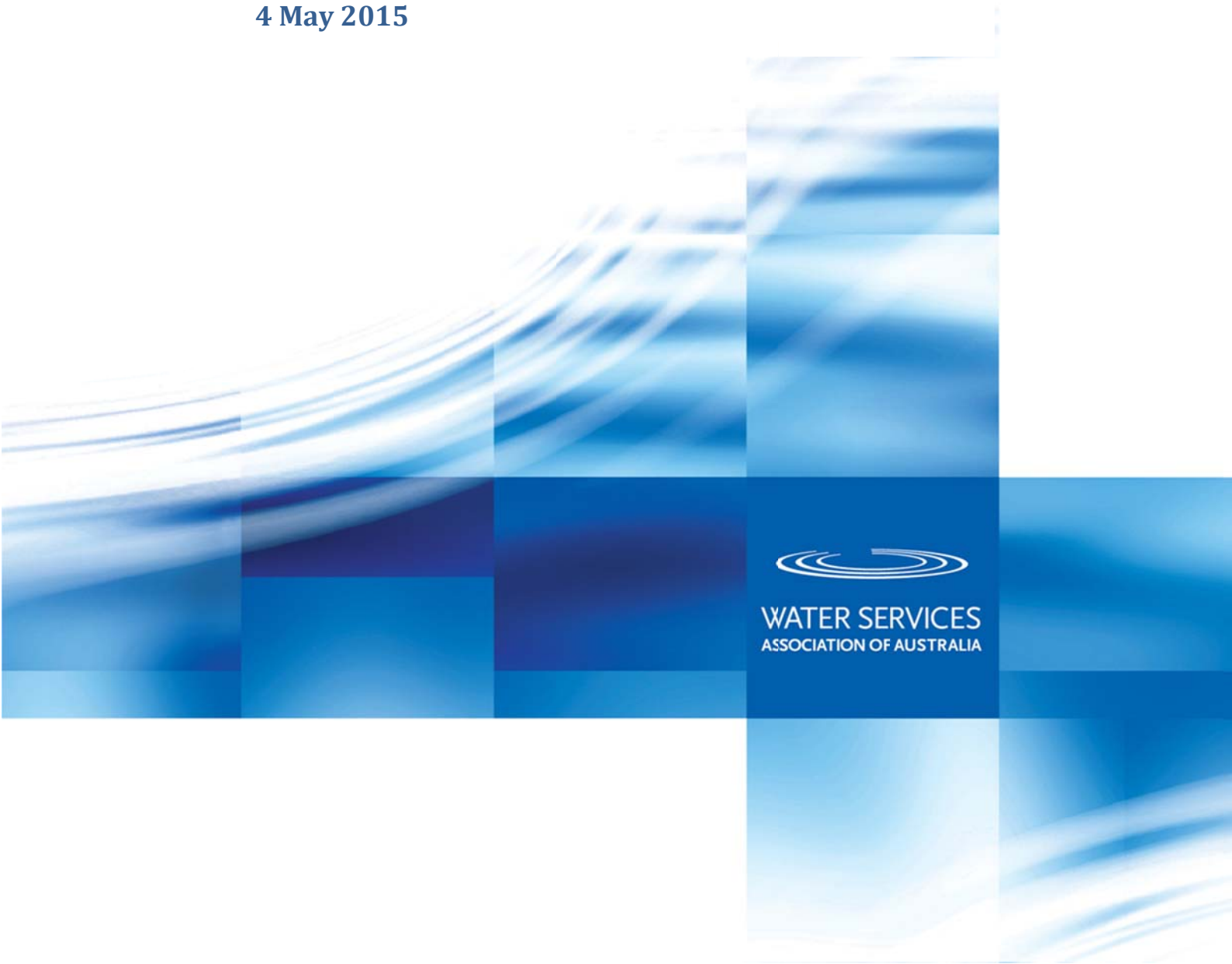
Water Services Association of Australia

Submission the Senate Environment and Communications References committee inquiry into:

Stormwater Resources in Australia

4 May 2015



Key messages

- The urban water sector is active in stormwater management at many levels with responsibility shared across utilities, councils and state government agencies with arrangements differing significantly in different jurisdictions within and across states.
- Responsibilities of the urban water utilities include ownership of drainage assets, accountability for flooding outcomes, accountability for waterway health and direct involvement in, or ownership of stormwater reuse schemes.
- For most jurisdictions climate change and urban growth will increase pressure on waterway health and flooding, necessitating better stormwater management even if this is not delivered directly by urban water utilities.
- Stormwater harvesting is a tool not an outcome, and could be utilised where it is a practical solution and it provides the best community outcome.
- There are also benefits of looking at stormwater beyond a challenge of mitigating flooding and maintaining the health of waterways. The opportunities from integrated planning and management of stormwater includes:
    - More efficient and streamlined planning and delivery processes
    - Improved social amenity and attractiveness
    - Improved engagement through recreation and creating places that bring people together
    - Health benefits through passive cooling and a reduction in the heat island effect
    - Increase in property values and economic activity through improved aesthetics
    - Economic benefits from healthy waterways such as tourism, commercial fishing and oyster farming
    - Resilience to extreme events and climate change

  Critically, we must engage our customers to determine which of these opportunities align with their preferences as well as their willingness to pay.
- A common experience is that lack of leadership and coordination across the different agencies results in challenges to delivering the best outcomes for customer and community.
- To meet the challenges and realise the opportunities for stormwater there needs to be:
    a. Better coordination across stakeholders in whole of water cycle planning and urban planning
    b. Engagement of customer and the community in determining a vision for a city and also their needs, preferences and willingness to pay around the opportunities for stormwater
    c. The promotion and acceptance of evidence-based evaluation models that account for integrated solutions and non-market benefits
    d. A consideration of alternative funding models for stormwater
- Notwithstanding jurisdictional and regional differences, there is a consistency in the above issues across Australia. There is a role for the Commonwealth as a catalyst to better coordinate and provide leadership. What precise form that involvement takes should evolve from further discussion with stakeholders.
- However, the National Water Initiative provides the starting point for states to agree upon the objectives for the stormwater sector.

