



Unlocking our future potential

AUSTRALIAN URBAN WATER INDUSTRY
RESEARCH PRIORITIES AGENDA



WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 24 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises. Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WaterRA

Originating from the Cooperative Research Centre (CRC) for Water Quality & Treatment, Water Research Australia (WaterRA) is a member-driven, national organisation which leads research with and for the water industry. WaterRA brings together key research groups, regulators and industry members to address current and emerging issues in water. Through our members, WaterRA defines research gaps, develops and delivers research programs and projects with readily adopted outputs, providing evidence to underpin decision-making and our build national water sector capability. WaterRA has a focus on ensuring that value is achieved for members at every stage of the research value-cycle.

Acknowledgement of Country

We acknowledge and pay respect to the past, present and future Traditional Custodians and Elders of this nation. We recognise their continuing connection to land and waters and thank them for protecting our waterways and environment since time immemorial.





Contents

Foreword	2	
Overview	3	
Why the urban water industry needs a Research Priorities Agenda now	5	
How the Water Industry Research Priorities Agenda has been developed	7	
What the Water Industry Research Priorities Agenda will be used for	9	
FIGURES		
Figure 1	Process, people and product	6
Figure 2	Priorities for Water Industry Research Priorities Agenda	7
Figure 3	Drivers and enablers	8
Figure 4	Influence of drivers and enablers across each theme and associated priority	9
Table 1	How priorities are structured	12
PRIORITIES		
Service delivery	14	
Supply optimisation	16	
Customers	18	
Workforce	20	
Liveability	22	
Circular economy	24	



Foreword

The water industry plays a fundamental role in our cities, towns and communities, through the provision of clean, reliable and affordable water and wastewater services that are the foundation of healthy communities, a healthy planet and a productive economy.

Ongoing investment and prioritisation in Research and Development (R&D) for the industry is important to ensure access to, and utilisation of the latest scientific evidence and information available. R&D is crucial to inform policy development that meets the needs of industries dependent on a safe and secure water supply, as well as our cities and communities now and into the future.

We have experienced unprecedented change and extremes in recent years. Throughout, the industry has successfully responded and adapted while at the same time recognising the need for greater foresight and resilience in this new era where improved integration across systems, decision-making and communication is expected. Ongoing investment and support to build a solid foundation of new knowledge through R&D which prioritises the needs of the industry will be key to achieving this. We therefore seek to harness our R&D success to date with a renewed commitment to greater R&D activity, and a focus on increasing efficiency and improved levels of collaboration to meet our objectives.

The urban water industry faces a number of challenges including population growth, climate change, and an ever-growing need for well-functioning, digitally connected and liveable cities. In addressing these challenges, R&D can provide a vehicle for exploring and discovering potential new opportunities across all areas of water and wastewater services. Consequently, this new research agenda has been developed to enable the urban water industry to rally as a collective and drive collaborative research, development and innovation that benefits the urban and regional communities we serve.

This paper outlines the new Water Industry Research Priorities Agenda which consists of six high-level priorities and key priority statements and will provide the basis for engagement, both within and outside the urban water industry, as we seek to coordinate and collaborate on shared interests and build new relationships and partnerships.

We have worked closely with the industry in the development of the new Industry Research Agenda and our desire is that it will lead to greater recognition of the importance of R&D and its integration into the business of water, while fostering engagement and collaboration to deliver greater outcomes for the industry, our partners and the communities we serve.



Karen Rouse
Chief Executive Officer,
Water Research Australia



Adam Lovell
Executive Director,
Water Services Association
of Australia



Overview

The purpose of this new Agenda is to help the water industry prepare for and manage significant future challenges and provide a catalyst for taking full advantage of recent rapid advancements in technology and the industry's growing appetite for innovation.

To effectively address these future challenges and capitalise on the opportunities, both research and development need to be targeted at factors that will help deliver both organisational and industry success. The Agenda embraces the key concerns and opportunities that link the industry right across Australia and provides focal points where action can be taken for the greatest benefit, and where benefits can be shared as broadly as possible.

The Agenda aims to foster a consistent and shared understanding of the opportunities to integrate research and development within the business of water services. Our hope is that it will provide the basis for productive discussions, both within and outside the urban water industry, as we seek to coordinate and collaborate on common interests and build new relationships.

The Agenda has been shaped through extensive consultation within our industry and a review of corporate and business strategies. The result is a strategic understanding of our shared drivers and enablers, our objectives, and our priorities.

The Agenda identifies priorities across six high-level priorities that capture current key narratives within the industry. These priorities also provide guidance in structure and language for the alignment of future urban water research roadmaps and strategies.

The six high-level priorities are:

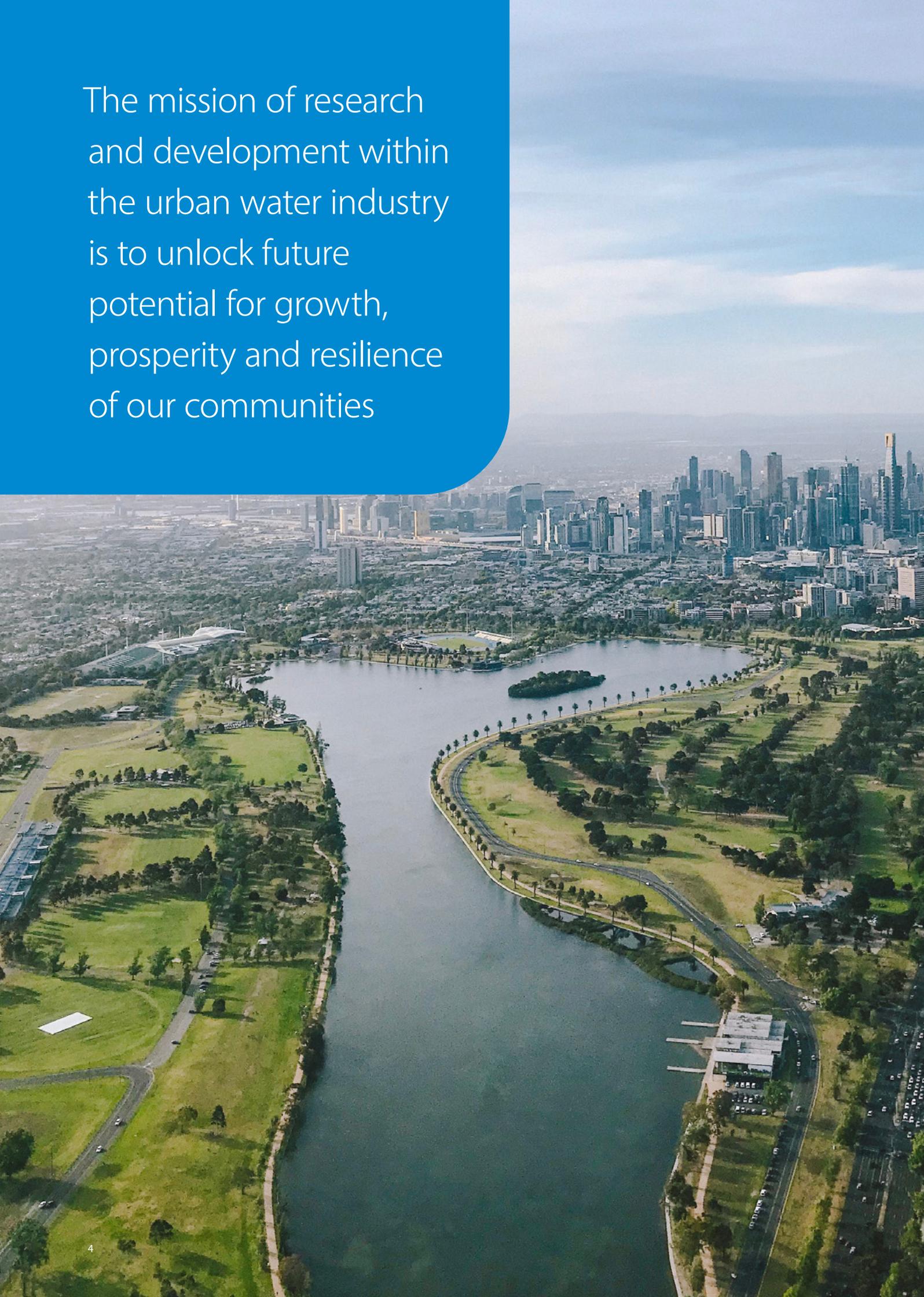
- Service delivery
- Supply optimisation
- Customers
- Workforce
- Liveability
- Circular economy

Within the Agenda, each theme consists of a priority statement that sets the long-term vision, underpinned by desired outcomes for the next 5 years, with a key research challenge identified to achieve the desired outcome. There are also questions for each priority statement that reinforce a collaborative and integrated approach to undertaking research. The development of the Agenda has recognised the extensive work done by the industry across the priorities and sets a forward-looking direction to address specific trends.

A new Research Priorities Agenda provides strong direction and focus to support and guide research investment across the Australian urban water industry

The new Research Priorities Agenda provides the basis for utility and industry-level engagement, both within and outside the urban water industry, seeking active and informed partnerships for high impact through efficient investment.

The mission of research and development within the urban water industry is to unlock future potential for growth, prosperity and resilience of our communities



Why the urban water industry needs a Research Priorities Agenda now

With revenue in excess of \$15 billion per year, the Australian urban water industry (the industry) has played a major role in enabling and driving economic growth across states and territories and delivering tangible benefits to the Australian community.

The water industry has invested significantly over decades in its research and innovation capability and built a highly productive and capable scientific community with a world leading reputation. However, investment levels in urban water research have been falling over recent years, funding sources have become fewer and requirements to demonstrate the value of research have become tighter. (Dillon, P. et al, 2018. Research Investment in the Australian urban water industry. water e-journal. Online journal of the Australian Water Association. ISSN2206-1991. Vol 3, No. 4 2018.)

In response to these changing times, and to continue to deliver value to customers and the community, the industry needs to refocus how it plans for research and innovation. It needs to have a more cohesive national agenda that will enable it to better meet future challenges.

The purpose of developing this national agenda is not to replace the great work being done across research agencies, brokers and utilities, it is to bring these entities together and focus their excellent work on a nationally consistent approach. An improved focus will help reduce the risk of fragmented and ad hoc research, and enable researcher and industry alike to better connect and leverage outputs to outcomes from disparate projects and programs.

This disjointed research landscape is an artefact of an industry without cohesive research directions. Current urban water research reflects the industry's multiple interests across the different national Science and Research Priorities of the Australian Research Council, making a purely urban focus for funding very difficult. The water industry has a significant interest, in not one, but in all of these priorities:

- Soil and water
- Environmental change
- Health
- Cybersecurity
- Energy

A clear and prioritised research agenda can help bring these aspects together for the water industry and find synergies of efforts across these topics.

For instance, research programs designed to meet the specific local needs of utilities and research agencies will find it easier, through this water industry research agenda and its execution, to find common linkages and access the broader pool of knowledge and expertise that may already exist.

Without a central guide, a variety of industry-wide, localised, efforts may keep tapping into the same pool of end users, creating engagement and enthusiasm 'fatigue'.

Research can then be more efficiently directed and undertaken, potentially not only avoiding overlap in project intents and execution approaches, but also making limited national and industry-derived funding count for more.

Furthermore, a sense of competition for funding can be redirected into collaborative consortium-like undertakings.

The clear alignment by the water industry to an industry research priorities agenda will:

- Accelerate the delivery of research outcomes through stronger partnerships across the water industry
- Increase the availability and efficient allocation of resources and investment to increase value and impact of the industry

This Water Industry Research Priorities Agenda (IPRA) provides a review of the current national approach and a direction for driving the future research landscape. Importantly, the agenda recognises that research and development is more than just a product, it is a support system and unlike a product, needs to adapt to a changing environment.

