THE ROLE OF THE URBAN WATER INDUSTRY IN CONTRIBUTING TO LIVEABILITY

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ABSTRACT

Liveability dominates current discussion about the planning and performance of cities. Customer research is beginning to confirm that customers expect water utilities to contribute to liveability and act in their longer term interests. By taking a different approach to the work we do, we can realise further multiple benefits for our communities. We need stronger integration of water and urban planning to ensure our water services secure the liveability of our cities and regions. This new framework clearly captures the broader context in which urban planning occurs, a greater role for communities in decision making and broader objectives for water utilities, including liveability.

INTRODUCTION

The water industry underpins the liveability of our cities and regions. From the provision of safe drinking water to ensuring clean beaches and waterways, urban water services provide the foundations for a city’s liveability by supporting public health, environmental protection, and economic productivity. In the past few years this role has broadened in response to a focus on meeting customer needs and engaging with stakeholders.

Greater engagement is fostering conversations about the role of the urban water industry beyond traditional water servicing. This includes consideration of water utilities’ role in supporting community wellbeing, for example by reducing the urban heat island effect and providing green spaces. Innovative design of public places, commercial and residential developments also demonstrate the role of water in creating places where people choose to live, work and play.

In 2014, the Water Services Association of Australia (WSAA) published an Occassional Paper on the role of the urban water industry in contributing to liveability in our cities and regions (WSAA, 2014b). WSAA also released an Urban Planning Framework and Guidelines which propose a broadening of urban water planning (WSAA, 2014a). The framework is based on achieving better integration between water and urban planning, and includes stronger community and stakeholder engagement, with the purpose of understanding and responding to customer needs and preferences, and providing water services that support aspects of liveability that are specifically pertinent to each city or region.

WATER AND OUR CITIES’ LIVEABILITY

These conversations about a broader role for the urban water industry in contributing to liveability are being prompted by the range of opportunities and challenges that now face the urban water industry. The impact of the Millenium drought in Australia triggered a number of reviews and inquiries into the urban water sector. These identified a range of problems and challenges for the industry in meeting the needs of its cities and the expectations of its communities. These include:

- problems with institutional roles and responsibilities for planning and investment
- inadequacies in planning tools and processes, particularly community engagement
- limited evidence of customer needs and preferences reflected in pricing reviews
- the definition of security of supply objectives
- policy bans on some water supply options e.g. dams and adding recycled water to drinking water supplies
- inflexible pricing arrangements
- the impact of water restrictions and the high cost of some water conservation measures
- catering for rapid population growth
- impacts of climate change and variability
- integrating stormwater, sewage, recycled water and groundwater into the urban water cycle
- managing the impact of investment programs on customer bills, and
- providing acceptable water and wastewater services in regional areas.

Commentary from

government, regulators, the community and the media made it clear that the industry needed to clearly articulate and communicate a broader approach to planning for urban water services. The approach would need to go beyond the existing best practice framework for urban water servicing and yield analysis (Erlanger and Neal, 2005) to more clearly capture

- the broader context within which urban water planning occurs
- the role for communities and stakeholders in decision making, and
- objectives such as those relating to liveability, and not previously included by the urban water industry

This would require water utilities to engage with governments, stakeholders and customers to understand their views on liveability, and more importantly, their expectations for the water industry’s role in contributing to the liveability of our cities and regions.

What is a liveable city or region?

Whilst liveability dominates current discussion about the planning and performance of cities, there are few clear definitions. Most descriptions of liveable cities refer to indices used in Australia and internationally to assess liveability for a variety of purposes (Table 1) including:

- assessing community wellbeing
- remuneration for overseas employment postings
- property development comparators.

A relationship between sustainability and liveability is often implied. However, liveability appears to be highly subjective and context specific; influenced by the needs, values and preferences of individuals and their communities. These subjective dimensions are not evident in definitions of sustainability. Having considered such sources, as well as what seems to be a common appreciation of liveability, WSAA has adopted the following definition:

A liveable city or region meets the basic social, environmental and economic needs of its people, and goes beyond this to address communities’ values and preferences for amenity, wellbeing and a sense of place. To be long lasting and resilient, a liveable city or region must consider the needs of future generations and use systems thinking to understand and respond to shocks and long term change.

How does water contribute to liveability?

The way we manage water affects almost every aspect of individuals’ and communities’ experience of their cities, regions and towns. For many decades the urban water industry has supplied safe and secure drinking water services, reliable sanitation and (in some areas) effective flood management for its customers. These are the most fundamental foundations of liveability in any city.