1. Introduction

The Water Services Association of Australian (WSAA) is the peak body representing urban water utilities in Australia and New Zealand. Our members provide water and wastewater services for over 20 million people. The industry manages assets with a value of over $120 billion and has annual revenue of around $15 billion.

WSAA welcomes the Senate Inquiry into *Stormwater Resources in Australia*. WSAA's vision is 'Customer driven, enriching life' and stormwater is an integral part of the fourth outcome of our vision, 'Stewardship of the urban water cycle'. WSAA is keen to actively participate in a nationally coordinated and considered debate to develop a shared understanding of the role of stormwater in the water cycle, and priorities for the development of liveable and prosperous cities.

Stormwater is a complex issue involving several stakeholders with different perspectives (see Box 1). To assist dealing with this complexity, this submission puts forward issues and considerations supported by case studies in order to contribute to a national debate on this important matter.

WSAA has a number of reasons for its interest in this inquiry:

- A number of its members have a variety of responsibilities relating to stormwater. These include ownership of drainage assets, accountability for flooding outcomes and waterway health, and direct involvement in or ownership of stormwater reuse schemes.
- WSAA has an active role to play in integrated water management. Customers expect our members to work actively with other key stakeholders across the whole water cycle to deliver value.
- Federal legislation and guidelines that influence stormwater management such as the Environmental Protection and Biodiversity Protection (EPBC) Act, also affect our members. WSAA is keen to ensure that any changes in this area deliver whole of water cycle benefits.
- Several WSAA members and their partners were direct beneficiaries of the last Federal Government investment in stormwater (The National Urban Water and Desalination Plan). This investment was a catalyst for the next generation of stormwater harvesting initiatives. The inquiry should take the opportunity learn from those past projects.

WSAA's submission does not seek to take any positions on this topic, as we believe to do so would be counterproductive to the overall goal of establishing an informed national understanding of stormwater management. While our submission references certain national and international frameworks and policies, we do not put them forward as our definitive view on the matter.

Instead, WSAA puts forward a range of considerations that should be worked through when considering change around stormwater and urban water cycle management.

2. Context

Urban land use and the development of impervious areas is the primary source of stormwater and its pollutant load in cities and urban communities. Rainwater which would otherwise soak into the ground is redirected from roofs, roads and impervious areas directly into stormwater pipes, channels and waterways. In some cases (though not all, see Box 1) this significantly disrupts the natural hydrological cycle, by reducing groundwater infiltration, and increasing and intensifying run-off events. This in turn leads to flash flooding, erosion and export of nutrients, pollutants and sediments.

Past urban planning has had little or no regard to the water cycle, exacerbating the consequential impacts by allowing such practices as building in flood plains, building over minor waterways and obstructing overland flow paths, removal of essential riparian zones and extending traditional drainage systems which seek to remove stormwater as quickly as possible. Management of these impacts is a distributed responsibility, often shared amongst councils, catchment management authorities and in some cases (eg. Melbourne) urban water utilities.

Stormwater management should consider both the volume and the quality of stormwater. Many of the contemporary interventions for managing stormwater aim to address these problems by bringing a return towards a more natural hydrological cycle. However development practices often repeat the drainage mistakes of the past, leading to a growing management responsibility and cost for urban stormwater in Australian cities.

Box 1: Stormwater and groundwater in Perth requires different solutions

The approach to the management of stormwater is very much a function of the climate and geology. A key issue for sandy coastal plain environments is that about 80% of drainage flows are from groundwater and not stormwater. Most stormwater in Perth is recharged into the superficial aquifer if it is thick enough to accommodate the volume. This water then makes its way into the drainage network to become part of the surface flow. This recharged stormwater is reused via groundwater harvesting by residents, institutions and businesses. True 'stormwater' only enters drains directly when there is insufficient storage capacity in the shallow aquifer. Because the soil surface is close to the water table, there is virtually no opportunity for storage and reuse of this water other than what happens naturally through the superficial aquifer.

A further consideration for cities and urban communities is their surrounding catchments, which are typically occupied by peri-urban and agricultural activity. This may add to the volumetric and pollutant load in urban waterways and their receiving waters.

There are two other major factors to be considered in developing any national policy response:

1. Cities will roughly double their population over the next 50 years, consequently creating a significant increase in imperviousness and impacts to the hydrological cycle[1].

[1] The Federal Treasury 2015 Intergenerational Report states: "Based on patterns of migration, fertility and life expectancy, Australia's population is projected to grow at 1.3 per cent per year, which is slightly below the average growth rate of the past 40 years. If this were to occur, the population would reach 39.7 million in 2054-55, up from 23.9 million today."

2. Climate variability will lessen the long-term reliability of stormwater as a resource, but paradoxically increase short-term risks due to increased rainfall intensity and frequency.

Some jurisdictions will face increased pressure on waterway health and flooding necessitating changes to the way they manage stormwater. Among WSAA members, Melbourne Water is unique in that it has core responsibilities for managing drainage and waterway health.

Good management of stormwater creates opportunities to enhance the liveability of our cities and regions. This is an increasing need as our cities become more dense and populous. Population growth is also driving urban renewal and new growth projects, providing a one in a 50 to 100 year opportunity to embed contemporary stormwater management practices (ie. water sensitive urban design) into our cities and regions.