The current system of research and development for the Australian urban water industry has an opportunity to change its culture, behaviour and relationships and by so doing, support and prepare the industry to embrace the paradigm shift to greater water source diversification, optimisation and enhanced value for customers and community.

This change is being accompanied by a rapid expansion of technological advancements and a growing appetite for innovation. As well as technological changes, the industry also faces evolving environmental, social and economic responsibilities. The changing environment we are in requires us to manage new and as yet unidentified risks and has already driven an emphasis on resilience in the management of major infrastructure and a deeper need to understand the experience of customers and communities.

The nature of research and development is increasingly complex and operating conditions are always changing. To respond effectively, we need new knowledge and we need ever more sophisticated analysis and decision making.

To deliver a more focused agenda for industry research will require an increased effort to communicate and coordinate research activities both within the water industry and across other industries. It will also require an increased effort to improve strategic relationships across all levels of government and within different government sectors.

The objective across other sectors, like local government and energy etc. is to develop a shared understanding that the provision, distribution and treatment of water is an economic driver for liveability, health and our joint economic prosperity.

Within the water industry there is a need to better demonstrate the role of research and development both for and across the business. A version of a 3Ps for business success was applied to articulate and align the research priorities across People, Process and Product.

This application is summarised as follows and illustrated in **Figure 1 Process, people and product.**

This model recognises that the delivery of research and development for business success is reliant on a focus across all three areas, providing for a highly innovative, adaptable and motivated organisation balanced against accountability.

The nature of research and development is increasingly complex and operating conditions are always changing. To respond effectively, we need new knowledge and we need ever more sophisticated analysis and decision making.

FIGURE 1

Process, people and product 3Ps to align research and development with organisational success



How the Water Industry Research Priorities Agenda has been developed

The current key organisations working closely with the urban water industry on their research development and knowledge needs (WSAA and WaterRA) have been developing the WIRPA with their members over the last year.

In developing the research priorities, consideration has been given as to how the outcomes contribute to implementing relevant national (e.g. National Water Initiative, NWI, 2021; National Water Quality Management Strategy 2004) and international frameworks (e.g. United Nations Sustainable Development Goals) for the industry, as well as creating linkages with high-level national research agendas (e.g. CSIRO Missions and Challenges statements).

The identification of each of the priorities within the agenda has been based upon an intensive consultative engagement process with industry representatives and a review of corporate strategies, environment scans, associated reports and plans.

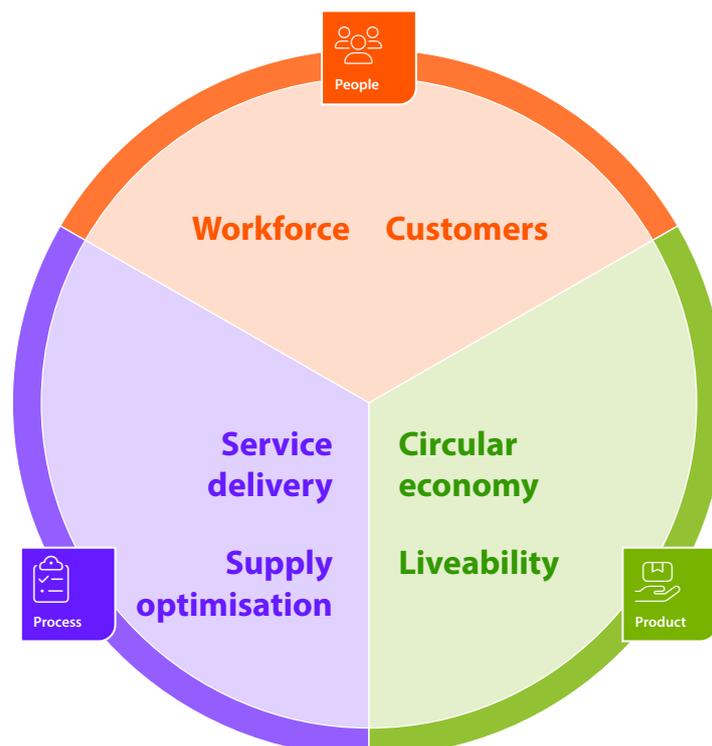
These have been further cross referenced against the projects and programmes as developed by WSAA, WaterRA and existing programs of the CSIRO. This helped ensure that the consideration and representation of broader strategic policy are aligned to the proposed research priorities.

The result is that the water industry research priorities agenda reflects the strategic issues being faced by the broader industry. In doing so, the Water Industry Research Priorities Agenda highlights the critical support system of research and development across the whole of business, with the aim to strengthen and elevate the profile of research and development in achieving strategic business objectives. This is demonstrated in **Figure 2 Priorities for Water Industry Research Priorities Agenda** represented across People, Product and Process.

The process of identifying the priorities needed to recognise and represent the overarching risks and opportunities faced by the industry. These have been identified and labelled as Drivers and Enablers (**Figure 3 Drivers and enablers**) They are important risks that have an enormous impact and should be considered right across the Water Industry Research Priorities Agenda.

FIGURE 2

Priorities for Water Industry Research Priorities Agenda



The drivers present the key challenges which are placing significant pressure on the urban water industry to respond and adapt, such as climate change, population growth and projected economic constraints to deliver equity of pricing (i.e. affordability) for access to services.

An increasingly significant opportunity as a driver for prosperity and growth of communities is for the inclusion and integration of Indigenous Water Values as part of the commitment by industry for reconciliation and development of Reconciliation Actions Plans.

The enablers recognise the emerging trends that support an improved level of development and adoption of research by the industry coupled with a culture for partnering and collaborating which is to be extended across industry sectors in order to create maximum leverage for the delivery of the priorities.

