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To:
Standing Committee for Regional Australia

Inquiry into certain matters relating to the proposed Murray-Darling Basin Plan

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Introduction

Murray Irrigation congratulates the Standing Committee on Regional Australia for reviewing the revised draft Murray-Darling Basin Plan specifically focusing on areas where works and measures could be used to offset the sustainable diversion limits (SDLs). The Committee rightly identified methods to offset SDLs in the report of their inquiry into the impacts of the Basin Plan, *Of Droughts and Flooding Rains.* This report also contained sound recommendations which, if followed, could ameliorate the impact of the Basin Plan on regional communities. Unfortunately, as far as the Basin Plan is concerned, the latest version remains focused on held entitlements and removing water from productive use rather than looking at ways to better manage environmental holdings to deliver meaningful environmental outcomes.

Murray Irrigation welcomes the opportunity to provide the Committee with the following submission to address the potential role that new environmental works and measures projects could play in partially offsetting SDL reductions under the Basin Plan, focussing particularly on prospective project proposals identified by state governments and community interests. Murray Irrigation also refers the Committee to our submission[1] to the Murray-Darling Basin Authority (MDBA) on the proposed Murray-Darling Basin Plan and our previous submissions to the inquiry into the impacts of the Murray-Darling Basin Plan as they also touch on the subject of environmental works and measures.

Request to Present

Murray Irrigation would welcome the opportunity to address the Committee to support the evidence provided in this Submission.

[1] Murray Irrigation submission to the MDBA on the proposed Basin Plan, 16 April 2012, http://www.mdba.gov.au/have-your-say/view-submission

Executive Summary

The proposed Basin Plan is focussed on reducing the amount of water extracted from the river system instead of achieving environmental outcomes. The whole premise of the Basin Plan is that the reduction in extractions will be achieved by transferring entitlements from licence holders to the Commonwealth Environmental Water Holder and that the (undefined) environmental benefits will accrue from the use of this water (in a manner not presently known).

It is the view of Murray Irrigation that the approach taken by the MDBA, to concentrate on held entitlements to provide managed flows, and to ignore current and/or future infrastructure or engineering measures to save and efficiently deliver water, has led to the proposed cuts to SDLs being unnecessarily high.

Murray Irrigation believes the proposed reduction of 2,750GL per year through entitlement recovery Basin wide is too high given the impact the reduction is likely to have on our region and the fact other infrastructure and/or operations management options have been largely ignored.

We believe if the following management options for the Murray-Darling Basin are adopted, the environment can be sustainably managed with the water currently held in environmental accounts:

- The construction of environmental works and measures to effectively deliver environmental flows to target assets **within existing system capacity constraints**;
- A review of the management of, rules pertaining to the operation of, and where required upgrades to, public infrastructure including the Menindee Lakes and the Coorong, Lower Lakes and Murray Mouth (including the Barrages);
- An efficient and effective environmental watering plan to deliver the large volumes of presently held environmental water (over 2,000GL in Commonwealth and State holdings to date) **within existing system capacity constraints**.

The revised draft Basin Plan still offers nothing but to remove water from productive use for environmental holdings without providing a plan for the use of that water or clearly identifying measurable environmental outcomes to be achieved. The environmental issues identified as reasons to justify the need for a Basin Plan cannot be addressed by increased flows alone. This fact has been recognised by a number of scientific reviews including the Sustainable Rivers Audit and the River Murray Scientific Panel and raised on numerous occasions by Murray Irrigation since 2004[2]. Most recently we commissioned a review of the proposed Basin Plan by Ecologist Dr Lee Benson which we included as an attachment to our submission to the MDBA this year[3].

Environmental works and measures on the other hand are, by definition, designed to achieve a specific objective and intensive studies and modelling is carried out to evaluate the environmental benefits. The MDBA has continually failed to properly account for environmental works and measures, despite developing, modelling and implementing various The Living Murray initiatives (TLM)[4].

