

The Senate

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Rural and Regional Affairs  
and Transport  
References Committee

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Management of the Murray-Darling Basin

Second interim report: the Basin Plan

October 2012

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Senator Fiona Nash	New South Wales, NATS
Senator Anne Urquhart (to 27 June 2012)	Tasmania, ALP
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to replace Senator Fiona Nash (from 23 August to 24 August 2012)	

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Senator Nick Xenophon	South Australia, IND

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<sup>1</sup> Please note, for this interim report, committee membership is listed from 1 December 2011 onwards.

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## Abbreviations

The Act	<i>Water Act 2007</i>
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABC	Australian Broadcasting Corporation
ABS	Australian Bureau of Statistics
ACF	Australian Conservation Foundation
ANAO	Australian National Audit Office
Basin Plan	Murray-Darling Basin Authority's Proposed Basin Plan
BDL	Baseline Diversion Limit
CEO	Chief Executive Officer
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry
ESLT	Environmentally Sustainable Level of Take
EWP	Environmental Watering Plan
GL/y	gigalitres per year
The Guide	Murray-Darling Basin Authority's Guide to the Proposed Basin Plan
MDBA	Murray-Darling Basin Authority
ML	megalitres
NWC	National Water Commission
SDL	Sustainable Diversion Limit
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities
Wentworth Group	The Wentworth Group of Concerned Scientists

Windsor Report	House of Representatives Standing Committee on Regional Australia, Of drought and flooding rains: Inquiry into the impact of the Guide to the Murray-Darling Basin Plan, May 2011
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# **LIST OF RECOMMENDATIONS**

## **Recommendation 1**

**5.9 The committee recommends that the Murray-Darling Basin Authority (MDBA) publicly release a succinct, non-technical explanation of the assumptions used to develop the 2750 gigalitres per year (GL/y) figure.**

## **Recommendation 2**

**5.10 The committee recommends that the MDBA consider modelling several alternative scenarios other than the 2750 GL/y. All relevant results (including the allocation of different water types) from any modelling must be publically released. The CSIRO must be commissioned to review the effectiveness of any scenario to reach the Water Act's required ecological outcomes. Finally, the socio-economic impacts of any scenario must be independently modelled and the results publicly released.**

## **Recommendation 3**

**5.11 The committee recommends that the MDBA publicly release a succinct, non-technical explanation of its climate change projections and the resulting effects to each Basin catchment's water harvesting potential. This should also include considerations of forest interception of water in the modelling for the return of water to the Murray-Darling Basin system.**

## **Recommendation 4**

**5.14 The committee recommends that the Government commit immediate resources to addressing the information gaps in scientific knowledge in surface and ground water connectivity particularly in the Murray-Darling Basin.**

## **Recommendation 5**

**5.15 The committee recommends that the MDBA further articulate the reasoning for the changes in ground water SDLs that have occurred over the various iterations of the Basin Plan. This should include details of all individual resource units and the aggregate for the Basin.**

## **Recommendation 6**

**5.19** The committee recommends that the MDBA clearly and publicly explain whether the 2750 GL/y target, and any subsequently modelled targets, meet the water requirements of key environmental assets and key ecosystem functions which are set out in the Basin Plan and required by the *Water Act 2007* and to what extent they are met.

## **Recommendation 7**

**5.24** The committee recommends that the MDBA clearly and publicly explain the socio-economic impacts of the 2750 GL/y target and any subsequently modelled targets.

## **Recommendation 8**

**5.25** The committee recommends that when the final Basin Plan is being implemented that the Government introduce support programs for Basin communities that are disproportionately affect by reduced water entitlements.

# Chapter 1

## Introduction and background

### Purpose of this interim report

1.1 The purpose of this interim report is to detail the concerns that the committee has with the Murray-Darling Basin Authority's Proposed Basin Plan (the Basin Plan).<sup>1</sup> The committee's concerns arise because the Murray-Darling Basin Authority (MDBA) has repeatedly ignored the major flaws in the Basin Plan, identified by virtually all relevant stakeholders including farmers, rural communities, scientists, environmentalists, and even the Basin states which referred their powers to the Commonwealth in order to create the Basin Plan. The Minister for Sustainability, Environment, Water, Population and Communities, the Hon Tony Burke MP, has stated his intention to present the Basin Plan to Parliament this year.

1.2 As a result, the committee feels it has little choice but to release this interim report now in a final effort to urge the Government to reconsider the substance of the Basin Plan. Because the Basin Plan is a legislative instrument, the Parliament has no ability to debate amendments to improve the Basin Plan. The Basin Plan will either be agreed to as presented or disallowed in its entirety.

1.3 The committee supports the need for a plan for managing the Murray-Darling Basin, however, it has concern with the lack of transparency and the process followed in developing this Basin Plan.<sup>2</sup> The committee notes that flooding rains of the last two years have returned healthy water levels to the river. This event ended eight years of continuous dredging of the Murray mouth to keep it open,<sup>3</sup> relieved the serious water pressures faced by irrigators, the broader agricultural sector and many rural and regional communities, and replenished the water reserves of many important environmental assets.

1.4 Furthermore, with the significant gaps in the scientific analysis and information underpinning the Basin Plan, Parliament will find it difficult to give the Basin Plan the comprehensive and informed consideration it deserves.

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1 Note: for the purposes of the report, the Guide to the Proposed Basin Plan will be referred to as 'the Guide' and the various iterations of the Proposed Basin Plan will be referred to as 'the Basin Plan'. Where it is necessary to refer to the specific iterations of the Basin Plan, they will be identified by the month of release i.e. the Basin Plan (November 2011), the Basin Plan (May 2012), and the Basin Plan (August 2012). Please note that where direct quotes are used the original nomenclature remains.

2 Note: at the time this interim report was finalised, the final Basin Plan had not been introduced into Parliament. As such, this report provides comment only on the Basin Plan provided to Minister Burke on 28 August 2012 as well as its various precursors.

3 The dredging of the Murray River mouth began in October 2002 and was stopped in December 2010 as part of the 'return of higher flows' to the river. See: [www.waterforgood.sa.gov.au/rivers-reservoirs-aquifers/lower-lakes-coorong/murray-mouth-sand-pumping-project/](http://www.waterforgood.sa.gov.au/rivers-reservoirs-aquifers/lower-lakes-coorong/murray-mouth-sand-pumping-project/) (accessed 20 September 2012).

1.5 The Basin Plan would commence in 2019 and continue through until 2029, so it will inform water policy in the Basin for almost the next two decades. The MDBA needs to assure Australians that its modelling and research will allow Parliament to consider a Basin Plan that is based on the best available science, provides value for taxpayers' money, is fair on irrigators and rural communities, and ensures the long-term ecological sustainability of the Basin. The MDBA also needs to provide a Basin Plan that meets ecological targets and outcomes required by the *Water Act 2007* (the Act).

1.6 Due to the specific focus on the Basin Plan, there are a number of other major issues that this interim report will not cover in detail, that the committee considers essential to its broader inquiry. Instead, these other issues will be given full consideration in the final report. These issues include:

- water trading and buyback arrangements, including the proposed Nimmie-Caira buyback;<sup>4</sup>
- the definition and allocation of different types of water, such as high security, supplementary, and terminal;<sup>5</sup>
- environmental works and measures; and
- possible solutions for the long-term environmental and consumptive water-use problems that are facing the Murray-Darling Basin.

### **Information about the inquiry**

1.7 On 28 October 2010 the Senate referred the matter of the management of Murray-Darling Basin to the Senate Rural and Regional Affairs and Transport References Committee for inquiry. The committee is due to deliver its final report for the inquiry on 1 November 2012.

1.8 The inquiry's terms of reference specifically require the committee to investigate the 'the development and implementation of the Basin Plan.' The full terms of reference are included in Appendix 1.

1.9 To date for the general inquiry (including the coal seam gas interim report tabled on 30 November 2011), the committee has received and published 380 submissions. It has held a total of 12 public hearings in Canberra and interstate. A list of submissions and witnesses can be found in appendices 2 and 3 respectively.

1.10 This report focuses on evidence received since the tabling of the interim report on coal seam gas in November 2011, and particularly on hearings since the beginning of April 2012 as these relate to the most recent and relevant iterations of the Basin Plan.

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4 Note: there is some discussion of the Nimmie-Caira buyback program in chapter 2.

5 Note: there is some discussion of water types in chapters 2 and 4 regarding how the different categories of water licences are considered in the modelling of the 2750 GL/y reduction in take and its socio-economic impacts on the Basin.

## **Acknowledgements**

1.11 The committee would like to thank all those organisations and individuals that have made submissions to the inquiry and appeared as witnesses at public hearings.

## **Note on references**

1.12 References to committee Hansard are to the proof versions. Page numbers may vary between the proof and official version of the Hansard.

## **Structure of the report**

1.13 This report is set out in five short chapters. This first chapter outlines the need for the interim report, information to the inquiry and the background to the Basin Plan. Chapter 2 discusses the issue of surface water and the key criticisms raised in the inquiry regarding the development of the Sustainable Diversion Limits (SDLs) and the target to return 2750 gigalitres per year (GL/y). Chapter 3 deals with the issue of ground water in the Basin Plan and, in particular, the Basin Plan's inadequate treatment of ground water and surface water connectivity. Chapter 4 discusses the failure of the Basin Plan to meet its own stated environmental outcomes and outlines the socio-economic impacts of the plan. Finally, chapter 5 provides an overview of the committee's findings and details the recommendations of the report.

## **Background to the MDB Plan**

1.14 There is a long history of water reform in Australia and water management has long been an issue of national importance. A large component of Australian water reform has focussed on the future environmental, social and economic health of the Murray-Darling Basin. The work of the Australian Government and Basin states led to the passing of the Act to 'deal with the management of water resources in the Basin in the national interest.'<sup>6</sup>

### ***Why an effective Basin plan is necessary***

1.15 The Basin is home to 11 per cent of Australia's population and 20 major rivers including the Darling, the Murray and the Murrumbidgee. According to the Australian Bureau of Statistics (ABS), the Murray-Darling Basin accounts for 40 per cent (or \$15 billion per annum) of Australia's gross value of agricultural production and 65 per cent of Australia's irrigated farms.<sup>7</sup>

1.16 The Murray-Darling Basin has recently experienced what has been described as a "devastating millennium drought" where many communities in the Basin were confronted with the prospect of running out of water. Many irrigators and other water users had their annual water allocations cut to zero. The drought led to continual dredging of the Murray mouth to keep it open, between 2002 and 2010, following four incredibly dry years and over extraction of water. The lack of water put stress on both

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6 MDBA, *Guide to the proposed Basin Plan*, Volume 1, Overview, 8 October 2010, p. xi.

7 ABS, *Completing the Picture - Environmental Accounting in Practice*, 4628.0.55.001, May 2012, p. 66.

the natural environment and on rural communities and farmers that relied on water allocations.<sup>8</sup>

1.17 Despite recent rains, severe droughts will inevitably come again and the development of an effective Basin Plan is a vital step to sensibly and responsibly managing water resources for the long-term. It is necessary that any Basin Plan proposed to Parliament is based on the best available science and modelling and will provide assurance that water will be available to support environmental, social and economic outcomes for future Australians.

*Establishment of the MDBA to deliver the Basin Plan*

1.18 The MDBA was established pursuant to the Act to develop a robust Basin Plan. The objects of the Act provide clear parameters about the management of the water resources, including to:

- give effect to international agreements relevant to the use and management of Basin water resources (such as, the Ramsar Convention which relates to the protection of wetlands, and various agreements regarding migratory birds and animals);<sup>9</sup>
- promote the use and management of the Basin water resources 'in a way that optimises economic, social and environmental outcomes';<sup>10</sup>
- ensure the return to Environmentally Sustainable Levels of Take (ELST) and to protect, restore and provide for the ecological values and ecosystem services of the Murray-Darling Basin;
- improve water security of the Basin water resources; and
- ensure that the management of Basin water resources takes into account the broader management of natural resources in the Basin.<sup>11</sup>

1.19 The MDBA undertook a lengthy process in developing this Basin Plan. The steps undertaken by the MDBA are outlined briefly below.

*Guide to the Proposed Basin Plan, October 2010*

1.20 In October 2010, the MDBA released the *Guide to the Proposed Basin Plan* (the Guide) which outlined proposals for public consultation. The MDBA stated that

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8 See, for example, MDBA, *Proposed Basin Plan consultation report*, May 2012, p. 4; [www.waterforgood.sa.gov.au/rivers-reservoirs-aquifers/lower-lakes-coorong/murray-mouth-sand-pumping-project/](http://www.waterforgood.sa.gov.au/rivers-reservoirs-aquifers/lower-lakes-coorong/murray-mouth-sand-pumping-project/) (accessed 20 September 2012).

9 MDBA, *Revised Draft of the Proposed Basin Plan*, May 2012, p. 194.

10 Section 3 of the *Water Act 2007*.

11 Section 3 of the *Water Act 2007*. The legislative objectives are discussed in further detail in Senate Legal and Constitutional Affairs References Committee, *A Balancing Act: provisions of the Water Act 2007*, June 2011.



the Guide was the 'landmark first-stage document in the process of establishing a plan' for the long-term management of the Basin.<sup>12</sup>

1.21 The Guide proposed that the additional surface water needed for the environment ranged from 3000 to 7600 GL/y.<sup>13</sup> However, the MDBA determined that reductions that exceed 4000 GL/y would not meet the requirements of the Act and accordingly the Authority only examined scenarios between 3000 and 4000 GL/y.<sup>14</sup> The MDBA has altered this range over time.

1.22 The Guide, and the subsequent consultation process, received a great deal of criticism. This criticism has been outlined in multiple public reports, including the House of Representatives Standing Committee on Regional Australia inquiry into the impact of the Guide to the Murray-Darling Basin Plan report titled, *Of drought and flooding rains* (the Windsor Report).<sup>15</sup>

1.23 Central to the proposals outlined in the Guide was that they reflected the best available science at that point in time.

#### *Proposed Basin Plan, November 2011*

1.24 The MDBA continued to amend its proposals, based on stakeholder feedback, which led to the release of the Basin Plan on 28 November 2011. This document, again, was developed for the purposes of further consultation. Accompanying the Basin Plan (November 2011) was the *Plain English Summary of the proposed basin plan* which attempted to set out a summary of the proposals in easy to understand language.

1.25 In the Basin Plan (November 2011), the MDBA outlined specific long-term ESLT including identifying the return of surface water for environmental purposes to be 2750 GL/y (a critique of this figure is provided in Chapter 2).

1.26 In the Basin Plan (November 2011), there was a significant increase of groundwater extraction by 2600 GL/y from that included in the Guide. The increase was made by the MDBA based on the inclusion of the work that various state governments had undertaken to establish caps on sustainable use for groundwater resources, such as the ACT Plan limit, the Achieving Sustainable Groundwater Entitlements program in New South Wales, South Australian natural resource management regulations, and local groundwater management rules in Victoria and

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12 MDBA, *Basin Guide released for public consultation*, 8 October 2010, [www.mdba.gov.au/media\\_centre/media\\_releases/basin-plan-guide-released-for-public-discussion](http://www.mdba.gov.au/media_centre/media_releases/basin-plan-guide-released-for-public-discussion), (accessed 17 September 2012).

13 MDBA, *Guide to the proposed Basin Plan*, Volume 1, Overview, 8 October 2010, pp 125–128.

14 MDBA, *Guide to the proposed Basin Plan*, Volume 1, Overview, 8 October 2010, p. xxi.

15 House of Representatives Standing Committee on Regional Australia, *Of drought and flooding rain*, 2 June 2011, [www.aph.gov.au/Parliamentary\\_Business/Committees/House\\_of\\_Representatives\\_Committees?url=ra/murraydarling/report.htm](http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=ra/murraydarling/report.htm).

Queensland.<sup>16</sup> Since this significant shift, there have been other changes made to the overall groundwater SDL in subsequent versions of the Basin Plan (more detail is provided in Chapter 3).

1.27 The Basin Plan (November 2011) also sets out proposals for further discussion over a 20-week consultation period. It was intended that the results of this consultation would then 'inform the development of the Basin Plan.'<sup>17</sup>

1.28 As a part of the public consultation for the Basin Plan, three public MDBA meetings were staged in Victoria at Shepparton on 13 December 2011, Mildura on 10 February 2012 and Swan Hill on 22 February 2012. The Shepparton and Mildura meetings were held during peak harvest (grain and grapes). Consequently less than a 1000 people attended these meetings in total for irrigation districts representing approximately 35 000 customers.<sup>18</sup>

#### *Proposed Basin Plan – a revised draft, May 2012*

1.29 Following the consultation period for the Basin Plan (November 2011), the MDBA released the Basin Plan (May 2012).<sup>19</sup> This version incorporated changes arising from the consultation process and also reflected new information. The surface water to be returned to the environment remained at 2750 GL/y; however, the groundwater SDL decreased from 4340 GL/y to 3184 GL/y.<sup>20</sup>

1.30 With the Basin Plan (May 2012), the MDBA was confident it had captured a balanced view and the Basin Plan (May 2012) was provided to the Murray-Darling Basin Ministerial Council. The Ministerial Council (which consists of all Basin water ministers and the Federal water minister) had a six week period to consider and comment on the Basin Plan (May 2012) and make suggested changes.<sup>21</sup>

#### *Ministerial Council comments on draft Proposed Plan*

1.31 On July 2012 the Ministerial Council provided its additional comments on the Basin Plan (May 2012) to the MDBA. These comments outlined the areas of

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16 MDBA, *Delivering a Healthy Working Basin: about the draft Basin Plan*, November 2011, p. 33.

17 MDBA, *Plain English summary of the proposed Basin Plan*, November 2011, p. vii.

18 Goulburn-Murray Water, *Proposed Murray-Darling Basin Plan Submission*, April 2012, [www.g-mwater.com.au/downloads/media-releases/Goulburn-Murray Water Proposed Murray Darling Basin Plan Submission.pdf](http://www.g-mwater.com.au/downloads/media-releases/Goulburn-Murray-Water-Proposed-Murray-Darling-Basin-Plan-Submission.pdf), p. 19; MDBA, <http://freeflow.mdba.gov.au/2012/01/25/more-public-meetings-scheduled/> (accessed 2 October 2012); MDBA, <http://freeflow.mdba.gov.au/2011/11/25/public-meetings-scheduled-so-far/> (accessed 2 October 2012).

