WATER SERVICES
ASSOCIATION OF AUSTRALIA

WSAA submission to Productivity Commission Inquiry into National Water Reform

September 2020

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Key messages and recommendations

Key messages

The urban water industry

- The urban water industry provides essential water and wastewater services to over 24 million people in Australia's cities and towns. The industry is highly trusted by the community and has a strong track record of providing high quality services to ensure Australians have liveable and productive places to live.
- Over the past 5 years we have made significant progress in transitioning to a customer centric sector from an engineering and asset focus.
- Notwithstanding the success of the industry, there are important areas where the removal of roadblocks at a national level would support the industry as it seeks to deliver better outcomes for customers.

Planning Australia's water security

- The urban water industry needs to continue moving towards a diversified portfolio of water supply options to meet water security needs and the challenges of changing customer expectations, population growth and climate change.
- There is no nationally agreed framework for defining and measuring water security and some jurisdictions still do not encourage conversations where all options for water supply are on the table.
- Each Australian city and community should consider all options for water supply within their local context and there should be no implicit policy bans. For example, despite being used in 35 cities around the world including Perth, purified recycled water for drinking is not always presented to the community.

Shaping cities to create liveable communities

- Investment in blue and green infrastructure is critical to supporting physical and mental health by making communities cooler, healthier and productive places to live, work and play. COVID-19 has underlined the importance of recreation and localism.
- Existing policy and regulatory frameworks need to evolve to accommodate the broader role that water plays in liveable and productive urban communities.
- The Productivity Commission has identified many of the institutional gaps and failures that are limiting integrated urban water cycle management and WSAA agrees:
  - there is a lack of clear objectives for water-related aspects of enhanced urban amenity
  - roles and responsibilities for providing enhanced amenity are unclear
  - statutory land planning and urban water planning are not well linked
  - stormwater management is not integrated into urban water planning.
- Integrating stormwater into the urban water cycle is fundamental to good water security and liveability outcomes, yet success on this front is characterised by ad hoc collaboration rather than a systematic approach.
- Given the widely disparate institutional arrangements, poor funding and lack of pricing principles, more urgency is now required to bring stormwater into the urban water portfolio.

Financial resilience and affordability

- Financial resilience across the urban water sector is fundamental to meeting industry challenges while maintaining the affordability of services.
  - Investment by the industry is rising and at the same time financial metrics are weakening.

- Governance and institutional accountability are critical to financial resilience and it would be beneficial to customers for jurisdictions to recommit to the principles of corporatisation.
- Where utilities are subject to economic regulation it should meet best practice principles to ensure the long-term interests of customers but WSAA recognises that one size does not fit all.

National action can assist

- While many of the clauses of the National Water Initiative (NWI) have been met it has not been an effective vehicle for addressing current and future challenges for urban water and has not been the driving force for the advancement and success of the industry.
- A new NWI is required to remove roadblocks to improve outcomes for customers and communities.
- To address what all parties agree are the challenges in urban water, a national approach is necessary to:
- provide collective agreement and focus on key priorities
- depoliticise sensitive issues when all jurisdictions agree to pursue action collectively
- create a long-term focus to overcome short term barriers
- create accountability and transparency for agreed outcomes
- provide a catalyst for reform that would not occur in individual jurisdictions.

A new national approach should include:

- a new NWI covering the areas we have identified
- a new reform incentives framework
- a new national reporting regime
- an agency or mechanism to oversee commitments
- acknowledgement of the importance of water management in Australia with explicit recognition in the new National Cabinet.

Recommendations

A new National Water Initiative

Recommendation 1

All states and territories commit to a new National Water Initiative (NWI) to assist the urban water sector to deliver water security and healthy, liveable communities for its customers, in the face of challenges including population growth and climate change.

a. That a Stakeholder Reference Committee or similar comprising water utilities and other key stakeholders across urban and rural water be established to lead the development of the new NWI.
b. That the Sustainable Development Goals be considered in the intended outcomes of the new NWI.

Planning Australia's water security

Recommendation 2

That the new NWI include the development of a National Water Security Framework for defining and measuring water security to be implemented and reported on nationally.

Recommendation 3

That the new NWI includes a commitment to achieve the optimal mix of water supply options across Australia.

a. It is necessary for utilities and policy makers to discuss all available options with their customers and communities, including options where there are implicit policy bans such as purified recycled water for drinking and dams.

Shaping cities to create liveable communities

Recommendation 4

That the Australian Government, together with State, Territory and local governments, in committing to productive and liveable cities through City Deals, includes urban water security and liveability as principal outcomes.

a. To achieve this urban water utilities should be included as a partner in the City Deals framework.

Recommendation 5

That the new NWI recognise the important contribution water makes to the health and wellbeing and productivity of Australia's cities and towns.

a. That the new NWI adopt principles for governance and water planning that reflect the importance of water to liveabilty and the role of urban water in contributing to liveability outcomes.
b. That the new NWI should adopt principles for integrated urban water management.
c. Each jurisdiction should commit to water planning for cities, including incorporating water into land use planning policies.

Recommendation 6

That stormwater be fully incorporated into the new NWI, reflecting that little progress that has been made in managing this important and valuable area. Consideration should be given to the development of single waterway managers with responsibilities to include stormwater in the water security and liveability outcomes being sought.

Recommendation 7

That Governments should commit to allocate funding, resources and accountability to liveability outcomes in the same way as other social infrastructure such as health and education.

Financial resilience and affordability

Recommendation 8

That the new NWI recognise a financially resilient water sector is critical to achieving other elements in the NWI including delivering water security and liveabiilty outcomes for customers and communities.

Recommendation 9

To this end jurisdictions should recommit to the corporatisation model as the preferred way to deliver long term outcomes for customers. Key elements of the corporatisation model are:

a. Governments, as shareholders, should establish long term commercial targets that enable urban water utilities to continue to invest on behalf of the community.
b. Flexible mechanisms to protect the long-term interests of customers including managing affordability, encouraging community engagement and providing incentives for efficiency.
c. Where this is implemented through formal economic regulation, there should be minimum standards that protect the long-term interests of customers.

Delivery in regional and remote areas & recognising Indigenous water values

Recommendation 10

That the new NWI includes a commitment to achieve affordable levels of services for water and wastewater in regional and remote communities. Key elements are:

a. Sustainable annual funding to maintain service levels is necessary in regional and remote areas rather than ad hoc capital grants.
b. When investing in regional and remote infrastructure projects, governments should apply regional scale planning combined with building capacity and ensure outcomes are linked to the funding.
c. That the new NWI should include a framework for reporting on progress toward goals to provide safe and reliable drinking water to remote Indigenous communities. The Closing the Gap Report (2020) identified the need to develop goals for urban water services for Indigenous communities in the next 12 months.

Recommendation 11

That the new NWI include a commitment for state, territory, local governments and Indigenous communities to clarify roles and responsibilities for the delivery of water and wastewater services to remote and Indigenous communities.

a. When investing in remote infrastructure projects, responsible agencies should apply transparent prioritisation principles.

Recommendation 12

That the new NWI includes a commitment to the cultural values of water and inclusion of Indigenous Australians in decision-making about water.

a. That the Productivity Commission should consult with Indigenous communities to determine the form of this commitment.

Commitment to research and innovation

Recommendation 13

That a Research and Innovation Strategy be developed to achieve the outcomes specific for urban water in the new NWI. The Strategy should give consideration to:

a. roles and responsibility of governments, government agencies including the Bureau of Meteorology, research institutions, utilities, technology providers and other stakeholders
b. ongoing review of priorities and investment guidance
c. implementation and commercialisation of Australia's water planning and management (including but not limited to technical delivery of services, customer and community engagement, water resource planning through climate change).

Recommendation 14

That relevant Research, Development and Innovation stakeholders (including but not limited to: Australian and State governments, water utilities, research institutions, science and technology providers and customer and community representatives) be engaged through a new NWI to determine a sustainable, consistent and transparent funding target to enable the urban water industry to achieve water security and liveability outcomes through leading science and data analytics. Given the benefits of world class water services accrue economy wide, it is expected that the Australian Government would provide significant and ongoing research and innovation funding.

a. Given the room for growth to implement and commercialise Australia's expertise in the end to end service provision of water management and services, the Australian Government should commit to an Annual Innovation Fund as part of its overall investment.

A national approach

Recommendation 15 - Incentives framework, financial and non-financial

That the new NWI recognise that the Australian Government is the beneficiary of water enabled productive and liveable communities while states are responsible for delivery.

a. Consistent with past reform efforts, the Australian Government should provide incentives, financial and otherwise as a catalyst to deliver agreed milestones.

Recommendation 16 - National reporting

That all jurisdictions should commit to redeveloping a future focused national urban water dataset recognising the emphasis of the objectives in the new NWI including customer, liveability and water security outcomes.

Recommendation 17 - Mechanism to oversee commitments, an incentives framework and reporting

That the Australian Government, together with State Governments establish a new independent agency or mechanism to oversee both urban and rural water reform.

a. The new independent agency or mechanism would assist with the effective implementation of the new NWI including overseeing national reporting and any incentives framework and developing and implementing a National Water Security Framework.

1. Introduction

WSAA is pleased to present a submission to the Productivity Commission's Inquiry into National Water Reform. In preparing this submission WSAA has consulted broadly with its membership through a number of 'have your say' webinars with utility staff, Managing Directors/CEOs and Chairs.

The Australian urban water industry is well regarded across the world. It has made significant gains in efficiency and customer focus. However, there are roadblocks preventing the industry delivering the best outcomes for customers and there is a role for a national approach to assist in removing these roadblocks.

Structure of this submission

Chapter 2 outlines the role of the urban water industry, including the contribution it makes to the Australian economy, communities and public health.

Chapter 3 outlines the role national action can play in achieving better outcomes for customers. Specifically, the challenges being faced by the industry, the status of the National Water Initiative for urban water and how national action can help. It also addresses Information Request 2 from the PC Issues Paper.

Chapters 4 to 10 outline key areas that need to be addressed in a new NWI (Information Request 3). These chapters cover areas where progress can be made at a national level as the industry focusses on continual improvement.

Chapter 4 - Water security planning and Chapter 5 - Shaping cities to create liveable communities are the two main areas that will benefit from a national approach. These two chapters also cover Information Request 11 relating to Integrated Water Management.

A commitment to financial resilience is fundamental to meeting future challenges while maintaining affordability of services (Chapter 6). Chapter 6 also addresses independent economic regulation and Information Request 8.

Chapters 7 and 8 outline challenges and opportunities in the delivery in regional and remote areas and Indigenous water values and covers Information Request 7 from the Issues Paper.

Chapter 9 covers research, development and innovation (RDI) and how a coordinated long-term framework for increased RDI investment is critical for capability and capacity in the urban water industry.

Chapter 10 outlines our position on implementing a new national approach and the different elements needed to address industry challenges and ensure the removal of roadblocks to deliver better outcomes for customers.

2. The urban water industry

The urban water industry provides essential water and wastewater services to over 24 million people in Australia's cities and towns. It not only covers major cities but it also covers smaller regional cities and towns. The industry has a strong track record of providing high quality services to support productive and liveable communities and has made significant progress in transitioning to a customer centric industry from an engineering and asset focus.

Australia's urban water sector delivers services to over 24 million Australians, across some 220 urban water utility businesses, owned by state and local governments, which directly employ around 30,000 Australians.

The urban water industry is highly trusted by the community to provide resilient water, wastewater and stormwater systems to cater for growing populations while protecting public health and the environment - even when faced with extreme climatic events like the recent severe drought. In addition, the industry has a strong reputation for contributing to the liveability of Australians by making our communities cooler, healthier and more attractive places to live, work and play.

Much has been achieved in urban water reform over the last three decades to drive efficiency of the sector, improve customer outcomes, and enhance the ability of water utilities to meet challenges such as the Millennium Drought.

In recent years the broader role that water plays in communities and how it contributes to the economy is being recognised. In its Australian Infrastructure Audit 2019, Infrastructure Australia stated:

> "Water supports almost every part of our lives, from the functional – clean, reliable drinking water and safe wastewater services – to the social – providing green spaces and clean waterways – and the environmental – sustaining natural life, enhancing biodiversity, and supporting natural habitats of flora and fauna."

The water industry invests around $5 billion annually in capital expenditure to provide for resilient water, wastewater and stormwater systems to cater for growing populations while protecting public health and the environment. For every job created in the water industry, an additional four jobs are created in the wider economy.

Figure 1: Urban water's contribution

The industry is committed to continuing its vital investments to the maximum extent possible to support jobs and the economy during the COVID-19 pandemic and in the recovery phase. In addition, we consider investing in resilience in regional Australia and in liveability outcomes across metropolitan and regional communities will deliver lasting benefits to community and environment while maximising the short-term economic recovery.

During COVID-19, the industry has continued to provide high quality drinking water and effective collection, treatment and disposal of wastewater. While the industry plays an important part in the provision of essential services it also makes an important contribution to the economic recovery from the COVID-19 pandemic. During the recovery phase water utilities will naturally re-prioritise their capital expenditure to assist with recovery, including bringing forward ‘shovel ready’ infrastructure projects, modernisation and digital transformation, and community focused investments.

This capital expenditure is critical to maintain the baseline business as usual investment during the COVID-19 pandemic recovery, further investment by government in additional water industry projects can provide effective stimulus resulting in economic impact as well as broader positive societal benefits. Beyond funding, all governments have a role in removing barriers and impediments to investment.

3. Removing national roadblocks will improve outcomes for customers

The urban water industry performs well and continues to provide clean, reliable and affordable water and wastewater services that are fundamental to life, health outcomes and the economy. Notwithstanding the success of the industry, there are areas where the removal of roadblocks at a national level would support the industry as it seeks to deliver better outcomes for customers.

Urban water is constitutionally a state responsibility. However, like health, education and transport there are an increasing number of issues that should be dealt with collaboratively at the national level. Indeed, the absence of a national approach has limited progress in a number of areas and these limitations will become more costly without coordinated national action. A new National Water Initiative would accelerate progress towards outcomes that add customers value.

3.1 Industry challenges

The industry is facing a number of challenges. These were recently outlined by the Productivity Commission in its research paper: *Integrated Urban Water Management — Why a good idea seems hard to implement* and include:

- population growth;
- climate change; and
- the need for well-functioning and liveable cities.

The Paper also outlines the implications these challenges will have on the provision of urban water services as:

- an increase in demand for water services;
- less reliable water sources due to declining rainfall; and
- management of storm events.

WSAA agrees with this assessment of the key challenges facing the industry.

