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Wentworth Group submission to the Productivity Commission, National Water Reform 2020, Draft Report.

We write to provide a submission to the Productivity Commission's National Water Reform 2020 Draft Report. The Wentworth Group (WG) thoroughly supports the objectives and elements of the National Water Initiative (NWI) and are encouraged by much of the constructive advice in the draft PC report.

The WG particularly supports the proposed new elements to recognise the interests of Aboriginal and Torres Strait Islander people in water resource management, and to add a framework for major water infrastructure developments.

Our comments here are intended to address those topics within our scope of work to highlight those elements of the findings and recommendations that we particularly support, and where we urge the Productivity Commission (PC) to go further in its advice to governments.

Environment benefits to date are grossly exaggerated

The Wentworth Group rejects the conclusions that "Benefits of these provisions for the environment are starting to be seen" (pp. 2, 24, 92) as a result of NWI implementation because these effects are highly localised and short-term in nature, and the amount of environmental water available is far too little to have a sustained and widespread benefit. In the case of the Murray-Darling Basin, our assessment of the literature is that there is little peer-reviewed evidence of systemic improvement of any flow-dependent matter of national environmental significance (including threatened species or Ramsar wetland site) or any tributary river system. Indeed, the only exception may be two threatened species (trout cod and southern bell frog) where, arguably, the increase in populations is primarily to long-term national threatened species recovery teams, not environmental water management programs (Ryan *et al.*, in review). Environmental flows are being actively managed but the evidence at the large scale is that river dependent communities are continuing to decline.

The government-funded grey literature cited in the draft PC report merely reiterates a series of *ad hoc* anecdotes of successful fauna breeding at individual sites following particular watering events. At very best, it includes some short-term ecological responses at localised sites. The paper by Chen *et al.* (2020) concludes precisely the opposite outcome to that implied by the PC. In Figure 7 the authors report that of nearly 3 million hectares of managed floodplain wetlands in the Basin, only 141,000 hectares, or 4.7% received any e-water over 5 years. This is a ludicrously small environmental return for a public investment of nearly \$13 billion in water reform.

Further, the paper by Hawke, Bino and Kingsford (2020) (p. 92) proposes that platypus could be conserved with e-flows, but did not provide any evidence that this was done or measured. Indeed, the e-flows did not prevent the entire Macquarie River drying out during the last drought, and the water sharing plan was again turned off so that water could be supplied to a mine. This does not constitute evidence of benefits from e-flows for conservation. Further these issues continue to be exacerbated by the approach of water authorities to the management of flows and floodplain inundation (e.g. floodplain harvesting).

For these reasons we ask the PC to forego the recycling of the unsubstantiated rhetoric that environmental "benefits are starting to be seen". Instead, please focus on enhancing the many

sensible ideas for reform in the report, and our suggestions that follow, in order to support the delivery of genuine improvements for biodiversity conservation.

Priority of water rights must be clearly defined

Defining the priority of water use is paramount if the NWI is to effectively manage river systems, particularly during periods of increased scarcity and competition over water use. We strongly recommend that the NWI includes a clear statement prioritising sustainability of the river basin then optimising social and economic outcomes. This is consistent with the Water Act 2007 and the Water Management Act in NSW (s5.2, s5.3, s9.1). The draft NWI proposes a priority setting approach for held environmental water (see Draft renewal advice 8.5). This needs to be expanded to include priorities of all forms of water use, including environmental water, drought reserves, stock and domestic, cultural needs and consumptive take.

Effective governance arrangements for a renewed NWI

We support the proposals for more effective governance arrangements for a renewed NWI (Pg. 7) which are desperately needed to progress water management reform in a changing climate.

Water entitlements and planning

In terms of water entitlements and planning, we strongly agree that water entitlement frameworks need to consider all key water uses, including extractive industries and inflow interception activities. The failure of the NSW Government to adequately regulate floodplain harvesting in the MDB is especially egregious. As we discuss below, we agree that triggers (e.g. end of system flows) need be identified that indicate when there is a demonstrable need to rebalance environmental and consumptive uses. It is no longer sufficient to rely only on models with considerable uncertainty, particularly as these do not adequately measure floodplain inundation.

