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## Region 7 (Adelaide Metro) Murray Darling Association Submission to the Murray Darling Basin Royal Commission March 2018

### Introduction

Region 7 of the Murray Darling Association (MDA) is made up of a number of local government authorities and some individual private members. Regional meetings are held quarterly and are designed to achieve three goals – keep members informed about the work of the Association and issues affecting the Basin, provide an opportunity for input into that work and to promote efficient use of water across the Adelaide metropolitan area.

This submission includes some general observations about the management of the Basin and the implementation of the Murray Basin Plan from the perspective of Adelaide, the largest population base and economy of the regions drawing water from the Basin rivers. It also responds specifically to some of the terms of reference of the Commission

### Overview

The Murray Darling Basin is a large and complex system of rivers across four states. Over the years large scale infrastructure has been built to manage the flow of the rivers thus enabling the development of towns and irrigated agriculture across the Basin. These communities and industries are dependant on an adequate supply of water in order to be sustainable. But, importantly, they are also dependant on the rivers of the Basin being healthy – ie the quality of the water across the whole system must be sufficient to enable it to be used for both agricultural and urban needs. Thus, a healthy river system is necessary for the long-term sustainability of communities dependant on water from the Basin. Measures that add to the health of rivers include

- Management of black water events
- Minimising algal blooms
- Increasing native fish stocks
- Reducing salinity levels
- Removing harmful blockages
- Reducing erosion of embankments
- Managing wetland systems etc

There must be adequate water flowing along the full length of the system to ensure there is adequate water of sufficient quality to sustain communities across the whole Basin. This is not about some communities having access to water and others not.

In order to achieve this, there must be rules governing the amount of water taken from the rivers upstream in order to ensure adequate water is available to communities downstream. These rules are particularly important for Adelaide as it is towards the lower end of all the river systems that come together by the time the River Murray crosses into South Australia. The Commonwealth Water Act 2007 is the basis for setting these rules in 2018.

The Australian Government Productivity Commission has recently issued an issues paper in relation to its assessment of the Murray Darling Basin Plan. On pages 3 and 4 of this paper it provides a succinct summary of events leading to the Water Act and what it covers. It is included here to provide the context for this submission.

## **“2 Resetting the balance in the Basin**

The Basin includes significant areas of inland New South Wales, Victoria, and the ACT, and parts of Queensland and South Australia. In the past, it was managed under state legislation with issues of common concern addressed through a formalised agreement between these jurisdictions and the Australian Government – the Murray-Darling Basin Agreement (MDB Agreement). The MDB Agreement set out arrangements for water sharing between states, river operations and other matters of common interest. The Agreement was based on a consensus decision-making model and, over time, jurisdictions collectively made a number of significant reforms, including:

- managing salinity, with the first strategy agreed in 1985
- capping water extractions across the Basin in 1995
- improving environmental flows in the River Murray through The Living Murray program, which recovered 500 GL of water for the environment and built environmental works along the River Murray.

However, the consensus-based approach to managing the Basin was challenged in the later years of the Millennium Drought (1997 to 2009). In 2006, the lowest inflows to the River Murray system were recorded, causing significant risk to the drinking water supplies of towns and cities that relied on the river and imminent risk of widespread and irreversible acidification of the Lower Lakes at the end of the river system. This triggered the Australian Government to intervene in the management of the Basin with a comprehensive initiative to reset the balance between environmental and consumptive water use and to establish a long-term and sustainable water management system for the Basin overall.

The Australian Government’s initiative included:

- Commonwealth legislation – the *Water Act 2007*
- a shift from the model of consensus decision-making to one where the Australian Government was responsible for determining a maximum level of extraction for consumptive use – the SDL – with which Basin States are required to comply
- developing the Basin Plan to set a new, lower, SDL, and the framework for the sustainable management of water resources across the Basin
- creating a new independent Australian Government agency (the MDBA) to develop and oversee the Basin Plan
- providing approximately \$13 billion to recover enough water from consumptive use to achieve the new SDL whilst minimising the socioeconomic impact on irrigators and communities, and to implement sustainable water management across the Basin
- creating a Commonwealth Environmental Water Holder (CEWH) to manage water recovered for the environment.

