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Associate Commission John Madden
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Dear Commissioner Doolan & Associate Commissioner Madden,

RE: FIVE YEAR REVIEW OF MURRAY-DARLING BASIN PLAN

Thank you for the opportunity to provide comment to the Murray-Darling Basin Plan Five Year Assessment. Please find my initial submission below. I would be happy to provide additional information or to attend a hearing if required.

I strongly support effective implementation of the Murray-Darling Basin Plan to ensure sustainable management of healthy working rivers to support all Basin communities. However, at this Five Year milestone, I wish to raise significant concerns about some aspects of the implementation process and the effectiveness of the Basin Plan in terms of achieving a balance between environmental, social and economic interests.

[Background to comments in submission](#)

I have worked on sustainable management of natural resources in the Murray-Darling Basin throughout my career, which has covered water policy and governance in the SA environment agencies, practical wetland rehabilitation projects in a conservation NGO, academic research on environmental water needs for floodplain vegetation and wetlands, and environmental consulting on natural resources management. I am aware of the extended history of the development of the Basin Plan, and the extensive and complex process undertaken to this point in implementation of the Plan.

[Overall Comment](#)

The interim targets for the Basin Plan broadly require no loss or degradation in flows, connectivity, assets, functions, Coorong, Lower Lakes and Murray Mouth regime, condition & recruitment of native species by 30 June 2019. Those targets are currently not being met, with significant decline in waterbirds across the Basin, in spite of floods in 2010-2012 and 2016, and the Murray Mouth requiring dredging. The condition of the Southern Lagoon of the Coorong is poor, with algal blooms smothering reproduction of the critical food source *Ruppia tuberosa*. However, environmental flows have been successfully coordinated this summer to support shallow inundation of mud flats at the critical time for migratory waders, prior to their departure for their Northern Hemisphere breeding grounds.

The legacy of more than 30 years of escalating over-extraction from the 1970s, compounded by the Millenium Drought, is millions of dead eucalypts along more than 700 km of floodplains in the Murray Valley. The surviving trees continue to show signs of stress during dry periods between and since recent floods. Mass germination occurred during the 2010-12 floods, but these seedlings and saplings

are also showing signs of stress and death during dry times. Those receiving environmental water are thriving and have a much enhanced chance of long-term survival to reproductive age (Figures 1&2).

Information Request 1: [feedback on its approach to assessing the Basin Plan](#)

The format of information requests has made developing a submission complicated and more time-consuming, in trying to sort the information according to the categories. While I understand that the Commission is attempting to manage and sort material contained in submissions, a simpler set of bullet point questions would have made responding easier. The effort required to provide this initial submission to the Commission has required over four hours of unpaid time. This format appeared too daunting for at least one potential rural respondent, to my knowledge.

Information request 2: [Successful Implementation of SDL adjustment projects](#)

Before implementation of the SDL adjustment projects, significant concerns have been raised by experienced scientists about all but one of the 36 supply projects, and whether they can in fact deliver 'equivalent environmental outcomes'. Stringent review is needed to ensure that the 36 supply projects when designed and implemented do in fact deliver equivalent environmental outcomes as required by the Basin Plan. The proposed consultation processes need to be rigorous and open for each project and set in the context of the required outcomes for the Basin Plan.

The SDL adjustment process now requires that the Federal Parliament approves the increase of SDLs for the Southern Basin by 605 GL in 2018, before the individual projects have been designed or implemented and without delivery of the postulated 'equivalent environmental outcomes'. The supply projects do not have to be implemented until 2024. Reconciliation at that time will determine whether they have been successful. If not, further action will be required to develop new projects or to purchase equivalent water, a delay of more than six years after the increase of SDLs and cessation of water recovery.

The process of evaluation which led to the recommendation for 605 GL as the adjustment volume has only assessed the 36 supply projects as a total package, without details of individual projects. The scientific, peer-reviewed methodology has only compared the effect of the package of projects with the benchmark of the 2750 GL compromise volume in the Plan, which is known to be unable to deliver all the outcomes and targets in the Plan. Any smaller recovery volume will be even less able to deliver the Basin Plan outcomes.

Concerns have been raised by the Wentworth Group of Concerned Scientists about 25 supply projects which do not meet Basin Plan requirements, raising questions about the validity of including 316-436 GL in the recommended SDL adjustment of 605 GL.

If the SDL adjustment is accepted now, no further environmental water will be recovered beyond the total held at 30 June 2017. However, scientific predictions are that the current water recovery of ~2100 GL/y cannot deliver all environmental outcomes in the Plan, and it is likely that more water will need to be recovered.

