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House of Representatives Committee Inquiry into use of Environmental Water
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I make this submission as a riparian landholder in the Condamine catchment of the Queensland section of the Murray Darling Basin for more than 30 years. I have been closely involved in many aspects of water management for more than 25 years. This includes stakeholder involvement in numerous water planning and management processes in Qld and NSW; wetland and flooddplain management committees in both states; a member of the MDB Commission's Community Advisory Committee (2004-08) and The Living Murray Community Reference Group (2005-09); the MDB Authority's Northern Basin Advisory Committee (2012-16) and NSW Gwydir Environmental Contingency Allowance Operations Advisory Committee from 2005 to present) - to mention a few.

Australia's unique climate makes our river systems the most variable in the world. Under natural conditions our rivers either have abundant water spread out on the floodplain or virtually no water at all. Yet we people and our cities, animals and crops require water all year, every year. And we persist in using "averages" to manage our rivers and water resources. The inevitable result has been that the health of our rivers, streams and wetlands has massively declined. 'Average' rainfall years are few and far between because an extremely wet year or even a single large flood event can significantly skew the statistics and increase the average value.

Currently, just 23 percent of our rivers are classified as in good or excellent condition and three quarters of wetlands on private land have disappeared altogether since European settlement.[1]

It has been said that, as a rule of thumb, a river can give up to a third of its water for consumptive use, such as irrigation and drinking, and remain in reasonable health. I have worked with ecologists who argue that this is the wrong question and that we should be asking ' what level of impact are we prepared to accept?' For many, the current level of impact on MDB rivers is unacceptably high.

The provision of environmental water is essential to mitigate the impacts of water consumption and to maintain and improve the health of our rivers and wetlands.

In my opinion, it was disasterous for the environmental water portfolio to be split between the federal Environment and Agriculture departments and with no requirement for the CEWH to be consulted about the value for money and environmental benefits of certain water purchases. Again, in my opinion, the purchase of highly unreliable water (avaiable perhaps once in 10-20 years) for more than twice market value are a clear indication of incompetence – at best. The CEWH should have been consulted and his advice required as part of the decision-making process. Taxpayers deserve full accountability and transparency and confidence that the person or people making such decisions are fully qualified to do so. The sooner the water portfolio is returned to the Environment department, the better.

Water can be used conjunctively for maximum efficiency. In the Gwydir, e-water is often "piggybacked" on

1 Commissioner for Environmental Sustainability, Victoria, 2013, *State of the Environment* Report p.137.

irrigation or pre-irrigation releases to minimise transmission losses and maximise the length of river channels receiving life-giving flows.

Particularly in regulated systems, e-watering can be coordinated across sites so that one water release can hit several ecosystem targets as it move downstream. Similarly water for consumptive use can be released in a particular pattern to deliver maximum in-stream and even some overbank benefits in the most efficient way possible.

The MDBA's Northern Basin Review paid little, if any, attention to water quality issues, including blackwater events.

Blackwater is a naturally occurring phenomenon. It occurs typically after floods when large quantities of organic material (leaf matter and other debris) are transported off the floodplain and into the river channel. The organic material can then undergo rapid microbial decomposition that depletes the oxygen content of the water, resulting in fish and crustacean mortality. If the water is warm the problems may be exacerbated by increased levels of harmful bacteria in the water. However in the long run, blackwater events are very beneficial for rivers because they increase the amount of carbon and other nutrients available that is the base of the food chain that supports all aquatic life.[2]

While blackwater events are a very significant cause of mass fish deaths, particularly in wet years, they are not the only cause or even the most common cause. The Victorian EPA analysed 181 reported fish kills over the 10 year period 1998-2007.[3] Only 8 of these events could be attributed to blackwater. Low dissolved oxygen resulting in fish deaths was more frequently caused by low flows, warm temperatures or algal blooms than by blackwater and 23 fish kills were attributed to pollution. *Environmental water can be used to mitigate the impact of low flows, warm water temperature, low dissolved oxygen and algal blooms.*

In late 2010 the millennium drought was followed by unprecedented rainfall across much of Victoria. Unseasonal spring and summer rain washed years' worth of accumulated organic matter into the river systems and resulted in a major blackwater event in the Murray-Darling Basin that extended over 2,000km and continued for several months. Widespread fish kills resulted, although species were affected to differing degrees and the magnitude of the fish kills was lower than expected given the extent and severity of the event.[4]

The severity of the 2011 event was caused by the unusual situation of prolonged drought followed by exceptional and repeated rainfall events. A number of other blackwater events have followed in recent years when rainfall has been above average, including a major event in the Edwards-Wakool in 2006, when dissolved oxygen levels fell below 4mg/L. While there have been suggestions in the media that this event was exacerbated by the delivery of environmental water,[5] there has been no monitoring or other scientific evidence to support this claim.

