

## Chapter 3

### Basin state issues

#### Introduction

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

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

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

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

...[A]ll the surface water connected to the channel network and all the groundwater (excluding any water in the GAB) located within the geographical boundaries of the MDB specified by the Act, except:

- the areas drained by the Snowy Mountains Hydroelectric Scheme storages that are located inside the legal MDB's boundaries
- the towns of Port Elliot and Middleton in South Australia.

Further, the following elements are not included in the MDB region water account:

- off-channel water storages, such as landscape catchment storages (also known as farm dams) used to harvest runoff and floodwaters (these constitute water abstracted before it reaches the rivers or water owned by the users)

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

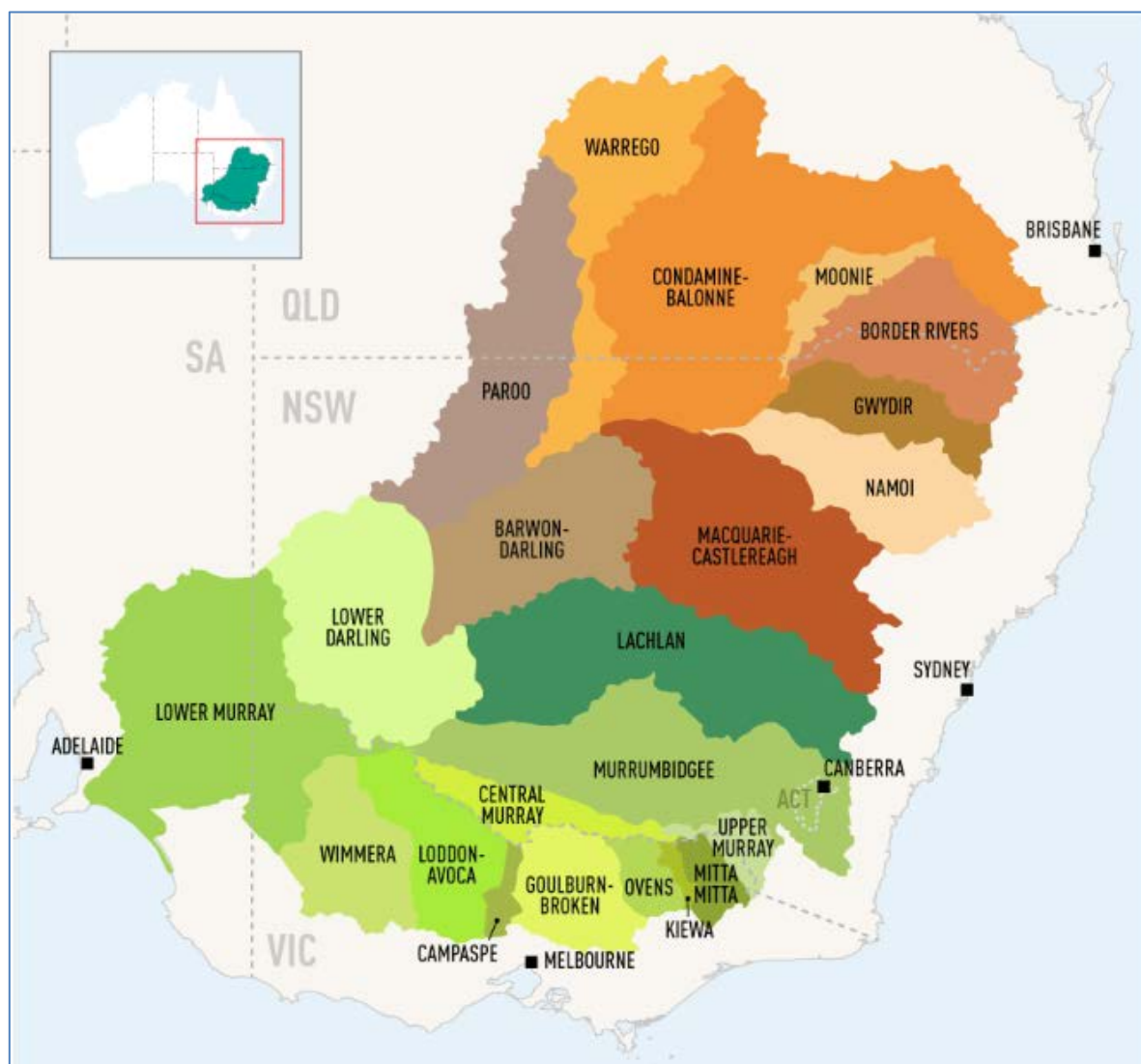
2 Water Act 2007, Water information, Part 7, Division 2—Functions and powers of the Bureau and Director of Meteorology, p. 183.