The identification of each of the priorities within the agenda has been based upon an intensive consultation process with industry representatives and a review of corporate strategies as well as, environment scans, associated reports and plans

FIGURE 3

Drivers and enablers



What the Water Industry Research Priorities Agenda will be used for

An important principle for the use and progress of the agenda is the support for developing a more integrated approach of research and development into the business of water services.

The Water Industry Research Priorities Agenda positions the role of research and development as fundamental for the required transition across the business of water. The identification of national level priorities provides focus for what the industry needs to achieve as a collective, while acknowledging the level of interconnectedness among the priorities from which research is expected to evolve and improve. The framework will also be used to guide specific research roadmaps that align with and feed into these overarching themes, to meet the desired outcomes across each of the priorities.

The Water Industry Research Priorities Agenda provides a national reference for the development of research programmes and projects both within the industry and importantly to partner across other industries.

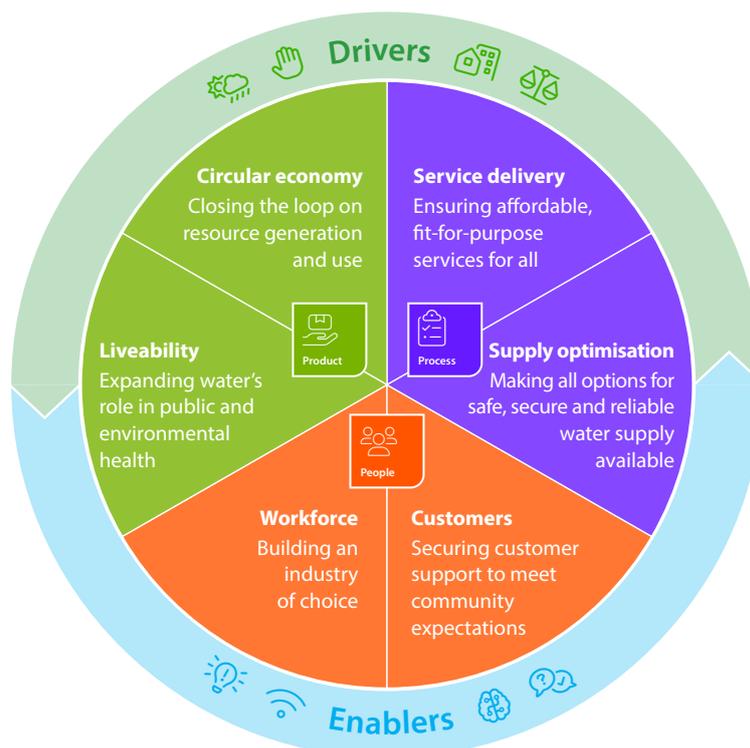
The priorities within the agenda (**Figure 4 Influence of drivers and enablers across each theme and associated priority**) are statements of the overall industry direction across high-level priorities of:

- Service delivery
- Supply optimisation
- Customers
- Workforce
- Liveability
- Resource flow

As an industry led and developed agenda the opportunity is to use the Water Industry Research Priorities Agenda to better engage and gain external perspectives from academia and infrastructure sectors such as energy, transport and digital services (e.g. internet of things).

FIGURE 4

Influence of drivers and enablers across each theme and associated priority



The structure of the Water Industry Research Priorities Agenda provides the vehicle to help identify, determine and develop partnerships to assist and support in leveraging research and development investment.

The structure starts with the Priority Statements. These set the long-term vision for each theme. Each Priority Statement is underpinned by a summary of the Desired outcomes for the next 5 years and a description of the Research Challenge which underpins the broader focus area to achieve the associated outcome. It is intended that the Desired outcomes and Research Challenges are reviewed periodically to assess progress and ensure continuing relevance (summarised in [Table 1 How priorities are structured](#)).

Within each of the Priority Statements there are “How might we” questions. These are open questions which do not presume the new ideas and innovative solutions yet to come. Their purpose is to underpin a collaborative approach to undertaking research and:

- Deliver influential research with a global outlook
- Provide an ability to link local and regional issues within a national context and, by extension, inform policy
- Give strategic direction for the development and implementation of industry research programs, initiatives and projects
- Guide the development of research that delivers transformational change
- Consider outputs that are achievable within a 5-year time period within reason

Priority statement sets the long-term vision for each priority, underpinned by desired outcomes for the next 5 years and key challenge to achieve the outcome – reviewed periodically – followed by collaborative how might we: questions



The application of the Water Industry Research Priorities Agenda in driving alignment and providing direction for research and development is best described in this example as given by Water Research Australia (WaterRA):



The proposed research agenda now provides an ideal platform to further develop research roadmaps, delving deeper into the research needs emerging under the different priorities. Aspirational ‘moonshots’ undertaken by WaterRA with the water industry in recent years, to articulate desired future outcomes or states of the water industry, can be aligned with the interim 5-year desired outcomes of the Water Industry Research Priorities Agenda.

For example, WaterRA’s programs have been and can continue to address water security aspects taking into account a diverse range of considerations such as water quality and public and environmental health outcomes, water yield and source water portfolio issues and, last but not least, long term resilience and rebuilding capability and capacity after shock events such as bushfires or pandemics.

Furthermore, the resources theme is integral to WaterRA’s **Whole Water** program which considers affordable options for water utilisation along the water-waste and recycled water-energy pathways, as are the practical exploration of digital and data solutions. To advance research in these fields, WaterRA has now the opportunity to work closely with WSAA to service our members with deep-dive, innovation and/or policy-ready research. WaterRA’s university and CSIRO members are well placed to undertake such applied research forward with us.



TABLE 1

How priorities are structured

The following section provides an overview of the Water Industry Research Priorities Agenda for all six priorities and further information for each priority.