Governments should actually implement what they have already promised but not delivered, for example, the pre-requisite policy measures in the Murray-Darling Basin (MDB) to enable environmental water holdings to be shepherded across state borders and constraint measures under the SDL adjustment mechanism. We ask the PC to make strong recommendations for governments take action to 'relax constraints' to enable optimal use of e-water to water floodplain wetlands. In the case of the southern MDB, the failure of the NSW and VIC governments to implement their commitments from 2014 to relax constraints continues to prevent the effective use of e-water to conserve biodiversity out of the river channels.

There are a number of areas where we ask the PC to make further recommendations to better manage water in a changing climate:

- a) Governments should be advised to end 'credit' systems for allocating water based on projected inflows, as with the Macquarie and Lachlan rivers in NSW, due to the history and further risk of over allocating water in a drying year (Steinfeld *et al.*, 2020). Instead, only debit water allocation systems should be used, which allocate water actually in storage.
- b) Within-valley and end of system flow targets should be set on all major river systems to ensure that high priority needs (e.g. human needs, stock, cultural needs and environmental requirements) receive their agreed water allocations before upstream extraction is permitted (Thoms and Sheldon, 2002).
- c) The remaining free-flowing rivers should be protected from instream infrastructure development and major water extraction due to their importance for biodiversity conservation and capacity to autonomously adapt to the impacts of climate change (Pittock

and Finlayson, 2011). This is also an additional point for Advice 8.1: Best-practice environmental objectives and outcomes.

- d) Water infrastructure should be subject to periodic re-licensing in order to ensure that dams and other barriers are assessed to ensure that they are safe, economically justified, and meet modern standards for minimising environmental and social impacts (Pittock and Hartmann, 2011). This is crucial to adaptively manage water infrastructure in a changing climate. Owners of infrastructure that do not meet adequate standards should be ordered to re-operate or remove it.
- e) Environmental flow objectives should be in water resource planning because currently there is no link. As a result, water management authorities can often avoid meeting such objectives even though they may be provided elsewhere.

We question whether significant progress on water recovery has been achieved and agree that further work on rebalancing overallocated systems is required. Below we argue that the purported 3,000 GL/yr. of held e-water entitlements in the MDB in practice has resulted in far lower e-flows.

We agree that the “next phase of reform should provide the policy principles and institutional arrangements to make the best use of environmental water to achieve agreed (and where possible, better) environmental outcomes. This includes clearly specifying environmental objectives and outcomes; ensuring adequate low-flow provisions; integrating environmental water management with waterway and catchment management; identifying institutional responsibility for waterway management; creating adaptive monitoring programs; and developing clear processes to adapt environmental management objectives as changes in climate necessitate.”

We agree that natural resource management programs should give priority to the key environmental assets identified in water planning processes, provide funding and undertake the required works to protect those assets. It is disappointing that in the MDB, since the adoption of the Basin Plan and apart from volumetric water measures, key natural resource management programs have been greatly diminished. Stronger natural resource management programs would greatly extend the benefits of water reform for biodiversity conservation. These programs should be complementary to water reforms and not used as offsets for water recovery.

Securing Aboriginal and Torres Strait Islander people’s interests in water

The WG strongly supports securing Aboriginal and Torres Strait Islander people’s interests in water. Government efforts to date have been totally inadequate as indicated by tiny portion of water entitlements held by Indigenous peoples. We suggest that the PC needs to provide stronger and more specific recommendations based on the advice of Indigenous experts.

Ensuring the integrity of water resource management

We agree that the current element of the NWI needs to be broadened to support the provision of credible and reliable information and institutional processes (Pg. 9).