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

- urban water systems at utility level, irrigation systems and private water supply systems.<sup>4</sup>

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

**Figure 3.1 The Basin catchments and states**



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

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

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

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

**Figure 3.2 The Northern and Southern Basins**



### Northern Basin

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

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

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

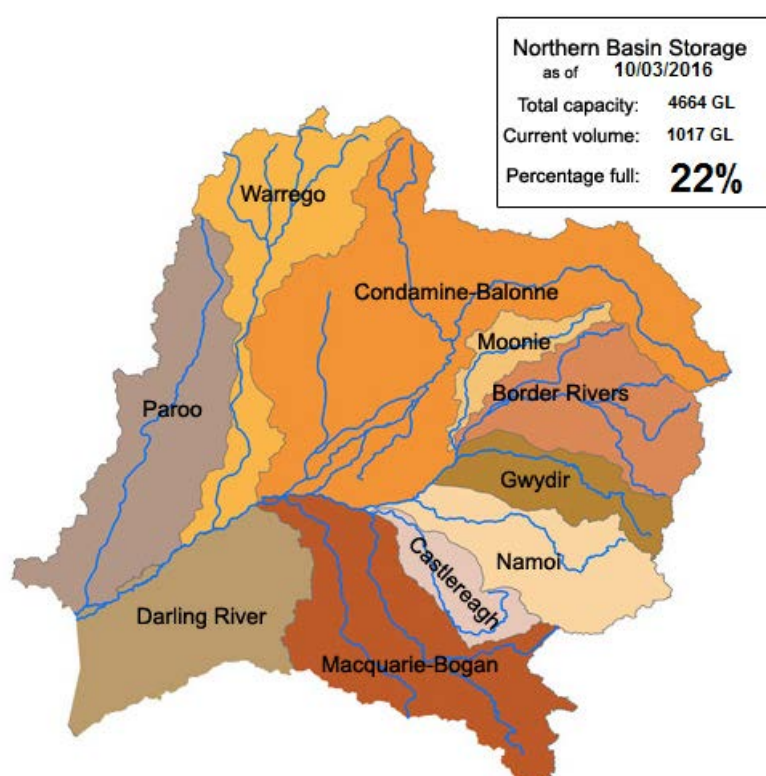
the winter time. The Northern Basin also has less regulation, less development, and uses less water than the Southern Basin.<sup>7</sup>

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

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

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

### Figure 3.3 The Northern Basin



#### *Committee hearing*

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

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

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

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

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

### *Northern Basin review*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### *Northern Basin Advisory Committee (NBAC)*

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

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

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

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

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

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

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

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

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

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

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

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they unfold their socioeconomic work, it will pass the pub test in the community.<sup>20</sup>

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

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

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

#### ***Water recovery in the Condamine-Balonne catchment***

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

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

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

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

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

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

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

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

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

### ***Water recovery through buybacks and efficiency projects***

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

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

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

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

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

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

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

### ***Impact of water recovery on businesses in Dirranbandi and St George***

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

### ***Impact of water recovery on the community in Dirranbandi***

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

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

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

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

The panel asked about suicide and depression and other social issues.

...If you take away jobs and people's reason to get out of bed in the morning, it will not get better.<sup>33</sup>

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

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

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

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

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

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

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

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

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

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

*Committee view*

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

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

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

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

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

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

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

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

### **Recommendation 1**

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

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

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

### **Recommendation 2**

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

#### *Macquarie Valley*

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

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

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

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

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

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

### *Over-recovery of water*

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

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

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

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

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

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

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

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

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

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

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

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

### *Potential impacts of over-recovery*

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

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

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

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

3.65 Mr Egan concluded that 'the only real solution is for the government to surrender over-recovered water.'<sup>44</sup>

### *Committee view*

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

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

### **Recommendation 3**

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

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

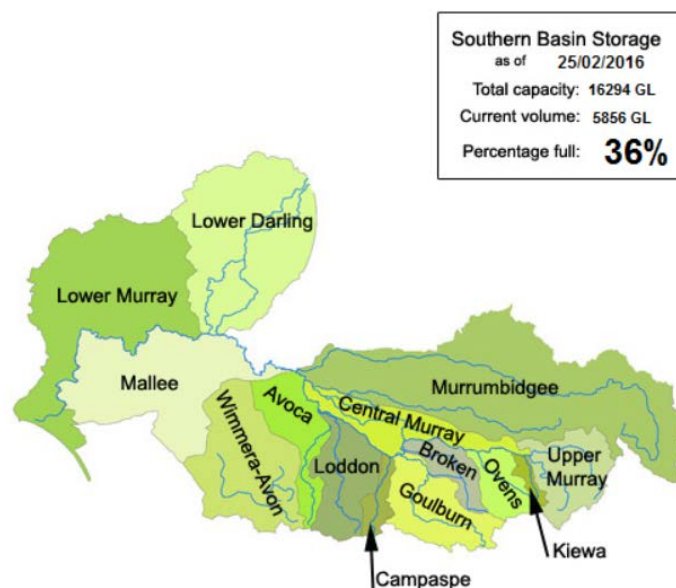
43 Mr Michael Egan, Chairman, Macquarie River Food & Fibre, *Committee Hansard*, 27 October 2015, p. 36.

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

## Southern Basin

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

**Figure 3.4 Southern Basin**



### *Committee hearing*

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

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

### *Menindee Lakes*

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

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

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

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

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

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

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

### ***Management of the lakes by NSW government***

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

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

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

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

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

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

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

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

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



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

***Broken Hill water supply***

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

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

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

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

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

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

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

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

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

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

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

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

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

### ***Measures to improve water security and the health of the lakes***

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

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

### ***Raising the trigger point for releases from the lakes***

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

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

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

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

### ***Commencement of already agreed-upon infrastructure works***

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

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

56 The Convention on Wetlands, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources, <http://www.ramsar.org/> (accessed 1 March 2016).