Others have also identified challenges for the industry including in Infrastructure Australia's Australian Infrastructure Audit 2019:

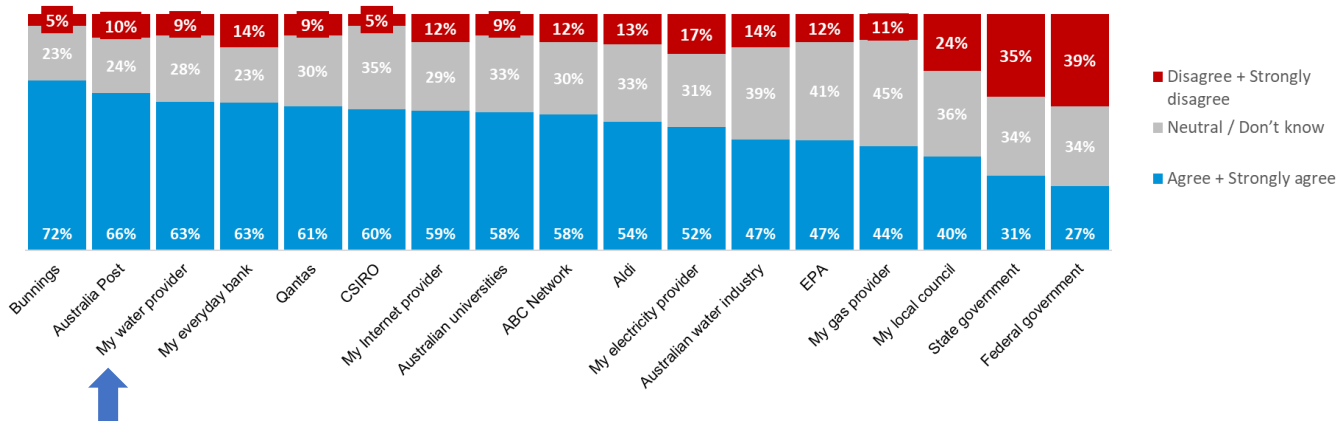
> "the sector faces unprecedented risks and challenges. Climate change, population growth, ageing assets, and competing interests will ramp up pressure for limited resources. Advances in technology, markets and planning can help to overcome these challenges, but many will require changes in laws and regulations to unlock benefits."

Customer expectations

The expectations of water customers continue to change and grow, reflecting broader community shifts. Customers expect more than just clean, safe and reliable water and wastewater services. The advent of improved service standards across a range of service sectors means that water utility customers expect proactive, real-time notification of service interruptions and the ability to pay their bills easily and in the way they choose.

Notwithstanding changing customer expectations, we know that water utilities in Australia are now one of the most trusted entities with two out of three (63%) respondents in a June 2019 survey saying they trust their water utility. The same survey showed that trust in water providers is high when compared to other institutions and brands, with only Bunnings and Australia Post higher.

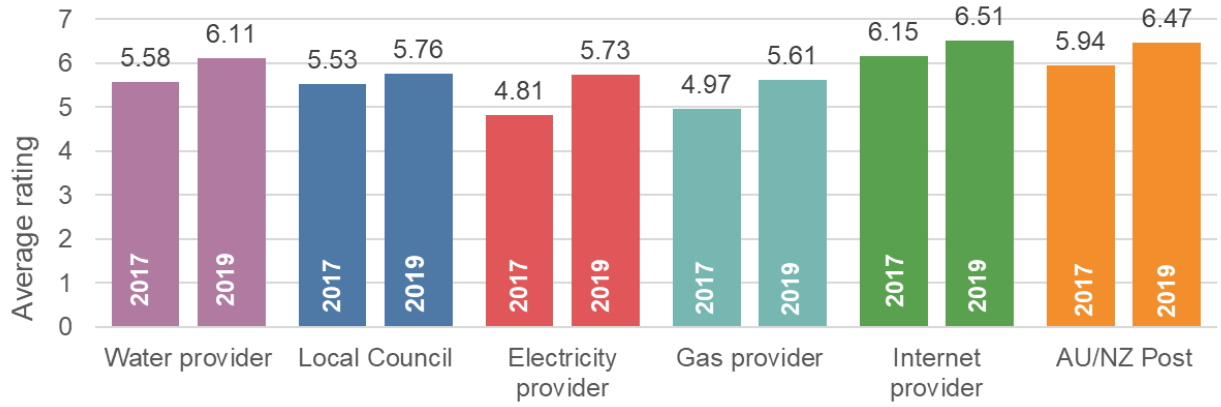
Figure 2: Trust in Organisations, Quantum Market Research June 2019 (n=2,500 collected between 23 Apr and 2 May 2019)



To what extent to you agree or disagree with the following statement: I trust..

The urban water industry also continues to improve in value for money ratings. Figure 3 below compares surveys from 2017 and 2019 showing an improvement for water providers and an overall ranking of three, ahead of local councils and electricity and gas providers.

Figure 3: Value for Money, Insync September 2019 (n= 9,422 collected Aug 2019)



Taking into account all services delivered, please rate your level of agreement with the following statements (0=Strongly disagree, 10=Strongly agree): My water provider delivers value for money

A major development in expectations has been that customers and the community now have greater expectations to be involved in decisions on infrastructure, long-term water security options and capital projects that impact their local area. Customers have always had a voice and wanted to share their views, but in recent years the industry has significantly increased the maturity of its approach to incorporating their input through systematic, deliberate and structured mechanisms.

These changing expectations also extend beyond the individual customer to the environment and liveability, including access to green space and cool urban areas and preserving and improving waterway health and biodiversity. These expectations may also include requests for increased levels of wastewater treatment, lower tolerance for odour at wastewater treatment plants and a desire for involvement in feedback mechanisms as part of regulatory review processes.

The recent COVID-19 pandemic has increased expectations around the role of essential services in providing support for customers that find themselves in vulnerable circumstances, extending to impacted businesses and those customers that have never needed this type of support in the past.

Infrastructure Australia, in their 2019 Audit state that there remains 'significant scope for improving engagement across most utilities, many of which do not routinely and meaningfully embed users' interests and view in their decision making.' As stated in the Audit, governance arrangements for urban water services do not always prioritise users' long-term interests. This makes it difficult to truly apply/reflect the outputs from customer engagement in investment decisions

Climate change

Infrastructure Australia in its Australian Infrastructure Audit 2019 notes that "of all the forms of infrastructure, the potential risks and costs of climate change are greatest in the water sector".

Australia's weather and climate continues to change in response to a warming global climate. Australia is projected to experience increases in sea and air temperatures, with more hot days and fewer cool extremes. This will be combined with decreases in rainfall across southern Australia with more time in drought, but an increase in intense heavy rainfall throughout Australia.

As the PC notes, the climatic projections indicate that most of Australia will be warmer and in particularly south eastern and south western Australia with Sydney projected to experience a 0.7℃ increase in average maximum temperatures over the period from 2020 to 2040, and by up to 1.9℃ over the period from 2060 to 2080.

The warming climate has also seen an increase in the frequency of extreme heat events and increased the severity of drought conditions. Extreme weather events such as intense rainfall, heat waves, lightening strikes and resulting floods and fires can impact infrastructure (roads, assets) and interrupt essential services such as power and telecommunications.

Other risks to water industry assets include increased rates of corrosion that can shorten asset life, inundation from floods or storm surges, and impacts from fires.

Populations are growing, and changing

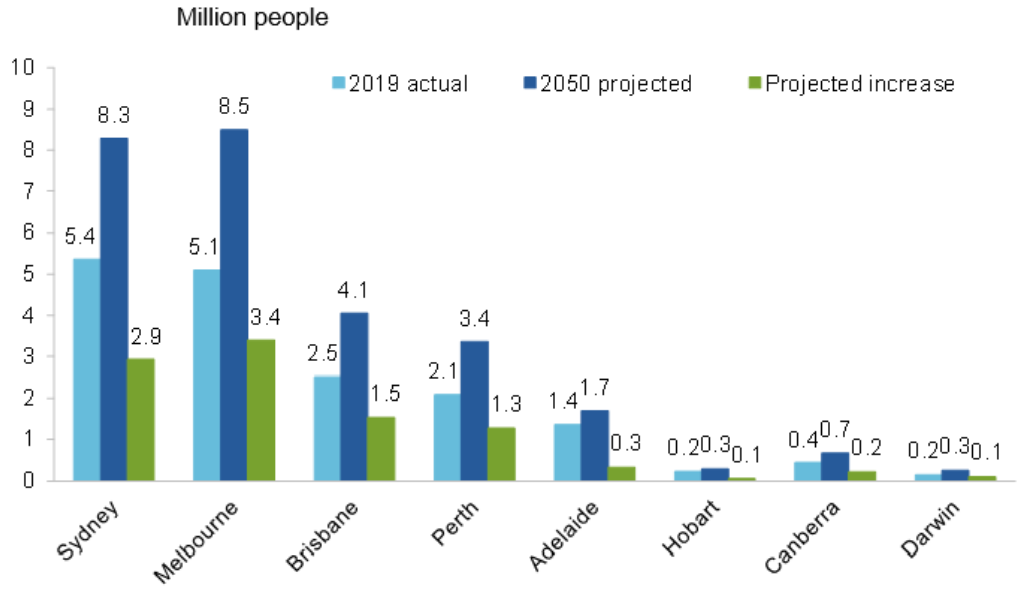
The projected increase in Australia's population is well known with our population growth among the highest of any industrialised country – 1.8 per cent per annum, compared to the global average of just over 1.5 per cent.

Australia's population is projected to reach 30 million people between 2029 and 2033, according to the Australian Bureau of Statistics (ABS) (November 2018). As yet the impacts of COVID-19 on population growth are largely unknown, however it is expected that growth will gradually resume.

As noted by the PC, Australia is a highly urbanised country with over 17 million people currently living in the five largest cities — Sydney, Melbourne, Brisbane, Perth and Adelaide (65 per cent of the total population) (See figure 4 below). It is projected that these five cities will need to accommodate around 10 million additional residents by 2050, growing at an average annual rate of 1.5 per cent per year, well ahead of the 0.7 per cent for the rest of Australia.

Growth allows us to create new innovative communities that are water efficient and great places to live. Growth also requires planners and utilities to work together to maintain affordability to ensure liveable, sustainable and productive cities. Growth impacts for the water sector include obvious needs like greater water supply, but it also means more hard surfaces, increased wastewater discharges to manage within environmental protection constraints, large and costly new treatment infrastructure, and considerations of stormwater and flood management as the urban footprint expands. The cost of providing these services can be relatively more expensive as cities expand into greenfield areas. There is also increasing appetite for water services to be developed more holistically, to provide liveability outcomes as well as just basic water and wastewater connections. This requires investment, but also greater integration of water planning with other land use planning.

Figure 4: Our capital cities are expected to grow strongly[3], extract from Integrated Urban Water Management - Why a good idea seems hard to implement



[a] Greater Capital City Statistical Areas.

Sources: ABS (2018, 2019).

3.2 Status of the National Water Initiative

As noted in the PC Issues Paper, its December 2017 inquiry into water reform found that the NWI was not adequate to meet emerging challenges posed by population growth, climate change and changing community expectations, and recommended that it be renewed.

WSAA agrees, and while good progress has been made in implementing elements of the NWI, it is not an effective vehicle for addressing current and future challenges for urban water. It does not specify an agreed set of contemporary outcomes for the urban water industry or a framework for achieving them. In that context, this submission is not intended as a review of progress against the NWI. Rather, reflecting the opportunity set out by the Treasurer, it is a proposal for a new, forward-looking agenda for urban water in Australia.

The urban water industry has made many improvements in recent decades and water businesses have continued to evolve as the industry successfully delivers safe and effective water and wastewater services. While well intentioned, the NWI has not been the driving force for the advancement and success of the industry and the industry will continue to evolve regardless of whether the NWI is renewed. However, a new NWI and a national approach could remove roadblocks to improve outcomes for customers and communities. It could also assist in delivering higher level outcomes like boosting Australia's economic growth through a healthy, liveable population, and water secure urban communities supported by efficient services, that are strongly valued and trusted by the community.

Our observation is that Governments no longer refer to or feel bound by the NWI and there is decreasing awareness of the NWI's existence as a policy instrument and is viewed as disproportionately weighted towards rural water issues.

The urban water sector is many times larger than the rural water sector (30 times larger). This indicates its impact on productivity, the economy and the lives of people. Yet the current NWI is dominated by rural water issues and in national water policy urban water is the poor cousin of rural

water. While there are links between the two sectors it is time for a new National Water Initiative that specifically addresses urban water. We believe a new NWI is required to better address challenges faced by the urban water industry and to assist the urban water industry to deliver better outcomes for customers.

3.3 How would national action address the problems

Governments pursue national action collaboratively to address major national problems. The advantage of national action is that it can:

- provide collective agreement and focus on key priorities
- depoliticise sensitive issues when all jurisdictions agree to pursue action collectively
- create a long-term focus to overcome short term barriers
- create accountability and transparency for agreed outcomes
- provide incentives as a catalyst for reform that would not occur in individual jurisdictions.

Recommendation 1 - A new National Water Initiative

All states and territories commit to a new National Water Initiative (NWI) to assist the urban water sector to deliver water security and healthy, liveable communities for its customers, in the face of challenges including population growth and climate change.

a. That a Stakeholder Reference Committee or similar comprising water utilities and other key stakeholders across urban and rural water be established to lead the development of the new NWI.
b. That the Sustainable Development Goals be considered in the intended outcomes of the new NWI.

To address what all parties agree are the challenges in urban water, a national approach is more necessary than ever across a range of areas including water security, to improve the liveability and amenity of communities, to manage affordability and financial resilience and to remove roadblocks to ensure better outcomes for customers. While many point to challenges with a national energy policy, the issues revolve more around the difficulty of reaching agreement, rather than questioning the need for national policy.

In relation to national action we believe two areas are the most critical:

- planning Australia's water security; and
- shaping cities to create liveable communities.

These areas are outlined in Chapters 4 and 5.

4. Planning Australia's water security

4.1 A National Water Security Framework

The current drought has exposed gaps in water security planning. There is no national framework for water security, that is balancing the future supply of water for all end uses with future demand. For example, for water quality, the Australian Drinking Water Guidelines (ADWG) is an effective national framework for water quality, yet there is no equivalent for water security.

In its February 2020 Infrastructure Priority List, Infrastructure Australia identified town and city water security as a High Priority Initiative stating 'Long-term urban water planning will need to be supported by stronger institutional arrangements".

A national approach is also necessary to allow utilities and policy makers to consider all options when planning for water security. And yet we seem to fail to learn the lessons of drought – ten years after the Millennium drought in NSW and Qld, the current drought caught us unawares again and has been acknowledged to have been the worst drought in the instrumental record of more than 120 years. According to the NSW Water Directorate, in January 2020, more than 50 town water supply schemes in regional NSW were at high risk of failure. Many smaller supplies had failed and required water delivery by tanker truck, a costly and inefficient 'crisis' solution.

In Queensland, South East Queensland's major storage Wivenhoe Dam is currently less than 50%, the lowest since the 2011 floods, and many inland areas still have not recovered from these dry conditions, with warmer and drier conditions and a new summer fast approaching. From a liveability perspective, these climatic conditions also led to challenges in Melbourne, which had its driest year on record in 2019, and the water security impacts of this have only been balanced by water orders from the Victorian Desalination Plant (VDP), and the arrival of rains in Victoria in the first half of 2020.

While these rains the first half of 2020 have eased the critical situation faced in Sydney and other major and regional urban areas across several states and territories, these events have exposed gaps in our collective understanding of what water security means for the nation. In particular, the bushfires that occurred in many of our drinking water catchments, including in Sydney, have put into sharp focus a water security challenge that has been building for some time – that is, much of Australia's urban water supply is dependent upon surface water, including dams and other rainfall dependent options.

The water industry also does not have a consistent definition for a key element of water security in water restrictions. While the large range of climates in Australia necessarily lend themselves to different levels of water security and restrictions, there are no principles at a national level to determine how these decisions may be made with the customer and the community's best interests at heart. This has resulted in states going in different directions, not all of which have been consistent with the NWI, and in some jurisdictions this has led to inefficiencies and inconsistencies in planning approaches, including towards investments that may not represent the best community value option. Avoiding costly and lumpy investments requires getting water security planning right.