		 Process	
Priority		Service delivery	Supply optimisation
Priority statement	Setting long term vision <hr/> Defining the focus area within a priority	Ensuring affordable and fit-for-purpose services for all	Making all options for safe, secure and reliable water supply available
Desired outcome	What success will look like by having this priority in place <hr/> Achievable within five years	Service delivery, affordability and costs are optimised across industries' asset bases, their lifecycles and role in value chains	A re-imagined and integrated urban water cycle where fit-for-purpose water is valued and utilised
Key research challenge	Stating the strategic research need in relation to achieving the desired outcome	How to balance or leverage long lived assets with the need to provide agility and responsiveness to changing operating conditions and customer priorities?	How to design, implement and maintain a balanced and integrated portfolio of all water supply options, taking into account climate extremes and evolving technologies?
How might we ...	Setting the scene in the context of the research challenge <hr/> Guiding research direction		



People		Product	
Customers	Workforce	Liveability	Circular economy
Securing customer support to meet community expectations	Building an industry of choice	Expanding water's role in public and environmental health	Closing the loop on resource generation and use
Customer support for delivering enhanced community outcomes is strengthened	A reliable and secure, high performing, skilled and diverse workforce, working within a safe, innovative environment	Liveability, public and environmental health benefits accrue to communities through integrated water management	The water industry plays a crucial part in the circular economy through new products, markets and business models
How to better engage with customers to understand their drivers for achieving community outcomes and to strengthen social licence to operate?	How to reshape the industry to be more inclusive and innovative, through attracting and creating a dynamic, high performing and skilled workforce?	How to implement integrated planning and the delivery of services to achieve health, environmental and liveability outcomes at optimal cost?	How to design and implement transition pathways that go beyond emission targets and recovery-based water services, to unlock new markets with quality products?





Process



Service delivery

Ensuring affordable and fit-for-purpose services for all



Desired outcome

Service delivery, affordability and costs are optimised across industries' asset bases, their lifecycles and role in value chains

Why it's a priority

Critical to the delivery of value chains for water services are the infrastructure, assets and supporting components which enable the transportation, treatment and the management of water. This is done in a way that is affordable to the customers and not detrimental to the natural environment.

A value chain is the full chain of business's activities in the creation of products or services. The water industry's value chain includes all the activities that contribute to water and wastewater management in a chain from water resources, to treatment to customer and back.

The Australian water industry has a combined infrastructure and asset value of over \$160 billion. The impact of aging infrastructure presents one of the most significant challenges to the industry in maintaining water delivery services at an affordable level. A focussed effort is needed given the role of infrastructure in achieving resilience both in terms of performance and cost.

The industry needs to move beyond maintenance and actively renew and prolong the life of our aging assets and infrastructure to help mitigate and manage future cost increases within the next decade. This is very challenging when we also need to do this at an optimal level without any interruption to water services and outcomes.

The ability to address this priority relies on a strong shift in research focus away from entrenching conventional approaches. The new focus needs to optimise the needs and opportunities across technological and digital advancements in the face of rising climatic impacts and customer expectations.

In the future our focus on the delivery of more agile and responsive water services, through assets and infrastructure, will deliver a more resilient system. To deliver this more resilient system the industry will need to better understand the limitations, capabilities and effective processes needed to adapt and to sustain affordability.

How we are responding to industry trends

The delivery of water services is under constant pressure for pricing to be kept as low as possible. The need is for a smarter and more efficient approach to account for increasing demand on capital resources. This provides a challenge to address the rising gap between available capital investment and the actual investment needed.

Key trends that have been considered include:

Affordability and working smarter

Integrating technology to help do more with less.

Customer focus

Limiting service disruptions and greater transparency in business decisions by understanding and matching customer expectations.

Big data

Managing the collection of data and how to support improved management and decision making.

Advancing technology

How to manage the opportunities and risks.

What has been done to date

Over the last decade and more, work has sought to improve operations and better understand, monitor and predict asset performance across pipelines, sewer systems and the corrosive characteristics within distribution networks. This has evolved to looking at new technological advancements and processes linked to asset renewal through smart linings and advancements in pipe manufacturing. These research developments have been met with a growing awareness and aspiration for the advancement of asset management and a higher standard of delivery and forward planning.



How might we:

- 1 Effectively manage the risk, cost and level of service trade offs to improve the level of affordability for all?
- 2 Embrace the advancement of digital technologies to enable more responsive and agile functionality across water services?
- 3 Adapt our networks and systems to become more agile and responsive to the evolving needs of water services and environmental requirements?
- 4 Improve infrastructure resilience through adaptive planning to optimise the integration of all water supply options?
- 5 Consider the relationship between human and infrastructure resilience in the face of disruptive and extreme events?





Process



Supply optimisation

Making all options for safe, secure and reliable water supply available



Desired outcome

A re-imagined and integrated urban water cycle where fit-for-purpose water is valued and utilised

Why it's a priority

Increasing demand and a greater awareness of the implications of a more extreme climate requires the water industry to shift away from a reliance on rainfall dependent, surface water supplies and towards more diverse supply options. The option to simply build more dams is limited by the supply of suitable locations, economic feasibility, yield uncertainty and changing public opinion.

A response is needed in which the management of a diverse and fit-for-purpose supply portfolio is supported by an evidence-based, research led approach on all available and fit-for-purpose options. Achieving a level of optimisation across both rainfall dependent and independent sources enables a balance for safe, secure and reliable supply for increased resilience.

In this process the reputation of Australian water utilities for delivering high quality drinking water needs to be maintained, and at the same time community trust in water also needs to be maintained. We need to ensure strong engagement with communities where options are fully considered equitably, openly and transparently and access to both quantity and quality of supply is understood.

To underpin the transparency of our engagement, we will require a more detailed understanding of all available options and the barriers we need to overcome. To ensure equity we must apply our efforts equally across regional, rural and metropolitan areas.

How we are responding to industry trends

The development of a more integrated urban water cycle looks towards the delivery of a diversified water portfolio by assessing both supply and demand- driven interventions across varying scales. The ability to rely on a single source of supply is no longer a secure option to meet the needs of Australian cities and regional towns.