The new approach was ultimately agreed by all Basin States who passed legislation that referred some powers for water management functions, covered in the MDB Agreement, to the Commonwealth. In addition, the importance of the MDB Agreement was recognised and it was included in the Water Act. The Basin Plan became law in 2012.

## The Basin Plan

The Basin Plan provides the guidance and legal framework to reset the balance of water use in the Basin. It sets objectives for the Basin and establishes new, lower sustainable extraction limits to achieve them. It outlines key actions, decision making processes and timeframes that Governments are to adopt to implement the Plan.

Successful implementation of the Basin Plan also depends on a range of inter-related elements to be delivered in conjunction with the Basin Plan, including:

- water recovery programs, where government is investing directly in water entitlements purchase or irrigation efficiencies to recover water entitlements for the environment and enable communities to transition to new extraction limits
- structural adjustment programs aimed at assisting affected communities to adjust to reduced water availability as a result of the Basin Plan
- environmental water management activities where environmental water holders work together to deploy environmental water and achieve the environmental objectives of the Plan
- jurisdictions embedding key parts of the Plan in their normal water planning and management processes through WRPs.

The key elements for establishing and implementing the Plan are described in figure 1. Implementation of the Basin Plan is a long-term undertaking requiring communities and institutions to adapt to the new SDLs, build new infrastructure works, implement specific projects and develop new ways of working to manage environmental water.

The timing for each of the major elements of the Plan is outlined in figure 2. Formulation of the Plan was completed in 2012. Governments are now working towards establishing the arrangements required to implement the Plan — this phase must be completed by 30 June 2019. This work includes establishing the final target for SDLs and developing WRPs which will give effect to the new SDLs, completing the majority of the water recovery.” (*Productivity Commission Issues Paper March 2018*)

One of the compelling conclusions from the above overview is that the Water Act 2007 and the consequent Murray Darling Basin Plan were triggered by the millennium drought in the early part of this century. The impact of this drought on the lower lakes and Adelaide’s water supply were critical ingredients in driving the consensus that lead to the Plan and the formation of the Murray Darling Basin Authority (MDBA).

The Murray Darling Basin Plan has as its prime objective the reduction of water taken from the Basin of 2750 GL per annum to a total of 10,873 GL per annum overall – the assessed Sustainable Diversion Limit (SDL).

Because of its location and the extent of river systems in New South Wales, combined with the natural desire of successive NSW Governments to maximise the economic benefits from the river systems in that State, the largest users of water from the Basin are the communities and agricultural industries in NSW. It is inevitable therefore that the greatest reduction in water usage required to implement the Basin Plan would occur in NSW.

It is perhaps also inevitable therefore that the combination of a perception that the Plan was implemented to benefit the lower reaches of the Murray River (ie in South Australia) and the

greatest impact of the required savings falling to communities further upstream (ie in NSW) would result in political tensions between these two States.

Further contributing to such tensions, not only between NSW and SA but right across the Basin, is the complex constitutional and institutional arrangements that have required separate jurisdictional responsibilities across four States and the Commonwealth.

If this were to work it would require trust across the jurisdictions that governments and water users were complying with the rules as agreed to. Unfortunately, this trust was challenged when media reports in late 2017 alleged wrongdoing by some irrigators and government officials in NSW. Two major reports were undertaken to investigate the allegations – one by the NSW Government, the Matthews Report, and the other by the MDBA on behalf of the Commonwealth Government. Both reports raised serious questions about the level of compliance, particularly in NSW.

It is not the intention in this submission to provide a commentary on these reports other than to observe that Region 7 of the MDA largely supports the recommendations made and welcomes the initiatives taken by the NSW Government to address the matters raised. This Royal Commission, of course, was established by the SA Government as a result of the same set of circumstances as outlined above.