A National Water Security Framework would:

- Convey the legitimacy of all water supply options, enabling the industry to confidently consider and investigate them, and evaluate them against standard criteria. It would assist water managers and governments, in the face of any challenges, to refer to a national framework as a justification for looking at any particular option.
- Help to moderate the influence of short-term political influences, by creating an enduring policy mandate to consider all water supply options. Not elevating or deciding on options above others, rather endorsing a conversation on all options.

Case study: Inconsistent application of water security standards within and between jurisdictions

Good water security planning should be underpinned by principles that set clear and consistent regulatory goalposts for water utilities, to ensure customers are receiving the level of water security they have indicated support for through engagement on a pricing submission.

Currently, different asset investments and customer pricing results from the different levels of water security applied both between jurisdictions, and internally for different users of water such as urban, agriculture and industrial.

In South East Queensland (SEQ), the level of water security is determined to be 1 in 2000 (ie. SEQ would run out of water once in every 2000 years), whereas Townsville is 1 in 500, and Gladstone 1 in 20.

Recommendation 2 - Planning Australia's water security

That the new NWI include the development of a National Water Security Framework for defining and measuring water security to be implemented and reported on nationally.

4.2 All options on the table

The Australian urban water industry needs to continue moving towards a diversified portfolio of water supply options to meet the water security needs for Australia's rapidly growing cities and regional centres in the face of climate change and drought.

Australia's climate continues to get hotter and drier - heat increases demand for water and the drying climate reduces the water we have available. Most of Australia's urban water supply is dependent on surface water including dams and other rainfall dependent options. In total across Australia 82 per cent of urban water is sourced from surface water.

While dams remain an option in some areas, we can no longer rely on dams alone to deliver water security in major metropolitan areas because:

- there are very few suitable sites
- future yields are uncertain due to climate change
- waterway health is increasingly in focus
- community expectations are changing.

In response, we need to optimise the use and investment in a diverse portfolio of water supply sources. Optimising the use of multiple rainfall dependent and independent sources increases our ability to balance resilience, security, cost and other network constraints, while also meeting the diverse and evolving expectations of our customers and communities. Balancing supply and demand efficiently require us to consider a diverse range of water supply sources.

At present, in most Australian states not all options for water supply are on the table for planning decisions. This could inhibit effective selection of the lowest long-term cost and most resilient resourcing options. While most of our major cities have turned to desalination plants as a reliable and climate resilient source of water, it is not always the lowest cost or most efficient water supply option.

Options which are constrained, and in some cases may be subject to implicit policy bans, include purified recycled water for drinking, dams, stormwater harvesting and rural-urban trade of water. In Australia the primary limitations are not technical, but rather around public perception and political will. In practice it makes sense to have a portfolio of options available, which includes both supply and demand side opportunities, to ensure water resilience for cities and regions. In the case of purified recycled water for drinking, experience globally and in Western Australia, has shown that any potential community concerns can be addressed through effective education and engagement.

Irrespective of the source of water, Australian water utilities provide their communities with high quality water that meets the requirements of the Australian Drinking Water Guidelines.

Each Australian city and community should consider all options on the table within their local context. By understanding all of the options available, we can be more resilient to respond to change and implement water supply options to provide water security to Australian cities and regions.

The views of customers and communities are vital to shaping water supply decisions. We support water utilities and governments engaging openly and transparently to understand customer and community values and expectations, and to enable customers and community to be informed and make choices. Each option displays a different set of characteristics which can make it valuable to achieve water security and other community outcomes.

The Productivity Commission noted in 2020 that removing inefficient policy bans and mandates related to recycled water and stormwater would enable urban water utilities to consider opportunities that respond to local circumstances and achieve better or lower cost outcomes.

The Infrastructure Australia 2019 Audit found:

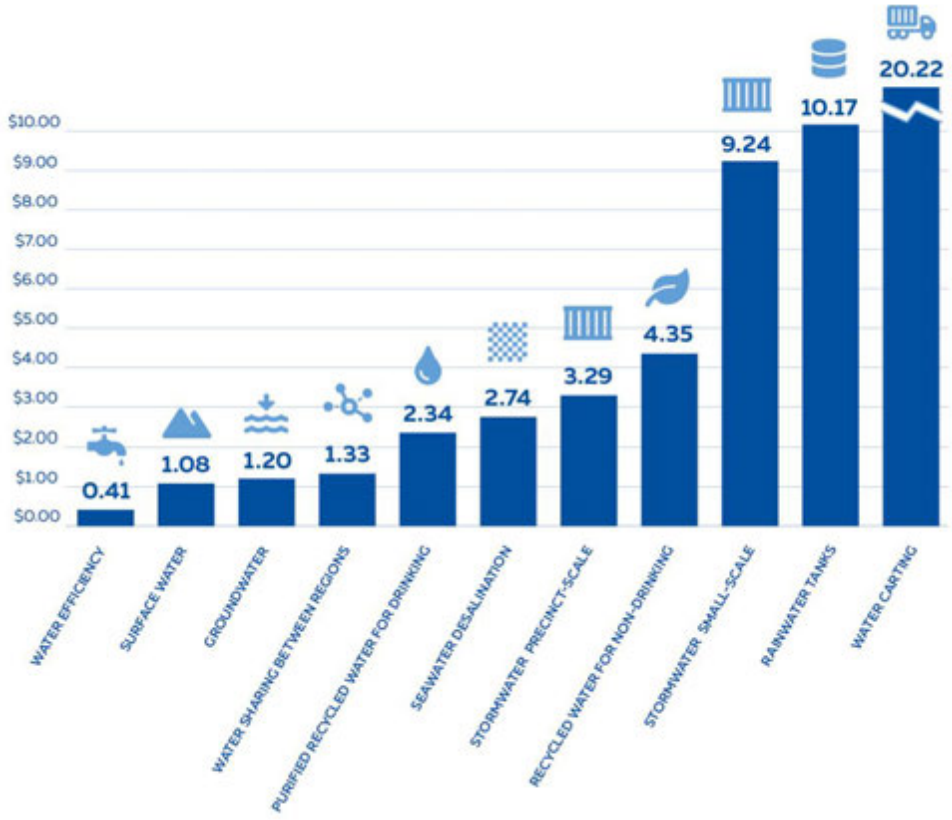
> "Ensuring all options are on the table, and can be deployed when required, is likely to be essential for governments and operators to effectively and efficiently ensure secure supply over the long term."

Our recently released report *All options on the table: urban water supply options for Australia* examines the broad role each option can play in the water supply mix including the indicative costs of each option, noting that most options are more expensive than the dams built many years ago and paid for by previous generations. Our analysis found:

- the cost of water from purified recycled water for drinking is comparable to water from seawater desalination
- the cost of recycled water for non-drinking is relatively high, because while this option includes lower cost projects that use recycled water for agriculture and industrial processes, it also includes higher cost projects including where pipework is duplicated to provide recycled water to households
- decision-makers should also consider wider considerations including environmental and social impacts or benefits, avoided or delayed infrastructure costs, and broader liveability benefits, as these are not included in our cost estimates.

See Figure 5 for more details on the costs of each water supply option.

Figure 5: Costs of water supply options in WSAA study (Levelised $/kL 2019-20)



Purified recycled water for drinking

As a nation we have not always been able to effectively discuss the role that purified recycled water for drinking can play in water security. Despite being used in 35 cities across the world including Perth, and broad industry consensus here that it should be considered, a number of jurisdictions have discouraged conversations on the option of purified recycled water for drinking. This could inhibit effective selection of the lowest long-term cost and most resilient resourcing options.

As the driest inhabited continent on earth, we need to be open to diverse water supply options. Within the water industry, there is broad consensus that this option should be considered as it is equally capable of delivering reliable water outcomes as other supply options. WSAA's view is that all available options need to be considered in all jurisdictions, and evaluated against the same criteria.

The 2004 National Water Initiative included Urban Water Planning Principles, which specified that all options need to be considered, including recycling and desalination. These principles were agreed through the Coalition of Australian Governments process. This shows that at a conceptual level, governments as well as the industry, recognise the need to consider all options as sound policy.

However, a lack of accountability around the NWI principles, along with the closure of the National Water Commission, saw the influence of these principles decline. It is our observation that there is often no reference to these principles in water planning by the industry.

For water managers or elected representatives looking to consider purified recycled water, there can be several challenges. These include:

- Governments have sometimes discouraged consideration of this water supply option. There may be no official policy impediments, however there may have be directives to avoid talking about this option, particularly during sensitive time periods.
- Discussion of this water supply option can stimulate media coverage, even at the early planning stage (examples include in Tenterfield NSW in 2020, and Toowoomba during the Millennium Drought).
- There is low awareness, including in the water industry, of how widely this water supply option is practised around the world, including technological advances over recent years, and available knowledge on how to take the community on a journey to understand the process.

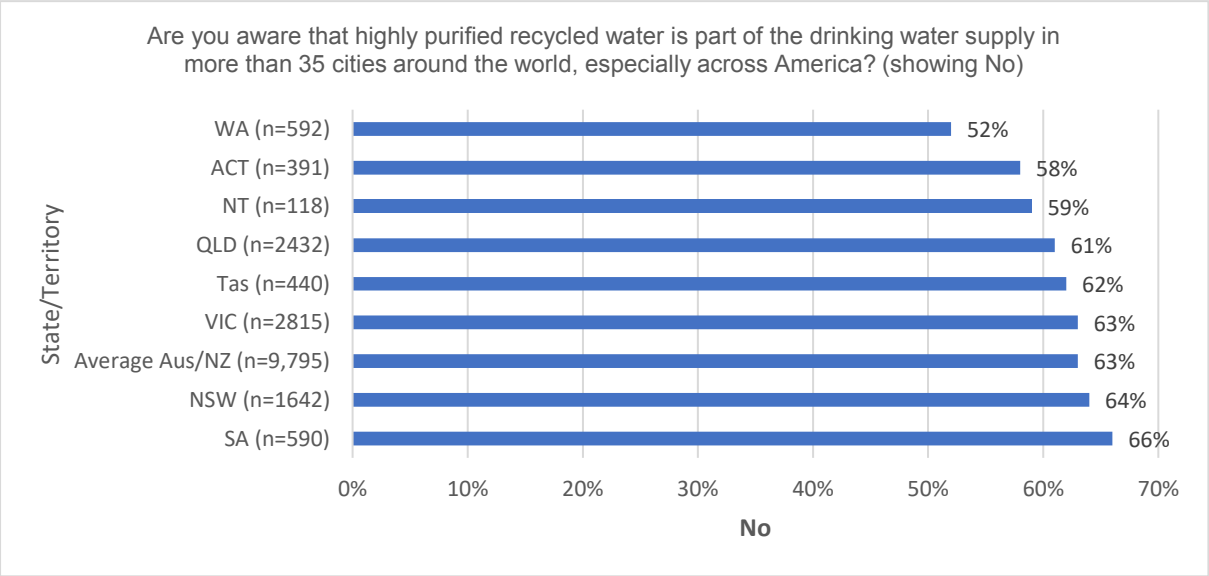
During discussion of purified recycled water, the example of Toowoomba is often raised. However, the case study of Water Corporation's Groundwater Commissioning Scheme in Perth showed that a thorough and transparent consideration of all options can lead to government and community support for purified recycled water options. Water Corporation's deliberate and open 'Water Forever' planning process, including a demonstration project and community engagement, successfully gained bi-partisan government support and community acceptance. There was not significant community resistance, in fact support remained fairly steady over several years leading up to construction of the scheme. Water Corporation is now building Stage 2 of their scheme.

A new NWI stipulating that urban water planning needs to consider all options would reflect that it is a legitimate and natural part of water supply planning, and help mitigate the challenges. Such a requirement does not pre-empt an outcome or assume that any particular water supply option is right for any location. It would simply help to enable the water industry to confidently perform its role of evaluating all available options, and assessing them against standard criteria. This in turn gives communities confidence that they can receive the most cost-effective and resilient options to ensure water security.

A national approach is necessary to depoliticise this issue, allow a bi-partisan and consistent principles-based approach across Australia. This should start with raising awareness of the range of water supply options in use around the world.

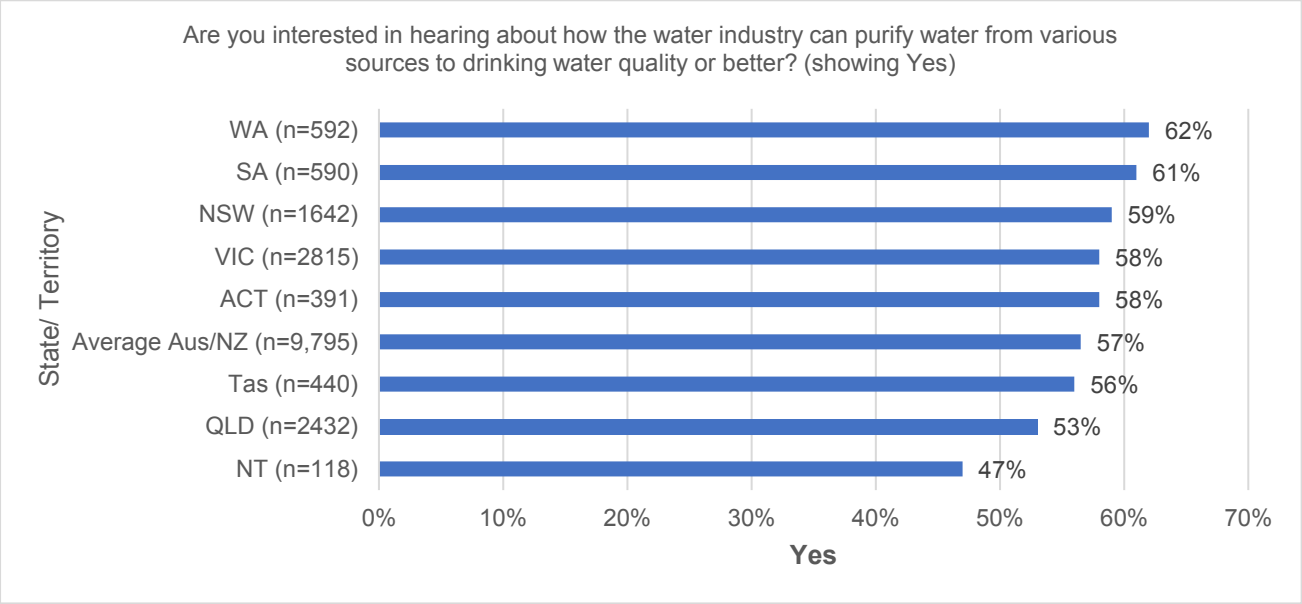
In a survey of 10,000 Australians, WSAA found that on average 63% of Australians were not aware that highly purified recycled water was used as part of the drinking water supply in 35 cities around the world, especially America:

Figure 6: Awareness of purified recycled water for drinking use, Insync September 2019 (n= 9,422 collected Aug 2019)



Importantly, 57% of those surveyed were interested in hearing more about how the water industry can purify water from a range of sources to drinking water standard. This highlights that the majority of the community is interested in receiving information about these matters:

Figure 7: Interest in hearing more about purifying water for drinking, Insync September 2019 (n= 9,422 collected Aug 2019)



WSAA researched the extent of purified recycled water for drinking worldwide and found that it has been in use for decades, and is increasingly common, particularly in America. It has a long and proud history in Orange County California, the scheme on which Western Corridor in Queensland was based. A famous example is that visitors to Disneyland in Anaheim, who have drunk local water supplies supplied by Orange County Water District, have drunk recycled water.

