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SUBMISSION TO THE PRODUCTIVITY COMMISSION ON THE NATIONAL WATER REFORM ISSUES PAPER

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Australia has been widely regarded as an international leader in water management in recent decades. Largely as a result of the reforms introduced through the 2004 National Water Initiative, water is now used more efficiently in both urban and rural settings; finances of water agencies have improved; some of the over-allocation of surface and groundwater systems has been addressed; water planning is generally improved and more consistent; a market has been introduced that gives water users much greater choice; institutional structures are now more transparent; and water law is more comprehensive and consistent in most jurisdictions.

However, at a time when Australia should be reaping the benefits of the 2004 National Water Initiative, water reform has lost momentum and, in many jurisdictions, is in decline. The National Water Commission that was established to lead the 2004 reforms, was abolished in 2014 and the Council of Australian Governments Standing Council on Environment and Water, the peak body for coordinated government action on water reform, has also ceased. Oversight by the National Competition Council and leverage with Commonwealth Grants has also ceased, making it more difficult for the Australian Government to call State Governments to account in relation to water management.

A core commitment of the National Water Initiative was to "complete the return of all currently overallocated or overused systems to environmentally-sustainable levels of extraction". In 2017 the Wentworth Group published a review of progress on the Murray-Darling Basin Plan that found that although progress had been made in some areas, water recovery under the Basin Plan had stalled and there was a risk of failure to redress overallocation in the Basin. These findings still hold true. With regard to loss of momentum on water reform, we note that little has changed since the Wentworth Group's statement on the future of Australia's water reform in 2014.

Getting the Basin Plan back on track is central to the completion of the National Water Initiative. There is insufficient evidence that many rivers in the Murray-Darling Basin are at 'environmentally-sustainable levels of extraction', particularly given ongoing degradation of wetlands listed as of international importance under the Ramsar Convention.

Water will always be a scarce and highly variable resource in Australia. Current discussion of the progress on national water reform provides the opportunity to take a long view and prepare this country for future pressures on water resources including droughts and a changing climate.

The remainder of this submission focuses on the future of Australia's water reform particularly in non-urban water management. It sets out the incomplete National Water Initiative reforms from 2004 and emerging priorities requiring new approaches.

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For the NWI to provide Australia with a pathway for managing water in a changing future, it must do the following:

1. Clarify the obligations of the Commonwealth and State governments in protecting river health.
2. Establish the principles for sharing water in a drying climate including the priorities for river health and critical human water needs including indigenous use.
3. Set the standard for adaptive management of water resources so that information is sufficient for making decisions, and best available scientific evidence underpins all decisions related to water management.
4. Ensure that appropriate management options are available to achieve outcomes-based targets.
5. Ensure any policy, action or decision related to the management of water is consistent with NWI objectives.

Below we suggest a number of specific measures which address these points. These suggestions are intended to better conserve freshwater biodiversity conservation, improve the ability of water management institutions to adjust to a changing climate and ensure effective cost-benefit analyses are done with proposed new water resource developments in northern Australia, the Murray-Darling Basin and in other river basins in Australia.

1. The language of the NWI suffers from a view that science can determine "environmentally-sustainable levels of extraction." All water in our environment supports, directly or indirectly, freshwater ecosystems and biodiversity, and diversions for consumptive use inevitably diminish this. The role of science is to inform the community and policy makers of the costs of diversions and extractions to biodiversity and ecosystem functions as well as implications for the people who depend on healthy freshwater resources. In addition science provides information on the risks and benefits of different options for conserving freshwater biodiversity. The NWI should focus on transparency to improve decision making, including systematic monitoring of ecosystem information and management:
    a. Sound inventories of freshwater ecosystems (location, extent, type) and changes in their extent and condition over time;
    b. Identification and prioritisation of biodiversity of importance for representative conservation, threatened and migratory species conservation, and maintenance of fisheries;
    c. Effective risk assessment of freshwater ecosystems;
    d. Identification of thresholds of potential concern and limits of acceptable change
    e. An understanding of the ecosystem response to different water management actions.

    This information should be available for any river basin in Australia where there is the potential for a development or activity to impact on water resources.

