Submission to the Standing Committee on the Environment and Energy and its inquiry into the management and use of Commonwealth environmental water.

Professor Lin Crase, 20th March 2018

Thank you for the opportunity to provide comment to the inquiry. I provide this short response in four parts that broadly align with the terms of reference.

I note that the Standing Committee seeks to limit its focus to environmental water and to avoid broader comments (controversies) about the Murray-Darling Basin Plan. Whilst understandable and pragmatic, this is also not particularly realistic as strengths and weaknesses of the Plan and the legacy of other policies (good and bad) necessarily impinges on the management options for this water. I will nonetheless endeavor to remain focused on the 4 core topics.

Maximizing the use of environmental water for the protection and restoration of environmental assets:

- Held water (i.e. water entitlements set aside to be actively managed by an environmental entity - CEWH) needs to be optimally managed. This should be distinguished at the outset from any notion of maximizing. It's a subtle point but water planners in this country have previously made bold statements about maximizing across multiple objectives, when the trade-offs between them make this fundamentally impossible. CEWH necessarily has to operate in the same environment, where the aim is to optimize within constraints. Meanwhile politicians and others often seek to maximize one objective over another, like proclaiming success by wriggling out of commitments to reassign water to restore the environmental condition of the MDB.
- The constraints within which CEWH operates are substantial. The Water Act and its interpretation by many has led to a popular view that environmental outcomes are solely, directly and linearly related to the quantum of water controlled by CEWH – more held water equates to better environmental outcomes. This is why the debate over SDLs is so tedious but somewhat misplaced. It is simply not the case that more water entitlement sitting on CEWH books *automatically* equates to better environmental outcomes. In this regard it remains a challenge to explain the complexities of the river system to the public – a public who are funding restoration and who have been led to believe that the large sums of money set aside for water buybacks and infrastructure projects will deliver a sustainable river system.
- It is also a challenge to simultaneously prevent rent-seeking by states who are keen to use the complexities of the river ecology to water-down their specific commitments to contribute to held water as part of the MDB Plan (excuse the pun). So whilst water is not the only ingredient to environmental outcomes and its relationship is not linear, it is

nonetheless still an important component. It is spurious to seek to compare the eradication of an invasive species, for instance, to 450 Gl that will not be making its way into the rivers and through to South Australia. Likewise, pumping water into wetlands can produce some gains for plants, but the fish who are minced in the pumps probably don't regard the experience as equivalent to an over bank flow. That's not to say that some engineering fixes aren't worthwhile. Rather, the public needs to be made aware of what they are getting for their $13 Billion investment. Water set aside to service environmental assets and functioning must be sufficient to make a difference.

- Without dwelling on history too much, it is probably worth the Standing Committee's time to reflect on the science that was used to establish the amount of water to be recovered and subsequently held by CEWH to achieve a positive system-wide environmental response. Preliminary expert opinion put this figure at around 4,000 Gigalitres (see Jones et al. 2002). Later, the MDBA-commissioned science indicated that about 3,870 Gigalitres would be required but this would only have a modest chance of delivering a sustainable environmental dividend. At that time the MDBA noted that only 7,600 Gigalitres would have a good chance of delivering the desired outcomes (MDBA 2010). Subsequently, a figure of 2,750 Gigalitres was settled upon as being sufficient. Of course there is the option of bolstering this to 3,200 Giglitres, provided the money can be found and the purported economic and social impacts are not too severe. This potted history puts CEWH actions and options in context. In essence, whilst CEWH holds large amounts of water entitlements the science would support the view that it cannot deliver the system-wide environmental objectives sought. Much is made about CEWH being the largest entitlement holder in the Basin – that's a bit like a farmer holding an entitlement but still not enough to grow a crop.
- Adding complexity to the challenges of CEWH is the fact that return flows remain largely unmeasured in the MDB. This is proving a major problem for any environmental water holder. On paper, CEWH held a little over 2,000 Gigalitres in January 2018. Much of that water was secured using irrigation infrastructure subsidies that were both costly and necessarily impacted on return flows that were already accumulating to rivers and groundwater recharge. Put simply, the 2,000 Gigalites supposedly held for the environment can only be considered a net 2,000 Gigalitre gain for environmental use <u>if we ignore the physics of water</u>. The extent to which the held water is less than this amount is an empirical issues that the MDBA, BoM and others do not appear willing to confront.
- In sum, CEWH has a hard job delivering the 'maximum' environmental outcome. Of course there will be localized gains but the water planning and political processes have not provided CEWH with sufficient real water to deliver the end of system promises. It seems highly likely that much more public money will be spent for very little system-wide environmental outcome, regardless of CEWH's entitlement holing.

Considering innovative approaches for the use of environmental water:

- The science on the MDB is incomplete. Somewhat reminiscent of the arguments over the impacts of tobacco on health, gaps in the science of the MDB are used to stall and confuse interventions. This also has the effect of reducing innovation and making the public suspicious of experimentation. Although not in the MDB, a recent study by Cooper (2017) asked the residents of Melbourne if they would support using environmental water entitlements held by Melbourne Water in an adaptive way. Adaptive management is well-understood by the scientific community as a sensible approach when there is some uncertainty about environmental responses. In essence, the water holder deploys water in different ways, measures the response and learns how to do better. In the survey by Cooper (2017) there was no statistical evidence that residents supported adaptive management and ample anecdotal evidence that the concept itself was confusing to respondents. With that in mind, it is going to be difficult for the public to accept too much innovation in the environmental water context. More generally, much more effort needs to be placed on explaining complexity and resisting offering simplistic and misleading 'truths'.
- One obvious innovation relates to the use of the allocation market to optimize environmental outcomes (see, Ancev 2014). CEWH has authority to sell water allocations and potentially use the monetary gains to achieve improvements elsewhere. As an economist I am obliged to support this innovation. As a citizen who has witnessed the backsliding on environmental restoration I remain nervous. Irrigation enthusiasts may well see this as the means by which to reinstate entitlements at a lower cost than that used to secure them for CEWH. It may also open the way for some in government to advocate that CEWH pay its own administrative costs through trade – not the initial intention of the environmental water entitlement.
- Clearly, any innovation in this context requires capacity to monitor and that is sadly lacking – noted below.