Leadership and coordination are the key requirements to take an integrated approach to urban and water planning. This will be enabled through engagement with relevant stakeholders, development of common objectives and a consistent and recognized framework to support delivery of the objectives. WSAA encourages the inquiry to consider a 50 year timeframe, mirroring the period over which our cities will double their population and the effects of global warming will be increasingly felt.

3. Stormwater opportunities and challenges: a framework

With a national inquiry, there is an opportunity to step back and consider what should be a holistic set of outcomes for stormwater. It is vital to view stormwater management as a critical element of total water cycle management in urban areas. If this is not done then effective reduction in contaminant loads, improved biodiversity and social amenity are unlikely to be realised. Research by a number of Australian and international organisations, including the Australian Cooperative Research Centre for Water Sensitive Cities, is helping to better describe and quantify the contribution of the urban water sector to the liveability of our cities and towns (Brown 2008, Johnstone 2012). The concept of cities evolving to meet the needs of their people is captured in Figure 1.

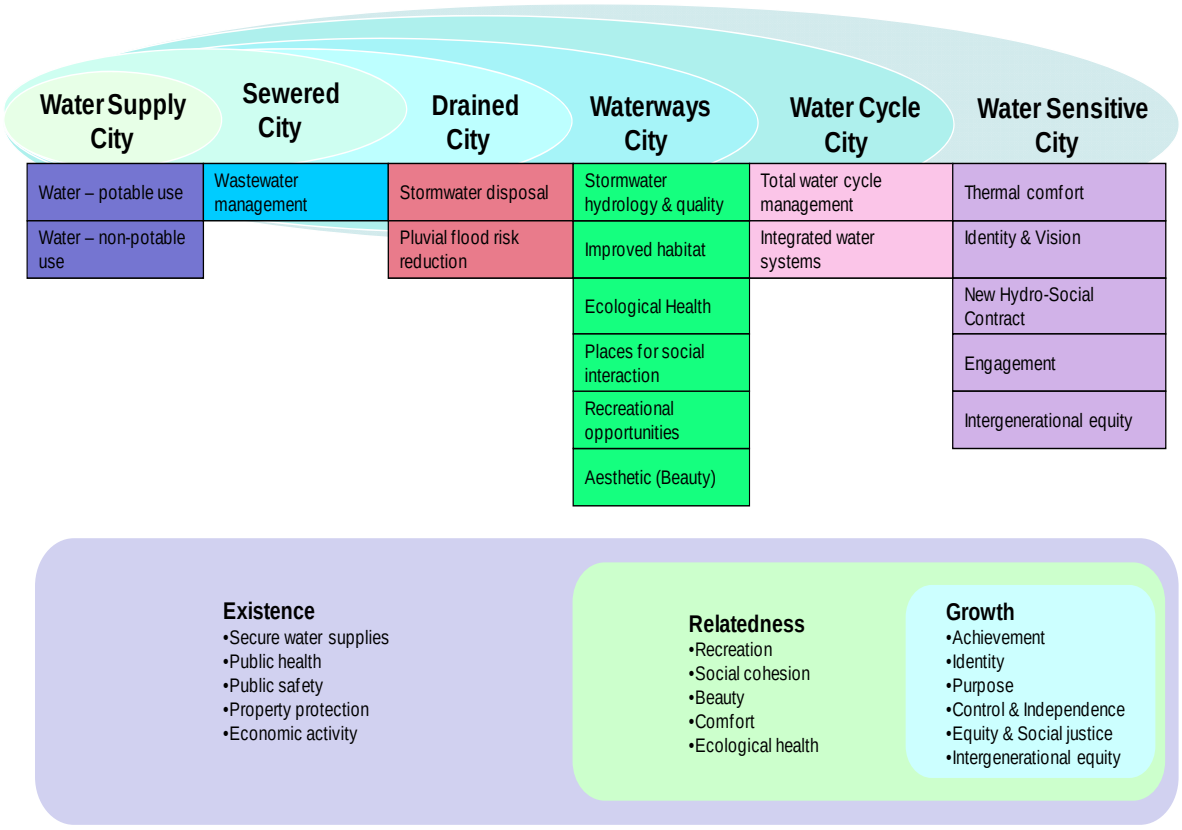


Figure 1: *Illustration of the relationships between city states and societal urban water needs (Johnstone et al., 2012)*

This evolution towards water sensitive cities captures progress, from meeting essential needs (clean water, sanitation and in the case of stormwater, reducing flood risk and public safety) through to providing water-related services that more broadly support growth and personal wellbeing.

Key aspects of stormwater as part of Figure 1 include:

1. Stormwater is managed as an integral part of the urban water cycle contributing to liveable and prosperous cities.

2. Stormwater management has a role beyond the primary challenges of flooding and maintaining ecological health. It is also about creating opportunities. This can happen when the urban form is planned with water in mind and comes to life with the co-location of open space and natural water assets or the clever positioning of stormwater treatment facilities in the urban form to enhance amenity. Our customers take accountability for their part in the water cycle via the use of rain tanks or rain gardens bringing about a level of connectedness and engagement (See Box 2: Clayton South Wetlands). This sits well with past federal aspirations for our cities[2].

3. Implicit in this model is the concept that before we move towards a water sensitive city, and for communities to engage in the "aspirational" goals around liveability, the survival factors such as flood protection need to have been addressed and expected community standards maintained (Figure 2).

[2] *"To ensure Australian cities are globally competitive, productive, sustainable, liveable and socially inclusive and are well placed to meet future challenges and growth."* *Communiqué – COAG meeting Brisbane December 2009)*

Box 2: Clayton South Wetlands

The Clayton South Wetlands is a great example of integrated water cycle management and how collaboration can achieve better outcomes and multiple benefits for a community in the South East of Melbourne. Melbourne Water had planned to upgrade the existing retarding basin to relieve flooding experienced by 110 local properties in a one in 100 year ARI event and saw an opportunity to incorporate multiple integrated water management systems.