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

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

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

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

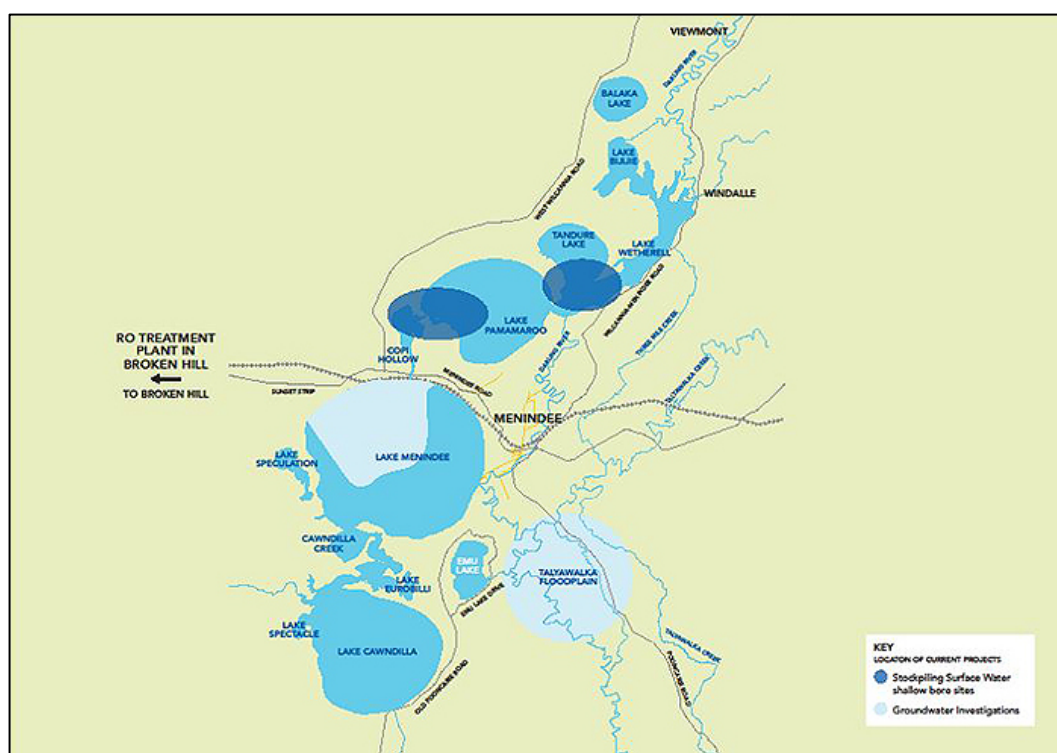
2010 in a Memorandum of Understanding (MoU) by the then Prime Minister Julia Gillard and the then Premier of NSW Kristina Keneally.<sup>61</sup>

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

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

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

**Figure 3.5 Menindee lakes, NSW<sup>63</sup>**



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

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

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

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

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

Hill to extend the use of all available surface water sources from the Menindee Lakes.

Desalination will not be needed if there are significant inflows from rainfall to replenish the Menindee Lakes system before this time. Up until then the surface water that remains in the Lakes will have increasing levels of salinity.

The recommission and upgrade of the existing desalination plant in Broken Hill is now underway to extend the use of all available surface water sources. Reverse osmosis may also be required to treat water sourced from groundwater beyond 2015, if it is required.<sup>64</sup>

### ***Ramsar or iconic site nomination***

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

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

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

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

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

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

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

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

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

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

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

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*Committee view*

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

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

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

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

**Recommendation 4**

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

**Recommendation 5**

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

**New South Wales***Committee hearing*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The volume of water that they send down the Lachlan is eroding the banks over time. It is just unbelievable...<sup>74</sup>

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

3.111 Cr Dal Broi stated that:

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

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

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

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

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

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

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

## Victoria

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

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

### *Constraints management strategy—delivering environmental water*

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

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

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

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

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

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

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

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



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

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

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

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

***Community concerns about the impact of overbank flows on properties***

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.128 Furthermore, there appeared to be a lack of awareness among some farmers of the potential and impact of the flows.<sup>89</sup>

### ***Consultation with MDBA***

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### ***Cost of overbank flows***

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

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

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

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

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

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

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

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

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

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

#### *Committee view*

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

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

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

#### **Recommendation 6**

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

#### **Recommendation 7**

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

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

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

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

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

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

## **Recommendation 8**

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

### ***Goulburn-Murray Water Connections Project***

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

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

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

### ***Objectives of the project***

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

3.151 The objectives of the project are:

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

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

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

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

- investigating and delivering special environmental projects
- boosting regional economies, and
- minimising the increase in GMW infrastructure whole of life costs and customer prices.<sup>102</sup>

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

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

### ***Delivery of the project and independent review of stage 2***

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

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

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

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

The independent GHD review has found fundamental changes are required to ensure the delivery of the Connections Project.

It states the Commonwealth and Victorian governments, along with GMW, will need to agree on a mix of options for the success of the project.

The review has found the reset needs to occur because the assumptions underpinning the project are no longer appropriate. For example: It was assumed about 3,000 landowners would choose to leave irrigated agriculture by terminating 45 per cent of delivery share in the GMID

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

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

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

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

however our experience to date indicates 14 per cent or about 1,000 landowners are likely to terminate;

The review also found...less time has been available to deliver the project; securing landowner agreements has been more complex and the availability of suitably qualified resources in the GMID has been more challenging, and;

The review also found GMW has made significant improvements to the project. Specifically on our introduction of Least Cost Methodology, End-to-End Project Managers, outsourcing SCP delivery, and creating shared connections. It also identifies areas for improvement in the delivery of the Project.