Key factors considered to be driving a focus on achieving a more diverse and fit-for-purpose water supply include:

Resilience and security

Achieving reliable supply through a flexible and outward-looking approach given the impact of climate change

Reducing ecosystem decline

Limiting the negative impact of supply options on natural and waterway health

Customer acceptance

Provide a level of confidence through knowledge and expertise to address customer concerns and preferences

Regulatory and policy setting

To enable a developed system which is adaptable to needs of customers by considering all supply options.

What has been done to date

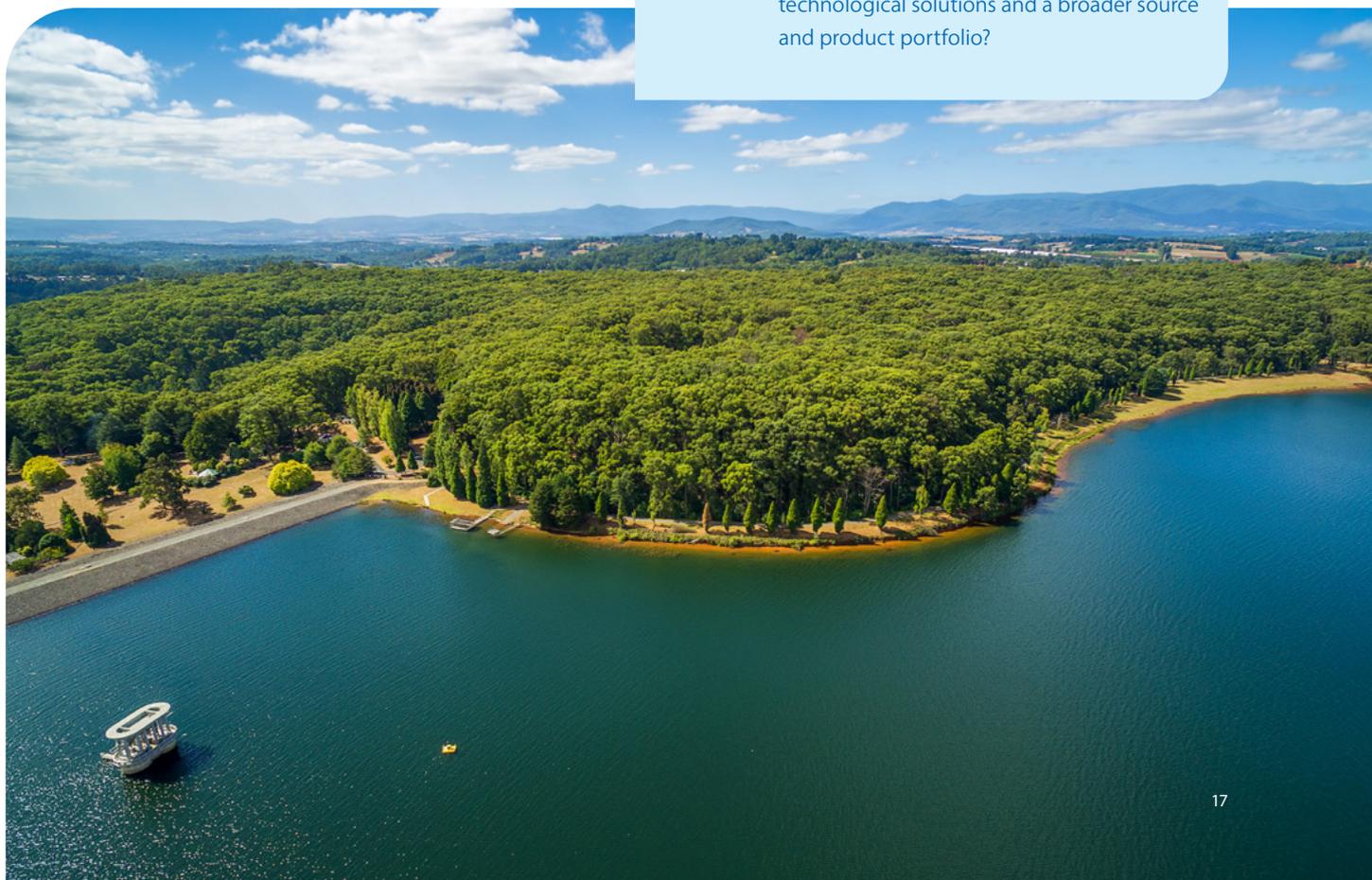
The vulnerability of supply systems solely dependent on surface water or groundwater for drinking water supplies was exposed during the Millennium Drought. In response, there has been growing investment to increase rainfall-independent water supply options. However, an assessment of urban water supply options, found that, in 2018-19, Australia's urban cities and communities still relied on surface water sources for 82% of their water supply.

Significant effort has been undertaken to help understand the costs of various supply options. But more needs to be done to better understand the complex social, economic, regulatory and environmental process to unlock the development and delivery of all options.



How might we:

- 1 Develop supportive regulatory systems and planning tools to deliver all water supply options?
- 2 Reduce and manage leakages to an acceptable level?
- 3 Maintain an effective response to, and control over contaminants of emerging concern in order to deliver safe water services?
- 4 Provide adequate support to the operational delivery of safe water, balanced across technological solutions and a broader source and product portfolio?





People



Customers

Securing customer support to meet community expectations



Desired outcome

Customer support for delivering enhanced community outcomes is strengthened

Why it's a priority

As customer needs and community expectations evolve the water industry needs to match the pace of change in order to keep up. The future customer wants to be at the centre of the design process for a seamless experience and ability to engage meaningfully on decisions that impact them as a community. Customers are expecting more from the water industry, with a greater emphasis on improved self-service and tailored delivery options, coupled with a low tolerance for service disruption and performance failures.

