WATER SERVICES
ASSOCIATION OF AUSTRALIA

NEXT GEN URBAN WATER

The role of urban water in vibrant and prosperous communities

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The Water Services Association of Australia (WSAA) is the peak body that supports the Australian urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. The collegiate approach of its members has led to industry-wide advances to national water issues.

WSAA can demonstrate success in standardising industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The Executive of the Association retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance. WSAA is regularly consulted and its advice sought by decision makers when developing strategic directions for the water industry.

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Foreword

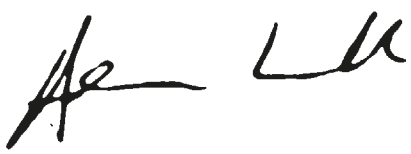
Vibrant and productive cities are the key to Australia and our economic growth. Over 80% of our population lives in a city and 80% of our GDP is produced on just 0.2% of our land mass.

Australian cities are regularly recognised as some of the most liveable in the world. Efficient, financially stable and high performing water businesses are a key requirement for a liveable city or region. Much of our economic growth in cities is fuelled by knowledge workers. Attracting the best human capital is crucial as we are competing with international cities like London, Hong Kong and New York.

In previous occasional papers, WSAA explored the current and potential contribution water businesses make to the liveability of our cities and regions, and how this could be measured. WSAA has also proposed a new urban planning framework that incorporates more customer involvement and greater collaboration with stakeholders. Our recent position paper on reform for the urban water industry looked at regulatory and competition reform to align the water sector in the long-term interests of customers.

This paper brings previous papers together by highlighting that water businesses can play a greater role in creating value for communities. This involves a rethink within the water business, by engaging with their customers and the community to determine expectations and to collaborate with other stakeholders to create shared value. Governments have a role to play by enabling integrated planning across transport, energy and water sectors, bringing stakeholders together and enabling more flexible, outcome-focused regulation.

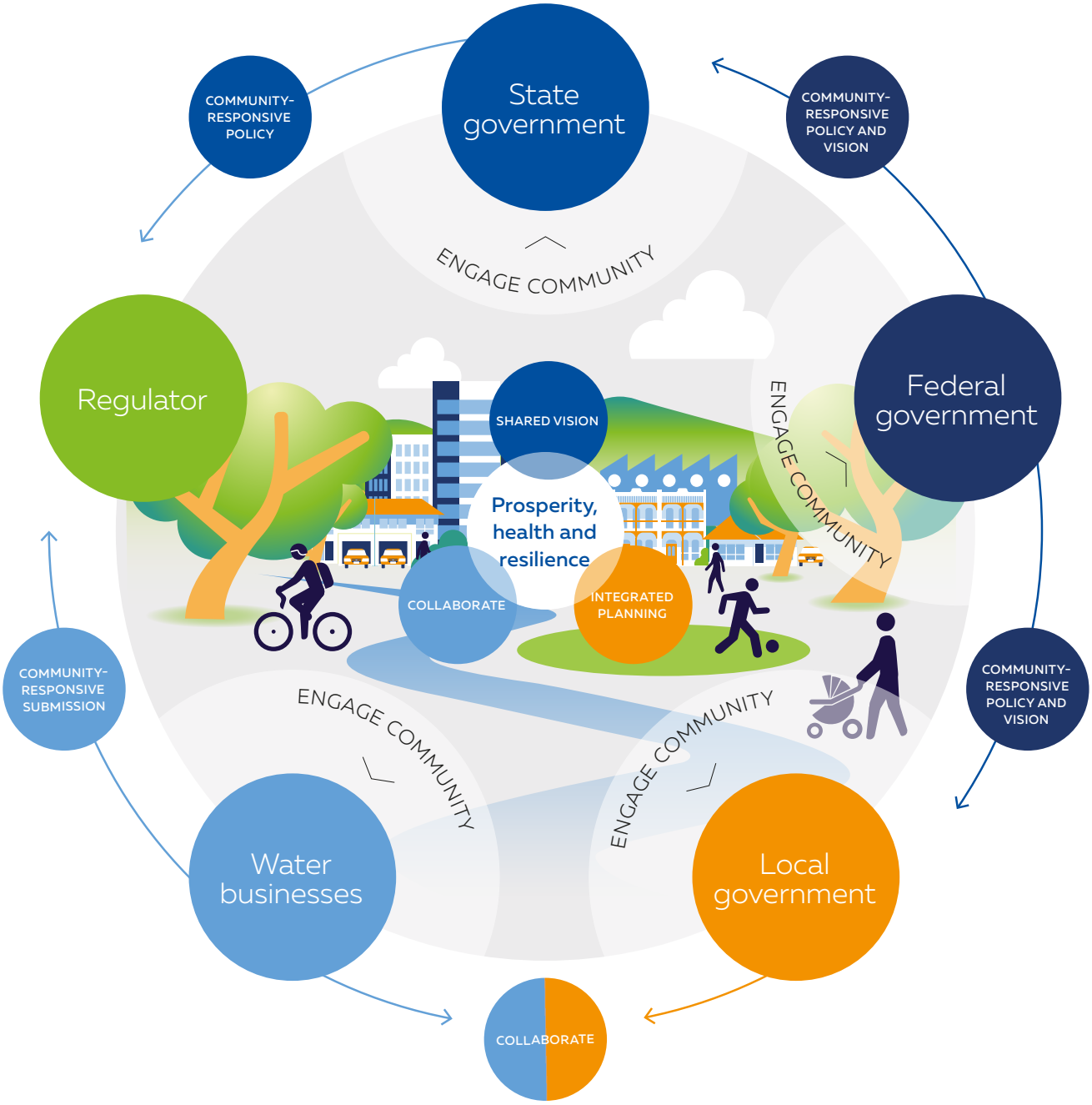
These messages are not new. However this paper provides a practical way forward, demonstrated through more than 20 Australian case studies. It is designed to speak to State and Federal Governments as a useful tool to inform policy and planning. Our desire is that this paper will lead to greater collaboration between essential services and government to deliver outcomes that matter to our urban water customers and the communities in which they operate.



Adam Lovell,
Executive Director, WSAA

Creating value for our communities

With community our top priority, governments and the water industry can work together to achieve greater benefit for less cost



Executive summary

Cities in Australia and New Zealand consistently rank as some of the most liveable in the world, providing us with a core competitive advantage in attracting talent and investment as both countries transition to the knowledge economy.

Retaining that competitive advantage in the face of emerging challenges will require innovative solutions and collaborative planning, particularly around essential services and infrastructure.

Developing liveable, vibrant and prosperous cities is an objective with universal support across all stakeholders, including governments and other industries. Ultimately success will be determined by transitioning to a new paradigm where:

- all levels of Government collaborate to seamlessly plan, invest and enable day to day services,
- the private sector is encouraged to invest in new infrastructure and provide services, and
- business and government connect and continuously engage communities to drive end user value.

Infrastructure Australia and the recent Turnbull Government Smart Cities Plan (2016) outline new approaches to cities and the built environment in Australia. Transport, energy, telecommunications and water: these essential services are undeniably critical. However, too often, inconsistent priority setting, poor collaboration between these sectors and different approaches to investment and a restrictive user pays philosophy has prevented the vision for vibrant cities and towns. In the paper 'Doing the important, as well as the urgent', WSAA outlined a blueprint for urban water reform in the core business of water and sewerage services. This paper explores a pathway to deliver improved community outcomes beyond water and sanitation.

I. Urban water's role in vibrant and prosperous communities

The urban water industry can play a much greater role in enhancing quality of life in our cities and regions. The Urban Water National Performance Reports consistently show the value of urban water services through safe drinking water and environmentally sound sewerage services (Bureau of Meteorology, 2016).

Different communities have different needs. Some water businesses are supporting their communities through school health programs while others, like Yarra Valley Water are focussing on some of their most vulnerable customers (Case study 11).

Urban water businesses are also in a unique position to contribute to green space, amenity, waterway health and recreation. The Greening the West (Case study 14) initiative demonstrates that connecting people through green parks and open space and through urban habitat creates opportunities to improve physical and mental health of our communities.

Significant gains have been achieved for the customers of water businesses through National Competition Policy (NCP) reforms and Australia's urban water sector is well trusted by the community, with a long history of safe, secure water supplies—even when faced with extreme climate events like the Millennium drought. Although the sector is still under pressure from numerous challenges (outlined in WSAA's report Doing the important as well as the urgent: reforming the urban water sector) there are many water businesses leading the way in delivering outcomes beyond their core services. This paper seeks to build on the gains made by water businesses over the last 20 to 30 years by advocating the creation of *shared value*. First conceived by Porter and Kramer in 2006, this paper defines shared value as '... a collaborative approach to identify ways in which commercial objectives and wider social and community priorities can reinforce one another' (Harper et al, 2014).

> "Through collaboration, shared value seeks to identify ways in which commercial objectives and wider social and community priorities can reinforce one another."

Many water businesses are already leading the way, delivering great outcomes beyond their core services. Our research shows that these initiatives are opportunistic rather than systemic. We anticipate that to unlock the next step-change in value creation, water businesses must target shared value – where the water business, customer and community interests are in alignment.[1]

1 In this paper, the term community refers to everyone that receives or is impacted by services from a water business. The term customer refers to those members of the community that pay a water bill.

This will need more than a just a cultural shift within water businesses. It requires stronger partnerships with governments and the private sector to recognise the value that water can create, leading to more involvement in planning and service delivery. It also needs engagement with the community so they can play an active role in shaping the direction of the water business, enabled by more flexible regulation.

II. Key findings

The key findings of this paper are:

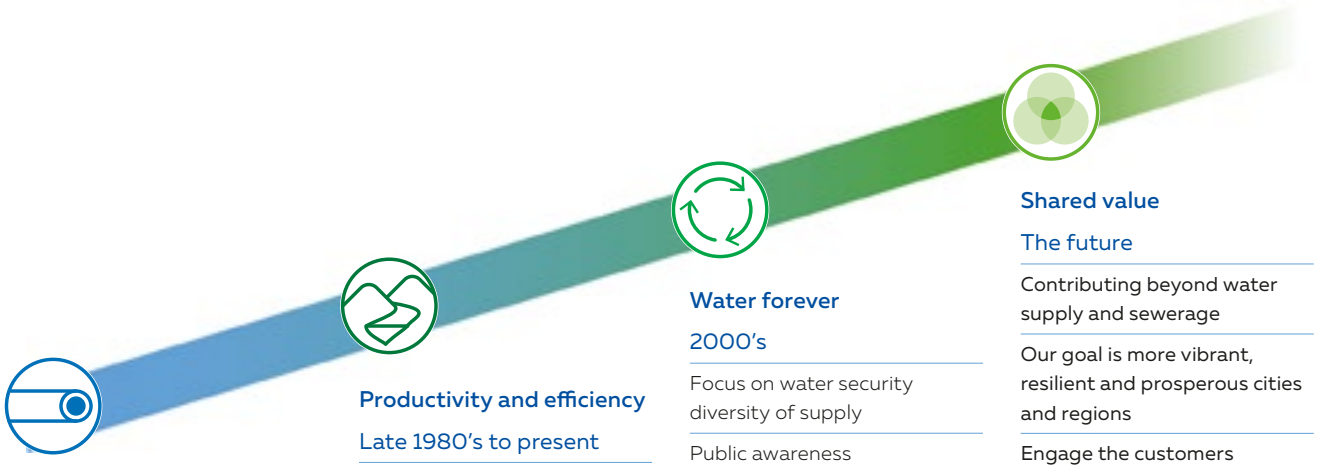
The urban water industry, through water and sewerage provision, underpins liveability

The industry also provides value beyond these regulated requirements. Urban water businesses are highly regulated, transparent and operate under full cost recovery to provide these essential services. They have a history of good performance. Many water businesses also create shared value in the form of education, amenity and waterway health. However these are pursued in an opportunistic, rather than strategic manner.

To further the delivery of broader community value, the urban water industry needs internal culture change along with corresponding changes in the authorising environment

A more deliberate and sustained approach requires leadership and a different skills mix within the water businesses to understand community needs and seek collaborative solutions. Systemic change in policy and regulation is also needed to allow water businesses to work with other agencies to respond to a broader spectrum of customer needs and expectations. This collaborative approach that delivers both public and commercial value is at the core of creating shared value.

Figure 1: The next era for the water industry



Public health is our reward

1880 to 1980

Building infrastructure for essential services

Productivity and efficiency

Late 1980's to present

NCP reforms (productive efficiency)

National water initiative reforms

Water forever

2000's

Focus on water security diversity of supply

Public awareness and education

Shared value

The future

Contributing beyond water supply and sewerage

Our goal is more vibrant, resilient and prosperous cities and regions

Engage the customers and community

Federal and State Governments need to facilitate integrated planning across essential services for cities and regions

Urban water needs to be part of strategic and long term regional plans for all cities and regions around Australia. This is not just water businesses and councils but should also include energy, transport, waste and health. Government frameworks and processes that support collaboration between sectors will lead to co-investment, lower costs and better value outcomes for businesses and the community. State Governments can lead the process by giving the water businesses a role in strategic economic development and land use planning activities. Federal Government can facilitate integrated planning through implementing and building on Infrastructure Australia's National Infrastructure Plan. A reinvigorated National Water Initiative should be a core component of the Federal Government's plans. Recently the Council of Australian Governments (COAG) signed the International Agreement on Competition and Productivity – Enhancing Reforms. This agreement includes sections specifically on urban water and is in line with the reforms WSAA recommends in its 'Doing the important as well as the urgent report' and other key submissions.

Value is customer and community driven

Urban water businesses need to establish a relationship with customers and communities to understand their needs and expectations. It is important that this relationship is not between the regulator and customer, but directly between the water business and customer. Part of this is communicating and educating customers on what is possible. This also means accepting the fact that in some areas, customers may just want base level services and cheaper bills. Water businesses, councils and various stakeholders are undertaking work to understand how customers of the water businesses and community define value, however further, more detailed engagement is required.

The Victorian Essential Services Commission has set an example by putting the requirement for customer engagement at the core of its new regulatory model (Essential Services Commission, 2016).

The regulatory environment needs to evolve to match the customer and community expectations.

Environmental regulation needs to focus on outcomes such as waterway health, amenity and risk as opposed to prescriptive treatment and discharge requirements that are out of alignment with community expectations. Current economic regulation requires water businesses to deliver the lowest cost water and sewerage services. Postage stamp pricing means that all customers pay the same for this base level service. While this has its advantages, it does not allow for customer choice or the flexibility to provide additional services where there is demonstrable value to the community. Exploring alternative funding and ways to recover costs other than just 'postage stamp pricing' can ensure that beneficiaries (and not just the customer base) contribute. Additional options for cost recovery have the potential to lead to appropriate cost recovery for stormwater and a breakdown of the artificial boundaries between water and sewerage, and the rest of the urban water environment.

It is not the intent of the water industry to usurp the responsibilities of local government or other agencies.

Instead it is WSAA's suggestion that this broader role incorporates a collaborative approach to planning, and supporting other agencies in the delivery of services valued by the community.

III. Call to action

This paper demonstrates that water businesses are well on the way in creating shared value. However government-owned water businesses operate in a highly regulated environment which, while necessary and highly successful in terms of driving efficiency, has resulted in a siloed approach from other infrastructure systems and loss of opportunity. WSAA is calling for integrated planning across all city infrastructure; government leadership to enable collaboration between stakeholders; and greater engagement with customers and community. The aim is to achieve lower long term costs to communities while increasing the resilience and liveability of cities.

This paper also calls for State Government and Local Government to recognise the potential of the urban water businesses to contribute beyond water and sewerage provision.

The Victorian Water Plan by Department of Land, Environment, Water and Planning (DELWP) is discussed in case study 17. It is a step in the right direction with a section dedicated to 'water for liveability' (DELWP, 2016).

There is a need for state governments to drive collaboration between agencies through frameworks for integrated planning. The paper asks economic regulators to recognise the importance of customer involvement and accept pricing submissions that reflect the aspirations and preferences of customers.

It speaks to environmental regulators in that it advocates for outcomes-based regulation, moving away from highly engineered to more integrated and potentially catchment-based solutions that deliver broader outcomes, at a lower cost. And it speaks to Federal Government to show leadership and recognise the current roles of the urban water industry, as well as its potential to do more in contributing to its Smart Cities Plan (Australia Federal Government, 2016).

The unique aspect of this paper is the use of Australian case studies to demonstrate the key findings and also to give practical examples of how the recommendations could be applied in the Australian context and legislative setting. Unlike other pieces of work, this paper also looks specifically at how the water businesses can leverage their expertise, assets and relationships to deliver broader community value. The case studies are broadly categorised as follows.