Information request 3: [Achieving SDL adjustments in the Northern Basin](#)

The key finding of the Northern Basin Review was to reduce the volume of water to be returned to the environment to sustain river health from 390 GL to 320 GL. The justification was that additional modelling had shown that the same environmental targets could be met, but with reduced confidence. It was argued that this reduction could be accepted, in spite of the lower certainty of meeting environmental targets. However, the modelling compared only the original 390 GL volume with one option of 320 GL and found only small differences. This assessment overlooked the major fact that

neither option delivered more than 22 of the desired 43 environmental flow targets for the Barwon-Darling system. The evaluation also omitted any consideration of downstream impacts.

Scientific evidence indicates that the recovery target for the Northern Basin should be increased, and 415 GL has been recommended as a minimum volume to meet environmental targets required by international treaties and agreements to protect wetland habitat, migratory shorebirds and biodiversity values, including the Ramsar Convention, CAMBA and JAMBA.

In addition, the Northern Basin Review assumed that all other measures in the Basin Plan, including water recovery in the Southern Basin and non-compulsory complementary 'toolkit' measures, would be implemented effectively and in full. This is not guaranteed and is still subject to vigorous discussion by state governments. Significant pressure continues to reduce actual water recovery and to substitute complementary measures for water recovery. Insufficient consideration was given to impacts on downstream communities, including the Lower Darling, Menindee Lakes and the South Australian Murray Valley.

The proposal to reduce currently held environmental water in the Macquarie River by 12 GL and the Gwydir River by 6 GL would have unacceptable impacts on the Macquarie and Gwydir wetlands.

Information request 4: [Slow progress to remove constraints](#)

The implementation of the constraints package is a critical element in effective implementation of the Basin Plan. Measures need to be introduced to speed up active implementation of the projects, and consideration should be given to introducing penalties for slow implementation.

The provision of critical oxygenated flows to relieve the effects of a significant black water event on native fish during the 2016 flood was prevented because of constraints imposed by the Wentworth Caravan Park. This constraint should be resolved as a matter of urgency, to allow delivery of e-flows from the Menindee Lakes to benefit native fish throughout downstream reaches, with environmental, economic and social benefits for multiple communities.

Constraints need to be removed to allow minor floods to reach floodplain creeks, anabranches and wetlands. This can happen with limited threats to infrastructure and should be promoted to sustain recovery from the Millennium Drought, as well as augmenting the benefits from environmental flows.

Information request 5: [Water recovery where gaps remain, risks to achieving water recovery targets, examples of well implemented water recovery or major deficiencies](#)

The major risk to water recovery is that the water recovered so far has a significantly lower average annual yield than the volume listed (total CEWO holdings in entitlements 2672 GL, with long term average annual yield of 1836 GL (to end Feb 2018)). Further water recovery is restricted by the 1500 GL cap and the potential effect of the SDL adjustment process stopping any further recovery at 30 June 2017.

An additional serious risk comes from the hypothesis embedded in the Basin Plan that equivalent environmental outcomes can be delivered with less water. The methodology for applying this hypothesis is flawed, in that it compares only two scenarios, that of the total package of supply projects at a reach scale compared with the benchmark flow of 2750 GL. Thus, it compared two scenarios that cannot deliver all the Plan outcomes and stated that there is no significant difference in the outcomes, ie they can be considered 'equivalent', so the lesser flows can be adopted. A similar methodology applied in the comparison of 390 GL to 320 GL for the Northern Basin, two scenarios which met only 22

out of 43 targets. Multiple submissions argued that at least 410 GL was needed to meet critical environmental targets.

Individual supply projects clearly do not provide 'equivalent environmental outcomes'. Regulators, such as the Chowilla regulator, provide valuable complementary flow conditions between floods, but do not replace the connectivity, extent of inundation and flow regime of natural floods. Flows from the South East region into the Southern Lagoon of the Coorong are not equivalent to flows from the River Murray into the Northern Lagoon. Details are not available for the project to change management of the Menindee Lakes, which may have major implications for migration and breeding of native fish in the Lakes, as well as flows to the Lower Darling.

There is also a risk to water delivery, in the limitations on funding to support the costs of delivery and on-ground monitoring. The NGO Nature Foundation SA has an allocation of water and receives some funding from CEWO for delivery costs, but also has to rely on substantial philanthropic grants and substantial volunteer and landholder involvement to meet the real costs of delivery and monitoring. The CEWO has invested strategically in Basin-scale and reach-scale monitoring, but there is a gap at local and site scale, where funding is ad hoc and insecure.