### **Adelaide's Water Supply**

Before commenting specifically on some of the particular issues raised in the Commission's terms of reference it is considered important to provide a brief summary of Adelaide's water supply system and the efforts made to ensure ongoing reductions in water use and security of water supply. This will provide some context for the important issue of equity of water allocation which is referred to later in this submission.

#### **Adelaide Water Supply – an Overview**

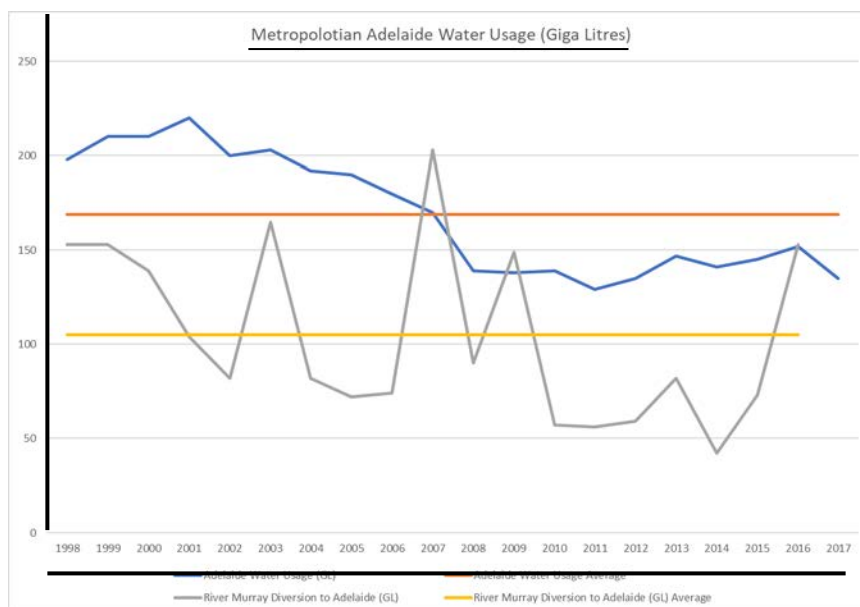
Availability of water is a major determinant of the evolution and location of all towns and cities around the world. Adelaide was established as a new free settler colony in 1836 and Colonel Light chose the site largely because of the availability of water – the Torrens and other small rivers emanating from the Mount Lofty Ranges.

The Mount Lofty Ranges catchment still provides a significant amount of Adelaide's water supply through the 10 reservoirs linked to the greater Adelaide system. These reservoirs have a combined capacity of 100 GL. Water from the River Murray began being supplied to Adelaide in 1955 with a pipeline from Mannum to the northern part of Adelaide. A further pipeline from Murray Bridge to Onkaparinga in the South was completed in 1973.

The balance of supply between the Mt Lofty Ranges catchments and the River Murray depends on the amount of rainfall in the Mt Lofty ranges and the rate of flow in the river. The amount used from each source can vary significantly – as can the total amount of water needed.

Graph 1 shows the amount of water used each year since 1998 and the amount of water diverted from the River Murray over the same period.

Graph 1



A number of facts can be seen from the above graph:

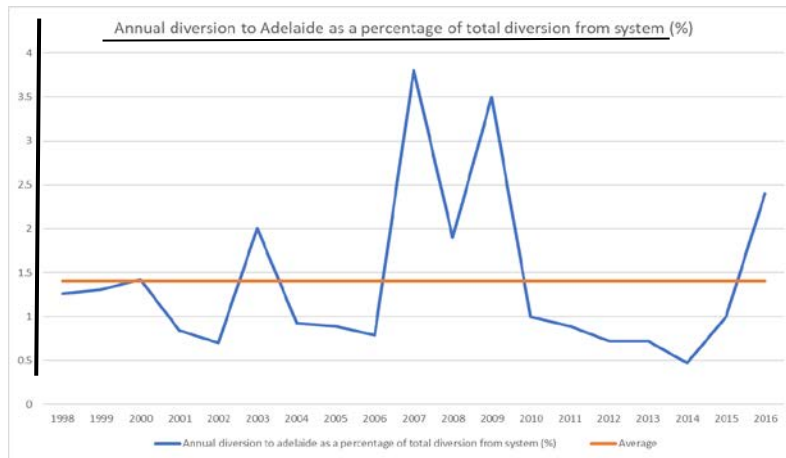
1. **Since the millennium drought in 2007 the amount of water consumed in Adelaide has dropped significantly (around 27%) and remains at the lower levels.**