We consider that in the case of the MDB, that the volume of environmental water actually delivered to the environment is far less than what was intended under the Basin Plan. Of the 2,100GL of entitlements that has been recovered for the environment to date, 1,577GL was acquired before the Basin Plan was agreed in 2012 (WGCS, 2017). The actual amount of water that was returned to the environment, on average, per annum between 2012-13 and 2018-19 was 1,905 GL. However, the average annual volume of environmental water that was being released before the Basin Plan came into effect (2008-09 to 2011-12) was 1,315 GL. That means that the mean additional volume of

environmental water released annually since the Basin Plan commenced is only 590 GL (Senate Committee on Management and Execution of the Basin Plan, Nov. 2020, in Hansard [here](#)).

Further, the WG has assessed the observed flows in the MDB rivers compared with those projected under the Basin Plan from 2012-19 and found that there was 22% less water at the SA border than intended (WGCS, 2019). This estimate accounted for the climate conditions and adjusted for environmental water recovery. A number of recommendations flow from this situation:

- a) Governments should be required to have up to date models that link climate and hydrology and river basins need to be represented by a single model which is consistent across jurisdictional borders. Models used now in the MDB fail this test.
- b) Governments should be advised to use remote sensing to enhance monitoring of water resources and extraction, and enable this information to be actively used in enforcement.
- c) Water accounting needs to be reformed. The current 'single entry' accounting only quantifies water extracted by licences. Governments need to adopt 'double entry' accounting where both the water extracted and the water remaining in the rivers is calculated at gauging stations to check on whether the river flows are as expected and to take action if not.
- d) Governments should be expected to make publicly available all relevant water data to enhance transparency.

New infrastructure development

We agree that “new and refurbished water infrastructure needs to be both economically viable and ecologically sustainable, with costs recovered from users in most cases” (Pg. 10). The principles in the NWI about full cost recovery need to be emphasised, particularly in relation to private benefits at public costs. Further many of those public costs continue to be underestimated. There should be more explicit identification of downstream costs to communities, including indigenous communities and water quality, other ecosystem services (e.g. floodplain grazing) and biodiversity impacts. The PC helpfully provides the example of the proposed Dungowan Dam. The Wyangala Dam and Mole River raising are similarly egregious proposals and we would be happy to provide the PC with further information if desired.

Community engagement and adjustment

We agree that “Clarity will be required on who bears the risk of climate change” (Pg 10). While the current NWI states that “entitlement holders bear the risks of changes to the quantity or reliability of water allocations as a result of seasonal or long-term changes in climate and natural events such as bushfire and drought.” This could be seen as being contradicted by provision for government to bear the costs of policy change. The principle of entitlement holders bearing the risks of climate change should be unqualified by any other provision.

Ensuring climate change is taken into account in water planning

The PC has sought feedback on suitable triggers for rebalancing environmental and consumptive shares in the context of climate change (Pg 12; information request 6.1). The PC critiqued our proposal for 'continuous adjustment', saying that “it essentially places an infinite value on marginal environmental outcomes, and similar to a hydrological trigger, may not reflect the actual ecological outcomes emerging as water availability changes.” We would like to clearly articulate the basis for

our proposition and broader context for how, in our view, climate change could be considered in the NWI.

To account for climate change, the National Water Initiative should establish a framework where environmental and socio-economic objectives to be defined, agreed, prioritised and implemented for each catchment in light of plausible future climate change scenarios. This requires best available science to inform an assessment of the range of objectives can be supported given resource availability under a range of scenarios and a process for triage to arrive at priorities. This is an adaptation pathway approach (Wise *et al.*, 2014). This process must include consideration of structural adjustment and other measures to support communities to adapt to a future with less water. This would provide more flexibility in identifying socio-economic thresholds given the potential for acceptable transformative adaptations. Final agreement of the outcomes and priorities within each catchment is a social/political decision.