Despite the above the project still met its targets until recently.<sup>106</sup>

3.158 There was no further elaboration on this summary.

### ***Management of the project***

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

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

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

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

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

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

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

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



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

### ***Communication and consultation with stakeholders***

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### ***Political representations for review***

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

*Committee view*

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

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

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

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

**Recommendation 9**

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

**South Australia**

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

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

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

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

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

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

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

#### ***Adelaide water supply***

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

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

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

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

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

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

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

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

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

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

***SA government desalination plant and purchase of water***

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

#### *Committee view*

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

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

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

### **Recommendation 10**

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

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

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

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

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

***The Coorong, Lower Lakes and Murray Mouth (CLLMM)***

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

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

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

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

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

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

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

3.206 Following European settlement, the region developed irrigation and stock industries, and currently supports agriculture, viticulture, fishing, manufacturing and tourism industries.<sup>139</sup>

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135 SA Government, [http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong\\_Lower\\_Lakes\\_Murray\\_Mouth](http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth) (accessed 11 February 2016).

136 SA Government, [http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong\\_Lower\\_Lakes\\_Murray\\_Mouth](http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth) (accessed 11 February 2016).

137 SA Government, [http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong\\_Lower\\_Lakes\\_Murray\\_Mouth](http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth) (accessed 11 February 2016).

138 SA Government, [http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong\\_Lower\\_Lakes\\_Murray\\_Mouth](http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth) (accessed 11 February 2016).



### *Construction of the barrages*

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

**Figure 3.6 Lower Lakes Barrages<sup>141</sup>**



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

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

139 SA Government, [http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong\\_Lower\\_Lakes\\_Murray\\_Mouth](http://www.environment.sa.gov.au/managing-natural-resources/river-murray/river-restoration-and-environmental-water/Coorong_Lower_Lakes_Murray_Mouth) (accessed 11 February 2016).

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

141 Murray-Darling Basin Authority, [http://www.mdba.gov.au/sites/default/files/archived/annualreports/mdbc/ar0405/enlargement/c hp2\\_lowerlakes.htm](http://www.mdba.gov.au/sites/default/files/archived/annualreports/mdbc/ar0405/enlargement/c hp2_lowerlakes.htm) (accessed 27 February 2016).

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

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

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

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

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

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

### ***Water levels and quality in the Lower Lakes and Coorong***

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

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

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

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

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

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

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

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parliamentary submissions by settlers) shows that the Lower Lakes were mainly fresh.<sup>146</sup>

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

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

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

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

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

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

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

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

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

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

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

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

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

1876, using water for stock from creeks that ran from the lower end of the lakes onto Mundoo Island.<sup>151</sup>

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

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

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

### ***Water security***

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

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

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

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

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

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

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

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***Evaporation from the Lower Lakes and Coorong and salinity issues***

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

### ***Ramsar listing of the Coorong and Lower Lakes***

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

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

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

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

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

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

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

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

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

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

convention any change from that state to the Ramsar Convention. They are the obligations that we have.<sup>167</sup>

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

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

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

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

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

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

### ***Potential impact of removing or modifying the barrages***

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Figure 3.7 Bird Island – Main Murray mouth channel<sup>179</sup>**



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

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

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

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

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

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

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

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

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

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

### ***Potential construction of a lock at Wellington***

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

#### *Committee view*

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

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

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

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

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

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

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

### **Recommendation 11**

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

### **Recommendation 12**

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

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

### **Recommendation 13**

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

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

3.279 The committee is of the view that returning the lakes to an estuarine environment may have significant benefits by allowing more water upstream to be utilised for productive agriculture and environmental watering, as well as reducing the loss of fresh water through evaporation in the lower lakes.

3.280 The committee considers that these benefits should be quantified in order to determine whether removal or alterations to the barrages would provide the most productive use of the fresh water in the basin.

3.281 The committee notes evidence that this could have negative effects on Lower Lake irrigators, landholders and the environment and recognises these aspects should be taken into account. Landholders who require fresh water for stock, irrigation or

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other productive use should be adequately serviced by fresh water, through pipes or other means of supply, sourced sufficiently upstream to ensure it remains fresh.

3.282 Furthermore, should a greater estuarine environment be assessed as positive, the committee would support the construction of a lock where the river enters Lake Alexandrina to secure fresh water supply to towns, irrigators and landholders.

3.283 The committee is aware that these potential changes would constitute a major alteration to the Plan and the current understanding of the way the system operates. However, the committee sees value in assessing the potential costs and benefits of these options.

