

# WATER SENSITIVE CITY ACTION PLAN 2021-2025

## DOCUMENT PROPERTIES

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## ACKNOWLEDGEMENT OF COUNTRY:

Adelaide City Council tampinthe, ngadlu Kurna yartangka panpapanpalyarninthe (inparrinthe). Kurna miyurna yailtha mathanya Wama Tarntanyaku. Parnaku yailtha, parnaku tapa purruna, parnaku yarta ngadlu tampinthe. Yalaka Kurna miyurna itu yailtha, tapa purruna, yarta kuma puru martinthe, puru warri-apinthe, puru tangka martulayinthe.

City of Adelaide acknowledges the traditional Country of the Kurna People of the Adelaide Plains and pays respect to Elders past and present.

We recognise and respect their cultural heritage, beliefs and relationship with the land.

We acknowledge that they are of continuing importance to the Kurna People living today

*“Adelaide is an attractive and resilient city that uses its diverse water resources and knowledge to drive prosperity, sustain healthy ecosystems and connect communities”.*

**A 50-year vision for Adelaide as a  
Water Sensitive City.**

Cooperative Research Centre for Water Sensitive Cities 2017

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# Executive Summary

A water sensitive city is a place where people enjoy reliable and safe water supplies, are protected from flooding, use water resources efficiently, live amongst cool, green landscapes and are able to connect with healthy, natural ecosystems in an urban environment.

The City of Adelaide (CoA) is on a journey to become a water sensitive city.

Over the last four years, the development of an 'integrated water measure' (CoA Strategic Plan 2016-20) led CoA to join the Cooperative Research Centre (CRC) for Water Sensitive Cities where a collective of local water policy specialists, researchers, practitioners and government agencies established a vision for Greater Adelaide as a water sensitive city.

Well before this time, CoA was a leader in water resource management through investment in the Glenelg to Adelaide Recycled Wastewater Scheme to supply water for irrigation in the Park Lands, participation in the Torrens Taskforce to address blue-green algae outbreaks in Torrens Lake and responding to the Millennium Drought by declaring its own water conservation targets for council operations.

The shared vision for Greater Adelaide as a Water Sensitive City created through the CRC partnership and the objectives and strategies outlined in this plan to accelerate a transition towards being water sensitive, are well aligned to CoA's current strategic directions for integrated water management and being a climate ready city.

The CoA Water Sensitive City Action Plan 2020 is our contribution to the Greater Adelaide vision, but there is a strong focus on key priorities that will also deliver beneficial outcomes for CoA, such as increased greening, greater digital capabilities and enhanced biodiversity, all of which support Adelaide to become the '*most liveable city in the world*' (CoA Strategic Plan 2020-24).

Through an extensive consultative approach during 2019 and 2020, three water sensitive key priorities for CoA emerged and ideas for actions, projects or activities to help realise these priorities have been gathered to create an implementation plan.

Along with measures of success to quantify outcomes, these elements together form the Water Sensitive City Action Plan 2020.

A summary of the Water Sensitive City Action Plan 2020 is detailed over page.



## Water for Green

CoA will have a diversity of fit-for-purpose water sources to support increased greening throughout the city, enabling soils to be replenished for healthy plant growth and groundwater systems to be naturally recharged.

### Measures of success:

- Increased opportunity for stormwater to infiltrate soils to support trees and streetscapes.
- Expanded access to recycled water sources for streetscape irrigation systems.
- Higher proportion of canopy cover across the City and North Adelaide.

### Key Actions:

- Encourage residents and the community to use alternative water sources for irrigation and greening.
- Strategically deploy water sensitive urban design features to maximise use of stormwater runoff from city streets.
- Demonstrate innovative greening ideas using alternative water sources on council buildings and developments.



## Water Smarts

Knowledge, capabilities, experiences and relationships will be enhanced to develop future water resources with data and technology harnessed to inform decision making and used to measure the benefits of actions taken.

### Measures of success:

- More recycled water is used in buildings, public facilities and for council operations.
- Real-time data is used to analyse water use patterns for efficient asset management.
- A monetary value is adopted for costs and benefits of water sensitive urban design.

### Key Actions:

- Deploy smart technologies to manage, measure and automate water use and provide insights for key decision making.
- Collaborate, listen and learn from each other, build cultural connections and work in partnership with others.



# Wetlands and Waterways

CoA will take an integrated approach to restoring the condition and function of wetlands and waterways to protect the ecosystem services they provide to the city, improving water quality, biodiversity, amenity and connecting the community to nature.

## Measures of success:

- Variety and extent of aquatic and terrestrial flora and fauna in the River Torrens is expanded.
- Increased volume of catchment runoff is treated before discharging to natural waterways.

## Key Actions

- Create wetland features in key locations that capture, clean and release high quality stormwater into waterways.
- Restore aquatic habitat, manage pests and increase biodiversity in the River Torrens to support healthy ecosystem functions.

# Introduction

The City of Adelaide (CoA) is on a journey to becoming a water sensitive city.

In a water sensitive city, people can enjoy access to safe and reliable water supplies, protection from flooding, healthy ecosystems, cool green landscapes, efficient use of resources, and natural urban spaces that feature water and bring the community together.

Water has always influenced the culture and creation of Adelaide. Karrawirra Pari (River Torrens) was an important meeting place for the Kaurna people, with its valuable sources of food and fresh water.

European settlers later chose the banks of this ephemeral waterway to establish a capital city for the colony of South Australia and it remains an iconic feature of the state with continued environmental and cultural significance to the Kaurna today.

As a 'City in a Park', the open spaces in the surrounding Adelaide Park Lands that link formal squares to street trees and verges, rely on rainfall and other water sources to stay green and healthy.