Some US schemes involved use of purified recycled water for groundwater replenishment, which is then used for drinking water. Others involve surface water from rivers and dams. The story of San Diego provides an interesting reference as it shows that community opposition, if it arises, can be overcome.

Case study: San Diego experience

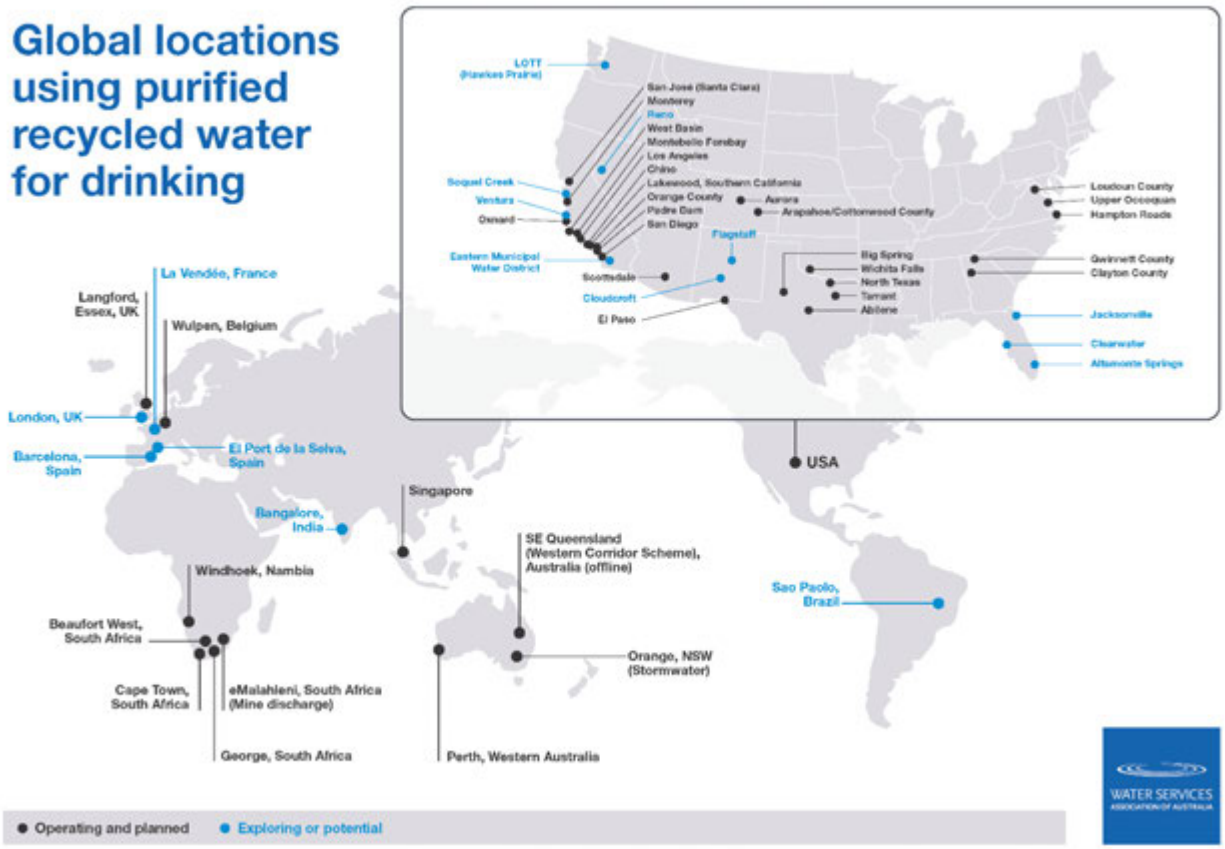
In the 1990s the city of San Diego had a purified recycled water scheme fully planned, but it was rejected with community backlash, due to local politics and use of the phrase 'toilet to tap'.

However, the challenges in ensuring a secure water supply continued to exist, and it was considered again. After 10 years of careful, patient education, partnering with San Diego Coastkeeper and Surfrider Foundation on a recycled water study, then building a demonstration project, San Diego turned the previous opposition around.

Community support went from 26% in 2004 to 73% in 2012. They are now building a full-scale scheme that will supply one third of their drinking water by 2035.

In our 2019 report: *All options on the table – Lessons from the Journeys of Others*, WSAA has mapped the use of purified recycled water for drinking around the world (see figure 8), to highlight to policy-makers that it is well proven, is used to meet a range of climate and other challenges, and expanding rapidly. Purified recycled water is widely regarded in the water industry as the 'next frontier', yet governments and policy-makers have for some years placed implicit or explicit policy bans on its consideration, even during processes that purported to explore a full range of options.

Figure 8: Global locations using purified recycled water for drinking



In the All options paper we also identified ten lessons that utilities can use to plan their community and stakeholder engagement.

Figure 9: Ten lessons from the journeys of others, extract from All options on the table: lessons from the journeys of others.

Lessons from the journeys of others

LESSON 1

It can be done

Communities around the world have implemented purified recycled water schemes for decades. It could be successfully implemented in Australia, if circumstances warrant.

The three 'T's:
- Trust
- Transparency
- Time

LESSON 2

Trust is critical for securing support for purified recycled water

Transparency and open information sharing will help to develop and maintain this trust.

LESSON 3

Establishing purified recycled water is complex and takes time

It takes time – up to a decade. People need to be taken on a journey to be comfortable with it. Rushing or imposing deadlines increases the risk of rejection or backlash.

LESSON 4

Seeing is believing

Investing in a demonstration plant, visitor centre and tour program for 'place based learning' will greatly improve community understanding and support. It can showcase and prove the reliability of the technology, and pre-empt stigma reactions through calm, engaging learning environments.

The experience should be carefully crafted with sequenced messaging to build overall awareness and understanding, and may include sampling the water.

LESSON 5

Wording and imagery are critical

This will be somewhat specific for each community, so local research is important. Choose words and branding that resonate and do not alienate. Technical jargon confuses people and doesn't build trust.

LESSON 6

News media coverage has a profound impact on public acceptance

It can make or break a scheme. Proactively engaging key influencers and the media, leveraging social media, and using expert testimony and third party advocacy can help build trust and transparency.

'Water should be judged by its quality and not its history.'

Lucas van Vuuren, South Africa

LESSON 7

Political support is essential

Political cycles can polarise an issue, and force people to take a side. Good engagement across the full political spectrum, to gain and keep support, is critical.

LESSON 8

Grass roots education and engagement

Can be more effective than high profile marketing activity or 'above the line' presence.

LESSON 9

General education around the urban water cycle and context

Will help prevent stigma and encourage acceptance. Provide information on the range of long-term supply options, climate trends and cost.

LESSON 10

Regulators play a powerful role

They will lead government and community perception, and have the authority to determine whether purified recycled water can proceed. It is their role to take a conservative approach to risk management, so it may take a long time for them to become comfortable and produce a regulatory framework. Good regulatory engagement, and high transparency, are essential.

Recommendation 3 - Planning Australia's water security

That the new NWI includes a commitment to achieve the optimal mix of water supply options across Australia.

a. It is necessary for utilities and policy makers to discuss all available options with their customers and communities, including options where there are implicit policy bans such as dams and purified recycled water for drinking.

5. Shaping cities to create liveable communities

Institutional gaps and failures are limiting investment in blue and green infrastructure. This investment is critical to supporting physical and mental health by making our communities cooler, healthier and more attractive and productive places to live, work and play. COVID-19 has underlined the importance of recreation and localism.

We have lost opportunities to incorporate water into the urban environment effectively to create amenity for people in growth areas and regional communities. There are opportunistic successes, but every jurisdiction has examples of developments with no green space for recreation, little access to water and low levels of amenity.

For the Australian Government, City Deals can provide cut through to secure the future prosperity and liveability of cities and regions but they have been sporadic rather than systematic and urban water security and liveability are currently not included as principal outcomes.

Our recent report *Blue + green = liveability: the value of water to liveable communities* provides evidence of the urban water industry's contribution to green and blue infrastructure – with health benefits of up to $94/person/day. With a hotter and drier climate and development increasingly moving inland away from the temperate coastal strip, better planning for liveable cities and regions is not a nice to have, but a must have.

The Productivity Commission's paper *Urban Water Cycle Management: why a good idea is hard to implement* identified the key obstacles and impediments including:

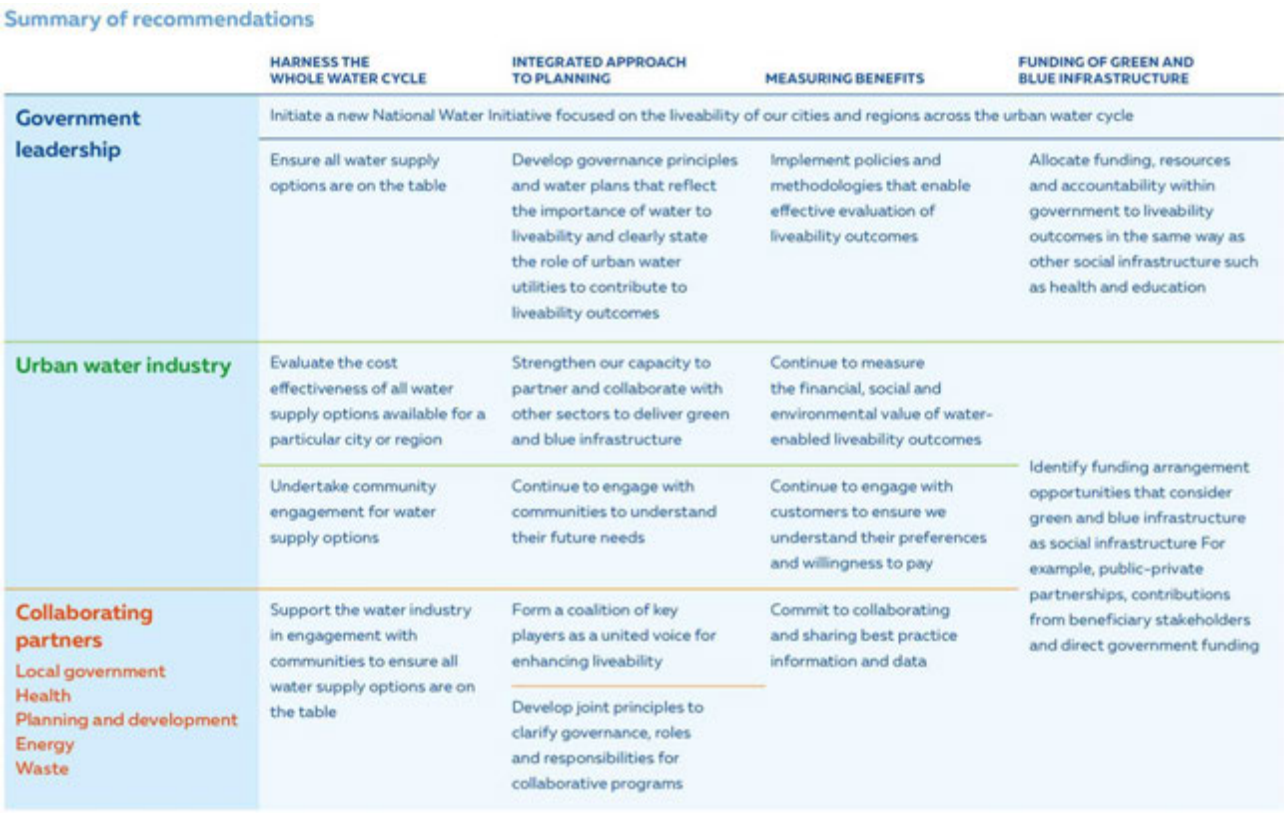
- there is a lack of clear objectives for water-related aspects of enhanced urban amenity
- roles and responsibilities for providing enhanced amenity are unclear
- statutory land planning and water planning are not well linked
- stormwater planning and management is not integrated into general water planning.

Integrating stormwater into the urban water cycle is fundamental to good outcomes, yet success on this front is characterised by ad hoc collaboration rather than a systematic approach. A serious option is to merge the stormwater and urban water industries to overcome the limitations of planning and collaboration. For example, while there are limitations with local government delivery, one advantage is they can overcome barriers to delivering liveability that exist in metropolitan areas.

The Australian Government funds considerable infrastructure in cities. Governments should now move to allocate funding, resources and accountability to liveability outcomes in the same way as other social infrastructure such as health and education.

In *Blue + green = liveability* we outline recommendations for governments, the urban water industry and collaboration partners to enable green and blue infrastructure to deliver liveability outcomes for cities and regions. Figure 10 below outlines these recommendations.

Figure 10: Summary of recommendations from Blue + green = liveability



Recommendation 4 – Shaping cities to create liveable communities

That the Australian Government, together with State, Territory and local governments, in committing to productive and liveable cities through City Deals, includes urban water security and liveability as principal outcomes.

a. To achieve this urban water utilities should be included as a partner in the City Deals framework.

The water industry makes a vital contribution to liveability outcomes

The water industry has always played a role in delivering liveability outcomes for the community by protecting public health and amenity through its core services involving:

- safe, affordable and reliable supply of water to meet the needs of households, business and irrigated green space
- effective and affordable collection, treatment and disposal of wastewater, with human health and environmental benefits
- effective stormwater management (where water utilities have responsibility over stormwater management) to protect waterway health and manage risks of floods to people and property.

The urban water industry ensures these fundamental services are affordable and available to all members of the community, through both government-funded concessions and water utilities' targeted hardship programs. In addition to these core services, water utilities are publicly owned businesses tasked with achieving broader community outcomes.

In recent years, the water industry has explored how it can more widely contribute to liveability, including maximising the potential of water and land use as well as other initiatives such as circular economy hubs, education programs and collaborative partnership models. This is more fully explored in the WSAA Occasional Paper: Next Gen Urban Water. Green and blue infrastructure is already a highly valued asset for the water industry, providing ecosystem services that enhance the quality of water and wastewater for people and the environment.

The water industry is now leading work on how Integrated Water Management (IWM) – a planning approach that considers the how a whole of the water cycle framework can generate environmental, social and financial benefits – can improve liveability outcomes. IWM solutions for example can mitigate flooding risk through improved management of stormwater runoff and provide climate resilient sources of water to irrigate private and public spaces. This can keep our cities and regions green and cool, enable passive and active recreation, provide biodiversity benefits and improve neighbourhood amenity even in times of drought.

Importantly, where water utilities own or manage land they can make a notable difference to urban amenity and community outcomes by enabling green and blue infrastructure. Connecting people through green parks and open spaces and through urban habitat creates opportunities to improve the physical and mental health of our communities. This land is likely to become even more valuable for the community moving forward, as urban green space becomes limited as a result of urban densification and the trend towards smaller backyards.