19 MDBA, *Proposed Basin Plan – a revised draft*, May 2012, [http://download.mdba.gov.au/revised-BP/PBP\\_reviseddraft.pdf](http://download.mdba.gov.au/revised-BP/PBP_reviseddraft.pdf).

20 MDBA, *Addendum to the proposed Groundwater Baseline and Sustainable Diversion Limits: Methods Report*, July 2012, p. 2.

21 MDBA, *Changes to the draft Basin Plan released*, 28 May 2012, [www.mdba.gov.au/media\\_centre/media\\_releases/changes-to-the-draft-basin-plan-released](http://www.mdba.gov.au/media_centre/media_releases/changes-to-the-draft-basin-plan-released), (accessed 17 September 2012).

disagreement with the Basin Plan (May 2012). Specifically, the comments and requests raised by the Council as a whole included the following:

- an SDL adjustment mechanism to be developed which recognises works and measures, investment in infrastructure and on-farm water efficiency to recover water;
- further modelling of a 3200 GL/y 'without constraints' scenarios to be undertaken to determine what environmental outcomes may be achieved;
- equitable downstream apportionment and water recovery to be divided fairly between states;
- removal of the formal 2015 review in the Basin Plan;
- SDLs to commence in 2019 and accredited water resource plans to stand for 10 years (i.e. until 2029);
- additional work to be undertaken regarding groundwater SDLs; and
- insertion of a clause making it clear that the obligation to 'bridge the gap' between current and future SDLs will not be passed from the Commonwealth to the states.<sup>22</sup>

1.32 In addition to the Council's feedback as a whole, each Basin state Minister provided detailed comments to the MDBA for further consideration. These comments detailed state specific concerns, including the call for more water to be recovered for environmental purposes (South Australia), and less water to be returned to the environment (i.e. Victoria, New South Wales) due to social and economic impacts on communities.<sup>23</sup>

#### *Altered Proposed Basin Plan, August 2012*

1.33 Following receipt of the Ministerial Council comments, the MDBA sought further advice from 'the Basin Community Committee, national peak bodies, key scientists and technical experts, indigenous representatives and local government representatives from areas most likely to be affected by the Ministers' propositions.'<sup>24</sup>

1.34 On 28 August 2012, after this further consultation, the MDBA released the Basin Plan (August 2012) along with two volumes of documents outlining its views on the matters raised by the Ministerial Council. Discussion of the feedback it received through consultation on these matters was also provided. The MDBA indicated it had attempted to incorporate matters where there was a consensus position

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22 MDBA, *Attachment A – Council as a whole comments*, 9 July 2012, [http://download.mdba.gov.au/revised-BP/AttachmentA\\_Main.pdf](http://download.mdba.gov.au/revised-BP/AttachmentA_Main.pdf), (accessed 17 September 2012).

23 Note: see Ministerial Council state specific comments, 9 July 2012, Attachments D, F and G. [www.mdba.gov.au/proposed-basin-plan](http://www.mdba.gov.au/proposed-basin-plan).

24 <http://www.mdba.gov.au/have-your-say/view-submission> (accessed 25 September 2012).

among Basin states; however, many other matters that individual states expressed opposing views on were difficult to accommodate.<sup>25</sup>

1.35 The return of surface water to the environment stayed at 2750 GL/y. However, the groundwater SDL changed again, this time from 3184 GL/y to 3324 GL/y.

1.36 Key matters considered by the MDBA, and therefore reflected in the Basin Plan (August 2012) included:

- apportionment of downstream shares among jurisdictions to be consistent, equitable and transparent. The options to achieve this were subject to further discussion within the Ministerial Council to reach a consensus position. As such no formal changes were made on this issue in the Basin Plan;
- inclusion of an SDL Adjustment Mechanism to take into account 'efficiencies and savings achieved through various initiatives in the Basin that could lead to adjustment of SDLs.'<sup>26</sup> The Basin Plan (August 2012) provided a framework and the MDBA indicated it would continue to work with jurisdictions to finalise detailed guidelines underpinning this mechanism; and
- further adjustment to groundwater SDLs based on additional information provided by Basin states regarding groundwater aquifers.<sup>27</sup>

1.37 The Basin Plan (August 2012) was provided to the Minister Burke on 28 August 2012. Any further changes to the Basin Plan can only be instigated by Minister Burke, and not from individual Basin state Ministers. However, Minister Burke indicated that he would continue to work with all Basin states to finalise the Basin Plan in 2012.<sup>28</sup> Minister Burke stated that the Basin Plan (August 2012) is closer 'to a genuine consensus position to reform of the Murray-Darling Basin.'<sup>29</sup>

1.38 When the MDBA provided the Basin Plan to the Ministerial Council for consideration, Minister Burke stated publicly that he did not consider it went far enough. He stated that the 2750 GL/y figure was not 'as environmentally ambitious for

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25 The Hon. Craig Knowles, *Transmittal letter to the Hon. Tony Burke MP*, 6 August 2012, <http://download.mdba.gov.au/altered-PBP/APBP-Transmission-letter-from-MDBA-Chair-to-Minister-Burke-06-August-2012.pdf>, (accessed 17 August 2012).

26 The Hon. Craig Knowles, *Transmittal letter to the Hon. Tony Burke MP*, 6 August 2012, <http://download.mdba.gov.au/altered-PBP/APBP-Transmission-letter-from-MDBA-Chair-to-Minister-Burke-06-August-2012.pdf>, p. 2 (accessed 17 August 2012).

27 The Hon. Craig Knowles, *Transmittal letter to the Hon. Tony Burke MP*, 6 August 2012, <http://download.mdba.gov.au/altered-PBP/APBP-Transmission-letter-from-MDBA-Chair-to-Minister-Burke-06-August-2012.pdf>, (accessed 17 August 2012).

28 MDBA, *Statement from the Chair*, [www.mdba.gov.au/files/MR-statement-from-chair\\_v02\\_2012-08-28.pdf](http://www.mdba.gov.au/files/MR-statement-from-chair_v02_2012-08-28.pdf), (accessed 17 September 2012).

29 The Hon. Tony Burke MP, Minister for Sustainability, Environment, Water, Population and Communities, Media Release, Government working closely with states on basin plan, 28 August 2012, [www.environment.gov.au/minister/burke/2012/mr20120828.html](http://www.environment.gov.au/minister/burke/2012/mr20120828.html), (accessed 17 September 2012).

the health of the basin' and he wanted to see the further modelling for 3200 GL/y.<sup>30</sup> Despite this, Minister Burke has remained adamant that the Basin Plan will be put before Parliament, and 'signed off' by the end of 2012.<sup>31</sup>

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30 ABC News PM, *Environment Minister still not happy with rivers plan*, 6 August 2012, [www.abc.net.au/pm/content/2012/s3561783.htm](http://www.abc.net.au/pm/content/2012/s3561783.htm), (accessed 20 September 2012).

31 ABC Rural, *Murray-Darling basin plan will be signed off before end of year: Burke*, 7 August 2012, [www.abc.net.au/rural/news/content/201208/s3562362.htm](http://www.abc.net.au/rural/news/content/201208/s3562362.htm), (accessed 20 September 2012).



# Chapter 2

## Surface water

2.1 The Murray-Darling Basin Authority (MDBA) established a baseline from which to measure reductions in diversions which is known as the Baseline Diversion Limit (BDL). The surface water BDL is defined as 'the sum of the long-term annual average limits (or where there is currently no limit, the long-term annual average take) for all forms of take from a surface-water [Sustainable Diversion Limit] SDL resource unit.'<sup>1</sup> The MDBA determined the total 2009 BDL to be 13 623 gigalitres per year (GL/y) for surface water.<sup>2</sup>

2.2 The Basin Plan estimates the long-term Environmentally Sustainable Level of Take (ESLT) of water from its rivers is 10 873 GL/y.<sup>3</sup> The MDBA explains this ESLT is the 'amount of water that can be used for irrigation, agriculture, drinking and so forth (known as 'consumptive use') on average' and still ensure there is sufficient water in the Basin to meet environment needs, and therefore meet the objectives of maintaining the Basin as a healthy, working river system.<sup>4</sup>

2.3 To achieve the ESLT, the plan sets environmentally sustainable limits on the quantity of surface water that may be taken from an SDL resource unit.<sup>5</sup> The long-term average SDLs for water resources will come into effect in 2019<sup>6</sup> through state-based accredited water resource plans.<sup>7</sup> The MDBA describes the SDLs as:

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- 1 MDBA, *Draft Basin Plan Chapter Summary – Schedule 3*, [www.mdba.gov.au/draft-basin-plan/draft-basin-plan-chapter-summary/schedule03](http://www.mdba.gov.au/draft-basin-plan/draft-basin-plan-chapter-summary/schedule03) (accessed 2 August 2012); For a glossary of terms see: [www.mdba.gov.au/draft-basin-plan/draft-basin-plan-chapter-summary/glossary#environmentally\\_sustainable\\_level\\_of\\_take](http://www.mdba.gov.au/draft-basin-plan/draft-basin-plan-chapter-summary/glossary#environmentally_sustainable_level_of_take) (accessed 21 September 2012).
  - 2 See: MDBA, Schedule 3, *Proposed Basin Plan 2012*, August 2012, pp 169–191.
  - 3 MDBA, *Proposed Basin Plan 2012*, s. 6.04. *Note*: although a legislative instrument, the *Proposed Basin Plan* is made up of 'sections'. The Basin Plan itself states this at subsection 1.05(2).
  - 4 MDBA, *Plain English summary of the proposed Basin Plan – including explanatory notes*, November 2011, p. vii; and *Water Act 2007*, s. 64.
  - 5 *SDL Resource Unit*: describes a geographical area which contains a set of water resources. Boundaries of surface water SDL resource units are generally based on catchments, while boundaries of ground water SDL resource units are based on hydrogeology and existing state planning boundaries (see Chapter 6 of Proposed Basin Plan).
  - 6 MDBA, *Proposed Basin Plan – revised draft*, 28 May 2012, Chapter 6, Division 2, p. 27.
  - 7 *Water Resource Plans*: set out how water resources will be managed, usually for a 10-year period. They will be developed by the Basin states or in certain circumstances by MDBA, for approval by the Commonwealth Water Minister (see the glossary of the Proposed Basin Plan [www.mdba.gov.au/draft-basin-plan/draft-basin-plan-chapter-summary/glossary#environmentally\\_sustainable\\_level\\_of\\_take](http://www.mdba.gov.au/draft-basin-plan/draft-basin-plan-chapter-summary/glossary#environmentally_sustainable_level_of_take) (accessed 21 September 2012)).

...limits on the volumes of water that can be taken for human uses (including domestic, urban and agricultural use) and are set at both a catchment and Basin scale.<sup>8</sup>

## **2750 GL/y reduction figure**

2.4 The Basin Plan indicates consumptive use of surface water needs to be reduced by 2750 GL/y.<sup>9</sup> The MDBA has indicated that in recovering 2750 GL/y of water that '2360 GL/y should be sourced from the southern Basin' and '390 GL/y should be sourced from the northern Basin.'<sup>10</sup>

### ***MDBA's rationale for the 2750 GL/y figure***

2.5 The MDBA's rationale for the 2750 GL/y is unclear to the committee as well as to many of the key stakeholders who presented evidence to the inquiry. The most direct explanation that the committee received from the MDBA was in response to a question on notice from its public hearing on 24 April 2012. In this instance, the MDBA claimed that as a result of its hydrological modelling and socio-economic testing, it considered that the 2750 GL/y figure was:

...sufficient to achieve most of the key ecological targets and objectives set by the Authority, while also ensuring that social and economic impacts on the Basin community are manageable.<sup>11</sup>

2.6 The MDBA claimed that it undertook 'sensitivity analysis' of water reduction scenarios of 2400 GL/y and 3200GL/y. It stated that the analysis of the 2400 GL/y figure would not achieve a number of key ecological targets and outcomes. On the other hand, the MDBA stated that the 3200 GL/y scenario only had marginal improvements on the 2800 GL/y scenario and that this did not justify the potential additional socio-economic impacts.<sup>12</sup>

2.7 In addition, the MDBA referred to a number of system constraints having an impact on the prospect of using the additional environmental water that would be available under the 3200 GL/y (and other) scenarios. These constraints include physical and legal barriers to delivering water, for example, due to preventing the flooding of roads, bridges and private property, among other things.<sup>13</sup>

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8 MDBA, *The proposed 'environmentally sustainable level of take' for surface water in the Murray-Darling Basin: methods and outcomes*, November 2011, p. iii.

9 MDBA, *Proposed Basin Plan – revised draft*, 28 May 2012, Chapter 6, Division 2, p. 27.

10 MDBA, *The Socio-economic implications of the proposed Basin Plan*, May 2012, pp 1–2.

11 MDBA, answer to question on notice, 24 April 2012, (received 7 June 2012).

12 MDBA, answer to question on notice, 24 April 2012, (received 7 June 2012).

13 MDBA, answer to question on notice, 24 April 2012, (received 7 June 2012).



### *Criticisms of the 2750 GL/y figure*

2.8 Despite the rationale provided by the MDBA for the setting of the 2750 GL/y, there has been significant criticism for many different groups about the figure and how it was developed.

2.9 The most common criticism received by the committee was that the MDBA had not provided sufficient details in support of its decision. Many key stakeholders, including peak bodies, told the committee that the reasoning for the decision to set the 2750 GL/y figure was not based on information that the MDBA has made available for their consideration.<sup>14</sup>

2.10 This criticism was highlighted by the CSIRO discussion of the science behind the a 2800 GL/y scenario, in a review commissioned by the MDBA:

The panel [of CSIRO scientists that conducted the review of the MDBA's modelling] understands that other reduction scenarios have been modelled, but the panel has not seen modelling results for these other scenarios, and thus it is not clear how the 2800 GL/y reduction proposal was arrived at. The panel *assumes* this proposal was arrived at as a result of socio-economic considerations by MDBA...<sup>15</sup> [emphasis added]

2.11 The Wentworth Group of Concerned Scientists (Wentworth Group) also criticised the rationale for the 2750 figure. Its representatives told the committee that the 2750 figure has no scientific justification and that this has not changed across the various iterations of the plan and the supporting documentation released by the MDBA.<sup>16</sup> Mr Stubb's gave this colourful description:

Just to be clear, that model did not tell [the MDBA] that 2,750 was the number. You select a number and plug it into the model. It is like a sausage machine. So if you put good mince in, you will get nice sausages. If you put bad mince in, you will get bad sausages.<sup>17</sup>

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14 This was particularly an issue for witnesses in Hay/Mildura see, for example, Mr John Culleton, CEO, Coleambally Irrigation Co-operative Limited, *Committee Hansard*, 2 April 2012, p. 29. Although the National Irrigators' Council stated that the MDBA consulted well on the modelling, it did note the significant difficulties in dealing with the vast quantities of documentation on the website, Mr Tom Chesson, CEO, National Irrigators' Council, *Committee Hansard*, 23 April 2012, p. 53.

15 Young WJ, Bond N, Brookes J, Gawne B and Jones GJ, *Science Review of the estimation of an environmentally sustainable level of take for the Murray-Darling Basin*. A report to the Murray-Darling Basin Authority from the CSIRO Water for a Healthy Country Flagship, November 2011, p. 31. Note: the 2800 GL/y was reviewed by the MDB prior to the release of the 2750 GL/y figure.

16 Dr John Williams, Member, Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 14.

17 Mr Tim Stubbs, Environmental Engineer, Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 18.

2.12 The MDBA's statements that the 2750 figure is a result of 'sensitivity analysis' is considered by the committee to need further explanation given that alternative modelling scenarios were not clearly articulated to even the CSIRO as part of the MBDA commissioned review, or made available to the public and Parliament for debate.<sup>18</sup> The committee notes that the MDBA is currently modelling a 3200 GL/y scenario, which it plans to provide to the Ministerial Council on the Murray-Darling Basin before the Basin Plan is tabled.

### ***Reliance on historical data***

2.13 Another key criticism of the 2750 GL/y and related modelling is that it relies on historical data up to 2009. When asked why more recent periods have not been used, especially a date that would include the extensive rainfall and runoff in the basin of the last two years, the MDBA claimed that it would have little impact. However, the committee considers this to be an unsatisfactory explanation given the claims by the MDBA to use the 'best available science' to develop the Basin Plan.<sup>19</sup>

### ***Climate change impacts omitted***

2.14 The absence of specific climate change assumptions in the modelling of the Basin Plan is of great concern to the committee. Climate change was identified by the MDBA as a significant issue in the development of the *Guide to the Proposed Basin Plan* (the Guide, released October 2010), and considered it 'essential that the proposed Basin Plan appropriately addresses the impacts of climate change.'<sup>20</sup>

2.15 Specifically, the Guide goes on to state:

In light of the various issues associated with climate change, the Authority has determined that 3% is an appropriate allowance to account for the effect of climate change in the proposed Basin Plan. That is, the reduction being considered as necessary to achieve an environmentally sustainable level of take is inclusive of a 3% reduction in the current surface-water diversion limit in the Basin.<sup>21</sup>

2.16 Despite this, the MDBA chose not to specify the impact of climate change in the Basin Plan. The committee heard extensive evidence that climate change is likely

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18 The MDBA's comments regarding sensitivity analysis and the reason for not modelling other scenarios can be found in: *Committee Hansard*, 24 April 2012, pp 78–80 and 23 August 2012 p. 12.