#### **Recommendation 14**

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

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

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

#### ***South East Flows Restoration Project***

3.286 Historically, fresh water from the south east region flowed into the southern end of the Coorong then in a north-westerly direction. Prior to European arrival the area behind the Coorong, the 'interdunal' corridors, were swamps that feed groundwater and drained into the Coorong from the south east through Salt Creek.<sup>190</sup>

With the establishment of the SE Drainage Scheme during the 20th Century, the inter-dunal corridors were released for grazing and cultivation and huge areas of wetland habitat lost or radically altered. At the same time numerous drainage outlets cut through the coastal region to the sea: these

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190 Natural Resources, SA, South East, Coastal action plan heritage and geology, 14 May 2014, p. 124.

were significant modifications to the coastal geomorphology of the region.<sup>191</sup>

3.287 Dr Jennifer Marohasy stated in her submission that this land was progressively drained from the 1860s to the 1970s and has meant that 4000GL of fresh water has been diverted from the Coorong through drains and floodways to the sea:

What those drains did was redirect that water, so now it goes straight out to sea. So 4,000 gicalitres of water is now going straight out to sea—water which once flowed into the Coorong—down the Coorong and then out the Murray Mouth. What happened was that drainage programs drained the underground aquifers.<sup>192</sup>

3.288 The SA Government's response to questions from the committee outlined that various programs have been undertaken in recent years to divert flows back into the Coorong.<sup>193</sup>

3.289 One of these programs is the South East Flows Restoration Project (SEFRP), a \$60m investment by the Commonwealth and SA governments to 'assist salinity management in the Coorong South Lagoon, enhance flows to wetlands in the Upper South East and reduce drainage outflow at Kingston beach.'<sup>194</sup>

3.290 The project will use a variety of channels to divert water to the Coorong to reduce salinity:

Using a combination of natural watercourses, newly constructed flood ways and existing drains, the South East Flows Restoration project aims to divert additional water from the Upper South East into the Coorong South Lagoon to help provide environmental benefits that would assist in maintaining a healthy South Lagoon ecosystem through lower salinity.<sup>195</sup>

3.291 The project's design and survey, environmental program, cultural heritage program, land acquisition, community engagement and program management aspects have all commenced and are ongoing or in progress. Construction delivery is scheduled to commence in spring 2016.<sup>196</sup>

3.292 Restoration of fresh water flows to the Coorong was supported by various witnesses in South Australia. Professor Peter Gell, Professorial Research Fellow,

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191 Natural Resources, SA, South East, Coastal action plan heritage and geology, 14 May 2014, p. 124.

192 Dr Jennifer Marohasy, Spokesperson, Myth and the Murray, *Committee Hansard*, 8 December 2015, pp 4–5.

193 SA Government, responses to questions on notice, received 17 February 2016, p. 3.

194 Natural Resources SA, <http://www.naturalresources.sa.gov.au/southeast/projects/se-flows> (accessed 10 February 2016).

195 Department of the Environment, responses to questions on notice, received 2 October 2015, p. 10.

196 Natural Resources SA, <http://www.naturalresources.sa.gov.au/southeast/projects/se-flows> (accessed 10 February 2016).



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Federation University Australia, stated that the Coorong is a naturally highly tidal system that 'would have received considerable volumes [of water] from the south-east', in addition to tidal inflows from the north.<sup>197</sup>

3.293 Professor Gell stated that historically, this combination of salt and fresh water inflows from different locations has been sufficient to keep the salinity level of the Coorong below that of the sea:

...the Coorong was not more saltier than the sea; it was always less saltier than the sea and has as little as a 10th of the salinity of the sea. So there must have been a considerable volume coming from the upper south-east. With our work, we cannot reconstruct how much. Certainly for most of its time, it was around half the salinity of seawater, so there must have been a considerable shandyng effect from the water from the upper south-east.<sup>198</sup>

3.294 Professor Gell stated that the Murray River itself has not generally contributed to the flows in the Coorong as it flows directly out to sea when the river floods:

There were times when the river water may have contributed but, by and large, typical of estuaries, the river Murray goes straight out over the top when it is in flood and it does not contribute significantly to the Coorong.

In fact, we found next to no river Murray algae in the Coorong record for the whole of the last 7,000 years.<sup>199</sup>

3.295 Mr Grant Rigney, Board Secretary, Ngarrindjeri Regional Authority, also concurred that change is required to the bottom half of the Coorong, stating that it is very saline at present:

Set some change to the bottom half of the system; it is super saline on the moment.<sup>200</sup>

3.296 However, Mr Paul Harvey, Member, River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group, stated that while fresh water inflows from the south are important, they also need to be complemented by fresh water inflows from the northern end of the Coorong. Mr Harvey stated that the SEFRP project on its own will not have a significant impact on the health of the Coorong:

Management of the South Lagoon in the long term will require both that project and river flows going in through the North Lagoon of the Coorong. They are both essential but the south-east drainage project does not really make a significant difference in terms of the amount of water, in fact it makes virtually no difference in terms of the amount of water that is still

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197 Professor. Peter Gell, Professorial Research Fellow, Federation University Australia, *Committee Hansard*, 8 December 2015, p. 7.

198 Prof. Peter Gell, Professorial Research Fellow, Federation University Australia, *Committee Hansard*, 8 December 2015, p. 7.

199 Prof. Peter Gell, Professorial Research Fellow, Federation University Australia, *Committee Hansard*, 8 December 2015, p. 7.

200 Mr Grant Rigney, Board Secretary, Ngarrindjeri Regional Authority, *Committee Hansard*, 8 December 2015, p. 43.

needed in the Murray River system to be able to manage the South Lagoon of the Coorong.<sup>201</sup>

### ***Lake Albert-Coorong Connector***

3.297 There is no direct flow of water between Lake Albert and the Coorong. Both bodies of water are separately connected to Lake Alexandrina. As highlighted earlier, freshwater was discharged in the top north eastern end while water was flushed in from the Murray mouth end. However, the southern end of Lake Albert, west of Meningie, is only separated from the Coorong by a few kilometres of land.