The project included:

- An upgrade of an existing retarding basin to provide additional flood protection to local properties (including works in conjunction with Kingston City Council to alter overland flows).
- A wetland system approximately 1.3 hectares in size to treat stormwater and reduce pollutant loads – approximately 1.3 tonnes of Nitrogen annually amongst others – to Mordialloc Creek and Port Phillip Bay.
- A 92ML stormwater harvesting and reuse scheme for Kingston City Council to provide water for surrounding parks and nearby Namatjira sporting grounds which improved public amenity to the local area and surrounding community.

Through collaboration the project scope was extended to complete works on the adjoining parkland which opened public access to four hectares of previously fenced off land. The project demonstrates the importance of stakeholder collaboration. It is a great example of how the communication and collaboration between the local community, Kingston City Council and Melbourne Water resulted in a project that had a traditional flooding solution modified to provide multiple positive outcomes, including:

- creating additional green space
- amenity for the local community
- stormwater treatment to improve waterway and bay health
- management of flooding
- alternative water source for irrigation
- connectivity through the neighbourhood

The project cost was $7.36M and utilised funding from the Federal Government, Melbourne Water and Kingston City Council. The project is an example of organisations working together to implement an innovative solution. The project transformed a previously unusable space into a more liveable and accessible place for the local community. It highlighted the importance of effective collaboration through problem definition, design, construction and implementation.

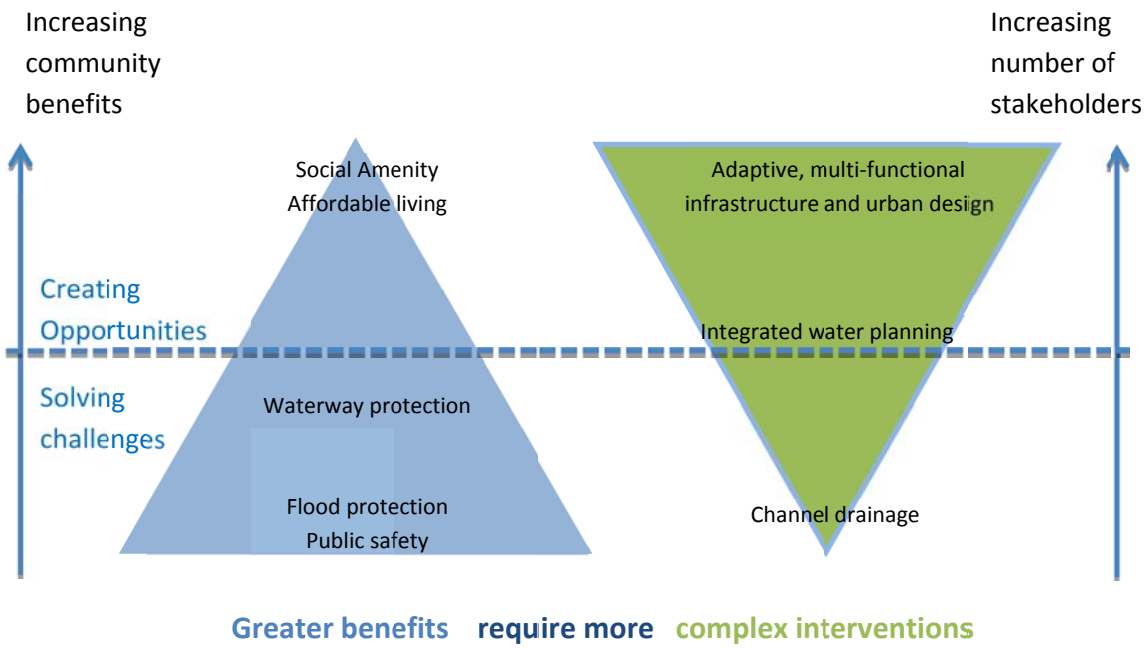


Figure 2: Cumulative benefits of better stormwater management

4. Where pressures on flooding and waterway health are most acute addressing these issues can also provide the catalyst to achieving other benefits. Key to this is retaining, slowing and harvesting the volume of stormwater at a precinct or local level, as it moves through the catchment so as to retain more natural flow conditions and minimise flood peaks.

5. The benefits realised are cumulative, with integrated interventions realising broader community outcomes that go well beyond water management to support social wellbeing, community health and improved urban productivity. These services and solutions will be different for different communities, cities and regions and must be developed in concert with customers and account for their willingness to pay. WSAA has developed an urban water planning framework (figure 3) that includes the essential aspect of community and stakeholder engagement as part of the process.