In turn, street trees, park lands and irrigated green spaces provide amenity, shade and cooling in the urban environment and also create space for habitats that support abundant biodiversity, areas for recreational activities and opportunity for nature connection.

Adelaide is the capital of the driest state in Australia. Droughts and water restrictions have led to innovation and transformation in the way we think about, manage, use and reuse water.

The CoA helped establish the Glenelg to Adelaide Recycled Wastewater Scheme (GAWRS), creating a new source of water for irrigating the Park Lands.

We have also built flood protection infrastructure including the Torrens Lake Weir and are managing the quality and quantity of stormwater runoff to reduce the impact of storm events.

Historically, Adelaide has responded in times of water crisis and the result has been a step change in the way we manage water resources.

However, in a changing climate, proactively transitioning towards a water sensitive city is an imperative to maintain green spaces, leafy canopies and healthy watercourses as the city becomes hotter and drier, heatwaves extend for longer periods and rainfall events are projected to be more intense.



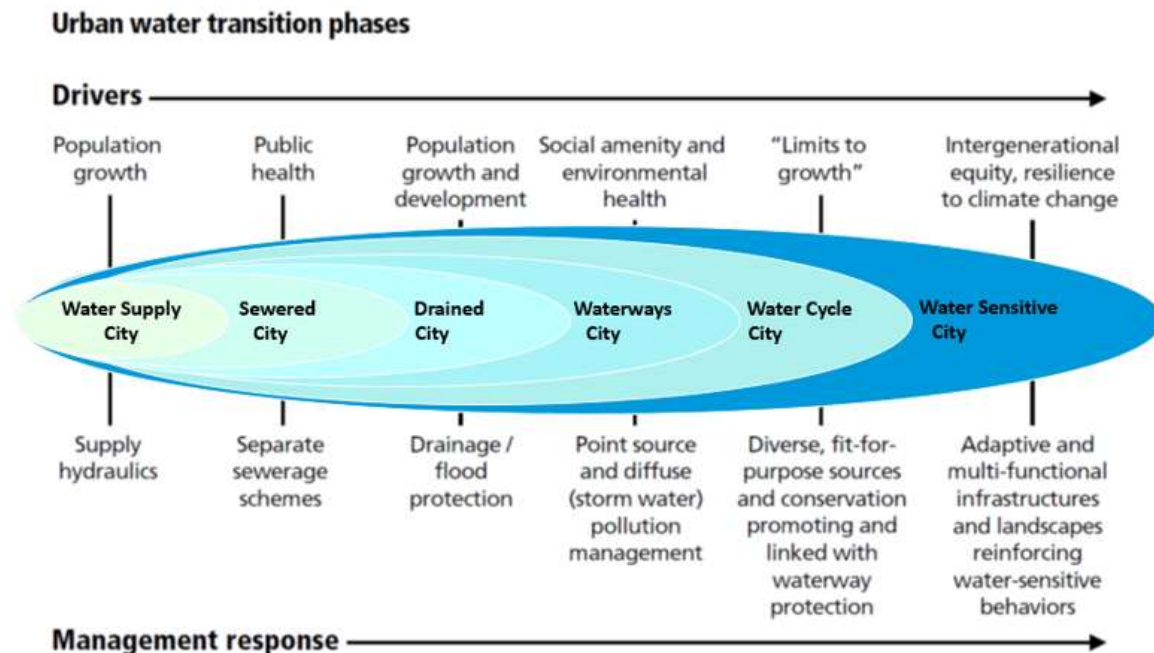
## Our approach to transition

In 2014, The CoA participated in the CRC for Water Sensitive Cities Index project which benchmarked Greater Adelaide's current water sensitive performance across seven Water Sensitive Cities goals.

This provided insight into where along the Urban Water Transition Framework (Figure 1) Greater Adelaide considered itself to be. The indicator scores showed the three goals of *Ensuring quality urban space*, *Improve ecological health* and *Increase community capital* needed further attention to achieve being a Water Cycle City, but that Greater Adelaide was almost halfway along this transition phase at that time.

Greater Adelaide was also considered to have commenced its transition into becoming a Water Sensitive City due to the equity in supplying essential services of water supply and sanitation, meaning that water is safe, secure, accessible and affordable to everyone. However, significant effort is still needed to achieve objectives related to restored and protected ecosystems, flood control, amenity, liveability and economic sustainability.

To be more water sensitive, Greater Adelaide needs adaptive infrastructure that is smart and responsive, water must be better integrated into the urban form, our water ecosystems need to be more diverse and the community needs to embrace the natural water cycle of abundance and scarcity.



Source: Based on T. Wong and R. R. Brown. 2009. *The Water Sensitive City: Principles for Practice*. Water Science and Technology 60(3):673–682.

Figure 1: Urban Water Transition Framework (Wong and Brown, 2009)

From the benchmarking project, the CRC for Water Sensitive Cities partnership created the Vision and Transition Strategy for a Water Sensitive Adelaide (2017), providing a 50-year vision to achieve 24 strategies for Greater Adelaide's transition to a water sensitive city.

Many of these strategies have synergies with the CoA objectives, albeit at different scales and with a different perspective given council's role in the community and its operational nature.

The CoA Strategic Plan 2020-24 seeks to achieve a "Climate ready organisation and community" and this resonates with and responds to the Greater Adelaide vision which acknowledges the impact of climate change on water resources over the coming decades.

## **Creating CoA water sensitive priorities**

Throughout 2019, more than 210 CoA staff helped identify key priorities and actions that could be implemented for the CoA to become more water sensitive as part of the Water Sensitive City Project.

The collaborative consultation process included forums, workshops, site visits, surveys and capacity building activities all designed to stimulate ideas, share experiences and knowledge and understand the relationship between the water cycle, environment, business operations and climate change.