The urban water industry has a unique advantage in delivering liveability benefits at the city and precinct scale

Water utilities:

- often cover large geographic areas and can therefore take a whole of catchment approach to planning, allowing them to co-ordinate across council boundaries.
- can coordinate stakeholder groups from diverse sectors.
- act as a voice for engaging, partnering and empowering the community.
- have a high degree of competitive neutrality with ongoing public ownership, which facilitates the achievement of broader community outcomes and the ability to work with and across competing interests in the private sector.

Figure 11 below displays the contribution the water industry makes to the liveability of communities.

Figure 11: Urban water's contribution to communities, extract from Blue + green = liveability

Transforming our cities and regions

The urban water industry has had success in delivering green and blue infrastructure projects that deliver liveability benefits to the community beyond safe and secure water and wastewater services. However, these initiatives have typically been at the pilot or project scale, rather than precinct or city scale. We believe the water industry can unlock more value in our assets and investments through integrated planning approaches.

Australian and New Zealand cities are regularly recognised as some of the most liveable in the world. Retaining that competitive advantage in the face of emerging challenges will require innovative solutions and collaborative planning, particularly around essential services and infrastructure.

As discussed earlier, designing communities to be more appealing places to live, work and play can be achieved by providing easy access to key services (including green and blue infrastructure), enabling healthy behaviours, and protecting environmental values in a way that provides resilience to drought, urban heat and climate change.

An example of how planning for innovative approaches rather than simply adopting business as usual has the potential to achieve more liveable cities and regions is the work undertaken to date in planning for accommodating more than 1.5 million people in Western Sydney over the next 40 years. This case study demonstrates how the consideration of green and blue infrastructure as an essential and early land use planning decision has the potential to deliver significant liveability benefits.

Case study: The Western Parkland City

As Sydney heads towards a population of 8 million by 2056, the NSW Government's vision for Greater Sydney is based on a 'Metropolis of Three Cities': the Eastern Harbour City, the Central River City and the Western Parkland City. Most of the Western Parkland City lies within the South Creek Catchment, a major part of the NSW Government's designated 'growth areas', which are earmarked to accommodate a signification portion of Sydney's population growth over the next 40 years.

The development of a highly productive and liveable Western Parkland City is central to realising the NSW Government's vision for Greater Sydney. To compete successfully with the more established Eastern Harbour and Central River Cities – and attract people and businesses to the area – the Western Parkland City will need to offer a 'cool and green' environment, attractive urban communities and appealing places to live, work and play.

This urbanisation of the catchment will place major pressure on the health of South Creek, its tributaries and the local environment and pose significant challenges in meeting a much higher community demand for water, wastewater and stormwater services in one of the hottest, driest and flattest parts of Greater Sydney. Water will also be needed to increase the urban tree canopy, maintain shaded, open and green spaces, and support water features in the landscape.

A strategic business case undertaken by Infrastructure NSW and Frontier Economics found that adopting integrated land use and water cycle management strategies would best deliver the Government's Western Parkland City vision and provided $6.5 billion in value for the community through:

- Cost savings associated with deferring the augmentation of infrastructure in the potable bulk water supply and Malabar wastewater systems
- Open space benefits including improved urban amenity, increased recreation opportunities and lower healthcare costs associated with reduced inactivity
- Urban cooling benefits, including a reduction of up to 2.2°C in forecast maximum summer daily temperatures, and associated reductions in energy consumption, peak demand, and heat-related deaths, illness and healthcare costs

- Greater protection and conservation of native vegetation and biodiversity, and benefits associated with the improved environmental health of South Creek and the Hawkesbury Nepean River
- Additional benefits from a more compact urban form, such as lower housing construction costs.

This analysis showed that a robust framework to monetise the economic value that water investments can contribute to the community is a key enabler for effective policy, regulatory and investment decision making, and ultimately more attractive, liveable and productive places.

The path to liveability

Going forward, decisions around water will be vital in transforming our cities and regions into cooler, greener and more liveable places However, unlocking the potential range of liveability benefits from water industry investment requires addressing several key challenges:

- Harnessing the full water cycle
- Integrating our approach to planning
- Implementing an effective framework for measuring liveability benefits
- Funding green and blue infrastructure as social infrastructure.

Harnessing the full water cycle

Since the Millennium Drought, the urban water industry has worked to secure climate resilient sources of water through both supply side (e.g. desalination, recycled water) and demand side (e.g. leakage reduction, water efficiency, behavioural change) interventions. As the climate continues to shift and population grows and changes, the urban water industry must continue to ensure we can support and enhance our communities through harnessing the full water cycle.

As outlined in Chapter 4 it is important that the industry optimise the use of and investment in a diverse portfolio of water supply sources, both rainfall dependent and independent sources. In doing this we will increases our ability to balance resilience, security, cost and other network constraints, while also meeting the diverse and evolving expectations of our customers and communities.

The value of an integrated approach to planning

Current institutional arrangements have resulted in complicated governance arrangements where no one party has full responsibility for managing all aspects of the urban water cycle. A number of organisations are involved in decision-making for the urban water cycle, including water utilities, local governments, stormwater managers and urban land use planning authorities.

As noted by the Productivity Commission and Infrastructure Australia, this can often lead to ad hoc outcomes due to a lack of clarity on who should lead planning, who is accountable, and funding arrangements including who should ultimately pay for the benefits.

Whilst there are some examples of coordination between agencies at a precinct level (e.g. Victorian IWM Forums, Greater Sydney Commission), existing regulatory frameworks can often constrain green and blue infrastructure initiatives. Clearer governance principles that confirm roles and responsibilities and collaborative frameworks would assist in improving liveability outcomes.

Further, city planning itself is fragmented which means that we are missing opportunities to enhance community outcomes. From a city planning perspective, water is often considered late in the process, when most major decisions have been made.

This not only poses a challenge in supporting regions with core water and sewer services, there is also the potential to miss out on key opportunities to deliver green and blue infrastructure and support liveability outcomes such as reducing water demand, improving flood resilience, increasing greening and providing cooling services. Water infrastructure needs to be considered early in the process to better enable it to support land use and support growth.

Fragmented institutional arrangements produce inefficiencies, increased costs and missed opportunities. These could be avoided by:

- providing clarity on the lead party for planning and identification of options at precinct and local level
- providing frameworks for joint planning, or creating a lead planning entity to develop improved liveability outcomes through integrated design
- enabling planning for growth that considers green and blue infrastructure up front, including considering how water flows through the catchment and interacts with the environment.

Case study: Linking water and land use planning - Victorian Planning Provisions Amendment VC154

Planning in Victoria is governed by the state Planning Policy Framework (PPF), which integrates state, regional and local planning provisions, and governs most development in the state. On 26 October 2018, planning schemes Amendment VC154 came into effect to enable the planning system to better manage water, stormwater and drainage in urban development.

Building the case for this amendment was years in the making, and the limitations of the planning scheme had become increasingly obvious through both a desire on most agencies parts to better optimise stormwater harvesting, and a lack of on-ground projects making a measurable difference to the problem. The amendment was also facilitated by machinery of government changes following the 2014 Victorian election, that placed Planning and Water in the same department. This move recognised the critical importance of linking water and land use planning at a state policy level, and having water considered early in policy implementation through state agencies and local government.

Amendment VC154 amends Clause 19.03-3S (Integrated water management) by implementing an objective and strategies for integrated water management and incorporating the objectives and strategies of the deleted Clause 14.02-3S (Water). The revised state Planning Policy Framework (PPF) will better support coordinated action at state, regional and municipal levels on integrated water management.

Stormwater management mechanisms will also be strengthened by applying consistent requirements to the development of two or more dwellings, commercial and industrial development, public use development and all subdivisions in urban areas and address gaps in the planning framework for stormwater management.

Revisions to the PPF will streamline policies related to integrated water management by reducing a range of overlapping but separate policy sections of the PPF. A consistent approach to planning requirements for integrated water management will assist both responsible authorities and applicants to navigate the planning framework more effectively.

Planning Advisory Note 75 (co-developed by Water and Planning groups within Dept of Environment, Land Water and Planning - DELWP) provides information about the changes made to the Victoria Planning Provisions and all planning schemes by Amendment VC154 to introduce new stormwater management provisions for urban development and amend State planning policies related to integrated water management.

Integrated water management: Principles and best practice for water utilities

Integrated Water Management (IWM) is a process that brings together all stakeholders involved in the planning and management of all water across the entire water cycle, to ensure that the liveability, resilience and sustainability outcomes that the community is seeking are maximised across our cities and regions.

WSAA and the Monash Sustainable Development Institute recently released a summary paper '*Integrated water management: Principles and best practice for water utilities*' that provides a framework with a set of principles and agreed best practice outcomes supported by case studies, that allow water utilities to step through the IWM planning process in a way that suits their own particular circumstances. A more detailed report with case studies will be released in the coming months.

Best Practice IWM Outcomes Framework

Enabling outcomes

Key Outcome Area 1 - An engaged, inspired and knowledgeable community that drives decision making.

- Outcome 1a - Connection with water and water literacy
- Outcome 1b - Shared ownership, management & responsibility
- Outcome 1c - Community preparedness and response to extreme events Outcome 1

Key Outcome Area 2 - Leadership and capacity

- Outcome 2a - Collective leadership, long-term vision and commitment
- Outcome 2b - Knowledge, skills and organisational capacity
- Outcome 2c - Indigenous partnership in water planning
- Outcome 2d - Constructive organisational culture

Key Outcome Area 3 - Institutional, policy and regulatory arrangements that drive integrated and collaborative approaches to water cycle planning.

- Outcome 3a - Policy, legislation and regulations
- Outcome 3b - Cross-sector institutional arrangements and processes
- Outcome 3c -Public engagement, participation and transparency
- Outcome 3d - Economic and financial/funding systems

Implementing an accepted framework for measuring liveability benefits

To ensure the right projects proceed, it is important to ensure they are evaluated using quantitative evidence based on robust and consistent frameworks and methodologies.

Without monetising the full economic, environmental and social benefits, decision-making is typically based on financial costs to each party, and does not adequately consider the full economic, environmental and social benefits and costs across the whole of community. An outcomes-based planning approach based on quantitative evidence can lead to investments that support liveability outcomes.

In recent years, the water industry and others have done significant work to better quantify the intangible benefits of investments. This includes an economic evaluation framework being developed by the CRC for Water Sensitive Cities to understand social, environmental and

economic benefits and WSAA work led by Frontier Economics to quantify the health benefits of water industry investments.

While the value of water enabled liveability outcomes is now clear, translating that value into deliverable business cases for green and blue infrastructure for liveability outcomes, and also expand our collaboration with other sectors to share and align our frameworks.

In recent years the water industry has made considerable progress in measuring liveability benefits by understanding what customers want and are prepared to pay for. A number of businesses have undertaken willingness-to-pay surveys as part of their regulatory pricing submissions.

While the willingness to pay framework provides one pathway to progress green and blue infrastructure projects to deliver liveability outcomes, we note water utility customers are not the only beneficiary receiving the broader benefits and therefore are not necessarily the most appropriate source for funding.

Case study: Hunter Water community survey of willingness to pay for discretionary liveability and environmental services

Hunter Water wanted to assess whether its residential customers have the capacity and willingness-to-pay more for higher liveability and environmental standards over the next price period (2020-25). It commissioned a customer survey of almost 700 Hunter Water residential customers which was designed to meet best practice requirements and recommendations of IPART and the NSW Government, including around customer consultation.

The community survey results provide clear evidence that over 70% of Hunter Water customers are willing to pay more to deliver higher levels of some amenity and environmental services.

- Around 75% of survey respondents were willing to pay $1 more per year for Hunter Water to reduce its carbon emissions.
- Around 80% of survey respondents were willing to pay $2 or more per year towards increasing stormwater harvesting.
- 77% of survey respondents were willing to pay more ($1.00 to $2.50 per year) for Hunter Water to increase the amount of wastewater recycled for irrigation of parks and sporting grounds.

Recommendation 5 – Shaping cities to create liveable communities

That the new NWI recognise the important contribution water makes to the health and wellbeing and productivity of Australia's cities and towns.

a. That the new NWI adopt principles for governance and water planning that reflect the importance of water to liveabilty and the role of urban water in contributing to liveability outcomes.
b. The new NWI should adopt principles for integrated urban water management.
c. Each jurisdiction should commit to water planning for cities, including incorporating water into land use planning policies.

Recommendation 6 - Shaping cities to create liveable communities

That stormwater be fully incorporated into the new NWI, reflecting that little progress that has been made in managing this important and valuable area. Consideration should be given to the development of single waterway managers with responsibilities to include stormwater in the water security and liveability outcomes being sought.

Funding green and blue infrastructure as social infrastructure

The water industry has a strong history of implementing full cost recovery whereby water and wastewater customers (as beneficiaries of the service) pay the full cost value including a commercial return on assets.

However, water-enabled liveability outcomes provide benefits to the broader community not only to water utility customers. It makes sense to think of green and blue infrastructure as providing essential services and fund them in the same way other social infrastructure such as health and education.

In its 2019 Audit, Infrastructure Australia identified that green and blue infrastructure is often treated in isolation by governments. This presents funding challenges where the economic benefits, for example avoided health costs, may be high but it is not possible to identify a direct funding source.

In other sectors, mechanisms exist to fund social infrastructure where there is no direct funding source. For example, transport projects, such as urban rail lines, often need to acquire expensive inner-city land but are able to subsidise the cost through value uplift and property development rights. The costs of operating these rail lines is then only partially funded by customers, with the large proportion subsidised by governments representing the value in reduced traffic congestion. To date these funding mechanisms are generally not available to deliver green and blue infrastructure.

Models that should be considered by governments and water utilities to fund green and blue infrastructure for liveability outcomes include:

- public and private partnership models.
- contributions from beneficiary stakeholders such as local government, developers and industry.
- direct government funding.

The water industry is now confident in the value of the water industry's contribution to green and blue infrastructure to deliver liveability outcomes. In our view, the water industry should be included at early stages of planning; this requires funding, resources and accountability within government to be allocated to liveability outcomes in the same way as other social infrastructure such as health and education.

Recommendation 7 - Shaping cities to create liveable communities

That Governments should commit to allocate funding, resources and accountability to liveability outcomes in the same way as other social infrastructure such as health and education.

Circular economy and integrated water management

Water utilities are moving towards a vision of integrated resource recovery. The long-standing, linear approach of extracting freshwater, treating it, using it, collecting it and disposing of it is no longer viable. This approach does not easily allow for realisation of value. This is particularly true in Australia, where many urban centres are vulnerable to variable and declining water resources and the disposal of additional biosolids to landfill or to the oceans is no longer acceptable.

Water utilities can become agents for the circular economy and have an opportunity to play an important role as resource stewards. There are opportunities for water utilities to work with a broad range of stakeholders and customers to transform the way the total flow of energy and resources is managed and optimised.

IWM planning provides water utilities with an approach to optimising water cycle management, liveability and the circular economy.

WSAA will be releasing a paper in the coming weeks on transitioning the water industry with the circular economy.

6. Financial resilience and affordability

Financial resilience across the urban water sector is fundamental to meeting industry challenges while maintaining the affordability of services. The recession associated with COVID-19 will place pressure on both utility revenue and customers' ability to pay and underlines the need for the industry to be able to withstand financial shocks.

The financial resilience of the industry generally, but particularly in regional areas, continues to weaken, increasing risks of a lack of investment or bill price spikes in the future. The importance of strong finances has not gone unnoticed by those outside the industry.