3.298 Witnesses at the South Australian hearings discussed the possibility of a connector between Lake Albert and the Coorong. Councillor Neville Jaensch, Mayor, Coorong District Council, stated that a connector would improve flow between the two lakes:

The Coorong connector is basically to allow flow from Lake Albert to the Coorong. It is a very short distance between the two at a certain point. The fact is that you have water coming in one end and it cannot get out the other.<sup>202</sup>

3.299 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, concurred, stating that the possibility of a connector had been discussed for some time, and would provide much better connectivity between the two bodies of water:

...the connection between the bigger lake, Lake Alexandrina, and Lake Albert is very restricted, so it is very hard to get water exchange. That is the premise behind it—trying to get some through-flow.<sup>203</sup>

3.300 Ms Caren Martin, Chairperson, South Australian Murray Irrigators, stated that the connector would benefit communities, irrigators and the environment:

It is triple bottom line. We in society want it, irrigators want it and the environment needs it—because, again, the do-nothing scenario in the northern south lagoon of the Coorong is not an option. It is dying.<sup>204</sup>

3.301 Mr Hopton noted that a connector, whether a channel or a pipeline, would need to be effective, so it would be imperative to ensure the connector would function well. Mr Hopton noted that one of the biggest issues is the velocity of the water travelling through the connector:

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201 Mr Paul Harvey, Member, River Murray, Lower Lakes and Coorong Tourism, Boating and Environmental Group, *Committee Hansard*, 8 December 2015, p. 42.

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

203 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 32.

204 Ms Caren Martin, Chairperson, South Australian Murray Irrigators, *Committee Hansard*, 9 December 2015, p. 42.

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The wind action brings a lot of sand into suspension and when the water slows going through the interconnector the sand can sediment and it is very difficult to clean it out.<sup>205</sup>

3.302 Mr Hopton also noted that there were significant cultural heritage issues depending on the location of the connector:

There are also significant cultural heritage issues to with the range of alignments that have been discussed.<sup>206</sup>

3.303 Cr Jaensch argued that the Lake Albert scoping study options paper, which showed that the connector would be relatively uneconomic, did not measure all the benefits of the connector.<sup>207</sup> Cr Jaensch argued that a feasibility study would assess broader benefits:

The amount of local pressure that we have and the fact that, irrespective, the movement of the water is of benefit. The other aspect I am aware of anecdotally is that, if water is released into the Coorong at the correct time of the year and in reasonable volumes, it promotes fish spawning and other things in that respect. So it does have other economic benefits to the region.<sup>208</sup>

3.304 Further, Mr Samuel Dodd, Chairman, Meningie and Narrung Lakes Irrigators Association, stated that the benefits of a connector to irrigation on the Narrung Peninsula would be minor and a side benefit, compared to the benefit to the environment. Mr Dodd argued that the primary benefit and intention of the connector would be to improve the environment:

...increased production from the limited irrigation industry on the Narrung Peninsula. That is actually a gain from the Coorong connector, rather than the primary function of it. The primary function is for environmental outcomes. ...Our five-point plan was an environmental plan that would give economic irrigation spin-offs, not the other way around.<sup>209</sup>

3.305 Many witnesses called for further investigation of the feasibility of a connector. The SA government's submission stated that options for a connector pipe or channel had been explored 'to address water quality issues and maintain ecological

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205 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 33.

206 Mr Hugo Hopton, Regional Manager, South Australian Murray-Darling Basin Natural Resources Management Board, *Committee Hansard*, 9 December 2015, p. 33.

207 Cr Neville Jaensch, Mayor, Coorong District Council, *Committee Hansard*, 8 December 2015, p. 38; document tabled by Coorong District Council, available on the committee's website.

208 Cr Neville Jaensch, Mayor, Coorong District Council, *Committee Hansard*, 8 December 2015, p. 38.

209 Mr Samuel Dodd, Chairman, Meningie and Narrung Lakes Irrigators Association, *Committee Hansard*, 8 December 2015, pp 47–48.

health.' The submission noted that the options assessed were 'not considered suitable for various reasons, including cost and failure to maintain the ecology of the site.'<sup>210</sup>

3.306 Furthermore, the SA government's submission stated that the costs of a connector would outweigh the benefits:

Modelling and engineering studies have found that the costs of connecting infrastructure between Lake Albert and the Coorong outweigh the benefits. In addition, with predicted Basin Plan environmental flows, it would not be needed to return Lake Albert salinity to its historical salinity range.<sup>211</sup>

3.307 The SA government's submission indicated that water cycling is currently taking place to improve salinity levels, and temporary pumping could be undertaken in future if required:

Instead, the South Australian Government is cycling water levels in the Lower Lakes to remove higher salinity water from Lake Albert. Temporarily pumping water between Lake Albert and the Coorong could be considered if needed in a future extreme drought.<sup>212</sup>

3.308 Mr Dodd, however, argued that past lake cycling had actually increased salinity in the lakes. Mr Dodd also stated that a recent CSIRO report had also confirmed this:

The reality is that it actually increases salinity. They trialled it in the 1980s. Rather than helping and being of benefit it increased salinity. We got a report in the last week from the local environment department in relation to another issue, which is a CSIRO report that they use for management of the Lower Lakes, and it clearly states that, if you drop lake levels, you bring saline water from groundwater into the lakes. It is actually getting the exact opposite to what they are trying to achieve.<sup>213</sup>

#### *Committee view*

3.309 The committee supports the South East Flows Restoration Project and urges the SA government to accept more responsibility for the environmental state of the Coorong. The committee encourages the SA government to implement management practices to improve the environmental state of the Coorong.