Key themes emerged during the consultation activities around using a diversity of water supplies to support increased greening for neighbourhood amenity, shading and mitigating the impacts of extreme heat. CoA staff also agreed that the knowledge and skills of people working with water could be enhanced with digital technologies to boost the capabilities of the CoA to manage water resources more efficiently and effectively. A focus on the natural environment and waterways also arose with a desire to protect, restore and integrate water features in the city back into the natural water cycle.

This Water Sensitive City Action Plan 2020 establishes these themes as priorities for the CoA and the implementation plan sets out the delivery of actions over the next four years.



### **Water for Green**



### **Water Smarts**



### **Wetlands and Waterways**

## Strategic Context

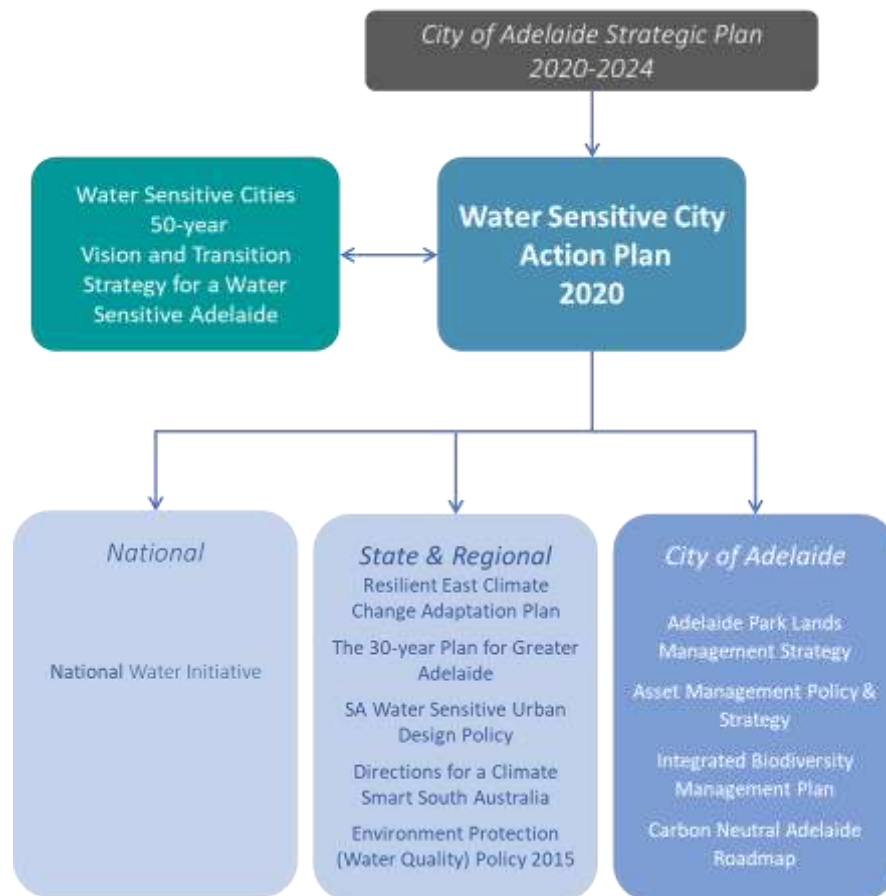
The Water Sensitive City Action Plan 2020 is aligned to deliver the community outcomes and the key actions of the City of Adelaide Strategic Plan 2020-2024:

### Community Outcome - Environmental Leadership:

- Enhanced greening and biodiversity
- A climate ready organisation and community.

### Key Actions:

- Educate and support our community to be zero-waste, water sensitive, energy efficient and adaptive to climate change.



The Water Sensitive City Action Plan 2020 is also integrated with Greater Adelaide's water sensitive transition in the short to medium term including:

- Adelaide's terrestrial, freshwater and marine ecosystems are diverse, healthy and productive.
- Adelaide's water infrastructure systems are smart, sustainable and flexible.
- Adelaide's urban form is accessible, liveable and integrates water creatively to highlight Adelaide's unique features.

The Water Sensitive City Action Plan supports policy directions at national, state and regional levels and helps achieve multiple benefits from existing CoA plans and strategies in an integrated way.

# 2019 City Snapshot



**210**

CoA staff participating in water planning



**62,500L**

Capacity of CoA rainwater systems



**44**

Smart Water Meters installed



**264ML**

River Torrens water extracted



**57**

Extra street trees planted



**4**

Public toilets flushed with recycled water



**5**

Streets watered with recycled supply



**187**

Tonnes of litter captured by GPTs



**6**

Species of native fish in River Torrens



**92**

Recycled water connection points in 2018/19



**22**

Rain gardens installed



**779ML**

Recycled wastewater consumed in 2018/19



**1,362**

tonnes of litter collected by streetsweepers



**14.7%**

Native aquatic vegetation in River Torrens

# Water Profile

Understanding how and where the CoA uses water resources and the variety of operational activities water supports is vital to the efficient use of water and being able to identify opportunities for change.

The CoA Water Inventory underpins decision making by enabling analysis, trends and forecasting of all water consumption and costs each year. Community water consumption data is also provided annually by SA Water.