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[2] *Getting Water Right(s): The future of rural Australia*, House of Representatives Standing Committee on Agriculture, Fisheries and Forestry, June 2004, Reference to Murray Irrigation evidence.
[3] Murray Irrigation submission to the MDBA on the proposed Basin Plan, 16 April 2012, http://www.mdba.gov.au/have-your-say/view-submission
[4] The Living Murray works and measures website: http://www.thelivingmurray.mdbc.gov.au/programs/environmental_works_and_measures.html

The issue of giving adequate consideration to the outcomes that can be achieved through works and measures has been raised with the MDBA on multiple occasions by multiple organisations, including the Regional Affairs Committee[5].

Murray Irrigation has repeatedly requested that all TLM projects, that have been modelled and approved, be included in the Basin Plan modelling to offset SDLs. This request has continuously been ignored with claims that high flows are required to achieve return flows and whole-of-river outcomes. Murray Irrigation has two concerns with this approach; the potential for the requisite high flows that cannot be managed without significant third party impacts and secondly the assumption that return flows are necessarily linked to meaningful environmental improvements downstream. This is particularly the case in the River Murray downstream of Echuca where the river channel capacity is significant and, assuming environmental watering is to be conducted within operational and capacity constraints, return flows from upstream assets including the Barmah-Millewa and Gunbower-Koondrook-Perricoota Forests are likely to remain within channel.

In the submission to the Guide to the Murray-Darling Basin Plan, released in October 2010, Murray Irrigation posed the following questions (among others):

- Why is no evaluation of the benefits of TLM and Water for Rivers investment in water recovery and infrastructure available? Stakeholders need to appreciate what has been achieved already and why the volume required since the TLM decision has increased so much.
- Why is there no consideration or evaluation of the effectiveness of infrastructure investment to deliver environmental outcomes in the highly regulated River Murray, including agreed investments such as the planned works in the Koondrook-Perricoota Forest?

These questions remain unanswered.

Murray Irrigation believes it is time the MDBA stopped focussing on held entitlements and began focussing on outcomes. An effective Murray-Darling Basin Plan must be about managing water delivery to environmental assets to maintain a level of ecological health between the natural flood years and the natural dry years.

Environmental Water

Murray Irrigation is of the belief that, if managed appropriately and delivered effectively using environmental works and measures, operational improvements and other non-volume related mechanisms, there is enough water available to the environment now if you also take into account the volume that will be transferred through the various projects announced by the Commonwealth.

Environmental water committed from the NSW Murray region to date includes the Barmah/Millewa Forest Allocation - minimum of 50,000ML per year, up to 100,000ML per year first implemented in 1993.

Since then there have been several programs to recover water from our region for the environment with over 20 percent of Murray Irrigation's original licence volume transferred to environmental holdings to date. If the Basin Plan is implemented without the ability to offset SDLs through works and measures or management options, Murray Irrigation faces a total reduction of productive water

[5] *Of Drought and Flooding Rain: Inquiry into the impact of the Guide to the Murray Darling Basin Plan*, House of Representatives Standing Committee on Regional Australia, May 2011, Appendix E, p 241

entitlements of around 44 percent of the original licence volume (Table 1). Murray Irrigation's access licence is almost entirely made up of NSW Murray General Security Entitlements. During the drought, our announced allocation fell to zero percent for the two years 2006/07 and 2007/08. The Government has committed not to change the allocation characteristics of the any water purchased which is a commendable policy, but also means that if there was a repeat of the Millennium drought circumstances, then the nearly 250GL recovered from Murray Irrigation to date will deliver zero water for the environment. This again, shows that complimentary management actions must form part of a Basin Plan that will lead to real environmental outcomes.

