4 September 2020

Australian Government

Productivity Commission

To Whom it May Concern

RE: National Water Reform (2020) Inquiry – Issues Paper Submission

I refer to the request of 26 May 2020 calling for consultation with the water industry on the National Water Reform - Productivity Commission - Issues Paper.

Hunter H2O is a specialist water industry consulting firm that supports water suppliers throughout Australia. We believe that by working together we create solutions that improve lives and support sustainable and healthy communities.

As such, we are pleased to submit our attached Submission on the Issues Paper for consideration by the Productivity Commission to help inform the National Water Reform (2020) Inquiry.

Please do not hesitate to contact me should you require any additional information to support this important work.

Kind regards

Michael Carter

Senior Engineer

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About our contributors

Paul Thompson

RPEQ, CPEng, FIEAust

Executive Director

Paul manages one of the leading consulting groups of water/wastewater process engineers in the Australian water industry, providing process consulting services throughout Australia, New Zealand and the South Pacific.

Paul's team includes 32 Process Engineers based in offices in Newcastle, Brisbane and Adelaide. As a Principal Chemical Engineer with over 20 years' experience, he is highly skilled in water and wastewater treatment process design and operations.

David Perry

RPEQ, CPEng

Principal Engineer

Dr David Perry is an expert Project Manager with over 15 years' experience in the water industry in Australia and the UK. Responsible for the delivery of water and wastewater projects for municipal water authorities and regional councils across Australia. Previous roles have included Process Engineer, Lead Design Engineer, Planning Engineer, Project Manager and Expert Witness. Contributed to all phases of project delivery including strategic planning, pilot plant investigations, compliance negotiations, design, project delivery, process proving and optimisation. David holds a PhD in Chemical Engineering based on his research and development into oxygen transfer and sludge digestion. A leader in coordinating project delivery groups, he is a highly motivated, engaged Project Manager, with a sound understanding of water industry requirements.

Clara Laydon

Senior Process Engineer

Clara has been an integral part of the water industry for over 15 years through pioneering awareness about Naegleria Fowleri across Australia and further abroad. Clara has gained an extensive set of experience through being involved in a wide range of projects; including water, wastewater and reuse.

Clara is a national certified auditor regarding Drinking Water Safety Quality Management. As part of Clara's experience she has reviewed and created drinking water monitoring programs for a number of water authorities throughout Australia. This includes understanding the different water quality challenges associated with each supply system and creating monitoring programs which address the individual nature of each system. This also includes collaborating with testing laboratories and working with operational teams to provide training in the new programs, sampling techniques.

Clara has travelled extensively and has provided assistance throughout Australia and overseas. This has included on-going external contracts to provide technical support and expertise in the operation of a water quality optimisation and water treatment plants.

Michael Carter

RPEQ, CEng

Senior Process Engineer

Michael is a chartered chemical engineer with over 10 years of water industry experience who thrives on challenging the status quo. As a highly motivated and performance driven process engineer, Michael has a proven track record of providing customised solutions for clients.

Michael originated from a small regional NSW community and commenced his water career working with larger water utilities. In recent years Michael has discovered a vast disparity between water supplied in metro and regional areas. Michael has since developed a passion for working together in partnership with regional councils to improve treatment plant performance and water safety for the benefit of local communities by providing technical advice and operational support.

Michael has developed a wide range of operational and troubleshooting skills through extensive pilot plant and desktop jar testing, executing more than five pilot plant studies and over 27 jar testing and desktop level investigations, involving clarification, filtration, dissolved air floatation, organics removal, manganese oxidation, chlorine demand, disinfection by-product formation (and formation potential) and soluble metals removal. Michael established, commissioned and operated the Dungog WTP DAF Filtration pilot plant for over 12 months in NSW and the Huia WTP DAF Ozone/BAC pilot plant for over five months in New Zealand.

