Australian Government Productivity Commission
Canberra

14th September 2020

Dear Commissioners

Re: Response to the Productivity Commission's National Water Reform Issues Paper related to the Inquiry into the progress with the reform of Australia's water resources sector

Water Research Australia (WaterRA) welcomes this opportunity to provide a submission on the Productivity Commission's National Water Reform Issues Paper dated May 2020 (Issues Paper). Please note that WaterRA has previously provided comments on the 2017 National Water Reform draft report (dated 17 November 2017).

About WaterRA

WaterRA is a member-based organisation which since it began 22-year ago as the Cooperative Research Centre (CRC) for Water Quality & Treatment in 1995, has continuously enabled collaborative research, knowledge transfer and capacity building within the water sector.

A unique feature of WaterRA is its enduring and unbroken commitment to both, foundational and applied research using science to resolve issues and create opportunities for the water and related sectors such as agriculture, energy, public health and environment.

Since 2008 WaterRA has been industry funded with over 70 members based across Australia - around half comprising industry organisations such as water utilities, government departments, regulators, and consultants, and half being research organisations, mainly universities. This particular combination of members is an essential part of our value proposition as it facilitates a clear path to impact for the new knowledge we generate. We work closely with the Water Services Association of Australia (WSAA) to understand the urban water industry's research priorities and wherever possible we endeavour to leverage Australian investment in research through our international collaborations. In addition we contribute to capacity building through sponsorship of research students most of whom (around 95%) go on to become highly valued water sector employees.

NWI Reform

WaterRA welcomes the Australian Government's commitment to the Commission's recommendation of renewing the NWI. As a key broker for national water research initiatives across different water (supply) and related sectors, WaterRA's comments will focus on how we think research can support one of the key goals as articulated in the issues paper: *The Commonwealth has played a role in funding the acceleration of reform, providing leadership and coordination, and management of some transboundary resources where agreed by relevant jurisdictions.*

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We recognize and agree with the statements in the issues paper that reform of the water sector has been an ongoing process over several decades, in recognition of its fundamental importance to the Australian economy. During this period the water sector has experienced significant challenges of managing a shared natural resource, which has not only comprised periods of scarcity due to climate change and climate emergencies, but also the recent COVID-19 pandemic which acted as an additional stressor to the continued water management imperative.

The value of sustained research efforts through appropriate funding and enduring, trusted institutions

We suggest that further reform of the NWI should be supported and underpinned by independent, nimble and well funded research, that can provide additional decision support to allow for sound responses to either sudden system shocks (such as climate emergencies or pandemics) or more gradual changes over time that warrant more systematic addressing.

More than ever, recent climate and health emergencies have emphasised the need for a high degree of collaboration between governments, research organisations and the community, to develop solutions in a timely manner. WaterRA has been involved in some of these efforts and can confirm that success was born from longstanding trusted relationships and foundation research conducted over previous decades, which provided the springboard for conducting research in a shorter time frame. As a result and consistent with our comment in 2017, we re-iterate that the value of research and its implementation can be maximised through the establishment of a national approach to water research that fosters long-lived, or 'enduring' collaborative ventures between research providers and water sector adopters, be they government departments, utilities, or regulators.

Enduring research collaboration vehicles as well as strong and respectful industry/government agency/ researcher relationships engenders community trust and also increases the likelihood of long-term complex problems being addressed (e.g. climate change). To achieve enduring collaborative partnerships requires sustained investment. With research funding having gradually diminished over the past decades (e.g. R&D funding for the water sector shrunk from about $100-130 million in 2013 to $40-50 million in 2015[1]), the maintenance and enhancement of the water sector's research capability and capacity to continue to contribute to Australia's sustainable management of its water resources is paramount. A clear requirement of the NWI for research in this space would alleviate the need for justifying investment in research to price regulators on an individual basis, especially in situations where benefits are long-term or intangible.

It is suggested that renewal of incentives for stimulating research investment is considered, ranging from appropriate tax incentives (if applicable) to leveraging.

The balance between the creation of foundation knowledge and commercialisation

We suggest that NWI reform should appropriately balance the creation of foundation knowledge (linked to enduring institutions and addressing long term challenges in the water sector) and commercialisable research that can stimulate Australia's economy in the short term (often built upon earlier foundation research).

1 http://www.awa.asn.au/AWA_MBRR/Publications/Latest_News/What_s_behind_the_alarming_drop_in_water_research_investment.aspx

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Over the past decades, research funding dispersed by State and Federal Governments has been increasingly tied to the requirement to commercialise outputs. The commercialisation of a product resulting from research efforts is currently seen as a key indicator of impact or project success.

The current COVID-19 pandemic in particular has highlighted that this approach, if used in isolation, may not be effective in addressing key issues we face as a society. For example, foundation or baseline research into issues such as emerging chemicals or pathogens can become an essential piece of the knowledge puzzle. Only through the foundation knowledge in the field of virus analysis created by the CRC for Water Quality & Treatment /WaterRA over the past 20 years and WaterRA's unique membership profile of water utilities, health regulators and universities, has WaterRA been able to successfully create a timely research platform to accelerate and adapt this knowledge for the novel coronavirus. Through WaterRA's national ColoSSoS Project (Collaboration on Sewage Surveillance of SARS-CoV-2) collaborating water utilities, health departments, universities and laboratories have been able to undertake 'real-time' research that leverages existing knowledge, thereby accelerating the development of robust and reliable methods for sewage sampling, testing and integration of results with clinical and other data, which can be used by governments to inform their pandemic response.

