Dear Mr Bull

Thank you for your letter of 28 June 2017 to Dr Gordon de Brouwer, Secretary of the Department of the Environment and Energy (the Department), inviting the Department to make a submission to the Victorian Parliament's Inquiry into the Management, Governance and Use of Environmental Water (the Inquiry). As the Commonwealth Environmental Water Holder, I have responsibility for the management of the Commonwealth's water entitlement portfolio and am therefore responding on behalf of the Department.

The enclosed submission individually addresses each of the terms of reference for the Inquiry. I note that the submission is a public document and I encourage the Environment, Natural Resources, and Regional Development Committee to publish the Department's submission on its website.

If you have any questions relating to the submission please feel free to contact me on

Thank you again for your letter.

Yours sincerely

Mark Taylor
Commonwealth Environmental Water Holder
18 August 2017

Enc.
Submission to the Victorian Parliament's Inquiry into the Management, Governance and Use of Environmental Water

Background and context

In my role as Commonwealth Environmental Water Holder (CEWH), I am responsible for the management of the Commonwealth environmental water holdings. This role is governed by the Water Act 2007, the Basin Plan 2012 (the Basin Plan) and subsidiary documents, such as the Basin-wide environmental watering strategy and the Basin annual environmental watering priorities.

I am committed to being a diligent, responsive and prudent water manager. I do not waste water. Rather, I am focused on maximising environmental outcomes across rivers, wetlands and floodplains from the use of the entire Commonwealth environmental water portfolio. This includes the considered use of the tools available to all water users, such as carryover and trade, and the application of adaptive management with:

- clear objectives
- robust planning and decision-making processes
- comprehensive risk assessments
- meaningful engagement with other water users, river operators, land managers and local communities
- long-term monitoring programs that assess the effectiveness of water use and inform future decisions.

Commonwealth environmental water has contributed towards achieving a range of environmental objectives including:

- providing river flows that support good water quality for the environment and water users
- connecting rivers to floodplains to maintain food chains and support fish movement
- filling wetlands that support native fish, birds and other native animals
- supporting the recovery of the environment following drought, and building resilience in preparation for the next drought.

I work closely with delivery partners, such as the Victorian Environmental Water Holder (VEWH), Goulburn Murray Water, Victorian Catchment Management Authorities and the Murray-Darling Basin Authority (MDBA) to deliver water to protect and restore Victoria's environmental assets. The restoration effort will take decades, with progress towards these outcomes being measured as part of a continuing Long Term Intervention Monitoring Project ($30 million over 5 years) to monitor and evaluate environmental outcomes and support the adaptive management of Commonwealth environmental water. Monitoring of outcomes from the use of Commonwealth environmental water to date has shown significant results for fish, birds and native vegetation. Building on these outcomes and achieving the full intended benefits of the Basin Plan relies on:

- entitlements that the Commonwealth holds being subject to no less favourable conditions than like entitlements held for other purposes, consistent with the Intergovernmental Agreement on Implementing Water-Reform in the Murray Darling Basin (the 2013 IGA)
• the implementation of commitments under the Basin Plan, including the assumptions used in calculating the volume of environmental water required to meet the Basin Plan targets and objectives.

**Assessment of the role of environmental water management in preventing or causing 'blackwater' events**

Floods can carry organic matter (carbon-rich material) from large areas of floodplain into rivers. This carbon-rich water is referred to as 'blackwater'. This is a natural process, which is critical to the health of rivers and wetlands. The carbon is food for organisms at the bottom of the food chain, and so in turn, can lead to more food for larger animals, such as native fish.

As the organic matter decays, it can result in oxygen levels in the river dropping. In some circumstances, oxygen levels in the river can drop significantly (referred to as 'hypoxic') and can cause stress to fish, crayfish and other aquatic animals. Hypoxic blackwater events typically occur after long intervals between flooding, when high levels of carbon-rich material had built up on floodplains.

Hypoxic blackwater events are not a new occurrence. There have been at least six hypoxic events in the mid-Murray (downstream of the Barmah Choke) since 1990, five of which occurred before the Basin Plan was finalised and before any significant delivery of Commonwealth environmental water. It is clear that these events are not caused by environmental water.