The drop in water supply can be attributed to a number of factors including:

- Public awareness of the need to conserve water
  - Water pricing policy
  - Investment by households in efficient watering systems (eg drippers)
  - Investments in rainwater storage tanks
  - More dense housing development with significantly less garden space
2. The amount of water diverted to Adelaide from the River Murray varies significantly from year to year. In years of lower rainfall, water from the river is used to build up holdings in the Mount Lofty Ranges reservoirs. (NB The 5 year rolling cap for Adelaide is 650 GL – average 130 GL per annum. The average diversion is well below this level (see Graph 1))
  3. **Over the 20 year period the average diversion from the River Murray is approximately 66% of the water used – ie two thirds.**

Graph 2 shows the amount of water diverted from the River Murray to Adelaide compared to the total amount diverted from the overall Murray Darling Basin.

Graph 2



Again it is clear that the amount diverted varies considerably each year. The impact of the drought years around 2007/8 is clear.

**However, the average diversion over the 20 year period is less than 1.5% and in many years is well below 1%.** If the impact of the millennium drought is removed, the average is considerably less than 1%.

The key issue for Adelaide is to ensure the availability and quality of water passing the pipeline extraction points (Mannum and Murray Bridge) is at the necessary level. This is very much dependent on the water levels in the lower lakes of the Murray. If the water level in the lakes drops, the acidity level increases. This acidity can leach back upstream and thus make the water unusable for the 1.2 million population of Adelaide.

**Thus the health of the lower lakes is critical for the water supply of Adelaide.**

Recycled sewerage and stormwater aquifer recharge schemes had been developed in Adelaide over many years, however the severe drought in 2006-7 resulted in a significant investment by the Commonwealth, State and local governments to increase these schemes as part of water proofing Adelaide strategies – ie securing water supply.

Currently waste water schemes produce approximately 30 GL per annum. Since the recovery from waste water is around 30%, this suggests that, of the approximately 145 GL provided through the water mains system, 100 GL (approximately 70%) is used for drinking, washing and toilets, whilst 45 GL is used for watering of gardens etc.

Storm water recharge schemes have a combined capacity of 22 GL per annum. These systems are used extensively to water public parks, gardens, ovals, golf courses etc. Local government is also active in investing in water sensitive urban design for its own infrastructure and in encouraging its use in other suitable developments. Adelaide is a world leader in many of these technologies.

Also as a result of the 2006-7 drought, the State Government invested in a desalination plant in the south of Adelaide with a capacity of 100 GL per annum. Current policy is that full capacity of the plant will be used when the spot price of water from the River Murray is greater than the marginal cost of running the plant. It is currently kept running at around 10% of capacity ie generating 10 GL of water annually.

A brief summary of Adelaide's water supply is set out below:

- **Adelaide takes, on average, less than 1.5% of the water off-take from the Murray Darling Basin**
- **On average, 66% of Adelaide's water supply comes from the River Murray**
- **An additional 20% comes from recycled waste water**
- **Storm water recharge schemes have the capacity to supply a further 8%**

- **Since the drought of 2007 Adelaide's demand for water has dropped significantly and security of supply has been improved through investment in a desalination plant**

**The key issue for Adelaide in terms of River Murray policy is the level and quality of water in the lower lakes.**

Sources:

SA Water Annual Reports  
SA Government "Water for Good" report 2009  
Murray Darling Basin Authority data  
Water Sensitive SA

This summary shows that, whilst Adelaide is not a major user of water from the Murray River compared to the overall offtake, it is highly dependant on the health of the lower lakes for the quality of water it needs – hence the comment earlier in this submission about the impact of the millennium drought. What is also clear from this summary is the variability of the offtake from the River. This is a reflection of the variability of the seasons – a matter we will provide further comments on later in this submission.