19 MDBA, *Plain English summary of the proposed Basin Plan – including explanatory notes*, November 2011, p 109.

20 MDBA, *Guide to the proposed Basin Plan*, 2010, Canberra, p. 33.

21 MDBA, *Guide to the proposed Basin Plan*, 2010, Canberra, p. 34.

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to have significant impacts on the outcomes to be expected from returning water to the basin through the SDLs.<sup>22</sup>

2.17 It is forecast that the impact for water run-off is far more significant than the change in rainfall due to a multiplier effect. As was pointed out in the Garnaut Review on climate change 'a decrease in rainfall can result in a two- to three-fold decrease in streamflow.'<sup>23</sup>

2.18 The CSIRO conducted extensive analysis on this issue in 2008, including modelling rainfall run off to the year 2030. According to the report, the likely impact would be significant:

The best estimate or median indicates that the future mean annual runoff in the MDB [Murray Darling Basin] in ~2030 relative to ~1990 will be lower, by 5 to 10 percent in the north-east and southern half [of the Basin], and by about 15 percent in the southernmost parts. Averaged across the entire MDB, the best estimate or median is a 9 percent decrease in mean annual runoff.<sup>24</sup>

2.19 The committee is of the view that the impact of climate change has not been adequately explained by the MDBA.

2.20 The Wentworth Group, for example, strongly criticised the lack of consideration of climate change projections in the Basin Plan and noted that the MDBA's position 'conflicts with Government Policy on climate change.'<sup>25</sup>

2.21 The committee also notes that the MDBA has ignored the recommendation of the Windsor Report which urged the MDBA to 'apply greater rigour to the assumptions made to develop the proposed sustainable diversion limits, including the forecast impact of climate change'.<sup>26</sup>

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22 See for example, Ms Juliet Le Feuvre, Healthy Rivers Campaigner, Environment Victoria, *Committee Hansard*, 24 April 2012, p. 25; and Wentworth Group of Concerned Scientists, *Statement on the 2011 draft Murray-Darling Basin Plan*, November 2011, p. 19.

23 Professor Ross Garnaut, *The Garnaut Climate Change Review: Final Report*, Cambridge University Press, 2008, p. 109.

24 Chiew FHS, Vaze J, Viney NR, Jordan PW, Perraud J-M, Zhang L, Teng J, Young WJ, Penarancibia J, Morden RA, Freebairn A, Austin J, Hill PI, Wiesenfeld CR and Murphy R, *Rainfall-runoff modelling across the Murray-Darling Basin. A report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project*. CSIRO, 2008, p. 13.

25 Wentworth Group of Concerned Scientists, *Evaluation of Proposed Basin Plan*, August 2012, p. 4.

26 House of Representatives Standing Committee on Regional Australia, *Of drought and flooding rains: Inquiry into the impact of the Guide to the Murray-Darling Basin Plan*, May 2011, p. xvii.

### ***Interceptions***

2.22 A final consequence of the reliance on historical data is that it may overlook changes in water interception that may have occurred due to changes in land management over the past century.

2.23 The current modelling process also appears to fail to account for interception in regarding certain forestry projects. Professor Mike Young provided information to the committee that stated:

Under the Proposed Plan, States will be required to adjust for the adverse effects on water availability of increased forestry, increases in farm-dam interception and increases in the capture of overland flows...

Missing from the Proposed Plan is a requirement for the adverse interception effects of biodiversity plantings to be fully accounted for.<sup>27</sup>

2.24 CSIRO climate modelling for 2030 predicts a five per cent lower median and a 15–20 per cent extreme range lowering of rainfall in the Southern Basin. The relative high proportion of high security water purchase from South Australian and Victoria under the Commonwealth Restoring the Balance in the Murray-Darling Basin program will have a disproportional effect on agriculture as a result of climate change. Consequently these states will suffer disproportional socio-economic effects relative to other Basin states.<sup>28</sup>

### ***Water entitlement types in the 2750 figure***

2.25 Finally, the committee was concerned with how various types of water entitlement had been taken into account by the MDBA when developing the 2750 GL/y figure. The committee heard evidence that the outcomes for the Basin system could vary significantly based on the type of water used.

2.26 The committee's concern with water types used in the modelling for the 2750 GL/y figure focussed on four main types: high security water; general security water; supplementary water; and terminal water. The MDBA acknowledged that depending on the type of water used this could have a significant impact on the outcomes for the Basin:

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27 Professor Mike Young, "Droplet No. 20: Which is better – The Existing or Proposed Administrative Arrangements for the MDB Basin?", April 2012, p. 3. This quote above was also read into the Hansard by Senator Nick Xenophon on 24 April 2012. See *Committee Hansard*, 24 April 2012, p. 8.

28 Chiew FHS, Teng J, Kirono D, Frost AJ, Bathols JM, Vaze J, Viney NR, Young WJ, Hennessy KJ and Cai WJ *Climate data for hydrologic scenario modelling across the Murray-Darling Basin. A report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project*. CSIRO, June 2008, [p. iv]; SEWPaC, *Progress of water recovery under the Restoring the Balance in the Murray-Darling Basin program*, <http://www.environment.gov.au/water/policy-programs/entitlement-purchasing/progress.html>, (accessed 2 October 2012).

**CHAIR:** ...do you agree that if you modelled [2750] gigs of buyback water that happened to be all supplementary water you would get a completely different outcome than if you modelled [2750] gigs of high-security water?

**Dr McLeod:** Yes, that is correct.<sup>29</sup>

2.27 The Wentworth Group explained these potential impacts further and highlighted how different types of water were needed to achieve different environmental outcomes and events in the Basin system. As Mr Tim Stubbs explained:

...Once you have your breakdown of how you want to get those outcomes and what is the best way, you will then have some clear picture of what sort of water you would need. You might be able to say: well, to achieve all these events, we only need to achieve them when it is flooding already because we want to put a top on a peak or a tail on a flood. We may be able to use general security water for that or, potentially, even supplementary if it was in the right place at the right time. However, for other events you might have to say: well, we probably need high-security water to make sure we can be confident of achieving that event, because there will not be any supplementary water around at that time, potentially, and we will need a certain amount of high security in the bank to make sure we can hit those events, because they are drier time events. I am not sure how the authority has done it, but I imagine you would have to have a spread of entitlements to be able to hit all your targets.<sup>30</sup>

2.28 However, the committee remained unsatisfied with the explanations provided by the MDBA regarding water types in the development of the 2750 GL/y figure. The limited information received suggested that the assumption made was for a pro rata reduction across water types, excluding terminal water (that is, water from terminal or non-connected river systems). As the MDBA told the committee:

**Dr McLeod:** We assumed a pro rata reduction across all the entitlement classes in each of the—

**CHAIR:** ...So you had an equal 25 per cent terminal, 25 per cent [supplementary], 25 per cent general purpose?

**Dr McLeod:** That is right. Terminal is not actually a class. In the terminal system—

**CHAIR:** I can assure you, though, the impact of buying water out of a terminal river is a lot different to the impact of buying out of—

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29 Dr Tony McLeod, General Manager, Water Resource Planning, MDBA, *Committee Hansard*, 23 August 2012, pp 15–17.

30 Mr Tim Stubbs, Environmental Engineer, Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 16.

**Dr McLeod:** I totally accept that. In the typical New South Wales system, there is high security, general security and supplementary. We assumed a pro rata share across each of them.<sup>31</sup>

2.29 The committee also received information about how this division of water types had operated in practice so far through the government's buyback program. As at 31 March 2012, of the 1238.2 GL of purchased entitlements, 455.4 GL was high security water, 695.4 GL was general, medium or low security water, 41.8 GL was supplementary water, and the remainder unregulated or unsupplemented water.<sup>32</sup>

2.30 The committee considers that the government needs to further explain the rationale for the particular make-up of the water types in developing the 2750 GL/y figure, how it will treat terminal water, and how this correlates to the division of water types for the government's buyback program so far and into the future.

2.31 In this regard the committee notes the recent agreement by the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) and Murray Irrigation Ltd to purchase a significant volume of water from 35 irrigation farms for return to the Basin. Murray Irrigation Ltd stated that the volume of water purchased remains confidential.<sup>33</sup> The confidentiality of this purchase further highlights how significant details regarding the implementation of Basin plan are not being made publicly available.

2.32 Victoria has contributed 424,150 megalitres (ML) of high security water and 22,493 ML of low security water to the Commonwealth Restoring the Balance in the Murray-Darling Basin program, a ratio of 1 to 19.<sup>34</sup>

### ***Uncertainty regarding the impact of water buybacks (the Nimmie-Caira case)***

2.33 The committee heard evidence about the Nimmie-Caira buyback scheme in hearings on 23 August and 10 September 2012. In order to meet part of its contribution towards the 2750 GL/y reduction, the NSW Government is proposing to purchase water from 11 properties in the Nimmie-Caira irrigation district near Hay, NSW.

2.34 The committee is aware that the NSW Legislative Council passed an order to produce documents relating to the proposed Nimmie-Caira water buy-back. On 20 September, the response was tabled in the NSW Parliament. The index of documents

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31 Dr Tony McLeod, General Manager, Water Resource Planning, MDBA, *Committee Hansard*, 23 August 2012, pp 15–17.

32 SEWPaC, answer to question on notice, 24 April 2012, (received 2 July 2012).

33 See <http://blogs.abc.net.au/nsw/2012/09/0730-abc-riverina-news-25092012.html> (accessed 25 September 2012).

34 SEWPaC, *Progress of water recovery under the Restoring the Balance in the Murray-Darling Basin program*, <http://www.environment.gov.au/water/policy-programs/entitlement-purchasing/progress.html>, (accessed 2 October 2012).

that was made publicly available in the Parliament shows that many of the relevant documents remain confidential because of claims of privilege.<sup>35</sup>

2.35 The committee is unsure about whether the purchase of water will be at market value. It was indicated that the total Nimmie-Caira proposal for participating land holders could be priced at around two and a quarter times the value of the water, which would include the sale of 'the land and water and the infrastructure.'<sup>36</sup>

2.36 The committee notes that large scale purchases of water can, in certain circumstances, legitimately attract a premium because they deliver administrative savings. This is consistent with the government's guidelines for large purchases of water under its buyback program, which allows for an up to 10 per cent premium on water purchases above 40 GL.

2.37 A recent Auditor-General's report on the water buyback program found that while governments have the prerogative to offer a premium for large scale purchases for these reasons, the potential savings should be documented:

...the ANAO suggests that the justification for price premiums should include explicit consideration of the reliability of the entitlements and the compatibility with priority environmental needs that are not able to be serviced through other entitlements already held. The expected administrative cost savings resulting from large purchases should also be documented.<sup>37</sup>

2.38 Because the details of the proposal remain confidential it is not possible to judge the value-for-money of the Nimmie-Caira proposal.

2.39 In response to questioning about the price to be paid for supplementary water as part of the Nimmie-Caira proposal, the NSW Office of Water insisted that it would not provide the information to the committee:

**CHAIR:** Surely you can tell us what the base price of supplementary water is.

**Mr Raft:** Around \$300-plus a megalitre.

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35 See: NSW Legislative Assembly, Return to Order - Nimmie-Caira System Enhanced Environmental Water Delivery Project - Clerk tabled documents received on Thursday 20 September 2012 from the Director General of the Department of Premier and Cabinet, together with an indexed list of documents, [www.parliament.nsw.gov.au/prod/lc/lctabdoc.nsf/cccc870c6126b1b6ca2571ee000318a4/8a60b511edeacd8ca257a7f00209cd5/\\$FILE/Index%20-%20Nimmie-Caira%20System%20Enhanced%20Environmental%20Water%20Delivery%20Project.pdf](http://www.parliament.nsw.gov.au/prod/lc/lctabdoc.nsf/cccc870c6126b1b6ca2571ee000318a4/8a60b511edeacd8ca257a7f00209cd5/$FILE/Index%20-%20Nimmie-Caira%20System%20Enhanced%20Environmental%20Water%20Delivery%20Project.pdf) (accessed 28 September 2012).

36 Mr David Harriss, Commissioner, NSW Office of Water, *Committee Hansard*, 10 September 2012, p. 40.

37 ANAO, *Restoring the Balance in the Murray-Darling Basin*, Audit Report no. 27 2010-11, 2011, p. 95.

**CHAIR:** Yes, it was 350 on the Warrego. What you are doing there is paying \$800-something for the water [based on the 2¼ multiplier]. Could we do this in camera?

**Mr Harriss:** I still will not reveal the cabinet-in-confidence, rather the commercial-in-confidence.

**CHAIR:** Did you say that is the first time that that has been mentioned today; that it was cabinet-in-confidence?

**Mr Harriss:** No, not cabinet-in-confidence, I meant commercial-in-confidence.<sup>38</sup>

2.40 The committee was also concerned whether the full supplementary water entitlements or the long-term average annual yield of the Nimmie-Caira proposal would contribute towards the 2750 GL/y reduction. In the Nimmie-Caira case this would be 381 GL/y or 173 GL/y respectively. This issue was not fully explained to the committee and would have a significant impact on the implementation of the 2750 GL/y return of water to the Basin as proposed under the Basin Plan.<sup>39</sup>

2.41 In this respect, the committee is not able evaluate whether this important issue represents value for money for Australian taxpayers. The committee will consider this issue in further detail in the final report of the inquiry.

### **Adjustment mechanism**

2.42 The Basin Plan (August 2012) included an adjustment mechanism to facilitate changes to the 2750 GL/y reduction in take from the river. The adjustment mechanism would provide for a 5 per cent change in the 2750 GL/y.

2.43 According to the MDBA, the proposed changes to introduce an adjustment mechanism:

...are designed to allow changes to be made to the SDLs when new initiatives or projects are identified that achieve better outcomes either for the environment or for Basin communities.<sup>40</sup>

2.44 The MDBA added that the mechanism would consider:

...projects based on environmental works and measures, river operations, rule changes and infrastructure developments that could use less environmental water to achieve similar environmental outcomes, or more

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38 Mr David Harriss, Commissioner and Mr Stephen Raft, Coordinator, State Priority Projects, NSW Office of Water, *Committee Hansard*, 10 September 2012, pp 41-42.

39 Mr David Harriss, Commissioner, NSW Office of Water, *Committee Hansard*, 10 September 2012 p. 42.

40 MDBA, *High Level Summary of the Basin Ministers' collective comments on the Proposed Basin Plan*, 28 August 2012.  
[http://download.mdba.gov.au/BM\\_responses/Ministers\\_comments\\_28-08-2012.doc](http://download.mdba.gov.au/BM_responses/Ministers_comments_28-08-2012.doc) (accessed 17 September 2012).



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environmental water to improve the environmental outcomes without increasing the socio economic impacts.<sup>41</sup>

2.45 Under the adjustment mechanism the MDBA would not require Ministerial or Parliamentary approval for a change to 2750 GL/y within the 2040–3460 GL/y range.<sup>42</sup>

2.46 The committee notes that the relevant amendment to the *Water Act 2007* to provide for an adjustment mechanism was only introduced into Parliament on 20 September 2012.<sup>43</sup> Because of the timeframe the committee has not been able to form a specific view on the provisions of the bill.

2.47 Overall, the committee is very concerned with the lack of information about how the adjustment mechanism would work and the details in determining changes. The 2750 GL/y is a highly controversial figure but the committee is of the view that the public and Parliament need to be reassured that any changes are based on appropriate information and processes. These are yet to be detailed by the MDBA. As a result, the Parliament is again being asked to legislate on a matter with insufficient information.

### **Modelling of scenarios**

2.48 Given the problems that have been discussed above with the 2750 GL/y scenario, the committee finds it difficult to understand the MDBA's refusal to model other key scenarios for the return of water to the Basin. Indeed, now that the Parliament will be asked to approve an adjustment mechanism that can change the 2750 GL/y figure, the committee considers that conducting and publishing the modelling of other scenarios is even more important.

2.49 The MDBA has continually claimed that significant scenarios were not modelled because of the 'sensitivity analysis' already undertaken and the issue of constraints in the system.<sup>44</sup>

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41 MDBA, *High Level Summary of the Basin Ministers' collective comments on the Proposed Basin Plan*, 28 August 2012.  
[http://download.mdba.gov.au/BM\\_responses/Ministers\\_comments\\_28-08-2012.doc](http://download.mdba.gov.au/BM_responses/Ministers_comments_28-08-2012.doc)  
(accessed 17 September 2012).

42 MDBA, *High Level Summary of the Basin Ministers' collective comments on the Proposed Basin Plan*, 28 August 2012.  
[http://download.mdba.gov.au/BM\\_responses/Ministers\\_comments\\_28-08-2012.doc](http://download.mdba.gov.au/BM_responses/Ministers_comments_28-08-2012.doc)  
(accessed 17 September 2012).

43 The relevant amendment was put forward in the Water Amendment (Long-term Average Sustainable Diversion Limit Adjustment) Bill 2012.

44 Mr Russell James, Executive Director, Policy and Planning, MDBA, *Committee Hansard*, 23 August 2012, p. 12.

2.50 However, organisations such as the Wentworth Group have disputed this as a sound justification for the 2750 GL/y figure. The Wentworth Group acknowledged that the MDBA has the best available modelling capabilities for water resources in the Basin system but lamented that it has not been used to model other scenarios.<sup>45</sup>

2.51 To this end, the committee welcomes the recent commitment of the MDBA to model the 3200 GL/y with constraints scenario. The committee urges the MDBA to publicly release the detail and results in a way that is suitable for public scrutiny and debate.

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45 See for example, Mr Tim Stubbs, Environmental Engineer, Wentworth Group of Concerned Scientists, *Committee Hansard*, 23 April 2012, p. 17; Mr Peter Cosier, Director, Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 17.

# Chapter 3

## Ground water

3.1 Like its approach to surface water, the Murray-Darling Basin Authority (MDBA) has developed Sustainable Diversion Limits (SDLs) and Baseline Diversion Limits (BDLs) for ground water as part of the Basin Plan. The MDBA has determined ground water SDLs and BDLs for different resource units and aggregated these to provide a total for the basin system.

3.2 The proposed total SDL can be compared to a basin-wide (BDL) which represents the MDBA's determination of the limits on ground water use under state-based water management arrangements in 2009.

3.3 However, these numbers have changed dramatically across the various iterations of the Basin Plan. The total ground water SDL went from 1601 gigalitres per year (GL/y) in the Guide (October 2010), to 4340 GL/y in the Basin Plan (November 2011), to 3184 GL/y in the Basin Plan (May 2012), and finally to 3324 GL/y in the Basin Plan (August 2012). The BDL on the other hand has changed from 1786 GL/y in the Guide, to 2352 GL/y in the Basin Plan (November 2011) and 2373 GL/y in the Basin Plan (May 2012).<sup>1,2</sup> There were also significant changes for the SDLs in a number of different resource units and the changes were not uniform across the Basin.<sup>3</sup>

### Surface and ground water connectivity

3.4 The committee heard evidence that surface water and ground water are strongly connected water resources and therefore they should be jointly managed. For example, the Conservation Council of South Australia stated 'by default, these systems should be treated as connected'.<sup>4</sup>

3.5 This supports information from bodies such as National Water Commission (NWC) which has stated that surface and ground water resources are 'intimately linked' and should be managed together.<sup>5</sup> The committee has also previously

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1 MDBA, *Addendum to the proposed Groundwater Baseline and Sustainable Diversion Limits Method Report*, July 2012, p. 21.