Furthermore, regulators are seeking more evidence of delivering and enhancing community value. The impact of rising customer expectations with regards to climate change and the environmental leadership that is expected of organisations in relation to their community provides the opportunity for the water industry to lead in this regard.

A focus on value requires customers to be both engaged and empowered in the decision making and system management process and have access to the appropriate level of information. An aspect of sustained or improved trust is needed to provide for effective engagement so as to attain and share the appropriate level of information. This is considered critical both in terms of the provision of support to customers, especially those experiencing hardship and for support to water services in decision-making processes. Increasing water literacy can help empower the community but needs to be structured in a way builds community engagement while strengthening and maintaining trust.

A new focus has emerged for tailor-designed customer experiences in line with broader community expectations. This recognises that as a community, there are rising expectations due to the level of investment in customer experience from other industries customers engage with. By prioritising the need to better understand customer needs in the context of community expectations, the objective is to improve and strengthen the social licence to operate.

Vulnerability is another crucial aspect to customer support that is not limited to a single customer but can encompass whole or segments of communities (e.g. communities who struggle or can't speak English). What is therefore needed is a systems approach to the provision of support by working across sectors and levels of government in this regard.

How can the industry be supportive and involved in a process and mechanism by which to streamline vulnerable services to ensure those eligible customers and communities are accessing the relevant entitlement? Such an approach would seek to unlock the complexity of the current system to improve the ease of navigation and access.

How we are responding to industry trends

Increasing attitudes and awareness of sustainability are creating higher expectations by customers for a value proposition aligned with their values for the future. In this regard, we ask what would future interactions look like and what tools and knowledge is needed to support, educate and connect?

Customer focus areas help to address future customers' needs and include:

Customer-centricity

Delivering services that are designed for customer and community needs.

Cost savings

Continue to develop efficiency, flexibility and transparency while responding to hardship and addressing vulnerability.

Product quality

Maintaining trust to build towards improved customer engagement.

Delivering a sustainable future:

Empowering positive behaviour change and a voice in future planning.

What has been done to date

The customer of the future has been defined from a range of possible social, economic, political and technological trends, coupled with industry inputs and insights across metro and regional areas of Australia. This work has focussed very much on the residential customer and the diversity of such persons to inform water industry approaches to improving customer experiences. Highlights of this work look at the ways operations, services and products of water businesses can respond to support future individuals.



How might we:

- 1 Empower customers to advocate at the community level for necessary changes to water service delivery?
- 2 Improve community driven acceptance and social licence of a diverse, fit-for-purpose and optimised delivery water services portfolio?
- 3 Utilise water literacy to inform customer behaviour and better understand the drivers of trust?
- 4 Better determine and respond to vulnerable customers in times of hardship?
- 5 Seek to integrate and reflect the integration of Indigenous culture in the value of water to our customers?





People



Workforce

Building an industry of choice



Desired outcome

A reliable and secure, high-performing, skilled and diverse workforce, working within a safe, innovative environment

Why it's a priority

In times of increasing uncertainty, it is difficult yet increasingly important to improve our understanding and forecasting of the needs and the impacts on the performance of the workforce, brand image and the skills required for a high standard of service delivery. If this were not to be prioritised, the industry is at risk of collapse through a lack of understanding on how to address the significant skill gaps and what skills are missing.

Consequently, this further risks the future provision of clean and safe water and wastewater services at affordable prices. The focus towards addressing these gaps and required skills is thus driven by harnessing insights across business operations, customer expectations and effective service delivery to build an industry of choice.

In terms of managing this priority, a focused research effort is required by the industry to increase our knowledge of how worker development, diversity and safety impact our workplace, respond to policies and change over time. Armed with this knowledge we will be better able to make critical improvements ahead of time. Science, research and development will also, increasingly, provide an important role in informing, educating, attracting and retaining employees.

An important component of this work in terms of the required skills, capabilities and pathways to sustain the delivery of business objectives, is the provision of improved levels of confidence for professional development within the industry. The trust of the industry across all customers and sectors provides a significant advantage from which to further the reputation to attract high performing and diverse talent. The attraction through reputation must be balanced with the ability to retain such performance and diversity to further improve upon reputation and increase demand. Ultimately, this will be based on a successful model to raise awareness and education of what the industry has to offer.

How we are responding to industry trends

Much of the focus in addressing this priority is based on a better understanding of trends in the workplace and in the workforce. The following industry trends are regarded as having an impact and influence the response needed:

Transitioning workforce

Dealing with the loss of institutional knowledge as a result of diminishing longer career water professionals and greater movement of workers across different utility sectors.

Shift to digital, remote and automation

Increasing demand for digital skills and automation of routine tasks.

Regulation pressure

Increasingly regulators are requiring industry to work with customers to deliver value through the pricing submission process.

Diversity and inclusion

Expectation that commitments to diversity and inclusion are meaningfully delivered.

What has been done to date

An initial investigation into the workforce of the future provided recommendations for priority next steps in the development of an employee value proposition and a strategic workforce plan. Key to the success of the implementation of these recommendations is to improve our knowledge about the adaptations required to enable a change in trends for the workplace and on the workforce. The industry has taken a significant step in health and safety through the Health and Safety Leadership Commitment. This work continues to strengthen the emphasis on improving health and safety culture and performance across the industry. Next steps in driving this priority forward are a renewed focus on identifying and addressing knowledge gaps to enable the water sector to become an industry of choice.



How might we:

- 1 Enable and inspire a future workforce to embrace innovation thinking?
- 2 Address transient workforce and retiring of key water industry experts to ensure continuity of high quality services?
- 3 Determine the capability and knowledge that is needed and how we deliver that to meet the required needs of increased performance, skills, safety and diversity?
- 4 Measure, monitor and manage the employee experience to understand impacts and the effectiveness of changes?
- 5 Resource, deliver and manage on-the-job training component of operational teams?