There are a number of factors that trigger hypoxic blackwater events including reductions in the frequency of small and medium floods (from damming of rivers and diverting water for consumptive use) leading to the excessive build-up of organic matter on the floodplain. The volume of organic matter washed into rivers also changes with different land use activities. While there has been research on the contribution of river red gum forests to blackwater events, there has been little research into the potential inputs from agricultural land use and floodplain soils. The experience from the 2016 flooding events suggests agricultural land contributed organic matter, and that both native and modified landscapes influenced the carbon load during the blackwater events in the southern Basin.

The capacity to prevent and manage impacts from these events by using environmental water is limited. Environmental water can be used to provide water with high levels of oxygen, which provide refuge areas for fish and other aquatic animals. In 2011–12 and 2016 environmental water was used in a number of catchments in response to hypoxic blackwater events that followed large-scale natural flooding.

In the long-term, the frequency or severity of blackwater events could be reduced by mimicking the natural small-scale floodplain inundation during winter and spring. These smaller events would contribute important organic material at a time when temperatures are cooler and microbial activity is low.

A case study looking at blackwater events in 2016 is provided at Attachment A.
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

The Commonwealth environmental water portfolio was acquired by the Australia Government through investments in water-saving infrastructure and purchases on the water market. Commonwealth environmental water entitlements are subject to the same fees, allocations, carryover and other rules as equivalent entitlements held by other water users. These rules determine the utility and value of the Commonwealth environmental water holdings and the environmental outcomes that can be achieved. Commonwealth environmental water makes up a very small portion of all water stored across the Basin. On average, the volume of Commonwealth environmental water held in all major storages accounts for less than 5 per cent of total capacity.

My planning and decision-making is driven by the need to fulfil legislated environmental outcomes under the Water Act 2007, Basin Plan and the Basin-wide environmental watering strategy. The portfolio of Commonwealth water is actively managed to give me the flexibility to adapt to seasonal, operational and management conditions in the same way that an irrigator would adapt to changing conditions to achieve the best outcomes with their water. This is particularly important because conditions differ across catchments. These tools allow me to deliver water over the course of the watering year; carryover for future years to meet future environmental needs; or trade - sell or purchase water allocations to get an improved environmental benefit.

Basin States create the rules that apply to the carryover of water, including carryover limits. Carryover allows water entitlement holders to hold water in storages so that it is available for call later in a water year or in subsequent years in regulated parts of the Basin. I comply with the same rules as those that apply to all water users and can carryover water in the same way as occurred when the water entitlements in the Commonwealth's portfolio were managed for agricultural use. No water holder can fill up dams to the exclusion of other water users.

Carryover is an essential management tool for any water user as a prudent risk management strategy. I interact with and utilise management tools in the same manner as all other water entitlement holders. Commonwealth environmental water carryover into 2015–16 was equivalent to approximately 2 per cent of the capacity of public water storages across the Basin. Water that is reserved in good years can be used to mitigate the risk of environmental damage during drier periods. Additionally, wetlands and river red gums have been watered in late winter and early spring, ahead of most of the increases to seasonal allocations for many entitlement types.

The expectation is that the Commonwealth’s water entitlements held for environmental use will not be enhanced or diminished relative to like entitlements held and used for other purposes, except by agreement to facilitate improved environmental watering. This includes changes to fees and charges, access to allocations, and the capacity to use, trade, and carryover, compared to like entitlements held for other purposes, including irrigation. Any rule changes that disadvantage the Commonwealth’s holdings compared to equivalent entitlements held by other users could devalue this public asset and would be contrary to Basin States’ commitments under the 2013 IGA.
Consideration of what barriers exist to the more efficient use of environmental water and how these may be addressed

Physical barriers and constraints

I work with river operators, land managers and effected entitlement holders to enhance river management and operational practices so that the outcomes of environmental water can be optimised. This includes removing constraints on the use of Commonwealth environmental water in circumstances where impacts to landholders and other water users are minimised or mitigated. Operating effectively in a working river system, where much of Australia’s food and fibre is produced, requires environmental water management to co-exist with agricultural production in a mutually respectful and harmonious manner. I have established a ‘good neighbour’ policy, which guides my management of Commonwealth environmental water. The central principle of this policy is ‘first, do no harm’. A precautionary approach is taken to managing environmental water, so that there is no material impairment of the interests of landholders and other water users.