No.	Australian case studies	Location	Outcomes
The broader economic benefits of effective water and sewerage provision			
1	The value of clean beaches	Sydney	
2	More value than just water and sewerage	ACT	
Water businesses delivering more than just water and sewerage			
3	Greening the pipeline	Melbourne	
4	Using water industry know how in a new way	Bendigo	
5	Irrigating Adelaide's airport	Adelaide	
6	Using offsets to deliver biodiversity and waterway health	Brisbane	
7	A sewage treatment plant for all	Sunshine Coast	
8	Water only schools	Shepparton	
Rethinking internal processes, services and skills to create shared value			
9	Renewable energy	Melbourne, Sydney	
10	Energy generation – a paradigm shift for a water utility	Melbourne	
11	Helping not hindering – support for domestic violence victims	Melbourne	
12	Creating shared value	Frankston, Melbourne	
Collaboration and integrated planning to deliver better value for communities			
13	Cooks River bank naturalisation	Inner West, Sydney	
14	Greening the West	Western suburbs, Melbourne	
15	Fishermans Bend – Integrated planning for the community	Inner suburbs, Melbourne	
16	The Urban Water Cycle planning guide	Geelong	
Government facilitating collaboration and integrated planning			
17	The Victorian Water Plan	Victoria	
18	Water and economic development	Adelaide	
19	Buffertopia	Western Australia	
Working with customers and communities to define broader value			
20	Making the Parramatta River swimmable again	Western Sydney	
21	Our space, your place	Melbourne	
22	Using engagement to find a solution	Northern Territory	
23	Understanding customer views on stormwater	Sydney	

Water business outcomes

- Financial benefits
- Improved reputation
- Improved community and stakeholder relationships
- Improved business capability
- New products and services

Government and community outcomes

- Economic growth and development
- Better health outcomes
- Better social outcomes
- Better environmental outcomes
- Resilience
- Engaged and active community

IV. A pipeline to action

Key message	Actions	Federal government	State government	Local government	Water business	Regulator
Recognise the role of water in liveable cities	Federal and State Plans for cities and regions include the importance of water to liveability and resilience.	●	●	●	●	●
	Develop a water plan that includes a role for water beyond just water supply and security and is developed with a number of stakeholders and owned by the community	Via NWI	●			
Improve collaboration and coordination for integrated planning outcomes	Develop frameworks to support collaboration between agencies and the private sector to deliver broader outcomes	Via NWI	●			
	Water businesses are involved in strategic land use planning of cities and regions	Via NWI	●	●		
Ensure customer and community define value	Regulation should foster a closer relationship between customer and community, and the water business through deeper and broader engagement		●	●	●	●
	Regulation should allow water businesses to respond to a broad spectrum of customer needs and preferences	Via NWI	●		●	●
Build capacity within water businesses	Create a corporate culture that aligns with creating value for communities				●	
Evolve the regulatory environment to match customer expectations	Remove impediments to allow more flexible additional mechanisms for cost recovery and funding	Via NWI	●	●	●	●
	Environmental requirements to be focused on community expectations and waterway health	Via NWI	●	●	●	●

So where to now? The urban water industry has the capacity to contribute to a broader range of services. The case studies demonstrate the value the urban water industry can provide, but we need to remove the impediments to collaboration to take that value creation to another level. WSAA believes the next era for the industry is one where communities and governments can define what they expect from their water business, and the policy and regulatory mechanisms are in place to work with other stakeholders to plan, deliver, support and fund these outcomes.

The industry

The urban water industry enriches our quality of life in ways beyond the provision of essential water and sewerage services. Driven by community expectations, there is the potential to collaborate with other sectors, government and private businesses to create vibrant, resilient and prosperous cities and regions.

4 SYDNEY HARBOURS OF WATER EACH YEAR PROVIDED BY THE AUSTRALIAN WATER INDUSTRY

Which is nearly 2,000 gigalitres of drinking water

6x AROUND THE PLANET

Or around 300,000 km of water and wastewater pipes

1,500GL OR THREE SYDNEY HARBOURS

Treated wastewater released each year

$160BN

ASSETS as at 1 July 2015

$15BN+

REVENUE PER ANNUM

0.75%

AUSTRALIA'S GDP

DIRECTLY ACCOUNTED FOR

Customers

$1200PA AVERAGE HOUSEHOLD WATER BILL

Or 2.4% of the average household disposable income

50% of all water customers don't realise their water company provides sewerage services

40% of all household water is used outdoors

Environment

96% of all ocean beaches in NSW were rated as good or very good in 2015 (Beachwatch scorecard)

95% of all biosolids are beneficially reused, in Australia on average

35% of all Adelaide sewage from its treatment plants is recycled

$332M

CONTRIBUTION TO
SYDNEY TOURISM

The value of coastal beach water quality is in the order of $137 million per annum for Sydney residents and an additional $332 million to the economy due to tourism

Value of water

$400M–$1.5BN

Estimated cost of the Millennium Drought in Melbourne as a result of restrictions

Liveability

$1.8BN ECONOMIC COST*

to the Melbourne community due to hot weather. Of this, the urban heat island effect contributes about $300 million in present value terms

79% HOBART'S TREE CANOPY COVERAGE

The highest recorded tree canopy coverage of all the capital cities

*Estimated

1 Introduction

1.1 Why has the Water Services Association of Australia (WSAA) undertaken this work?

Beyond just water and sewerage services, water businesses around the country create shared value. However this 'value add' tends to be ad hoc and opportunistic.

This paper starts a strategic discussion on the following questions:

1 Are there benefits in the water industry systemically broadening its value proposition beyond the core products of water supply and sewerage?

2 Are there overall cost savings and benefits to be realised through greater collaboration of all stakeholders involved in the urban water cycle?

3 What would be the benefit to customers and community?

4 What changes if any, are required in both the "authorising environment" and industry capability to make this systemic shift happen?

Although water businesses are just embarking on this journey, they are in a unique position to create shared value for the following reasons:

- As corporatised, government owned businesses they have strong financial foundations and a business mindset to investment and transparency via their economic regulator.
- As monopoly suppliers the urban water businesses are in a privileged position and therefore must be open to collaboration. Their strong performance in water and sewerage provision has also built up a strong measure of trust in the community, though they must avoid complacency.
- They also have longevity so there is confidence in the operation and maintenance of any additional services.
- They tend to cover large geographical areas allowing a whole-of-catchment approach to urban water management.
- The Australian urban water industry has approximately $160 billion in assets and there is the potential to leverage some of these for multi-purpose use.
- Water businesses also have many skills, expertise and relationships that are readily transferable to other areas of urban water and beyond.

WSAA policy papers

WSAA has a history of involvement in this space and are strong advocates of integrated planning and regulatory and industry reform. WSAA's contribution to the discussion around liveability of cities and regions is reflected, in part, by the many strategic papers it has delivered including those listed below.

- Liveability Indicators 2016
- Doing the important as well as the urgent: the case for urban water reform 2015
- Improving economic regulation 2014
- Urban water planning framework and guidelines 2014
- The role of the urban water industry in contributing to liveability 2014

1.2 How does the water industry contribute to liveability?

Government-owned water businesses around the country are well-trusted by the community, with a long history of safe, secure supplies – even when faced with extreme climate events like the recent Millennium drought. Their core business of water and sewerage provision delivers liveability and economic development, demonstrated by a recent study by Deloitte Access Economics (2016) detailed in case study 1.

Water businesses have the potential to make an even greater contribution to a liveable city, where people want to work and play through activities such as:

- making available assets like easements for conversion into bike paths as demonstrated by the Greening the Pipeline initiative in Melbourne (case study 3)
- boosting the generation of renewable energy, as in case study 9, through
  - cogeneration where local food manufacturers supply their waste
  - installing micro-hydro schemes on large pressurised systems
- assisting local councils to provide green, cool spaces by supplying alternative water supplies for parks, sporting fields and trees as in case study 14
- improving amenity, biodiversity and environmental health by working with councils to:
  - naturalise urban waterway banks as in case study 13
  - developing wetlands to reduce erosion and pollutants
- supporting healthy hydration programs in schools and promoting tap water as in case study 8.

There are many reasons for the water industry to take up the challenge of creating shared value:

The water industry understand how crucial water is to a prosperous and liveable city

During the most urgent water restrictions of the Millennium Drought, when water could no longer be allocated for maintaining community infrastructure such as sports fields, some estimates costed the damage to 'welfare in the community' of no longer having such communal outdoor recreation facilities between $400 million and $1,500 million (Productivity Commission, 2011). Beyond essential services, water is part of the fabric of a liveable city.

The capacity exists within water utilities

Shareholders, governments, policy makers and customers see the capacity and capability of their water utilities to do more than just provide water and sewerage services and demand directly and indirectly that they do so. For example, the State Government, other agencies and the community asked Coliban Water to lead the solution to remediate contaminated groundwater from old gold mining operations. (case study 4)

It is good business

Water businesses see the reputational benefits of broadening their value proposition, which in turn gives them the support of their shareholders, and the legitimacy and support to progress this agenda.

It encourages innovation

Water businesses are unlocking innovative solutions and creating greater value for not only the community but themselves when they leverage their assets for multi-purposes. Melbourne Water tapped into community ideas and needs to find new uses for their assets in case study 21.

In some instances there is a formal remit to work across the broader water cycle such as Melbourne Water's role in waterways and flooding.

Case study 1

The value of clean beaches

Sydney Water has made a number of key infrastructure investments over the years to improve water quality. Twenty-five years ago, they replaced the old cliff-face outfalls at Malabar, Bondi and Manly with Deepwater Ocean Outfalls (DOO) along with a range of other improvements. A study by Deloitte Access Economics considered the potential benefits and contributions, and estimated that:

- the value attributable to coastal beach water quality – for Sydney residents alone – is in the order of $137 million per year or a lifetime value of around $2 billion.
- the net value added associated with beach water quality is worth around $332 million per year to the NSW economy through domestic and international tourism
- the health benefits associated with beach water quality due to the avoidance of illness for beach users is estimated at $140 million per year from avoided absenteeism

In addition to the economic benefits there were also intangible benefits associated with biodiversity and brand value.

It can deliver financial benefits

There is a growing realisation that the current approach of growing the asset base proportional with growth will be extraordinarily costly. Unitywater on the Queensland's Sunshine Coast used a non-asset solution to deliver a capacity upgrade that not only had financial benefits for the water business but delivered additional value to the community (case study 7).

It is important to note that for some water businesses the overall preference is for core service provision and lower prices. For others it may be providing fit for purpose water to keep sporting fields green during a drought. The most important point is involving the customer and community in this decision so water businesses can focus on the outcomes they value most.

Case study 7

A sewage treatment plant for all

The Maleny Sewage Treatment Plant (STP) needed a capacity upgrade to cater for increased population growth in the region and improve treatment standards. In a region with strong community spirit, Unitywater were well aware that successful delivery of the upgraded STP would require taking a partnership approach with the Sunshine Coast Council, the Maleny community and local indigenous groups.

Through close consultation and collaboration over several years a preferred approach was delivered. This involved an STP upgrade in addition to planting an adjacent forest and wetland on a former dairy farm site which further treats the effluent from the STP.

This preferred approach to the $17 million project won on both cost and non-cost criteria. It also brought numerous benefits for the community including positive impact on water quality of the nearby creek, biodiversity benefits, heritage protection and development of community spaces such as walking tracks, in alignment with the Maleny Community Precinct Master Plan.

OUR SPACE. YOUR PLACE.
Use Melbourne Water land to benefit your community

Case study 21

Our Space, Your Place

As Melbourne grows it is becoming more important to provide opportunities for exercise, such as cycling and walking and community interactions and access to open outdoor areas. Melbourne Water is the custodian of 33,000 hectares of land across greater Melbourne, and much of this land is available on request for projects which will benefit the wider community. To encourage the use of land for community projects, Melbourne Water created a map based web application, 'Our Space. Your Place', which makes information on Melbourne Water's land publicly available and streamlines the process of finding land and expressing interest in using it for community benefit.

Community groups and individuals can use the application to search for an appropriate space for their community use concept, access information on potential funding sources, and send through an expression of interest. Community members are encouraged to consider a wide range of activities on the land, such as parks, shared pathways, community gardens, events, landscaping and vegetation, murals and public art. There is strong evidence of a positive relationship between providing access to safe, green open space and the physical health and wellbeing of our communities.

2 The current state of the water sector

Key messages

The urban water sector in Australia has a long history of providing secure water supplies and wastewater services. The sector wants to continue this as well as maximising its economic, social and environmental contribution.

Some parts of the urban water cycle suffer from underinvestment. The siloed and fragmented nature of urban water management is one of the impediments to better outcomes.

There is an opportunity for the water industry to leverage its assets and capability to support improved outcomes in other parts of the urban water cycle.

The Australian water industry is very mature, formed some 140 years ago to protect the fundamental health of urban communities. Advances in engineering and technology have led to enormous improvements in public health and environmental protection. Due to its success at maintaining high quality and continuous services at relatively low prices it is easy to forget water businesses exist.

In more recent times the industry has made incremental improvements in becoming more efficient in delivering essential services due to the National Competition Policy (NCP) and National Water Initiative (NWI) reforms of the 1980s and 1990s. The Millennium Drought resulted in a $30 billion investment across the country to secure our water supplies into the future through desalination, recycling and water efficiency measures. The end result is a water industry that is financially self-sufficient, with high standards of service, professional governance, transparent pricing and a focus on long-term security.

With water and sewerage services already optimised, the next step change in value creation is likely to come from optimising community-desired outcomes across the urban water cycle particularly stormwater.

The millennium drought proved that the water industry can manage water in a crisis. The years since have shown that we struggle to engage governments and customers in times of plenty.

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. 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. Currently most Australian cities and regions are likely to be categorised as 'drained city' with some moving towards 'waterway city'. There are impediments to transitioning to a water sensitive city:

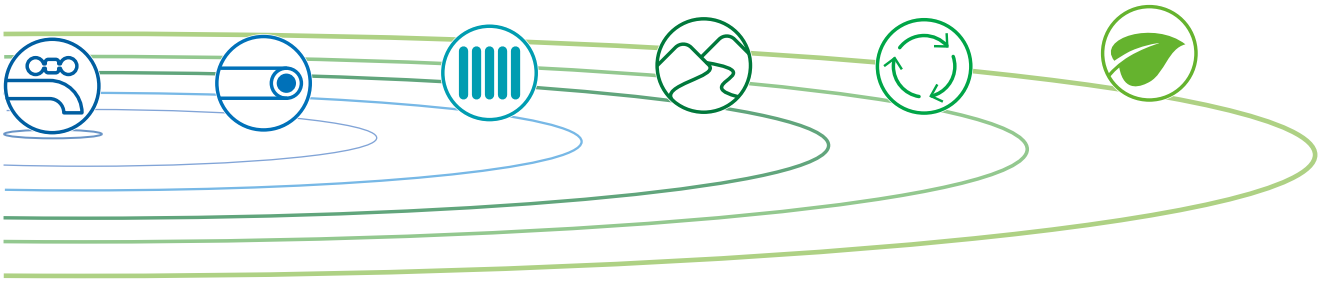
- The industry is siloed and responsibilities for various parts of the urban water cycle vary across the country (refer Figure 3) resulting in the piecemeal and fragmented management of water.

- Inflexible regulation frameworks mean that the water businesses are not required and in most cases discouraged from considering benefits beyond their regulated responsibility of water and sewerage when making investment decisions.
- There is still a limited understanding of the needs and preferences of the water business customers and the communities in which they operate.

WSAA's view is that there is an opportunity to transition to a water sensitive city by building off the strong foundations of the water and sewerage businesses and optimising the whole urban water cycle. To address this we require a holistic and collaborative approach.

This view aligns with recommendations in the Australian Infrastructure Plan (2016) and the recent COAG Intergovernmental Agreement on competition and productivity – Enhancing reforms. The Agreement states that 'water reforms should be developed and considered, with a focus on more efficiently and sustainably securing urban water services'.

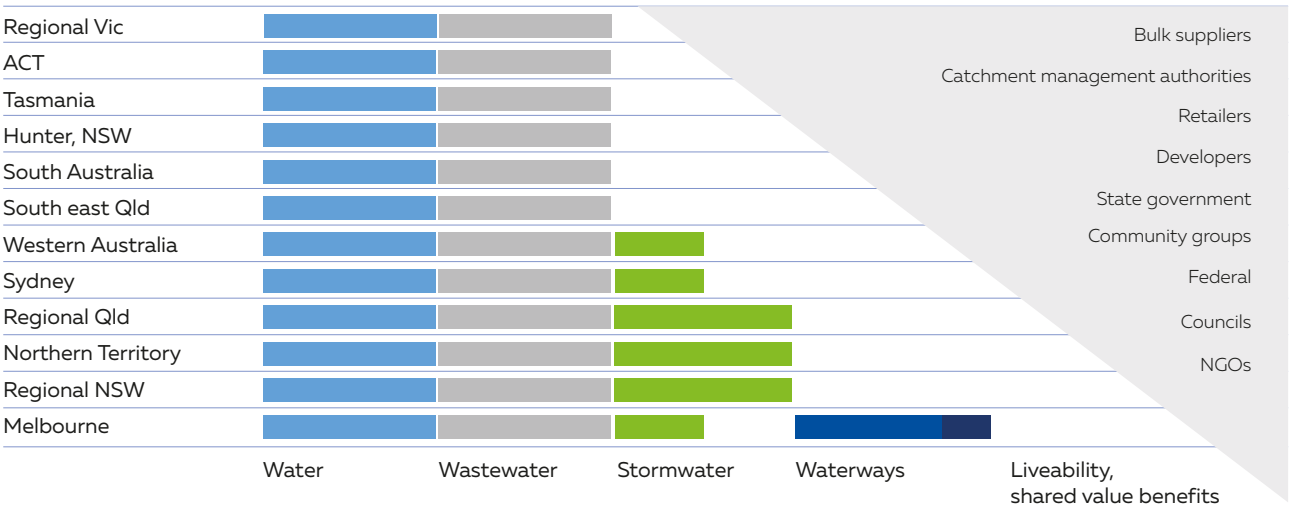
Figure 2: Illustration of the relationships between city states and societal urban water needs (Johnstone et al, 2012)



Water supply city	Sewered city	Drained city	Waterways city	Water cycle city	Water-sensitive city
Water for potable use	Wastewater management	Stormwater disposal	Stormwater hydrology and quality	Total water cycle management	Thermal comfort
Water for non-potable use		Pluvial flood risk reduction	Improved habitat	Integrated water systems	Identity and vision
			Ecological health		New hydro-social contract
			Places for social interaction		Engagement
			Recreational opportunities		Inter-generational equity
			Aesthetic (beauty)		

Existence	Relatedness	Growth
Secure water supplies	Recreation	Achievement
Public health	Social cohesion	Identity
Public safety	Beauty	Purpose
Property protection	Comfort	Control and independence
Economic activity	Ecological health	Equity and social justice
		Intergenerational equity

Figure 3: Jurisdictional responsibilities for water management around the country



3 Opportunities

Key messages

There are existing problems in water management including flooding, degraded waterways and inefficient investments as a result of poor integration of planning and lack of collaboration.

Climate change, increased population and a wave of new challenges will exacerbate these problems to the extent that the current siloed approach will need to change.

A different collaborative, integrated approach that focuses on optimising outcomes across the whole of the urban water cycle will benefit communities and water businesses in the long term.

