MOU.

2008 - Water Act amended to incorporate provisions of MOU and IGA on Murray-Darling Basin Reform.

2010 - Guide to the proposed Basin plan released.

2011 - Release of the Draft Basin Plan

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1 Department of the Environment, *Submission 50,* p.10.

2012 - Proposed Basin Plan released and advice sought from the Murray-Darling Basin Ministerial Council under Section 43(A) of the Water Act. Advice received included the need for a Sustainable Diversion Limit adjustment mechanism and a Constraints Management Strategy.

2012 - The Basin Plan was made.

2013 - Victoria, South Australia and the Australian Capital Territory sign onto the Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin.

2013 - Constraints Management Strategy released.

2014 - New South Wales and Queensland sign onto the Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin.

2014 - Commonwealth releases the Water Recovery Strategy with a priority to invest in water saving infrastructure projects over purchasing as a means of returning water to the environment.

2014 - Basin Plan water trading rules commenced.

2014 - Findings of the independent review of the Water Act 2007 released.

2014 - Commonwealth environmental water Trading Framework released, outlining the CEWH's legislative requirements and operating rules.

2015 - First Basin Plan Annual Report

2015 - Release of independent Stocktake Report on progress in the SOL Adjustment Mechanism

2015 - Legislation to limit purchasing to 1500 GL passes the Parliament on 14 September.

Appendix 4

Roles and responsibilities for Murray–Darling Basin water reforms[1]

In broad terms, the roles and responsibilities for water reform in the Murray–Darling Basin are as follows:

- The Minister for Water approves the Basin Plan (and any amendments), approves the use of program funding (water recovery, SDL adjustment measures etc.), considers evaluations of overall progress, and chairs the MDB Ministerial Council.
- Department of Agriculture and Water Resources is responsible for policy advice and program implementation, in particular investing in water recovery and SDL adjustment measures. The Department also chairs the Basin Officials Committee.
- Murray–Darling Basin Authority oversees implementation of the Basin Plan, including the Sustainable Diversion Limits, reporting direct to the Minister.
- Commonwealth Environmental Water Holder manages the use of Commonwealth-held environmental water consistent with the Basin Plan, to achieve best possible environmental outcomes.
- Basin States own water and are responsible for allocating it to licence holders consistent with their water resource plans. They also hold and deliver environmental water, and are responsible for implementing the Basin Plan in their own jurisdictions.
- Australian Competition and Consumer Commission provides advice to the Minister on water market rules and water charge rules which are intended to free up trade and regulate costs of monopoly infrastructure (e.g. access to irrigation schemes), and to monitor and enforce these rules.
- Productivity Commission conducts 5 yearly audits of Basin Plan implementation.

1 Murray-Darling Basin Authority, *Submission 243*, p.43. The table has been reproduced in a different format to the original, to increase font size.

Roles and responsibilities for Murray–Darling Basin water reforms

		Minister for Water
REVIEWS	SDL Adjustment Process	Support SDL adjustment package through Ministerial Council. Adopt amendments to Basin Plan giving effect to the proposed SDL adjustment.
	Constraints	Support constraints measures as part of SDL adjustment package. Note that some constraints projects are also likely to be SDL adjustment projects.
	Northern Basin Review (mid 2016)	Adopt any proposed amendments to Basin Plan and revisions to water recovery strategy in light of northern basin review.
WATER RECOVERY	Buybacks & Infrastructure	Decide on water recovery strategy.
BASIN PLAN	Prepare & implement Basin Plan	Adopt Basin Plan (done). Consider regular reports on Basin Plan implementation, including those to Ministerial Council.
	State Water Resource Plan (WRP) Accreditation	Decision to accredit each state WRP based on MDBA advice. There are 36 plans required by 2019.
	Environmental water planning and delivery	Considers reports on use of environmental water.
	Water Trade	Makes Water Market and Charge Rules on advice of ACCC (done).
	Monitoring and evaluation	Consider 5 yearly evaluations and PC audits.