Monitoring and evaluating outcomes of the use of environmental water:

- The former National Water Commission and others have noted the preponderance of governments in Australia to pay very little attention to water unless there is a drought. The upshot is that scientific measurement of the benefits of environmental water is ironically prioritized when there is very little environmental allocation to distribute. Moreover, accumulating long-term data on system change is problematic when states use funding for science as a political lever to exert pressure on the MDBA and others.
- It is also the case that some in government actively seek to suppress the creation of scientific evidence, else their political options are narrowed. The cancellation of scientific research so that politics can be used to determine the water required for environmental purposes is not new – the mechanisms used by the Howard government to establish the Living Murray target of 500 Gigalitres is instructive (see, Crase, Dollery and Wallis 2005; Crase, O'keefe and Dollery 2015). Others in the scientific community (e.g. Williams 2017) remain unconvinced that the current processes are any better.
- The so-called economic evaluations undertaken by the MDBA are also instructive in this context. The MDBA research to support the downward adjustments in the northern basin should have been done differently. This could well reflect the lack of resources made available to MDBA, CEWHA and others to undertake reasonable and rigorous analysis and evaluation.
- In sum, more resources are needed on a consistent basis to inform decision making. Some may seek to argue that this is wasteful, but any $13 Billion public investment deserves monitoring.

Options for improving community engagement and awareness of the way in which environmental water is managed:

- In the work undertaken by Cooper (2017) noted above, she asked residents of Australia's second largest city questions about environmental water. Very few understood the concept and many confused environmental water with rainwater tanks, recycled water and so on. Ultimately, Cooper (2017) settled on referring to this as 'water for the environment' which at least gained partial acceptance. The point is that most Australians live in cities far removed from the MDB and many would appear to have very little understanding of environmental water and its management. Metropolitan communities are logically the major funder of environmental water purchases so at least some effort should be directed at improved understanding.
- Frequently when policy makers refer to engagement of communities around environmental water the sub-text is about convincing rural and regional communities that there are gains from environmental water. This is challenging on several fronts. First and as already noted CEWH has insufficient real water to deliver what it was asked to do. Second (also already noted), the investment in monitoring is not sufficient to demonstrate the system change.
- The third reason it is difficult to convince rural and regional communities about positive impacts relates to the manner in which adjustment has been addressed. Water held by CEWH is in large measure the result of significant sums of public money being directed at a small sub-group within regional communities. The rents accruing to this group have been very large and understandably they have sought to promote this as a wider community benefit. However, even the most rudimentary analysis would show that this is not the case. The flow-on effects of an irrigation upgrade accrue to very few. If governments were genuinely concerned about the prosperity of rural and regional communities and engaging on environmental water they would invest in those activities that yielded the greatest public benefit. Improving public infrastructure rather than private irrigation infrastructure would be a useful starting point. This would have the benefit of spreading the benefits of adjustment and also potentially underpin other investments. An improved road so that dryland farmers can access markets and tourists can visit environmental assets seems at least as worthy of public support as a low-water/high-energy-use irrigation device capitalized by an irrigator.
- In sum, engaging with metropolitan communities has not been a priority and given their financial stake this should receive some attention. Engaging regional and rural communities requires a wider conversation that takes into account the public good that should attend public investment.

References

Ancev, T. (2014). 'The role of the commonwealth environmental water holder in annual water allocation markets', *Australian Journal of Agricultural and Resource Economics*, vol. 59, pp. 133–153.

Cooper B. (2017). *Valuing Melbourne's Environmental Water Entitlements*, Report prepared for Melbourne Water.

Crase, L., Dollery, B. & Walis, J. (2005). 'Community consultation in public policy: The case of the Murray-Darling Basin of Australia', *Australian Journal of Political Science*, vol. 40, pp. 221-237.

Crase, L., O'Keefe, S. & Dollery, B. (2013). 'Talk is cheap, or is it? The cost of consulting about uncertain reallocation of water in the Murray-Darling Basin, Australia', *Ecological Economics*, vol. 88, pp. 206-213.

Jones, G., Hillman, T., Kingsford, R., McMahon, T., Walker, K., Arthington, A., Whittington, J. & Cartwright, S. (2002). *Independent report of the expert reference panel on environmental flows and water quality requirements for the River Murray system*, Cooperative Research Centre for Freshwater Ecology.

Murray–Darling Basin Authority (2010). *Guide to the proposed Basin Plan, Technical Background Part I*, Canberra, Australia.

Williams, J. (2017). 'Water reform in the Murray–Darling Basin: a challenge in complexity in balancing social, economic and environmental perspectives', *Journal & Proceedings of the Royal Society of New South Wales*, vol. 150, part 1, pp. 68–92.