The water industry that has been largely successful in the provision of drinking water and sewerage services but there has been mixed success across the remainder of the urban water cycle. This has led to the following issues:

- As our urban areas have grown and developed, there has been an underinvestment in stormwater management. Most stormwater assets are managed by local councils and of these, they estimate that 9% totalling $3.1 billion (IPWEA, 2016) are in a poor to very poor state. In addition most of these existing assets are not able to manage the increasing urbanisation and very few (if any) cities have acceptable levels of flood protection in place. For example, the estimated costs of maintaining current levels of flood protection in Melbourne up to the year 2051 would be a total of $9.8 billion (DELWP, 2015).
- Increasingly poor aquatic health of urban waterways and a loss of biodiversity as a result of a greater hydraulic and pollutant load. This is due to an increase in impermeable surfaces as our cities grow and increase in density.
- Inefficient investment due to poor planning decisions that do not consider water in the environment and instead require water services to be retrospectively 'plumbed in'. This costs the customer, ratepayer, community and taxpayer more in the long term.
- There is little opportunity for the community to genuinely engage about their needs and preferences in relation to liveability. This is partly due to the confusion in who is accountable for the outcomes (see case study 22) and the fact that the different agencies work in isolation. However there are some very good models that can be built on, such as community based catchment management trusts for managing local waterways. Case Study 20 demonstrates how community values and preferences guide the management strategy for the Parramatta River.

Case study 20

Making the Parramatta River swimmable again

The Parramatta River Catchment Group (PRCG) has a clear mission: to make the Parramatta River Swimmable again by 2025. The PRCG has taken a strong outcomes based approach to this complex task, driven by community needs. For the community, being a 'swimmable' river meant more than just swimming, but also a desire to enjoy the amenity and biodiversity benefits of the river.

The PRCG are developing a Masterplan that encompasses the many dimensions of making the river swimmable, including water quality, ecological health, swimming site activation and waterway governance. To further strengthen the links between ecological health and swimming, the PRCG undertook a community engagement program which centred on customers voting for their favourite 'mascot' species for the river.

Through these mascots, the PRCG aim to educate the community on how biodiversity contributes to a 'living' river system and how we can all benefit from these broader ecosystem services.

It will also inform the plan for the river going forward by understanding what pressure points these mascot species have in the river and how they link back to the vision. The PRCG itself is comprised of Sydney Water as well as councils, other State government agencies and community groups, who are all key stakeholders or have various responsibilities for the river catchment. For Sydney Water, involvement strongly aligns to corporate strategy goals of playing a proactive and leading role in the broader conversation of urban environments and considering innovative solutions to complex problems.

Figure 4: The next wave of big challenges

In addition to these existing problems, there is a wave of new challenges (see Figure 4) that will challenge the existing business model of water business and other agencies responsible for liveability outcomes in cities. It will require a rethink of the approach to city and land use planning.

The common theme to these challenges is that they require collaboration across a range of different organisations and stakeholders. The current, siloed approach has had only partial success so it is unlikely to work in the future. With increasing growth, we have limited ability to 'put more infrastructure in the ground' so we need to be smarter. This means pooling resources for water cycle management so they can be used most efficiently for greatest community benefit.

"The definition of insanity is doing the same thing over and over again, but expecting different results"

Albert Einstein

As monopolies, water businesses are subject to a range of external regulatory controls and operate within defined areas of responsibility. This creates barriers to working with other stakeholders and results in a less than optimal approach to planning.

An open-minded and holistic state government plan could allow water businesses to support broader government objectives such as economic growth and employment. Case study 18 shows how SA Water contributed to job growth and to development of an important industry for the state.

Facilitating integrated planning encourages organisations to think outside their silos to address issues and realise opportunities. Fishermans Bend, a new development in Melbourne not only demonstrates this concept on a precinct scale but also considers broader citywide and regional challenges (Case study 15).

Case study 18

Water and economic development

In response to a number of state-wide financial and social pressures, there is a strong imperative from the South Australian Government to bolster economic development. One priority for the Government is positioning SA as a 'renowned producer of premium food and water, from its clean water, clean air and clean soil'. KPIs and targets ensure previously siloed departments and organisations can move toward the same goal. As a State-owned corporation, SA Water has the capacity to foster and facilitate projects which have broader benefits to the community, such as providing a secure recycled water supply to the food and wine industry.

Projects are financed either directly from the State and/or Federal Governments or via reduced dividends to its owners; hence these projects do not impact the customer base through higher water bills. One such project is the proposed Northern Adelaide Irrigation Scheme, which will deliver an additional 20 GL of recycled water to support high value food production for export markets in the Northern Adelaide Plains. This will contribute to an estimated $350 million of horticulture production annually and create over 3,600 jobs for the region.

Case study 15

Fishermans Bend
Integrated planning to benefit the community and more

Fishermans Bend—one of Australia's largest inner city brownfield developments—will be home to approximately 80,000 people and support 60,000 workers by 2050. There is a strong imperative to make this a first class, sustainable and liveable development. It was recognised early on that Fishermans Bend would need to be delivered in partnership with a number of key players, including South East Water, Melbourne Water, relevant State government departments, two local councils and the CRC for Water Sensitive Cities.

The strong relationships, forward looking vision and capacity and expertise by South East Water to deliver increasingly complex projects has meant that the preferred option going forward has the potential to halve water and sewerage loads, reduce flooding and support a green, cool landscape that reduces heat stress and improves amenity. The cost of this option is higher than Business as Usual for the water utility though the outcomes will deliver additional value for the State Government, the community and residents. Collaborative financing options such as developer contributions or federal and/or state funding are now being explored.

4 Broadening the value proposition

Key messages

Value is defined by the recipients, not the provider. Water businesses need to engage with their community to guide their investment decisions.

Collaboration with stakeholders will create shared value.

Water businesses need to look at new ways to deploy their unique skills, assets, waste products, knowledge and relationships to create shared value.

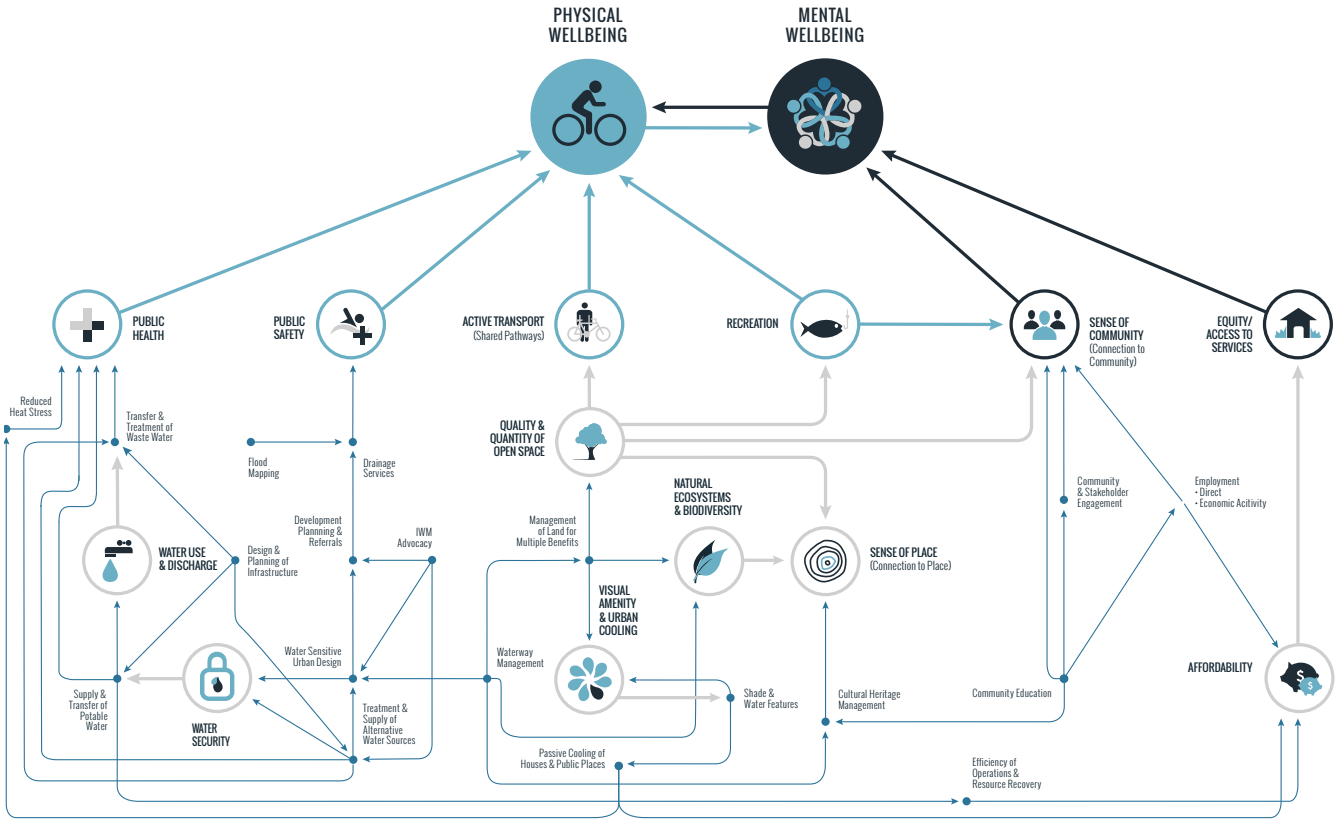
There is evidence that a community places value in healthy waterways, green spaces and connectivity. There is the potential to use innovative financing techniques to fund these services.

There is a relationship between water and the physical and mental wellbeing of communities. Figure 5 shows the many ways water businesses can provide additional value beyond their regulated outcomes of "water use and discharge", "water security" and "affordability".

By engaging with customers and the community, the water business can determine where they are best placed to create shared value. A good example is SA Water collaborating with a commercial customer to trial harvested stormwater. While it had commercial benefits for SA Water and the customer, it will also result in biodiversity benefits and health benefits for the community through urban cooling (Case study 15).

Sydney Water has also engaged with their customers to understand their expectations around using, managing and paying for stormwater (Case study 23). It will ensure their investments and relationships with stakeholders target these expectations.

Figure 5: Interactions between water and aspects of liveability (Holmes, 2013)



Case study 15

Adelaide Airport irrigation

Climate change poses a number of challenges to Adelaide Airport operators as a result of rising average summer and autumn temperatures. Impacts of a hot and dry landscape in an airport setting include load restrictions of aircraft (high air temperature reduces the amount of weight a plane can carry), higher energy use and increased dust generation, bird activity and erosion. A two year trial has been established at the Adelaide Airport to study the possible temperature reductions that can be achieved through irrigation of open space.

The overall project site covers around 30 hectares, of which 4 hectares is irrigated with stormwater that has been captured and stored using the adjacent aquifer storage and recovery (ASR) scheme. During the first year of the trial the average temperature difference between the irrigated and unirrigated area was 2.4 degrees. Preliminary results of the trial suggests significant operational gains could be made in an airport setting and also supports the implementation of an irrigation system for cooling and heat refuge in urban parks and sports grounds.

Case study 23

Understanding customer views of stormwater

Population growth, urban development and increasing run off continue to place stress on local waterways. Effectively managing these pressures will require Sydney Water to increase future investment in stormwater. Sydney Water undertook extensive community engagement to understand the level of customer knowledge and their view of stormwater and its infrastructure: what customers value, their preferences and willingness to pay for improved or different outcomes from stormwater management.

Engagement showed that customers had a low level of knowledge about stormwater and how it related to the urban water cycle, who looks after stormwater infrastructure, who pays for it and how much they paid. However once educated, they understood the value of stormwater and believed they paid a reasonable amount or not enough for stormwater infrastructure.

Customers believed that stormwater is essential infrastructure and should be paid for equally by all, in the same we support health or education. Customers value transparency and believe management of stormwater (currently shared between Sydney Water and local councils) should be streamlined. Sydney Water aspires to be a leading utility where customers are at the centre of decision making. This engagement allows them to align their products and services with customer values.

The key principles are:

- Water business should be guided by their customers and the communities in which they operate when determining what aspects of liveability, resilience and economic prosperity they should focus on. This includes considering whether postage stamp pricing limits the flexibility water businesses require implement the desires of the communities in which they operate.
- Policy makers should avoid defining the value a water utility can provide in a nationally consistent and prescriptive manner and instead be flexible so a water utility can deliver additional value based on input from community.

> "Value is defined by the recipient, not the provider"
> Dr Ron Ben David,
> Chair Essential Services Commission Victoria

Collaboration and integrated planning generally deliver lower cost solutions but in some cases the community has defined a need that requires additional investment. Innovative funding mechanisms can be used to deliver more than just transport infrastructure. Projects around the world such as the rejuvenation of the Bradford City Centre, UK (ARUP, 2015) and Millennium Park in Chicago have delivered social and environmental outcomes by attracting private investment and using innovative funding methods such as value capture and fundraising. There is the potential for water businesses in collaboration with other stakeholders like local government to tap into these mechanisms to fund additional services. The key to making this work is defining and demonstrating the value to the community, and maintaining fairness by ensuring the beneficiaries make an appropriate contribution.

Millennium Park, Chicago – an opportunity for value capture

A 2005 study found that buildings located in proximity to the park generated over $10 million more in annual taxes than pre-park amounts, and $24 million more in sales taxes.

The park attracted an estimated 3 million visitors in 2005 and helped propel Chicago to America's #1 most popular destination in 2006 according to Priceline.com.

Source: http://www.cityparksalliance.org/issues-a-resources/publicprivate-partnerships/case-studies/millennium-park

A recent study showed naturalising a local waterway in Sydney's inner west (Case Study 13) increased the value of the surrounding properties by 4.8% - 8.9%. (Buyani, Morrison and Bark, 2016), WSAA is keen to explore opportunities for the urban water industry to use value capture to fund community preferences for liveability.

For every example of shared value, there are many more where the embedded approach is one of focusing on just optimising commercial outcomes for the water business. The following sections consider what changes are needed in the authorising environment and industry capability to enable water businesses to generate shared value as their preferred option.

5 Making a systemic shift

Key messages

Customers and communities will define what broader or shared value means to them, as well as the role they expect from water businesses and other key stakeholders. For water businesses it means two-way engagement with communities to demonstrate opportunities and understand needs and expectations.

Collaboration and working closely with key stakeholders is necessary to creating shared value.

Water businesses already deliver broader and shared value but it is opportunistic. To go further requires change to policy and regulation (the authorising environment) as well to the capacity and capability of the organisation.

Water businesses are proactively exploring how they can deliver greater community value. However, there is strong evidence to suggest that these initiatives are more often than not personality driven or opportunistic. Changes in personnel or a less than favourable view of this activity by an economic regulator, policy unit or shareholder will see the utilities having to retreat back to the provision of their commoditised water supply and sewerage products. What needs to change so the industry can deliver additional value in a more systemic and strategic manner?

This paper considers the "Strategic Triangle" (Moore, 1995) which will be referred to hereafter as Moore's Model (Figure 6). It encourages us to think more holistically about how to drive sustainable change, by considering:

- What outcome do we want from delivering additional public (broader) value?
- What changes are necessary in the authorising environment to give legitimacy and support to providing this added value?
- What changes are necessary in capacity and capability to deliver that value?

A key feature of Moore's Model is that the elements of the triangle are strongly linked in that as more value is added, the legitimacy and support grows, thus allowing the industry to in turn build on its capability and capacity to deliver on that value.

Moore also contends that for industries such as water which exist in politicised environments, the greatest challenge can be determining a vision for public value that both commands legitimacy and support of the authorising environment and is operationally doable.

A further point raised by Moore is that to deliver additional value, one is likely to require resources beyond the direct control of an organisation. In short, this means that collaboration delivers more value. This is consistent with the experience of water businesses to date. The key is genuine engagement of stakeholders and involving them in creating the solutions.

This is quite a shift for the water industry. In the past the water industry has dealt directly with their regulators. The regulator sets the specifications and the water business designed and implemented a solution. They were not expected to consult or work with any external stakeholders. These solutions have generally been in the form of major infrastructure initiatives such as dams, sewers and water supply schemes. Hence the industry evolved to be strongly technical and inwardly focused. This was generally the expectation of the communities of the day and the approach was also largely successful.

However, WSAA argues that to make a systemic shift to delivering broader value, we need to consider each of the elements of Moore's Model – where are we now and where we should be (Figure 7). WSAA believes the underlying shift required is to move away from the current model where a water business is encouraged and regulated just to create value for itself and shareholder(s), to one of being encouraged to also create community and public value or shared value (Porter and Kramer, 2011). In terms of Figure 7, shared value is the strategic expansion of the "current value".

Importantly Porter and Kramer point out that shared value is not social responsibility or philanthropy, but rather a new way of achieving economic value. To this end, they suggest three ways in which companies can create shared value:

1 Reconceiving products and markets.

2 Redefining productivity in the value chain.

3 Enabling Local Cluster Development.

There are a number of examples of how the urban water industry is opportunistically bringing the principles of shared value to life.

- Several utilities are 'reconceiving products and markets' by looking at renewable energy generation (Case study 9 and 10).
- Yarra Valley Water is 'redefining productivity in the value chain' by helping domestic and family violence victims (Case study 11) through specialised training and support for staff in identifying and dealing with these customers. This not only helps this vulnerable group, it also has benefits for the utility in regards to better understanding and management of debt and staff morale.

