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APPENDIX 12
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Mr Josh Bull MP
Chair, Victorian Parliament's Environment, Natural Resources and Regional
Development Committee
Parliament House, Spring Street
EAST MELBOURNE VIC 3002

Dear Mr Bull,

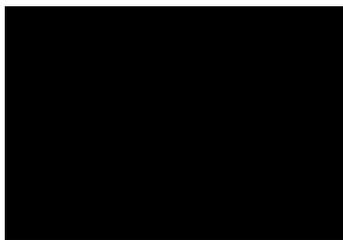
**SUBMISSION TO INQUIRY INTO THE MANAGEMENT, GOVERNANCE AND
USE OF ENVIRONMENTAL WATER**

Wimmera CMA thanks you for the invitation to provide a submission to the Inquiry into the Management, Governance and Use of Environmental Water. There is a long history of environmental watering in the Wimmera, with the first environmental flows for the Wimmera River in the late 1980's amongst the first in Australia. Despite the impacts of droughts, bushfires and floods, environmental watering along with other waterway improvement works have led to steady improvements in waterway condition. This has translated into broader community benefits, for example new community events such as fishing competitions, boat races and cultural festivals have been able to take place thanks to environmental water providing much more regular and continuous flows than would otherwise be the case.

Responses to the specific terms of reference are outlined following this letter.

Should you require any further information or assistance regarding this submission please don't hesitate to contact Tony Baker, Manager – Statutory and Strategy at this office.

Yours sincerely



**DAVID K BRENNAN
CHIEF EXECUTIVE**



1. *The role of environmental water management in preventing or causing 'blackwater' events.*

Environmental water has played a significant role in reducing blackwater events in the Wimmera and there are no records of environmental water causing 'blackwater' events.

- In 2009 a blackwater event in the Wimmera River was caused by polluted runoff containing fire retardant entering the river after a nearby haystack fire. Some water was able to be released from Horsham Weir to boost dissolved oxygen levels. There was insufficient environmental water to provide flows during and following the fire that would have potentially prevented the death of a large number of native fish.
- Blackwater events have occurred immediately following floods in 2011 (downstream Horsham Weir) and 2016 (Brim Weir Pool).

During these events when flooding has occurred, environmental water is normally not released as natural flows are being provided from upstream tributaries which dilutes the likelihood of any immediate blackwater event. If blackwater events persist, once the natural flows have ceased or decline, environmental water could be used to reduce the risks.

The Wimmera landscape is subjected to flooding and droughts. Often creating ideal environmental conditions for blackwater events, that can persist for months.

- Earlier this year there was a high risk of a blackwater event in the Wimmera River after floods in September 2016 had mobilised a lot of organic matter and nutrients from the floodplain and deposited them into the river. In November 2016 natural flows reduced due to dry conditions, as expected there were sharp fluctuations in dissolved oxygen levels over a 24 hour cycle as biological processes consumed oxygen within the water column overnight and aquatic plants produced oxygen during the day. Environmental flows over summer/autumn allowed mixing of water to keep oxygen levels high enough to avoid blackwater and fish deaths.
- Data for the Wimmera River at Horsham indicated that once flows reduced from over 30 ML/day to 5 ML/day in early April dissolved oxygen levels plummeted and there was a high risk of blackwater (Figure 1). The period of no flow was intended to only be approximately a week so when the environmental flows reached this location they immediately boosted dissolved oxygen to safe levels.