## CoA corporate water profile

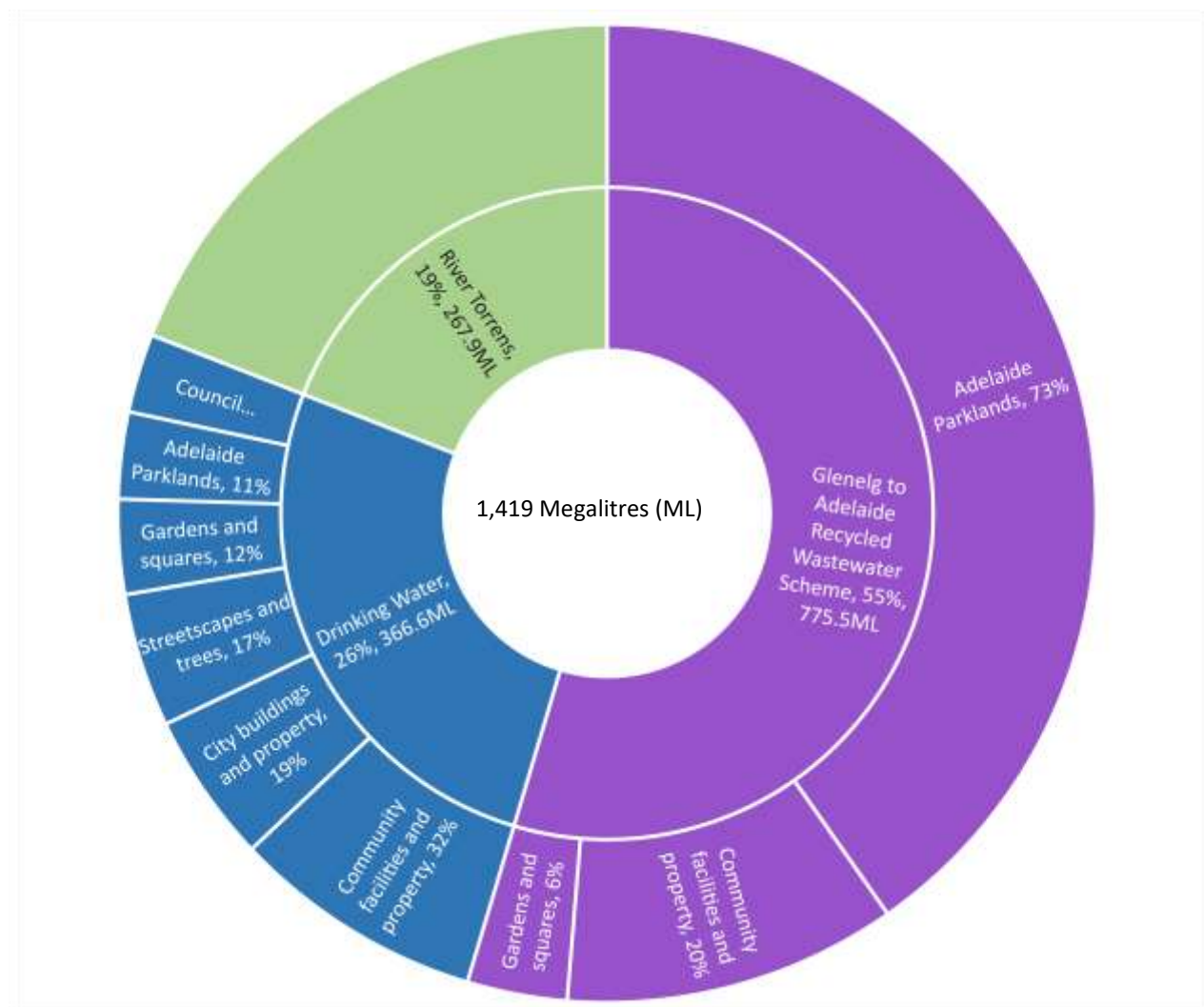


Figure 2: City of Adelaide Water Profile 2018/19

Almost three quarters of CoA's total water use is supplied from non-drinking sources including the Glenelg to Adelaide Recycled Wastewater Scheme (GARWS) and Karrawirra Pari (River Torrens).

The GARWS network irrigates the Adelaide Park Lands, open spaces, city squares, supplies the public toilets in Victoria Square and Rundle Park and is used to fill Rymill Lake. Water pumped directly from Karrawirra Pari is used on the adjacent golf course to maintain the playing surface and landscape.



The volume of these resources consumed by the CoA is highly dependent on seasonal rainfall and evapotranspiration rates during heat waves which can impact demand, leading to fluctuations of more than 40% for irrigation water.

Potable water from SA Water supplies (sourced from a mix of Eastern Mount Lofty Ranges reservoirs, the desalination plant and the River Murray) accounts for 26% of total water consumption. Most of this is used by indoor activities and demand remains fairly constant, with a slight annual increase each year since water restrictions eased in 2009.

## Community water profile

Community water used by residents, businesses and others (including CoA) in the suburbs of Adelaide and North Adelaide is captured by SA Water and provides a general overview of trending total consumption of potable water.