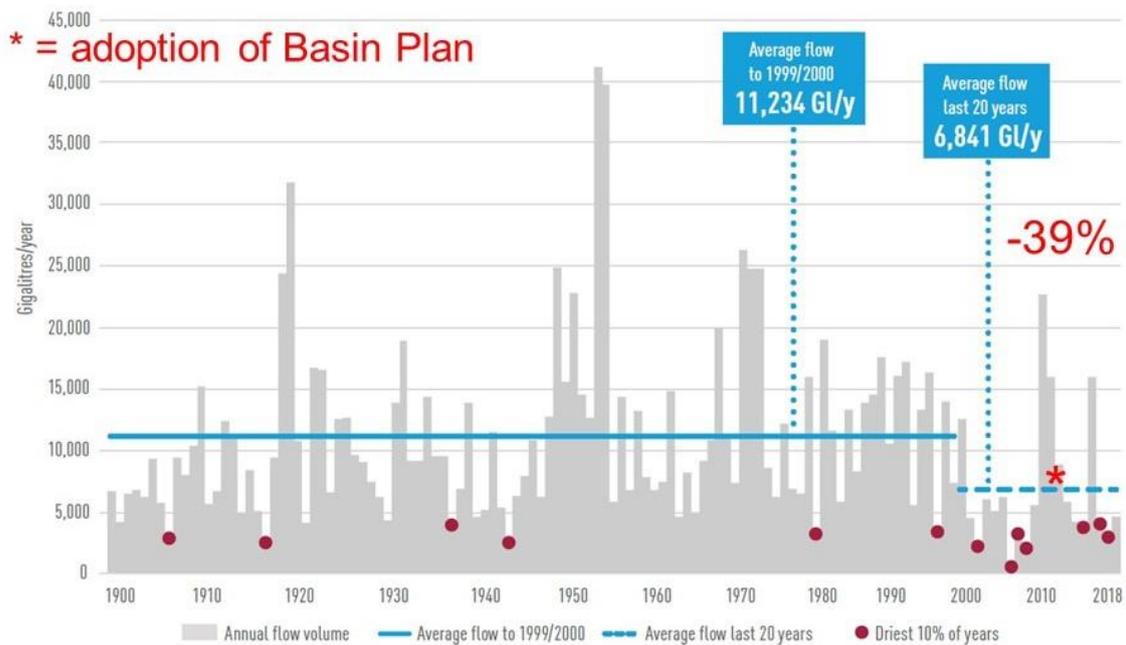
In applying this framework, two sets of triggers need to be established. The first set should be based on ecological and socio-economic outcomes including cultural requirements. These triggers should be used in water planning to define the overall balance between environment and consumptive use. These triggers should not apply on a once-off basis - there needs to be a series of environmental and socio-economic triggers that once crossed, require a rebalancing of environmental and consumptive use in a successive process. The objectives, thresholds and triggers should be evaluated at the end of each 10-year plan horizon.

The second set of triggers should be based on river flows at specific gauges. These triggers should represent the within-valley and end of system flow requirements. They need to be linked to consumptive access rules to enable achievement of the objectives according to the agreed priorities (that is, extraction should occur once the flow targets are achieved). The targets need to consider antecedent flows, thus they are applied flexibly depending on the level of achievement.

These triggers need to be statutory and linked to specific actions to avoid the risk of inaction as governments procrastinate on 'pulling the trigger.' The MDB Plan demonstrates the likelihood of inaction. The Federal Government funded CSIRO's Sustainable Yield Project which in 2008 published best practice climate change projections for future water availability in the MDB. Despite this, in 2012 the Authority reverted to stationarity, stating that it has: 'formed the view that there is considerable uncertainty regarding the potential effects of climate change, and that more knowledge is needed to make robust water planning and policy decisions that include some quantified allowance for climate change. Until there was greater certainty MDBA considered that the historical climate record remains the most useful climate benchmark for planning purposes' (MDBA, 2012: 123).

What is astonishing, is that there has been a 39% fall in river inflows in the Basin over the last 20 years compared to the long-term average, as shown below. The Basin plan was adopted in 2012 more than half way through this period. The 39% fall and the outcomes linked to this step change should have already been sufficient to trigger a governance decision in the MDB.

Reduction in long-term average inflows to the River Murray



We do argue for an annual reduction of the volumetric value of the entire entitlement pool according to a formula in line with recorded, reduced water availability. This will allow for gradual changes rather than more difficult, large step changes at the end of each water plan period. During the water plan period the market will enable trading of the diminished water entitlements to maximise socio-economic returns. The decadal review of the water management plans then provides an opportunity to review and reset the overall triage or adaptation pathway.