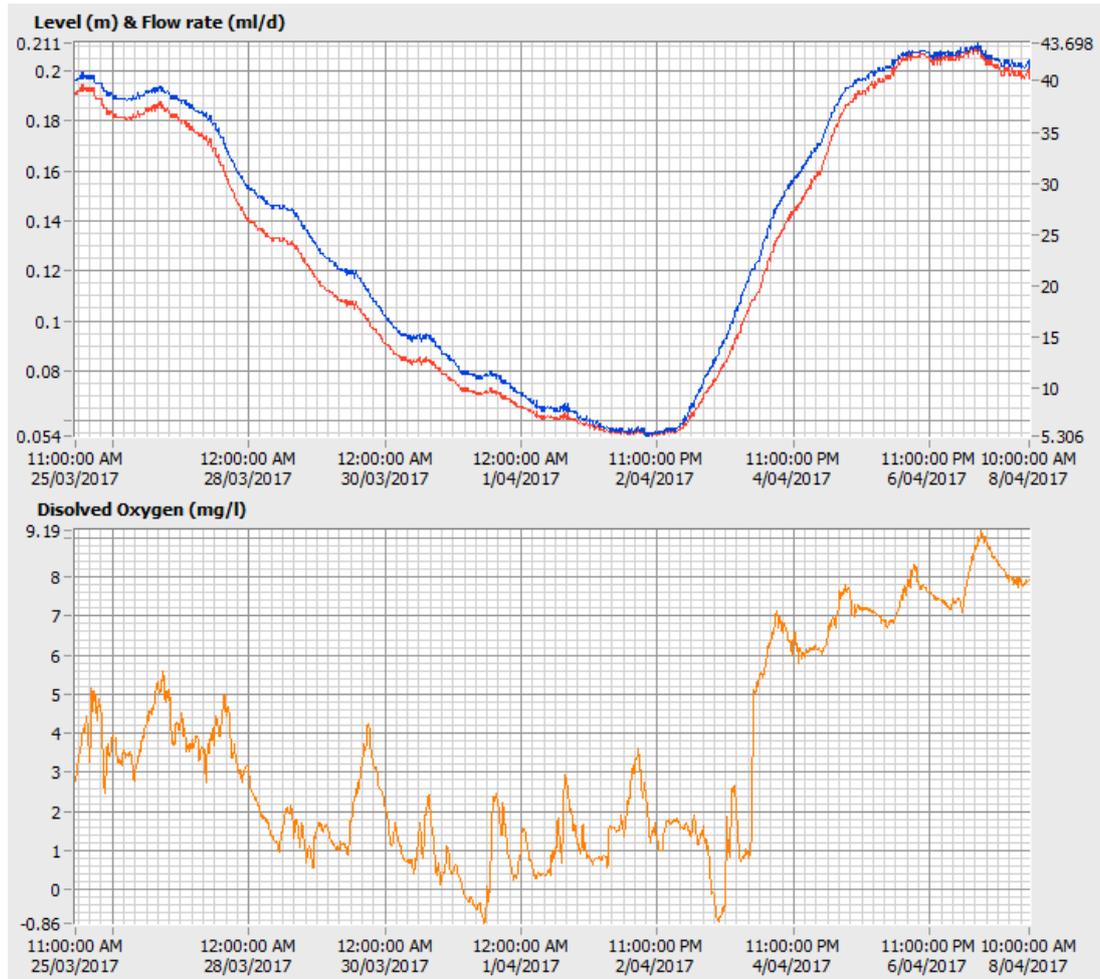


Figure 1: Flow rates (top) and dissolved oxygen levels (bottom) for the Wimmera River at Horsham, March-April 2017

The above example highlights the critical importance of environmental water in avoiding blackwater events that would have almost certainly occurred along the Wimmera River in summer/autumn 2016/17. This also avoided impacts to environmental and social outcomes. Widespread fish deaths would be a massive blow to events like the Horsham Fishing Competition (March Labour Day Weekend) and Jeparit Fishing Competition (Easter Weekend). These events are great occasions for the towns, attracting many visitors that boost the local economy and community groups benefit from the funds raised by the hard-working committees (Figure 2).

Environmental flows also provide much greater connectivity for fish so they are not confined to isolated pools for long periods of time and they can escape from areas of poor water quality. These flows also lead to breakdown of organic matter within the river channel which reduces the organic matter load during floods. This is especially important given vegetation along creeks and rivers (e.g. river red gums) typically produce large quantities of organic matter as they are very productive parts of the landscape.



Figure 2: Attendees at the Horsham Fishing Competition enjoying the presentation by Wild Action Zoo's Chris Humfrey on native fauna that use the Wimmera River and its streamside vegetation for habitat on behalf of Wimmera CMA.

- 2. How environmental water and environmental water managers interact with, and utilise, management tools such as carryover and whether the carryover of environmental water impacts on the availability of water for irrigators;*

Since the sale of the Wimmera Irrigators' Association entitlement to the Commonwealth Environmental Water Holder there are currently no regulated water supplies for irrigators so carryover and other tools do not affect their allocations. There are a number of irrigators that extract water directly out of deep pools in the Wimmera River. Access to this water is governed by triggers based on unregulated flows. It is worth noting that environmental water assists in maintaining water quality in these pools in periods when unregulated flows are not occurring.

In the Wimmera there are disincentives to carrying over large volumes of water due to a 15% deduction to carryover incurred at the start of the water year. Also, if storage levels are high then volumes are locked away in a "spillable water account" until a low risk of spill is declared by the storage manager or the water is spilled and lost as carryover. This could hinder environmental water deliveries in winter/spring when water is much more likely to be in the spillable water account.

It could be reasoned that the 15% deduction due to evaporative losses disproportionately affects the environment's entitlement.

Storage operation actions also have important impacts on allocations in the Wimmera-Mallee system. For example, some headworks storages have comparatively large evaporative losses as they are shallow and transferring water between headworks storages leads to seepage and evaporation losses especially in hot and dry periods. Again, these losses are significant in the scheme of allocations and although largely unavoidable, regularly communicating them (e.g. via storage level or allocation announcements) will help build the community's understanding of their scale and effect on allocations.



3. *consideration of what barriers exist to the more efficient use of environmental water and how these may be addressed; and*

Experience and knowledge around environmental water management is building as regular environmental water releases have only been occurring for about a decade. This period has been punctuated by record flood and drought conditions. The challenge for environmental water managers, just like other water users, will always be achieving the maximum outcomes for the minimum volume of water. The keys to this are increased knowledge and improved infrastructure, much like they would be for an irrigator looking to increase productivity and profitability.