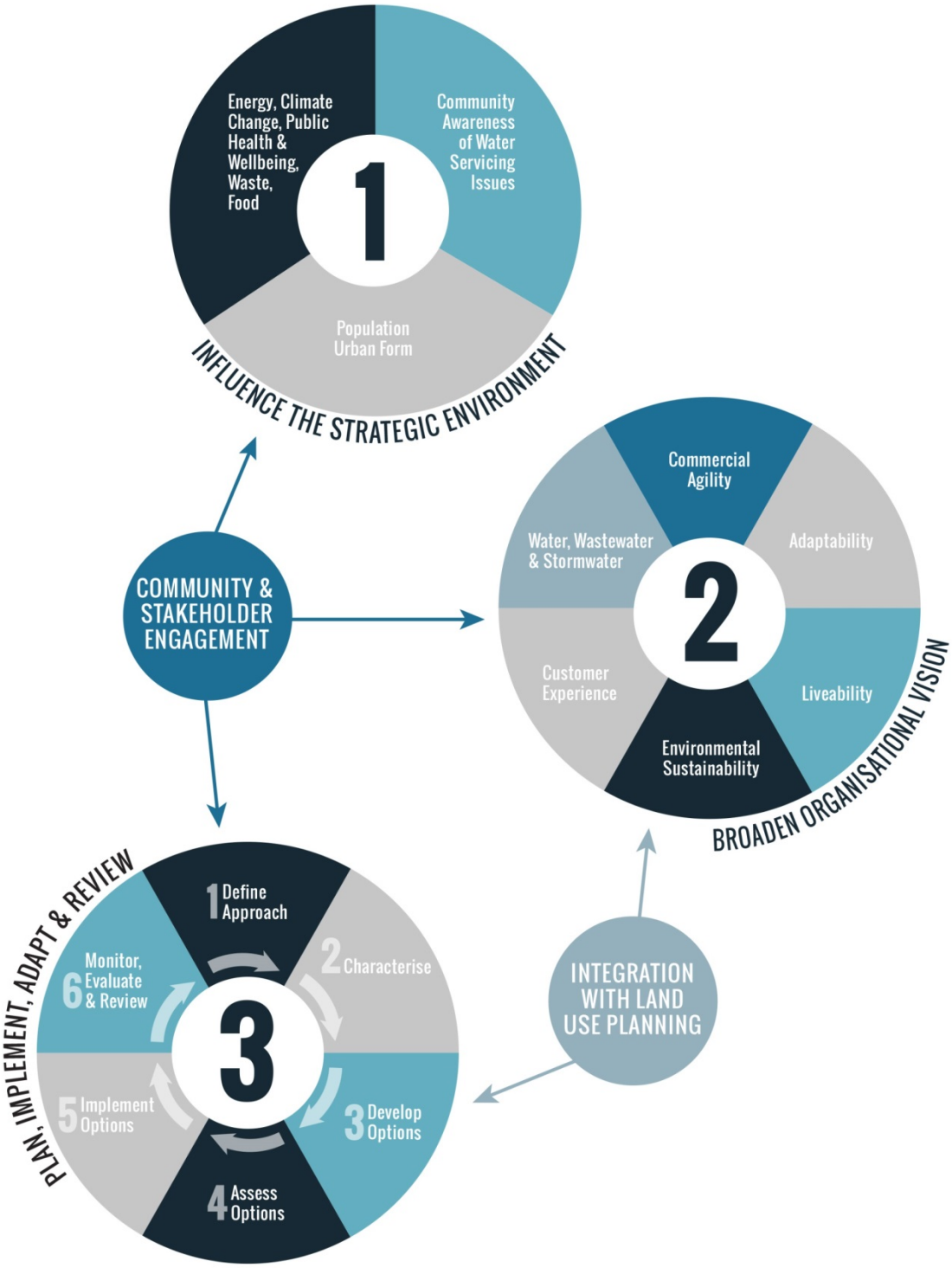


Figure 3: The WSAA Urban Water Planning Framework (WSAA, 2014)

4. Issues and case studies

To take full advantage of the opportunities stormwater offers for integrated water cycle management and urban planning a number of issues will need to be addressed. Key among these are:

- Urban and water planning frameworks
- Institutional arrangements
- Regulation (price and licensing)
- Project evaluation (benefits and costs)
- Funding mechanisms

4.1 Urban and water planning frameworks

Integrated planning is one of, if not the key ingredient for successful and sustainable stormwater management. The water sector has recently developed a more integrated approach to water planning in the WSAA Urban Water Planning Framework, which sets out the elements of sound water planning (Figure 3). The urban water sector is taking a more outwardly focused approach to planning to reflect customer and community needs. The framework supports this direction. Good planning does not happen in a vacuum and this is reflected in the first two phases of the framework: influence the strategic environment and broaden the organisational vision.

Key aspects of the WSAA urban water planning framework, apply equally to stormwater planning:

Leadership and coordination

Strong leadership brings stakeholders, agencies and the community together to develop a shared vision, common goals and a shared understanding of the way forward. This is particularly important where stormwater is concerned. One model of leadership is where a centralized planning authority or well-resourced agency facilitates coordination of these players (See Box 3). There are also examples of where multiple agencies have self-organized to achieve this leadership and coordination (see Box 4).

Box 3: Water Sensitive Urban Design in New York

New York City has embarked on a program to plant 1 million trees and build 2,000 rain gardens. These programs have political and community support, with the past Mayor of New York Michael Bloomberg being a high profile supporter of green infrastructure. The drive is in part managing sewer overflows, improving water quality in rivers, and cooling the urban landscape. The Department of Environmental Protection commissioner Emily Lloyd in a statement said “Investing in green infrastructure is a cost effective way to manage stormwater that also delivers multiple benefits to local communities, including a greener landscape, cleaner air, and increased shade and cooler temperatures during the summer.

Box 4: Self organisation at Cooks River

The Cooks River's 100km^2 catchment includes 13 local government areas. The river itself meanders through the inner South West of Sydney for some 23km before discharging into Botany Bay near Sydney International Airport. The river was lined with concrete in the 1940's. The intent of this channelisation was to reduce flooding and formalise the riverbanks whilst also stimulating the economy. Unfortunately the river remained badly polluted, and with increasing development was often treated more like an open sewer during subsequent decades. In the mid-2000s Sydney Water observed that sections of the concrete channel were starting to fail structurally. The need to renew this stormwater asset provided the opportunity to work towards a different future for the river. Sydney Water and 8 Councils collaborated to develop a flood study and Masterplan for the river. The Masterplan sets a vision for the future of the river's foreshores that each party is now working towards as they undertake their separate stormwater and open space accountabilities. The Masterplan was the basis for a successful Federal Government grant application in 2010 to construct an artificial wetland at Cup and Saucer Creek. This project was undertaken as a partnership between Sydney Water and Canterbury City Council with the financial assistance from the Federal Government. 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. Collaboration between Sydney Water, Councils and local community groups has triggered significant community engagement in the ongoing protection and management of the river, including education, litter collection, monitoring waterway pollution, and vegetation management. It appears that the value of properties adjoining the river has lifted as a direct result of the amenity and connectivity provided, with Charles Sturt University including this site in a PhD study to try and quantify the value uplift.