Product



Liveability

Expanding water's role in public and environmental health



Desired outcome

Liveability, public and environmental health benefits accrue to communities through integrated water management

Why it's a priority

The supply of infrastructure and related services needs to shift towards an integrated model for liveable, sustainable and productive cities and regions which form the basis for economic wellbeing and quality of life with a particular focus on climate conscious solutions..

The water industry is pivotal to the experience of our cities, towns and neighbourhoods because of the role it plays by providing quality water, wastewater and drainage services. While these services provide the basis for a functioning and growing economy they also contribute to an improved quality of life.

Their benefits extend to the enhancement of natural systems, disaster risk management and protection and improvement of public health, which is also noted to have significant advantages economically.

The industry has sought to focus on how it can more broadly contribute to liveability, by using green and blue infrastructure assets. This has now become part of an accepted approach for Integrated Water Management (IWM) which considers public health outcomes together with planning. This focus has provided successful results by the provision of spaces in which communities are more connected with opportunities to improve physical and mental health and well-being.

These opportunities need to become mainstream and be entrenched within the lexicon of delivering public and environmental health outcomes by focussing on achieving liveability through water. Currently, the water industry is limited in terms of resources to advance this service and is reliant on further demonstration, validation and ongoing monitoring to achieve the desired outcome.

With a prioritised approach, focus can be given to unlocking the pathways to greater investment and value through integrated planning approaches.

How we are responding to industry trends

The advancement of liveability by the water industry is seen as a progression given the extent of basic services already delivered. However, the difficulties that are experienced in furthering the delivery of liveability are as a result of the extension of services being advocated for. These difficulties are aligned with existing trends being experienced by the industry which include:

Enhanced amenity

The need is for clearer objectives, roles and responsibilities to help deliver and value this intangible service.

Statutory planning

An increasing demand for a better link to local government and a progression towards more integration of statutory land and water planning.

Harnessing the full water cycle

Achieving liveability by applying fit-for-purpose water to sustain blue and green infrastructure.

Sustainable funding

Where there is shared value, the investment needs to be apportioned effectively and sustainably.

What has been done to date

The body of work to date on the role of the water industry in achieving liveability is a testament to the level of commitment and vision of the industry. The work has evolved from waterway protection and enhancement to a deeper understanding of the additional value that improved environmental health offers to the public health of urban, regional and remote communities.

The focus, effort and resources that have been made available for making and presenting the case for IWM and liveable cities, have ensured an overwhelming consensus by the industry on liveability as a fundamental outcome, especially in urban and rural urban settings having to manage climate change impacts (e.g., heat island effects).

The next steps require stronger integration of planning and partnerships across sectors. The water industry can bring to these partnerships its core strength in design, validation, management and monitoring and help deliver broader liveability outcomes to meet growing community expectations and experiences.



How might we:

- 1 Measure and validate both the direct and in-direct public and environmental health benefits of liveability and related solutions?
- 2 Determine best management practice for understanding, managing and minimising the impact of discharge to waterways according to required environmental values?
- 3 Contribute to blue and green orientated development as part of integrated planning?
- 4 Develop financing mechanisms, which account for intangible value and avoid inequitable allocation of costs and benefits, to deliver environmental, health and liveability outcomes for all communities?





Product



Circular economy

Closing the loop on resource generation and use



Desired outcome

The water industry plays a crucial part in the circular economy through new products, markets and business models

Why it's a priority

The level of degradation of our natural systems, together with the depletion of resources to the point of criticality, has meant that sustainability alone is no longer an adequate objective. While current statements are made both within and across industries regarding achieving “net zero targets”, the current state of the world in which we operate requires a move beyond this, to thinking of productivity and resource recovery in terms of restoration and regeneration. These are the principles which can support the water industry in facilitating the transition to a circular economy.

The industry can lead a transition in which the process does not seek to disadvantage current linear-based economic practices, but rather supports and enables the transformation across the industry supply chain. The degree to which the water industry can achieve this requires a deeper understanding, awareness and increased knowledge of the new markets and business models which are aligned to the transition to a circular economy.

The benefits of the transition to a circular economy will also be shared across many of the objectives and challenges currently facing the water industry. The water industry is in a unique position and can act as both an enabler and a catalyst to more broadly promote the transition across the community.

In addition to the technical requirements, a further focus on institutional and governance structures is needed to manage a circular economy approach across services planning, procurement, delivery and management.

How we are responding to industry trends

While the water industry has committed to the Sustainable Development Goals, the process of implementing new approaches and managing transitions remains limited. There are key trends, which are raising the level of awareness in terms of what the application of the principles of the circular economy translate to, are:

Efficiency gains

Ensuring affordability by maximising resource use.

Resource recovery

The tailoring of recovering resources and products as new revenue generators or cost saving measures.

Restoring nature

Given the reliance upon and responsibility for protecting natural systems, the industry needs to transition towards net positive gain and impact.

What has been done to date

The circular economy as a concept is not new, even application to aspects of the water industry are not necessarily new with regards to resource recovery. However, when considered at an international scale and the focus towards transitioning to a circular economy, we recognise the Australian water industry as lagging behind key regions. This has become evident by work done to date which has demonstrated the extent to which the industry is managing the transition. It is therefore recognised that as an industry we need to support these initial steps towards enabling the circular economy.

A better understanding of the gaps, followed by a broader assessment of the required new business models and related governance structures, are fundamental to a sustainable and just transition.



How might we:

- 1 Develop the new business models, and links across sectors, needed to integrate the principles for transitioning the water industry to play its role in a circular economy?
- 2 Identify, address and remove the barriers for the water industry to actively participate in the transition to a circular economy?
- 3 Transition and monitor beyond net zero environmental harm, to the recovery and production of quality resources for new products, services and markets at different scales?
- 4 Ensure the quality of products are maintained, safe and suitable to meet the needs, demands and opportunities of new markets and compatible with pre-existing infrastructure?