It is also worth noting that, notwithstanding the comment made above that the greatest impact of change falls to the greatest user of water, Adelaide has done a significant amount to reduce its demand for water resulting in a 27% drop in consumption. It has also reduced the potential impact of a future significant drought by building a desalination plant with a capacity of nearly two thirds of Adelaide's annual water needs.

However, it is recognised by Region 7 that the reduction in water usage in communities within the Basin itself can have negative impacts on the sustainability of those communities if not properly managed and this is in clear distinction from the issues Adelaide has faced.

### **Specific Issues Needing Consideration by the Commission**

#### **Compliance**

Terms of reference 7 to 10 relate to the issue of compliance.

Any compliance system requires trust that it is effective and this is best achieved through transparency. In the case of water off-take in our view it requires

- effective metering
- penalties for offences and
- an independent audit regime

Both the Matthews Report and the MDBA Review referred to above called for the first two of these to be implemented across the Basin. They did not give much emphasis to the provision of an independent audit regime.

At the Annual General Meeting of the MDA held in October 2017 a motion was put by Region 7 of the MDA that a regular independent audit be undertaken of compliance systems across all jurisdictions. This motion was passed unanimously by all delegates at the meeting. The Commission is urged to recommend such a regime.

Advances in technology can improve the viability of monitoring flows and reading metres and this should be adopted at every opportunity.

Many other issues affecting compliance were well covered in the Matthews and MDBA Reports and it is not our intention to provide a commentary on these other than to observe we support the findings. We also note that some prosecutions have been instigated.

## **Equity**

A critical objective of the Water Act 2007 and of the Murray Darling Basin Plan is to ensure equity across the Basin. This has already been touched on above. We now make some further observations on this topic.

Evaporation is a major cause of water loss across the Basin. This is in part because flow in the rivers for most of the year is slow. The MDBA often quotes the comparison that one year's flow in the Murray is equivalent to one day's flow of the Amazon River.

Therefore, measures to mitigate evaporation can have a significant impact. This is not to say that wetlands should be abandoned. Indeed, the opposite is true as wetlands play a significant role in contributing to the health of the river systems and to the natural environment. However, the use of open channels containing significant quantity of stagnant water should be minimised. Leakage from such channels should also be reduced.

Thus, recent policies by the MDBA to achieve water savings through investment in on and off farm infrastructure is supported by Region 7. However, in regard to on farm investment, care must be taken to ensure that this does not become, in effect, a subsidy that drives planting of more perennial crops as opposed to annual crops which provide greater flexibility in water use. We believe water buy back programs can have unintended consequences resulting in a reduction of agricultural activity with resultant negative impacts on communities. Buy backs can have the effect of hastening the closure of marginal farm activity – eg in the dairy industry which has been undergoing significant structural change as a result of factors other than water availability.

It is understood that the allocation of water to South Australia is determined and measured by river flows at the State border and it is recognised that such a system is not possible for the other States. However, one of the consequences of this system is that evaporation is included within the SA allocation. This is not the case in NSW, for example, where water allocations are determined at the particular farm offtake point. Thus, evaporation from irrigation channels is not included in the NSW allocation figures and this raises the question of equity between jurisdictions. The question is, should water allocation for the State be determined at "the farm gate" or at the point water is extracted from the river?

There are two large lake systems within the Basin system – the Menindee Lakes and the so-called lower lakes including Lake Alexandrina. Because of the large amount of evaporation from these systems, there are calls for them to either be reduced in size (the Menindee Lakes) or allowed to be converted to sea water (Lake Alexandrina).

In the case of the Menindee Lakes it is understood a decision has been made to construct a pipeline to Broken Hill for its water supply and therefore reduce the amount of water required to maintain the level of the lakes. There is no government proposal to convert Lake Alexandrina to sea water at this point in time, however there are some who advocate for this to occur.



