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GOULBURN BROKEN
CATCHMENT MANAGEMENT AUTHORITY

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24 August 2017

Mr. Josh Bull MP
Chair, Victorian Parliament's Environment, Natural Resources and Regional Development Committee
Inquiry into the Management, Governance and Use of Environmental Water
Parliament House, Spring St
EAST MELBOURNE VIC 3002

Dear Mr. Bull

Call for Submissions: Inquiry into the Management, Governance and Use of Environmental Water

Thank you for your invitation to make a submission to the Inquiry into the Management, Governance and Use of Environmental Water.

The Goulburn Broken Catchment Management Authority (CMA) is the leading natural resource management body in the Goulburn Broken region and has been actively involved in the management, governance and use of environmental water for over 15 years. The Goulburn Broken CMA is responsible for developing seasonal proposals for environmental watering in rivers and wetlands in the region, ordering environmental water from storage managers, conducting technical studies to inform environmental water use decisions and monitoring the outcomes of environmental water use.

Please find below our response to the Inquiry's terms of reference.

1. **Term of Reference – The assessment of the role of environmental water management in preventing or causing 'blackwater' events**

   In recent years, a number of regulated and unregulated waterways across the Goulburn Broken Catchment have experienced hypoxic blackwater events that threatened the survival of aquatic fauna or resulted in their death. These hypoxic blackwater events have not been caused by environmental water management, but have been caused by unseasonal rainfall and flooding events washing large amounts of organic material (from the floodplain and surrounding agricultural land) into the waterways. River regulation and a warming climate characterised by longer dry periods reduces the frequency, duration and magnitude of floodplain inundation. This increases the build-up of organic material on the floodplain and in ephemeral waterways (waterways that only flow after rain) increasing the risk of hypoxic blackwater events when overbank flows or high rainfall events do occur.

   Environmental water management can play an important role in mitigating the impacts of blackwater. Although there is not enough environmental water to dilute large blackwater events in systems like the Goulburn and Murray Rivers (dilution flows need to be approximately twice the flow of the blackwater to sufficiently

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increase dissolved oxygen levels in the water column), the delivery of environmental water can provide small refuges for aquatic fauna and reduce the time taken for dissolved oxygen levels in the water column to return to normal levels. In addition, environmental water management increases the resilience of aquatic fauna so they can recover more quickly following a shock such as a hypoxic blackwater event. For example, the lower Goulburn River experienced a hypoxic blackwater event in January this year which killed thousands of native fish. Despite this, anglers were catching native fish in the affected area weeks later and native fish monitoring indicated most native fish species were still present.

Environmental can be used to dilute smaller localised blackwater events in regulated waterways across the Goulburn Broken Catchment. However, this is inhibited by:

- the potential long travel time of water deliveries (e.g. it takes approximately 4 days for water to travel down the Goulburn River from Lake Eildon to Shepparton and 7 days for water to travel down the Murray River from the Hume Reservoir to the Barmah Forest);
- limited operational tools and models that forecast river flows that can help predict and manage blackwater events; and
- operational constraints to the delivery of higher in-channel flows as outlined below (e.g. maximum flow rates that can be delivered and required notification periods for irrigators).

Environmental water management could play an effective role in reducing the risk of blackwater events if constraints to the delivery of overbank flows along our large waterways such as the Goulburn and Murray Rivers were addressed. This would allow more frequent inundation of their floodplains reducing the build-up of organic material.

In June 2017, the Victorian Minister for Water agreed to develop a new Goulburn Constraints Measure Business Case. The Business Case seeks to address constraints to the delivery of higher in-channel flows along the lower Goulburn River. This could aid the mitigation of hypoxic blackwater events in and downstream of the waterway by providing greater dilution flow opportunities.

2. **Term of Reference – 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**

Carryover is an important management tool for environmental water managers and irrigators alike. It provides flexibility in the timing of water delivery across years. For example, carryover can help ensure environmental water is available to meet winter and spring demands at the beginning of the water year when water determinations can be low. Carryover can also be used to safeguard against risks (e.g. poor water quality or loss of critical aquatic refuge) by ensuring there is sufficient water to respond if the season turns dry and there are low water determinations.

Individual Basin States set their own carryover rules, which can result in variations in conditions between entitlements and across water plan areas. In Victoria, the carryover limits, account limits and use limits apply to all entitlement holders including the Commonwealth and Victorian Environmental Water Holders.

3. **Term of Reference – Consideration of what barriers exist to the more efficient use of environmental water and how these may be addressed**

It is widely acknowledged that environmental water is required to improve the health and functioning of rivers, wetlands and floodplains affected by regulation. Environmental water holders, waterway managers and water authorities seek to maximise environmental water use outcomes through:

- environmental water planning and prioritisation processes (with significant local community input);
- carryover and trade of entitlements;
- coordination of environmental water releases to achieve outcomes in multiple waterways;
- the use of consumptive water en route to achieve environmental outcomes; and
- monitoring to inform and refine environmental water planning and use.