2 *Note*: the basin-wide groundwater BDL was not set out in the Addendum Report, the ground water BDLs are set out in the August Altered Proposed Plan according to each ground water SDL resource unit.

3 A breakdown of the changes is provided by Friends of the Earth, *Basin Plan Groundwater Diversion Limits: Comparing the "Guide" and the Proposed Basin Plan*, document tabled at committee hearing, 24 April 2012.

4 Mr Tim Kelly, Chief Executive, Conservation Council of South Australia, *Committee Hansard*, 24 April 2012, p. 24.

5 NWC, *Groundwater-Surface Water Connectivity*, 13 December 2011, <http://nwc.gov.au/groundwater/connectivity>, (accessed 14 September 2012).

addressed this connectivity concern in its earlier interim report for this inquiry regarding coal seam gas.<sup>6</sup>

3.6 That said, the committee notes that connectivity between ground water and surface water is not uniform. Some aquifers in deep ground water systems have little or no connection with surface water. The CSIRO has estimated that around one quarter of current ground water extraction is believed to be reducing surface water availability, amounting to just four per cent of the Basin's surface water use.<sup>7</sup>

3.7 The committee also notes that this figure doesn't include the Basin Plan's proposed additional extraction and the associated potential impact on surface water.

### ***Ground water extraction and limited information***

3.8 Stakeholders in the Basin are well aware of the connectivity between water systems and they voiced concerns regarding the limited knowledge and scientific understanding of the impact of ground water extractions. As Ms Smiles from the Inland Rivers Network explained:

Those of us who have been following water for a long time know that the knowledge and science around groundwater is relatively new compared to what we know about what is in front of our faces on a regular basis with surface flow.<sup>8</sup>

3.9 The NWC identified the Murray-Darling Basin as an area of 'particular concern' in managing the interconnectedness of the resources because of the increases in ground water extraction following the surface water diversion cap introduced in 1997.<sup>9</sup> The MDBA initially estimated that, across the entire basin, the annual extraction level of ground water was approximately 1795 GL.<sup>10</sup>

3.10 This concern was echoed by the Wentworth Group of Concerned Scientists (Wentworth Group) that stated that the MDBA's failure to include the impact of increasing ground water extractions in the surface water modelling means the surface water SDLs are unlikely to deliver the claimed outcomes. The Wentworth Group analysis of the Basin Plan (November 2011) stated:

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6 Senate Rural Affairs and Transport Committee, *Management of the Murray Darling Basin Interim report: the impact of mining coal seam gas on the management of the Murray Darling Basin*, 30 November 2011, pp 17–37.

7 CSIRO, *Water Availability in the Murray-Darling Basin, A report to the Australian Government from the CSIRO Murray-Darling Sustainable Yields Project*, October 2008, p. 47.

8 Ms Beverley Smiles, President, Inland Rivers Network, *Committee Hansard*, 24 April 2012, p. 20.

9 NWC, *Groundwater-Surface Water Connectivity*, 13 December 2011, <http://nwc.gov.au/groundwater/connectivity>, (accessed 14 September 2012).

10 MDBA, *The Proposed Groundwater Baseline and Sustainable Diversion Limits: Methods Report*, 2012, p. 1.

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The failure to adequately analyse the impacts of increasing ground water extractions on surface water means the draft basin Plan will not adequately protect environmental assets, particularly those dependent on low flows.<sup>11</sup>

3.11 There is very little scientific understanding of the impacts (especially on surface water) of increasing ground water extraction. As the CSIRO told the committee:

The surface water impacts from the ground water take...will take a long time to emerge. There is a review process that has been put in place. There may be no demand for that increase in groundwater use to happen in a hurry, but that does not necessarily mean it is scientifically defensible.<sup>12</sup>

3.12 The MDBA increased ground water extraction limits from the Guide to Basin Plan November 2011—based on incorporating the work that state governments had done in establishing sustainable groundwater limits, including through the Australian Capital Territory Plan limit, the Achieving Sustainable Groundwater Entitlements program in New South Wales, South Australian natural resource management regulations, and local groundwater management rules in Victoria and Queensland.<sup>13</sup> Some stakeholders have suggested that any increases to ground water extraction from those that were presented in the Guide should be delayed until thorough assessments are completed.<sup>14</sup> The proposed increase in ground water extraction also led to committee concerns about the approach the MDBA is taking to ground and surface water connectivity.

#### ***The MDBA's modelling and assumptions***

3.13 Despite the apparent need to consider the connectivity of the two resources, the MDBA's treatment of connectivity is limited. Although MDBA documentation released in July 2012 did reflect some consideration of ground water and surface water connectivity in its revision to the ground water SDLs and BDLs, this connectivity is only considered in the ground water modelling, not for surface water modelling.<sup>15</sup>

3.14 The committee is not surprised, therefore, that the CSIRO called for more science to be undertaken on ground water extraction and the impact on surface water:

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11 Wentworth Group of Concerned Scientists, *Analysis of Groundwater in the 2011 Draft Murray-Darling Basin Plan*, April 2012, p. 3.

12 Dr Bill Young, Director, Water for a Healthy Country Flagship, CSIRO, *Committee Hansard*, 23 April 2012, p. 62

13 MDBA, *Delivering a Healthy Working Basin: about the draft Basin Plan*, November 2011, p. 33.

14 Ms Juliet Le Feuvre, Healthy Rivers Campaigner, Environment Victoria, *Committee Hansard*, 24 April 2012, p. 25.

15 MDBA, *Addendum to the proposed Groundwater Baseline and Sustainable Diversion Limits: Methods Report*, July 2012, p. 5.

**Dr Young:** There are a number of areas around the ground water parts of the proposed plan where we believe that there is a more robust evidence base that could be assembled to try and support the proposed position.

**CHAIR:** Is that code for, 'We need a little more time to sort this out to make sure the science is right?'

**Dr Young:** No. We have undertaken a lot of the science, as you referred to, and I think not all of that science has necessarily been taken into full account.<sup>16</sup>

3.15 The CSIRO went on to say that:

...the evidence base that has been presented by the authority to date to support the plan has not demonstrated that it has undertaken a rigorous assessment of the surface water impacts of the proposed levels of ground water take. The only caveat I would put on that is that on the last day of the consultation period they released another 100-page report supporting the ground water information. I have not had the opportunity yet to review that information.<sup>17</sup>

3.16 In contrast the NSW Office of Water argued that the MDBA was still being too conservative in its setting of ground water limits:

The most recent altered plan sets out sustainable diversion limits for four New South Wales aquifers. These are deep aquifer that contain water that is brackish or saline at best. We believe that the sustainable diversion limits established by the Murray-Darling Basin are overly conservative and not based on the best available science. The four aquifers in particular have no or minimal connectivity to surface water and the sustainable diversion limits developed in New South Wales are already extremely conservative without another layer of conservation put over the top of them.<sup>18</sup>

3.17 Even though the MDBA has made several adjustments to the ground water SDLs from the Guide and through the various iterations of the Basin Plan, the Wentworth Group claimed there was no new modelling undertaken which would explain these changes:

In the 12 months since [the release of the Guide in October 2010], there has not been any new science done—let us make that clear—but there has been a change of 2,600 gigalitres. We have increased the amount of ground water we can take by 2,600 gigalitres. I am a little bit shocked at that without new science to back that up.<sup>19</sup>

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16 Dr Bill Young, Director, Water for a Healthy Country Flagship, CSIRO, *Committee Hansard*, 23 April 2012, p. 60.

17 Dr Bill Young, Director, Water for a Healthy Country Flagship, CSIRO, *Committee Hansard*, 23 April 2012, p. 61.

18 Mr David Harriss, Commissioner, New South Wales Office of Water, *Committee Hansard*, 10 September 2012, p. 33.

19 Mr Tim Stubbs, Environmental Engineer, Wentworth Group of Concerned Scientists, *Committee Hansard*, 23 April 2012, p. 17.

3.18 Furthermore, the Wentworth Group has strongly criticised the assumptions used to calculate the diversion limits and stated that the assumptions used 'ignore the long-term connectivity of surface and ground water' resources.<sup>20</sup> It explained how connectivity may operate in this situation:

...documentation supporting the draft Basin Plan [Basin Plan (November 2011)] the Authority states that for the purpose of determining Sustainable Diversion Limits, rivers that are classified as losing streams...can be treated as unconnected systems. This is then used to justify the assumption that drawing these aquifers down further will not increase the loss of water from the overlying rivers.

However, this assumption is incorrect. The aquifers that receive water from losing river reaches will provide water to these rivers further upstream or downstream; i.e. there are gaining reaches elsewhere. Allowing additional extractions from these aquifers simply means that the level of the watertable will drop, and the extent of the losing stream will increase into areas that are currently gaining streams. Reducing the length of these gaining streams will affect river flows, including important base flows.<sup>21</sup>

3.19 The committee considers that in the absence of firm science and research as outlined above, the MDBA should provide more information in regard to its assumptions on surface and ground water connectivity.

#### ***Ground water advisory group***

3.20 The committee welcomes the consideration by the MDBA to establish a ground water advisory group.<sup>22</sup>

3.21 Given the significant gaps in scientific information that exist, the committee considers this to be positive step (provided it is implemented properly) towards addressing some of the committee's concerns regarding the state of knowledge about ground water extractions in the Basin. However, it is essential that such a move be combined with significant changes to the MDBA's approach to ground water and the open and transparent provision of information to stakeholders and Parliament to ensure that informed decisions can be made about the Basin Plan.

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20 Wentworth Group of Concerned Scientists, *Analysis of Groundwater in the 2011 Draft Murray-Darling Basin Plan*, April 2012, p. 6.

21 Wentworth Group of Concerned Scientists, *Analysis of Groundwater in the 2011 Draft Murray-Darling Basin Plan*, April 2012, p. 6.

22 <http://download.mdba.gov.au/revised-BP/Addendum-to-Groundwater-Methods.pdf>, p. 30.





# Chapter 4

## Environmental outcomes and socio-economic impacts

4.1 The previous two chapters showed the significant shortcomings in the Murray-Darling Basin Authority's (MDBA) processes for developing its Sustainable Diversion Limits (SDLs) on surface water and ground water.

4.2 This chapter shifts the focus to what the reductions flowing from the SDLs, particularly the surface water 2750 GL/y, aim to achieve for the environment and the communities that depend on the Basin. As will be shown below, the evidence received by committee questions whether the Basin Plan would achieve either of these two main objectives.

### Environmental outcomes

4.3 An objective of the Basin Plan and the determination of SDLs and Baseline Diversion Limits (BDLs) for surface and ground water is to achieve the environment outcomes that are set in the *Water Act 2007*, in a way that optimises economic, social and environmental outcomes. However, the committee requires reassurance that the Basin Plan will meet this central task.

4.4 The committee received evidence that the Basin Plan would not achieve its defined ecological targets. The CSIRO's *Science Review of the Estimation of an Environmentally Sustainable Level of Take for the Murray-Darling Basin*, was tabled at a committee hearing on 23 April 2012. The review, published in November 2011, is a comprehensive evaluation of much of the science used by the MDBA to develop the Basin Plan.

4.5 The CSIRO's review identified a number of shortcomings with the Basin Plan, but perhaps the most significant was the criticism of the Basin Plan's ability to reach the required ecological outcomes. According to the report:

The modelled 2800 GL/y reduction scenario considered by the panel [of CSIRO scientists that conducted the review of the MDBA's modelling] does not meet several of the specified hydrologic and ecological targets. In some cases operations constraints prevent delivery of environment water to meet targets implying that some of the current ecological targets are not consistent with unavoidable operational constraints. In other cases, the shortfalls against targets appear to be a result of insufficient environmental water, shortcomings in modelling environmental flow regimes in the unregulated rivers of the Basin or a combination of the factors.

*Further analyses, including modelling of water use reduction scenarios above the 2800 GL/y scenario, are required to more fully assess the reasons for the modelled shortfalls. Given the current evidence base, the level of take represented by the 2800 GL/y reduction scenario is not*

*consistent with the hydrologic and ecological targets* provided in the review.<sup>1</sup> [emphasis added]

4.6 The CSIRO report goes on to discuss the 2800 GL/y scenario meeting the individual environmental targets across the Basin:

The SDLs modelled in this scenario do not achieve the majority of hydrologic targets. They meet 55% of the 'achievable' targets at either the 'high risk' or 'low risk' frequency. The 2800 GL/y reduction scenario is thus not consistent with the currently stated environmental targets.<sup>2</sup>

4.7 The committee also received evidence from the Australian Conservation Foundation (ACF) about this issue. The ACF has examined the MDBA's ecological targets and how they may be met by the Basin Plan. The ACF tabled its review in the committee's hearings of 24 April and 10 September 2012. The most recent version shows that the ACF believes the Basin Plan would only succeed in achieving the required environmental outcomes in 57 per cent of cases.<sup>3</sup>

4.8 The ACF argued that the 43 per cent failure rate stems in part from the various physical and regulatory constraints in the Murray-Darling Basin system. However, the ACF also concluded that there is not enough water being returned to the Basin under the 2750 GL/y scenario.<sup>4</sup>

### **Environmental watering plan**

4.9 The MDBA is required under the Water Act to develop an Environmental Watering Plan (EWP) as part of the Basin Plan. The EWP is designed to address:

- the overall environmental objectives for water-dependent ecosystems;
- the targets by which to measure progress toward the objectives;
- a management framework for environmental watering;
- methods for identifying environmental assets and ecosystem functions that require environmental watering and their watering requirements;
- principles and methods for deciding environmental watering priorities;

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1 Young WJ, Bond N, Brookes J, Gawne B and Jones GJ, *Science Review of the estimation of an environmentally sustainable level of take for the Murray-Darling Basin*. A report to the Murray-Darling Basin Authority from the CSIRO Water for a Healthy Country Flagship, November 2011, p. 29. Note: this document was tabled at the committee's hearing on 24 April 2012.

2 Young WJ, Bond N, Brookes J, Gawne B and Jones GJ, *Science Review of the estimation of an environmentally sustainable level of take for the Murray-Darling Basin*. A report to the Murray-Darling Basin Authority from the CSIRO Water for a Healthy Country Flagship, November 2011, p. 30.

3 Australian Conservation Foundation, *Modelled Ecological Outcomes of the Proposed Basin Plan 2750 SDL Scenario*, document tabled, 10 September 2012.

4 Australian Conservation Foundation, *Modelled Ecological Outcomes of the Proposed Basin Plan 2750 SDL Scenario*, document tabled, 10 September 2012.

- principles for carrying out environmental watering; and
- planning for the recovery of additional environmental water.<sup>5</sup>

4.10 The Windsor Report criticised the EWP as set out in the Guide because of concerns over its lack of detail.<sup>6</sup> The evidence heard by the committee regarding the Basin Plan (November 2011) suggested this issue had not been addressed.

4.11 According to Mr Tom Chesson, CEO of the National Irrigators' Council:

It is confusing that you can come up with a number before you know what you want to water locally. That has always been a confusion point of ours. It is pretty clear in chapter 7 [of the proposed basin plan] that they [the MDBA] do not have a long-term environmental watering plan.<sup>7</sup>

4.12 Mr Chesson later added that it 'must be very hard to operate a watering regime when you do not have an environmental watering plan'.<sup>8</sup>

4.13 The frustration that the MDBA had continually failed to address the issue from the Guide to the Basin Plan was expressed clearly to the committee in its visit to Hay and Mildura. For example, Mr Culleton, CEO, Coleambally Irrigation Co-operative, told the committee in Hay:

Many promises were made to communities like Coleambally as the Commonwealth government went into damage control post the *Guide to the Basin Plan* [the Guide]. Almost 18 months later we have a draft plan [Basin Plan (November 2012)] that still will not deliver on those promises. We were promised better science. Why is it, then, that we still do not have an environmental watering plan...<sup>9</sup>

4.14 During the committee's visit to Mildura, Ms Cheryl Rix, General Manager, Western Murray Irrigation Ltd expressed a similar frustration:

...there is no environmental watering plan in the guide and there is none in the draft [Basin Plan (November 2012)] as well. There is an enormous amount of taxpayer' money tied up in that. They need to be given the right to understand how it will be used.<sup>10</sup>

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5 MDBA, *Plain English summary of the proposed Basin Plan — including explanatory notes*, November 2011, p. 32. The environmental watering plan is set out in chapter 7 of the basin plan.

6 House of Representatives Standing Committee on Regional Australia, *Of drought and flooding rains: Inquiry into the impact of the Guide to the Murray-Darling Basin Plan*, May 2011, pp 149–152.

7 Mr Tom Chesson, CEO, National Irrigators' Council, *Committee Hansard*, 23 April 2012, p. 56.

8 Mr Tom Chesson, CEO, National Irrigators' Council, *Committee Hansard*, 23 April 2012, p. 57.

9 Mr John Culleton, CEO, Coleambally Irrigation Co-operative Limited, *Committee Hansard*, 2 April 2012, p. 28.

10 Ms Cheryl Rix, General Manager, Western Murray Irrigation Limited, *Committee Hansard*, 3 April 2012, p. 14.

4.15 The way that the MBDA had developed the principle of localism to better implement the objectives of the EWP also came under criticism in the committee's hearings. While the committee is generally supportive of the concept of localism, the evidence received during the inquiry suggests that much more work remains to be done before it can be used effectively as part of the EWP.

4.16 As the National Irrigators' Council stated:

We have certainly got some mixed messages from the Murray-Darling Basin Authority around the localism issue. It certainly has been promoted that localism would be a huge part of the answer in developing the [environmental watering plans] from here on. Then we have had the chair of the MDBA saying that localism may just further exacerbate the current problems that we have in running a basin-wide system.<sup>11</sup>

4.17 The committee acknowledges that the MDBA has made some changes to the EWP in recent months. However, it is still of the view that significant problems remain regarding the issues raised above. In its recent hearing on 23 August 2012, only several weeks prior to the tabling of this report, a Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) official responded to a question about the timeline for environmental water plans in the following way:

It is an ongoing process and the precise timeline—the integration between the environmental watering plan and the environmental watering strategy, which cascades from it, the long-term watering plans for particular sites, which cascade from and also feedback into the environment—is presently being finalised. Broadly speaking, from memory, on the basis of the existing plan, if that were to be approved, the environmental watering strategy is required to be done within one year...