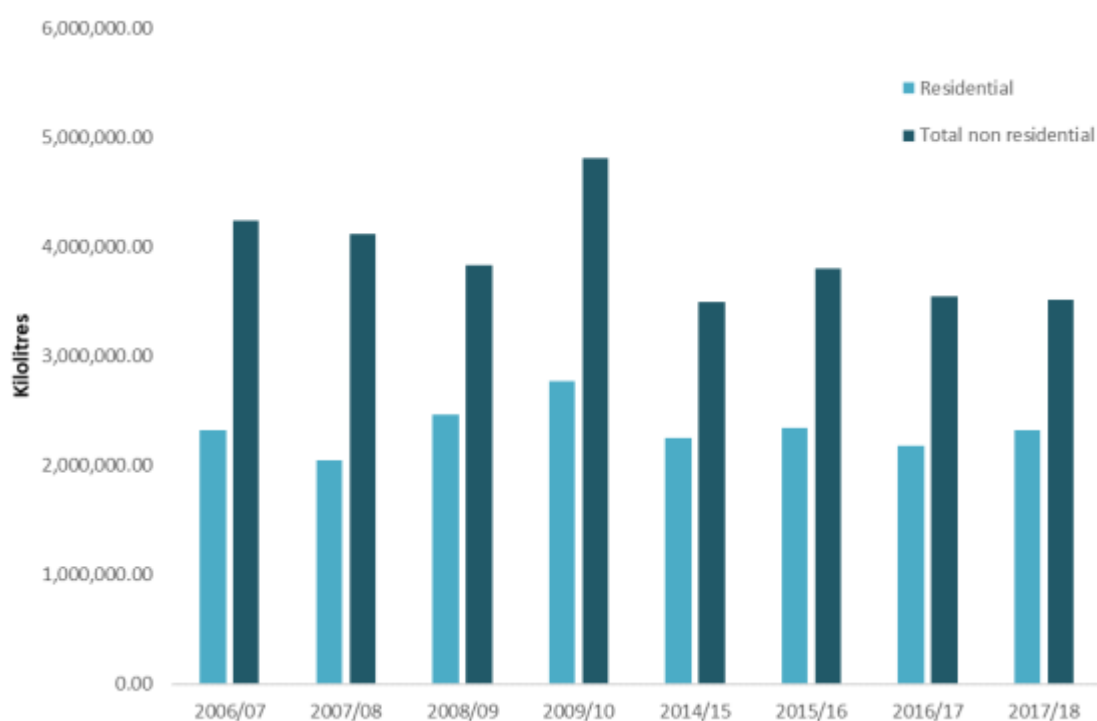


Figure 3: Adelaide and North Adelaide Community water use 2006 -2018

City residents have been consuming potable water at a constant level over the last ten years. In 2006 South Australia experienced severe water restrictions due to the Millennium Drought. This forced significant changes to household water use volumes which are still sustained today, demonstrating long-term behaviour change.

# Our water sensitive city ...

Requires **long term planning** and thinking and not making decisions for short term gains.

Has **minimum requirements and standards** that must be delivered in order for streetscapes, buildings, programs, operations and practices to contribute to being water sensitive.

Is **green**, where there is increased canopy cover and vegetation integrated into streetscapes, roads and buildings.

Uses **technology** to support the 'smart management' of water, including measuring and monitoring its use and efficient "smart watering".

Is one where water sensitive urban design features are **given a monetary value** recognising the benefits they deliver.

Comprises features such as **wetlands** that improve water quality and biodiversity values, return areas of the city to natural landscapes, support a diversity of plant and animal species and help detain water during heavy rainfall.





Considers **ecosystems in a holistic way**, recognising that water, soil, plants, animals and fungi all play a role in biodiversity.

Involves **fit for purpose water use**, where the quality of the water is matched to how it is used. Potable water is only used for drinking, with recycled water used for other activities such as irrigation, flushing of toilets and street cleaning.

Has an **engaged community**, where people are knowledgeable about water, are personally engaged and invested in its management. Our people take ownership of their contribution to manage it sustainably.

Has facilities that are **self-sustaining** – they capture and re-use water for irrigation of open space, playing fields and other facilities.



# Priorities and Implementation

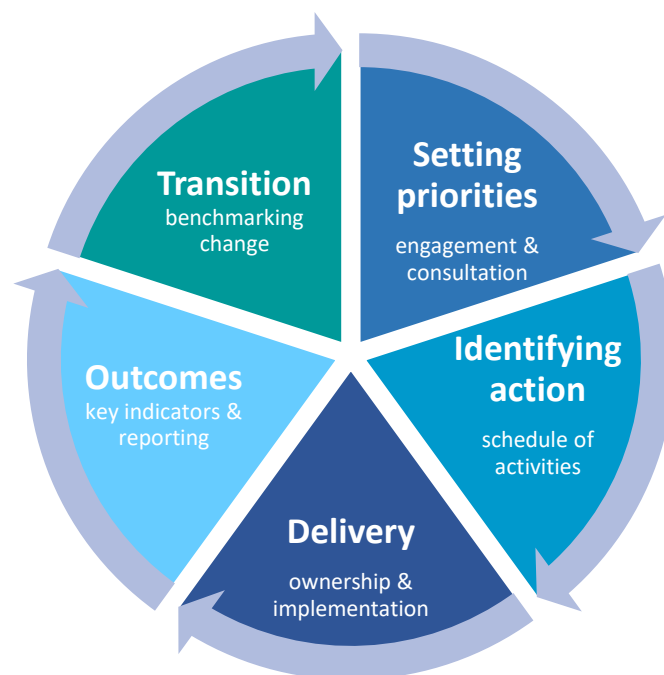
Each of the Water Sensitive City Action Plan 2020 priorities are described in detail from page 16, setting the background and rationale for the key actions that will help achieve our priorities over the next four years.

Measures of success will be used to benchmark the transition journey for the CoA towards becoming a more water sensitive city and will also verify if the desired outcomes of the Water Sensitive City Action Plan 2020 have been met.

The implementation plan consolidates all of the actions into a schedule of activity, recognising that many actions require multi-year approaches to investigate, plan and deliver or an ongoing roll out of projects to transform infrastructure, environmental condition and digital capabilities to support a more water sensitive city.

Funding to deliver the implementation plan is expected to come from existing CoA resources, operational efficiencies, changed business practices, external grants and annual budget opportunities.

Monitoring the progress of the Water Sensitive City Action Plan 2020 will occur annually using available data from the benchmark source as a set of key indicators.





## Priority 1: Water for Green

Water for green means having a diversity of fit-for-purpose water to irrigate green infrastructure, street trees, landscaped areas and sports grounds. It also enables water to penetrate the impervious surfaces of the CBD's built form and replenish soils which support healthy plant growth and groundwaters below.

### Background

Adelaide's hot dry climate means the city relies on irrigation to support street trees, landscaped gardens and green spaces to maintain amenity, provide shade and keep the urban environment cool. The City of Adelaide (CoA) has an expansive network of recycled water, (installed in 2009), that provides more than 700 megalitres of treated wastewater each year to the Park Lands, Whitmore, Victoria and Light Squares and the entrance to the Royal Adelaide Hospital.