As at 31 March 2012

Murray Irrigation	**Year(s)**	**Volume and Entitlement Type**	**Percentage reduction from original licence volume**
NSW Adaptive Environmental Water (recovered from MIL at privatisation)	1995	Conveyance - 30,000	9% (original conveyance water access license volume)
Supplementary water access licence	2007	Supplementary - 100,000	45% (original supplementary water access licence volume)
NSW Murray General Security Entitlements – held at privatisation	*1995*	*1,190,763*	*N/A* *Rounded to nearest percent*
NSW The Living Murray	2008-2009	General Security - 29,591	2%
MDBA The Living Murray	2007-2008	General Security - 16,268	1%
Water for Rivers	2004-current	General Security - 11,002	1%
Commonwealth Government (Buyback, OFIEP, etc)	2009-current	General Security - 187,513	16%
TOTAL 1995 to 31 October 2011		General Security - **244,374**	**20%**
Basin Plan "In-Stream" recovery remaining 68GL	2011-2019	59,605 (48,280ML)	5%
Basin Plan "shared" recovery 263GL	2011-2019	230,531 (186,730ML)	19%
Basin Plan TOTAL	**2011-2019**	**290,136 (235,010ML)**	**24%**
TOTAL 1995-2019		**534,510 (432,953ML)**	**45%**

TABLE 1:
*Murray Irrigation was issued 71% NSW Murray General Security Entitlements and it is assumed pro rata recovery for analysis.
**Based on long term cap equivalent cap factor of 0.81.

Salinity

As well as the Murray River Dilution flow of 696GL per year committed through the Murray-Darling Basin Agreement, in the 1990s the Murray Darling Ministerial Council committed further dilution flows to the Murray of 3,000ML per day once storage levels in Menindee, Hume and Dartmouth reach certain trigger levels. Following the end of the drought, the dilution flow triggers were reached and additional flow to South Australia commenced in August 2010. The total annual flow to South Australia, including

additional dilution flow and unregulated flow in 2010-11 was about 15,100GL, the highest amount since 1975-76[6].

Since the drought broke there have been significant flows into South Australia[7] and through the Lower Lakes, yet Lake Albert remains hypersaline[8] and experts point out that the Coorong remains under "extreme threat"[9]. This shows that flows alone will not fix the salinity and water quality issues faced in the area and management and infrastructure options must be part of the solution, particularly the management of the barrages.

The argument that more water is required to ensure salt export and flows out the Murray mouth is not supported by historical observations and ignores any management actions that could be implemented to improve the water quality and ecological health of this part of the system.

Observed salinity in Lake Alexandrina has been maintained at or below 1,000EC for the majority of time since records commenced in 1975[10], excluding periods of extremely low flow including the most recent millennium drought. Analysis also shows the target of 2 million tonnes of salt exported; using 10 year rolling average during 1975 – 2000 (the benchmark period of the Basin Salinity Management Strategy (BSMS) was achieved with average flows of 5,491GL/year[11].

To address salinity there has been significant investment in salt interception schemes in the Lower Murray and changes in land and water management practices throughout our region. The implementation of the Basin Salinity Management Strategy has also seen significant improvement in water quality. These initiatives are not flow related but have had a measurable impact on the water quality measured at specific sites. This again shows that infrastructure and management must be part of any Basin Plan that is designed to delivery outcomes.

Assumptions and options

The Victorian Government specifically requested the MDBA to review the level of returns gained from increased water recovery to assess if the incremental benefit justified the high returns. As the MDBA declined to conduct such a review, the Victorian Government commissioned its own modelling and found the net benefit of recovering less entitlement (2,100GL/year equivalent), when combined with effective management and environmental works and measures was as great as, if not better than the outcomes achieved by recovering 2,750GL/year alone.

It is fair to say that there is a point at which the benefit of each megalitre of water recovered diminishes to less than the cost imposed on communities for the removal of that water (i.e. a net negative outcome for society overall). It could be argued that the cost of purchasing water for a negligible incremental benefit would be better spent on management or infrastructure options that will deliver real environmental benefits.