In its 2019 Australian Infrastructure Audit, Infrastructure Australia found that:

> 'the urban water sector faces challenges, including the impacts of climate change, population growth, ageing assets, and changing needs and expectations from users. Failure to adequately address these challenges could lead to rising water bills, as well as exposing users to risks of declining service quality and reliability'.

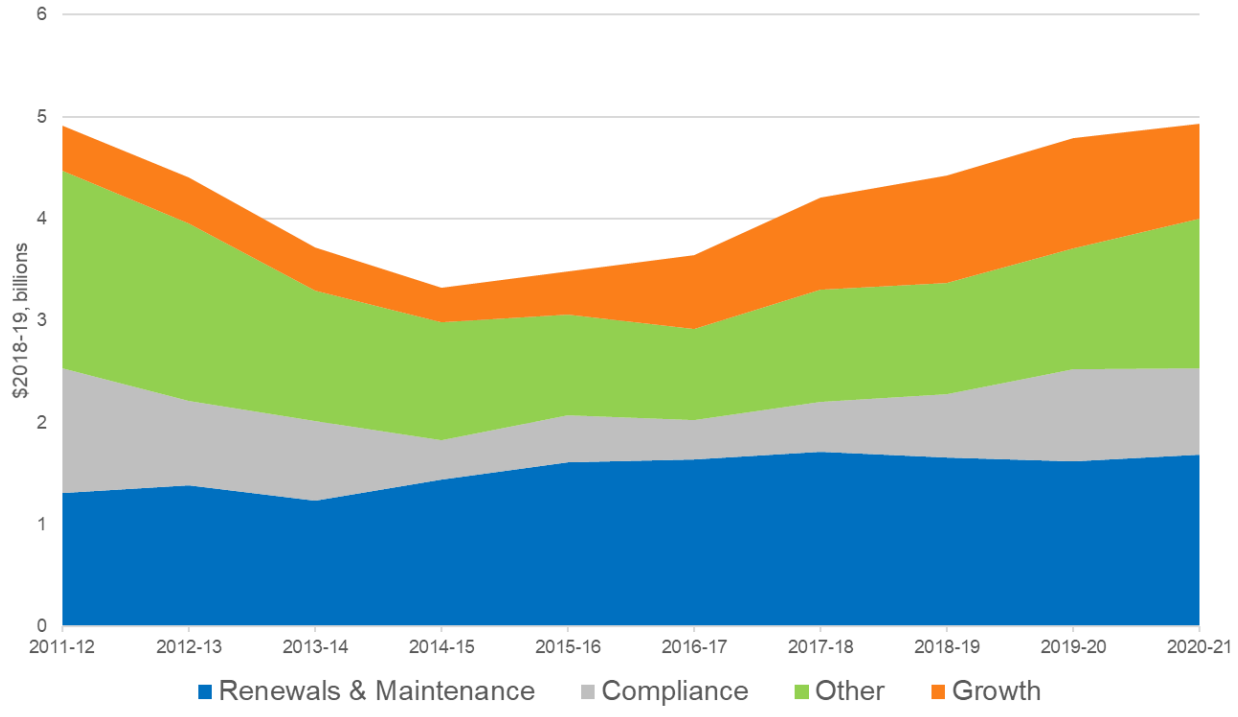
National commitments are necessary for financial resilience

In the UK, a core function of the national regulator Ofwat is to maintain the financeability of the sector. This means that the sector is able to raise finance from equity and debt markets to maintain its services. WSAA understands that this requirement is stronger in water than in other regulated sectors to recognise the critical nature of water as an essential service. As set out below there is a strong case to include commitments to financial resilience in a new national water initiative.

Investment in the industry is rising

The need for greater investment in the industry is a current issue, not a future scenario. Investment is already increasing significantly to meet the urban water sector's challenges. After the Millennium Drought the sector reduced investment to manage customer impacts. However, since 2014-15 capital expenditure shows a strong upward trend as set out in figure 12. Significantly, little of that expenditure is for water security. Major water security enhancements would add to that expenditure.

Figure 12: Capital expenditure – actual and forecast ($2018-19). Data from 17 utilities.



WSAA's own analysis is supported by recent price determinations that have approved increases in capital expenditure of 30% to 40%. In each case the increase in operating and capital costs have been reviewed and approved as efficient by economic regulators.

Table 1: Outcomes from regulatory determinations in 2020

	Sydney Water	Hunter Water	SA Water	WaterNSW
CAPEX	Up 41%	Up 31.2%	Up 28%	Up 33.2%
OPEX	Up 2%	Up 5.9%	Up 2%	Up 1.4%*
Prices	Down 7%	Down 3.6%	Down 10-15%	Down 8.3%

*estimate

Water bills continue to fall in the short term owing to lower interest rates combined with weakening of utility balance sheets as utilities rely more heavily on debt. In the medium term (5+years) bill increases are inevitable and/or there will be a lack of investment to maintain services for the next generation.

At the same time, financial metrics are weakening

The difficulties faced by many regional areas with small revenue bases to generate sufficient funds to maintain services is well known.

However, in metropolitan areas the financial strength of utilities continues to come under pressure. A number of utilities are being downgraded by ratings agencies and are sitting close to the bottom of the investment grade range. WSAA considers that as essential services investing in long lived assets, it is imperative that utilities are able to maintain an investment grade credit rating.

Figure 13 sets out the problem. It shows the performance of major utilities against two key credit metrics that WSAA projects for 2019-20. The figures, based on a survey in 2019 do not include the impacts of the price determinations noted above which will place additional downward pressure on the financial metrics.

The credit metrics are Funds from Operations to Interest and Funds from Operation to Debt. Funds from Operations (FFO) is a cash measure of profit, and the ratios show how much headroom utilities have to cover their interest payments and the level of FFO in comparison to total debt. Ratings agencies set target bands, for each ratio. While these ratios are not deterministic — the credit metrics comprise only 40 percent of the credit rating score — they nevertheless indicate the financial strength or resilience of the utility.

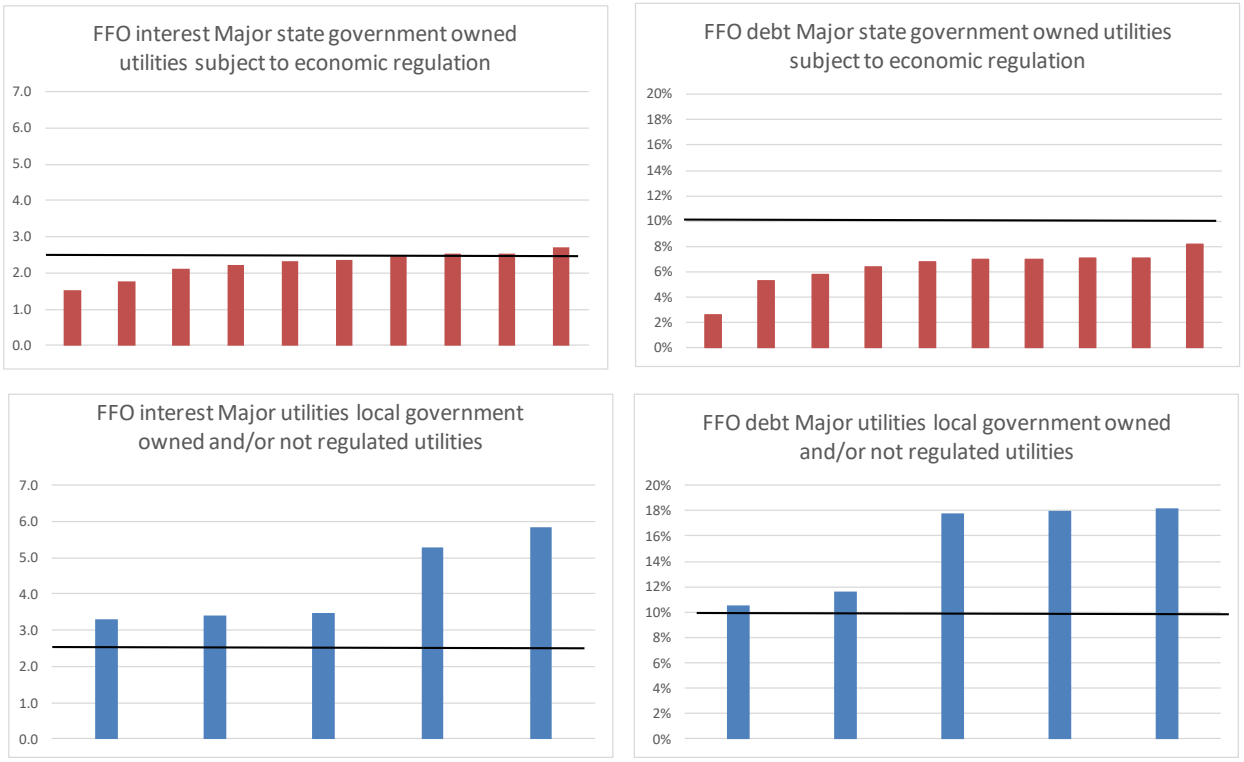
Figure 13 shows that major state government owned utilities that are subject to independent economic regulation have reduced financial flexibility and have reduced ability to withstand shocks. The average FFO to interest ratio for these utilities is 2.3 times, which is just below the target range for investment grade. The average FFO to debt percentage is 7%, well below the investment grade target of 10%.

By way of comparison, the average FFO to interest for the utilities regulated by Ofwat in the UK in 2018-19 (the latest data) is 3.87 times and the FFO to debt is 10%. State Government owned utilities subject to economic regulation have less financial resilience than their UK counterparts. (Note, a fuller comparison would show higher gearing ratios in the UK).

However, another dominant feature in figure 13 is the difference in financial outcomes between state government owned utilities with economic regulation and other utilities. These other utilities are either local government owned utilities (whether they are subject to regulation or not), and state government owned utilities that are not subject to regulation. These other utilities have significantly greater financial headroom and resilience

Figure 13: Projected Funds from Operation to Interest and Funds from Operation to Debt by ownership and regulation

(Each column is a separate utility. Below the black lines indicate breaches of investment grade rating for that metric)



Note: excludes 3 utilities which did not participate in WSAA's survey

As figure 13 demonstrates, financial resilience is the outcome of the intersection of utility governance arrangement and the economic regulatory regime.

Utility governance and economic regulation are critical to financial resilience

Corporatisation

In terms of structure, the industry largely operates under the corporatised SOC model developed 30 years ago. The principles of corporatisation are well known yet remain relevant. It would be beneficial for customers, shareholders and stakeholders for jurisdictions to recommit to the principles of corporatisation in a new national agreement to provide additional independence, commercial discipline and enhanced accountability to customers.

Characteristics of a Fully Corporatised GTE

i) **Clear and Non-Conflicting Objectives**
- a clear understanding of the government shareholder objectives
- guidance given where there are conflicts between commercial, social and regulatory objectives
- contractual arrangements covering community service obligations (CSOs) between the entity and government provider and that ideally, the provision of such services should be open to competitive tender to minimise the costs
- ministerial responsibility for the commercial success of an enterprise should be separated from the responsibility for associated regulatory functions.

ii) **Managerial Responsibility. Authority and Autonomy**
- government as owner should operate at arm's length from the Board and management of the enterprise so that managers can be held fully accountable for their performance.

iii) **Effective Performance Monitoring by the Owner-Government**
- established independent and objective performance monitoring arrangements, such as a central monitoring unit
- such a unit would review the GTE's business plans and provide advice to the shareholding Ministers, including on the entity's proposed core activities, rate of return, dividends and capital structure.

iv) **Effective Rewards and Sanctions Related to Performance**
- incentive systems and penalties should exist against agreed performance targets and should act to motivate the Board and management to maximise the performance of the enterprise.

v) **Attaining Competitive Neutrality in Input Markets**
- GTEs should not enjoy any special competitive advantages or disadvantages over their private sector counterparts because of their government ownership
- a level playing field is needed on a range of issues, including cost of debt, return on equity, tax arrangements.

vi) **Attaining Competitive Neutrality in Output Markets**
- removal of protective barriers that reduce competition faced by government enterprises
- GTEs should be subject to the same legislative regulations as private sector enterprises.

vii) **Effective Natural Monopoly Regulation**
- where GTEs enjoy a natural monopoly, a public policy framework should be established to ensure that natural monopoly powers are not abused

NSW Treasury, Characteristics of a Fully Corporatised Government Trading Enterprise, August 1991

In terms of financial resilience, governments have billions of dollars invested in water utilities. It is appropriate that they receive a dividend from that investment. Dividends are critical to funding other state and local government services such as health and education and community facilities.

Nevertheless, for commercial companies', dividend payments differ depending on circumstances. When companies are in a strong growth phase and have a high need for capital, they will often reduce dividend payments to assist funding that growth from retained earnings.

As noted, the urban water sector is in a strong growth phase. As part of ensuring financial resilience governments should review their dividend policies for urban water to ensure they remain within normal commercial practice.

Economic regulation

Economic regulation is a core element of the regulation of most monopoly industries, including energy, telecommunications and rail transport. WSAA has supported independent economic regulation for urban water and advocated for best practice economic regulation across Australia to protect the long-term interests of customers.

Over the last five years there have been positive developments in a number of jurisdictions. For example:

- in Victoria, the Premo model introduced by the Essential Services Commission has placed the utility/customer relationship at the centre of the regulatory process
- in NSW the Independent Regulatory and Pricing and Tribunal has introduced major pricing reforms such as drought pricing and a sophisticated approach to the economic regulation.
- in Tasmania and the ACT the role and duties of the economic regulators have been clarified.

However, where economic regulation is in place, further improvements are possible to meet best practice (figure 14). There have been frameworks released to measure financeability, but as WSAA data shows more work is required. Merits review – which WSAA considers an essential element of the regulatory framework - remains the exception rather than the rule in most jurisdictions. In addition, in the face of strongly increasing capital expenditure, the regulatory framework needs to evolve to enable price smoothing and avoid price spikes.

Figure 14: Assessment of regulation in Australia

	NSW	VIC	QLD*	WA	SA	TAS	NT	ACT
The regulator has deterministic power to set prices or revenue	Yes	Yes	Not regulated	Not regulated	Yes	Yes	Not regulated	Yes
Regulator's key objective is the long-term interests of consumers	Partially	Yes	Not regulated	Not regulated	Yes	Yes	Not regulated	No
Establishing incentives for productivity and innovation	Partially	Yes	Not regulated	Not regulated	Partially	Partially	Not regulated	Partially
Assessment of financial viability to protect the long term interests of customers	Yes	Partially	Not regulated	Not regulated	Partially	Partially	Not regulated	Partially
Strong and transparent customer engagement within the regulatory framework	Partially	Yes	Not regulated	Not regulated	Yes	Partially	Not regulated	Partially
Merits review part of the regulatory framework	No	Yes	Not regulated	Not regulated	No	No	Not regulated	Yes

*Bulk water utilities in Qld regulated

Yes No Partially Not regulated

More broadly, it is also a feature of the urban water landscape that some jurisdictions have not adopted independent regulation. This has not harmed the performance of the sector in those jurisdictions, and may have contributed to greater levels of resilience. WSAA considers that the lesson from this experience is that the ownership of utilities by state and local governments provides flexibility, and alternatives to regular economic regulation, to protect the long-term interests of customers.