Table 1: Comparison of attributes assessed by various liveability indexes (Holmes 2013)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>EIU/Mercer</th>
<th>ACF Sustainable Cities Index</th>
<th>Community Indicators Victoria</th>
<th>Australian Unity Wellbeing</th>
<th>London Quality of Life</th>
<th>NZ Quality of Life Project</th>
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<tbody>
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<td>Health/Wellbeing</td>
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<td>Local economy</td>
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<td>Infrastructure</td>
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<td>Local identity</td>
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<td>Green building</td>
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<td>Climate change</td>
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<td>Equity</td>
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Beyond these foundations, the interactions between water, natural and built water industry assets, and aspects of a community’s liveability, are quite complex. This complexity is captured in Figure 1.

The way water is used in urban design creates the look and feel of a place. It affects the desire of people to move through and interact with that place, and with one another, and impacts on their wellbeing. Water supports amenity by helping to manage urban heat, sustain playing fields and parks, and create green and blue spaces. The land and infrastructure networks managed by water utilities provide some of the best opportunities for parks, paths and cycleways in our cities and towns, providing connectivity and open space in the face of increasing urban densities. Such opportunities
support the physical and mental health of our communities. These complex interactions demonstrate the breadth of the role that urban water services could play in supporting the liveability of our cities and regions. By understanding these interactions, water services can help to make our cities less susceptible to stresses, shocks and extreme events. This in turn makes them better places to live and makes our communities more resilient.

**LIVEABILITY NEEDS AND PREFERENCES**

Research by a number of Australian and international organisations, including the Australian Cooperative Research Centre for Water Sensitive Cities, is helping to better describe and quantify the contribution of the urban water sector to the liveability of our cities and towns (Brown 2008, Johnstone 2012). The concept of cities evolving to meet the needs of their people is captured in Figure 2. Associated with this evolution towards water sensitive cities is a hierarchy of societal needs being satisfied - from meeting essential needs (clean water and sanitation) through to providing water-related services that more broadly support growth and personal wellbeing.

A tenet of this needs hierarchy is that the basic and essential needs of communities are (at least capable of being) met before higher order aspirations for liveability become relevant to those communities. In regions and towns that still struggle to ensure water supply security, or to protect their waterways from pollution, the role of water utilities in liveability is still about providing reliable services to satisfy these fundamental needs. However in Australia, the ability of water utilities to seamlessly and invisibly meet these water servicing needs is simply an assumed foundation for the liveability of our capital cities and major regional centres.

Whether explicit or implied, expectations and aspirations for the role that water plays in contributing to liveability are likely to be different from place to place, community to community, and likely to change over time. It will also reflect the needs and preferences of people within communities who have already made a choice about where they live and work. Such choices may be on the basis of affordability, access to employment and services, natural features (beaches, bushland), and/or social infrastructure. We expect that these needs and preferences will reflect the extent to which basic water servicing needs are already satisfied, as well the needs of economic and population growth, and aspirations for a city or region’s future.

It can also be expected that communities’ responses at any point in time will reflect recent events and experiences. Water restrictions, exposure to extended heatwaves, deterioration of public gardens or playing fields, bill increases and public commentary around water planning and governance will influence awareness and expectations of the role that water plays in their life and how it impacts on their city or region.
Customer research by water utilities is beginning to confirm that a significant cohort of customers expect water utilities to contribute to liveability and act in communities’ longer term interests. As an industry we therefore need to:

- engage with our customers and communities to understand their preferences and values
- Partner with state and local government, the private sector and community groups to plan, fund and deliver broader outcomes that support the needs and aspirations for our cities and regions
- Innovate to achieve broader outcomes that contribute to liveability from the services we provide

CASE STUDY – CUSTOMER LIVEABILITY RESEARCH

In April 2014 Sydney Water completed the first phase of customer research designed to better understand customers’ liveability values and preferences. This research explored what customers understand liveability to be, and what aspects are important to them. It then explored the appeal of potential Sydney Water initiatives.

When asked to prioritise the five most important aspects of a liveable city, Sydney Water customers identified affordable living, public safety, good employment opportunities, health and welfare services, and good public transport and roads.

Water and wastewater services were not listed in the top five, suggesting that they are not a front of mind issue for customers, and that these services may often be taken for granted. Despite clear overarching preferences, the research also showed that what makes a city liveable means different things to different people, depending on a number of factors including life stage, gender, location, and financial situation.