That then feeds into a process where annual watering priorities are determined, and those annual watering priorities are then matters which are key things which feed into actual environmental watering decisions. It is a complex process.<sup>12</sup>

4.18 This response gives the committee very little confidence that the issues discussed above regarding the EWP will be solved anytime soon.

### **Impact on rural communities and irrigators**

4.19 The committee is of the view that the 2750 GL/y figure may have been determined by the MDBA as a trade-off between the ecological targets and the socio-economic impacts of the Basin Plan.

4.20 The committee is highly supportive of the rural communities in the Basin and the need to include socio-economic outcomes in the Basin Plan. However, evidence was received that the Basin Plan may fail to achieve its desired ecological targets, and may have significant adverse impacts on rural communities.

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11 Mr Stewart Ellis, Chair, National Irrigators' Council, *Committee Hansard*, 23 April 2012, p. 49.

12 Mr David Parker, Deputy Secretary, SEWPaC, *Committee Hansard*, 23 August 2012, p. 34.

4.21 A number of witnesses show great concern about the viability of communities and irrigation supply businesses as a result of the ‘Swiss cheese’ affect which is the non-uniform loss of irrigation within irrigation districts. As Mr Ellis, Chair of the National Irrigators' Council told the committee:

We formed the National Irrigators' Council two, three or four years ago but this would be the first time we have had irrigators from across the four basin states actually sitting in a room and having some discussions. I do not want to see [the Central Irrigation Trust] go out of business from the Swiss cheese effect down there [in the Riverland Region of South Australia] any more than I want to see my own region go out of business. I formed the National Irrigators' Council with a view to being smarter about how we do things in this basin and trying to come up with some positives about how we do things better—and God help us if we don't.<sup>13</sup>

4.22 The additional problems for communities only just recovering from severe drought, the economic downturn stemming from the global financial crisis and the sustained record high Australian dollar were made apparent when the committee held public hearings on Hay and Mildura in early April 2012.

4.23 Indeed, the committee's hearing in Hay took place only days after the town suffered significant flooding. The backdrop to the hearing reasserted the need for the Basin Plan being the right one for rural communities.

4.24 Mr Crighton, a local engineer from Hay, summed this up well:

Water is going to go; we understand that. We all want the river to be managed; we all want it to be maintained. We understand that a volume of water has to go but the communities that are there are going to be the people who are truly going to suffer from that change and they are the people who most need assistance. These regional towns need any assistance they can get to broaden their sector, to get out and grab other work and other income and to start working with other industries, such as our predominant industry which is dryland farming. The transition is not easy.<sup>14</sup>

4.25 The General Manager of Hay Shire Council outlined the impact of the 2750 GL/y reduction for Hay in stark terms:

That will decimate the lifeblood of this area. From Hay Shire's point of view, it is a very resilient community but it has had a pretty hard time with 12 years of extreme drought, and to lose this amount of irrigated agriculture from the area is a terrible blow to the economy of the community.<sup>15</sup>

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13 Mr Stewart Ellis, Chair, National Irrigators' Council, *Committee Hansard*, 23 April 2012, p. 55. See also Mr Terence Hogan, Chairman, Riverina and Murray Regional Organisation of Councils, *Committee Hansard*, 2 April 2012, p. 58; and Mr Mark McKenzie, Chief Executive, Murray Valley Winegrowers Inc., *Committee Hansard*, 3 April 2012, p. 20.

14 Mr Jasen Crighton, Director, Crightons Rural Engineering *Committee Hansard*, 2 April 2012, p. 5.

15 Mr Allen Dwyer, General Manager, Hay Shire Council, *Committee Hansard*, 2 April 2012, p. 57.

4.26 The impact was not limited to Hay, as the committee heard from evidence it took in Mildura the following day. Mayor Margaret Thomson of Wentworth Shire was pessimistic about the Basin Plan's impact on the Wentworth community given its reliance on irrigated farming:

We do have very grave concerns about the effect on our communities in the future and how we can remain a prosperous community. The shire is an agricultural economy that is almost entirely dependent on production from irrigated horticulture. Up to 80 per cent of the gross value of our agricultural production is generated by only 0.5 per cent of the landmass of the Wentworth shire.<sup>16</sup>

4.27 The Mildura Rural City Council Mayor was also concerned that communities would be 'decimated' as a result of the Basin Plan and its implementation of the water buyback. He also pointed to its follow-on effects:

...it will take out of those areas massive production, and it is going to make it very difficult for the councils to continue with a rate level as it is currently, because as the land values in those areas decrease other people are going to pay more. Mildura is also a member of Regional Cities Victoria, and both the previous Labor government and the current coalition government in Victoria have a policy of people moving to the regional cities. You cannot do that with a lower rate base unless there is some significant capital put in to ensure that they are able to survive.<sup>17</sup>

4.28 The representative from Citrus Australia highlighted the need for the Basin Plan and related water policies to build consensus among industry. However Ms Chapman suggested that at the moment there is likely to be the opposite outcome:

...we will have infighting within our industries, all about everybody saying that their produce is the most important. It is so essential that, if we are going to have solid regional communities—and we need that for Australia to survive—we can get something that we can all work with. At the moment there is no guarantee that we are getting anywhere close to anything that we can live with.<sup>18</sup>

### **Modelling of rural impacts**

4.29 The available socio-economic information makes it clear that certain rural Basin communities will struggle due in part to the Basin Plan. However, the reliability of this information is thrown in doubt by various problems in the modelling of the socio-economic impacts of the Basin Plan on rural communities.

4.30 For example, the committee questioned the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) over its analysis of

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16 Councillor Margaret Thomson, Mayor, Shire of Wentworth, *Committee Hansard*, 3 April 2012, p. 30.

17 Councillor John Arnold, Mayor, Mildura Rural City Council, *Committee Hansard*, 3 April 2012, p. 31.

18 Mrs Tania Chapman, Chair, Citrus Australia, *Committee Hansard*, 3 April 2012, p. 26.

socio-economic impacts and, in particular, the assumptions made about people remaining in communities after they sold their water entitlements. ABARES officials explained that their main modelling 'assumed they [those who changed jobs as a result of the Basin Plan] would stay within the regions' as the modelling only considered large regions rather than focussing on smaller towns.<sup>19</sup>

4.31 ABARES went on to state that different scenarios, such as modelling the impact where people moved out of a region and therefore removed money from that region, made only a 'relatively small' difference. Despite this, ABARES conceded that the way the modelling worked meant it was difficult to actually determine the proportion of people staying or leaving a region as a result of the plan.<sup>20</sup>

4.32 Another significant flaw in the ABARES modelling appears to be limited consideration of connectivity between the water resources in the Basin, the importance of which was discussed in Chapter 3. When asked about the inclusion on connectivity in the ABARES modelling, officials responded:

It is not a detailed scientific model, but there is some representation of differences between surface water and groundwater in the modelling.<sup>21</sup>

4.33 The MDBA's own socio-economic modelling report only looks at the 'likely' impact of reducing surface water. The socio-economic implications reflected in this report are limited to one scenario but also only consider the long-term average SDLs for surface water and no consideration is provided to groundwater extractions.<sup>22</sup>

4.34 Given the broad nature of the assessments made by the MDBA and ABARES, there is uncertainty regarding the extent of the negative socio-economic impact, which communities will suffer. As a consequence, some organisations undertook their own assessments into the impact on local areas. One such report commissioned by Murrumbidgee Irrigators Ltd presented quite different findings to the MDBA's assessments:

The Independent [Economics] study found that a 29 per cent reduction in productive water use in the South West Murrumbidgee (Griffith, Leeton, Narrandera, Carrathool and Murrumbidgee local government areas) is likely to permanently reduce employment by 2100 jobs...[and] also estimates GDP in this region will reduce by about 9 per cent and income by about \$200 million.<sup>23</sup>

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19 Mr Paul Morris, Executive Director, ABARES, DAFF, *Committee Hansard*, 24 April 2012, p. 11.

20 Mr Paul Morris, Executive Director, ABARES, DAFF, *Committee Hansard*, 24 April 2012, p. 11.

21 Mr Paul Morris, Executive Director, ABARES, DAFF, *Committee Hansard*, 24 April 2012, p. 5.

22 MDBA, *The Socio-economic implications of the proposed Basin Plan*, May 2012, p. 3.

23 Murrumbidgee Irrigators Ltd, *Murray-Darling Basin Plan*, [www.mirrigation.com.au/Policy-and-Reform/Murray-Darling-Basin-Plan/Murray-Darling-Basin-Plan](http://www.mirrigation.com.au/Policy-and-Reform/Murray-Darling-Basin-Plan/Murray-Darling-Basin-Plan), (accessed 6 September 2012).

4.35 ABARES explained that the variation in results of modelling could be attributed to the size of areas assessed. Mr Morris explained:

[The Independent Economics modelling] has some quite unusual results that we do not quite understand. The smaller the region, potentially the higher the likelihood of people moving out of the region. They have defined quite a small region—it is the south-west Murrumbidgee—whereas our regions are a bit bigger than that.<sup>24</sup>

4.36 The MDBA also stated that the main reason for the varying socio-economic impact results is that different assumptions have been used for different modelling and that it did not agree with the assumptions used in alternative modelling.<sup>25</sup>

4.37 However, the MDBA has not stated which assumptions it disputed nor has it given a clear explanation as to the key assumptions that underpinned its assessment of socio-economic impacts and a rationale as to why these were more appropriate.<sup>26</sup>

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24 Mr Paul Morris, Executive Director, ABARES, DAFF, *Committee Hansard*, 24 April 2012, p. 11.

25 MDBA, *The Socio-economic implications of the proposed Basin Plan*, May 2012, pp 3–4.

26 MDBA, *The Socio-economic implications of the proposed Basin Plan*, May 2012, p. 4.



# Chapter 5

## Conclusions and recommendations

5.1 This final chapter sets out the committee's views and recommendations for the key areas of surface water, ground water, environmental outcomes, and socio-economic impacts that are covered in this interim report.

### Surface water

#### *Committee view*

5.2 The committee is deeply concerned with the treatment of surface water in the Basin Plan. In particular, it considers greater explanation of the assumptions used to develop the 2750 gigalitres per year (GL/y) figure put forward by the Murray-Darling Basin Authority (MDBA) is required.

5.3 Until the MDBA conducts and releases detailed modelling of Sustainable Diversion Limit (SDL) scenarios, with and without system constraints, the committee is of the view that the Australian public and Basin stakeholders are without some necessary information to allow sensible debate on the Basin's future.

5.4 As a consequence, the committee believes that Parliament is limited in its ability to make an informed decision on the Basin Plan as it stands.

5.5 The committee considers that the MDBA's reliance on historical data up to 2009 for its modelling purposes has significant shortcomings. In particular, the committee is unconvinced by the MDBA's explanations for not including the rainfall from 2010 and 2011.

5.6 More importantly, the committee is of the view that greater explanation of climate change projections into the modelling is required.

5.7 This issue is exacerbated in the committee's view by the MDBA overlooking the relevant consequences of forest interception for the modelling of surface water SDLs.

5.8 Finally, the committee is of the view that the MDBA has not properly explained its rationale for using a pro-rata reduction for all water entitlement classes in developing the 2750 GL/y figure. In this regard, the committee is also concerned about the lack of information from the MDBA on its treatment of terminal water (that is, water from terminal or non-connected river systems) in the development of the plan.

### **Recommendation 1**

**5.9** The committee recommends that the Murray-Darling Basin Authority (MDBA) publicly release a succinct, non-technical explanation of the assumptions used to develop the 2750 gigalitres per year (GL/y) figure.

### **Recommendation 2**

**5.10** The committee recommends that the MDBA consider modelling several alternative scenarios other than the 2750 GL/y. All relevant results (including the allocation of different water types) from any modelling must be publically released. The CSIRO must be commissioned to review the effectiveness of any scenario to reach the Water Act's required ecological outcomes. Finally, the socio-economic impacts of any scenario must be independently modelled and the results publicly released.

### **Recommendation 3**

**5.11** The committee recommends that the MDBA publicly release a succinct, non-technical explanation of its climate change projections and the resulting effects to each Basin catchment's water harvesting potential. This should also include considerations of forest interception of water in the modelling for the return of water to the Murray-Darling Basin system.

## **Ground water**

### *Committee view*

**5.12** The committee acknowledges that there are still significant and serious information gaps regarding surface and ground water connectivity which is restricting the ability of decision-makers to evaluate the Basin Plan in an informed and considered way.

**5.13** The committee believes that the MDBA has failed to adequately explain the decisions it has taken regarding ground water SDLs in developing the Basin Plan. This has been highlighted by a number of changes from the Guide to the Basin Plan which could have been more fully explained.

### **Recommendation 4**

**5.14** The committee recommends that the Government commit immediate resources to addressing the information gaps in scientific knowledge in surface and ground water connectivity particularly in the Murray-Darling Basin.

## **Recommendation 5**

**5.15 The committee recommends that the MDBA further articulate the reasoning for the changes in ground water SDLs that have occurred over the various iterations of the Basin Plan. This should include details of all individual resource units and the aggregate for the Basin.**

### **Environmental outcomes**

#### *Committee view*

5.16 The committee is concerned that evidence presented during the inquiry stated that the Basin Plan does not meet a significant number of the water requirements of key environmental assets and key ecosystem functions which are set out in the plan and required by the *Water Act 2007*.

5.17 The committee remains unconvinced by the arguments put forward by the MDBA and other government departments that these targets and outcomes are a necessary trade-off for the socio-economic impacts identified in the Basin Plan.

5.18 The committee is also concerned with the lack of information available about the environmental watering plan. It considers it necessary to more clearly develop the details of such a plan for the Basin system.

## **Recommendation 6**

**5.19 The committee recommends that the MDBA clearly and publicly explain whether the 2750 GL/y target, and any subsequently modelled targets, meet the water requirements of key environmental assets and key ecosystem functions which are set out in the Basin Plan and required by the *Water Act 2007* and to what extent they are met.**

### **Socio-economic impacts**

#### *Committee view*

5.20 The committee agrees with those witnesses who highlighted the significant and adverse impact that the Basin Plan will have on Basin communities.

5.21 The committee does not consider the potential for socio-economic impacts as a reason for not having a robust Basin Plan. It is the committee's view that changes to ensure the long-term ecological sustainability of the Basin system are also ultimately in the long-term interests of the Basin communities.

5.22 However, the committee remains concerned of the socio-economic impacts of the Basin Plan and believes it is necessary that further engagement with rural communities at a local level is needed to manage the challenges faced as a result of the Basin Plan.

5.23 The committee also considers that the relevant government departments need to further research the socio-economic impacts of the Basin Plan and articulate the results more clearly to the communities and key stakeholders.

### **Recommendation 7**

**5.24 The committee recommends that the MDBA clearly and publicly explain the socio-economic impacts of the 2750 GL/y target and any subsequently modelled targets.**

### **Recommendation 8**

**5.25 The committee recommends that when the final Basin Plan is being implemented that the Government introduce support programs for Basin communities that are disproportionately affect by reduced water entitlements.**

5.26 The Chair of the committee and Australian Greens committee members believe that the Basin Plan should be delayed rather than implemented in its current form. Acknowledging that the final version may differ from the various draft versions prepared by the MDBA, these committee members believe that the due to the following reasons the plan should be delayed:

- there is deep dissatisfaction among a wide-variety of stakeholders, from scientists, irrigators, farming organisations, rural and regional communities, environmental groups and MDB state governments;
- the drought-ending rains of the past two years provides the MBDA with more time to develop the right plan for the Basin; and
- as it stands, Parliament does not have the necessary socio-economic information and sufficient scientific justification to make an informed decision whether the plan meets the requirements of the *Water Act 2007*.

5.27 Accordingly these committee members believe that Minister Burke should delay the tabling of the plan.

**Senator the Hon. Bill Heffernan**

**Chair**

# **Australian Greens**

## **Minority Report – The Management of the Murray Darling Basin**

1.1 The establishment of a Murray Darling Basin Plan will be a crucial reform in Australian history and it must ambitiously seek to correct the decades of over-allocation from the Basin system. The final Basin Plan must address the long-existing environmental crisis of over-consumption and restore the river's health for the benefit of communities, local economies and ecological resources up and down the system. The reforms must achieve a healthy, productive and resilient river and land network that can survive dry times and flourish over future generations.

1.2 The Committee heard evidence in a number of hearings from scientific experts, individuals who are experienced in the management of Australia's precious water resources, and industry and community representatives. The Committee looked at three different iterations of the Murray Darling Basin Draft Plan over the course of the inquiry. The submissions and evidence given to the Committee are summarised in the Majority Report.

1.3 This Minority Report identifies the Australian Greens' analysis of the key concerns raised by submitters in relation to the proposed Draft Plans over the course of the inquiry, including the most recent version released in August 2012.

### **Surface Water - Sustainable Diversion Limits (SDLs)**

#### ***Lack of transparent identification of SDLs target based on best available science***

1.4 The Draft Plan proposes a reduction in consumptive use of water by 2750 GL/y. This figure is not adequate to achieve the majority of targets required by the Water Act for a healthy working river. The 2750 GL/y of environmental flows fails to achieve 43% of the Act's environmental targets, and so does not deliver a healthy river.<sup>1</sup>

1.5 Expert witnesses appearing before this inquiry noted that the Murray Darling Basin Authority (MDBA) did not, as a first step, clearly identify and publish the volume of water that is needed to keep the system healthy as informed by the best available science in accordance with the *Water Act 2007*. This failure of scientific process has dogged the Draft Plan through its various iterations.

1.6 Mr Tim Stubbs, of the Wentworth Group, raised concerns that the requisite scientific steps have not been taken by the MDBA in the development of the Draft Plan:

First we need a plan that clearly articulates how much water we need for a healthy Murray Darling Basin. This plan does not do that, so we need a plan

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1 Australian Conservation Foundation, *Modelled Ecological Outcomes of the Proposed Basin Plan 2750 SDL Scenario*, document tabled, 10 September 2012.

that sets that number down as the science is based. We need to understand where that water needs to come from, which share comes out of each catchment and what contributions to the downstream flows are needed.<sup>2</sup>

1.7 A higher range of return of environmental water scenarios, including with major constraints relaxed, should immediately be modelled and released so the Australian public can understand the scope of environmental achievement at each level.