		Department of Agriculture and Water Resources
REVIEWS	SDL Adjustment Process	As Chair of BOC, facilitate agreed package of SDL adjustment measures (see State role). Implement efficiency measures program and part-fund states to implement supply measures.
	Constraints	Manage $200 million to address constraints.
	Northern Basin Review (mid 2016)	Participate in the review. Consider changes to water recovery strategy in light of the review.
WATER RECOVERY	Buybacks & Infrastructure	Implement the Commonwealth's water recovery strategy including cap on buybacks, and recovery of water for enhanced environmental outcomes (efficiency measures) under the SDL adjustment mechanism.
BASIN PLAN	Prepare & implement Basin Plan	Input to draft Plan (done). As BOC Chair, facilitate development of agreed state comments (done).
	State Water Resource Plan (WRP) Accreditation	
	Environmental water planning and delivery	
	Water Trade	Participate in water market as per water recovery strategy.
	Monitoring and evaluation	Annual and five yearly reports on water recovery and investment to MDBA.

		Murray–Darling Basin Authority
REVIEWS	SDL Adjustment Process	Develop method for assessing 'supply' measures based on Basin Plan (done). Apply method and modelling to determine amount of adjustment. Advise Minister on proposed SDL adjustment to Basin Plan.
	Constraints	Develop Constraints Management Strategy. Provide technical advice to states on measures to best implement the strategy, where requested.
	Northern Basin Review (mid 2016)	Conduct 'triple bottom line' review to test if there is a case to change SDLs or pattern of water recovery in the northern basin. Advise Minister on amendments to Basin Plan and changes to water recovery strategy based on the review.
WATER RECOVERY	Buybacks & Infrastructure	Monitor and report progress with water recovery ('Bridging the Gap').
BASIN PLAN	Prepare & implement Basin Plan	Develop Basin Plan including consultation with states and stakeholders (done). Enforce Basin Plan including through annual assessment of state SDL compliance.
	State Water Resource Plan (WRP) Accreditation	Assess state water resource plans and advise Minister on their accreditation.
	Environmental water planning and delivery	Set long term outcomes for environmental watering across Basin (done) and set annual priorities. Coordinate environmental watering at a basin scale.
	Water Trade	Ensure compliance with Basin Plan water trading rules.
	Monitoring and evaluation	Monitor and evaluate economic and social outcomes across Basin with input from Dept on investment. Monitor and evaluate environmental outcomes with input from CEWO and States. PC to audit each 5 years.

		Commonwealth Environmental Water Holder
REVIEWS	SDL Adjustment Process	
	Constraints	Input as required.
	Northern Basin Review (mid 2016)	Participate in the review.
WATER RECOVERY	Buybacks & Infrastructure	Input as required.
BASIN PLAN	Prepare & implement Basin Plan	
	State Water Resource Plan (WRP) Accreditation	
	Environmental water planning and delivery	Manage Commonwealth environmental water holdings consistent with the Basin Plan.
	Water Trade	Manage Commonwealth water portfolio – including trading – in accordance with Water Act (under review).
	Monitoring and evaluation	Monitoring and evaluation of CEWO watering activities. Annual and five yearly reports to MDBA.

		Basin States
REVIEWS	SDL Adjustment Process	Develop proposed supply measures. Agree on package of SDL adjustment measures by 30 June 2016.
	Constraints	Develop proposals to address constraints by mid-2016. Implement agreed measures.
	Northern Basin Review (mid 2016)	Qld and NSW are participating in the review. They will need to advise on their preferred apportionment of the 'downstream' component before the review is finalised. Provide views on any proposed amendments to Basin Plan.
WATER RECOVERY	Buybacks & Infrastructure	Work with Commonwealth to identify ways to maximise water savings made through existing and proposed infrastructure projects (IGA).
BASIN PLAN	Prepare & implement Basin Plan	Advise state views on draft Basin Plan (done). States report on SDL compliance post 2019.
	State Water Resource Plan (WRP) Accreditation	Prepare WRPs suitable for C'wealth accreditation.
	Environmental water planning and delivery	Prepare valley-based long term environmental watering plans and annual priorities. Have regard to MDBA published priorities when conducting environmental watering.
	Water Trade	Implement state trade rules consistent with Basin Plan trade rules and processing trades.
	Monitoring and evaluation	Monitoring and evaluation of environmental outcomes at valley/local scale. Annual and five yearly reports to MDBA.