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[6] MDBA Annual Report 2010-11, http://www.mdba.gov.au/annualreports/2010-11/chapter_03_2.html
[7] *Coming soon to a river near you?*, Adelaide Advertiser, 8 March 2011
[8] ABC Radio, PM, 7 March 2012 http://www.abc.net.au/news/2012-03-07/sa-irrigators-struggle-to-save-once-thriving-lake/3874994
[9] University of Adelaide professor David Paton, reported in the Weekly Times, '*Coorong flows in dire straits'*, 21 November 2011.
[10] *Development of Flow Regimes to Mange Water quality in the Lower Lakes, South Australia*, Technical Report DFW 2010/05, Department of Water, South Australia, Murray-Darling Basin Division, p12.
[11] *MDBA Basin Plan Salt-load Target - Rationale Final Hyder Consulting.*

River operators must look to coordinate the significant volume of water already available to the environment under the various programs and explore options that involve changed operations of existing infrastructure or identification of new infrastructure to deliver environmental outcomes. Examples include weir pool manipulation and changed operations of the Barrages. Introduction of these changes may require an investment in infrastructure and or technology.

Environmental Works and measures

There are both practical and social and economic reasons for using environmental works and measures in the modern working river system.

From the practical perspective, managing environmental flows down the system is difficult due to the need to actively manage multiple flow events from various storages to culminate in a large flow event. Our analysis shows the maximum flow that can be achieved to a site such as South Australia's Riverland-Chowilla Floodplain through managed releases using current operating rules falls short of the MDBA's identified flow target of up to 80,000ML/day for that site. Achieving this in a regulated river is very difficult, if not impossible, and does not allow for any channel sharing with town water or irrigation needs:

Downstream of Yarrawonga Weir	10,600ML/day[12]
Lake Victoria Release	10,000ML/day[12]
Darling River downstream Menindee	9,000ML/day[12]
Murrumbidgee into Murray	9,000ML/day[13]
Goulburn storage release	10,000ML/day[13]
TOTAL regulated flows	**54,000ML/day**

The MDBA acknowledges that target indicator flows above 100,000ML/day for downstream sites including Hattah Lakes and the Riverland-Chowilla Floodplain are difficult to achieve by active flow management and rightly says:

> *"These events are dependent on large inflow events from a number of tributaries and potential storage spills and are beyond the scope of a managed watering event."*[14]

Socially and economically works and measures provide communities with security of production as there is a reduced need for water to be transferred away from productive use and economic activity during the construction phase.

Unfortunately, the current focus of the Basin Plan to require "held environmental water"[15] means it is not possible for offsets from works and measures that do not result in entitlement transfers to be credited to the Basin Plan. There must be a mechanism to account for offsets provided by such projects in the Basin Plan.

[12] *River Murray System – Annual Operating Plan*, 2011-12, MDBA, June 2011, p10
[13] *Fact Sheet: Constraints and River Management*, MDBA, November 2011
[14] *Hydrologic modelling to inform the proposed Basin Plan: Methods and results*, MDBA, February 2012, p201 and 203.
[15] Proposed Basin Plan – revised draft, MDBA, May 2012, Chapter 6, Subsection 6.05(4), p29

The Committee has specifically requested Murray Irrigation respond to the following:

The potential role that new environmental works and measures projects could play in partially offsetting SDL reductions under the Basin Plan, focussing particularly on prospective project proposals identified by state governments and community interests.

The opportunities for efficiently delivering environmental flows is not limited to major in-stream infrastructure projects, nor is it limited to new works and measures. There is potential to use and/or upgrade existing infrastructure to deliver measurable environmental outcomes via means other than overbank flows.

A significant failing of the proposed Murray-Darling Basin Plan is the fact that the MDBA have identified over 2,000 significant wetlands in the Basin but have not considered how to deliver water to these, mainly privately owned, sites without large overbank flood events that would lead to flooding of private and often productive land. While environmentalists such as Tim Stubbs of the Wentworth Group quite rightly points out that no water is wasted in these overbank flood events[16] as the environment makes use of it all, he fails to recognise that between the key indicator sites is private, productive land that no Government has a right to flood at will.