WSAA considers that a new NWI should recognise that where utilities are subject to economic regulation it should meet best practice principles, but that one size does not fit all.

Recommendation 8 - Financial resilience and affordability

That the new NWI recognise a financially resilient water sector is critical to achieving other elements in the NWI including delivering water security and liveabiilty outcomes for customers and communities.

Recommendation 9 - Financial resilience and affordability

To this end jurisdictions should recommit to the corporatisation model as the preferred way to deliver long term outcomes for customers. Key elements of the corporatisation model are:

a. Governments, as shareholders, should establish long term commercial targets that enable urban water utilities to continue to invest on behalf of the community.
b. Flexible mechanisms to protect the long-term interests of customers including managing affordability, encouraging community engagement and providing incentives for efficiency.
d. Where this is implemented through formal economic regulation, there should be minimum standards that protect the long-term interests of customers.

7. Delivery in regional and remote areas

Water enables liveable, sustainable and productive cities and regions which are critical to our economic wellbeing and quality of life. By improving the delivery of water and wastewater services in regional and remote areas there will be gains in productivity, prosperity and liveability.

The recent drought and bushfires have shown that water security and resilience need to improve in some parts of regional Australia, some with relatively high populations. It is widely recognised that in New South Wales, Queensland and Tasmania there is an infrastructure backlog in the water industry that needs investment. Part of the issue is water security, however in some jurisdictions there are capacity and capability issues within the industry.

Every Australian community should receive safe and reliable drinking water that meets the Australian Drinking Water Guidelines. We need a national conversation about how to define and achieve affordable levels of service for water and wastewater in regional and remote communities, these are difficult conversations to have at a local, regional or state level. The new NWI should include an agreement on minimum service levels in remote communities, or a decision-making framework that facilitates discussion in the wider community and agrees to minimum service levels for all Australian communities.

Sustainable funding of regional infrastructure

Capital grants are currently used by various jurisdictional governments to promote economic activity or to support the delivery of water in regional and remote areas. The Productivity Commission recognises that sustainable annual funding to maintain service levels is necessary in regional areas, rather than ad hoc capital grants. WSAA agrees that capital grants distort investment decisions and considers that in addition to investing in capital projects, investment is required to raise industry capacity in regional Australia. WSAA considers that when investing in regional infrastructure projects, governments should apply regional scale planning combined with building capacity and ensure outcomes are linked to the funding.

The capital costs of large water and wastewater infrastructure projects are often only a small component of the lifecycle costs of the infrastructure. In some cases, capital investment in infrastructure made by one local council or regional water utility may have impacts on the operational expenditure of downstream infrastructure owned and operated by another local council or regional water utility.

For example, capital investments may result in increased water prices for all customers of the bulk water service provider, i.e. not just the customer installing the new infrastructure. Incremental changes to the bulk water service provider's price as a result will be a function of the bulk water service provider's connections policy, any subsequent costs needed to incorporate the new infrastructure into the existing network, the incremental level of demand facilitated by the new infrastructure and/or pricing framework.

Consistent with the discussion by qldwater in its submission to this inquiry, the extent to which capital expenditure drives ongoing annual costs for operation, depreciation and renewals may be overlooked by councils particularly when driven by ad hoc and competitive grants programs such as the Building Better Regions (Cwth), Building Our Regions (Qld) and Local Government Grants and Subsidies Programs (Qld) programs.

Due to these potential impacts, it is important that the underlying investment decisions are robust and comprehensive. Failure to consider the future viability of services and alternative options, may have broader implications including on water and wastewater affordability.

Under the existing NWI, the beneficiaries of economic investment in water and wastewater should fund that investment, however in some cases regional communities lack the capital resources or rating potential to fund required infrastructure. Funding streams such as the Community Services

Obligations from State and Territory governments can assist, however there is not always an impetus to expand these to new communities or retain these in existing communities.

We propose a commitment under a new NWI for a long-term, sustainable funding model for regional and remote area water and wastewater service infrastructure that is based on meeting requirements for asset planning, asset management and service delivery. Funding could be prioritised based on an independent assessment in each jurisdiction into the cost of improving assets to deliver a predefined level of service over a reasonable time period (for example, 10 years).

Investment in water, wastewater and stormwater is an effective way to stimulate the economy in the short-run while providing lasting benefits to the community and economy in the longer term. In response to the COVID-19 pandemic, WSAA identified an opportunity for Commonwealth stimulus funding to develop a program of digital water initiatives for regional, rural and remote Australia. WSAA's proposal received broad support through the National COVID-19 Coordination Commission process and is being considered by the Commonwealth Government (see attached).

Increased capacity and capability for regional and remote areas
In addition to investing in capital projects, investment is required to raise industry capacity to achieve water utility business excellence and develop the capability and capacity of people in regional Australia. Figure 15 shows opportunities to invest in resilient regional water utilities.

Figure 15: Opportunities to invest in resilient regional water utilities

Opportunities for capital investment in regional assets include projects to:

- Address drought, water security and resilience
- Improve drinking water quality
- Renewing assets to ensure service reliability and continuity
- Improving local environmental and liveability outcomes
- Meet the expectations and standards of customers and regulators.

In general capital investment is delivered through investment from state and territory governments and have new programs in place to bring forward investment.

When investing in regional infrastructure projects, governments should apply regional scale planning combined with building capacity and ensure outcomes are linked to the funding.

Opportunities for capacity development, managing business risks and delivering outcomes in water utilities in regional Australia include:

- improving training, pro-active risk management (including emergency event planning)
- a shift to a digital utility including through increased automation and data analytics; and
- applying assessment management systems aligned to AS/NZS 55001.

Smaller regional water utilities lack the economies of scale available to large metropolitan and regional water utilities. WSAA agrees with qldwater and the NSW Water Directorate that regional collaboration can assist in addressing increasing scale through collaboration. Where regional approaches are in place (eg, Central NSW Joint Organisation, ORANA. QWRAP) they provide benefits to efficiency and capacity improvements.

Water and wastewater services for remote Indigenous communities

There is a well-established connection between water supply and health, recognised in the United Nations Sustainable Development Goal 6 (SDG 6) which sets the expectations for clean water and sanitation for all. In 2019 Infrastructure Australia identified that SDG 6 is not being met in remote and indigenous communities, and stated:

> "Many remote communities are home to a high proportion of Aboriginal and Torres Strait Islander people, meaning poor standards of water and wastewater services compound historical hardships and reinforce disadvantage. A lack of access to clean water and sanitation can worsen existing health issues and increase risks of disease and infection."

Several health issues occurring in remote Indigenous communities can be reduced through improved water supply volumes and quality, including diseases like trachoma and leprosy.[1] Addressing health issues is key in closing the quality of life outcomes gap for Indigenous Australians. There are also key economic benefits, both in reducing the burden of disease on individuals and communities, as well as reducing burdens on health systems.

While the existing NWI encourages consideration of Indigenous water use for cultural purposes and in water planning (see Chapter 9), the benefits of supply for health and economic reasons are not contemplated.

Under the existing NWI, the beneficiaries of economic investment in water should fund that investment, however most remote Indigenous communities lack the capital resources or rating potential to fund required infrastructure. Similar to funding for regional infrastructure, funding streams such as the Community Services Obligations from State and Territory governments can assist, however there is not always an impetus to expand these to new communities or retain these in existing communities.

As discussed above, we propose a commitment under a new NWI for a long-term, sustainable funding model for regional and remote area water and wastewater service infrastructure that is based on meeting requirements for asset planning, asset management and service delivery.

WSAA considers that there should be a renewed focus on core service provision in remote areas, and in particular remote Indigenous communities, that meet the expectations of those communities.

The recent National Agreement on Closing the Gap (July 2020) identified the need to develop goals for community infrastructure, including water and wastewater services, for Indigenous communities within 12 months (i.e. by July 2021) (clause 87b(i)). WSAA supports this explicit link between the Closing the Gap strategy and the provision of essential water and wastewater

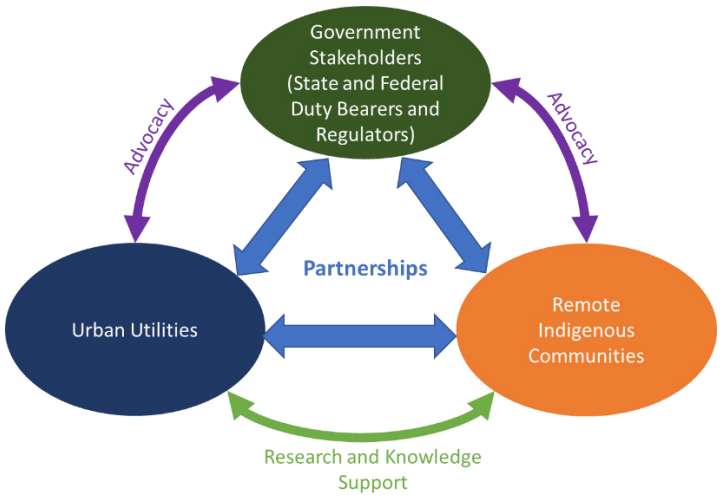
[1] Bailie, Carson and McDonald (2004). Water supply and sanitation in remote Indigenous communities – priorities for health development. Australian and New Zealand Journal of Public Health. Vol 28 (5) p409.

services to Indigenous communities. A new NWI should include a framework for reporting on progress towards these goals once agreed and the progress towards institutional, legislative and regulatory reforms.

Recent work commissioned by WSAA[2] identified five principles of effective development practice for working with Indigenous communities provide guidance for conceptualising any support initiatives from the water sector:

- any initiative must be based on trust, integrity, collaboration and partnership with relevant Indigenous communities.
- a long-term perspective must be taken.
- remote Indigenous communities must be recognised and respected as key client-partners with agency
- any initiative must leave a legacy in the community of strengthened capacity to achieve good water service outcomes.
- utilities must approach initiatives with an orientation for mutual learning.

Figure 16: Avenues for water sector engagement with remote Indigenous stakeholders



The project identified a selection of topics to illustrate the complexities, challenges and needs around remote indigenous water and wastewater services, under four broad themes:

1) **Water quality and quantity**
    a. microbial and chemical contamination of source water
    b. data and information management needs for improving water supply security
2) **Management, governance and financing**
    a. complexity and confusion regarding roles and responsibilities
    b. government funding that preferences capital investment over lifecycle needs
    c. structural challenges to funding and cost recovery for ongoing services
    d. conflicting land tenure arrangements for water and other essential services
3) **Technology and operations**
    a. ensuring 'fit for purpose and fit for place' technology solutions
    b. capacity constraints for operation and maintenance of services
    c. challenges in fulfilling the Australian Drinking Water Guidelines
4) **Mutual learning**
    a. reciprocity of benefits through community-led initiatives, from which the water utilities can listen and learn.
    b. need for building sector capacity for collaboration and shared learning.

[2] Abeysuriya K, Soeters S, Jackson M, Hall N, Mukheibir P, Beal C, 2019. Safe water and sanitation for all in remote Indigenous Australia: Exploring the roles and opportunities for the water industry. Unpublished draft. Prepared for the Water Services Association of Australia.

Many remote community water supplies are insecure, of poor quality, prone to contamination or a mixture of these. These issues are further compounded by scarcity. Common issues with local supplies that can be readily treated include:

Source	Security issues	Quality issues	Contamination issues
Groundwater		Salinity, inorganic chemical hazards, pathogens	Sewage or other waste into groundwater
Surface water	Rainfall dependent	Salinity, pathogens	Sewage or other waste into surface water
Rainwater	Rainfall dependent	Pathogens	Dust contamination

While there are opportunities to improve water quality, supply and security in remote Indigenous communities, these options can be costly to implement and maintain. Large initial investment is required in order to deliver a sustainable solution, with available ongoing technical expertise to manage supplies.

We recognise the natural challenges and tyranny of distance of urban water services in remote areas, however there is a pressing need to develop formal arrangements for servicing remote and Indigenous communities and have strong clarity around the legislative and regulatory frameworks.

In particular, there is a need for clear accountability for the delivery of water and wastewater services (by government owned or private sector entities) separate from the provision of welfare and growth policies by government agencies.

Urban water utilities with their ability to utilise economies of scale and technical expertise are well positioned to support the water and wastewater services in remote Indigenous communities. There are some strong examples where governments have supported investment in remote Indigenous communities through Community Services Obligation payments, for example APY Lands in far north-west South Australia (see case study below). More recently there have been changes in Western Australia and Water Corporation invests directly in Indigenous communities in the Kimberley.

Case study: SA Water

SA Water are responsible for providing services to 20 Aboriginal Communities (and two APY Lands administrative centres). These activities are operated on a separate Community Services Obligation. SA Water does not own the assets. SA Water manages:

- Operational and capital works.
- Asset management planning, risk assessments and asset condition assessments.
- Water quality monitoring
- Emergency breakdown responses
- Consumer metering and implementation of retailing

Since 2005, SA Water has been involved in the management of water supplies and wastewater disposal systems in nine APY Lands communities – Indulkana, Mimili, Fregon, Umuwa, Ernabella (Pukatja), Kenmore Park, Amata, Pipalyatjara and Kalka. Included in these operations are 53 bores (nine of which are solar-powered), four state-of-the-art desalination plants, and one wastewater treatment plant.

SA Water's infrastructure projects in the APY Lands are very much community-driven, with its Remote Communities team working with local people right through the engagement, planning, design and construction phases, as well as for ongoing management and maintenance.

To incorporate the views of customers in remote Indigenous communities, governments should consider the development of legislated consumer protections for all water customers that specifically includes a section that is designed to be culturally appropriate and targeted to aboriginal customers in remote communities. This could be developed in conjunction with stakeholder bodies such as Reconciliation Australia to ensure a broad and appropriately broad range of cultural and community perspectives are taken into account.

Governments should consider options to improve land access for essential service providers that whilst respectful of Indigenous land rights, provide reasonable access for the delivery of services. Securing land access to commence water source investigations can take many years navigating the various committee and groups whose approvals are required. In the meantime, community members are left without access to secure water supplies and often land development is constrained or delayed.

Recommendation 10 - Delivery in regional and remote areas

That the new NWI includes a commitment to achieve affordable levels of services for water and wastewater in regional and remote communities. Key elements are:

a. Sustainable annual funding to maintain service levels is necessary in regional and remote areas rather than ad hoc capital grants.
b. When investing in regional and remote infrastructure projects, governments should apply regional scale planning combined with building capacity and ensure outcomes are linked to the funding.
c. That the new NWI should include a framework for reporting on progress toward goals to provide safe and reliable drinking water to remote Indigenous communities. The Closing the Gap Report (2020) identified the need to develop goals for urban water services for Indigenous communities in the next 12 months.

Recommendation 11 - Delivery in regional and remote areas

That the new NWI include a commitment for state, territory, local governments and Indigenous communities to clarify roles and responsibilities for the delivery of water and wastewater services to remote and Indigenous communities.

a. When investing in remote infrastructure projects, responsible agencies should apply transparent prioritisation principles.

8. To recognise Indigenous water values

WSAA considers that there should be a renewed focus on the cultural values of water and inclusion of Indigenous Australians in decision-making about water. We support Indigenous specific consultation by the Productivity Commission to determine what should be included in a new NWI.