Figure 6: Moore's Model

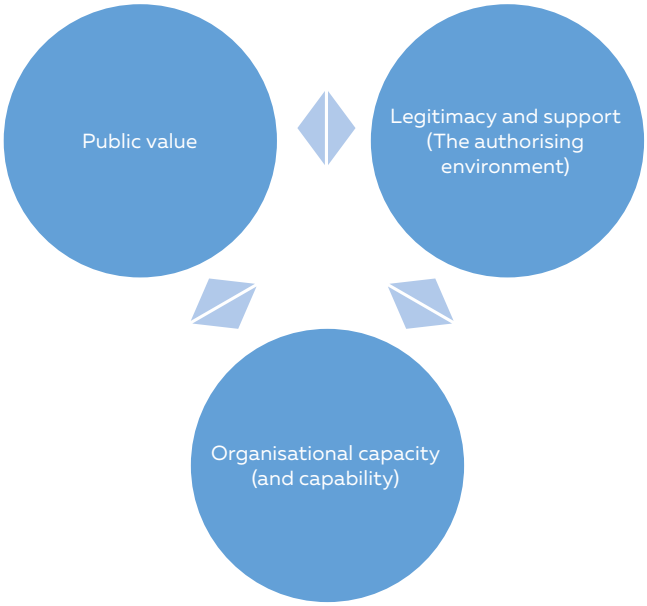
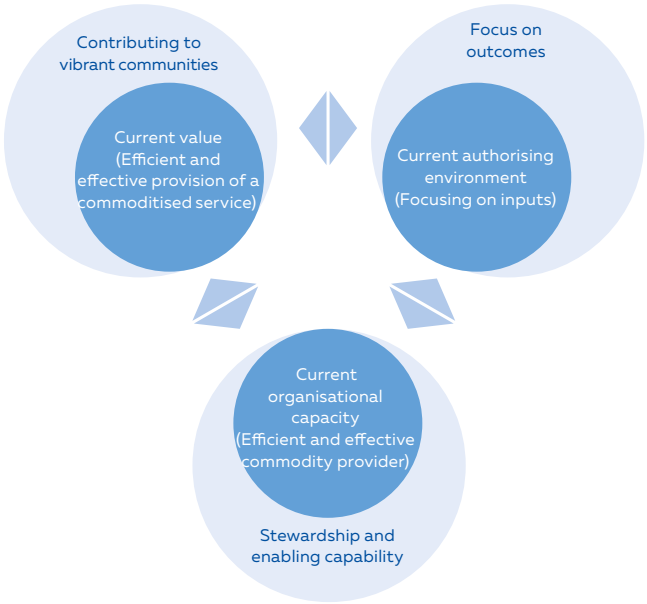


Figure 7: The future of the role of the water industry according to Moore's Model



- Water Corporation in Western Australia is 'enabling local cluster development' by working with stakeholders to establish beneficial and synergistic uses of land surrounding treatment plants (Case study 19).

Figure 8 captures some of the current and possible future mechanisms for the water industry to create shared value.

Table 1 summarises how water businesses can make the systemic shift.

The real potential is where the water industry collaborates with, or supports other stakeholders. While there are few natural boundaries in the urban water cycle, over time we have created institutional boundaries.

This in turn has created policy, regulatory and governance impediments to creating shared. A sustained and strategic shift also requires change in the authorising environment and the organisational capability. The following sections go into this in more detail.

Table 1: Making the systemic shift

From organisational value	To shared value
An exclusive focus on optimising the drinking water and sewerage element of the water cycle (narrow focus)	Looking for optimal outcomes across the whole of the water cycle and urban communities more broadly (systems thinking)
Need for prescriptive direction and clear attribution	Outcomes focused and capable of making sense of complexity
Offering products and building assets	Offering services and enabling outcomes
Working within an organisation's capability and jurisdiction to deliver services	Using the broader community knowledge, goodwill and assets to deliver shared value
Technical skill set	A diverse range of skills with a particular focus on social skills
Solving problems	Creating an enabling environment to involve community in the solution
Growing the asset base proportionally with population growth, level of service requirements and risk	Leveraging the existing asset base to meet future needs
Single purpose assets	Upcycling and repurposing assets for multiple outcomes
Linear delivery model	Circular delivery model

Figure 8: Mechanisms for water businesses to deliver shared value

New service offerings

- Co-production with other sectors (Case study 10: Aurora food waste to energy)
- Integrated service offerings (Case study 15: Fishermans Bend – integrated planning)
- Embracing the circular economy e.g energy, nutrients, organic recycling (Case study 9: Renewable energy)

Stewardship

- Facilitating regional collaboration around planning and service delivery (Case study 20: The urban water cycle planning guide)
- Repurposing assets to deliver greater community value (Case study 5: Greening the pipeline)
- Efficiently allocating investment across the water cycle to achieve given outcomes (Case study 13: Cooks river bank naturalisation)
- Creating an enabling environment for growing public value (case study 21: Our space, your place)

Core service productivity

- Avoiding capital investment to meet future needs (Case study 21: Using nutrient offsets to improve the Logan River)
- Further optimisation via intelligent networks and operations
- Embracing disruptive technology
- Innovative pricing options (consideration of value capture)

Case study 10

Aurora food waste to energy plant – A paradigm shift for a water provider

Yarra Valley Water is currently constructing a waste to energy facility next to the Aurora Sewage and Recycled Water Treatment Plant in Melbourne's north. The plant, which will be operational in 2017, will provide an environmentally friendly disposal solution to divert 33,000 tonnes of organic waste per year from landfill. Businesses will also have access to an easier and more affordable way of recycling commercial organic waste. Commercial organic waste from local food markets and manufacturers will be processed into biogas via anaerobic digestion.

It is expected that enough energy will be generated to run the facility and the neighbouring treatment plants. Any surplus energy will be exported to the electricity grid, helping to reduce greenhouse gas emissions, and Yarra Valley Water's reliance on traditional sources of electricity. While using food waste made co-digestion economically viable, the initiative was sparked by a paradigm shift: Yarra Valley Water already processed 75% of the regions waste – so why not expand into other waste streams? Instead of treating organics as waste, they are treated as a product with value.

Case study 19

Strategic resource precincts: a move to buffertopia

As cities and towns grow there is often increasing pressure to locate residential areas close to wastewater treatment plants (WWTPs). This can expose residents to nuisance causing odour, leading to complaints and pressure for the utility to either undertake expensive infrastructure upgrades or to relocate the treatment plant.

Water Corporation has been working with key stakeholders to establish the concept of Strategic Resource Precincts. These proactively communicate opportunities for synergistic and beneficial land uses in the buffer zone that either use outputs from the plant (e.g. green spaces or intensive horticulture could be high users of recycled water, nutrients, sludge, biogas) or provide inputs (e.g. co-location of food waste or research facilities) which benefit the WWTP and urban communities.

The establishment of Strategic Resource Precincts around WWTPs has now been recognised in the Western Australian Planning Commission's State Planning Strategy 2050 and Water Corporation is progressively working together with local governments and other key stakeholders to ensure it is included in a range of other strategic and statutory plans and policies. Going forward, Water Corporation has an important facilitation role to play as they have the expertise to communicate and advise on most appropriate beneficial land uses.

6 Changing the authorising environment

Key messages

The customer and community will drive change in the authorising environment. If water businesses are to broaden their services, then they must first have the trust and support from customers and community.

State policy and economic regulation needs to adapt to allow water businesses the flexibility to respond to their customers' needs and preferences, particularly in regard to providing 'value add' services. This in turn drives more customer-centric investment.

Federal and state governments need to recognise the role of water in strategic or early planning of cities and regions. They also need to include water businesses in integrated planning.

Any changes to the authorising environment must always be in the long term interests of customers and the community.

A key element Moore's Model is that water businesses should not broaden their role in isolation. The mandate needs to come from changes in policy. And this change will not come unless the community and customers see value in this broader role. We should make it clear that it is not the intent of the water industry to usurp the responsibility of local government or other agencies. Instead our suggestion is that this broader role incorporates a collaborative approach to planning across the whole urban water cycle to meet community expectations.

Figure 9 provides a simplistic representation of the authorising environment. The important thing to note is that legitimacy and support comes first from the community. For the urban water environment, we should note that:

- the authorising environment is most mature around the water supply and sewerage elements, that is, those elements delivered by water businesses,
- due to its monopolistic characteristics, economic regulation is a key feature for water supply and sewerage activities,
- many of the contemporary policies and regulations relating to water supply and sewerage were put in place in response to the National Competition Policy and National Water Initiative reforms. Hence there is a strong but narrow focus on productivity and efficiency, and;
- governments play multiple roles in the authorising landscape including ownership, policy setting and regulation.

6.1 Removing the barriers

What are the barriers in policy and regulation that prevent the delivery of broader value? A number of shortcomings in the UK policy and regulatory framework were identified in a recent paper (Helm, 2015), some of which are equally applicable in Australia:

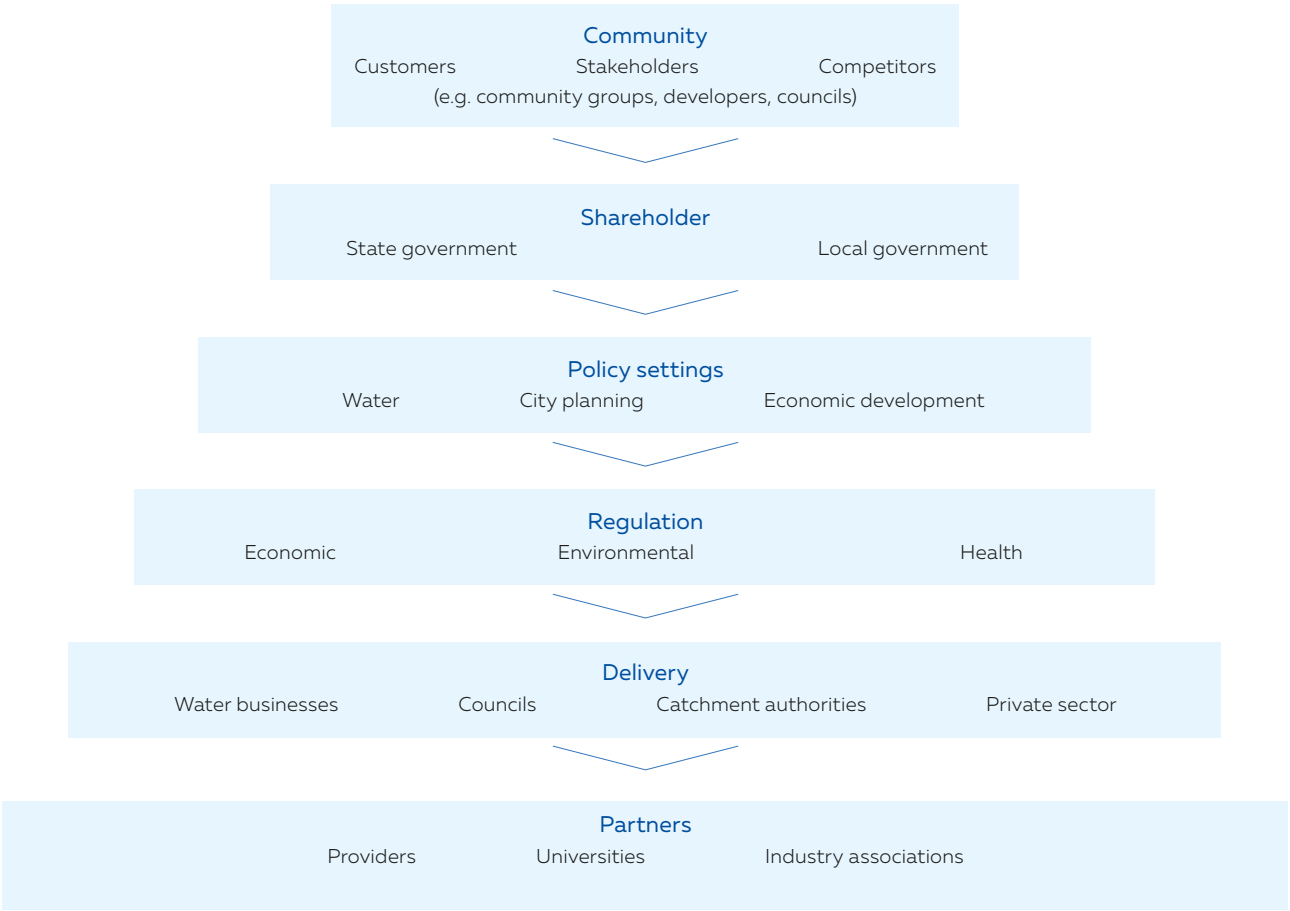
- The UK framework leads to the inefficient allocation of resources across the water cycle (i.e. they are mostly tied up in the water supply and sewerage businesses).
- There is often no coordination of planning and policy across the whole water cycle and the broader outcomes that are being sought by society from its effective management.
- Water businesses have a narrow focus and the cost of capital dominates their cost base and prices. This in turn creates a strong incentive to continue to pursue capital intensive (and single outcome) solutions to the challenges they face.
- The regulatory model has effectively turned water companies into contractors – carrying out functions that are tightly defined in their respective licenses, for a fixed price. This model has limited flexibility in allowing water companies to innovate and explore value adding opportunities.
- There is confusion about the role and form of competition. This is true for Australia where there would be benefit from a more nationally consistent approach. This would open up opportunities for private investment in the urban water cycle by providing greater confidence and certainty (WSAA, 2015).

Another policy and regulatory barrier is the failure to adequately account for externalities. Obvious social and environmental costs such as pollution can be 'internalised' by organisations by imposing taxes, regulations and penalties. However there are often no regulatory or policy incentives for organisations to go 'above or beyond' or to deliver positive social and environmental outcomes outside of their specific obligations, even if the community indicated that they valued these services.

Regulation, particularly environmental regulation forces the water business to just consider managing their particular activities, rather than looking at a whole of urban water cycle approach.

For example, when upgrading a sewage treatment plant, should success be measured as achieving license compliance or as achieving environmental outcomes such as a healthy waterway? While an outcomes-based approach may be more difficult to measure and attribute, it can lead to significant innovation in the industry. It can also deliver solutions that are both more cost effective and beneficial to the environment such as using nutrient offsets to improve the biodiversity and health of a waterway.

Figure 9: The authorising environment



Case study 6

Using nutrient offsets to improve the Logan River

The provision of a voluntary offset mechanism under the Queensland Environmental Protection Act 1994 has allowed Queensland Urban Utilities (QUU) to find an innovative solution to nutrient discharge limits at Beaudesert Sewage Treatment Plant. Instead of a plant upgrade, they completed riverbank restoration works at Logan River to reduce sediment and nutrient loads. The 500 metre, re-engineered bank of the Logan River prevents more than 11,000 tonnes of sediment, 5 tonnes total nitrogen and 8 tonnes of total phosphorous from entering the waterway every year due to natural channel erosion. The $800,000 water quality project was more cost-effective than the $8 million alternative to upgrade the Beaudesert Sewage Treatment Plant. This approach has led to significant benefits such as lower greenhouse gas emissions, improved biodiversity, stream cooling and reduced erosion for landholders.

Similarly, SA Water met their obligation to remove nutrients from the Gulf Vincent by constructing a recycling scheme to irrigate the parklands surrounding the Adelaide CBD, rather than upgrade the Glenelg Sewage Treatment Plant. The EPA, through a rigorous scientific assessment has also put charge on the mass of Nitrogen discharged to the gulf which supports the business case for reuse. This solution not only improved environmental outcomes for the receiving waters of Greater Adelaide, but enhanced the liveability of the city. This has been achieved by improving the quality and use of the open space surrounding the city and reducing the heat island effect.

"Successful shared value programs will seize the opportunity to bring together multiple forms of expertise, resources and skills.... Governments can bring a wealth of social outcomes data, experience in social services, enabling approaches to the regulatory environment, and incentive schemes"
Social Outcomes, 2015

6.2 Structure

The structure of the industry can often be the focus of any debate around reform of the urban water environment. It is a complex issue and should be left to the State and Territory jurisdictions to determine their appropriate structure for advancing their own urban water aspirations. The considerations to be taken into account include the existing policy and regulatory structures, economies of scale, and the extent of private industry and competition. WSAA does not recommend any particular structure but advocates that any changes need to be in the long term interests of the customers and regulatory and policy frameworks should adequately support any changes in industry structure or ownership.

WSAA's recent paper, 'Doing the important as well as the urgent: Reforming the urban water sector' (2015) discusses these points in more detail.

Any broadening of value needs to build off a solid platform of high quality, efficient water and sewerage services. WSAA proposes the following principles when evolving the policy and regulatory environment:

- Look beyond water and wastewater and consider the overall impact of policy and regulatory reforms on all aspects of the urban water cycle.
- Ensure those impacts and outcomes are in turn reflected in the licenses and rules within which water businesses operate. This will in turn provide greater clarity and direction for regulators.
- Focus on optimising the whole of the water cycle, not just the water supply and sewerage component part.
- Progress the whole of the water cycle to financial self-sufficiency.
- Lock in, continuously improve and broaden across the whole of the water cycle, the productivity gains realised from the NCP and NWI reforms.
- Continue to drive the efficient investment across the whole of the water cycle and broader community (this could involve the use of initiatives such as offset and/or trading schemes for salinity, nutrients, water).
- Broaden the recognition of benefits that will be realised from investments in areas other than water and sewerage service provision.
- Allow for alternative funding models in the water sector (such as value capture, variable pricing models) so that water businesses have alternative ways to fund these additional benefits in accordance with a principle of 'beneficiaries pay'.
- Keep in mind that at the top of the authorising environment is the community and any changes to policy and regulation must be in the long-term interests of the community.

7 Growing industry capability

Key messages

Creating shared value needs to be driven from the top of the water business and include culture change and skills within the business in collaboration and systems thinking.

Shared value is strategic. Water businesses need to align shared value creation with their own corporate goals, skills, communication, internal processes and metrics.

An authorising environment which is conducive to the delivery of broader value and outcomes focussed regulation in the interests of customers will require a shift in the business capability. In the context of this paper, capability can be thought of as people and culture, as well as internal processes and corporate goals.

7.1 People and culture

As previously discussed, water businesses are in an ideal position to play a greater role in delivering broader community outcomes. A shift to a delivering broader value by the water industry will come about through greater collaboration with other sectors and a cultural shift that is driven by strong leadership. The Greening the West program (Case study 14) is one such example. The Managing Director saw the impact of the Millennium Drought on sports fields and Melbourne's street trees and believed that water businesses should recognise and elevate the importance of the 'urban habitat' as a valid customer. City West Water went on to play the role of harnessing the power of the strong local government, agency, industry and community connections to achieve outcomes greater than the sum of the individual parts. To ensure a sustained contribution that is more than just the personalities within the organisation, it is also necessary to embed these principles in corporate strategy. South East Water (Case study 12) have developed a shared value program, with metrics and targets, and communicated internally and to stakeholders.

Most water businesses engage in corporate social responsibility (CSR). Shared value can be thought of as 'strategic CSR' or CSR that benefits both the organisation and the community as shown in Figure 10. It usually encompasses a small number of strategic initiatives that leverage the organisation's resources and capabilities.

Ingraining shared value in a business can be demonstrated by:

- Identifying those strategic initiatives that leverage an organisation's resources and capability
- Communication and education of employees.
- Supporting these intentions through internal process, such as the inclusion of shared value requirements in business cases and decision frameworks.
- Developing appropriate indicators and targets, collecting data, and reporting both internally and to external stakeholders. WSAA's Occasional Paper 31: Liveability Indicators provides guidance to water businesses on developing a Liveability scorecard (WSAA, 2016).