1.8 Once the range of possibilities is clear, an informed decision can be made. Socio-economic and other considerations could mean we do not pursue the highest return of environmental water scenario, but the Australian public could have confidence that the decision has been made on the best information. The modelling technology possessed by the MDBA is capable of providing clear evidence of the environmental outcomes under different water return scenarios. In all the evidence given to this inquiry, it is still not clear why the MDBA has never modelled higher ranges, including 4000 GL/y, as requested by numerous groups including the Australian Greens.

1.9 A 4000 GL/y water recovery has long been posited, by the best available science, as the minimum amount to be recovered in order to sustain a health river. If federal Parliament is to be asked to agree to a figure that is less than 4000 GL/y, then it is beholden on the MDBA to transparently provide the full modelling for both 4000 GL/y and for lower scenarios in order to map out the environmental trade-offs as the level of ambition drops.

### ***2750 GL/y is inadequate***

1.10 The witnesses appearing for the Wentworth Group advised the committee that the Draft Plan is inherently flawed because it does not provide the modelling and explanation for why 2750 GL/y has been settled on as the proposed surface water reduction of consumptive take. Mr Peter Cosier said 'our primary concern is that Parliament is not being provided with the scientific evidence on which to make an informed decision'.<sup>3</sup> Dr John Williams expressed the concerns of his 'horrified' scientific community that 'we are going to spend a lot of money without the best knowledge applying to what this river system needs. In addition to that, we are not using the best economics and social science to know how to help the people of this basin adjust to the huge task of adjustment'.<sup>4</sup>

### ***Modelling without constraints***

1.11 The Committee was advised that there is much still to be done to investigate how system constraints may be overcome and incorporated into the long term Basin

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2 Mr Tim Stubbs, environmental engineer for the Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 10.

3 Mr Peter Cosier, Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 14.

4 Dr John Williams, Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 14.

Plan. Mr Jonathan La Nauze of the Australian Conservation Foundation said 'we have been told a giant fib about constraints—specifically, the notion that you cannot deliver a drop more than 2750 GL/y of environmental water down the river without flooding a town or a bridge somewhere'.<sup>5</sup> There are different types of constraints in the system including physical constraints like dams or bridges, operational constraints and constraints caused by rules about water use. There are also many possibilities for tackling these diverse constraints up and down the system. The Basin Plan should be seen as a trigger to work creatively to remove those constraints and aim for higher water delivery, but instead, the mere existence of constraints has apparently put a hard ceiling on the Draft Plan's level of scientific inquiry and ambition.

1.12 The MDBA should model and release higher volume scenarios with major constraints removed. The constraints management strategy must include the cost and feasibility of overcoming river management infrastructure constraints so that environmental flows can be delivered downstream.

### **Recommendation 1**

**The Australian Greens recommend that the MDBA model several alternative scenarios above 2750 GL/y including 4000 GL/y and above, *with major system constraints removed*. All relevant results (including the allocation of different water types) from the modelling must be publically released. The CSIRO must be commissioned to review the effectiveness of each scenario to satisfy the Water Act's required ecological outcomes.**

### **Recommendation 2**

**The Constraints Management Strategy should be provided to Parliament for consideration prior to the tabling of the final Basin Plan by the Minister so that Parliament may make an informed decision.**

### **Environmental outcomes for South Australia**

1.13 The MDBA has presented a series of draft plans that only investigate a lower range of water to the environment. The low ambition is likely to have a very detrimental effect on South Australia. 2750 GL/y will be insufficient to fulfil Australia's Ramsar Convention obligations and would fail to maintain the ecological character of South Australia's internationally significant wetlands.<sup>6</sup> More than half the ecological targets of the Coorong will not be reached under the current Draft Plan, which will lead to dangerously high salinity in the Northern Coorong.<sup>7</sup> Many of the

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5 Mr Jonathan La Nauze, Healthy Rivers Campaigner, Australian Conservation Foundation, *Committee Hansard*, 10 September 2012, p. 20.

6 Australian Conservation Foundation, *Modelled Ecological Outcomes of the Proposed Basin Plan 2750 SDL Scenario*, document tabled, 10 September 2012, p. 2.

7 Australian Conservation Foundation, *Modelled Ecological Outcomes of the Proposed Basin Plan 2750 SDL Scenario*, document tabled, 10 September 2012.

ecological targets in the Riverland-Chowilla Ramsar site will also not be met under the 2750 GL/y scenario, and the rest are only satisfied to a high level of risk.

1.14 For the sake of South Australia and in pursuit of economic responsibility for these \$9 billion reforms, the Basin Plan must deliver more than a merely moderate improvement on our current disastrous water usage scenario. The Basin Plan must strive to achieve, as a priority, adequate water for all states *even in dry conditions*. South Australia, as the most water efficient state and the state most exposed to environmental disaster in times of low flow, needs certainty that this investment will deliver security in the times of extremity and plenty.

### **Recommendation 3**

**The Basin Plan must set appropriate salinity targets and provide for a minimum annual allocation of environmental water for the Coorong, Lower Lakes and Murray Mouth including during dry periods.**

#### **Groundwater and Climate Change**

1.15 The Guide of the Draft Plan in October 2010 anticipated that climate change and a drying climate would have a significant effect on the Murray Darling Basin water resources. However the current version of the Draft Plan does not make any provision for climate change modelling and impacts, particularly relating to water run-off. The Majority Report provides an overview of the evidence provided to the Committee.

1.16 In relation to the groundwater SDL, the MDBA has proposed four different figures for increased extraction over the course of two years. The proposed groundwater SDLs lurched from 1601 GL/y, to 4340 GL/y, to 3184 GL/y and in the most recent version to 3324 GL/y, with all but the first target representing a substantial increase in extractions. The MDBA's evidence before the Committee did not explain these changes to the groundwater SDL.

1.17 Given the lack of complete knowledge about the interaction of groundwater and surface water, and the connection across catchments and aquifers, it is difficult to understand how these large jumps have been scientifically justified. In line with a precautionary principle in a drying time and in light of the whole point of the water reforms being undertaken, the Greens support the view of the Conservation Council SA that 'by default, these systems should be treated as connected'.<sup>8</sup>

### **Recommendation 4**

**The Basin Plan should not increase groundwater extraction unless it can demonstrated on a case by case basis, with independent scientific assessment of connectivity and ecological outcomes, that the proposed increase in extraction is sustainable and justified.**

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8 Mr Tim Kelly, Chief Executive, Conservation Council of SA, *Committee Hansard*, 24 April 2012, p. 24.



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## Recommendation 5

**The Basin Plan must incorporate climate change modelling as forecast by the best available scientific data.**

### **SDL Adjustment Mechanism and Infrastructure Spending**

#### *Inadequate benchmarking and locking in failure*

1.18 The Greens note that the current SDL adjustment mechanism will set as its benchmark the inadequate environmental outcomes achieved under the 2750 GL/y water recovery scenario. This sets up any future adjustment of the Plan in later years for failure because even the highest possible adjustment for further environmental water returns will be damagingly constrained by its unambitious beginnings in 2012.

1.19 The adjustment mechanism as currently proposed would benchmark against a Plan that does not return enough water to even meet the full range of flow targets described by the MDBA itself as achievable under current operating constraints. Work will continue over the next six years on removing constraints, improving water efficiency and undertaking works and measures, while our scientific knowledge about groundwater/surface water connectivity and climate change will improve. As such, the adjustment mechanism should not bind the Plan to 2029 by placing an unreasonably low ceiling on future environmental achievement.

1.20 The Australian Greens share the concerns raised by submitters about the allocation of water savings being shared between socio-economic use and environmental use. The adjustment mechanism is focused on either upgrading irrigation infrastructure or in-stream works and measures. Given that both supply measures and efficiency measures will be paid for by the tax-payer, any water saved should go back to the environment which will ultimately benefit all States and communities.

#### *Prioritisation of infrastructure spending*

1.21 The adjustment mechanism requires that any further water recovery above 2750 GL/y must occur through infrastructure spending. The Committee was advised that buy backs offer better value for money than infrastructure per GL delivered back to the environment.

1.22 Mr Tim Stubbs noted, 'if you were to get 4000 [GL/y] you could buy that with about \$6 billion and you would still have a significant amount of money left over to help regional communities adjust to that change'.<sup>9</sup>

1.23 Similarly Mr Jonathan La Nauze observed that any future decrease to surface water SDLs, which by then could be necessary due to the drying climate, will be expensively bought by the Australian public under the current adjustment mechanism:

The mechanism can also be used...to recover extra water for the environment, but only through what the authority calls 'efficiency

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9 Mr Tim Stubbs, Environmental Engineer, Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 11.

measures'—that is, expensive upgrades to irrigation infrastructure, whether on farm or off farm. It effectively rules out extra buybacks, putting the brakes on water reform and constraining the hand of future governments.<sup>10</sup>

### **Recommendation 6**

**The adjustment mechanism should be structured to better accommodate the removal of constraints and to facilitate a future decrease in SDLs but not to facilitate any less water being returned to the river.**

### **Recommendation 7**

**The adjustment mechanism should be altered to facilitate and encourage future buybacks where they are strategic and voluntary as buybacks are proven to be the most cost-efficient and secure manner of recovering water from consumptive use.**

### **Conclusion**

1.24 The Australian Greens heard an overwhelming sense of dissatisfaction from virtually all key groups of stakeholders with the Basin Plan.

1.25 The environmental groups that provided evidence to the committee, such as the Australian Conservation Foundation, the Friends of the Earth, and the Inland Rivers Network all expressed serious reservations about the plan in its various iterations. Most recently, the ACF summarised the fundamental flaws with the plan. As Mr La Nauze put it:

...does it deliver a healthy river, and does it represent a good and proper use of taxpayers' money? You would have to say the latest version falls short on both counts.<sup>11</sup>

1.26 The committee received evidence from a number of scientists who have worked extensively on issues relating to the Basin Plan. Of particular note were representatives from the Wentworth Group and the CSIRO who provided evidence critical of various aspects of the plan. The CSIRO, which extensively examined MDBA material in the lead up to its review of the science behind the Environmentally Sustainable Level of Take (ESLT), identified significant shortcomings in the 2800 GL/y scenario in reaching environmental targets and objectives.<sup>12</sup>

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10 Mr Jonathan La Nauze, Healthy Rivers Campaigner, Australian Conservation Foundation, *Committee Hansard*, 10 September 2012, p. 20.

11 Mr Jonathan La Nauze, Healthy Rivers Campaigner, Australian Conservation Foundation, *Committee Hansard*, 10 September 2012, p. 20.

12 Young WJ, Bond N, Brookes J, Gawne B and Jones GJ, *Science Review of the estimation of an environmentally sustainable level of take for the Murray-Darling Basin*. A report to the Murray-Darling Basin Authority from the CSIRO Water for a Healthy Country Flagship, November 2011, p. 30. The CSIRO examined the impacts of returning 2800 GL/y rather than 2750 GL/y as its analysis was based on the modelling undertaken by the MDBA (which modelled 2800 GL/y) rather than is recommended reduction of 2750 GL/y.

1.27 The Wentworth Group was even more damning. As stated earlier in this Minority Report, the Wentworth Group considered key aspects of the plan to be without scientific justification.<sup>13</sup>

1.28 The crux of this Minority Report has been to outline that there are serious flaws in the assumptions used for the Basin Plan and the significant information gaps that remain for key parts of the Basin Plan.

1.29 The Australian Greens are of the view that the MDBA has not adequately explained the reasoning for the 2750 GL/y figure, has not conducted enough independent peer review, has not based the Draft Plan on best available science, has not included the effects of climate change in its modelling, and has relied on flawed assumptions regarding surface and ground water connectivity.

1.30 Taken together, the Australian Greens are of the view that these information gaps do not allow parliament to make informed and considered judgements about the merits of the Basin Plan to achieve the objectives required under the *Water Act 2007* and therefore cannot deliver good public policy for the Basin and its constituents.

**Senator Sarah Hanson-Young**  
**Australian Greens**

**Senator Peter Whish-Wilson**  
**Australian Greens**

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13 Wentworth Group of Concerned Scientists, *Committee Hansard*, 10 September 2012, p. 14.



# **Additional Comments by Nick Xenophon**

## **Independent Senator for South Australia**

1.1 There is absolutely no question we need a plan for this critically important river system, but there is considerable evidence suggesting the current version of the Proposed Basin Plan will not achieve any of its key objectives. Further, it will cause undue financial and social stress for the communities whose livelihoods depend solely on a healthy Murray-Darling Basin system.

1.2 In particular, the current Plan will not secure South Australia's future – it will not protect the Ramsar wetlands, ecosystems and wildlife. Nor will it give South Australian irrigators a fair go.

1.3 The Plan must be amended and the Murray-Darling Basin Authority (MDBA) must undertake fresh modelling urgently.

1.4 If this plan is not amended and it passes Parliament in its current form, we will continue to perpetuate the failures that have occurred since Federation when it comes to managing this vital resource.

1.5 As detailed in the majority report, the latest version of the Murray-Darling Basin Plan, again proposes a sustainable diversion limit which would result in a return to the environment of 2750 GL/y of water for the Murray-Darling River System.

1.6 This is the same SDL put forward by the MDBA in previous drafts of the Basin Plan. It is worth noting that this SDL is significantly less than the proposals of the Guide to the Proposed Basin Plan, which suggested the minimum amount of water needed to protect the environment was 3000 GL/y.

1.7 This is particularly alarming given the weight of evidence that suggests the 2750 GL figure will not be sufficient to flush 2 million tonnes of salt from the system each year.

1.8 I refer to the work of The Wentworth Group of Concerned Scientists, which comprises of some of Australia's best environmental scientists and engineers. They state:

Our fundamental objection is that none of the 2011 draft Basin Plan documents provide even the most basic information as to the volumes or timing of water that are required to give a reasonable prospect of achieving these objectives.<sup>1</sup>

1.9 Similarly, the Goyder Institute for Water Research concluded that *"the ecological character of the South Australian environmental assets, as defined in current water management plans, is unlikely to be maintained under the Basin Plan 2750 scenario"*.<sup>2</sup>

1.10 Given these substantial concerns, it is critical that new modelling is undertaken urgently.

### **Recommendation 1**

**The MDBA publicly release a non-technical explanation of the assumptions used to develop the 2750 GL/y.**

### **Recommendation 2**

**The MDBA conduct urgent modelling of a number of figures above the 2750 GL/y figure, up to 4000 GL/y. This modelling must be publicly released with a both a technical and non-technical explanation and conducted in a timely manner.**

### **Recommendation 3**

**The Murray-Darling Basin Plan is delayed until such modelling is completed.**

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1 Wentworth Group of Concerned Scientists, *Statement on the 2011 Draft Basin Plan*, January 2012, p. 6.

2 Goyder Institute for Water Research, *Expert Panel Assessment of the Likely Ecological Consequences in South Australia of the Proposed Murray-Darling Basin Plan*, 2 April 2012, p. viii.

1.11 There are serious concerns regarding the transparency and fairness of the Federal Government process for awarding taxpayer-funded grants of funding to irrigators.

1.12 In June 2012, the Australian National Audit Office (ANAO) report *Administration of the Private Irrigation Infrastructure Operators Program in New South Wales*, raised some serious concerns regarding the operation of this program – a key component of the Federal Government's \$5.8 billion Sustainable Rural Water Use and Infrastructure Program.

1.13 The ANAO's report concluded that all applications from funding rounds one and two of the New South Wales program – which collected a total \$649 million of taxpayers' money – *'did not contain sufficient detail to facilitate a thorough assessment, particularly in relation to addressing the economic/social criteria, environmental criteria and the projects' cost-benefit analyses'*.<sup>3</sup>

1.14 The ANAO report also concluded that the Department of Environment, Water, Sustainability, Population and Communities (SEWPaC) had not established baselines from which to measure water efficiency improvements, nor had it identified the quality of the water savings that would be returned to the environment based on these taxpayer-funded investments.

1.15 In another case of alarming mismanagement, The Victorian Ombudsman's report into the Foodbowl Modernisation Project – which attracted \$1 billion of Federal funding – found that the project allocated *"substantial funding although it had not undertaken a Business Case and feasibility studies critical to assess and evaluate investment options"*<sup>4</sup>

1.16 The Victorian Auditor General concluded:

The decision to commit \$1 billion was based on advice of water savings and cost assumptions that had not been verified, technology that had not yet proven itself and the feasibility of the project, which was unknown.<sup>5</sup>

1.17 These two examples highlight the alarming inconsistencies and errors in the allocation of funds, but also emphasise the inequality and unfairness in the way in which funds for projects have been awarded.

1.18 South Australian irrigators have applied for funding under a number of Federal Government programs – most notably the Sustainable Rural Water Use and Infrastructure Program – but many have been deemed too efficient to qualify.

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3 Australian National Audit Office, *Administration of the Private Irrigation Infrastructure Operators Program in New South Wales*, June 2012, p. 22.

4 Victorian Ombudsman, *Investigation into the Foodbowl Modernisation Project and related matters*, November 2011, p. 8.

5 Victorian Auditor General, *Irrigation Efficiency Programs – Audit Summary*, June 2010, p. 1.

1.19 The MDBA has consistently taken a glib attitude towards this issue, particularly when it comes to measuring the comparative efficiencies of different irrigation regions. I refer to evidence given by the MDBA's Chief Executive, Dr Rhondda Dickson, during Senate Estimates in May of this year.

**Senator XENOPHON:** No, but you can establish how efficient an area is and when it became efficient, can't you? That is a matter of fact, isn't it?

**Dr Dickson:** You could presumably do that. But I guess, as to how you might rank efficiencies, that is not really our job. It is more to look at what is a sustainable level of extraction rather than who is the most efficient.<sup>6</sup>

1.20 There is a distinct lack of flexibility in the use and criteria of the infrastructure fund, which disadvantages early adopters of water efficiency measures and in particular regions such as the Riverland in South Australia.

1.21 Further, not only are those upstream receiving money for water efficiency projects, they are also getting to keep half the water they save.

1.22 This will skew the buyback market dramatically against South Australia, particularly given the as the MDBA is committed to using a market based approach to finding another 101 GL of savings in South Australia after end valley targets are met.