Customers were then presented with a number of initiatives that Sydney Water could implement to enhance liveability. They identified eight standout concepts in terms of broad market appeal:

- Renewable energy
- Water recycling schemes
- Waterway naturalisation
- Water filling stations
- Working with councils to prevent flooding
- Tap™ (promoting tap over bottled water)
- Education activities (e.g. Taronga Zoo, Powerhouse Museum, site tours)
- Greening our city with rain gardens, wetlands, and use of treated stormwater

Further analysis suggests three core themes inherent to the initiatives that were ranked highest and have the broadest appeal to Sydney Water’s customer base. This is summarised in Figure 3, and will provide a common basis for Sydney Water’s ongoing role in contributing to liveability in the Sydney region.
ACHIEVING LIVEABLE CITIES – INTEGRATION OF URBAN WATER AND URBAN PLANNING

Greater integration of strategic land use planning and urban water planning is essential to achieve resilience, liveability and good urban design for our cities and regions. Understanding water infrastructure constraints, opportunities, and interactions with other sectors is critical to good urban planning, and cost effective investment in public infrastructure.

Equally important is the direction and objectives provided to the water industry by good urban strategies. These will define the objectives and outcomes that must be enabled by water services to realise the future that we aspire to for our cities and regions. This is of increasing importance in the face of rapid and unstaged Greenfield growth, and contestability in the provision of water services. A coherent approach to water servicing for our cities and regions that is sustainable, equitable and affordable across the whole community is required. This will not be achieved through disaggregated planning and bespoke solutions for individual precincts.

THE URBAN WATER PLANNING FRAMEWORK

Last year, WSAA released Occasional Paper 29, Urban water planning framework and guidelines (2014a), This framework builds on and updates the previous WSAA 2005 framework (Erlanger and Neal, 2005) that provides a proven approach to water resource planning for reliable and resilient water supplies. The new framework and guidelines propose a broadening of urban water planning from this technically sound base. The framework is summarised in Figure 4.

Overall, the urban water planning framework has shifted from being presented as a linear step-wise process, to better reflect the inter-dependent process of continual input and updates that occurs.

The framework consists of three planning ‘phases’:
1. Influence the external strategic environment
2. Broaden the organisational perspective
3. Plan, implement, adapt and review

The framework also explicitly addresses the need for better integration with land use planning and stronger community and stakeholder engagement to achieve the multiple objectives that contribute to the liveability of our cities and regions.

**Phase 1**

Of most importance in creating this framework, particularly in the context of resilience and liveability, is the need to inform and influence the external strategic environment. Phase 1 recognises that influencing trends in the strategic environment at the front end of the planning process provides opportunities for better outcomes. As time and urban planning processes progress, fewer opportunities exist to deliver the most efficient, productive, reliable and resilient services for the community.

Water service providers need to move from simply monitoring and understanding the external environment, to actively influencing it, noting both long and short term trends, as well as identifying potential for disruptive events. Institutional and legislative arrangements established by governments vary between jurisdictions and are frequently under review. Water service providers...
are encouraged to revisit their role in public policy formation and contemplate opportunities to leverage their technical and community knowledge to support effective outcomes in the public interest.

Key elements of this phase of the urban water planning framework include engaging with

1. communities to support a deeper understanding and awareness of the urban water cycle and water servicing issues, well ahead of the need to seek their approval or support for water servicing solutions
2. state-based land planning and resource management agencies in support of better integration of population, urban land use and water planning
3. public policy debates on a broad range of issues of relevance to urban water management, including climate change, community health and wellbeing, new models for financing public infrastructure, customer preferences for choice and control, private sector involvement and supply chain diversity.

Changing institutional boundaries and responsibilities require water service providers to respond to and underwrite the expansion or contraction of organisational vision and purpose.

Phase 2
Urban water utilities should establish the breadth of their vision to inform their planning processes. A more outwardly focused approach to urban water planning is required to reflect customer and community needs and preferences. This may require urban water utilities to broaden their vision beyond meeting regulatory requirements to
embrace new expectations, particularly with regard to customer value.

The framework proposes at least six domains that should be considered in establishing the organisational vision and objectives for providing water services:

1. Integration of water management across all aspects of the urban water cycle – water, sewage, and stormwater
2. Customer experience, which may go beyond standards of service to define how the organisation wishes to be regarded by customers and the experience it wishes customers to have in day to day use of water services and interactions with the utility
3. Environmental sustainability, addressing the environmental protection and resource efficiency outcomes to be achieved
4. Liveability, defining the role that the organisation will take in contributing to liveability, based on identified customer values and preferences relevant to their region and customer base
5. Adaptability, defining objectives for resilience of water services and an approach to planning that can respond to long term and uncertain changes and shocks to our operating environment
6. Commercial agility, responding to calls for a leaner sector, contestability, making the most efficient use of financial and economic resources, and drawing on the skills and strengths of both the public and private sectors.