The majority of recycled water infrastructure (owned by SA Water) remains on the outskirts of the city and so the CBD and North Adelaide continue to rely on more than 100 megalitres of potable water to sustain the amenity of green spaces, streetscapes and verges.

Adelaide has a network of stormwater drains that convey rainwater runoff to the River Torrens or Keswick Creek from hard surfaces such as roads, building roofs and footpaths. Approximately 1,300 megalitres of rainwater drains to local waterways each year transporting pollutants, sediment and litter into aquatic ecosystems.

Raingardens, infiltration trenches and permeable surfaces provide opportunities to capture rainfall and support water for greening, particularly during low rainfall events in the Summer months.

The community can contribute to diversifying their water resources. Households can harvest rainwater for indoor use or garden watering. Sporting clubs can connect to recycled water for their Park Land clubrooms and residents can support the installation of water sensitive urban design features in their streets.

As we face a changing climate, with reduced Spring rainfalls and more intense storm events, our reliance on traditional water infrastructure and sources will need to transform if we want to maintain and increase greening in the CoA. Supplying parks and gardens with much needed water means they will be able to provide the cooling and shading benefits that will be even more important as the climate becomes hotter and drier.

### Strategic links

- **City of Adelaide Strategic Plan 20-24** – Increase street canopies and green infrastructure in city hot spots and public spaces.
- **CRC Water Sensitive City Plan to 2067** – Demonstrate urban design solutions that integrate urban water management across the public and private realms.

### Desired outcomes

- A green city with increased canopy cover and vegetation integrated into streetscapes, roads and buildings.
- Fit for purpose water use where the quality of the water is matched to how it is used.

## Measures of success

	Source	Current benchmark
Reduction in % of impervious ground in the CBD and North Adelaide	Green Infrastructure Benchmark Data Report	CBD = 95.33% (2016) North Adelaide = 82.14% (2016)
Increase in stormwater catchment area (ha) directed to biofiltration raingardens.	A.Bowden Stormwater ArcGIS with WSUD layer	19.03732 ha (2020)
Increase in % of tree canopy in the CBD and North Adelaide	Green Infrastructure Benchmark Data report	CBD = 8.73% (2016) North Adelaide = 18.34 (2016)
Number of recycled water meters connected to streetscape irrigation.	CoA Water Profile	5 (2020)
Increase in total number of passively irrigated street trees installed.	Pre- Assetic system WSUD study (2020)	151 (2020)

## Key Actions – Water for Green

The following actions are proposed for the next 4 years:

- 1.1 Develop an incentives program to assist residents, businesses and community clubs to trial innovative greening ideas using alternative water within the City.
- 1.2 Create a "Water Play" space to encourage interaction, appreciation and cooling for community access.
- 1.3 Expand the use of permeable materials for bike lanes, parking bays, footpaths and tree surrounds to enable rainfall infiltration at the source or to nearby green infrastructure.
- 1.4 Assist Park Land tenants to transfer irrigation systems and club rooms from potable to alternative water supplies.
- 1.5 Prepare a strategic WSUD map to identify urban stormwater treatment opportunities for runoff to the River Torrens.
- 1.6 Undertake a review of the effectiveness of existing biofiltration raingardens and prepare a "best practice design and installation guide for CoA", including aspects of maintenance and life cycle benefits.
- 1.7 Invest in irrigation infrastructure that enables streetscapes to access recycled water from a nearby SA Water network in lieu of a new potable supply.
- 1.8 Demonstrate innovative green infrastructure supported by alternative water sources on Council led developments that are identified in the Strategic Property Action Plan.
- 1.9 Increase the efficiency of watering Park Lands and streets by upgrading irrigation systems, selecting climate resilient species.
- 1.10 Direct low flow stormwater into nearby street trees or gardens beds to maximise infiltration of rainfall.



## Priority 2: Water Smarts

Being smart with water is not just about conserving the supplies that we use. It refers to our knowledge, capabilities, experience and relationships that can be built upon to develop water resources for now and into the future. We can use technology and data to inform decision making and monitor the results of actions we take to assess the benefits.

### Background

The CoA has been actively monitoring its water consumption for more than 20 years and at the height of the Millennium Drought, that knowledge informed the transition of Adelaide's Park Land irrigation supplies to a secure, recycled source from the Glenelg Wastewater Treatment Plant.

This action has reduced the volume of sewerage outfall to the Gulf St Vincent, improving the quality of marine environments. The use of GARWS water reduces demand on the River Murray and demonstrates the capacity we have to be smarter with water.

The use of technology to automate irrigation systems and integrate them into natural seasonal rainfall cycles means we can use our recycled water resources more efficiently. The installation of real-time smart water meters to monitor consumption at public facilities helps to identify leaks swiftly and minimise wasted water. As more technical solutions become available, we can use our in-house capabilities and experiences to determine how best to apply them or work in collaboration with our partners to test and analyse exactly which technology suits our business needs.

Incorporating the economic value of water and the ecosystem services it provides into business decisions remains an ongoing challenge. While there is a purchase price for potable and recycled water, the externalities or financial benefit from holistic water resource management is rarely included in financial models. Methods and tools to monetise water sensitive urban design need to be translated into CoA business practices, so that the true cost and benefit to council and the community can be realised.

Sharing information and data with each other and joining with partners on projects and programs that pursue our Water Sensitive City priority objectives will help achieve our outcomes. Significant knowledge and resources already exist within CoA which could be made more accessible through a shared approach supported by stronger communication channels.