Murray Irrigation has experience in working with our landholders to achieve outcomes throughout our system. We have worked with the NSW Government, Murray Catchment Management Authority and landholders to deliver NSW adaptive environmental water to wetlands on private properties. The Regional Australia Committee saw an example of these projects when they visited Deniliquin in January 2011.

Murray Irrigation has recently provided submissions to the NSW Office of Water that identifies offsets of approximately 250GL per year by using our supply infrastructure to effectively deliver water straight to an identified wetland or river system without overbank flows.

Our proposal would see outcomes delivered for wetlands, permanent and ephemeral creeks and streams and provide benefits for the Edward Wakool Rivers system, an identified hydrological indicator site in the Basin Plan, using much less water than the MDBA proposes to deliver through the Basin Plan – which does not consider flows to wetlands far removed from the river channel.

Further, we have estimated a potential transfer of over 83GL per year in entitlements through infrastructure and efficiency measures including on-farm projects and reconfiguration of the Murray Irrigation supply system. While there is potential for entitlement transfer in return for efficiency projects, Murray Irrigation would highlight that entitlement transfer even through efficiency measures impacts on our ability to contain cost pressures and continue to provide a service that our customer shareholders can afford.

[16] Wasted water is lifeblood of river, Opinion, Tim Stubbs and John Williams, The Canberra Times, 13 June 2012, http://www.canberratimes.com.au/opinion/wasted-water-is-lifeblood-of-river-20120612-208gm.html

Environmental works and measures: Past, present and future

The proposed Basin Plan, while purporting to be a plan for a "healthy working river"[17] and "not about returning the rivers to their natural state"[18], has been modelled largely to achieve overbank flows and "changes in flow regime are required in order to recover toward natural flows"[19] failing to take advantage of technology and human ingenuity to improve what is already a highly modified river system.

The idea of using man-made infrastructure to achieve environmental outcomes is not new. Earthen levees were first constructed in the Millewa Forest, ironically, to control high flows and prevent extended flooding that was causing declining health of the local Red-Gum population[20]. There are now over 50 water management structures within the Barmah-Millewa Forest which have been built in an attempt to restore a more natural flooding and drying regime while maintaining the working integrity of the modern Murray system and minimising any third party impacts.

The Barmah-Millewa Forest is a key hydrologic indicator site for the proposed Murray-Darling Basin Plan, yet the role this infrastructure and the surrounding communities has played in ensuring the maintenance of its ecological health has been ignored by the Basin Plan section of the MDBA who commenced their planning processes at a time of record low inflows. The MDBA modelling for the Basin Plan fails to recognise that high regulated flows through this region risks the health of this iconic site that has been RAMSAR listed, is a Living Murray Icon Site and is a recreational destination for many locals and tourists.

The installation of regulators and levees throughout the forest, implemented through consultation with local communities, enables Victoria and NSW to effectively alternate periods of high flows, up to 15,000ML per day to allow drying and wetting of the forest. Flows above 15,000ML per day cannot be managed and will effectively inundate both sides of the forest. Flows of over 20,000ML per day sees access to public beaches in Tocumwal closed, private land bordering the forest inundated and access to the forest itself limited[21]. Despite this, the MDBA is proposing flows downstream of Yarrawonga of up to 40,000ML per day in order to achieve required downstream flows. This could see the health of one environmental asset decline for the sake of improving the health of another, downstream asset or assets.

In the 1980s and 1990s, salinity was a major issue and communities and government agencies worked together to develop a program to improve land and water management to address the issue. It was recognised that active management and human intervention was required to provide environmental outcomes.