One of the aims of Phase 2 is to better reflect customers’ values and willingness to pay for services in the objectives defined for each of these six domains. This can then be used to determine the way that services are delivered, and what tradeoffs are made between risk, reliability and affordability. We expect this will drive the industry to provide a greater range of services and more choices for customers.

**Phase 3**

Phase 3 consists of the core water planning process defined by WSAA in 2005 (Erlanger and Neal, 2005). Elements from Phases 1 and 2 inform and respond to the process of planning, implementing, adapting and reviewing as described in Phase 3 of the updated urban water planning framework. This Phase acknowledges the continuing significance of these core tasks: water service providers will continue to be responsible for providing water, wastewater and stormwater services.

Water resource planning will continue to have a strong focus on balancing supply and demand, providing resilience in the face of population growth, demographic change, and other emerging trends and challenges such as those associated with climate change. The latter include the ability of communities to survive and recover from extreme weather events, bushfires, and longer periods of severe heatwaves. It is also necessary to integrate water services with other sectors, such as energy and waste management, to create liveable and sustainable communities.

Phase 3 consists of 6 Steps which are general in nature, reflecting the diverse circumstances, scales and objectives for contemporary water service businesses. The 6 Steps bundle tasks into broad categories, as in reality tasks occur in parallel rather than sequentially. These steps are summarised in Table 2.

**Table 2: 6 Steps and 11 core elements of Phase 3 - planning, implementing, adapting and reviewing**

<table>
<thead>
<tr>
<th>Key step</th>
<th>Core elements</th>
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</table>
| Define approach | 1. Define an approach to planning that includes an opportunity for a diverse range of stakeholders to come together and ask “What is the problem we are trying to solve?”
2. Establish a clear and agreed set of urban water servicing objectives between urban water planners, land use planners, communities and customers, and economic, health, water and environmental regulators.
3. Develop a stakeholder and community engagement strategy which aims to maintain open and transparent lines of communication between all parties to the planning process, including around key decision-making points. |
| Characterise | 4. Adopt a ‘systems’ approach to planning for and managing urban water services. That is, plan for, and manage water services in the urban context on a whole of water cycle basis and within the context of land use planning (particularly capital city and regional), waste management, and energy and food production. |
| Develop options | 5. Identify (and regularly update as conditions change) flexible portfolios of water servicing options at a variety of scales (on site, local and region/city). |
| Assess options | 6. Assess the merits of all options for a particular area and identify for each option the associated funding models including the identification of who benefits and who pays for each option.
7. Quantify environmental, economic and social costs and benefits of options using a model agreed to by economic regulators. |
| Implement | 8. Develop an investment strategy – a set of policy rules and instructions as to the sequence in which the types of options are chosen, the thresholds and triggers for new options, predecessors and constraints for some options, and the constraints of the system.
9. Ensure the implementation plans include agreements on responsibility for ongoing management, operation and maintenance of all options. |
| Monitor, evaluate and review | 10. Publish periodically a water outlook that contains information on:
11. the amount of water currently available
12. a forward storage/capacity outlook for the coming year under a range of plausible climate scenarios
13. whether agreed levels of service will be able to be met under these scenarios and if not what actions will be taken to improve system performance so that these agreed levels of service can be met (i.e. what triggers, if any, need invoking).
14. Comprehensively review and update the plan every five years. |
COMMUNITY AND STAKEHOLDER ENGAGEMENT

The framework also emphasises the need for community and stakeholder engagement throughout all phases of the urban water planning process. The need to inform and influence is of critical importance, particularly in the context of achieving resilience and contributing to liveability. In this way, the framework acknowledges that there is a need to address community values and expectations and consider different economic and political perspectives. Without this type of engagement a ‘technically correct’ solution can become rejected and unappreciated by the community. There are a number of recent examples which demonstrate this, often relating to water supply solutions, such as dams, desalination plants and the use of indirect potable reuse.

Community engagement should influence decision making, irrespective of the objectives chosen by water utilities as part of Phase 2. The framework encourages water businesses to work with customers to determine what they value and why, and to consider what benefits, if any, may come from customer segmentation work. Also critical during the implementation phase is engagement with the broader urban planning sector to ensure integration between strategic land use planning and urban water planning.

CONCLUSION

As the Australian water industry underpins the liveability of our cities, towns and regions, it must have a greater role in urban planning, design and management. The Australian water industry needs to play a key role in influencing public policy debate on the form and function of growing cities, towns and regions. It also has a role in considering how best to service water needs in the short and long term. Greater integration of planning and providing urban water services with strategic land use planning will result in the best long-term benefits for residents in the most cost-effective way. This integrated approach is also essential to deliver services that meet multiple objectives including resilience, liveability and good urban design.

ACKNOWLEDGMENT

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