Integrated planning

Which includes whole of water cycle, water and urban planning, community health planning, and stormwater and coastal zone planning. Successful integrated planning requires:

- A shared vision for a community, city or region, a set of high level objectives and clarity around outcomes.
- A structured process to ensure that water is included at the early stages of urban planning.
- Clarity of roles and responsibilities.
- Capacity to deliver this 'new' service.

Box 5 gives a practical example demonstrating how when several aspects of integrated planning are considered, multiple benefits can be delivered to the community. In this case funding was delivered partly through a grant. Often this is not the case and the cost of delivering these benefits must also be considered when weighing up the options.

Box 5: Darling St Stormwater Harvesting

The Darling Street Stormwater Harvesting project in East Melbourne, Victoria, is a stormwater harvesting project that provides treated stormwater to irrigate neighbouring parks and tree medians. The scheme harvests stormwater from two nearby drains to reduce the potable water demand. The project took advantage of a local streetscape upgrade - including replacement of poor performing golden elms, modification of tree islands and resurfacing of roadway - to trial a new stormwater harvesting technology that requires infrastructure to be installed below ground.

The Darling Street stormwater harvesting project provides a range of benefits:

- **Environmental:** Reduces stormwater runoff volumes and pollutants into the local waterways. In addition, use of the treated stormwater for irrigation reduces pressure on potable water supply.
- **Economic:** Introduces an economically viable alternative water source as the cost of Melbourne's potable water supply begins to riseThe saving is mainly achieved by the combined use of raingarden and underground storage tanks, which, (i) minimise the spatial footprint of the project compared to a traditional above-ground raingarden alone, and (ii) reduce the maintenance requirements of the system.
- **Social:** The project provides increased landscape amenity and mitigation of the urban heat island effect. A community engagement strategy was put in place to seek internal and key external support early on in the project development. It allowed project details to be communicated widely to the local residents, creating greater community awareness of water sensitive urban design.

The project cost $1.7M and was jointly funded by the City of Melbourne, Melbourne Water – Living Rivers and the Victorian Government through the Stormwater and Urban Recycling Fund. http://www.clearwater.asn.au/resource-library/case-studies/darling-street-stormwater-harvesting-project.php

Whole of catchment planning

Having regard to surrounding peri-urban and agricultural areas, which contribute to the volumetric and pollutant load or our urban waterways.

Spatial and temporal considerations

Water resource planning needs to have regard to space and time. Stormwater reuse is rarely the most cost-effective water supply option as it is a rain-dependent source. There are practical limitations to storage, particularly in built up urban areas where retro-fitting storage is prohibitively expensive, and it is difficult to treat due to the presence of hydrocarbons and contaminants. The real driver for harvesting stormwater is waterway health, local greening and managing minor flood peaks. If we are able to quantify the benefits of waterway health and urban greening from stormwater harvesting, in some cases stormwater reuse may be a viable option. The science to enable us to quantify these benefits is rapidly advancing with decision making tools, pilot restoration projects and economic evaluation studies currently in place in some jurisdictions.

Fit for purpose interventions

This relates to achieving the most appropriate mix of source based and centralised interventions. For

instance, the ultimate purpose and outcome should not be about harvesting stormwater but about utilising the most appropriate water resource that creates liveable cities, is good for the economies of cities and the health of waterways. Such planning then guides other policy considerations such as incentivising those undertaking urban development and redevelopment. Attachment 1 (*Brisbane City Council Watersmart Strategy, 2010*) is Brisbane City Council's vision of the multiple benefits of good stormwater management. It also highlights the number of stakeholders who need to be involved to deliver these outcomes.

4.2 Institutional arrangements

When discussing institutional arrangements debate can often default to industry structure. This may mask more deep-seated problems within the overall institutional arrangements, such as a lack of planning and poorly integrated policy and planning settings. Changing industry structures may result in shifting existing accountability and interface problems to another point. For instance if drainage infrastructure were to be structurally separated from councils, this may in turn lead to an interface problem with road accountabilities. Instead, WSAA believes the focus should be on better frameworks for leadership and coordination of key stakeholders in planning, upgrade and maintenance of stormwater assets. Another key issue is clarifying the roles and responsibilities of managing green infrastructure and for incorporating green infrastructure and stormwater infrastructure in development.

4.3 Regulation

Water utilities encounter a range of regulatory issues which affect their ability to integrate stormwater within total water cycle management.

- Economic regulators and utilities are working on incorporating customer preferences and willingness to pay into their decisions, however all stakeholders agree there is a significant way to go.
- Issues of environmental regulatory neutrality whereby stormwater and wastewater are subject to different and separate regulatory regimes, notwithstanding similar and interrelated impacts on waterway health. This can cause a financial imbalance whereby water utilities have responsibility to manage the environmental and public health issues arising from the unintended interconnection of the two systems (wet weather sewage overflows). Waterway quality modeling in some cases indicates that instead of a wastewater asset solution, better outcomes for waterway health can be achieved through catchment management options outside the utility's accountability. These may target more chronic flow and diffuse source pollution problems and have additional benefits such as amenity (See Box 6). However these lower cost stormwater management solutions are not always encouraged by existing wastewater licensing arrangements.
- The belief that it is difficult for non-market values to be incorporated into decisions by economic regulators (see next section).
- Cost recovery arrangements across different agencies (see section on Funding).