WSAA supports an Indigenous Water Strategy, to progress Indigenous water requirements inclusion in water plans, and the engagement of Indigenous peoples in water planning processes. WSAA supports a refresh of the First People's Water Engagement Council.

A common assumption has been that Indigenous water aspirations could largely be encompassed through environmental water allocations, with appropriate cultural heritage protection mechanisms in place to protect water sites of significance. But as numerous First Nations declarations, policy statements and research[3] suggests, this perspective substantially under-recognises the numerous and varied roles water plays in the cultural, spiritual, social, environmental and economic livelihoods of indigenous Australians.

Many water utilities are seeing successes in building strong partnerships with Traditional Owner groups and are committed to continuing to improve Indigenous engagement. Indigenous engagement and sharing of Indigenous knowledge in integrated water management projects facilitates broader national reconciliation goals, and can add significant value to projects and outcomes for communities.

The framework and set of principles and agreed best practice for IWM developed by WSAA and the Monash Sustainable Development in the summary paper 'Integrated water management: Principles and best practice for water utilities' includes Indigenous partnership in water planning as a key outcome.

A number of Indigenous organisations and advocates have emphasised that the water related rights and aspirations of Indigenous people should first and foremost be established and recognised from Indigenous perspectives, rather than seeking to categorise them under current water planning and management terms, processes and doctrines.

While it is recognised that this is a stretch goal for water utilities, an Indigenous perspective should ideally be incorporated at all levels of an IWM framework, including the institutional and legislative enabling environment, through to processes and protocols for engaging first nations people and communities in planning, management and decision-making.

Practically, this involves at a minimum, water utilities meeting their legislative responsibilities (both state and Commonwealth) towards the Traditional Owners within their service area, and supporting their self-determination by engaging early and comprehensively. Currently, this often results in Traditional Owners being swamped by engagement requests from organisations across multiple sectors – agreeing with each Traditional Owner on their priorities for involvement, and developing a strong working partnership based on mutual respect can assist in progress towards this outcome.

With Traditional Owners spread across diverse geographic contexts and possessing unique cultural customs, protocols and languages, there is no 'one size fits all' approach or intended outcome to indigenous partnership in water planning. Instead, a place-based approach is required to ensure that partnership processes and outcomes at all levels of the IWM framework are culturally respectful and contextually appropriate to empower Traditional Owners in ways that support their aspirations for Country, culture and people.

[3] including the Boomanulla Statement (2002), the Indigenous Peoples Kyoto Water Declaration (2003), the Echuca Declaration (2007), the Mary River Statement (2009), the Garma International Indigenous Water Declaration (2009) the Fitzroy River Declaration (2016) and the National Cultural Flows Research Project (2018).

Recommendation 12 - Recognise Indigenous water values

That the new NWI includes a commitment to the cultural values of water and inclusion of Indigenous Australians in decision-making about water.

a. That the Productivity Commission should consult with Indigenous communities to determine the form of this commitment.

9. Commitment to research and innovation

One objective of the NWI is to “encourage innovation in water supply sourcing, treatment, storage and discharge”. This remains relevant today. Investment in water delivers value for communities and the economy. The water sector underpins economic activity and requires a reinvigorated focus on research, development and innovation to build a resilient economy for future growth.

Research and development are critical to deliver new knowledge, maintain progress and advancement of the execution of operations while innovation is the application of new knowledge for realising new opportunities for commercial benefit and societal impact. However, there has been a significant decline in the funding for research and innovation and a renewed commitment from governments is a must as part of a new National Water Initiative.

In line with the significant decline in funding, the closure of numerous water specific related research centres has placed a greater burden and a corresponding proportional increase of funding by water utilities to support ongoing research for the industry. However, the level of investment by water utilities has also declined from 0.6-0.9% of water utility revenue in 2010 to 0.1–0.3% in 2018. In the past decade we have seen investments in the range of $40 million for the Centres of Excellence in Water Recycling and Desalination and further funding for the CRC for Water Sensitive Cities. Whilst such research centres provide a confident return in terms of benefit/cost ratios, the lack of a structured framework at the national level has restricted the broader uptake of research to adoption. This can be argued as a result of the limited understanding for the fact that the role of water extends beyond an essential service but actually contributes to the financial, social and natural capital of Australia. As such, the measure of research to commercialisation is but only one aspect of how success could be measured in terms of the broader multiplier benefits of funding and investing in research and innovation.

The success of a renewed commitment by government will rely on a clear, well thought-out structured framework to focus the contributions of water research, development and innovation (RDI) activities for enhanced uptake and adoption, to then deploy this increased capability through the export of water management practices, processes and technologies. The ability to develop a water RDI value chain from which to harness significant value for the sector and be an engine for economic growth requires a level of consistency in funding and investment. Currently, funding is akin to a ‘rollercoaster’ as droughts come and go. However, as most Australian’s are fully aware, water security and quality is a long-term issue and should not be the subject of short-term interest and investment.

The existing structure of support for research and development to the urban water industry is fragmented across many of the current national science and research priorities, most notably among soil and water, environmental change, health, cybersecurity and energy. The absence of a clear and prioritized national agenda for the urban water industry diminishes the drive of research outcomes through development to impact and support for innovation.

In response, the development of the National Water Research Industry Key Research Priorities is a call to action, led by WSAA in partnership with Water Research Australia and CSIRO, to achieve the required alignment through a prioritised agenda of research questions from which to improve coordination, collaboration and leveraging of funding by focusing the available effort on addressing matters relating to the needs of the whole industry. Critically, the process seeks to foster partnerships and linkages with linked (e.g. energy) sectors for increased investment in research and development.

A new NWI should set out a long-term framework for RDI investment and support. This would include strengthening the capability and capacity within and across research institutions, academia, private and public sector to enable an accelerated delivery of valuable outcomes for the community and industry and create opportunities for the export of Australian technology and know-how for international development and investment (See Smart Linings Project Case Study).

A program dedicated to the deployment of the water RDI value chain, would include focus points such as the delivery of a breakthrough technology every five years (See Ofwat Innovation Fund Case Study), increasing the number of small and medium sized enterprises supplying and supporting the water sector; delivering water and sanitation to regional, remote and rural communities which ultimately contributes to significant social, health, environment and economic benefit. Such a program, with a focal point through the new NWI with the support of the Australian government can further stimulate the formation of cross-sector partnerships, providing opportunities for new innovations and increasing global competitiveness and attracting private investment (See Hydrogen Hubs Case Study).

Comparatively, the water sector is behind other sectors in terms of investment in research, development and innovation. For example, the global renewable energy market invests an amount of approximately 1.7% of total revenue into research and development. A report by UNEP and BloombergNEF states:

> "Total annual investment in renewable energy has held roughly steady for the last four years, but the amount of capacity built each year for the same outlay continues to grow. The engine for this progress is research and development, which has delivered a continuous stream of efficiency gains and cost reductions".

Appreciating, the importance, relevance and extent of the challenges faced by the urban water industry, a significant reinvestment is required to achieve an equal engine for growth and progress of the industry. A consistent and transparent target is needed to bring the industry in line with the current standard of related sectors. Contributions to the funding target would be made from the urban water industry, state and federal governments coupled with partnering opportunities with private industry and across sectors.

Recommendation 13 – Commitment to research and innovation

That a Research and Innovation Strategy be developed to achieve the outcomes specific for urban water in the new NWI. The Strategy should give consideration to:

a. roles and responsibility of governments, government agencies including the Bureau of Meteorology, research institutions, utilities, technology providers and other stakeholders
b. ongoing review of priorities and investment guidance
c. implementation and commercialisation of Australia's water planning and management (including but not limited to technical delivery of services, customer and community engagement, water resource planning through climate change).

Recommendation 14 - Commitment to research and innovation

That relevant Research, Development and Innovation stakeholders (including but not limited to: Australian and State governments, water utilities, research institutions, science and technology providers and customer and community representatives) be engaged through a new NWI to determine a sustainable, consistent and transparent funding target to enable the urban water industry to achieve water security and liveability outcomes through leading science and data analytics. Given the benefits of world class water services accrue economy wide, it is expected that the Australian Government would provide significant and ongoing research and innovation funding.

a. Given the room for growth to implement and commercialise Australia's expertise in the end to end service provision of water management and services, the Australian Government should commit to an Annual Innovation Fund as part of its overall investment.

Case study: Smart Linings Project Case Study (Australia)

The value of buried pipe infrastructure in Australia is in the order of $160 billion. With many water utility assets approaching the end of their useful life the effective replacement of aging infrastructure presents a challenge for the urban water industry. Lining technology has the potential to substantially increase asset service life and delay the need for replacement. Lining systems reduce community impact as they take less time to install and require less open trenching than conventional solutions.

Key to introducing new lining technologies into the Australian market will be establishing confidence in the lining technology by proving its service life, creating tools for asset managers to select lining systems that are fit for purpose, developing sensors for quality assurance and establishing clear requirements for new products.

WSAA is leading a $24 million international project investigating innovation into lining technologies for water and sewer infrastructure. The Australian Government, through the Cooperative Research Centre, has funded $3 million to this partnership, comprising of 35 project partners across the globe.

The project partners consist of Universities, water utilities, Water Industry Organisations, Applicators and Manufacturers. Each type of organisation contributes to the project goals, for example:

- a utility provides a site to trial a product;
- a manufacturer provides the product;
- an applicator applies the product; and
- a university tests the installed product.

From there, the test information is fed into product codes and standards, and representatives from these groups come together to review the documents to ensure they are industry ready.

Case study: Ofwat Innovation Fund Case Study (United Kingdom)

Ofwat, the economic regulator for water companies across England and Wales, has recognised the significance of supporting innovation as a way to meet the challenges facing water companies in a cost-effective and sustainable way. Their current strategy states:

> "Our price review framework already promotes innovation by setting water companies stretching outcomes and allowing them the flexibility to adopt innovative means of delivering, and we are encouraged to see some companies demonstrate real ambition in this space. But there remain significant untapped opportunities for the industry to work with each other, the supply chain and those in other sectors to trial and adopt new practices and technology to transform performance. Existing initiatives need to be streamlined so that efforts are complementary rather than duplicative, learning is shared, and technology that is proven to work can be easily adopted across the industry."

Ofwat announced the formation of a £200 million innovation fund at the end of 2019. The fund aims to encourage innovations that will facilitate a transformation for water and wastewater services. The fund is open to the current 17 licensed water companies, as well as smaller water and sewage companies, through which collaborations within the water industry and across other non-water related industries are encouraged. The disbursement of the fund aims to be managed through a series of competitions. Each of the competitions aims to target varying sizes of innovation projects, which provides greater opportunity for involvement and support to a broader range of suppliers and innovators across the supply chain spectrum.

While further details of the competition are being developed, the focus is for innovations that seek to deliver a step-change across technology, use of systems, processes and people, including the opportunity for commercial arrangements.

Ofwat plans to appoint an innovation fund partner by October 2020 following which competition details are to be finalised and the first entries open from early in 2021.

Case study: Hydrogen Hubs Case Study

The production of hydrogen is considered an important opportunity for the drive towards a sustainable future by enabling the international trade of renewable energy. However, cost of production needs to match or better that of competing alternative energy sources. This barrier is recognised in Australia's National Hydrogen Strategy, which outlines the need for 'hydrogen hubs' as a driver to delivering cost effective production of hydrogen. The link to wastewater treatment plants (WWTPs) has been identified based on the favourable site conditions for the development of such hubs. Consequently, the role of WWTPs is actively being explored to better understand the potential to support and grow the hydrogen industry in Australia.

Two approaches are currently being undertaken:

1. **Western Australia Water Corporation and HAZER**: An Australian first in the production of renewable hydrogen and graphite from wastewater, with the technology linked to the biogas production from the Woodman Point WWTP in Munster.

2. **Yarra Valley Water and Jacobs**: Through the electrolysis of water for the production of hydrogen, oxygen is also produced. Pure oxygen has immense value to the process of treating wastewater as it increases the efficiency of energy-intensive aerobic treatment processes, most commonly used across Australia. By securing an offtake for the production of pure oxygen in the treatment process of wastewater, this could partially subsidise the production of hydrogen thereby increasing its commercial viability.

10. Implementing a new national approach

10.1 An urban water national initiative

Reflecting the critical issues to be addressed at a national level, WSAA considers that a new National Water Initiative is required.

A new NWI will have the following benefits:

- in the face of the growing climate extremes, as experienced across Australia in 2019/2020, it will underpin Australia's economic sustainability through efficient, effective, outcomes based urban water management
- it will set the outcomes to be achieved whilst allowing freedom for jurisdictions to enact their own approach for their local context
- it will clearly set out the health, environment and social goals for urban water services, agnostic to ownership, institutional, management or contractual differences
- it will provide a transparent approach for Australians to engage on how water is managed, the effectiveness of the various institutions, and to a certain extent de-politicise direction setting and decision making by enabling customer and community views to be the lead voice.

The urban water sector is many times larger than the rural water sector (30 times larger). This indicates its impact on productivity, the economy and the lives of people. Yet the current NWI is dominated by rural water issues and in national water policy urban water is the poor cousin of rural water. While there are links between the two sectors it is time for urban water to be accurately reflected in a new NWI to address the challenges we have identified.

10.2 A new reform incentive framework

Experience shows that nationally consistent reform is best achieved through incentive payments, such as the National Competition Policy payments to states from the mid-1990s to early 2000s.

A reform incentive framework should be developed with funding for state governments linked to urban water reform milestones. This recognises the national economic benefit flowing from increased productivity and broader performance improvements in the urban water sector.

Recommendation 15 - Incentives framework, financial and non-financial

That the new NWI recognise that the Australian Government is the beneficiary of water enabled productive and liveable communities while states are responsible for delivery.

a. Consistent with past reform efforts, the Australian Government should provide incentives, financial and otherwise as a catalyst to deliver agreed milestones.

10.3 New national reporting

The current National Performance Report (NPR) is out of date and no longer provides a fit for purpose data set for the industry. Transparency is critical to customers and stakeholders and measurement against outcomes is important to tracking performance.

The Bureau of Meteorology are reviewing the NPR, however, all jurisdictions should make a commitment to redeveloping a future focused national urban water dataset. Indicators that reflect the Sustainable Development Goals should be included in the new national urban water dataset.

Recommendation 16 – National reporting

That all jurisdictions should commit to redeveloping a future focused national urban water dataset recognising the emphasis of the objectives in the new NWI including customer, liveability and water security outcomes.

10.4 An agency or mechanism to oversee commitments and an incentives framework

Any agreement should include a new independent agency or mechanism to oversee both urban and rural water reform. The agency or mechanism would hold all jurisdictions and stakeholders to account for implementing the new agreement, take a lead role in national reporting and develop and implement a national framework for water security and water related liveability outcomes.

There are a range of options for such a mechanism. These include an enhanced role for the PC, an interjurisdictional committee for water reform reporting to the newly formed National Cabinet Reform Committee (potentially the Infrastructure and Transport Reform Committee), or a separate agency.

Recommendation 17 - Mechanism to oversee commitments, an incentives framework and reporting

That the Australian Government, together with State Governments establish a new independent agency or mechanism to oversee both urban and rural water reform.

a. The new independent agency or mechanism would assist with the effective implementation of the new NWI including overseeing national reporting and any incentives framework and developing and implementing a National Water Security Framework.

Contact

WSAA welcomes the opportunity to discuss this submission further.

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