Continual improvement of knowledge needs to be gained around environmental water's effect on ecology and habitat. There are a number of examples of programs aimed at linking the response of flora and fauna to environmental watering however they are comparatively modestly resourced when compared to the substantial funds expended in obtaining environmental water. They also have to deal with the complexity of a variety of confounding factors such as carp, livestock grazing and other flows (unregulated flows, water transfers etc.). Given sufficient time and resources more and more links will be able to be drawn between flows and ecological outcomes and there will be a commensurate increase in the effectiveness and efficiency of environmental watering.

Increasing knowledge around habitat comes through understanding the hydrology (volume and duration of flow) and hydraulics (velocity and cross-sectional area) of waterways. For example, certain fish and plant species need water to reach high on the bank or into anabranches and flood runners for certain periods of time at key periods during the year (e.g. late spring) in order to successfully breed.

The streamflow gauge network across Victoria is vital to understand flow rates. Maintaining and idealling enhancing this network is important in terms of linking the environmental water releases with the flora and fauna outcomes. In the Wimmera, this has been complemented by the use of new technology such as Portable Automated Logger System (PALS) Units. PALS units are small, temporary installations that can provide real-time data around water levels and water quality on a reasonably cost-effective basis (Figure 3). These units were purchased to be used to provide data during floods. It would be beneficial to increase the utilisation of this technology through providing a framework for PALS unit use for environmental water monitoring.

Another approach to improving the efficient use of environmental water is improving infrastructure. This has been successful in the past with Wimmera CMA providing funding to upgrade a number of headworks sites belonging to GWMWater and local government as well as building new delivery infrastructure on Parks Victoria-managed land. There is some reluctance for agencies to take on new/upgraded infrastructure given the extra maintenance costs incurred, especially as damage from floods/fires/vandalism may be more costly to fix. It should be noted that trying to ensure that these sites are resilient against floods is considered as part of the design/construction process.



Figure 3: PALS unit on the Wimmera River at Polkemmet

Clear policy around environmental water management infrastructure would assist facilitate their construction, operation, maintenance and ownership. This will ensure that environmental water works and measures can achieve the greatest outcomes and potentially offset some of the impacts of climate change on current environmental water availability.

4. assessment of fees and charges applied to environmental water and whether these differ from those imposed on other water users.

When assessing fees and charges applied to environmental water it is important to note the origin of environmental water – through water purchase or water infrastructure modernisation. In the Wimmera, the majority of environmental water has been provided through the construction of the Wimmera Mallee Pipeline. Over two-thirds of the \$688 million for the project was provided by the state and federal governments in order to achieve environmental outcomes. The local community also benefits from a vastly improved consumptive water supply in terms of reliability and quality.

Water corporations derive much of their income from retailing water to customers. Harvesting of water and use of waterways as distribution channels impacts on waterway condition and the broader values they provide to the Victorian environment and community. The environmental contribution levy in part reflects this. Funds from the levy have been used by the VEWH to pay headworks and delivery charges to water corporations as well as by CMAs to undertake works with landholders such as streamside revegetation and erosion control which provides broader benefits through improved habitat and water quality.



In many respects environmental water delivery can be comparatively cost-effective for water corporations compared to other water supplies. For example in the Wimmera, upgraded regulators, funded by Wimmera CMA and VEWH have the capability to deliver requested flows through being automated and remotely operated. This potentially reduces the requirements for on-ground staff creating cost savings and reduced OH&S risks and enhances the accuracy of flow regulation. Flow rates are typically constant with baseflows interspersed with occasional higher pulsed flows (freshes).

Water purchased from the Wimmera Irrigators' Association for environmental flows also has led to broader costs savings through the decommissioning of redundant headworks infrastructure (not just the irrigation system) and provides opportunities for additional water and cost savings due to the changed patterns of water demands from irrigation to environmental flows.

Any actions to increase transparency in environmental water pricing decisions will be beneficial to ensure levied charges are not disproportionate compared to actual costs. It will also help allay community concerns of inequitable cost sharing between consumptive and environmental supplies. Fees and charges need to take into account levels of service as well (i.e. accuracy and responsiveness of flow delivery). Lastly fees and charges could, where possible, consider water quality. For example, water supplied to the environment from Taylor's Lake or Lake Lonsdale can be ten times as saline as water supplied from Lake Wartook yet there is no differentiation in charges levied despite the differences in outcomes such disparate water supplies can achieve.

Recent analysis has highlighted the financial and broader health benefits provided by the Wimmera River which apart from during very wet conditions, its flow is entirely provided by environmental water. In 2016-17 over 110,000 people used the river which in turn generated over \$1.4 million for the local economy (Street Ryan, 2017). So whilst floods in September 2016 filled pools along the river, when the survey took place in Autumn 2017, the only flows were environmental water releases. For the 24 waterways surveyed across the Wimmera and Southern Mallee in 2016-17 the combined mental and physical health benefits totalled \$8,573,553. In addition to this storages in the Wimmera do not need to be operated to their full supply levels due to shifts from consumptive to environmental water supply therefore creating significant flood mitigation benefits. Environmental water provides substantial benefits beyond the environmental outcomes and whilst this does not need to be reflected in the determination of fees and charges, it is worth noting.

References:

Street Ryan (2017) *Wimmera Southern Mallee: Socio-Economic Value of Recreational Water*, Street Ryan, Gisborne.