Case study 11 shows an example of how one water business has leveraged existing capability and embedded the delivery of shared value in their organisation.

If we are to solve complex problems, utilise new technology and data and work closely with customers and other stakeholders, then the sort of skills water businesses are likely to see more of into the future include:

- Greater social skills such as stakeholder engagement, and communication.
- Skills to deal with complexity and systems thinking.
- Collaborators and deal-makers.
- Data analytics and skills to deal with disruptive technologies.

Figure 10: A strategic shift to shared value requires linking the approach to CSR to corporate goals (Porter, 2006)

A more diverse workforce, skills set and a culture that supports and incentivises innovative thinking also encourages views more representative of the customer and community. Case study 22 shows how one business developed additional capability through community engagement. It is also a good example of a shift to developing a solution with the community as opposed to looking for a technical or asset solution to a problem.

Case study 11

Helping not hindering

Keeping on top of water bills can be a challenge to many households that are experiencing financial or domestic difficulties. Those who experience domestic violence are especially vulnerable to financial stress. The Yarra Valley Water hardship team evaluated their processes and touchpoints with these customers and put together some simple process changes which allow them to effectively deal with victims of domestic abuse, without causing extra burden. This includes flexible approaches to processing customers, for example not needing proof of domestic violence, having one point of contact, creating private accounts and being flexible with communication methods and payment plans. This method can lead to a number of broader community benefits including the reduction of mental stress and financial burden on already strained individuals. They also embedded this within the organisation through:

- Ongoing training and development for all staff that interact with clients. The training module was developed with Kildonan Uniting Care. Call centre staff are also seconded into the hardship team to encourage a broader perspective and skills.
- Staff support through debriefing and discussion of difficult calls. This is an important facet of staff retention at YVW. If a person encounters a difficult or challenging call, they have the option to transfer the call to another staff member, or have another staff member listen in on the call to provide feedback and advice for that particular matter.

7.2 Process

Presently, activity across the entire water cycle follows a clear and well defined linear delivery model. This typically starts with the harvesting of water in our catchments through to the discharge of treated wastewater to the environment. This model is being challenged overseas, particularly in the European Union. There are strong policy shifts to what is known as a circular economy.

A circular economy is one that is restorative and where either biological nutrients are designed to re-enter the biosphere safely or technical nutrients are designed to circulate at high quality without entering the biosphere. This is quite distinct from the dominant "take, make, consume and dispose" linear economy that relies upon high consumption of readily available energy and resources. Reports such as 'Towards the Circular Economy' (Ellen Macarthur Foundation, 2013) suggest shifting to a circular economy is not only an environmental and social imperative, but also economic. This also aligns well with the notion of shared value.

The typical operation of the water industry results in an accumulation of resources and by-products at relatively large scales, typically at wastewater and water treatment plants.

There is also a growing accumulation of waste within stormwater networks with wetlands and other devices now designed to screen out nutrients, sediments, gross pollutants and other contaminants. Furthermore, there is significant embedded energy within water and wastewater. The industry is well placed and already moving towards becoming a key player in the circular economy.

To shift this foray into the circular economy into something more systemic will require a supportive regulatory regime (costing pollution, recognising benefits, removing barriers to compete in new areas) and more robust processes for the industry to follow.

The circular economy and the water industry

Some examples where the water industry is contributing to the circular economy:

- Recycling of water and biosolids is undertaken extensively across the industry.
- Energy recovery from treatment plants, including enhanced recovery by taking in additional food waste. The Western Treatment Plant (WTP) in Melbourne is at times a net producer of energy and exports to the grid. The WTP is on track to become energy self-sufficient (utilising its own biogas) in 2016/17.
- Nutrient recovery, particularly phosphorous is now being undertaken commercially in the Netherlands. The market is local farmers.
- WaterNet in the Netherlands are currently trialling using their water supply network for heat exchange around the City of Amsterdam. They are also trialling heat recovery within homes from showers.
- Mini-hydro facilities are being installed at various locations across water utilities including water storage or dam off takes and trunk mains. Key requirements for making this business case positive include proximity to the grid, a localized use for the electricity and a continual flow of water to generate the electricity.

Case study 22

Engagement to find a solution

Remote indigenous communities in the Northern Territory often rely on stressed groundwater or freshwater sources and experience critical water shortages. Power and Water were keen to engage these communities to spread water efficiency messaging. In initial consultations a clear message came across: effective engagement would need to come from those with the same cultural and language backgrounds, and with understanding of community needs and indigenous water values.

In 2012 Power and Water worked with local community organisations to employ, mentor and train four local indigenous Water Conservation Ambassadors to educate the remote community of Galiwin'ku on positive water behaviours and water efficiency.

The program resulted in significant water efficiency and education gains. Following the success of this program, in 2013, Power and Water were then able to leverage federal funding into a Low Income Energy Efficiency Program to spread water efficiency messaging across five more communities, leading to the employment of 80 local indigenous community members in the process.

Power and Water are now leading the way to explore opportunities with other government agencies that may have the need for similar indigenous community engagement programs to pool resources and implement joint indigenous training or employment programs.

8 The next step for the water industry

As cities grow we want to see new neighbourhoods designed around water, connecting communities to active and passive recreation opportunities. This won't be easy and it requires changes to water business skills, culture and leadership. It also requires much stronger partnerships, with governments to take an interest in the value that water creates in liveable, resilient and smart cities by:

- Specifically recognising the role of water in Federal and State Plans.
- Determining how water businesses can contribute to the liveability and resilience of a region beyond water supply and security in state water plans.

One of the impediments to better community outcomes is the siloed nature of agencies responsible for different parts of the urban water environment along with health and waste management. There are numerous case studies that demonstrate that collaboration between these different agencies can deliver better community outcomes. WSAA calls upon State governments to take a leadership role and facilitate this collaboration between agencies. One of the key ways is to involve water businesses in strategic land use planning and to carry out integrated planning of new precincts and growth areas similar to what has been done for the Fishermans Bend precinct in Melbourne (Case study 15).

Another way is to develop integrated water management plans for a city or region as laid out in the new framework developed by the Department of Land, Water, Environment and Planning Victoria (Case study 17)

Customers and community define value. Regulatory models that require water businesses to own the relationship with the customer through extensive customer engagement is an important first step. The next step is more flexible economic and environmental regulation that allows water businesses to work with community agencies to respond to a broader spectrum of community needs and preferences.

Collaboration with other agencies to deliver broader community outcomes will also require our regulatory models to evolve to allow alternative methods to recover costs other than just 'postage stamp pricing'.

True stewardship and vision means looking beyond one's own accountabilities. While water businesses have been providing more than just water and sewerage services for some time now, they are only just beginning to understand how to make a more strategic and sustained contribution. For a water business this translates to broader corporate goals and vision and a shift to developing and hiring employees with skills and expertise in engagement, collaboration and systems thinking. It also involves reimagining how the skills, assets and products (or waste products) of an organisation can be leveraged to provide community value in another way.

Australia is a diverse country with many different approaches to how it manages the urban water cycle. This diversity drives a number of innovative approaches and should continue to be encouraged. The urban water industry will have a lasting role in delivering broader value by developing its capacity and capability in this space, through an engaged and supportive customer base, which in turn will shape the policy and regulatory environment to give legitimacy to the industry.

Where to next? The next big gains for the water industry are likely to come through integration, looking beyond the narrow scope of water and sewerage provision and collaborating with other sectors (waste, energy, local government). WSAA believes that next generation for the urban water industry is one where the value can be leveraged for the benefit of the whole urban water environment and urban communities within which they operate.

Appendix 1

Case studies

No.	Australian case studies	Location	Outcomes
The broader economic benefits of effective water and sewerage provision			
1	The value of clean beaches	Sydney	
2	More value than just water and sewerage	ACT	
Water businesses delivering more than just water and sewerage			
3	Greening the pipeline	Melbourne	
4	Using water industry know how in a new way	Bendigo	
5	Irrigating Adelaide's airport	Adelaide	
6	Using offsets to deliver biodiversity and waterway health	Brisbane	
7	A sewage treatment plant for all	Sunshine Coast	
8	Water only schools	Shepparton	
Rethinking internal processes, services and skills to create shared value			
9	Renewable energy	Melbourne, Sydney	
10	Energy generation – a paradigm shift for a water utility	Melbourne	
11	Helping not hindering – support for domestic violence victims	Melbourne	
12	Creating shared value	Frankston, Melbourne	
Collaboration and integrated planning to deliver better value for communities			
13	Cooks River bank naturalisation	Inner West, Sydney	
14	Greening the West	Western suburbs, Melbourne	
15	Fishermans Bend – Integrated planning for the community	Inner suburbs, Melbourne	
16	The Urban Water Cycle planning guide	Geelong	
Government facilitating collaboration and integrated planning			
17	The Victorian Water Plan	Victoria	
18	Water and economic development	Adelaide	
19	Buffertopia	Western Australia	
Working with customers and communities to define broader value			
20	Making the Parramatta River swimmable again	Western Sydney	
21	Our space, your place	Melbourne	
22	Using engagement to find a solution	Northern Territory	
23	Understanding customer views on stormwater	Sydney	

Water business outcomes

- Financial benefits
- Improved reputation
- Improved community and stakeholder relationships
- Improved business capability
- New products and services

Government and community outcomes

- Economic growth and development
- Better health outcomes
- Better social outcomes
- Better environmental outcomes
- Resilience
- Engaged and active community

Case study 1

The value of clean beaches

Sydney Water

This case study showcases

The broader economic benefits of effective water and sewerage provision

Problem

Beaches contribute to the 'liveability' of a city. Beaches provide plentiful opportunities for recreation for people from all walks of life, and cater to varying interests. Beaches are a place to swim, surf, play, relax, spend time with friends and family or simply enjoy the view.

If water quality at the beach is poor, swimmers may become ill, biodiversity may suffer, and the beach experience would be less enjoyable overall. Sydney Water has made a number of infrastructure investments which have improved water quality in key beaches over the years. For example, the old cliff-face outfalls at Manly, Bondi and Malabar were decommissioned and replaced with the Deepwater Ocean Outfall, alongside other changes to wastewater treatment, beneficial reuse and trade waste.

In order to fully understand the value in this investment, the economic and social value generated from the improvements in water quality must be taken into account. These impacts are challenging to measure.

Solution

A report by Deloitte Access Economics considers the wider benefits and contributions improved water quality has on Sydney beaches. A range of economic modelling and other estimation techniques were used to get a sense of the quantum of benefits associated with beaches, and with cleaner water at beaches.

This study considered five potential benefits and contributions

Tourism contribution – domestic and international

Health benefits (e.g. reduced absenteeism) with a reduction in sewage pollutants

Value for Sydney residents – direct uses, amenity for future generations

Biodiversity benefits (not quantified)

Brand benefits (not quantified)

The study estimated that

the value attributable to coastal beach water quality – for Sydney residents alone – is in the order of $137 million per year or a lifetime value of around $2 billion.

the net value added associated with beach water quality is worth around $332 million per year to the NSW economy through **domestic and international tourism**

the **health benefits** associated with beach water quality due to the avoidance of illness for beach users is estimated at $140 million per year from avoided absenteeism

In addition to the economic benefits there were also intangible benefits associated with biodiversity and brand value.

Business case

Sydney Water makes a significant infrastructure investment to improve water quality in Sydney beaches. This study can help to justify future investment in this area by making decisions commensurate to actual benefit.

Key drivers

Understanding the broader benefits that Sydney Water can provide through their infrastructure investments.

Benefit/outcome

The broader benefits Sydney Water provides to the community by maintaining good water quality at Sydney beaches include:

Ability to keep beaches open for recreational activities for local residents

Amenity of beaches and knowing the water is clean and pristine (even for those that don't swim or visit).

Enhanced tourism from both domestic and international visitors

Decreased incidence of gastrointestinal, respiratory, eye and ear conditions related to sewage pollutants.

Improved biodiversity at the shore, reduction in pollutants.

Brand value for Sydney.

Case study 2

More value than just water and sewerage services

Icon water, Melbourne Water and others

This case study showcases

the broader benefits of effective water and sewerage provision

Examples

Recreation and biodiversity are some of the additional outcomes of business as usual activities. Some key examples include:

Drinking water supply catchments are managed to ensure water quality is maintained through healthy natural landscapes and these management activities deliver both safe drinking water and biodiversity and conservation outcomes to the community.

The management and maintenance of roads for asset management in catchments and to water assets can provide for safe public access for recreation, and also serve as access to manage hazards such as bushfire.

Buffer zones, that are essential to prevent incompatible land use around treatment plants, not only reduces the impact of noise and odour to the community, they also provide open space for recreation and habitat for native and threatened species.

Wastewater treatment lagoons provide habitat for certain species of birds and frogs and are a great attraction for the community, bird watchers and conservation scientists.

Fyshwick Sewage Treatment Plant adjacent to Jerrabomberra Wetlands in ACT is a particularly important haven for protected migratory birds when their inland habitats are suffering in drought conditions, and is a key monitoring location for the Canberra Ornithological Group's annual bird population surveys which are used by the ACT Conservation Unit.

Lagoon habitats within the Melbourne Water Western Treatment Plant and the adjacent shoreline are renowned as important locations for waterbirds on a local, national and international scale and the plant is home to various native flora, fauna and migratory birds. Over 120 different waterbird species have been documented, including residents, annual migrants, nomads and vagrant visitors. This includes a number of waterbird species listed on international migratory bird agreements as well as species considered to be threatened at both the state and national level.

Case study 3

Greening the Pipeline

Melbourne Water

This case study showcases

water businesses delivering more than just water and sewerage provision

how collaboration and integrated planning deliver better value for communities

Problem

The Main Outfall Sewer (MOS) is a 27km disused sewer running through between the suburbs of Spotswood and Werribee, in Melbourne's west. It was built in the 1890s, an engineering feat at the time, and was then decommissioned in 1993 but remains heritage listed to this today. A combination of open concrete lined channels and covered brick lined concrete, it is costly to maintain and in poor condition for most of its length. In 2005, ownership of the surrounding reserve was transferred from Melbourne Water to VicRoads, who built the Federation Trail bicycle path along the length. Despite this, in its current state the MOS provides little community benefit, poses a potential safety hazard, acts as a physical barrier between communities and lacks any amenity benefits. The MOS runs through an area which is one of highest residential growth areas in Australia, has few existing green spaces and suffers from significant heat stress.

Solution

The Greening the Pipeline initiative aims to transform MOS pipeline reserve into a multi-use, natural and vibrant space that will connect communities and provide a unique place for neighbours to meet, play and relax. This project is being undertaken in a partnership between Melbourne Water, Wyndham City Council, City West Water and VicRoads. Green shady spaces will support the Federation Trail bicycle path and local community needs, as well as counteract heat stress in the area. To showcase the potential of the reserve as a green linear parkland, a pilot project has been initiated by Melbourne Water in Williams Landing, part funded by a State Government grant supporting demonstration sites for integrated water management. The Williams Landing pilot captures and reuses local stormwater to irrigate grass, shrubs and trees in a new community parkland built along the reserve. Community consultation has revealed strong support for the project and final designs for the pilot are complete, with construction due for completion in early 2017.

Business case

This project relies on external funding, which may come in the form of government grants or community funding. High Line in New York is a similar example, which relied on a mix of public grants and private donations for construction, and where the Friends of the High Line continues to raise approximately 98% of the annual budget to maintain and operate the park. Given the GTP project runs over 27km, key zones are being prioritised and works will be staged as funding is secured.

Key drivers

A strong vision, collaboration with key stakeholders and community engagement are all key to the success of the project.

The vision for the GTP project was initially driven by Melbourne Water, and it has been an important journey to translate this into a joint vision which is accepted and driven by the community and key stakeholders.

Rigorous governance frameworks were set up by Melbourne Water to facilitate the GTP project and coordination between stakeholders

Given the reliance on external funding, Melbourne Water identified the need for strong community buy in to advocate for the project. As such, there has been focus on a marketing campaign and the pilot site, which has been used successfully to inspire a vision for the project within the community.

Benefit/outcome

Improved amenity for the local community

Physical and mental wellbeing benefits, particularly the promotion of active transport.

Enable connectivity within and between communities

Reduce urban heat stress in the area.

Engage local community

Case study 4

Using water industry know-how in a new way Managing rising groundwater following mining activity

Coliban Water

This case study showcases

water businesses delivering more than just water and sewerage provision

Problem

Following the cessation of gold mining beneath Bendigo in 2011, groundwater has been rising back to the surface. This poses a number of issues including:

The inundation of key tourist attractions such as Central Deborah tourist mine, as well as well frequented and valued spots in the CBD such as the botanical gardens and city square.

Risk of discharges into local waterways, bringing with it odour and compounds such as salts and metals, with detrimental effects on the environment and local amenity.

Salinity damaging urban infrastructure.

Residue drying from pumping groundwater into evaporation ponds bringing up dust with arsenic content which is a concern to the local community.

Solution

Through a collaborative process, led by the Victorian Government through the Department of Environment, Land, Water and Planning Victoria (DELWP) in partnership with Coliban Water, a number of key state government, local agencies and community groups have been involved in reviewing and recommending the preferred solution for the next four years. Coliban Water is delivering this 'transitional option' as it was recognised they had the expertise, infrastructure, relationships with key agencies, and perhaps most importantly, a high level of trust within the community to deliver the solution for this complex issue. The transitional solution agreed upon involves pumping groundwater from the North New Moon mine shaft, treating it to remove arsenic, rotten egg gas, other metals and salt and storing the brine at the Epsom Water Treatment Plant, with treated water discharged to this environment.

Business case

State government funding of $1.5 million for the project was used to fund the feasibility stage of the project. From Coliban Water's perspective, the community benefits far outweighed the potential risks of being involved. Coliban Water's commitment to the community, underpinned by its vision of Water to Live, Grow and Enjoy has enabled the project to proceed.

Key drivers

The Victorian Government facilitated the project financially as well as by bringing together key agencies and actively involving the community. The key driver for Coliban Water was to provide broader community benefit, as a valued and trusted member of the community. Coliban Water believed they were the best placed agency to deal with the issue for the transition period, while DELWP progressed planning to identity a solution for the long term.