Michael has also gained extensive experience having successfully completed options assessments, feasibility investigations, concept and detailed designs for a variety of projects for clients across Australia and New Zealand. For these project he applied his knowledge and experience in developing and undertaking mass and solids balances, process unit sizing, general site arrangements, process design, P&ID development and drafting, plant control philosophy's and functional descriptions, HACCP and HAZOP studies, risk based cost estimating, technical specifications, tender documents, construction technical support and commissioning.

About Hunter H2O

Hunter H2O is a specialist water and wastewater services company. We operate throughout Australia supporting water authorities, local government and industries as well as servicing major clients in New Zealand, Papua New Guinea and Fiji and undertaking regular assignments throughout the Asia Pacific region and North America.

Our people work alongside regional and metropolitan water authorities, government departments, private sector companies and international water and wastewater agencies on all components of the water industry.

Hunter H2O Holdings Pty Ltd (Hunter H2O) was formed by 25 managers and senior staff who worked for Hunter Water Australia (HWA) and successfully purchased the consulting and operations enterprise of the business on 31 December 2014.

Unique in Australia, Hunter H2O draws on decades of frontline experience in management, process and operations, engineering planning, design and delivery, SCADA, telemetry and electrical engineering and maintenance to deliver highly practical, proven solutions to any water challenge. Our broad operational background is backed by our highly experienced specialist consultants.

When you talk to Hunter H2O we connect you with the people most experienced and skilled to meet your individual project needs. Our clients benefit from our in-depth knowledge and long term thinking that only comes with an active, integral role in supporting the water industry.

To:	Australian Government Productivity Commission	From:	Michael Carter, Paul Thompson, David Perry and Clara Laydon of Hunter H2O
		Date:	4/09/2020

Subject: Hunter H2O Submission to the Productivity Commission's National Water Reform (2020) inquiry

1 Introduction

Hunter H2O's vision is to work together with our clients to realise our purpose:

Together we create the right water solutions to improve lives and support sustainable and health communities.

Hunter H2O works in partnership with many regional Australian water suppliers and with a rich operational heritage gained through operation of Hunter Water's 18 water and wastewater treatment plants for over 18 years, we have a unique practical perspective to offer councils. Hunter H2O loves working in partnership to upskill operators and council engineers, and improving systems to realise the the most out of existing or new infrastructure.

With a strong focus on improving lives and supporting sustainable and health communities, one key focus for Hunter H2O is creating the right water solutions to improve water safety and the reliability of its supply.

2 Information Request Reponses

There have been a number of submissions to this inquiry and to previous inquiries which focus on the broader range of issues at hand, however many do not focus solely on drinking water safety which is of paramount importance to the health of a community. This submission therefore focuses more directly on drinking water safety. Hunter H2O have thus only provided responses to those information requests that refer to drinking water safety and its supply with particular reference to the divide we have observed between regional and metropolitan supplies... ..

2.1 Request 9

INFORMATION REQUEST 9

How can small regional providers best balance affordability with longer term service quality? Are there barriers to effective local planning?

Is there scope for greater collaboration between small providers? When might government support be warranted, and how should it be provided?

There are many barriers to effective local planning and delivery of reliable and safe water supplies to regional communities. Broadly speaking, there is a vast inequality between the reliability and safety of drinking water in regional communities compared to Australian cities. This is not due to a lack of regional communities' commitment to delivery of safe and secure water, however mainly appears to be attributed to the fact that drinking water catchments can vary significantly and do not discriminate by the socioeconomic status of their users. Essentially regional local water utilities (LWUs) need to address the same or more complex water safety risks compared to those challenges