Information request 6: Assistance to communities to adjust

Insufficient assistance has been provided to communities during the process of developing and implementing the Basin Plan to assist in the difficult process of adjustment to change. The result has been massive concerted push-back from irrigation communities, including reports claiming significant economic and social damage has been caused by the Plan. Copies of the Plan were burnt in Griffith at the height of the community anger amid claims that the Plan would put the irrigation community out of business. This view has become entrenched in the irrigation communities but, ironically, Griffith has just been named as the most vibrant community in regional New South Wales.

Analyses of social and economic impacts for the Northern Basin Review did not adequately take all factors into account, including:

- benefits of major economic investments in improved infrastructure, water buy-backs, and community support for transition and more efficient farming methods (Regional Economic Diversification Program)
- whether current levels of irrigation farming in the intermittent Barwon-Darling system are sustainable
- cultural values for river communities on the Lower Darling, and the need for water allocations to deliver cultural outcomes, including maintaining low flows in dry periods
- economic and social benefits of improved floodplain grazing productivity, freshwater fishing, recreation and tourism, improved breeding of native fish and yabbies
- opportunities for innovation and alternative farming activities to adapt to lower volumes of available water, as demonstrated during drought restrictions, when similar productivity was achieved on 30% water volume.

Recent work by Prof Lin Crase has found that purchase of water through buy-backs costs half as much as water recovered through engineering works. He also found that spending the balance on social services in communities (eg health services, social support services and schools) brought greater economic and social benefits for the total investment. This approach should be adopted for spending the balance of funding for water recovery.

Information request 7: risks to WRPs being finalised and accredited by mid-2019

Progress is reported to be slow on Water Resources Plans due to be completed by June 2019, with a strong possibility that the deadline may be missed by many plans. These plans are a critical instrument to provide detail for the implementation process which needs to be in place on time for delivery of Basin Plan outcomes. If necessary, effective penalties need to be introduced and enforced for state governments failing to meet deadlines and provide sound and appropriate information as required in the implementation process.

Information request 8: How environmental water planning is facilitating achievement of Basin Plan's environmental objectives

Planning for the management and use of Commonwealth environmental water is well on track to deliver (as far as possible within the constraints of volumes available and delivery capacity) the desired outcomes of the Environmental Watering Plan for the Murray-Darling Basin. The Commonwealth Environmental Water Holder (CEWH) and his team have laid a very strong, science-based foundation to direct the return of available environmental water to the most beneficial targets and outcomes.

The CEWH has developed a solid strategic and science-based framework for flexible delivery of water within the context of annual flow scenarios, to deliver priority outcomes according to annual conditions. This is a smart approach to optimise delivery of environmental watering while taking account of the high variability of flows and range of potential watering actions. The aims range from minimising environmental damage in drought to building resilience in wet conditions. The framework emphasises regional and reach scales, and connectivity with floodplains.

In order to maximise use of environmental water, the CEWH has lobbied strongly for necessary policy and legal changes in state governance to shepherd environmental flows through river systems to their target sites. It is essential that these reforms are enacted to ensure that environmental water cannot be captured in transit by irrigation diversions, and that environmental flows are protected in transit.

Information request 12: Risks to MDBA's ability to monitor and enforce compliance

All supporting regulations and compliance mechanisms need to be in place to deliver the Basin Plan effectively. Concerns about the Lower Darling running dry for 500 days in 2015 led to community action and eventually the Four Corners report 'Pumped' in August 2016. These led to investigations and reports, with stringent recommendations. Action to implement these recommendations effectively needs to be speeded up, to address the concerns about sharing resources and maintaining ecosystems in the Lower Darling.

Compliance with regulations must be enforced to ensure that allocations are extracted legally and within the spirit of the Basin Plan. In particular, the regulations in New South Wales need to be changed to ensure that irrigators on the Upper Darling River cannot capture environmental flows purchased with taxpayer funds and intended for environmental targets on the Lower Darling River. The rules introduced just prior to signing the Basin Plan, allowing larger diameter pipes and take at lower flows, need to be changed to more limited conditions which will ensure flows reach the Lower Darling during low flow periods.

Rules for shepherding environmental water must be put in place to ensure that environmental water reaches its targets, and environmental water should be managed for the length of river systems for multiple environmental outcomes.

The Lower Darling River has recently been identified as being critical to all native fish populations in the Basin, as well as supporting towns, communities, traditional owners and graziers along the length of the

Lower Darling. The Lower Darling must be kept flowing, the situation of no flows in the Lower Darling for eight months in 2015 while upstream irrigators were allowed 100% allocations must not be repeated.