In both instances we urge careful and independent analysis of the consequences of such substantial changes to what have been naturally occurring features of the Basin for millenia. The changes should not be made for short term political purposes.

### **Efficiency of Water Use**

All users of water from the Basin should be encouraged to utilise the most efficient technology possible for using the water. This can be achieved either through regulation, investment incentives or pricing policy – or a combination of all three. This should apply to urban centres and townships (as has occurred in Adelaide) as well as irrigators. The gains from such efficiencies should be used to increase environmental flows, not to allow an increase in users.

Some raise the question of using scarce water for large water using crops such as rice and cotton. We do not make specific comments about this as, provided the water used is within the agreed limits of the Water Act 2007, it is not an issue for the Commission. We also note these are annual crops and provide some flexibility for water use when water is particularly scarce during low rainfall seasons – and the price of water in the market increases.

However, we do suggest that work be done to ensure there is a full understanding of the particular economic value of irrigated agriculture products. This will result in improving investment decisions and, perhaps more importantly, improve wider community understanding of the economic value of irrigated agriculture in the equation of the balance between industry and the environment which are sometimes seen to be in conflict – although in reality they should not be as noted above.

### **Variability and Uncertainty**

It is stating the obvious to say that there is considerable variation in the amount of rainfall across the Basin and in temperatures experienced. This creates variability in flows through the entire river systems of the Basin.

As noted earlier, the variability in flow has been reduced as a result of significant investment in infrastructure such as dams, locks and barrages. This has not been without some consequences for the natural environment, but has enabled the development of industry and communities across the Basin.

However, it is this variability that makes modelling of the system and the determination of sustainable diversion limits challenging. Those doing the modelling need to bear in mind that sustainability of the system depends on its ability to withstand significant periods of drought and, as with any system modelling, such as transport, hospitals etc, average levels are not the most appropriate measures to use – nor are the extreme peaks or troughs.

Given the need for long term sustainability, it seems to us that the benchmark for modelling should err on the side of lower flows, not averages. This may, in fact, be the case, but it needs to be tested in the public arena.

The greatest uncertainty in developing models for long term sustainability is, of course, climate change. The MDBA and the various State and Commonwealth governments need to develop a common approach and ensure consistency in policy. This may be a tall ask given the experience in approaches taken to energy policy around the same issue, but it is worth pursuing before investment and policy get out of step.

## **Institutional Arrangements**

Section 5 of the Productivity Commission Issues Paper, referred to earlier, summarises the Institutional and Governance arrangements for the Murray Darling Basin. By any reckoning it is a complicated set of arrangements that sets the overall governance up for lack of accountability and disputes across jurisdictions.

However, we are likely stuck with it as a result of the Australian Constitution. Therefore, there needs to be mechanisms to maximise a collaborative and cooperative approach. To a large extent this depends on transparency and proper information.

The level of government that is not part of the formal institutional structure is local government. We believe the inclusion of local government in an appropriate way that fits within the powers of governments set out in the Constitution is likely to be helpful to the process of building cooperation through sound information flows – both to and from communities.

The Murray Darling Association provides an effective structure for this to occur. The MDA is already doing work to better inform communities across the Basin on Basin issues. It is also developing ideas for a social and economics assessment framework, including an agreed socio-economic neutrality test.

This approach is supported by Region 7 and has the potential to contribute significantly to the capacity of governments to provide the 450 GL of up-water, a significant issue listed in the Commission's terms of reference.

We recommend that the Commission give thought to ways in which local government can provide added value to the goal of developing understanding and cooperation across the jurisdictions into the future and thus avoid the set of circumstances leading to the establishment of this Royal Commission.

## **Conclusion**

We have not dealt with a number of the issues raised in the terms of reference for the Royal Commission because we do not have the specific information to provide to the Commission.

We have, however, raised a number of other issues that we think are pertinent to any enquiry into the Murray Darling Basin and we encourage the Commission to take submissions and evidence that places the specific terms of reference it is asked to address into a broader context.

Cr David Shetliffe

Chair, Region 7,

Murray Darling Association