International collaboration is also of utmost advantage to resolve global issues (such as climate change or pandemics). Whilst the Commission recommends the inclusion of international experience, more guidance and incentives would be additional useful tools to enable more effective efforts in this area.

Emerging issues in entitlements and planning (e.g. managing extreme events and long-term climate change)

The need for research (scientific, technical, social, environmental and economic) in the field of emerging contaminants, climate change impacts on source water, and public health aspects of water management will continue over an extended period of time, and will require sustained funding to generate the knowledge base necessary to guarantee adequate decision making power.

We note that the Commission recognises that changes to water availability due to climate change is an area where there are significant knowledge and capability gaps. The combination of research in this topical area and tailored, integrated capacity building can assist in the long term, sustainable management of water resources. Research can greatly enhance the understanding of how seasonal or long term changes in climate or shorter, climate emergency events such as bushfires or drought, can for example impact the reliability of allocations, or how socio-economic adaptation can be best achieved.

WaterRA acknowledges the Commission's assessment that "climate change is expected to lead to changes in water availability and reliability, and an increase in the frequency, severity and duration of droughts across much of Australia. Extreme rainfall events are also expected to become more intense. Under the NWI, all entitlement holders (consumptive and environmental) will be impacted by a less reliable water supply. Changes in rainfall variability undermine certainty for all users and impact on their ability to make efficient water use decisions." NWI's module relating to climate change is also recognised as providing useful information on regional climate projections and tools that can assist. Again, research can assist in underpinning when and how the balance between environmental and consumptive use should be reset (PC 2017, p. 91).

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With a likely higher frequency of climate emergency events in the future, water security wil increasingly be linked to the greater challenge of treating water of impaired water quality. Unknown effects of the recent devastating, bushfires on water quality are starting to emerge. This does not only include a general impairment of water quality for the environment and potable water customers, but also refers to long term trends that indicate a further worsening or shift in quality in different ways.

Drought, bushfires or floods mean that alternative water sources will need to be explored further in the future. In addition, the source water portfolio will likely be expanded for more communities (desalination, recycled water). This, on the other hand, means that greater integration of water quality is needed as part of the water allocation frameworks. Water quality expectations in regional and remote communities and/or for agricultural or manufacturing enterprises may challenge a service provider's ability to deliver to the expected standards in the future.

Need for investment in capacity building

WaterRA proposes that the NWI framework for reform should incorporate the principle of integrating foundation / applied research with an inbuilt capacity building process, to enable the future workforce to address water resource management issues with a sound knowledge framework.

The Commission has, again, in its issue paper, identified the need to address gaps and limitations in existing policy settings and respond to new challenges posed by population growth, climate change and evolving customer expectations. We continue to emphasise the importance of investment in capacity building, as this will create the foundation of a well-informed future work force in charge of water resources management. Enduring institutions (for example) can incorporate such capacity building in their operations. Knowledge retention and maintenance will be critical benefits of such investment.

One of WaterRA's keystone project is the assessment of the "Value of Research". Through interviews with researchers, water utilities and health departments it became evident that research is primarily 'valued' if collaboration and capacity building form an integral part of the research effort. This only confirms that applied research goes hand in hand with the end user's needs.

Water for economic use

WaterRA welcomes the Commission's approach to consider how jurisdictions have improved Indigenous involvement in water planning, the achievement of cultural outcomes, and progress made towards providing water for economic purposes (NWI acknowledges that it hasn't addressed the need to provide water for the economic development of Indigenous communities.)[2]

In recognition of the role water plays for the economic and overall well being of indigenous populations, WaterRA is a strong supporter of research and collaboration with indigenous groups with the aim to resolve water access or technological (e.g., water treatment) issues. We encourage the NWI to embrace the positive challenge to co-create a suitable framework with the indigenous leadership.

[2] Explanation in the issues paper: Some definitions of cultural water include economic uses of water.

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In summary,

WaterRA supports the Productivity Commission's continued efforts to maximise the NWI reform. Our suggestion focuses on the need for integrating independent, yet collaborative research leadership into the water reform process so that the goals of the NWI can be addressed in a globally and nationally changing 'environment'.

WaterRA is one of the water sector's key national research brokers offering a platform of collaboration between research organisations, government and health departments. Applied and foundation research will remain a paramount contributor of knowledge to underpin strategic decisions in the management of water resources.

We re-iterate our recommendations to consider the following inclusions into the NWI reform:

- The need for national and state based policy and regulatory frameworks supportive of integrated urban and rural and remote water management, providing key guidance and incentives to consider 'all supply options on the table', including centralised /decentralised, potable reuse and stormwater in the mix of supply augmentation options.
- A strong focus on independent, collaborative research, underpinning decision-making mechanisms/ incentives for ensuring emerging challenges can be addressed through a mixture of solid foundation knowledge and nimble applied research:
    - The provision of efficient and reliable funding of research that addresses emerging challenges and opportunities, fills knowledge gaps, generates the evidence base that ensures rigour of new policies and regulatory frameworks, and supports the sustained focus and effort necessary to solve complex issues facing the water sector
    - mechanisms/incentives for development and retention of capability and capacity within the sector to ensure necessary research can be delivered in a timely manner, and impact can be realised from research investment.
- The recognition that water security in the broader sense has now evolved into the combination of water yield and water quality aspects that need the similarly combined focus in research to achieve the desired outcomes for all water users and consumers.

We thank you for this opportunity to provide our views on the issues paper.

Yours faithfully

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