I have not and will not place water orders that would flood private land, without the consent of the landholder. River operators will not deliver environmental flows above the operational limits that apply to all water deliveries, including irrigation orders. If potentially unacceptable impacts on private property are identified, I will negotiate with affected landholders to avoid or minimise any potential problems and obtain consent to watering events. Where there has been a risk of third party impacts or inconveniences, environmental flows have been limited to levels below operational thresholds to avoid these, thereby reducing the scale of potential environmental outcomes.

In some places, the height and depth of the river (that is the ‘channel capacity’) is not large enough to allow every user to order their water at the same time. Competition for ‘channel capacity’ can limit users, including me, from accessing the water they need, when they need it. Commonwealth environmental water does not increase competition for channel capacity primarily because environmental water is not ‘new’ water in the system, but existing water that is being used for a different purpose. In addition, I generally provide environmental water outside the irrigation season which helps to mitigate delivery risks and can benefit irrigators by freeing up channel capacity during periods of peak demand. In the event of channel capacity becoming limited, I can be flexible about how and when environmental water is ordered, to minimise any potential impact on others. However, at times of critical environmental need, I may need to assert my right to access my share of channel capacity, just as the previous owner of the water would have done.

Policy-related barriers

There are also policy and operational barriers which limit the efficient use and protection of environmental water. Underlying assumptions in the Basin Plan and commitments by state governments support the need for the protection of environmental water to ensure system-wide environmental benefits. The Basin Plan (section 7.1) refers to anticipated measures (called ‘unimplemented policy measures’) which consist of a policy to:

a) credit environmental return flows for downstream environmental use; or
b) allow the call of held environmental water from storage during un-regulated flow events.
As with entitlements held for consumptive use, Commonwealth environmental water should be protected from extraction by other users. Before these entitlements were recovered under the Basin Plan, they were owned by consumptive users and the water was not available for extraction by others, and it should not be available now. Protection and re-use of environmental water is necessary to realise the full asset value of Commonwealth's water portfolio. It is also essential to optimise environmental benefits in order to achieve Basin Plan objectives that were established on the basis that arrangements would be in place to protect and enable the re-use of environmental water.

If Commonwealth environmental water is not protected from extraction, or is not able to be re-used throughout the system, a greater volume of environmental water would be needed to achieve the Basin Plan objectives. A failure to deal with legal over-extraction also undermines public confidence that existing state government rules and regulations will protect water recovered for the environment. There is also a need to account for Commonwealth environmental water in the system to enable transparent management of the water as a public asset. Accurate accounting also supports adaptive management and monitoring of the outcomes of environmental water.

As part of protecting environmental watering and crediting return flows, it is important that water 'lost' along the way (e.g. water absorbed by a wetland) is accurately accounted for. Loss rates should be set at realistic levels based on the best available science to avoid diminishing the security of supply for any user, including irrigators and the environment. Where water for the environment and water for irrigation travel along the same channel, the water lost through evaporation and absorption should be shared, as it was when the Commonwealth's entitlements were owned by other water users and utilised for irrigation.

**Planned Environmental Water under Water Resource Plans**

Planned environmental water is particularly important for river operations, allowing storage airspace and flood mitigation to be managed and delivering critical in-stream flows necessary for maintaining the health of riverine ecosystems degraded by river regulation. It also provides more natural flow variability, which is important for stimulating primary production and providing chemical cues crucial for biota lessened as a result of river regulation. Held environmental water, which makes up the Commonwealth portfolio of entitlements, is used to deliver environmental benefits over and above those provided by planned environmental water.

Both sources of environmental water are important, with planned environmental water being considered as integral and fundamental to the Basin Plan modelling that determined the sustainable diversion limits. Commonwealth environmental water deliveries are coordinated with other water in the system, including planned environmental water, to achieve the best environmental outcomes.

The operation of processes and rules in Basin State water resource plans determine the volumes and timing of planned environmental water and the environmental outcomes that can be achieved. It is important that any new water resource plans maintain the same volumes of planned environmental water, and do not change the timing of planned environmental water in ways that would reduce the environmental outcomes achievable. water resource plan requirements under the Basin Plan (section 10.26) stipulate that water
resource plans must be consistent with the environmental watering plan and the Basin-wide environmental watering strategy. Any reduction of planned environmental water undermines the foundation of the Basin Plan and would require greater volumes of held environmental water to be recovered to meet the minimum set environmental objectives.