Benefit/outcome

Improvement of waterways and improved environmental quality

Protection of tourist icon and infrastructure in Bendigo.

Reputation benefits for Coliban Water as a trusted organisation with community support

Increased organisational capability for Coliban Water.

Improved relationships between key agencies – project a model for processes between water utilities and state government, councils, EPA etc.

Case study 5

Irrigating Adelaide's Airport for a heat reduction trial

SA Water

This case study showcases

water businesses delivering more than just water and sewerage provision

Problem

With increased summer and autumn temperatures in Adelaide expected to occur as a result of climate change, investigations are occurring as to how these impacts may be best managed. Impacts of a hot and dry landscape at an international airport can include load restrictions of aircraft (high air temperature reduces the amount of weight a plane can carry), higher energy use in cooling towers in passenger terminals, dust generation from areas of bare earth, increased bird activity related to the bare earth (easy access to seeds and invertebrates), and increased erosion.

Solution

One of the more passive methods for heat reduction is through the irrigation of open space and green infrastructure to enhance the evapotranspiration of the vegetation and hence cool the air in the vicinity of the irrigated zone. A two year trial has been established at the Adelaide Airport to study the possible temperature reductions that can be achieved through irrigation of open space. The overall project site covers around 30 hectares, of which 4 hectares is irrigated with stormwater that has been captured and stored using the adjacent aquifer storage and recovery (ASR) scheme.

The aim of the trial is to quantify the temperature differences from open space irrigation and use this data to model the potential operational energy savings (in adjacent buildings) and aircraft operational fuel efficiency and safety. The project also aims to capture information in other critical areas to airport operations such as improved aesthetics, reduction in soil erosion and resultant dust, reduction in high risk bird populations, reduction in airfield maintenance requirements and the potential for primary production crops.

During the first year of the trial the key finding was that the average temperature difference between the irrigated and unirrigated area was 2.4 degrees. The next stage is to quantify how this temperature difference will benefit airport operations. Expansion to the entire airside area would utilise recycled water. This would enable beneficial reuse of the recycled water which, if not used for irrigation or industrial/commercial use, is discharged to the marine environment.

Business case

The actual business case has not yet been formalised as it is still in the data collection and collation phase. It is assumed that the financial and non-financial benefits that could include energy and fuel savings, reduced bird and dust risk. The production of crops which will provide the same temperature reduction and associated benefits also result in ability to gain income from the irrigated vegetation. This would demonstrate a good example of a circular economy.

Key drivers

To our knowledge this type of trial has never been conducted at a national or international airport for the purpose of temperature reduction. The project also gives SA Water the opportunity to undertake a trial of this nature in a controlled urban setting. The information gained from this trial can also be transferred to other settings where a trial of this nature would be difficult such as urban parks and sportsgrounds.

Case study 6

Using nutrient offsets to improve the Logan River

Queensland Urban Utilities

This case study showcases

water businesses delivering more than just water and sewerage provision

Problem

The Beaudesert Sewage Treatment Plant needed an upgrade to manage additional nitrogen discharges that occur during and after wet weather events when irrigators reduce their recycled water demands. At the same time, high rates of natural channel erosion in the Logan River was leading to a significant mass of sediment and nutrients entering the river.

Solution

Queensland Urban Utilities (QUU) used a nutrient offsets mechanism to improve Logan River in lieu of a nutrient removal upgrade of the Beaudesert STP. QUU re-engineered a 500 metre bank of the Logan River to prevent more than 11kT of sediment, 5T total nitrogen and 8T of total phosphorous from entering the waterway every year due to natural channel erosion. Controlling sediment and nutrient loads through a green infrastructure solution enabled Queensland Urban Utilities to cost effectively manage compliance with the STP's nutrient discharge limits, particularly in wetter than average years.

This approach was a pilot project for the Queensland Department of Environment and Heritage Protection (DEHP) *voluntary market based mechanism for nutrient management*, which offers an alternative investment option under the *Environmental Protection Act 1994*. A waterway emission nutrient offset of five tonnes per year of total nitrogen was added to the environmental licence. QUU reduces future environmental licence compliance risk associated with climate change and allows time for adaptive planning to cost effectively service the projected population growth for Beaudesert.

Business case

The provision of a voluntary offset mechanism has allowed QUU to undertake riverbank restoration works at Logan River to reduce sediment and nutrient loads, thereby enabling QUU to comply with nutrient discharge limits at Beaudesert STP and avoiding a costly upgrade. The $800,000 water quality project was more cost-effective than an $8 million alternative to upgrade the Beaudesert Sewage Treatment Plant for partial biological nutrient removal (BNR). The green infrastructure solution also has significantly lower (~90%) annual operational costs ($540k/yr BNR Vs $40k/year offset), saving $5 million over the life of the 10 year offset.

Key drivers

Planning flexibility – the offset provided QUU sufficient time to understand local population growth forecasts and integrate sewerage loads from a nearby planned 'State significant' inter-state freight-train intermodal terminal into master planning for a new regional STP in the Beaudesert area.

Environmental leadership – nutrient offsets had been talked about for many years in South East Queensland. It was time for a pilot project to show how it could be done and to get the scientific community to challenge the assumptions and continually improve the voluntary mechanism policy in Queensland.

Financial sustainability – the offset was significantly better value for money for customers.

Benefit/outcome

Environmental sustainability – many intangible environmental benefits such as much lower GHG emissions, improved biodiversity (wildlife corridor) and stream cooling.

Community benefit – riparian land holders were losing around one metre of land per year on average due to river bank erosion. This project has reduced this to near zero.

Drinking water security – the offset location resides within a drinking water catchment where a significant supply risk is high turbidity events from channel erosion. This project is the first step to help address this problem.

Case study 7

A sewage treatment plant for all

Maleny Sewage Treatment Plant upgrade

Unitywater

This case study showcases

customer and community working with water businesses to define broader value

Problem

The Maleny Sewage Treatment Plant (STP) needed a capacity upgrade to cater for increased population growth in the region and improve treatment standards. In addition, the plant was discharging into the nearby Obi Obi Creek, which was a sensitive issue in the local community.

Solution

In addition to a treatment plant upgrade, Unitywater planted an adjacent forest and wetland on a former dairy farm site which acts to further treat the water from the STP.

From the STP, Class A effluent is pumped 1.4 kilometres to the Maleny Community Precinct where it irrigates 13.8 hectares of revegetated native forest. Any treated effluent that isn't used by the irrigated forest seeps through the soil profile into three hectares of wetlands. Incorporating the irrigation and wetlands as part of the sewage treatment process takes up residual nutrients, naturalising the water before it is released into the Obi Obi Creek and hence back into the water cycle.

The forest and wetlands have transformed a section of an old dairy farm into an important habitat for flora and fauna. Unitywater worked hand-in-hand with Sunshine Coast Council, local bushcare groups and the community to develop parts of the forest and wetlands system and align them with the Maleny Community Precinct Master Plan. This includes walking tracks and planting zones for the community to enjoy.

Business case

The business case put the preferred option (STP upgrade with a membrane bioreactor plus discharge to forest and wetlands) ahead on both cost and non-cost criteria, compared to six other options. Compared to other options, the $17 million innovative approach of combining membrane bioreactor technology with natural processes saves up to $18 million over the service life of the plant.

Key drivers

The Maleny community is well known in the region for being a passionate and tight knit community who is interested in preserving and enhancing the town. Unitywater was therefore well aware that the successful delivery of the upgraded sewage treatment plant would require taking a partnership approach with the Sunshine Coast Council, the Maleny community and local indigenous groups, and involve close consultation and collaboration over several years.

Benefit/outcome

- STP upgraded to meet needs of future growth in the region
- Reputational benefits for Unitywater stemming from positive community engagement
- Positive impact on health and water quality of Obi Obi Creek
- Community spaces such as walking tracks and planting zones
- Biodiversity benefits
- Indigenous heritage protection
- Recycled water provision to local organisations
- Improved energy efficiency.

Case study 8

Water only schools

Goulburn Valley Water

This case study showcases

water businesses delivering more than just water and sewerage provision

Problem

Many parts of Australia, and particularly regional cities and towns, have a high incidence of health issues relating to obesity and other lifestyle diseases. High consumption of sugary drinks is a strong contributing factor and is associated with an increased risk of developing Type 2 diabetes, weight gain and obesity, as well as poor dental health. Lack of adequate hydration is also increasingly being linked to decreased cognitive function in children. Many communities lack education on the detrimental health effects of sugary drinks. Tap water is a healthy, hydrating and cheap alternative to soft drinks and other sugary drinks.

Solution

Active programs are offered in the Goulburn Valley and Barwon regions to engage schools in the benefit of drinking tap water.

Goulburn Valley Water's 'Water Only Schools' Program is offered to schools in the local community, where students are only allowed to drink water and plain milk at schools. Students are not able to bring in other drinks into school or buy any other drinks. Goulburn Valley Water have also engaged local health organisations to assist in delivering a community education program which promotes the health, financial and environmental benefits of choosing tap water. While the program mainly targets students, staff and parents are also engaged through newsletters and other collateral.

Success in the Water Only Schools to has raised its profile of the program and a number of workplaces are now keen to be involved. 'Water Only Workplaces' launched in June 2016 with a number of local indigenous community service groups, for example the Rumbalara Aboriginal Co-operative which provides a range of support services for indigenous communities such as health and cultural activities. The program is also looking to expand into early childhood education – e.g. childcare, kindergartens and pre-schools.

Business case

The program is run at a very low cost to GVW, with some staff time and giveaways such as water bottles required during launch activities, but very little upkeep thereafter.

Key drivers

The initial idea for the 'Water Only Schools' program came from Barwon Water, who has been partnering Barwon Health on a similar program, H2Only, in Geelong. Developing a 'Water Only' program complimented Goulburn Valley Water's comprehensive education program. Goulburn Valley Water has taken the role of the lead agent (which in the Barwon region has been led by the health agency) and engaged local health organisations to partner and deliver the project. The program also complements the 'Be Smart – Choose Tap' campaign which has been developed by Yarra Valley Water and has shared with other Victorian utilities to create a strong and united 'brand' for tap water.

Benefit/outcome

Improved health, financial and environmental outcomes of the community through promotion of tap water

Improved partnerships between Goulburn Valley Water and community, as well as local health organisations.

Reputational benefits

Case study 9

Renewable energy

Melbourne Water, Sydney Water

This case study showcases:

water businesses delivering more than just water and sewerage provision

Problem

The Australian water sector is a large energy user during the supply, treatment and distribution of water. Energy use is heavily influenced by the requirement to pump water and sewage and by the nature of sewage treatment processes employed, and varies significantly from city to city and process to process. In a carbon constrained future, relying on non-renewable sources of energy will mean utilities and communities will face a number of challenges:

climate change impacts on society if greenhouse gas emissions are not curbed

shocks to energy price and supply variability

rising costs as more energy intensive options, such as recycled water, decentralised systems and desalination are considered.

understanding customer willingness to pay for less greenhouse intensive options

resolving environmental trade-off energy intensive nitrogen removal versus discharging it to the environment.

Solution

Many utilities are looking for renewable energy sources to meet their energy demands.

Sydney Water has built a diverse renewable energy portfolio made up of cogeneration, hydroelectricity and solar, which now accounts for approximately 20% of total energy demand of the utility. Of this, cogeneration accounts for approximately 15% of energy production, having been rolled out in eight of the larger wastewater treatment plant sites. Sydney Water are now trialling co-digestion of sewage sludge and organic food wastes; reflecting a gradually changing mindset that Sydney Water could provide broader benefits as a 'waste services' provider by expanding its current capability treating one significant stream of waste. Hydroelectricity and a small amount of solar is also generated in suitable sites within the network. Notably, there has been some community interest in using Sydney Water land for community solar sites. Sydney Water has been approached by community based renewable energy groups or companies to discuss the potential to place solar PV systems on Sydney Water assets. The companies would fund the generation system and pay Sydney Water a royalty for access to the space. Sydney Water would also access sufficient 'behind the meter' electricity to power on-site assets, with the bulk of the power being exported to the grid. Reservoirs are the sites of main interest as these are large open spaces, but involve the challenge of finding suitable floating solar PV arrays.

Melbourne Water also have a significant renewable energy program. Nine mini hydros across Melbourne's water supply system generate 61,000 Megawatt hours of electricity each year – enough to power 9,000 households. In all, the water supply network generates more electricity than it uses. On the wastewater side, Melbourne Water captures biogas from the waste treatment processes at both treatment plants, and uses it to power 40% of the electricity required for treatment processes. The Western Treatment Plant is on track to become energy self-sufficient (utilising its own biogas) in 2016/17. As part of its continued commitment to reduce it emissions, Melbourne Water also has a pipeline of R&D and commercialisation. These projects include algae for treatment and biofuel production, advanced biogas recovery and small scale hydro and solar generation.

Business case

Getting renewable energy projects approved is generally based on what makes good commercial sense – i.e. those projects where there is financial pay back over the life of the project, the ability to leverage and make 'quick wins' off the system (e.g. biogas from large wastewater treatment plants) and/or to reduce high supply costs or unreliability in supply (e.g. in some remote areas).

Under the currently electricity market there tends to be little incentive to feed electricity back into the grid and renewables need to offset a current energy use. This can limit feasibility of these projects down to a few suitable sites. More lucrative tariff structures such as a local network tariffs are being investigated as a means of facilitating renewable energy exports into the grid. Melbourne Water have negotiated offsetting of renewable energy generation between sites as part of their long term energy contract.

Customer research undertaken by Sydney Water has found that customers highly value utility efforts to pursue renewable energy projects; despite this there is

little willingness to pay over and above current bills. However due to this customer support and the broader environmental benefits, business cases can be approved on longer payback terms than a normal project. As part of Melbourne Water's recent pricing submission to the regulator, willingness to pay was undertaken to get an understanding of community support for renewables. This work showed that the community is willing to pay for a portion of Melbourne Water's energy to be sourced from renewables at a small premium.

Key drivers

Renewable energy is generally used to deliver projects and services at the lowest cost to customers and the lowest impact to the environment.

Newer technologies or approaches are also facilitating the uptake of renewable energy solutions where they were not feasible previously.

Support for renewable energy varies from state to state. Strong policies, mandatory/voluntary targets or financing mechanisms can drive a push towards renewable energy solutions however to date the policy landscape across most states has been largely uncertain. Melbourne Water support the Treasurer of Victoria's new $300 million green bonds initiative, which drives investment into projects that offer climate change and environmental benefits. Melbourne Water projects that can be supported through the green bonds initiative include the construction of 9 additional mini hydros and improvements on the biogas capture and reuse at the Western Treatment Plant and Eastern Treatment Plant.

Benefit/outcome

Financial benefits – reduced energy costs and hedge against future price increases and insecurity of supply.

Reduction in greenhouse gas emissions/ climate change mitigation

Contribution to liveable and resilient cities.

Reputational benefits

Case study 10

Aurora food to waste energy plant

Yarra Valley Water

This case study showcases

water businesses delivering more than just water and sewerage provision

how water businesses are rethinking internal processes, services and skills to better serve communities

Problem

As the millennium drought hit, Yarra Valley Water investigated the augmentation of their satellite STPs to include recycled water provision, which would essentially drive up energy costs. Initial assessment of a number of renewable energy sources such as traditional cogeneration systems, wind, solar, etc. did not stack up economically for smaller sized plants. The Australian water sector is a large energy user during the supply, treatment and distribution of water. In an uncertain future, relying on non-renewable sources of energy will mean utilities and communities will face a number of challenges

climate change impacts on society if greenhouse gas emissions are not curbed

shocks to energy price and supply variability

rising costs as more energy intensive options, such as recycled water, decentralised systems and desalination are considered.

Solution

Yarra Valley Water is currently constructing a waste to energy facility next to the Aurora Sewage Treatment and Recycled Water Treatment Plants in Melbourne's north. A long standing partnership with East Bay Municipal Utility District in California provided insights on what might be possible from co-digestion with food waste as a feasible renewable energy source. From a regulatory and cost standpoint, the best approach was to separate the sewage sludge and food waste processes and not integrate the two.

100 tonnes of food waste that was previously destined for landfill will be processed every day into biogas via anaerobic digestion. The site was strategically chosen for its location near the treatment facilities but also for its proximity to local food manufacturing as well as the wholesale markets in Epping. The plant is designed to divert 33,000 tonnes of waste per year from landfill, and power both treatment plants. The plant will be operational in early 2017.

Business case

The business case was reliant on taking an asset off the grid or selling to another customer, as contributing straight to the grid did not stack up economically.

Yarra Valley Water set up a separate entity. Commercial organic waste from local markets and manufacturers will be processed into biogas via anaerobic digestion. It is expected that enough energy will be generated to run the facility and the neighbouring Treatment Plants. Any surplus energy will be exported to the electricity grid, helping to reduce greenhouse gas emissions, and Yarra Valley Water's reliance on traditional sources of electricity.

Key drivers

With the economics finally in favour of renewables, the consideration of a food waste to energy plant was further sparked by a paradigm shift of Yarra Valley Water's role as a processor of waste, not just sewage: Yarra Valley Water already processed 75% of region's waste by volume – why not expand into other waste streams? This was achievable from a capacity and capability standpoint.

There was also strong community support to construct the plant which was achieved through strong community engagement throughout the project. The township of Aurora was built as an 'environmental showpiece' and providing recycled water via a renewable energy source contributed to this vision.

Benefit/outcome

Reduction of waste going to landfill

Reduction in greenhouse gas emissions.

Reduction of energy costs to utility (and less costs being passed on to customers)

Non-regulated revenue stream for the utility from gate fees to treating the waste

Sustainable energy source resilient to supply or price shocks.

Case study 11

Helping not hindering

Yarra Valley Water

This case study showcases

how water businesses are rethinking internal processes, services and skills to better serve communities

Problem

Keeping on top of water bills can be a challenge to many households that are experiencing difficult circumstance or financial stress. Those who experience domestic violence are especially vulnerable to financial risk.