These issues highlight WSAA's broader point, that better coordination between agencies is an essential requirement for improved stormwater management.

Box 6: Using offsets to fund improved river quality

Queensland Urban Utilities (QUU) re-engineered a 500 metre bank of the Logan River preventing more than 11,000 tonnes of sediment from entering the waterway every year due to natural erosion. This includes five tonnes of nitrogen and eight tonnes of phosphorus. Controlling sediment and nutrient loads through a green infrastructure solution enabled QUU to manage increasing nutrient discharges from the Beaudesert Sewage Treatment Plant, a consequence of local population growth. Reducing sediment and nutrient loads through a green infrastructure solution will enable QUU to comply with its nutrient discharge limits at the Beaudesert Sewage Treatment Plant and cost effectively service population growth. The $1 million water quality project was more cost-effective than an $8 million alternative to upgrade the Beaudesert Sewage Treatment Plant using traditional solutions. There are benefits to customers and stakeholders:

- The $7 million saving for QUU is a significant saving which will help moderate water prices.
- The landowner is no longer losing up to a metre of land every year from natural riverbank erosion.
- There is a new wildlife corridor, improved biodiversity and reduced greenhouse gas emissions.

This approach enabled QUU to manage a long-term problem with a long-term solution, facilitating growth and new development in the Beaudesert area.

4.4 Evaluation frameworks

There is a general perception that evaluation frameworks are not sufficiently robust to assess schemes with several benefits (including non-market) across multiple stakeholders.

WSAA believes the following should be considered when evaluating options:

- Identify integrated solutions that are possible. All options should be on the table, there should not be policy bans on particular water sources.
- Total community cost should be calculated.
- Identify the social, environmental and economic benefits at the community scale, and where possible quantify these benefits.
- Review public and private funding arrangements proportionate to the benefits received, including specific consideration of benefits accrued because urban growth/densification is enabled or property values are improved.
- Undertake further analysis to try and assess broader non-market benefits. Customers' needs, preferences and willingness to pay should be included as part of the evaluation process. Are there other ways to fund the non-market benefits, such as grants?
- Costs and benefits of all options should be evaluated with payment aligned to beneficiaries

There are several frameworks including Advanced Cost-Benefit Analysis (contained within WSAA's Social Environment Tool) and multi-criteria analysis that have been applied to this class of problem. However the difficulty is in cost recovery for the non-market benefits. Utilities can only claim cost recovery for those non-market benefits covered under their Operating Licence/Statement of Obligation, and other agencies lack funding to go beyond the essential services. This results in business as usual being seen as preferential. Increased customer and community engagement and incorporating willingness to pay studies from customers could further inform valuation frameworks and regulatory submissions.

4.5 Funding frameworks

An ongoing challenge for the water industry is funding growth infrastructure and determining the appropriate contribution by developers, customer and the broader community. Similar challenges exist for stormwater. The costs of delivering stormwater services particularly in Greenfield areas can be significant, and the default solution is to repeat traditional approaches which we now know to be ineffective in dealing with stormwater beyond simple conveyance objectives. The recent determination of developer levies for Blacktown Council illustrates the scale of these costs (Box 7).

Box 7: Stormwater costs in Blacktown

The Riverstone and Alex Avenue precincts are located in the North West Growth Centre in the Blacktown local government area (LGA). The total area of both precincts is around 1,295 hectares. The total net developable area for both precincts is 818.6 hectares. When fully developed, the Riverstone and Alex Avenue precincts are expected to accommodate an additional 44,228 residents in around 15,000 dwellings.

The developer contributions plan covers essential works for transport, open space and stormwater services. Stormwater represents the largest component at $492m or 55 percent of the total $886m total cost of essential infrastructure. Of the stormwater cost over 40 percent of the cost is for land acquisition for channels and basins. These costs have been increasing rapidly with the increase in land values.
To fund the essential works the developer contribution rate has been set at up to $83,109 for each low density residential dwelling. Based on the proportion of total costs the stormwater contribution is approximately $45,000 per low density dwelling

Source: Independent Pricing and Regulatory Tribunal, *Assessment of Blacktown City Council's Amended Section 94 Contribution Plan*, March 2015

One of the great benefits the water industry derived from the National Competition Policy reforms of the mid-90's was financial self-sufficiency. This was achieved via a shift to full cost pricing; user pays tariffs and independent economic regulation. The regulatory oversight in particular has driven robust disciplines around whole of life asset management and forward planning.

WSAA empathises with the difficult challenge faced by its stormwater industry counterparts in relation to funding the management of a burgeoning, and in some cases an aging asset base. WSAA considers that there would be much to be gained by a shift to a model that would enable financial self-sufficiency and to that end the inquiry should examine the options for this including the model adopted for all managers, and all components, of the urban water cycle.

Stormwater funding models

To realise multiple benefits of stormwater management we need to also consider who pays, particularly when it will benefit multiple stakeholders. This is particularly difficult when some of the benefits are not easily monetised. There are no regulatory frameworks around on how to account for these and include them in the options analysis. Relative to other OECD nations the range of potential funding models used by Australian institutions is currently limited. We outline in Table 1 a handful of funding models that have been implemented in Australia and elsewhere. We encourage the Committee to investigate the feasibility of implementing similar approaches in Australia.