**Assessment of fees and charges applied to environmental water and whether these differ from those imposed on other water users**

The Commonwealth's portfolio of water entitlements is managed within the state government rules that apply to other equivalent entitlement holders. This means that I pay the same fees and charges for my holdings, receive the same annual allocations as equivalent entitlements and operate within the same rules. I rarely pay fees and charges for the use of irrigation networks utilised by irrigators because environmental water is not generally delivered using these systems.

I pay for services used on a 'user pays' basis and support non-discriminatory behaviour consistent with the principles set out in the National Water Initiative. This is particularly pertinent when considering that I hold a significant public asset (currently worth over $3.2 billion) and I am required to manage this asset in an efficient, effective and accountable way according to the requirements established under the Public Governance, Performance and Accountability Act 2013.

Environmental water users should not be required to pay more for services compared to other water users, pay for services not used, or be required to subsidise other network customers. I support the role of independent pricing regulators (the Essential Services Commission in Victoria) to determine fair and transparent pricing of water entitlement and river infrastructure use, fees and charges.

State and Commonwealth agencies that regulate fees and charges should consistently apply the rules to facilitate and support an effective water market. Any changes to state government licencing arrangements, including fees and charges that disadvantage the Commonwealth's holdings compared to equivalent entitlements held by other users could devalue this public asset and would be contrary to Basin States' commitments under the 2013 IGA. Changes would detrimentally impact my ability to effectively manage the Commonwealth's portfolio, compromising environmental outcomes and necessitating further water recovery to meet Basin Plan objectives.

**Conclusion**

Acceptance and knowledge of Commonwealth environmental watering is increasing in the community over time as the Basin water reforms are implemented and as we build cooperative working relationships with water users, industry bodies, community groups and river operators. I have a strong working relationship with the VEWH and will continue to work constructively with the Victorian Government on issues of mutual benefit. I am happy to be contacted by the Environment, Natural Resources and Regional Development Committee about this submission, or other relevant matters considered by the Victorian Parliament's Inquiry into the Management, Governance and Use of Environmental Water.
Case Study: The use of environmental water in response to the 2016–17 blackwater events in the Murray-Darling Basin

There was widespread flooding in 2016 in the southern Murray-Darling Basin (including the Murray, Murrumbidgee, Lachlan and Goulburn catchments). The floods spread over much larger areas than the high flows experienced in 2010–11. The floods inundated both agricultural land and forests, including parts that had not been flooded in more than 30 years.

The large volume of organic matter collected by the floods resulted in hypoxic blackwater events, which in turn caused large-scale fish kills. Environmental water was used across a number of rivers to provide water with high-levels of oxygen, which provided refuge areas for fish and other aquatic animals. This included over 300 gigalitres of Commonwealth environmental water. Monitoring and anecdotal evidence from stakeholders indicated that the use of environmental water provided areas with high levels of oxygen and that native fish were using these areas.

A review of the environmental watering actions is underway. Some preliminary findings of this review include:

- The input of nutrients from agricultural lands may have been a contributing factor to the severity of the blackwater events.
- In some catchments, river operators and environmental water managers had to delay any response until the flood peak had passed due to concerns of potential third-party impacts. This limited the effectiveness of the actions. For example, increased flows from the Lower Darling (which had no blackwater) were prevented until after the flood peak had passed Wellington. Providing increased flows prior to or at the flood peak would have provided opportunities for native fish to leave the Murray (and enter the Darling) prior to the arrival of the blackwater. Any increased flows from the Darling were unlikely to make any material difference in the flood height at Wellington (and hence impact on third parties).
- The monitoring of water quality (and particularly oxygen levels) by state governments could be improved. In particular, there are relatively low cost options that could allow continuous surveillance, which could improve our understanding of blackwater events and our capacity to respond.
- To facilitate a timely and appropriate response to blackwater events, there would be benefit in developing a coordinated approach across agencies, including preparing a Blackwater Response Plan agreed with all relevant stakeholders.