3.310 The committee heard evidence that a connector between Lake Albert and the Coorong has the potential to improve the flow of water between these two bodies, and that a connector would benefit the environment. The committee notes that some studies have already been undertaken into the feasibility of a connector; the committee supports an independent feasibility and hydrology study of a connector, including

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210 South Australian Government, *Submission 364*, p. 14.

211 South Australian Government, *Submission 364*, p. 14.

212 South Australian Government, *Submission 364*, p. 14.

213 Mr Samuel Dodd, Chairman, Meningie and Narrung Lakes Irrigators Association, *Committee Hansard*, 8 December 2015, p. 46.

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environmental and economic costs and benefits, as well as a study into the current practice of lake cycling.

### **Recommendation 15**

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

### **Other matters**

3.312 Two other key matters arose during the inquiry: foregone agricultural production due to the implementation of the Plan, and the Snowy Mountains Hydroelectric Scheme.

#### *Foregone agricultural production from implementation of the Plan*

3.313 One of the indirect impacts of the implementation of the Plan is foregone agricultural production. Farmers and irrigators whose access to water was reduced under the Plan (or who must buy water from the trading market and are therefore subject to significant price fluctuations) are often unable to grow the same type, quantity or quality of crops, thereby reducing the volume and value of agricultural production in some regions.

3.314 It can be difficult to quantify the effect of a single factor such as the Plan on an industry that is affected by multiple factors. It can also be difficult to distinguish foregone agricultural production as cropping mixes and farming practices change over time.

3.315 In addressing the issue of the impact of the Plan on agricultural production, an official from the Department of Agriculture (now the Department of Agriculture and Water Resources) stated that there are many factors that affect agricultural production:

...the Basin Plan, the weather, international markets, the price of the dollar and the price of farm inputs, the value of agricultural production in the basin has been increasing and the total amount of production has continued to increase. The other thing that also makes that difficult is that there have been changes in cropping mixes as people have moved from rice to cotton, for example, and there are changes in the efficiency of water use by farmers.

3.316 The Department indicated that despite varying local conditions and multiple factors, including the Plan, the value of agricultural production has continued to grow:

It is quite a complex story but, to date, the value of production has continued to increase as a result of a whole range of factors. We cannot separate out the Basin Plan's impact or role as opposed to anything else. But as the Basin Plan was part of the overall Water Initiative, as we discussed

earlier, the capacity for security entitlements and the trade of water has underpinned some of the development growth.<sup>214</sup>

### *Dairy*

3.317 The increasing cost of water has also had an impact on the Australian dairy industry, which is a \$13 billion farm, manufacturing and export industry. It is the largest irrigation based livestock industry in the Murray-Darling Basin, with around 1790 dairy farms producing 27 per cent of the Australian milk supply. Ninety eight per cent of these farms are family owned. There are 31 large and small milk-processing facilities providing manufacturing jobs for thousands of Australians.<sup>215</sup>

3.318 Dairy farmers not only rely on water to irrigate pastures used for milk production; water is also a necessity for fodder supplies and agistment. Overall, a lack of water and/or a lack of affordable water has meant that milk production is no longer growing, despite the potential to grow substantially over the next decade as a result of growing export markets. The Australian Dairy Industry Council (ADIC) indicated that:

Milk production is significantly constrained compared to pre-drought levels. Production has not recovered but has now levelled out at below pre-drought levels.<sup>216</sup>

3.319 ADIC stated that although it supports the objectives of the Plan, the slow recovery of the milk production industry does appear to be due to the Plan:

The dairy industry in the Murray dairy region, which incorporates southern New South Wales as well, before 2007 was producing an average of 2,800 megalitres of milk a year. After 2007 that went down as consequence of the drought, and it bottomed out at about 1,870 megalitres a year. Since then we have managed to recover back up to 2,300, but in the last three or four years we have seen that we are basically plateauing out at that level of milk production, and that seems to be the Basin Plan effect: without access to more water or water affordability or a very large change in farming production systems, or both, we are not going to get back to where we were pre-drought.<sup>217</sup>

3.320 Mr Paul Ingleby, director of Australian Consolidated Milk spoke of the uncertainty created by continuing loss of available water:

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214 Mr Ian Thompson, First Assistant Secretary, Sustainable Agriculture and Fisheries Division, Department of Agriculture, *Committee Hansard*, 18 September 2015, p. 26.

215 Mr Daryl Hoey, National Councillor, Chair, Natural Resources Policy Committee, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, p. 19.

216 Mr Daryl Hoey, National Councillor, Chair, Natural Resources Policy Committee, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, p. 19.

217 Ms Claire Miller, Manager, Policy Strategy, Dairy Australia, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, p. 24.