1.23 Furthermore, when a Basin-wide cap was first introduced in 1995 it was based on levels of extraction for New South Wales and Victoria. Those States used modelling based on hydrological models due to a lack of metering of actual water usage.

1.24 In contrast, as South Australia had meters, a decision was made to cap use at 90 per cent of entitlements, which gave some recognition to South Australia abiding by the 1968 cap. At that time in 1995, usage was only about 82 per cent of entitlements.

1.25 However with the setting of Baseline Diversion Limits (BDLs) in the Proposed Basin Plan, it appears the MDBA – in an attempt to achieve consistency based on usage – has shifted the starting point to actual use, rather than entitlements.

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6 Dr Rhondda Dickson, Murray-Darling Basin Authority, Committee Hansard, Environment and Communications Legislation Committee, 23 May 2012, p. 102.



1.26 The uncertainty in how the BDL was calculated was discussed in depth by Mr Gavin McMahon, Chair of South Australian River Communities, at the Mildura hearing:

**Senator XENOPHON:** Can I just go to Mr McMahon in relation to pages 147 to 148 of the proposed Basin Plan. It refers to the South Australian Murray water resource plan, saying that the limit is BDL—basin diversion limit—minus 101 gigalitres per year and local reduction amount minus the SDL resource unit shared reduction amount. It says there: *As of 30 September 2011, the reduction achieved is estimated to be 79 GL per year and thus the gap remaining is estimated to be 22 GL per year in relation to the local reduction amount for this SDL resource unit.*

Do you have any comments on, firstly, how they got to that figure? It seems to be a bit different from Victoria, where the cap was 1,802 and the gap that is being sought is only 10 gigalitres less. Secondly, what would be the impact of taking 22 gigalitres out of the Riverland in terms of actual irrigation areas? Thirdly, you are right—I think Mr Byrne said it—that the minister acknowledges that South Australia has been an early adopter, but have you been provided with any form of crediting of that early adoption and sticking to the cap?

**Mr McMahon:** The last point is: no, we have not been credited with anything. I suggested earlier on that we do have an issue with the baseline diversion limit. We still have an issue, even though we have had—

**Senator XENOPHON:** How do they get to it, though?

**Mr McMahon:** There is a document that has been given to us from both the MDBA and the DFW, which shows that there are different components to the reductions. Our cap adjusted for trade is about 756 gigalitres. The BDL is 665. You have got to take into account the Living Murray water in there as well, which is about 42 gigalitres. So there is a shortfall in there of some 50 gigalitres. Some of that is attributed to the SA water cap, and then there are a number of other things that reduce the cap—things like improved monitoring, environment and adjusting for climate change and the like—which then reduced the BDLs.

**Senator XENOPHON:** Is that document a public document?

**Mr McMahon:** No, it is a letter from DFW to us. I am happy to provide that.

**Senator XENOPHON:** Could we ask for a copy of that, please.

**Mr McMahon:** Yes. That is why we have some issues over the BDL and its impact on our water security, first up.

**Senator XENOPHON:** Does it seem a bit rubbery to you in terms of how they got to it?

**Mr McMahon:** Yes, I have some concerns about it...<sup>7</sup>

1.27 Given the above interchange, it is critical the MDBA urgently clarify how the BDLs have been calculated in both the current and previous versions of the draft basin plan.

1.28 South Australia should receive recognition of its past efforts and adhering to the cap and for the inconsistencies in the setting of the BDL, but this has not been addressed in any version of the Proposed Basin Plan.

#### **Recommendation 4**

**The MDBA must urgently provide advice as to the methodology for the setting of the BDL.**

#### **Recommendation 5**

**Urgent modelling is undertaken to establish the comparative efficiencies of irrigation communities in the Murray-Darling Basin. The results of such modelling can be used to fairly determine Baseline Diversion Limits, and take into account such comparative efficiencies to ensure fair treatment of irrigators.**

#### **Recommendation 6**

**Irrigators must receive recognition for their past water efficiencies. In the absence of any prior recognition for past water-saving efforts, the guidelines for the Sustainable Rural Water Use and Infrastructure Program and other similar programs should be amended to allow irrigators to apply for funding for research and development purposes.**

#### **Recommendation 7**

**The MDBA provide urgent evidence that the current market-based buyback approach will not distort the water and commodity market.**

**In the absence of any available evidence, the MDBA conduct urgent modelling on the impact the market-based buyback approach will have on those who have not accessed funds under the Federal Government's \$5.8 billion Sustainable Rural Water Use and Infrastructure Program and other similar programs.**

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7 Mr Gavin McMahon, *Committee Hansard*, 3 April 2012, pp 49–50.

**Senator Nick Xenophon**



# Appendix 1

## TERMS OF REFERENCE

On 28 October 2011 the Senate moved that the following matter be referred to the Rural Affairs and Transport References Committee for inquiry and report by 30 November 2011:

The management of the Murray-Darling Basin, and the development and implementation of the Basin Plan, with particular reference to:

- (a) the implications for agriculture and food production and the environment;
- (b) the social and economic impacts of changes proposed in the Basin;
- (c) the impact on sustainable productivity and on the viability of the Basin;
- (d) the opportunities for a national reconfiguration of rural and regional Australia and its agricultural resources against the background of the Basin Plan and the science of the future;
- (e) the extent to which options for more efficient water use can be found and the implications of more efficient water use, mining and gas extraction on the aquifer and its contribution to run off and water flow;
- (f) the opportunities for producing more food by using less water with smarter farming and plant technology;
- (g) the national implications of foreign ownership, including:
  - (i) corporate and sovereign takeover of agriculture land and water, and
  - (ii) water speculators;
- (h) means to achieve sustainable diversion limits in a way that recognises production efficiency;
- (i) options for all water savings including use of alternative basins; and
- (j) any other related matters.

## IMPACT OF MINING COAL SEAM GAS

The Rural Affairs and Transport References Committee, as part of its inquiry into management of the Murray Darling Basin, is examining the impact of mining coal seam gas on the management of the basin. The committee will examine:

- The economic, social and environmental impacts of mining coal seam gas on:
- the sustainability of water aquifers and future water licensing arrangements;
- the property rights and values of landholders;
- the sustainability of prime agricultural land and Australia's food task;
- the social and economic benefits or otherwise for regional towns and the effective management of relationships between mining and other interests; and
- other related matters including health impacts.



# Appendix 2

## Submissions Received

### Submission

### Number

### Submitter

1	Matthew Devine
2	Debbie Buller
3	Geoff Tuckett
4	Finley Chamber of Commerce - Industry and Agriculture
5	David Leaman
6	Peter Oataway
7	Murray Valley Water Diverters Advisory Association (NSW)
8	Margot Marshall
9	Pechelba Trust
10	Donald Ward
11	Robyn Schmetzer
12	Greg Parr
13	Peter Millington
14	Michael Tonner
15	Environmental Farmers Network
16	Country Women's Association of NSW
17	Urban Taskforce Australia Ltd
18	South Australian River Communities
19	Les Hill
20	Pentreaths Lockington
21	Grand Junction Pty Ltd
22	Barrie Dexter and Donald Macleod
23	Brian Kelaher
24	Bill Murray
25	Murrumbidgee Valley Food and Fibre Association (MVFFA)
26	Virginia Tropeano
27	Les Worland
28	Robert Shaw
29	Yenda Producers Co-operative Society Ltd
30	John Fensom
31	Ken Jury
32	NSW Irrigators' Council
33	Wakool Shire Council
34	Meredith Whykes
35	Grampians Regional Development Australia Committee
36	Josephine Kelly
37	Australian Plantation Products and Paper Industry Council (A3P)

- 38 Leeton Shire Council
- 39 National Irrigator's Council
- 40 Citizens Electoral Council of Australia
- 41 Loddon Shire Council
- 42 Murray Irrigation Ltd
- 43 John Martin Total Property Services
- 44 Bruce Lang
- 45 Christine O'Callaghan
- 46 Tobacco and Associated Farmers Co-operative Ltd Rural Supplies (TAFCO)
- 47 Myrtleford Chamber of Commerce and Industry (MCCI)
- 48 East End Mine Action Group Inc. (EEMAG)
- 49 South Pacific Seed PL
- 50 Ian Rowan
- 51 Bill Hetherington
- 52 Mark Cameron
- 53 Jessica Stanford
- 54 Australian Floodplain Association
- 55 Max Winders
- 56 Kristy Bartrop
- 57 University of New England (UNE)
- 58 National Association of Retail Grocers of Australia PL (NARGA)
- 59 Mildura Rural City Council
- 60 Western Murray Irrigation Limited
- 61 Griffith Business Chamber
- 62 B and W Rural
- 63 Namoi Councils Water Working Group
- 64 Inland Rivers Network
- 65 Wentworth Shire Council
- 66 High Security Irrigators - Murrumbidgee
- 67 Victorian Farmers Federation (Corryong Branch)
- 68 The Hon. Tony Catanzariti MLC
- 69 Peter Calabria
- 70 Jason Richardson
- 71 Citrus Australia Ltd
- 72 Wine Grapes Marketing Board (WGMB)
- 73 Julie Andrezza
- 74 Ben Witham and Family
- 75 Young Irrigation Network
- 76 NSW Business Chamber
- 77 Bourke Shire Council
- 78 Loddon Mallee RDA Committee
- 79 Stephen Tynan
- 80 NSW Murray Darling Basin Catchment Authorities
- 81 Kitty Schiansky
- 82 Victorian Farmers Federation (Kiewa Branch)
- 83 Jason Reid



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- 84** Murrumbidgee Irrigation
  - 85** David Reid
  - 86** Des Morgan
  - 87** Barossa Infrastructure Ltd
  - 88** Bart Brighenti
  - 89** National Association of Forest Industries (NAFI)
  - 90** Gannawarra Shire Council
  - 91** Terry Court
  - 92** Borders Rivers Food and Fibre
  - 93** Murrumbidgee Private Irrigators Inc
  - 94** Casimiro Damiani
  - 95** Bill Johnston
  - 96** Don Ciavarella
  - 97** FutureFlow
  - 98** RDA Committees (Hume, Grampians and Loddon Mallee)
  - 99** Rural City of Wangaratta
  - 100** Namoi Water
  - 101** West Corurgan Private Irrigation District
  - 102** Conservation Council of South Australia
  - 103** Roger Shemilt
  - 104** Walter Mitchell AM
  - 105** North East Victorian Catchment Councils
  - 106** AgForce Queensland
  - 107** Anthony Roddy
  - 108** University of Newcastle, Centre for Rural and Remote Mental Health
  - 109** Tanya Clarke
  - 110** Sally Dye
  - 111** Booth Associates - Agribusiness and Environmental Solutions
  - 112** Michael Ryan
  - 113** Tom Condon
  - 114** Riverina Citrus
  - 115** Hay Shire Council
  - 116** CSIRO
  - 117** Municipal Association of Victoria (MAV)
  - 118** National Farmers' Federation (NFF)
  - 119** Indigo Shire Council
  - 120** Tandou Ltd
  - 121** Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)
  - 122** Running Stream Water Users Association Inc
  - 123** National Program for Sustainable Irrigation
  - 124** Bogan Shire Council (Nyngan)
  - 125** Murrumbidgee Groundwater Inc
  - 126** Riverina Eastern Regional Organisation of Councils (REROC)
  - 127** Department of Agriculture, Fisheries and Forestry (DAFF)
  - 128** Annette Commins

- 129** Tim Commins
- 130** Australian Centre for Agriculture and Law, UNE
- 131** Australian Dairy Farmers Ltd
- 132** Shire of Campaspe
- 133** Hydrology Research Laboratory, University of Sydney
- 134** Mildura Development Corporation
- 135** Balonne Shire Council
- 136** Australian Wetlands and Rivers Centre, UNSW
- 137** Towong Shire Council
- 138** South Australian Murray Irrigators
- 139** Uniting Church of Australia
- 140** Rubicon Water
- 141** Regional Development Australia - Hume Committee
- 142** Australian Network of Environmental Defender's Office (ANEDO VIC)
- 143** Gwydir Valley Irrigators Association Inc
- 144** RDA-Riverina
- 145** Strengthening Riverina Irrigation Communities
- 146** John Chant
- 147** National Water Governance Initiative
- 148** Moira Shire Council
- 149** Australian Conservation Foundation
- 150** Border Rivers - Gwydir Catchment Management Authority
- 151** Victorian Farmers Federation
- 152** Tumbarumba Shire Council
- 153** Michael Erny
- 154** Peter Smith OAM
- 155** Macquarie River Food and Fibre
- 156** SA Citrus Board
- 157** Queensland Farmers' Federation (QFF)
- 158** NSW Farmers' Association
- 159** SA Minister for Environment and Conservation; the River Murray; and Water
- 160** Caroon Coal Action Group
- 161** Dean Brown AO
- 162** Department of Regional Australia, Regional Development and Local Government
- 163** Kim Hann
- 164** Murray Group of Concerned Communities (MGCC)
- 165** Louise Burge
- 166** Glen Andreazza
- 167** Laura Andreazza
- 168** Brendan Andreazza
- 169** Teneeka Andreazza
- 170** Ian Bowditch
- 171** Upper Catchment Water Committee
- 172** Larry and Narelle Willams
- 173** Murray Shire Council

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- 174** Murray Williams
  - 175** Joan Pickersgill
  - 176** NSW State Member for Barwon
  - 177** John Cox
  - 178** Bob Culhane
  - 179** RDA Grampians Committee
  - 180** Ace Regional Marketing
  - 181** Jean Gall
  - 182** David Gall
  - 183** Trevor Loxton
  - 184** Robert Caldwell
  - 185** National Water Commission
  - 186** Ricegrowers' Association of Australia
  - 187** GetSet Inc
  - 188** Fonterra
  - 189** Holm Trading
  - 190** Sophie Mirabella, MP, Federal Member for Indi
  - 191** Gilbert and Tobin Centre of Public Law, UNSW
  - 192** Department of Sustainability, Environment, Water, Population and Communities (SEWPaC)
  - 193** City of Wodonga
  - 194** Irrigation Australia Ltd
  - 195** DHI Water and Environment
  - 196** Brian Mills
  - 197** Jeanine McRae
  - 198** Fifth Estate
  - 199** Alison Walpole
  - 200** Henry Schneebeili
  - 201** Shadow Minister for Natural Resource Management, Member for Burrinjuck
  - 202** J Cunningham
  - 203** Trevor Randall
  - 204** Alice Fiumara
  - 205** Campbell Partnership
  - 206** Ron Miller
  - 207** Tony Pickard
  - 208** David Allen
  - 209** Australian National University (ANU)
  - 210** NSW Government
  - 211** Southern Riverina Irrigators
  - 212** Max Talbot
  - 213** T Bowring and Associates Pty Ltd
  - 214** David McCabe
  - 215** Jim Leggate
  - 216** Central Downs Irrigators Limited
  - 217** Australian Lot Feeders' Association (ALFA)
  - 218** Natalie Tydd

- 219 Ben Rees
- 220 Doctors for the Environment Australia
- 221 Federal Member for Parkes
- 222 Dart Energy Ltd (Australia)
- 223 Victoria Hamilton
- 224 Joesph, Jennie and Ben Hill
- 225 Lock The Gate Alliance Inc
- 226 Queensland Conservation Council (QCC)
- 227 National Toxics Network (NTN)
- 228 Ruth Armstrong
- 229 Southern Highlands Coal Action Group
- 230 United Myall Residents Against Gas Extraction
- 231 Daniel Reardon
- 232 Australian Network of Environmental Defender's Offices (ANEDO NSW)
- 233 Cotton Australia
- 234 Claudia Cortizo
- 235 Basin Sustainability Alliance (BSA)
- 236 George Carrard
- 237 Australian Petroleum Production and Exploration Association (APPEA)
- 238 Penny Blatchford
- 239 Australian Water Campaigners Inc
- 240 Pamela Stoves Sefton
- 241 Annette Lovecek
- 242 Bart Ristuccia
- 243 Brian Cotgrove
- 244 Sue Wilmott
- 245 W. J Bryan
- 246 T. C Hall
- 247 Bev Pattenden
- 248 Xavier Marton
- 249 Moree Community Consultative Community (Coal Seam Gas)
- 250 Caroon Coal Action Group (Coal Seam Gas Committee)
- 251 John and Kate Scott
- 252 Drillham Action Group
- 253 Steve and Robyn White
- 254 John and Penny Taylor
- 255 Simon and Katrina Body
- 256 Alan Ellis
- 257 Queensland Beekeepers Association Inc.
- 258 Queensland Resources Council (QRC)
- 259 QGC Pty Ltd
- 260 Scott Collins
- 261 Alistair and Jenny Donaldson
- 262 James Kerr and Ms Judy Whistler
- 263 Mullaley Gas and Pipeline Accord
- 264 Kate Ausburn

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- 265 Lynda Windsor
  - 266 Robert Barry
  - 267 Debbi Orr and Mr Rod Matthews
  - 268 State Social Justice Committee of St Vincent De Paul Society of Queensland
  - 269 Stuart Setzer
  - 270 Kate Lloyd
  - 271 Allen and Barbara Clark
  - 272 Darling Downs Cotton Growers Inc
  - 273 Peter Shannon
  - 274 Angela Smith
  - 275 Save Bunnan Inc
  - 276 Ian Falconer
  - 277 Susan Gourley
  - 278 Friends of Felton
  - 279 Stephanie Weaver-Wong
  - 280 Eric Heidecker
  - 281 Craig and Iris Kelehear
  - 282 Gail Evlerstain
  - 283 Bill Hastings
  - 284 Darryl and Julie Bishop
  - 285 Nerida Mills
  - 286 Putty Community Association Inc - CSG subcommittee
  - 287 Ronald and Dawn Childs
  - 288 Denis and Anthea Itzstein
  - 289 James Murphy
  - 290 Marilyn Bidstrup
  - 291 Brian Sinnamon
  - 292 Fiona Paul
  - 293 Katie Ledingham
  - 294 Maules Creek Community Council Inc
  - 295 Janet Cox
  - 296 Beverly Smith
  - 297 Jackie Reardon
  - 298 Jill Wiltshire
  - 299 DJ and MP Wall
  - 300 Marko Klemen
  - 301 Matt Wiseman
  - 302 Friends of Pilliga
  - 303 Michelle Shaw
  - 304 Craig and Michele Radford
  - 305 North West Ecological Services (NWES)
  - 306 Beth Williams
  - 307 AGL Energy Ltd
  - 308 Michael and Margaret Chamberlain
  - 309 Judy Bloomfield
  - 310 Mullaley Gas Pipeline Accord