Solution

The Yarra Valley Water hardship team evaluated its processes and touch points with these customers and put together some simple changes which enable Yarra Valley Water to effectively support and work with those experiencing of domestic abuse, without causing extra burden. This includes flexible approaches to accessing the right support programs, founded on taking customers at their word – i.e. not requiring proof of domestic violence. The customer's safety is paramount and all processes are developed to ensure a more supported experience including; all customers who are identified as experiencing family violence are automatically transferred into the Customer Support Team where they have one point of contact, additional privacy and safety flags as well as flexible communication methods and payment plans.

Yarra Valley Water also embedded this approach within the organisation through:

Ongoing training and development for all staff that interact with clients. The training module was developed with Kildonan Uniting Care. Contact Centre staff are also seconded into the hardship team to encourage a broader perspective and skills.

Staff Support through debriefing and discussion of difficult calls. This is an important aspect of staff retention at Yarra Valley Water. Staff in the Customer Support Team are trained to deal with a range of complex interactions. There is also additional assistance process in place, such as having another staff member listen in on the call to provide feedback and advice for particular situations.

Benefit/outcome

This method can lead to a number of broader community benefits including the reduction of mental health stress and financial burden on already strained individuals.

Case study 12

Creating shared value

South East Water

This case study showcases

how water businesses are rethinking internal processes, services and skills to better serve communities

Problem

Water businesses are all contributing to communities beyond their regulated requirements of water and sewerage provision. However many of these are opportunistic and personality driven. Many water businesses are exploring how they can take a more strategic approach to creating shared value and what they need to do within their own business.

Solution

South East Water is one of the three Metropolitan water retailers in Melbourne. They have proactively recognised the additional value they create as part of their business and are communicating it through their creating shared value program. The concept of shared value is about meaningful, long term value that delivers benefits to customers, the community and the business. South East Water's creating shared value program has a long-term approach, and:

Is aligned to its business' strategic objectives, supports the government's priorities, and meets one of the four key business-identified themes of education, liveability, innovation, and wellbeing.

Defines nine commitments to achieve, along with objectives, targets, and progress against the commitments.

Communicates these commitments to the public, stakeholders and their staff

Business case

When South East Water was looking to implement a refreshed and enhanced corporate social responsibility program, it soon became evident that what the business wanted matched with the philosophy of a creating shared value program approach. The retailer's aims were to enhance its reputation, engage with customers and community, respond to the state government's wishes about engaging with communities in meaningful ways, and boost employee engagement.

South East Water held workshops with employees and the Executive to gauge their thoughts on how the business should engage in the community or how it should approach sponsorship. They also analysed previous programs, partnerships and sponsorships to identify what worked and how it could improve. It was evident that much of what South East Water does as part of its business and its role as an essential service provider is creating shared value, and the feedback from employees highlighted this too.

There is minimal cost to setting up the program; the costs are mostly associated with how activities are supported. South East Water is continuing to explore more potential opportunities that reinforce its program, and are encouraging its people to value what they do and identify new or different ways they can create value.

For example, South East Water proudly supported SCOPE disability services by retrofitting water efficient appliances at five of their properties.

Key drivers

There were a number of drivers, with the main ones being: a desire to provide some structure and criteria around community engagement and support for activities, which would provide value for those we support while also having some benefit for us. We also wanted to help enhance our reputation, and provide a mechanism for explaining the variety of ways the essential service we provide has a positive effect on our community.

Benefit/outcome

The benefits of the Shared Value program are:

An enhanced reputation of the organisation

Improved community and stakeholder relationships

Embed the consideration of community value when evaluating business cases and investments

Case study 13

Cooks River bank naturalisation

Sydney Water together with: Sydney Metropolitan Catchment Management Authority, local councils, Cooks River stakeholders (incl. community)

This case study showcases

how collaboration and integrated planning deliver better value for communities

Problem

The Cooks River meanders through the inner South West of Sydney for some 23km before discharging into Botany Bay. The river was lined with concrete in the 1940's to reduce flooding. In the mid-2000s Sydney Water observed that sections of the concrete channel were starting to fail structurally and required renewal.

Solution

The need to renew this stormwater asset provided the opportunity to work towards a different future for the river and re-think the role of the Cooks River in the local community. Sydney Water and eight councils collaborated to develop a flood study and Masterplan for the river. The Masterplan and partnership model was also the basis for the naturalisation of 1100m of the river by Sydney Water in 2014–15. This project replaced the failing concrete riverbanks with more gently sloped banks stabilised with sandstone and native plants as well as associated open space and cycleway amenities.

The community was highly supportive of the idea to renaturalise the river and remains engaged in the ongoing protection and management of the river. Collaboration with universities resulted in very valuable economics insights, as well as capacity increase for utility staff.

Business case

The project was supported by a federal government grant. An ongoing international research study is now mining historic sales data to determine the lift in house value as a function of the condition of a nearby river (and associated amenity).[1] The value of property across the Georges and Cooks River Catchments adjacent to waterways with natural channels and wide continuous vegetation canopy cover, was found to be up to 8.9% higher than property near a channelized waterways without canopy cover.

Key drivers

Need for asset renewal met a desire to do more than BAU.

Collaborative approach, with a committed group of project partners.

Very strong community support with over 80% in agreement with the project.

Benefit/outcome

The solution goes well beyond the original project need of flood protection.

Safety benefits: flood mitigation

Community benefits

Great uplift in amenity with new cycle paths, trees and open space, wetlands, ongoing engagement in maintaining and protecting the river, education and appreciation of saltmarsh with signposted viewing platform. Property value uplift by between 4.8% and 8.9%

Environmental benefits

Renaturalised river, wetlands, threatened saltmarsh vegetation reintroduced, flood (and erosion) mitigated

Staff capability was expanded through exposure to new economic assessment models and top-end research "We never talked about these concepts before this project, and now we are thinking about how we can apply the models to other projects".

1 http://riversymposium.com/wp-content/uploads/2015/10/Philip-Birtles.pdf
http://ageconsearch.umn.edu/bitstream/235637/2/Thomy%20ppt%20upload.pdf

Case study 14

Greening the West

City West Water together with: Brimbank City Council, City of Melbourne, Friends of Lower Kororoit Creek, Hobsons Bay City Council, Port Phillip & Westernport Catchment Management Authority, Metropolitan Planning Authority, · Hume City Council, LeadWest, Maribyrnong City Council, Melbourne Water, Parks Victoria, Regional Development Australia, Urban Development Institute of Australia, VicRoads, Western Water, Wyndham City Council, Yarraville on the Nose Community Group

This case study showcases

how collaboration and integrated planning deliver better value for communities

water businesses delivering more than just water and sewerage provision

Problem

Melbourne's western suburbs are some of the fastest growing in Australia. They receive less rainfall than other parts of Melbourne meaning they're drier and can experience warmer daytime temperatures. As the population increases, so too does pollution, heat stress and pressure on the environment. In addition, community health in the region is currently reported as poor with issues such as diabetes, obesity, heat stress and deleterious effects of air pollution.

Solution

Urban greening has been recognised as a low-cost strategy that will bring high impact results – environmentally, economically and crucially, for the health and wellbeing of the residents who live there.

Following a think tank organised by City West Water in 2011, an alliance of the many stakeholders with an interest in urban greening was formed to share knowledge, promote and implement solutions together. Goals include: joint advocacy for better planning outcomes, community education, new opportunities through collaboration.

Through collaboration the following targets are set to be achieved:

25% increase in alternative water for green space by 2030

Double tree canopy cover in the west by 2050

Green space to be increased by 25% by 2030

Business case

Business cases are completed on a project-by-project basis. One example is the Stony Creek renaturalisation project, where 1.2km of an inaccessible concrete drain will be turned into a natural creek with community access and facilities (e.g. park, playground, bbq). The benefit to the community were estimated to be:

$5 per visit from new and more frequent visits ($140,000–$620,000/year)

10% increase in avoided health costs from increased physical activity ($75,000 per year within 1 km of creek)

1–8% increased property value within 500m of the creek ($2.3–$18.2M)

Key drivers

Poor community health

Manage low rainfall

Low quality open space

Strong organisational leadership

Fast growing suburb, the chance for change is now!

Low tree canopy coverage

Benefit/outcome

Very strong **community benefits**: More open green and active space, more shade. More attractive region, also for investors and businesses.

Staff capability to be expanded through: collaboration with new disciplines and stakeholders, business cases to be developed with new tools and seeking private investment partners.

Authorising environment to be expanded through wide-ranging collaboration across public and private sector stakeholders.

Case study 15

Fishermans Bend

Integrated planning for the community

South East Water

This case study showcases

how collaboration and integrated planning deliver better value for communities

how government can facilitate collaboration and integrated planning

Problem

Fishermans Bend is a brownfield development and one of the largest inner city developments in the Southern Hemisphere at 455 hectares. By 2050, Fishermans Bend will be home to approximately 80,000 people and support 60,000 workers. There is a strong imperative by state, government and other organisations to make this a first class, sustainable and liveable development. Water is pivotal to the design. Only by adopting an integrated water management approach can we reduce the reliance of this rapidly growing region on already stressed water and waste water systems.

However, there are numerous challenges to face, including limitations to sewer capacity, regular flooding, drainage issues and unstable/contaminated soils. As a former industrial area, there is limited existing public green open space or recreational areas, an issue further exacerbated in a high-density urban environment where there will be few private green spaces. This means not only a high cost to retrofit but also a number of technical challenges.

Solution

The numerous challenges faced in Fishermans Bend has been viewed as an ideal opportunity to shape a water sensitive precinct, a vision which has been progressively embedded into Victorian Government policies over a number of years. To achieve this goal, a structured approach was taken:

Engage early in the planning process embed WSUD into precinct plans, etc.

Develop strong stakeholder partnerships A stakeholder working group, including South East Water, Melbourne Water, the EPA, relevant State government departments and local councils was formed. They committed to working collaboratively, openly sharing information and ensuring clear allocation of responsibility and risk.

Understand the context understand how water cycle needs in a local context and custom solutions around this.

Holistic thinking what are the liveability, recreational, amenity and social outcomes that could be achieved and ensuring these are accounted for in options analysis.

To combat key issues of the development and create a sustainable masterplan an integrated water cycle approach was required. A number of potential solutions were put forward, with the preferred option on a whole of community needs basis being:

Stormwater storage to reduce flooding frequency

Rainwater capture and smart tanks for non-potable uses – irrigation, toilets, laundry.

Centralised sewer mining – local treatment plant and third pipe for non-potable use (to supplement reuse of rainwater which would not adequately supply the precinct)

Latest technologies for digital metering, pressure sewer systems and intelligent networks which overcome some of the development challenges.

Waste to energy is being explored utilising the solid portion of the mined sewage combined with municipal organic waste through anaerobic digestion to generate gas for electricity generation and centralised heating or cooling.

The preferred option will reduce the water footprint of Fishermans Bend by 45%. The option has the potential to initiate a paradigm change in the way water services are delivered to the heart of Melbourne.

Business case

The cost of the preferred option is higher than business as usual for the water utility and as such, collaborative financing options such as developer contributions or federal and/or state funding are being explored.

The Fishermans Bend Authority has been set up to further develop the South East Water business case based on the additional value the servicing strategy will provide for the community and to support Melbourne as the world's most liveable city.

Key drivers

More broadly, a key driver for undertaking a 'water sensitive' approach has been incrementally growing interest in integrated water management by State Government over the last 20 years. This has largely been driven by the longstanding challenge in Melbourne to reduce nutrient discharge into Port Phillip Bay in addition to the supply challenges faced during the Millennium drought. This is also supported by the vision of state government, council, authorities and developers for sustainable and resilient communities.

Government & utility drive to try new things and set an example.

Strong relationship between South East Water and key stakeholders and the Metropolitan Planning Authority in particular, which has built capacity and expertise over a number of years across various projects, thereby preparing them for this larger challenge.

Availability of new technology which has made certain solutions feasible.

Benefit/outcome

Water footprint reduced by 45%

Creation of a green, cool landscape (including urban forests, open spaces, street trees, green walls) which combats heat stress and is sustained through a drought proof supply.

Reduced urban flooding

Climate resilience

Amenity and social benefits.

Case study 16

The urban water cycle planning guide

Barwon Water

This case study showcases

how collaboration and integrated planning deliver better value for communities

Problem

The Geelong region is one of the fastest growing in Australia and experienced considerable water management challenges during the millennium drought. New urban landscapes are being planned and designed at a rapid rate. A key challenge for urban planners, developers and governments is how to design and build new urban landscapes which are more liveable for residents and more resilient to external pressures like climate change.

Whilst these stakeholders share an interest in adopting good practice integrating urban and water planning can be complex and difficult. Consequently, it is absent or lacking in the early planning stages of new developments, meaning opportunities are missed and/or inefficiencies arise.

This stems from fragmented management of the different aspects of the urban water cycle from a planning perspective and a lack of tools for integration. Whilst Barwon Water has a key role to play in providing water, sewerage and alternative water to these new landscapes, it recognised the need for greater cross agency collaboration to help ensure the water cycle is considered as early as possible in the design stages.

Solution

Recognising that these challenges presented opportunities for better integration of water and urban planning, Barwon Water led the creation of Victoria's first Integrated Water Cycle Management (IWCM) Network. Establishment under a signed MoU between the water corporation, CMA and Local Government, the network commits the agencies to work towards a more integrated approach to urban and water planning. By signing the MoU, the organisations commit to playing a role in coordinating, raising awareness, building knowledge and confidence in and developing tools around IWCM.

A number of initiatives have now been delivered through the Network, including:

Colac IWCM Plan

A whole of city water cycle based master planning exercise where the key agencies in Colac worked through a strategic visioning and planning process to identify ways in which the urban water cycle can help the city achieve its broader community vision.

Urban Water Cycle Planning Guide

An online resource to help urban developers, consultants and planners embed the concept of IWCM into the design of new urban subdivisions, including built and natural infrastructure as a well as water servicing options.

IWCM plans for development precincts

The network has now developed several IWCM plans for more liveable design of urban developments in the region, including Fyansford and Spring Creek.

Atlas of alternative water opportunities

A detailed database describing all existing, planned and potential demands and supply nodes for alternative (non potable) water for use in all serviced areas across the region.

In the past five years the region has continued to push the boundaries of leading integrating water and urban planning; we have led the preparation of IWCM plans at various scales, (township, precinct and sub-precinct) and created an online guide to help consultants negotiate the integration process (www.urbanwaterplanner.com.au). Staff are taking on new roles as sub-consultants to lead similar processes in other jurisdictions across the state.

Business case

Through practical collaboration, the Network has developed a genuine commitment to working together for better integration of urban and water planning. Having a shared vision of more liveable urban landscapes and a working network of practitioners has helped the group develop successful funding proposals and become involved in urban master planning early in the process. Funded projects, such as the Guide has further strengthened relationships within the group. The leverage of funding and the sharing of knowledge and capability through joint projects has reaped returns in better developments and smarter water management decisions.

Key drivers

Ultimately, the cornerstone of Barwon Water's approach has been to help the region achieve its broader goals for urban liveability. With a strategic outlook, extensive multi-disciplinary experience and strong regional relationships and networks, Barwon Water has been in a position to help facilitate the changes necessary. Ultimately, this collectively leads to the right solutions for the community.

Benefit/outcome

Facilitating IWCM implementation at a practical scale, thereby leading to enhanced liveability outcomes in new developments such as improved aesthetics, green open spaces, better accessibility, improved environmental outcomes.

Local resilience to climate changes via a more diverse portfolio and water efficiency community

Greater communication, coordination and capacity amongst key players

Case study 17

The Victorian Water Plan

More than supply and security

Department of Environment, Land, Water and Planning, Victoria (DELWP)

This case study showcases

how government can facilitate collaboration and integrated planning

Problem

Water policies, strategies and plans exist for many states, regions and cities. They are often developed by State Governments, with the relevant water business(es), to articulate a Government's position relating to water, and actions for its management over the long term. Many water plans only consider water supply and security for a region. This continues the siloed approach to urban water cycle management in that water businesses are only asked to consider and plan for their specific area of responsibility. It also reinforces the perception that water businesses are only providers of water supply and sewerage services, and have no consideration for other elements of the water cycle.

In these plans there is often very little, if any, recognition of the contribution water provides to broader outcomes such as prosperity, liveability, indigenous values and general health and wellbeing. It also means that there is not a strong driver for agencies to come together to plan for these broader outcomes, and this potentially results in lost opportunities.

Solution

Water for Victoria seeks to optimise community benefit through stakeholders collaborating and taking a more holistic approach to water cycle servicing. Investment is continually made in managing the urban water cycle. An integrated water management approach to planning will improve value by using this investment to deliver multiple benefits. There will be increased effort at the planning stage to identify and explore opportunities to achieve this, with the benefits expected to significantly outweigh these additional upfront costs.

Business case

Population growth and climate change will present challenges to maintaining and improving the liveability of Victoria's cities and towns, for which water management is an important enabler. The traditional siloed approach to planning is a barrier to realising multiple benefits through multi-functional assets and collaboration.

Key drivers

The broader benefits from a Water Plan that encompasses more than just water supply security and sewerage provision are:

The recognition that outcomes such as liveability, health and resilience are the responsibility of more than one agency, and that water is a critical enabler

Better outcomes for the community through engagement to understand and deliver what the community values

Optimised value from investment, resulting from collaboration in the development of servicing solutions and leveraging the skills and assets from different agencies

Benefit/outcome

Water for Victoria seeks to optimise community benefit through stakeholders collaborating and taking a more holistic approach to water cycle servicing.

Investment is continually made in managing the urban water cycle. An integrated water management approach to planning will improve value by using this investment to deliver multiple benefits. There will be increased effort at the planning stage to identify and explore opportunities to achieve this, with the benefits expected to significantly outweigh these additional upfront costs.

DELWP have developed a framework for developing integrated water management plans to support this outcome.

Case study 18

Water and economic development

Providing broader benefits through the South Australia Strategic Plan

SA Water

This case study showcases

how government can facilitate collaboration and integrated planning

Problem

In response to a number of state-wide financial and social pressures, there is a strong imperative from the South Australian Government to bolster economic development. One priority for the Government is positioning SA as a 'renowned producer of premium food and water, from its clean water, clean air and clean soil' . As a State-owned corporation , SA Water has the capacity to foster and facilitate projects which have broader benefits to the community, for example through providing a secure recycled water supply to the food and wine industry. Previously, there has been a limited ability to pursue or finance such projects as the NPV did not consider the benefits that would be realised outside of SA Water.