Table 1: Potential stormwater funding models

Funding mechanism	Description
Municipal bonds	In the United States (US), municipal bonds have been used for decades as a mechanism to fund local government capital works and maintenance. Bonds are issued in financial markets, and typically attract a relatively lower rate of interest since they are backed either explicitly or implicitly by the relevant government. The bond raises 'up front' finance for capital works, and is serviced either by general rates revenue streams or revenue generated by the infrastructure that is to be constructed. In the US it is common practice for local and state government to seek the approval of constituents to raise funds for particular projects via municipal bonds (see www.landvote.org for a comprehensive database of finance measures that have been put to the vote). At 83%, the success rate of financing for natural infrastructure over the past 25 years has been surprisingly high.
Property based levies and charges	In the US stormwater 'utility' fees have been in existence for over 20 years. The fee is levied on a per property basis. Methods for calculating the fee range from a flat charge per property to a fee determined by the estimated runoff from both impervious and pervious surfaces on the lot. In NSW, some councils levy a stormwater management service charge on eligible ratepayers in the LGA receiving a stormwater management service. The income from the charge can be spent on both capital projects and recurrent expenditure relating to new or additional stormwater management services to eligible land. The charge is capped at $25 per residential property, and for business properties the lower of $25 per 350m² (or part thereof), or the cost of providing the additional stormwater management services. In those areas where Sydney Water also manages the trunk stormwater drainage infrastructure, customers also pay a per property area based stormwater charge. The charge is determined by the Independent Pricing and Regulatory Tribunal on an efficient cost recovery basis. A discount may be granted for large properties that have taken steps to reduce the impact of their stormwater runoff.
Offsets and in-lieu contributions	In Queensland and Victoria several local councils and utilities have established offset mechanisms that developers can opt-in to in lieu of meeting stormwater flow and quality compliance on the development site. The monies raised through these mechanisms are pooled and used to fund stormwater projects within the municipality/region. Economies of scale and scope mean that councils can often deliver stormwater works at a lower cost than on-site developments, particularly in in-fill areas. This can make the offset an attractive alternative to works on site.
Reverse auctions	In a reverse auction the seller does the bidding rather than the buyer. In the case of stormwater management property owners bid to provide environmental outcomes, such a reduction of stormwater flows, at the lowest cost.
Tax Increment Finance (TIF)	TIFs are a form of municipal bonds that are popular as a funding mechanism for investments that will benefit property owners within reasonable proximity of the works. See Box 8 for a detailed description.
Property tax incentives	Local governments can provide a financial incentive for property owners to undertake stormwater management works via a reduction in property rates and charges.

Voluntary surcharging	In the US some NGOs have had limited success in raising funds via voluntary surcharging for works to protect 'iconic' environmental sites. Businesses that are in reasonable proximity to the site offer to apply a modest and voluntary surcharge to a customers' bill (perhaps 1%) as a contribution to protecting the environmental asset.
Public-private partnerships (PPP) and government franchising	PPP are becoming more widely applied in stormwater management in the US and UK. Government franchising, a variant on PPPs involves the franchisee making no equity contribution to infrastructure and contracts are shorter-term. In the US this model is the predominant type of PPP for water services

Of the potential funding mechanisms outlined in Table 1, Tax Increment Finance has been of recent interest to policy makers in Australia. Further details on the mechanism and barriers to implementation are outlined in Box 8.

Box 8: Tax Increment Finance (TIF)

TIF allows local councils to pay for built or natural infrastructure. Councils borrow against increased future income from rates and taxes. These increases are driven by rising property values, thanks to improved liveability, amenity and services.

The tax "rate" however does not increase. This minimises political and financial risks. TIF reduces the mismatch in timing between the local council paying development costs and realizing the benefits through tax and rates receipts.

TIF has been promoted by the Property Council in Australia but has not yet been adopted. As is the case overseas, federal legislation may be required. The majority of US states have such legislation. Many projects are ongoing. An example is the $10m initiative in Burlington, Virginia to upgrade stormwater management, streetscapes, utilities, transport and lighting, as well as remediate brownfields sites. In England TIF may be used to finance the construction of a new London Underground extension to Battersea Power Station.

In some overseas cases, local councils sell bonds at the outset of the project so that funds are available for front-end costs. The bonds are then paid with tax increment revenues as they are collected. This requires the hypothecation of taxation revenues. This is not common practice in Australia. In the US, private investors can efficiently price risks, thanks to the large and liquid market for municipal bonds. This is still nascent in Australia. Accordingly, in Australia, private financing may be relatively high cost, absent guarantees from local councils.

5. Innovation / Competition

Stormwater management and the associated interventions is presently an area of considerable innovation. The inquiry should ensure the fundamentals that drive this innovation are protected and enhanced. In WSAA's view such fundamentals include:

- Growing industry capability. A number of highly successful industry capacity building (ie. training) organisations are operating in different jurisdictions and have been successful in supporting the uptake of best practice amongst developers, councils and other agencies.
- A large proportion of interventions for managing stormwater can occur on private property and at the development or redevelopment stage. Developers and property owners should be incentivised via the right mix of regulation and tariffs to drive this innovation.
- Where possible arrangements should facilitate private sector involvement in stormwater harvesting regimes. Such arrangements might include new entrant licensing and third party access regimes for existing non-potable supply schemes.
- Harvesting stormwater has the additional benefit (as well as several others) of waterway health and this should be reflected in any arrangements and incentives.
- Technological innovation should be encouraged to incorporate a whole of life perspective. Otherwise there will rightfully be opposition to such innovation from those who inherit the legacy of maintaining such assets.
- Planning innovation: consideration for transferrable development rights to facilitate the location and relocation of incompatible uses away from flood prone land, the protection of floodplain land uses from high value uses (eg. residential facilitated by major landfill), riparian and open space uses. Landowners' expectations for the realised value of land is based on existing and adjacent uses, despite land being 'compromised' by stormwater impacts and waterway needs. Transferrable rights enable a shift to more appropriate usage without agencies incurring premium land purchase costs to secure waterway and stormwater infrastructure/green infrastructure land to manage urban stormwater and flood risk.

Contact details

WSAA welcomes the opportunity to provide a submission to the Inquiry on this matter. If there are any details you wish to follow up on please contact:

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Attachment 1