2. The NWI should emphasise the obligations of governments to take decisions in water management institutions based on a sound understanding of what components of freshwater ecosystems and biodiversity will and will not be conserved. With changing water availability under a changing climate, a revised NWI should emphasise the need for water management institutions to set out trigger points for new decisions and adaptation pathways to conserve priority freshwater ecosystems and biodiversity. This will require

the development of a comprehensive monitoring program with appropriate indicators that are linked to upstream or other management levers.

3. The failure of our governments since 2012 to complete their interim Australian National Aquatic Ecosystem (ANAE) Classification Framework and apply it to the systematic conservation of biodiversity values needs to be addressed. This should be cognisant of the new International Union for Conservation of Nature (IUCN) typology for the Earth's ecosystems which includes a typology for freshwater and transitional ecosystems dependent on surface and ground water (https://global-ecosystems-dev.web.app/). This IUCN freshwater typology is increasingly being used in environmental accounting and throughout Australia.

4. Planned environmental water (PEW) that was supposed to be protected under the NWI has been poorly defined and lacks legal protection in practice. A blatant example is the NSW Government's current efforts to change rules to allow for increased water take in valleys such as the Lachlan up to the Murray-Darling Basin's Sustainable Diversion Limit, effectively including PEW in the take.

5. Of particular concern is the lack of clarity as to how water will be allocated between consumptive users and ecosystem functions and services in rivers under a changing climate. In our view existing NWI provisions are ambiguous. For while they state water entitlement holders bear any losses, governments have agreed to compensate users in the event of policy changes. Reductions in water availability in southern Australia will inevitably lead to the need for revised policy settings that reduce water allocations for all purposes, which is predicted to affect water for the environment (PEW) about four times as much as other entitlement holders.

6. Notably, the 2010 Guide to the Basin Plan proposed an equal sharing rule to overcome the bias in state water allocation institutions towards consumptive users in dry years. This rule was not included in the Basin Plan as finally adopted. This means that is likely that freshwater ecosystems are disproportionately impacted under a drying climate. The NWI should revisit the water sharing rules to ensure that environmental water is adequate and properly protected during periods of scarcity.

7. As the failure to include direct provisions to adjust water allocations for climate change impacts in the 2012 Murray-Darling Basin Plan demonstrates, uncertainty as to water availability projections will always give decision makers an excuse to take no meaningful action. In our view the NWI should require water entitlements to be adjusted automatically according to formulas that reflect multi-decadal trends in water availability as well as the condition of the environmental assets that require protection (see next point), so as to undertake progressive adaptation in a changing climate. In addition, PEW needs to be protected to ensure delivery of water to users, ecosystem services, urban and rural communities and environments.

8. A system of adjusting water entitlements automatically under a changing climate needs to be tempered by an understanding of the thresholds of change at which particular freshwater ecological values would be lost and ecosystems transform. This would then enable informed societal decisions to be taken to reallocate water to sustain particular

environmental values, or not. Prior adaptation pathway planning would enable water management institutions to consider each threshold in advance of a crisis, congruent with the principles of strategic adaptive management.

9. We also note that in NSW, some annual water entitlements are allocated on a 'debit' system based on water in storage. However, allocations from other rivers (e.g. Macquarie River) are based on projected inflows, a 'credit' system, that allocates water that has not yet fallen in the catchment, and risks failure in a drying climate. This was demonstrated in western NSW in 2018-19 as a number of towns ran out of water in part because of overly optimistic allocations for irrigation. The NWI should require the more conservative 'debit' based water allocation systems in a drying climate.

   Under current policy, communities downstream of a major storages can run out of potable water even despite the storage being full only years earlier (e.g. Burrendong Dam during the recent drought). This is because the water held in storage for critical human water requirements and other basic needs (i.e. the drought reserve) is not clearly or systematically defined across the continent, and water allocation frameworks may prioritise water allocation to entitlement holders over the maintenance of an adequate drought reserve. The NWI should promote a consistent approach to defining the drought reserve and any variations should require justification. Additionally, transparency is needed to ensure that each community along the river system knows how long their upstream storage will sustain them in the absence of inflows.