We have a joint venture with Freedom Foods in a UHT dairy plant that we have invested \$65 million in in the last couple of years. We employ more than 70 people. We have significant investment opportunities for these operations in northern Victoria, but these plans are now on hold until the availability and sustainability of water in the region is assured.<sup>218</sup>

3.321 Further, in the Goulburn-Murray irrigation district, reduced production is due to the sale of high-reliability water entitlements to the Commonwealth:

...dairy farmers in the Goulburn-Murray irrigation district have sold 120 gigalitres of high-reliability water entitlement to the Commonwealth. An additional 289 million litres of milk could have been produced if those entitlements were still owned by dairy farmers, worth \$144 million at the farm gate and \$360 million in regional economic activity. This forgone production is not being offset by increased production or investment in other primary industries, so the effects will be long term.<sup>219</sup>

### ***Food processors***

3.322 This inability to produce crops and goods also has a secondary impact on food processors, which are unable to maximise production due to this supply constraint. Thus the reduction of water has considerable flow-on effects in the economy and the community.

3.323 In the food processing sector, Kagome Australia is a tomato grower and processor:

...Kagome Australia is probably the most IT-enabled and most advanced tomato grower on the planet. We have advanced technologies that our competitors right around the world do not have. We produce product that we believe is world-class. We have invested about \$150 million in this area and, since March, we started a new business in food service.

...[W]e have recently stopped being a seasonal business, endeavouring to be a year-round business by starting a carrot and beetroot business.<sup>220</sup>

3.324 Kagome Australia's CEO stated that its existing processing plants currently have capacity for additional production:

Without putting in any more installation and just having our existing operation, we could probably put on another 30 per cent. We have already almost tripled in the last three years.<sup>221</sup>

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218 Mr Paul Ingleby, Director, Australian Consolidated Milk, *Committee Hansard*, 6 November 2015, p. 20.

219 Mr Daryl Hoey, National Councillor, Chair, Natural Resources Policy Committee, Australian Dairy Industry Council, *Committee Hansard*, 6 November 2015, pp 19–20.

220 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 21.

221 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 26.

3.325 This constraint is due to business risk factors, significantly, the availability and affordability of water.<sup>222</sup> Further significant expansion of food processing in northern Victoria is also stalling due to this constraint.

*Committee view*

3.326 The committee acknowledges that there are many factors that influence agricultural production. However, the committee contends that foregone agricultural production can be directly attributed to the implementation of the Plan.

3.327 The committee is of the view that any foregone agricultural production from the implementation of the Plan, and the subsequent impacts on businesses and communities, is a significant issue that needs to be quantified and addressed so as to reduce or reverse any negative effect the implementation of the Plan has on such areas.

**Recommendation 16**

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

*Snowy Hydro*

3.329 The Snowy Mountains Hydro-electric Scheme (commonly referred to as Snowy Hydro) is a hydro-electric power scheme that collects and stores water that would normally flow east to the coast. The scheme diverts this water through trans-mountain tunnels and power stations and into the Murray and Murrumbidgee Rivers for irrigation.<sup>223</sup>

3.330 The scheme is operated and maintained by Snowy Hydro Limited, and comprises sixteen major dams, seven major power stations (two underground), a pumping station, 145kms of inter-connected trans-mountain tunnels and 80kms of aqueducts.

3.331 In addition to generating renewable energy, the scheme diverts water that underwrites over \$3 billion in agricultural produce.<sup>224</sup>

3.332 The Commonwealth Parliament established the Snowy Mountains Hydro-electric Authority in 1949, which was the operating body of the scheme. In 1997, the NSW Government and State Electricity Commission of Victoria established Snowy Hydro Trading Pty Ltd (SHTPL), a joint venture to trade electricity generated by the

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222 Mr John Brady, CEO, Kagome Australia, *Committee Hansard*, 5 November 2015, p. 26.

223 Snowy Hydro Limited, <http://www.snowyhydro.com.au/energy/hydro/snowy-mountains-scheme/> (accessed 18 January 2016).

224 Snowy Hydro Limited, <http://www.snowyhydro.com.au/energy/hydro/snowy-mountains-scheme/> (accessed 18 January 2016).



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scheme in the National Electricity Market. The Commonwealth became a shareholder in early 2000.<sup>225</sup>

3.333 In 2002, the Snowy Mountains Hydro-Electric Authority was corporatized, which resulted in the merger of the Authority and SHTPL to become Snowy Hydro Limited.<sup>226</sup>

3.334 A key priority for Snowy Hydro Limited is to balance and meet the twin needs of irrigation and renewable energy production, noting that it is currently not part of the Murray-Darling Basin Authority's remit.

3.335 The scheme diverts a significant volume and value of water to irrigation, which enables substantial agricultural production. The operation of the scheme can therefore have a major impact on agricultural production and on the levels of water in the Murray and Murrumbidgee Rivers.

*Committee view*

3.336 Given the high demand for both irrigation water and renewable energy, the committee is keen to ensure that the operation of the scheme meets the needs of the Australian community.

3.337 The committee is of the view that the scheme should seek to properly balance the priority of irrigation and energy production, and give effect to local and downstream social, economic and environmental considerations.

3.338 The committee is cognisant of the fact that the seasonal timing of water releases by Snowy Hydro is of vital interest to irrigators, and notes suggestions that the timing of such releases could be managed to better suit irrigators without adversely affecting the broader operations of Snowy Hydro.

**Recommendation 17**

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

**Recommendation 18**

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

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225 Snowy Hydro Limited, <http://www.snowyhydro.com.au/energy/hydro/the-history/> (accessed 18 January 2016).

226 Snowy Hydro Limited, <http://www.snowyhydro.com.au/energy/hydro/the-history/> (accessed 18 January 2016).