However, the efficiency and outcomes of environmental water management could be improved by:

- Construction (e.g. building of regulators and lowering sills) to facilitate the delivery of environmental water to more wetlands, floodplains and rivers in the same precise manner as a modern agricultural irrigation system. In the Goulburn Broken Catchment only six wetlands can physically receive environmental water via connections to irrigation infrastructure. There are many more wetlands that could receive and would benefit from environmental water if works were put in place. This would allow for a greater variety of wetland habitats and dependent biota to be protected.
- Addressing physical and operational constraints to the delivery of higher in-channel and overbank environmental flows. For instance, the current operational water delivery limit on the lower Goulburn River at Shepparton is 8,500 ML/day (approximately half the bank full flow). Higher in-channel and overbank flows are required to connect the river to the floodplain. This is not only important to the health and survival of flood dependent plant and animal communities it also delivers organic material and nutrients to the in-channel environment, which sustains aquatic food webs. Higher flows are also important in promoting in-channel physical habitat diversity, stimulating native fish spawning and migration, and providing hydrological and ecological benefits to downstream waterways including the Murray River. A new Goulburn Constraints Measures Business Case has been developed by DELWP in partnership with Goulburn Murray Water (GMW) and the Goulburn Broken CMA. The Business Case seeks to address constraints to the delivery of higher in-channel flows along the lower Goulburn River. A decision on the approval of the Business Case by the Commonwealth and State jurisdictions is not expected until later in the year.
- Addressing operational constraints to the delivery of environmental water during and outside of the irrigation season. In the lower Goulburn River irrigators require three weeks' notice if flows are going to be increased above 3,000 ML/day during the irrigation season. This is due to potential impacts on irrigation pumps located within the bed and banks of the river. This significantly reduces the capacity to release environmental water in response to unregulated flows (flow that cannot be captured in major storages) to maximise environmental outcomes or release sufficient environmental water in a timely manner to mitigate water quality issues, such as hypoxic blackwater. Outside of the irrigation season (mid-May to mid-August) GMW closes or limits flow from

regulating infrastructure (i.e. dams, weirs, channels and drains) to undertake necessary maintenance works. This can restrict the timing and magnitude of environmental water releases to streams and wetlands at a time when they would have naturally received water. The Goulburn Broken CMA has been working cooperatively with GMW to identify opportunities to address some of these local constraints.

- Expanding operational tools and models to better forecast river inflows to improve the use of unregulated flows to meet environmental flow targets. This will not only improve environmental water use efficiency, it will also improve consumptive water use efficiency.
- Implementing long-term monitoring programs to: evaluate the ecological outcomes of environmental water use; refine environmental water management to improve ecological outcomes; understand why ecological outcomes are not achieved by environmental water use; and identify knowledge gaps in flow and inundation requirements of biota and ecosystem functions. Currently there are four key environmental water monitoring programs in place (Victorian Environmental Flow Monitoring and Assessment Program, Victorian Wetland Monitoring and Assessment Program, the Commonwealth Long Term Intervention Monitoring Project and The Living Murray environmental monitoring program for Icon Sites). However, these critical monitoring programs are not funded beyond 2019-20 and The Living Murray environmental monitoring program is only funded on an annual basis.
- Undertaking technical investigations required to address knowledge gaps associated with key environmental water management objectives and targets (e.g. the flow cues required to stimulate native fish migration and river discharges required to connect floodplain and wetland habitats).
- Developing and implementing complementary projects to protect and improve the condition of wetlands, rivers and floodplains (e.g. fencing to manage stock grazing, revegetating, re-snagging to improve instream habitat for native fish and invertebrates, restocking native fish, removing barriers to fish movement and controlling pest plants and animals). These complementary measures also reduce agricultural run-off to waterways, which contributes to hypoxic blackwater events.
- Improving community awareness and understanding of waterway management and environmental water. A recent investigation by the Victorian Environmental Water Holder showed the community had limited awareness and understanding of how waterways are managed across Victoria and the aims and benefits of environmental water use. This lack of awareness and understanding reduces community confidence in environmental water use and support to advance opportunities to improve its effectiveness and efficiency.
- Continuing to review and refine environmental water management governance arrangements. In particular the responsiveness of governance arrangements, as environmental water management planning and delivery has to regularly adapt to changing seasonal conditions to maximise environmental outcomes and ensure the efficient use of environmental water.

4. **Term of Reference – Assessment of fees and charges applied to environmental water whether these differ from those imposed on other water users**

The Goulburn Broken CMA recently provided input to the process being undertaken by DELWP to review the charging arrangements for environmental water in Victoria.

If you have any questions regarding this matter please do not hesitate to contact me. The Goulburn Broken Catchment Management Authority would also be pleased to give evidence at a public hearing if invited.

Yours sincerely

[redacted]

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