The Lower Darling is running dry again in April 2018, reinforcing these concerns. However, it is very hopeful to hear that a significant environmental flow is being sent down the Barwon River and the New South Wales government has issued a special order to protect the flows during transit.

The Murray-Darling Basin Authority needs to have power to enforce compliance, not just advise state governments. The Authority needs the power to apply penalties where state governments are not managing their catchments within the spirit and intent of the Basin Plan.

[Information request 13: how well current arrangements for monitoring, evaluation and reporting support the delivery of the objectives of the Basin Plan](#)

A Basin scorecard is needed to report on the various outcomes and targets listed in the Basin Plan. In preparing a presentation on whether the Basin Plan was on track, I went looking for the targets and found a confusing selection of objectives, outcomes and targets. They include:

- 4 over-arching **objectives** (protect & restore ecosystems, functions & resilience, ensure coordinated management of e-water)
- 2 **objectives** for water quality & salinity
- 2 major **objectives** for SDLs (with 7 sub-sets)
- 7 intermediate **targets** (to 30 June 2019) – no loss or degradation in flows, connectivity, assets, functions, CLLMM regime, condition & recruitment of native species
- 7 long term **targets** from 1 July 2019 require improvement in same parameters
- 7 **targets** for 450 GL, including floodplain & habitats in Southern Basin, flows to Lower Lakes, Coorong & Murray Mouth, & salt export target
- 16 flow & biodiversity outcomes = environmental watering targets.

It would be very helpful if your enquiry could include a report card on progress at the Five Year milestone against the specific intermediate targets to 30 June 2019.

In relation to the 16 environmental watering targets, the Commonwealth Environmental Water Holder has funded a major catchment scale monitoring program which provides an overview of the benefits of environmental watering. The CEWO provides excellent updates and reports on their website. However, the CEWO monitoring program does not detect the effects of local and regional projects, and more funding is required to support collation of data at this scale. Currently, this monitoring is dependent on external sources of funding, such as linked funded investigations or philanthropic grants.

Findings emerging from the extensive EWKR project are just now demonstrating the basin-wide benefits of sustaining environmental flows in the Lower Darling River for native fish populations in all Basin rivers. The commercial and social benefits of maintaining flows in this critical river reach are only just emerging, but the beneficial outcomes apply Basin-wide, not just in the Lower Darling region.

Additional funding would allow greater engagement with communities to promote stories of benefits from environmental watering, with particular emphasis on social and economic benefits.

Information request 14: a. whether current institutional and governance arrangements provide for sufficient oversight of the plan and support engagement with the community b. whether there are risks to the achievement of the objectives of the Plan that arise from the current institutional and governance arrangements c. what improvements can be made to ensure that institutional and governance arrangements are fit for the next phase of implementing the Plan.

The number of recent and current enquiries into matters relating to the Basin Plan is indicative of community concerns about the integrity of the implementation process. These enquiries take energy from community members which could have been directed towards engagement with the Basin Plan. It is also very disheartening when submissions

Engagement with the community on the elements of the Basin Plan could be much more effective and extensive. Consultation processes on Basin Plan implementation to date have been short, with limitations on the scope of comments and reliance on high-tech methods which create barriers for regional communities with poor computer connectivity and individuals with limited computer access or skills. The timing of opportunities for input appear to be too late for real chances to influence or change outcomes, for example the SDL Adjustment Process. A very large commitment is required to understand the technical reports and the Basin Plan, in order to provide relevant comment when there is an opportunity for input.

In the case of environmental watering, the Local Engagement Officers of the CEWO have been very effective in generating community engagement activities and providing information on outcomes from watering.

A significant risk to achieving the objectives of the Basin Plan is that reduced water availability due to climate change has not been factored into the Plan, with possible reductions of 30-50% in run-off to storages. This is currently not scheduled for inclusion until the 10 Year review in 2022.

Conclusion

The overall target of the Murray-Darling Basin Plan can be summarised as healthy working flowing rivers to support all river communities. However, the recovery target of 2750 GL/y is a compromise figure which fails to meet a significant number of ecological outcomes and targets in the Basin Plan. In addition, those targets met are at low levels of certainty and assume all constraints have been met, removed or relaxed.

The current stage of implementation should be delayed, with no decision on SDL adjustments until environmental equivalence has been fully demonstrated for all supply projects. The whole package of supply projects, efficiency projects, constraints projects and complementary measures need to be presented and approved as a total package to ensure that the overall impact of reductions in water recovery targets are acceptable and sustainable, and the Basin Plan can be implemented effectively.