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experienced by metropolitan water utilities albeit with far fewer resources and funding. Currently in the NSW context the existing system in place appears to be driven primarily by cost where 'fit for purpose' solutions are encouraged for LWUs to adopt which are limited by that which the community can afford or be funded by periodic infrastructure programs. Due to the small populations of some service areas which are challenged by the same water quality challenges, these 'fit for purpose' solutions are often not achieving the required outcomes sought by the Australian Drinking Water Guidelines in terms of implementing a multi barrier approach to water safety. This is resulting in a vast disparity between the reliability, robustness and ultimately the water safety between regional and metropolitan areas. This is clearly apparent within the NSW context with over ~80 boil water notices which have been issued in regional NSW since 2013, while none have been issued in metropolitan areas. There is a need to work more closely with regional LWUs due to the reality of the situation and need, such as: Internationally there are numerous examples of public health incidents due to water supplies with Havelock North New Zealand being the most recent which resulted in ~4 deaths, over ~80 hospitalisations and resulted in a proposed reform of the whole water industry with >$5 billion of investment identified as being needed to address drinking water safety issues.

The NSW government has invested in the Aboriginal Communities Water and Sewerage Program (ACWSP) which aims to improve water supply and sewerage services in eligible Aboriginal communities in NSW. *"The program began in December 2008 and is a joint initiative of the NSW Government and the NSW Aboriginal Land Council (NSWALC). Together, the government and the NSWALC are investing more than $200 million over a 25 year period to provide funding for the maintenance, operation and repair of water supply and sewerage systems in 62 eligible Aboriginal communities."* https://www.industry.nsw.gov.au/water/plans-programs/infrastructure-programs/aboriginal-communities

This type of holistic support is also needed for regional communities to help LWU focus on planning, maintenance, operation and setting communities up with the systems and skills to enable a sustainable delivery of a safe water supply into the future. Simply providing funding for infrastructure alone will not reduce the key risks, a corresponding investment in people and systems is required. Working in partnership with LWUs throughout the whole project to provide robust and resilient water supply systems, whilst upskilling people, investing in smart systems and providing ongoing operational support until the LWU is self-sufficient and sustainable is needed. Continuous rounds of infrastructure funding which do not focus on improvements to systems or training and skills development of people, will never be able to rectify or achieve the goals that they set out to achieve. In addition, quite often non-infrastructure solutions are best to rectify an identified issue. A more holistic approach is therefore required to support and optimise existing assets, new infrastructure and the people and systems that are required to maintain and operate those assets. There is an identified need however the solutions may vary region to region as a one size fits all approach is not always best. Possible solutions could be as per the above or maybe in the form of Community Service Obligation (CSO) funding or potentially local government owned water utilities which have been successful in QLD. There are various models available however funding is required to identify the best model for each region or solution to these issues rather than continually funding infrastructure which does not leave a community in a sustainable position to provide a resilient, robust and safe potable water supply to the community.

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2.2 Request 10

INFORMATION REQUEST 10

Do water service providers supply high quality water services in regional and remote areas? Are there examples of poor water quality, service interruptions, or other issues? Have regional water service providers adequately planned for extreme events?

Are there sources of data that could be used to benchmark smaller providers' water service levels (with fewer than 10 000 connections)?

Within the NSW context the NSW Performance Monitoring and Benchmarking reporting, undertaken by the NSW Government Department of Planning Industry and Environment, provides a great resource for assessing LWU performance. However, in consultation with LWUs, who are often resource constrained, the results are frequently estimated and therefore data accuracy may be questionable. Considering that most LWUs are resource constrained, reporting detailed performance information is a time intensive process especially for LWUs without systems in place to assist with the data preparation. A key metric within the performance monitoring is the compliance with the ADWG which would make one think that high levels of compliance are occurring across the board and there are no major issues with water quality across the state. However, given there has been over ~80 boiled water notices issued for regional LWUs across NSW since 2013 with just over ~20 of these occurring in a four month period during summer 2019/2020, combined with numerous news articles reporting residents disgust with some water quality standards in some communities, the metrics being used may not be providing a realistic representation of what the real situation is or the risks that exist. Upon a closer look, adherence with the ADWG noted in the performance monitoring for turbidity for example is aligned with the aesthetic limit of 5 NTU whilst the ADWG clearly state that:

- *A turbidity of less than 1 NTU is desirable at the time of disinfection with chlorine unless a higher value can be validated in a specific context.*
- *Where filtration alone is used as the water treatment process to address identified risks from Cryptosporidium and Giardia, it is essential that filtration is optimised and consequently the target for the turbidity of water leaving individual filters should be less than 0.2 NTU, and should not exceed 0.5 NTU at any time.*

It is noted that a large portion of catchments in regional Australia present a risk of chlorine resistant pathogens and therefore adherence to the ADWG guidance should be a focus. However, there is currently no reporting mechanism to assess the compliance within these guidelines. In addition, a continual focus on 'lowest cost solutions' has resulted in a lack of online water quality monitoring across many water treatment plants (WTPs) in regional NSW, which means that verification of water quality occurs only once daily via a manual grab sample. This effectively means that the water treatment plant operational staff are 'running blind' with no or limited ability to automatically shutdown the treatment plant on a water quality exceedance event. As water quality issues become more of an issue and water quality guidelines become increasingly more stringent, coupled with a rapidly varying climate it may only be a matter of time before a significant water quality incident, like Havelock North, occurs in Australia. At the time of writing even a metropolitan Victorian supplier (Yarra Valley Water) was experiencing water quality issues due to extreme storm activity and a failure of backup systems.

The risk of a Havelock North event occurring in parts of Australia is present, however the metrics being used to assess robustness and performance are not always aligned with findings from 'boots

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on the ground' assessments. More support is clearly needed to support struggling regional communities to supply safe and reliable water which is a complex task for any supplier (even metropolitan suppliers). Water treatment and supply is not equivalent to road services or any other service that local councils are responsible for. Where parks and gardens, road and bridges and waste services are similar across regional council boundaries and regions, water supply is inherently a site specific endeavour due to the varied water sources used and the complexity of treatment requirements to make the water safe to drink. In addition, the risk is applied to the whole community, whereas a dangerous road may only impact those who use it and the user has the ability to course-correct and reduce their risk. When water supply is concerned the risk is most often invisible and the supply of safe water is taken for granted, therefore the potential consequence vast outweighs any other service regional councils provide to the community. It is therefore vital that adequate systems are in place and dedicated appropriately trained resources are used to ensure water safety for a community. Regional communities often struggle to attract and retain appropriate resources with the skills necessary to tackle the ever changing and complex nature of water treatment challenges. Indeed, when large metropolitan water utilities struggle to maintain a safe supply of water, it begs the questions of how a much smaller regional council could be expected to provide the same level of service without external support.

In terms of planning, NSW regional LWUs are encouraged and supported to implement Integrated Water Cycle Management (IWCM) plans, which with guidance and encouragement have been a requirement of best practice management since 2004. However, to date there are only a handful of approved IWCMs across the state of over ~90 LWUs. The principals of an IWCM and long term planning are no doubt a very important part of delivery and maintaining a sustainable delivered water supply system. However, the extensive requirements sought by the IWCM process are far too strenuous for resource constrained regional LWUs to complete, hence the slow progress being made in their completion. Rather local water utilities are more concerned with the more urgent backlog of works and operational challenges on a day to day basis which renders the task of such detailed future planning activities near impossible to the level of detail currently being requested. Further support is clearly warranted.

2.3 Request 13

INFORMATION REQUEST 13

Are there any areas for future reform of the NWI that have not been raised in this issues paper that should be investigated for inclusion?

Drinking water safety for all communities across Australia is of paramount importance and therefore drinking water safety should be first and foremost front and centre of any future water reform, not a sideline issue to water security for agriculture and industry. The NWI should be looking to instil the United Nations Sustainable Development Goals (SDG) and in in particular SDG6 – safe and reliable access to water for all.

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