10. In the Murray-Darling Basin, diversions are assessed against modelled permitted take as part of the compliance framework. The permitted take models contain a degree of error, which means that estimates of permitted take may not be accurate. The validation (ground truthing) of hydrological models has not been made publicly available. In financial accounting, both sides of the ledger are reported and reconciled to verify the accuracy of records. Similarly, water compliance requires reconciling both inflows and outflows to ensure there is no shortfall. This means incorporating actual and modelled river flows as part of the compliance framework. This ensures that the models used for compliance properly simulate allowable diversions in the context of remaining river flows. This additional compliance requirement improves transparency (i.e. shows if the model is appropriately representing reality) and builds trust within the compliance system. It also allows for adjustments to be made to the allowable take if it is determined that the model does not appropriately represent real-world conditions.

11. NWI provisions are focussed on regulated rivers. Conservation of freshwater ecosystems and biodiversity under a changing climate requires a range of different but complementary measures that have different costs, benefits and risks. Remaining unregulated rivers should be protected through the NWI as free-flowing to facilitate autonomous adaptation to a changing climate, whereas on regulated rivers there are opportunities to use infrastructure to conserve some biodiversity *in situ* (e.g. use of multi-level off take towers in dam walls to maintain appropriate water temperatures and mitigate the detrimental effects of cold water pollution). Similarly, conservation of groundwater inflows in gaining river reaches needs to be prioritised to provide freshwater biodiversity refuges in southern Australian rivers.

12. Greater investment is needed in non-volumetric freshwater ecosystem conservation measures that will increase resilience of biodiversity under a changing climate. The NWI should include provisions for such measures including: restoration of indigenous vegetation along riparian corridors, removal of redundant infrastructure, removal of structures which reduce connectivity on floodplains where possible, provision of fish passage, and thermal pollution control devices. Water users should contribute to the costs of these measures through water fees.

13. Water resource plans need to better incorporate specific environmental objectives which improve transparency and accountability. Current environmental objectives are too broad and do not provide adequate accountability for water management. For example, specific obligations for meeting sustainability criteria for Ramsar wetlands could be incorporated.

14. The Wentworth Group considered that key water institutions should be reviewed on a ten yearly cycle so as to create an opportunity for considered reform, as opposed to the historical approach of revising institutions in hydrological crises ('the hydro-illogical cycle').

15. The Environmental Water Holder offices in the Commonwealth and Victorian governments have provided expertise and a degree of independence in environmental water governance. This model should be replicated in all jurisdictions, with environmental water protected legally from reallocation following political pressure.

16. There is an increasing focus on development of water resources in the Murray-Darling Basin (e.g. Wyangala Dam, Mole River Dam, Gin Gin Weir) as well as in northern Australia. Cost-benefit analyses are often superficial and do not adequately account for long-term costs to biodiversity or ecosystem services. Such cost-benefit analyses needs to include understandings from scientific and socio-economic research which has documented these costs in other parts of Australia. The focus should not just be on a particular river without bringing in transferable knowledge from other systems. These cost-benefit analyses need to extend for decades with appropriate discount rates as costs are only fully manifested over long periods of time.

17. We note that the NWI and subsequent government institutions discuss meeting the cultural and economic needs of Indigenous Australians (25 ix), but in practice there has been no discernible improvement in their access to water. A revised NWI needs to take substantial steps to give meaning to the concept of Indigenous access to water. Lessons should be drawn from similar natural resource restitution programs in Australia and overseas, e.g. the Indigenous Land & Sea Corporation in Australia, to design and implement programs to improve access, management and ownership. There also needs to be more meaningful indigenous involvement in decisions about water resources and their development and protection.

18. The Productivity Commission is fulfilling a much needed role as the reviewer of NWI implementation. However, an independent regulatory function similar to that performed by the former National Water Commission, and a strategic knowledge generation function similar to that performed by the former Land and Water Australia, are needed. This needs to be linked to mechanisms for enforcement in terms of State obligations.

We urge the Productivity Commission to recommend actions to revise and complete the reforms envisaged in the 2004 National Water Initiative.

Yours sincerely,

Dr Celine Steinfeld, Acting Director, on behalf of the Wentworth Group of Concerned Scientists