- 311** Jane Vickery
- 312** Northern Inland Council for the Environment, Friends of the Earth Melbourne, Nature Conservation Council of NSW, The Wilderness Society, the Colong Foundation for Wilderness, Coonabarabran Local Environment Group and the Armidale National Parks Association
- 313** Richard Golden
- 314** Janet Robertson
- 315** Scott Cooper
- 316** Kerrie Eather
- 317** Sonya Marshall
- 318** Paul Briotto
- 319** Northern Grampians Shire Council
- 320** David Hubbard
- 321** Omega Labels
- 322** Peter Faulkner
- 323** Bill Crawford
- 324** L K Wray
- 325** Barambah Organics
- 326** Queensland Murray-Darling Committee Inc.
- 327** Boudicca Cerese
- 328** Anne Bridle
- 329** Gilgandra Shire Council
- 330** Megan Donnelley
- 331** Len Martin
- 332** Alicia Harrison
- 333** Sarah Ball
- 334** Gordon Gilder
- 335** Trevor Crouch
- 336** Tracey and Clive Parker
- 337** Coast and Wetlands Society Inc
- 338** Rivers SOS Alliance
- 339** Sue Odgers
- 340** John and Peggy Hann
- 341** Narrabri Shire Council
- 342** Glen Zimmerle
- 343** Sandra Fasullo
- 344** Cotton Catchment Communities CRC
- 345** Moree Plains Shire Council
- 346** OzEnvironmental Pty Ltd
- 347** Bellata Gold
- 348** Martin Molesworth
- 349** Anne Cameron
- 350** John Bridle
- 351** J. L. Rohde
- 352** Judith Deucker
- 353** Santos Ltd

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354	Bob McFarland
355	Arrow Energy Pty Ltd
356	Peter Gillbank
357	Elfian Schieren
358	Queensland Government
359	Northern River Guardians
360	Dayne Pratzky
361	Deedre Kabel
362	Murray Scott
363	Geo-Processors Pty Limited
364	Wayne Somerville
365	University of Sydney
366	Australia Pacific LNG
367	Noondoo Partnership
368	Tom Lyons
369	Carol Jones-Lummis
370	Gympie Water, Air and Soil Protection Group
371	Rabobank Australia and New Zealand Group
372	Hunter Valley Protection Alliance (HVPA)
373	Charlie Shuetrim
374	Denise Ewin
375	Fodder King Ltd
376	Carol Donvito
377	Estelle Ross
378	Anne Layton-Bennett
379	Tom Loffler
380	Jason Beet

## **Additional Information Received<sup>1</sup>**

- Received on 19 April 2012, from the Hon. Craig Knowles, Chair of the Murray-Darling Basin Authority (MDBA). Answers to written Questions taken on Notice on 5 April 2012;
- Received on 17 May 2012, from the CSIRO. Answers to Questions taken on Notice on 23 April 2012 in Canberra, ACT;
- Received on 5 June 2012, from the Department of Agriculture, Fisheries and Forestry (DAFF). Answers to Questions taken on Notice on 24 April 2012 in Canberra, ACT;
- Received on 7 June 2012 & 12 June 2012, from the Murray-Darling Basin Authority (MDBA). Answers to Questions taken on Notice on 24 April 2012 in Canberra, ACT;

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1 Please note, for this interim report, additional information received is listed from 1 December onwards.

- Received on 7 June 2012 & 12 July 2012, from the Murray-Darling Basin Authority (MDBA). Answers to Questions taken on Notice on 23 April 2012 in Canberra, ACT;
- Received on 2 July 2012, from the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC). Answers to Questions taken on Notice on 24 April 2012 in Canberra, ACT;
- Received on 24 August 2012, from Wakool Shire Council. Answers to Questions taken on Notice on 23 August 2012 in Canberra, ACT;

## **TABLED DOCUMENTS**

### **2 April 2012, Hay, NSW:**

- Tabled by Mr David Davies. Opening statement;
- Tabled by Coleambally Irrigation Co-operative Limited. Opening statement;
- Tabled by Murray Irrigation Limited. Opening statement;
- Tabled by Mr Lance Howley. Opening statement;
- Tabled by Mr Jock Robertson. Opening statement and attachment;
- Tabled by Hay Business Chamber. Additional information: Correspondence between Hay Business Chamber and the Department of Sustainability, Environment, Water, Population and Communities;

### **3 April 2012, Mildura, Vic:**

- Tabled by Sunraysia Irrigators Council. Opening statement and attached correspondence;
- Tabled by Western Murray Irrigation Limited. Opening statement;
- Tabled by Mildura Development Corporation. Additional information: Updated Submission;
- Tabled by Central Irrigation Trust.
  - Additional Information: Graph of SA river communities;
  - Additional Information: SA River Communities Meeting with MDBA;

### **23 April 2012, Canberra, ACT:**

- Tabled by National Farmers' Federation. Submission to the MDBA for the Proposed Basin Plan;
- Tabled by Murray Lower Darling Rivers Indigenous Nations. Statement to the Proposed Basin Plan;
- Tabled by National Irrigators' Council. A balanced plan for the Murray-Darling Basin: A submission to the MDBA;
- Tabled by CSIRO.



- Submission on the Proposed Murray-Darling Basin Plan;
- Science review of the estimation of an environmentally sustainable level of take for the Murray-Darling Basin;

**24 April 2012, Canberra, ACT:**

- Tabled by Senator Nick Xenophon. Correspondence by Professor Mike Young to the Committee regarding biodiversity plantings and interception arrangements in the Proposed Basin Plan;
- Tabled by Inland Rivers Network. Submission to the MDBA in response to the Proposed Basin Plan;
- Tabled by NSW Murray Wetlands Working Group. NSW Murray Wetlands Working Group Projects;
- Tabled by Conservation Council of South Australia.
  - Correspondence to the MDBA regarding Conservation Councils of Australia Joint Submission on the Proposed Basin Plan;
  - Submission on the Proposed Murray-Darling Basin Plan;
- Tabled by Nature Conservation Council of NSW. Submission to Proposed Basin Plan;
- Tabled by Environment Victoria. Submission to the MDBA's Proposed Basin Plan;
- Tabled by Friends of the Earth.
  - Modelled Ecological Outcomes of the Proposed Basin Plan Surface Water Sustainable Diversion Limits;
  - Basin Plan Groundwater Diversion Limits: Comparing the "Guide" and the Proposed Basin Plan.

**23 August 2012, Canberra, ACT:**

- Tabled by Wakool Shire Council.
  - Wakool Shire Council discussion notes;
  - NSW Office of Water – *The Lowbidgee Water Licence – including Nimmie-Caira*.

**10 September 2012, Canberra, ACT:**

- Tabled by the Wentworth Group of Concerned Scientists. Centre of Policy Studies and the Impact Project paper: *Upgrading Irrigation Infrastructure in the Murray Darling Basin: is it worth it?*
- Tabled by Australian Conservation Foundation. Modelled Ecological Outcomes of the Proposed Basin Plan 2750GL SDL scenario.



# **Appendix 3**

## **Public Hearings and Witnesses<sup>1</sup>**

### **Monday, 2 April 2012 – Hay, NSW**

- BULLER, Ms Debbie, President,  
Murrumbidgee Valley Food and Fibre Association
- COUROUPIS, Mr Anthony, General Manager,  
Murray Irrigation Ltd
- CRIGHTON, Mr Jasen, Director,  
Crightons Rural Engineering
- CULLETON, Mr John, Chief Executive Officer,  
Coleambally Irrigation Cooperative Ltd
- DAVIES, Mr David Llewelyn,  
Private capacity
- DWYER, Mr Allen, General Manager,  
Hay Shire Council
- ELLIS, Mr Stewart, Chairman,  
Murray Irrigation Ltd
- FRASER, Duncan,  
Private capacity
- HEADON, Mr Neil Ronald, Chairman,  
Hay Private Irrigation District
- HEADON, Mr Ross Stuart, Irrigator, Former Chairman,  
Hay Private Irrigation District
- HILL, Mr James,  
Private capacity
- HOGAN, Mr Terence Noel, AM, Chairman,  
Riverina and Murray Regional Organisation of Councils
- HOWLEY, Mr Lance Edward,  
Private capacity
- JONES, Mr Howard, Chairperson,  
Murray Wetlands Working Group Inc.

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<sup>1</sup> Please note, for this interim report, public hearings and witnesses are listed from 1 December 2011 onwards

- LUGSDIN, Mr Ian, Vice Chairman,  
Hay Water Users Association
- MACARTNEY, Mr Darren, Rural Financial Counsellor,  
Rural Financial Counselling Service, New South Wales Southern Region
- MAYNARD, Mr Nick, Chairman,  
Hay Water Users Association
- McNAMARA, Mr Anthony James, Chairman,  
Hay Business Chamber
- MORPHETT, Graham,  
Private capacity
- OATAWAY, Mr Peter John,  
Private capacity
- PIEROTTI, Mr Paul Gregory, President,  
Griffith Business Chamber
- ROBERTSON, Mr John William Yeatman (Jock),  
Private capacity
- RUTLEDGE, Councillor Michael, Deputy Mayor,  
Hay Shire Council
- SCHIPP, Mr Andrew, District Agronomist,  
New South Wales Department of Primary Industries
- SHEAFFE, Councillor Roger William (Bill), Mayor,  
Hay Shire Council
- STUBBS, Mr Raymond Oscar, Executive Officer,  
Riverina and Murray Regional Organisation of Councils

### **Tuesday, 3 April 2012 – Mildura, VIC**

- ARNOLD, Councillor John, Mayor,  
Mildura Rural City Council
- BENNETT, Mr Malcolm Raymond, Vice Chairman,  
Sunraysia Irrigators Council
- BROWN, The Hon. Dean, AO, Chair,  
Lower River Murray Reference Group
- BYRNE, Mr Christopher John, Executive Officer,  
Riverland Winegrape Growers Association
- CHAPMAN, Mrs Tania, Chair,  
Citrus Australia Ltd

- GRAY, Mr Ron,  
Private capacity
- KING, Mr Mark, Chairman,  
Dried Fruits Australia Inc.
- LEE, Mr Daniel Thomas, Chairman,  
Sunraysia Irrigators Council
- LLOYD, Mrs Betty Lyniece, Grower Representative Board Director,  
South Australian Citrus Industry Development Board
- MANSELL, Mrs Anne, Chief Executive Officer,  
Mildura Development Corporation
- McKENZIE, Mr Mark de Lacy, Chief Executive,  
Murray Valley Winegrowers Inc.
- McMAHON, Mr Gavin Geoffrey, Chairman,  
South Australian River Communities
- MURDOCH, Mr Ian, Chairman,  
Western Murray Irrigation Ltd
- PEDERSEN, Mr Barry, Chair,  
Murray Valley Table Grape Growers Council
- RIX, Ms Cheryl Kathleen, General Manager,  
Western Murray Irrigation Ltd
- THOMSON, Councillor Margaret Elizabeth, Mayor,  
Shire of Wentworth

### **Monday, 23 April 2012 – Canberra, ACT**

- CHARLTON, Mr Terry, Managing Director and Chief Executive Officer,  
Snowy Hydro Ltd
- CHESSON, Mr Thomas Scott, Chief Executive Officer,  
National Irrigators Council
- COSIER, Mr Peter Aubrey, Director,  
Wentworth Group of Concerned Scientists
- DICKSON, Dr Rhondda, Chief Executive,  
Murray-Darling Basin Authority
- ELLIS, Mr Stewart Gordon, Chair,  
National Irrigators Council
- HARRIS, Mr David, Executive Officer, Production, Water and Environment,  
Snowy Hydro Ltd

- HAZELTON, Mr Richard George,  
Private capacity
- JAMES, Mr Russell, Executive Director, Policy and Planning Division,  
Murray-Darling Basin Authority
- KERR, Ms Deborah, Manager, Natural Resource Management,  
National Farmers Federation
- KNOWLES, The Hon. Craig, Chair,  
Murray-Darling Basin Authority
- LAURIE, Mr Jock, President,  
National Farmers Federation
- McLEOD, Dr Tony, General Manager, Water Resource Planning,  
Murray-Darling Basin Authority
- PROSSER, Dr Ian, Science Director, Water for a Healthy Country Flagship,  
Commonwealth Scientific and Industrial Research Organisation
- RIGNEY, Mr Grant John, Chairperson,  
Murray Lower Darling Rivers Indigenous Nations
- STUBBS, Mr Timothy Paul, Environmental Engineer,  
Wentworth Group of Concerned Scientists
- SWIREPIK, Ms Jody, Executive Director, Environmental Management  
Division, Murray-Darling Basin Authority
- WILLIAMS, Dr John, Founding Member,  
Wentworth Group of Concerned Scientists
- YOUNG, Dr Bill, Director, Water for a Healthy Country Flagship,  
Commonwealth Scientific and Industrial Research Organisation
- YOUNG, Professor Michael, Professor of Environmental and Water Policy,  
University of Adelaide

## **Tuesday, 24 April 2012 – Canberra, ACT**

- DICKSON, Dr Rhondda, Chief Executive,  
Murray-Darling Basin Authority
- GOOD, Mr Roger Bishop, Executive Member,  
Murray Wetlands Working Group
- GRANT, Mr Allen, First Assistant Secretary, Agricultural Productivity  
Division, Department of Agriculture, Fisheries and Forestry
- GRAY, Dr John, Acting Assistant Secretary, Productivity, Water and Social  
Sciences Branch, Australian Bureau of Agricultural and Resource Economics  
and Sciences, Department of Agriculture, Fisheries and Forestry

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- HARWOOD, Ms Mary Beatrice, First Assistant Secretary, Water Efficiency Division, Department of Sustainability, Environment, Water, Population and Communities
  - KELLY, Mr Tim, Chief Executive, Conservation Council of South Australia
  - LA NAUZE, Mr Jonathan, Murray-Darling Campaigner, Friends of the Earth Australia
  - LE FEUVRE, Ms Juliet, Healthy Rivers Campaigner, Environment Victoria
  - MORRIS, Mr Paul, Executive Director, Australian Bureau of Agricultural and Resource Economics and Sciences, Department of Agriculture, Fisheries and Forestry
  - NGUYEN, Dr Nga, Economist, Australian Bureau of Agricultural and Resource Economics and Sciences, Department of Agriculture, Fisheries and Forestry
  - OTTESEN, Mr Peter, Assistant Secretary, Crops, Horticulture and Wine Branch, Agricultural Productivity Division, Department of Agriculture, Fisheries and Forestry
  - OWEN, Mr Peter, Campaign Manager, Wilderness Society, South Australia
  - PARKER, Mr David, Deputy Secretary, Water Group, Department of Sustainability, Environment, Water, Population and Communities
  - ROBINSON, Mr Ian, Water Holder, Commonwealth Environmental Water
  - RUSCOE, Mr Ian, Acting Assistant Secretary, Forestry Branch, Climate Change Division, Department of Agriculture, Fisheries and Forestry
  - SANDERS, Mr Orion, Economist, Australian Bureau of Agricultural and Resource Economics and Sciences, Department of Agriculture, Fisheries and Forestry
  - SINCLAIR, Dr Paul, Healthy Ecosystems Program Manager, Australian Conservation Foundation
  - SLATYER, Mr Tony, First Assistant Secretary, Department of Sustainability, Environment, Water, Population and Communities
  - SMILES, Ms Beverley, Executive Member, Nature Conservation Council of New South Wales
  - SMILES, Ms Beverley, President, Inland Rivers Network

- SNELL, Dr Peter James, Rice Breeder (Professional Officer), New South Wales Department of Primary Industries
- SWIREPIK, Ms Jody, Executive Director, Environmental Management Division, Murray-Darling Basin Authority
- WARNE, Mr George, Chief Executive Officer, Northern Victoria Irrigation Renewal Project

#### **Thursday, 23 August 2012 – Canberra, ACT**

- DOUGLAS, Councillor Andrew John, Mayor, Wakool Shire Council
- GRAHAM, Mr Bruce David, General Manager, Wakool Shire Council
- HARWOOD, Ms Mary, First Assistant Secretary, Department of Sustainability, Environment, Water, Population and Communities
- JAMES, Mr Russell, Executive Director, Policy and Planning, Murray-Darling Basin Authority
- McLEOD, Dr Tony, General Manager, Water Planning, Murray-Darling Basin Authority
- PARKER, Mr David, Deputy Secretary, Department of Sustainability, Environment, Water, Population and Communities
- SLATYER, Mr Tony, First Assistant Secretary, Department of Sustainability, Environment, Water, Population and Communities
- SWIREPIK, Ms Jody, Executive Director, Environmental Management Division, Murray-Darling Basin Authority

#### **Monday, 10 September 2012 – Canberra, ACT**

- CHESSON, Mr Thomas Scott, Chief Executive Officer, National Irrigators Council
- COSIER, Mr Peter, Director, Wentworth Group
- CULLETON, Mr, John, Director, National Irrigators Council
- DWYER, Mr Allen, General Manager, Hay Shire Council
- GREGSON, Mr Andrew, Chief Executive Officer, New South Wales Irrigators Council



- HARRISS, Mr David, Commissioner,  
New South Wales Office of Water
- LA NAUZE, Mr Jonathan, Healthy Rivers Campaigner,  
Australian Conservation Foundation
- LITTLEMORE, Mr Christopher David, General Manager,  
Balranald Shire Council
- McMAHON, Mr Gavin Geoffrey, Chairman,  
National Irrigators Council
- PURTILL, Mr Alan Geoffrey, Mayor,  
Balranald Shire Council
- RAFT, Mr Stephen, Coordinator, State Priority Projects,  
New South Wales Office of Water
- SHEAFFE, Cr Roger (Bill), Mayor,  
Hay Shire Council
- STUBBS, Mr Tim, Environmental Engineer,  
Wentworth Group
- TALUKDAR, Miss Ruchira, Healthy Rivers Campaigner,  
Australian Conservation Foundation
- WILLIAMS, Dr John, Member,  
Wentworth Group