The new millennium brought with it prolonged drought and claims the river health was critical and the system was over-allocated – despite announced or accessible allocations decreasing to match the decreasing inflows (i.e. 0 percent allocations). The Living Murray program was developed, again in

[17] *Plain English summary of the proposed Basin Plan*, Explanatory note, MDBA, November 2012, pvii.
[18] *Delivering a Healthy Working Basin*, *MDBA*, November 2012, pi
[19] *Assessment of the ecological and economic benefits of the environmental water in the Murray-Darling Basin*, CSIRO, March 2012, pvi.
[20] Barmah-Millewa Forests Water Management Strategy, Murray-Darling Basin Commission, June 2000, p3.
[21] *Deliverability of Environmental Water in the Murray Valley*; Report to the Murray Group of Concerned Communities, Murray Catchment Management Authority, May 2012.

consultation with communities and governments of all levels, as an eight year program of both water recovery and infrastructure works to provide environmental benefits to key icon sites, including the River Murray channel itself.

A lot of time, research, consultation and taxpayer money has been invested in TLM to identify and develop projects that would deliver measurable environmental improvement for the six icon sites. Unfortunately, while the water recovery has been factored into the baseline diversion levels in the proposed Basin Plan, the flow regime to conform to the works and measures (lower flows than those required in the Basin Plan) have not been, regardless of whether they have been completed, are under construction or are proposed.

> *"It is noted that TLM environmental works at Riverland-Chowilla floodplain key environmental asset (built, under construction and/or proposed) could assist with meeting environmental outcomes through the delivery of water through works instead of through the delivery of high flows….. the Riverland-Chowilla floodplain and Lindsay-Mulcra-Wallpolla Islands may be able to be managed with less water to meet many of the same outcomes."*[22]

This is only one of multiple mentions of where TLM projects are acknowledged to deliver benefits with less water in the MDBA's supporting documents; however:

> *"…For Basin Plan purposes the presence of TLM environmental works did not result in modification of environmental water requirement (flow indicators) for TLM icon sites…."*[23]

Conclusion

Murray Irrigation understands and supports the need for a balanced Murray-Darling Basin Plan.

There needs to be a plan for the 2,000 gigalitres the Commonwealth Environmental Water Holder, the MDBA and State agencies already own and to coordinate the environmental water entitlements held by various entities at different levels of Government to make best use of available water.

There needs to be an investigation of opportunities to make better use of existing infrastructure, such as weir pools, barrages and irrigation infrastructure and their management to provide better environmental outcomes. There must be a priority to complete planned environmental works and measures where modeling and impact studies have been carried out and identify the proposal can deliver real outcomes. The use of new and existing infrastructure and any proposed changes to operational procedures must be carried out in a way so as not to cause **negative third party impacts**.

There needs to be a plan so rural communities can have certainty of what their future holds and they can plan for that future.

Unfortunately the proposed Basin Plan delivers none of the above.

The proposed plan does not tell us what is planned for current water holdings, let alone any more that the Government may acquire. There is no acquisition strategy so we can identify where the water will be sourced from. The shared recovery target is a mechanism so the MDBA does not have to make the

[22] *Hydrologic modelling to inform the proposed Basin Plan: Methods and results*, MDBA February 2012, p203
[23] *Hydrologic modelling to inform the proposed Basin Plan: Methods and results*, MDBA February 2012, p196

hard decisions about where the water should come from but leaves communities with no way of knowing what the final impact of the Basin Plan will be.

The proposed plan makes no mention about how new environmental water holdings will complement other programs already in place such as TLM. It ignores the offsets that can be provided by environmental works and measures, even those that are under construction, preferring to plan for overbank flows that could significantly damage private property and public infrastructure. It makes no plan for management or upgrades to public infrastructure such as the Goolwa Barrages, even where it is owned by the MDBA.

The proposed plan increases uncertainty for regional communities.

Murray Irrigation cannot support the proposed Basin Plan.

In its current form, the Basin Plan places our communities and our local environment at risk for a poorly defined outcome with no certainty that it will address the issues that confronted the Basin when the Water Act was first implemented in 2007.

Anthony Couroupis
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