### Strategic Links

- **City of Adelaide Strategic Plan 20-24** – Transparent decision making based on data and evidence.
- **CRC Water Sensitive City Plan to 2067** – Improve organisational culture, systems and processes for collaborative and integrated cross-sectoral water system management to share learnings and build system resilience.

### Desired Outcomes

- Water sensitive urban design features have a monetary value, recognising their benefits.
- Technology is used to support the 'smart management' of water, including measuring and monitoring its use and 'smart watering'.
- Facilities are self-sustaining, capturing and re-using water for irrigating open space, playing fields and other facilities.

## Measures of Success

	Source	Current Benchmark
Increase the use of GARWS for indoor and other non-drinking uses.	CoA Water Profile	814KL (2016/17)
Increase the use of GARWS for council operations.	CoA Water Profile	OKL, (2019)
Increase in the number of Smart Water Meters within the Smarty Utility Network.	Smart Utility Network Platform	44 (2019)
A monetised value for WSUD is used in project cost/benefit decisions.	Budget cost estimates	N/A

## Key Actions – Water Smarts

The following actions are proposed for the next 4 years:

- 2.1 Expand the use of alternative water (GARWS, rainwater) to public amenities in the Park Lands, major event spaces and CoA owned properties.
- 2.2 Install GARWS standpipe access points for CoA cleansing and water trucks and convert their use from potable water.
- 2.3 Install Smart Water meters at high water consuming sites, public toilets and community amenities in the Park Lands.
- 2.4 Adopt technologies to support automation of watering systems so that they respond to climatic and environmental conditions such as soil moisture, rainfall and evapotranspiration rates.
- 2.5 Upgrade automatic watering systems at the North Course Golflinks to enable climate responsive watering.
- 2.6 Introduce a model to assess the cost / benefits of WSUD that can be adopted into project value calculations used for capital expenditure.
- 2.7 Develop a monetised value for environmental water and waterways.
- 2.8 Create a Water Knowledge Platform that provides regular insight and analysis for key decision makers, the community and Elected Members using water data and information.
- 2.9 Incorporate Kaurna cultural knowledge of connections to water and share their understandings through conversations and mapping.
- 2.10 Develop an online Water Action portal where CoA staff can share success stories, follow the implementation of the WSCAP and access ideas for other innovative water management.
- 2.11 Work in partnership with local and state governments and organisations such as SA Water, Green Adelaide, Resilient East, Water Sensitive South Australia and Water Sensitive Cities Institute on programs and projects that pursue the key priorities of the CoA's WSCAP.



## Priority 3: Wetlands & Waterways

The City of Adelaide was purposefully located along the banks of the River Torrens to provide a clean and plentiful water supply to the new colony. Within a few years, this ephemeral waterway became degraded, over used and untenable due to flooding and its ecological health has declined extensively.

Restoring local watercourses to enhance aquatic diversity and riparian vegetation is essential to mitigating impacts of an altered stormwater regime and becoming a Water Sensitive City. Slowing the flow, preventing pollutants and enhancing aquatic and terrestrial biodiversity helps to restore highly valued areas of nature within a City.

### Background

Several watercourses flow throughout the CoA including Karrawirra Pari (River Torrens) (with a 508km catchment), Park Lands Creek, which flows into Keswick Creek at the southern boundary, Botanic Creek, which drains northwards through the eastern Park Lands and First Creek which crosses Hackney Road, connecting Waterfall Gully in the East to the River Torrens through the Botanic Gardens.

These natural water courses have been augmented to drain rainfall runoff from urban areas, directing pollutants, sediment and organic debris into waterways, in many cases without treatment. Drainage development and the regulated flow systems of dams and weirs in upstream catchments has severely impacted the quality of water, riparian biodiversity and the marine environment. This has resulted in blue-green algal outbreaks in the Torrens Lake, silting at Torrens Weir and an influx of woody weeds and pests.

Recognising wetlands and waterways as part of an integrated urban water system will bring ecological, social, recreational, economic and tourism benefits to the City of Adelaide. Restoring and protecting them as valuable natural assets and not just drains for excess stormwater, ensures their place in the landscape and can lead to the creation of quality, biodiverse habitats and opportunities for residents and visitors to connect with nature.

The CoA has been working collaboratively with neighbouring councils, State government agencies and our community to improve the ecological health of Karrawirra Pari (River Torrens) and other watercourses over the last twenty years. These partnerships are essential to improve the ecological functions of our natural watercourses and wetlands and be a more water sensitive city.

### Strategic Links

- **City of Adelaide Strategic Plan 20-24** – Enhance biodiversity in the Park Lands and connect our community to nature.
- **CRC Water Sensitive City Plan to 2067** – Trial and demonstrate innovative water system solutions that protect areas of high ecological value and deliver multiple benefits, such as community health and wellbeing.

### Desired Outcomes

- Wetlands improve biodiversity values, return areas of the city to a more natural environment, support diverse species, slow runoff and mitigate peak flows.
- Ecosystems are considered in a holistic way, recognising the water, soil, plant, animals and fungi all play a role in biodiversity.