Solution

The development and implementation of the South Australian Strategic Plan has enabled an overarching blueprint for future planning across all government departments. KPIs and targets ensure previously siloed departments or organisations can move toward the same goal. For SA Water, this means it is able to consider projects which may provide broader value to the State. Projects are financed either directly from the State and/or Federal Governments or via reduced dividends to its owners; hence these projects do not impact the customer base through higher water bills. One such project is the proposed Northern Adelaide Irrigation Scheme (NAIS), which will deliver an additional 20 GL of recycled water to support high value food production for export markets in the Northern Adelaide Plains. This will contribute to an estimated $350 million of horticulture production annually and create over 3,600 jobs for the region.

Business case

The initial estimates suggest that there is around $170 million required for the recycled water infrastructure, which does not include the additional on farm investment for glass houses, irrigation systems etc. At present the funding model for this project has not been finalised, however there is discussion with private investors and the State and Federal Governments regarding how the recycled water infrastructure will be financed. Other aspects that were considered in the development of the business case, such as SA Water's commitment to the EPA to reduce nutrient loads to the marine environment.

Key drivers

The key driver for this project was the SA Government's desire to boost employment and stimulate revenue for the State. The SA Strategic Plan and its State ownership provide SA Water with the mechanism to deliver broader benefits to the State.

As mentioned, a secondary driver is the reduction of effluent discharges and associated nutrient loads to the marine environment.

Benefit/outcome

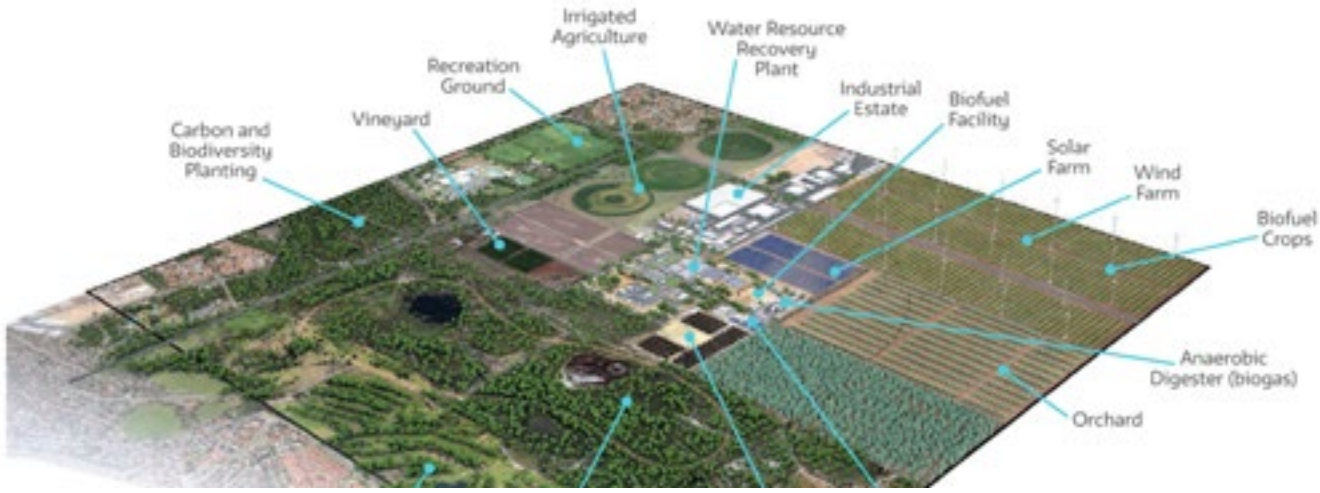
The main benefits that have been influenced by the State Strategic Plan include the ability to deliver the NAIS project, as described above. As an example, this project and other smaller supportive projects in this area will result in:

Jobs/economic development for SA (3,600 jobs)

Food production

Capacity building in SA Water – training staff to consider broader benefits and solutions

Reduce nutrient loads to the gulf



Case study 19

A move to buffertopia Strategic resource precincts

Water Corporation

This case study showcases

How collaboration and integrated planning deliver better value for communities

How Government can facilitate collaboration and integrated planning

Problem

As cities and towns grow there is often pressure to locate residential areas close to wastewater treatment plants (WWTPs). This can expose residents to nuisance causing odour, leading to complaints and pressure for the utility to either upgrade infrastructure or relocate the treatment plant at significant cost. Water Corporation operates over 100 treatment plants across Western Australia. Odour buffers have been identified for most of these, however, many are not secured and are at constant risk of urban encroachment. On average only 20 percent of land in the identified odour buffers is owned by the Water Corporation and so there is a heavy reliance on seeking to influence State and local government land use planning to prevent the intrusion of incompatible land uses into the defined buffer. While the Water Corporation has had some success in achieving this, around 25 percent of all WWTPs and 40 percent of large WWTPs are considered to be at risk of urban encroachment.

Solution

'Buffertopia' – the Strategic Resource Precincts[2] concept was conceived and developed in consultation with internal and external stakeholders, including planning authorities.

The concept recognises that WWTPs are increasingly being seen as secure sources of recycled water and other resources essential for helping to ensure the liveability, climate resilience and sustainability of cities and towns. At the same time it proactively communicates opportunities for synergistic and beneficial land uses in the buffer that either use outputs from the plant (e.g. recycled water, nutrients, sludge, biogas) or provide inputs (e.g. energy, knowledge) which benefit the WWTP and urban communities. For example parklands or intensive horticulture could be high users of WWTP outputs such as recycled water, nutrients or biosolids, or there may be benefit in co-locating other green waste facilities or research facilities for sharing of knowledge or technology. At a time of increasing water stress and urban heating, there is a growing community demand for green infrastructure such as playing fields, artificial wetlands and urban forests, which are supported by a secure water supply.

The establishment of Strategic Resource Precincts around WWTPs has been recognised in the Western Australian Planning Commission's State Planning Strategy 2050 and Water Corporation is now progressively working together with local governments and other key stakeholders to ensure it is included in a range of other strategic and statutory plans and policies. Going forward, Water Corporation has an important facilitation role to play as they have the expertise to communicate and advise on the most appropriate beneficial land uses.

Business case

A lack of appropriate buffers or land use planning is estimated to have cost the Water Corporation around $800 million in upgrades or relocations in the period 1997 to 2012. While each site will need to go through its own business case and may involve financial contributions from Water Corporation or other stakeholders, the main driver is avoided cost in addition to added community benefit.

Key drivers

Having secure odour buffers resulting in less complaints, avoided infrastructure upgrade or relocation costs as well as reputational benefits has largely driven this initiative. The concept of Strategic Resource Precincts has been used in Western Australia for other industries such as agriculture and basic raw materials and minerals which effectively set a precedent for Water Corporation to pursue this initiative.

Benefit/outcome

Long term asset protection

Efficient use of land, water and other resources

Communities which are more liveable, climate resilient and sustainable through provision of water secure land uses – e.g. parks, gardens, conservation reserves, horticulture etc.

2 http://www.watercorporation.com.au/home/builders-and-developers/land-planning/strategic-resource-precincts

Case study 20

Making the Parramatta River swimmable again

Parramatta River Catchment Group/Sydney Water

This case study showcases

How collaboration and integrated planning deliver better value for communities

Customer and community working with water businesses to define broader value

Problem

Up until the 1950s, most of the Parramatta River was swimmable and the river was the focal point of many social activities. Since then, the river's condition has deteriorated and is currently in an impaired state, with only few locations where people can still swim. With western Sydney facing strong population growth, there is a growing need for active public spaces where the community can swim and relax. At the same time, governance surrounding the Parramatta River is complex, with numerous organisations having responsibility for different aspects of the river.

Solution

The Parramatta River Catchment Group (PRCG) was formed in 2008 and comprises a group of councils, State government agencies and community groups, whose aim is to work together to improve the health of the Parramatta River catchment. Through regional collaboration, the PRCG seeks to ensure coordination of effort, optimal use of resources and greater impact on governmental policies and decisions affecting the catchment than could be achieved through each member working separately.

In 2014 the PRCG launched the Our Living River initiative, with the mission to make the Parramatta River swimmable again by 2025. To achieve this mission, the PRCG are developing a Masterplan to map the necessary steps and milestones required to meet our objectives. The PRCG has taken a strong outcomes based approach to this complex task, driven by community needs. Through initial community consultation, it became apparent that being a 'swimmable' river meant more than just swimming, but also a desire to enjoy the social, amenity and biodiversity benefits of the river. The Masterplan therefore encompasses the many dimensions of making the river swimmable, including water quality, ecological health, swimming site activation and waterway governance. It is being heavily informed by community preferences through an extensive community research piece as well as popular campaigns to involve the community in the decision making process. For example, to inform the locations of potential swimming spots, the community were asked to vote for where they would want to swim on the river.

To further strengthen the links between ecological health and swimming in community minds. The PRCG undertook a community engagement campaign which centred on inviting the community to vote for their favourite 'flagship' or mascot species for the river. With approximately 5,000 votes received, five mascots were chosen for different river qualities, being the Southern Myotis (fishing bat), Striped Marsh Frog (riparian), Eastern Long Necked Turtle (freshwater), Bar Tailed Godwit (estuarine) and the Powerful Owl (terrestrial). These have now become the focus of the ecological health component of the Masterplan.

Focusing on the preservation of these species will have natural flow on effects to the improvement of the river at large. Through these mascots, the PRCG aim to educate the community on how they contribute to a 'living' river system and how we can all benefit from these broader ecosystem services. It will also inform the plan for the river going forward by understanding what pressure points these mascot species have in the river and how they link back to the vision of making the river swimmable once more.

Business case

Resourcing for the development of the Parramatta River Masterplan has come through various forms of cash and in-kind funding of the PRCG. Funding for implementation will be further explored through a detailed economic analysis.

Key drivers

It was recognised early that strong community engagement would be required, given the population in the catchment and complexity of the issue. The diversity in participating organisations in the PRCG means that this was a strong vehicle to move the vision forward.

For Sydney Water, in addition to fulfilling wastewater/stormwater responsibilities, involvement strongly aligns to corporate strategy goals of playing a proactive and leadership role in the broader conversation of urban environments and considering innovative solutions.

Benefit/outcome

Amenity and recreational benefits

Ecological benefits

Relationship building with key stakeholders through the PRCG

Reputational benefits.

Case study 21

Our Space, Your Place

Melbourne Water

This case study showcases

how water businesses are rethinking internal processes, services and skills to better serve communities

Problem

There is growing evidence of the benefits of well-planned green spaces on the physical and mental wellbeing of the community. As Melbourne grows it is becoming more important to provide opportunities for exercise, such as cycling and walking and community interactions and access to open outdoor areas.

Melbourne Water is the custodian of 33,000 hectares of land across greater Melbourne, the second largest owner of land in Melbourne behind the Crown. Significant tracts of this land remain underutilised, and are often managed from a community safety perspective by making the land inaccessible to the public. There is great potential for Melbourne Water to provide more value to community for this land.

Solution

To encourage the use of land for community projects, Melbourne Water created a map based web application, '*Our Space. Your Place.*' which makes information on Melbourne Water's land publicly available and streamlines the process of finding land and expressing interest in using it for community benefit. Community groups and individuals can use the application to search for an appropriate space for their community use concept, access information on potential funding sources, and send through an expression of interest. Community members are encouraged to consider a wide range of activities on the land, such as parks, shared pathways, community gardens, events, landscaping and vegetation, murals and public art. Since launching, over 30 requests have been made through Our Space. Your Place.

Hope City Mission, who provide a significant quantity of food each week to families in need, conceived a 'Garden for Hope' where fresh local produce could be harvested and supplied to clients direct from the garden. Short of space for this project on their own land, Hope City Mission looked to the open space behind their premises where Melbourne Water maintained an easement with significant amounts of open space along its length. Hope City Mission approached Melbourne Water with a proposal to construct a community garden on their land. The beds were built above the ground in a 'no dig' solution to protecting the Melbourne Water assets.

Business case

Facilitation of the *Our Space. Your Place.* project has been cost effective, and includes some in-kind time and the development and maintenance of a web based platform. In addition to providing the land, Melbourne Water support applications through to implementation for example helping to identify funding opportunities.

Key drivers

Key to the success of *Our Space. Your Place.* has been a cultural shift within the organisation largely driven by the project champion. This included realising the potential benefits that could come from releasing the land, unlocking data previously only used internally and building capacity to engage and service the community in new ways.

Benefit/outcome

Assets are improved to directly meet community needs – with a number of potential benefits such as improved amenity, biodiversity and improved mental and physical wellbeing of the community.

Improve transparency, customer service and reputation of Melbourne Water

Case study 22

Using engagement to find a solution

Engagement of remote Indigenous communities in the Northern Territory

Power and Water Corporation

This case study showcases

how water businesses are rethinking internal processes, services and skills to better serve communities

Problem

Many remote indigenous communities in the Northern Territory rely on stressed groundwater or freshwater sources and are exposed to critical water shortages.

Communication on the importance of water conservation with these indigenous communities has been difficult. Residents of the townships retain ties to traditional culture with English as a secondary language. They are not well educated on the systems and processes of water or other utility services, i.e. where it comes from, where it goes and the governance that surrounds it. Hence they do not often make the connection between water that comes out of the tap and local issues of water stress. As they often live in public housing, there is no price signal to use less water. The communities are plagued with other social pressures such as high levels of unemployment and water efficiency is not high on the agenda for most. Power and Water in the Northern Territory hence face a strong cultural, language and distance divide in getting their water efficiency messaging across.

Solution

Through consultation with the local indigenous communities, Power and Water began to understand that effective engagement would need to come from those with the same cultural and language backgrounds, and with understanding of community needs and values.

In 2012, Power and Water employed, mentored and trained four local indigenous Water Conservation Ambassadors to educate the remote community of Galiwin'ku on positive water behaviours and water efficiency. Power and Water worked with local organisations, Community Development Employment Program providers and Community Enterprise Australia to assist in ensuring the right community ambassadors were chosen and provide culturally appropriate training and ongoing mentoring. The program resulted in significant water efficiency and education gains.

Following the success of this program, in 2013, Power and Water took part in the Low Income Energy Efficiency Program (LIEEP), a Federal Government funded project which in the Northern Territory was trialled in six remote communities, including Galiwin'ku. The LIEEP program built upon the community engagement process used in Galiwin'ku, and also took the opportunity to leverage this funding in energy efficiency to include some water efficiency education/services. The program involved recruiting and training 80 local indigenous community members in local languages, and preparing communications materials that spoke to the communities. Part of the training also involved more general HR activities such as experience in workplaces, with induction, timesheets, etc.

Power and Water are now leading the way to explore opportunities with other government agencies who may have the need for similar indigenous community engagement programs to pool resources and implement joint training or employment programs.

Business case

Due to the broader community benefits of this program, there has been Government funding and support to run this program.

Key drivers

Strong message from the indigenous community that Power and Water needed to engage with them in a culturally appropriate way to achieve the outcome the desired.

Drive from Power and Water to have a respectful and open dialogue with their customers

Benefit/outcome

Water efficiency outcomes –savings of up to 8% observed after household water education delivery

Upskilling and empowering remote indigenous community

Employment opportunities in a region where the unemployment rate is high.

Better relationship and understanding of the local community

Sustainable management of water.

Case study 23

Understanding customer views on stormwater

Customer value and willingness to pay for stormwater services

Sydney Water

This case study showcases

customer and community working with water businesses to define broader value

Problem

Population growth, urban development and increasing run-off continue to place stress on local waterways. Effectively managing these pressures will require Sydney Water to increase future investment in stormwater. At the same time, responsibility over stormwater is complex across many cities in Australia. In Sydney, Sydney Water manages trunk main and some smaller stormwater assets, while councils manage most of the smaller (and some larger) stormwater assets. Funding for maintaining this infrastructure is through a mix of Sydney Water bills, council rates and development contributions.

Unsurprisingly, there is some confusion amongst customers on the role of stormwater in the urban water cycle, and where the responsibility lies.

Solution

Sydney Water engaged the Institute for Public Policy and Governance at the University of Technology Sydney (UTS) to conduct social research to better understand customer views on stormwater. Sydney Water wanted to understand the level of customer knowledge and their view of stormwater and its infrastructure: what customers value, their preferences and willingness to pay for improved or different outcomes from stormwater management.

Customers were engaged through focus groups, an online survey and a deliberative panel. Participants were selected to represent a range of demographics and locations. Key findings included:

Most customers know very little about stormwater and how it relates to the urban water cycle.

There was confusion as to who looks after stormwater infrastructure, who pays for it and how much they pay.

However, once educated, they valued the range of outcomes stormwater infrastructure provides and believed they pay a reasonable amount or not enough for it.

Reuse of stormwater to reduce demand on drinking water, improving water quality, reducing flood impacts and reducing litter/pollutants were all considered important and primary outcomes/infrastructure.

Low levels of customer knowledge and experience of newer approaches to managing stormwater, such as water sensitive urban design, made it somewhat challenging for customers to understand the value they get from these approaches and whether they are willing to pay for it. However, once explained, customers felt strongly that they wanted such outcomes and were willing to pay for them.

In the deliberative forum, a consistent driver for water sensitive city outcomes from stormwater infrastructure was the desire for better city outcomes (including equity) for the next generation.

Following education, participants generally felt everyone across Sydney should pay the same for stormwater infrastructure, regardless of where they live. However, if delivering a more equitable charging system means an increase in the amount paid by some customers, then customers wanted this re-invested in the local area where they live.

Broadly, customers saw stormwater as essential infrastructure which:

Should be paid equally by all users similar to health, education and other vital services and infrastructure

Contributes to the future liveability of Sydney in a range of ways including public health and safety and water security

Operates as a network and should be managed across areas in a streamlined and transparent manner

Delivers outcomes that can be arranged into a clear hierarchy of needs from 1) public health and safety, 2) water security and environmental protection, and 3) amenity.

Business case

This study helps to understand willingness to pay for stormwater infrastructure and where to prioritise investment based on the range of values held by customers.

Key drivers

SW aspires to be a leading utility where customers are at the centre of decision-making.

Benefit/outcome

Improved outcomes in stormwater management

Understanding what customers value about the services Sydney Water provides

Products and services provided by Sydney water are aligned to the range of values held by customers

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