In fact the evidence points in the opposite direction: environmental water can be used to mitigate the impacts. For example, heavy rain caused floodwater with a heavy organic load from Pranjip, Castle and Seven Creeks to enter the Goulburn River on 29 December 2016. As the water turned black and some fish deaths were reported, Goulburn Broken CMA made the decision to release environmental water from the Goulburn Weir to help re-oxygenate the water and avoid a larger event. The strategy proved successful and disaster was averted.[6] Environmental water was also used in the Loddon River in 2017 to reduce the risk of a blackwater event, which did not eventuate.[7]

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2 https://www.mdba.gov.au/managing-water/water-quality/blackwater
3 Fish deaths reported to EPA Victoria 1998-2007 http://www.epa.vic.gov.au/~/media/Publications/1175.pdf
4 http://www.mdfrc.org.au/publications/factsheets/201313133694.asp
5 For example http://www.riverineherald.com.au/regional/2016/10/28/58039/environmental-water-leads-to-more-kills-chair
6 http://www.riverineherald.com.au/rural/2017/01/03/67940/blackwater-flush-kills-goulburn-river-fish
7 http://www.vewh.vic.gov.au/rivers-and-wetlands/northern-region/loddon-river

In addition to its role in mitigating the impacts of blackwater events already underway, environmental water can be used to reduce the risk that they will occur. Black water is caused by the build-up of organic matter on the floodplain. More frequent environmental watering can reduce the level of build-up. Water should be delivered during cool weather and before peak litter accumulation is reached. Increased flow can also be used to dilute floodplain discharge in receiving channels.[8] However there are many constraints to the delivery of environmental water to floodplains (see below) and until these are dealt with the full benefits of environmental water as a risk management tool will not be realised.

Monitoring and evaluating the results of environmental watering is crucial to the use of taxpayers' money. Objectives, targets and outcomes need to be clearly defined along with performance indicators so that successes can be measured. This needs to be part of an adaptive management framework so that watering strategies and plans can be continually improved.

The Gwydir ECAOAC develops 3 year rolling plans and considers a range of scenarios (annual rainfall forecasts, dam storage levels etc) for the annual e-water.ing plan. This includes specific targets and outcomes for eg wetland vegetation, water quality (often a town water supply issue), native fish etc. It should be noted that there is *never* sufficient water in our e-water account to initiate a waterbird breeding event – these being key outcomes sought in the MDB Plan. At best, e-water can be provided to help ensure water persists at sufficient depth in wetland breeding areas long enough for chicks to fledge.

Ideally, there should be some space within the M&E framework for local landholder and community involvement. Communities and especially riparian landholders know their rivers well and have in the past taken a keen interest in eg carp buster events, monitoring the condition of riparian vegetation, presence of bird and frog life, and water quality. Their work could be used to trigger more technical, scientific studies should certain thresholds be reached or threats be observed.

Much information about environmental watering can be made available online. Water is an extremely complex issue and the general community is often ill-informed about which department or government agency is responsible for which aspects of water management. There is a long-standing need to make available easily understood information about 'who is who in the water zoo' and where specific responsiblities lie. What e-water is, how and where it is used and what benefits it provides is a key element of this.

Given the relative amounts of water involved, metering of all licenced consumptive use *must be introduced as a matter of urgency.* Theft (or rorting) of environmental water, as alleged by ABC TVs 4 Corners and Lalteline programs makes it abundantly clear that some irrigators are not to be trusted and compulsory metering of all take – including overland flow and floodplain waters – is essential for taxpayers to have connfidence in the Basin Plan.

Scrutiny is also needed on the benefits of water use efficiency measures as concerns have been raised about the impacts of such projects on return flows.[9]

In my opinion, the MDBPlan should be paused so that the inquiries underway can be completed; full metering introduced; the impact of reduced return flows studied and the benefits of e-water recovered to date can be properly assessed.

Thank you for considering this submission.

Yours sincerely

8 http://www.mdfrc.org.au/publications/factsheets/201313133694.asp

9 http://www.abc.net.au/news/2017-07-27/murray-darling-300-billion-litres-of-environmental-water-lost/8748794