## Measures of Success

	Source	Current Benchmark
Increase the mix of aquatic and terrestrial flora and fauna in the River Torrens.	Baseline Littoral Zone Vegetation mapping and Assessment of Torrens Lake	2.6011 ha of littoral zone vegetation in Torrens Lake. (2020)
Update the City Map to include watercourses.	City Map	Zero (2020)
Increase in city street stormwater catchments (m <sup>2</sup> ) diverted through fine sediment cleansing system (wetlands, swales for pollutant load reduction).	City Catchment Map	124.8431 ha (2020)
Volume of gross pollutants removed from traps and collected via street sweeping.	GPT maintenance contract.	187 tonnes GPT (2019/20)

## Key Actions – Wetlands and Waterways

The following actions are proposed for the next 4 years:

- 3.1 Establish partnerships to deliver wetlands within the River Torrens riparian zone to improve water quality and restore aquatic biodiversity in the City.
- 3.2 Support the construction and community use of the Victoria Park Wetlands.
- 3.3 Investigate opportunities to integrate more natural features into Rymill Lake for improved catchment-wide water quality, recreation and nature connection outcomes.
- 3.4 Create a suite of water related spatial layers to enable a Waterways Overlay to be created.
- 3.5 Restore waterways to more natural systems and assist them to be more resilient in the face of climate change.
- 3.6 Establish a wetlands and waterways health monitoring program, incorporating data collected by the existing Water Quality Monitoring Program.
- 3.7 Engage our community in watercourse appreciation activities using educative, informative hands-on and digital approaches.
- 3.8 Prioritise the management of waterway pests and weeds in the next Integrated Biodiversity Management Plan.
- 3.9 Prepare a Torrens River & Lake Environs Management Plan, establishing long-term agreed outcomes for improving water quality and biodiversity.

# Implementation

Investigate	Plan	Plan & Deliver	Deliver	Ongoing
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## Priority 1: Water for Green

	Action	CoA Leads	Year 1	Year 2	Year 3	Year 4
1.1	Develop an incentives program to assist residents, businesses and community clubs to trial innovative greening ideas using alternative water within the City.	Strategic Property Management & Sustainability				
1.2	Create a "Water Play" space to encourage interaction, appreciation and cooling for community access.	D&TS & RMMA				
1.3	Expand the use of permeable materials for bike lanes, parking bays, footpaths and tree surrounds to enable rainfall infiltration at the source or to nearby green infrastructure.	Design & Technical Services				
1.4	Assist Park Land tenants to transfer irrigation systems and club rooms from potable to alternative water supplies.	Strategic Property Management				
1.5	Prepare a strategic WSUD map to identify urban stormwater treatment opportunities for runoff to the River Torrens.	Sustainability & D&TS				
1.6	Undertake a review of the effectiveness of existing biofiltration raingardens and prepare a "best practice design and installation guide for CoA" which includes maintenance and lifecycle benefits.	D&TS & Assets				
1.7	Invest in irrigation infrastructure that enables streetscapes to access recycled water from a nearby SA Water network in lieu of a new potable supply.	Horticulture				
1.8	Demonstrate innovative green infrastructure on Council led developments identified in the Strategic Property Action Plan.	Strategic Property Management				
1.9	Increase the efficiency of watering Park Lands and streets by upgrading irrigation systems, selecting climate resilient species.	Horticulture				
1.10	Direct low flow stormwater runoff into nearby street trees or gardens beds to maximise infiltration.	D&TS Horticulture				

## Priority 2: Water Smarts



	Action	CoA Leads	Year 1	Year 2	Year 3	Year 4
2.1	Expand the use of alternative water (GARWS, rainwater) to public amenities in the Park Lands, major event spaces and CoA owned properties.	Sustainability & Infrastructure				
2.2	Install GARWS standpipe access points for CoA cleansing and water trucks and convert their use from potable water.	Sustainability & Public Realm				
2.3	Install Smart Water meters at high water consuming sites, public toilets and community amenities in the Park Lands.	Sustainability & Assets				
2.4	Adopt technologies to support automation of watering systems so that they respond to climatic and environmental conditions such as soil moisture, rainfall and evapotranspiration rates.	Horticulture				
2.5	Upgrade automatic watering systems at the North Course Golflinks to enable climate responsive watering.	Commercial Operations				
2.6	Introduce a model to assess the cost / benefits of WSUD that can be adopted into project value calculations used for capital expenditure.	Sustainability & Finance				
2.7	Develop a monetised value for environmental water and waterways.	Assets & Sustainability				
2.8	Create a Water Knowledge Platform that provides regular insight and analysis for key decision makers, the community and Elected Members using water data and information.	Innovation & Sustainability				
2.9	Incorporate Kaurana cultural knowledge of connections to water and share their understandings through conversations and mapping.	City Wellbeing				
2.10	Develop an online Water Action portal where CoA staff can share success stories, follow the implementation of the WSCTP and access ideas for other innovative water management.	Sustainability				
2.11	Work in partnership with local and state governments and organisations such as SA Water, Green Adelaide, Resilient East, Water Sensitive South Australia and Water Sensitive Cities Institute on programs and projects that pursue the key priorities of the CoA's WSCAP.	Sustainability				

## Priority 3: Wetlands & Waterways

	Action	CoA Leads	Year 1	Year 2	Year 3	Year 4
3.1	Establish partnerships to deliver wetlands within the River Torrens riparian zone to improve water quality and restore aquatic biodiversity in the City.	Sustainability				
3.2	Support the construction and community use of the Victoria Park Wetlands	Sustainability				
3.3	Investigate opportunities to integrate more natural features into Rymill Lake for improved catchment-wide water quality, recreation and nature connection outcomes.	Assets				
3.4	Create a suite of water-related spatial layers to enable a Waterways Overlay to be created.	Sustainability				
3.5	Restore waterways to more natural systems and assist them to be more resilient in the face of climate change.	Sustainability				
3.6	Establish a wetlands and waterways health monitoring program, incorporating data collected by the existing Water Quality Monitoring Program.	Assets & Sustainability				
3.7	Engage our community in watercourse appreciation activities using educative, informative hands-on and digital approaches.	Sustainability				
3.8	Prioritise the management of waterway pests and weeds in the next Integrated Biodiversity Management Plan.	Sustainability				
3.9	Prepare a Torrens River & Lake Environs management plan, establishing long-term agreed outcomes for improving water quality and biodiversity.	Sustainability				

CoA Lead abbreviations: Rundle Mall Management Authority (RMMA), Design & Technical Services (D&TS), Asset Management (Assets).