In terms of environmental thresholds there are obvious ways to begin setting these trigger/triage decisions based on conservation principles, namely that:

- Viable population of each species should be conserved, especially threatened and migratory species;
- Australia has committed to maintain the ecological character of each Ramsar wetland of international importance;
- There should be comprehensive, representative and adequate conservation of each kind of ecological community, including groundwater dependant ecosystems; and
- Water quality should be sufficient to avoid risking the health of humans and wildlife.

Targets need to be updated to adequately represent ecological requirements and linked to management actions so they are fit for the purpose of adaptive management. Problems include:

- Lack of any articulated link to the environmental treaty obligations upon which the MDB water reforms largely draw their constitutional mandate. For example, Australia's obligation to conserve the ecological character of each Ramsar wetland of international importance is incoherently expressed in water management plans (Kirsch *et al.*, in review).
- Excessive reliance on a plethora of hydrologically based, functional flow targets that are too numerous to implement, monitor or communicate, and which do not engage with stakeholders who may contribute to achieving more readily understood objectives.

- An incoherent jumble of different and conflicting e-flow targets, including the Basin Hydrologic Indicator Site Stream Flow Indicators (which the governments deny are indicators), differing MDBA and CEWO environmental watering plans, different state water management plans, and contradictory watering proposed for SDLAM projects.

Consequently, we welcome the PC's consideration of the integration of environmental and complementary waterway management (pg. 96). We ask that further attention is given to environmental flow targets that are:

- a) Focussed on conserving matters of national environmental significance;
- b) Coherent across programs and jurisdictions;
- c) Readily implemented, monitored and communicated;
- d) Capable of engaging contributions from community stakeholders.

Innovative market approaches

In terms of innovative market approaches (Pg. 104) we ask the PC to recommend that non-government water entitlement holders are subject to no unreasonable restrictions on the use of their water for public interest conservation activities. There are a growing number of conservation water trust organisations. In many cases they enable fine scale conservation of high value environmental assets, such as for threatened species recovery. They should not be subject to unreasonable restrictions by rules governing irrigation for agriculture.

We would welcome an opportunity to further discuss these matters with the Commissioners.

Kind regards,

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References:

- Kirsch, E., Colloff, M. J. and Pittock, J., in review. Lacking character? A policy analysis of environmental watering of Ramsar wetlands in the Murray–Darling Basin, Australia. MDBA, 2012. Proposed Basin Plan consultation report, Murray–Darling Basin Authority, Canberra.
- Pittock, J. and Finlayson, C. M., 2011. Australia's Murray-Darling Basin: freshwater ecosystem conservation options in an era of climate change, *Marine and Freshwater Research*, 62: 232–243.
- Pittock, J. and Hartmann, J., 2011. Taking a second look: climate change, periodic re-licensing and better management of old dams, *Marine and Freshwater Research*, 62: 312-320.
- Ryan, A., Colloff, M. J. and Pittock, J., in review. Flow to nowhere: the disconnect between environmental watering and the conservation of threatened species in the Murray–Darling Basin, Australia.
- Steinfeld, C. M. M., Sharma, A., Mehrotra, R. and Kingsford, R. T., 2020. The human dimension of water availability: Influence of management rules on water supply for irrigated agriculture and the environment, *Journal of Hydrology*, 588: 125009.

- Thoms, M. and Sheldon, F., 2002. An ecosystem approach for determining environmental water allocations in Australian dryland river systems: the role of geomorphology, *Geomorphology*, 47(2-4): 153-168.
- WGCS, 2019. Water Flows in the Murray-Darling Basin: Observed versus expected, Wentworth Group of Concerned Scientists, Sydney.
- Wise, R. M., Fazey, I., Stafford Smith, M., Park, S. E., Eakin, H. C., Archer Van Garderen, E. R. M. and Campbell, B., 2014. Reconceptualising adaptation to climate change as part of pathways of change and response, *Global Environmental Change*, 28: 325-336.