Dr Anne E Jensen
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Healthy Rivers Ambassador for MDB
Honorary Research Associate, Nature Foundation SA

Environmental Watering makes a Difference ...

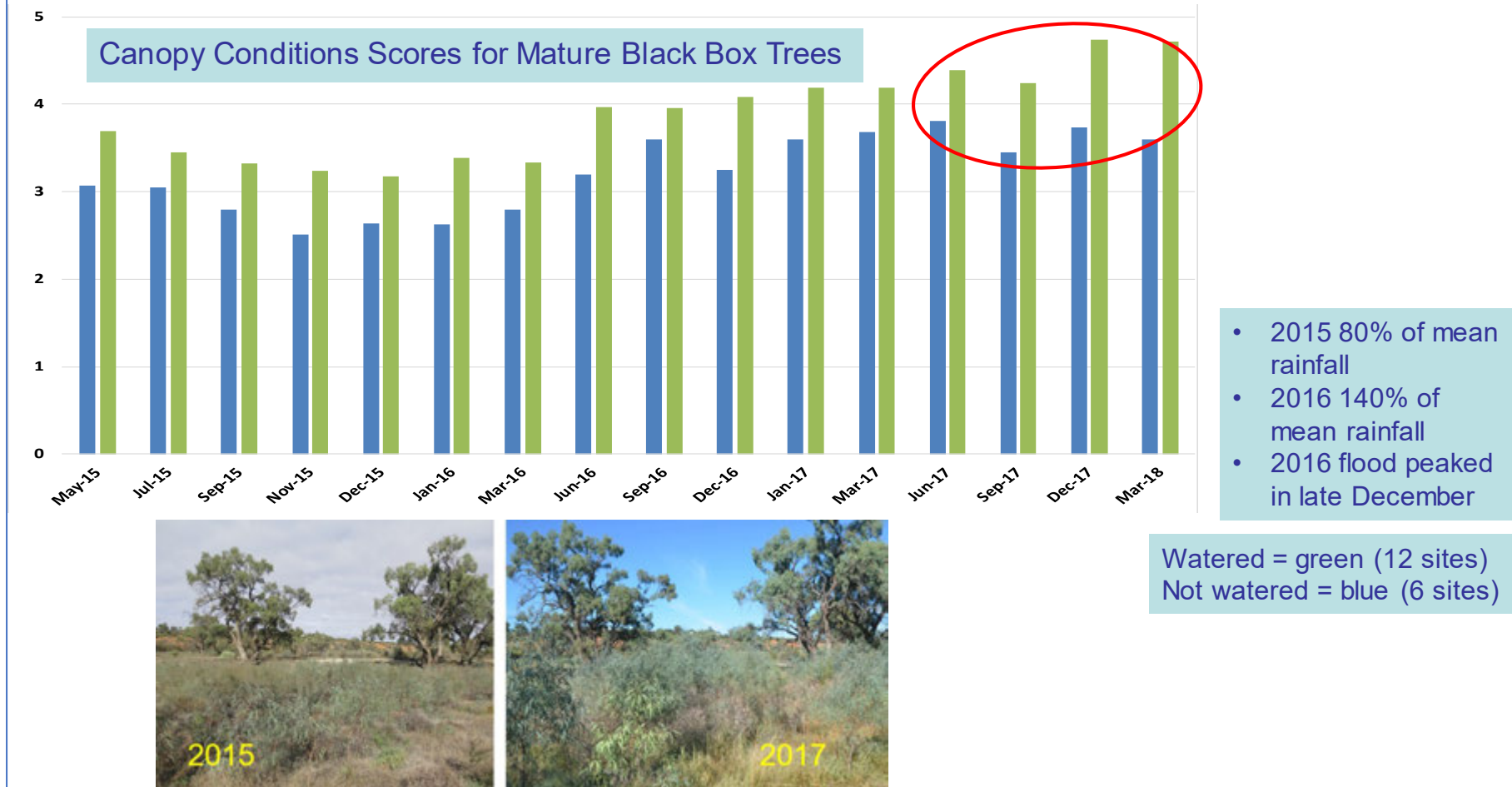


Figure 1 Environmental watering at sites with stressed mature black box has produced a significant improvement in condition (watered trees, green series), compared to the baseline condition of non-watered trees (blue series). All trees benefited from above average rains in winter and spring 2016 and the flood which peaked in December 2016, but the baseline condition has deteriorated in dry conditions since the 2016 flood. The watered trees have continued to improve (red circle).