City Water Stories:
Perth

the international water association

Population
- Current population 24,244 (ABS ERP 2015).
- By 2031, Perth is forecast to have an additional 14,452 new residential dwellings (based on 2006 figures) and 1.2 million m2 of non-residential space, with close to 60% population growth by 2036.

Geography
- Located on the Swan Coastal Plain.
- Local government area of 19.37km^2.

Main challenges
- Water scarcity; extreme weather events; excessive urban heat; and sea level rise.

Main solutions
- Promote the reduction of potable water use; identifying fit for purpose opportunities; investing in stormwater capture and reuse infrastructure; identifying alternative water sources; integrating green infrastructure; and employing a treatment train to manage nutrients and pollution.

Becoming a Sustainable City of Tomorrow

The City of Perth is the capital city of Western Australia, covering an area of 19.37km2. It has many unique characteristics such as being the largest employment hub in Perth and home to international, national and local business head offices.

Sustainability is a crucial topic for cities of tomorrow. With global warming and climate change an accepted fact by most people, the impact to the economy and people's way of life are being realised.

Perth's declining water availability from both surface and groundwater sources is well recognised. The Western Australian Water Corporation predict a 40% decline in rainfall by 2060, and the need for an additional 365 gigalitres of reticulated drinking water for Perth and surrounding towns. Despite a 20% reduction in water use since 2001, metropolitan Perth still remains one of the highest water using cities in Australia.

In order to transition to a water sensitive city, the City's operations, businesses and community need to optimise their use of water, reduce consumption where possible and increase the use of non-drinking water sources for appropriate uses.

The City of Perth is a founding partner in a Waterwise Office Program aimed at reducing water use in commercial properties in the CBD.

Maintaining Liveability in an Uncertain Future

With a changing climate and increasing urban development, Perth faces many challenges in maintaining its liveability. A number of changes to the climate of the south-west of Western Australia have been projected by the CSIRO, with some impacts already observed:

- Water scarcity - a continuation of the trend of decreasing winter and spring rainfall. Changes in other seasons are unclear, although projections suggest a continuation of the observed autumn declines;

- Extreme weather events - Even though annual mean rainfall is projected to decrease in the region, projections indicate increases in extreme rainfall. Time spent in drought is projected to increase over the course of the century;

- Excessive urban heat - Average temperatures will continue to increase in all seasons. Extreme temperatures are projected to increase at a similar rate to mean temperature, with a substantial increase in the temperature reached on hot days, the frequency of hot days, and the duration of warm spells; and

- Sea level rise - Mean sea level will continue to rise and height of extreme sea-level events will also increase. By 2030 the projected range of sea-level increases for the coastline is 0.07 to 0.18 m above the 1986–2005 level.

Case Study: Osborne Park Works Depot

In 2014/15, the City of Perth installed water sensitive infrastructure at its Osborne Park Works Depot. A water recycling plant recycles water returned from road cleaning operations and from the workshop wash bay, and a rainwater harvesting system collects flows from the main workshop roof. The recycled water is used for the City's street presentation and maintenance operations.

City of Perth

Perth's Journey to Become a Water-Wise City

A closer look at how Perth is satisfying the IWA Principles for Water-Wise Cities

1 Regenerative Water Services

Replenish Waterbodies & their Ecosystems

✓ Minimise use of groundwater and scheme water from City operations and public spaces.

Reduce the Amount of Water & Energy Used

✓ Supporting partner of Perth's Waterwise Office Program. Partner organisation of the CitySwitch Green Office Program.

Reuse, Recover, Recycle

✓ Commitment to complete an 'Alternative Water Sources for Irrigation Feasibility Study'.

Apply a Systemic Approach for Integration with Other Urban Services

✓ Commitment to implement and promote water sensitive urban design.

Increase the Modularity of Systems and Ensure Multiple Options

✓ Promote and support increased retention, reuse and use of non-scheme water sources within new and existing developments, precincts, and buildings in the city.

2 Water Sensitive Urban Design

Enable Regenerative Water Services

✓ Review and improve design guidelines, approvals processes, incentives and compliance mechanisms to facilitate environmentally sustainable design and improve environmental performance of new buildings.

Design Urban Spaces to Reduce Flood Risks

✓ Work with stakeholders to prepare for, and positively adapt to, climate change risks through creation of natural spaces, facilitation of climate responsive built form, and risk mitigation strategies.

Enhance Liveability with Visible Water

✓ Strengthen community connection and increase community access to the natural environment.

Modify & Adapt Urban Materials to Minimise Environmental Impact

✓ Implement an Urban Forest Plan.

3 Basin Connected Cities

Plan to Secure Water Resources & Mitigate Drought

✓ Complete a Water Sensitive City Transition Study.

Protect the Quality of Water Resources

✓ Monitor and improve water quality discharging into the river and wetlands.

✓ Construction of Point Fraser water quality treatment wetland.

Prepare for Extreme Events

✓ Signatory to the WALGA Declaration on Climate Change and Compact of Mayors.

4 Water-Wise Communities

Empowered Citizens

✓ Collaborate with stakeholders to improve the quality of inflows into the Swan River and coordinate maintenance of groundwater quality and riparian areas. Publically report climate change mitigation and adaptation benchmarking through the Carbon Disclosure Project.

Professionals Aware of Water Co-Benefits

✓ Collaborate with stakeholders to improve environmental performance and adopt environmental best practise in current and new development.

Transdisciplinary Planning Teams

✓ Collaborative working arrangements developed with the CRC for Water Sensitive Cities and the Water Sensitive Transition Network.

Policy Makers Enabling Water-Wise Action

✓ Collaborate with multidisciplinary teams to implement the City's Environment Policy.

Leaders that Engage and Engender Trust

✓ Increase understanding of environmental sustainability within the City of Perth organisation and community to build capacity to improve environmental performance.

5 Building Blocks for Perth on the journey to water-wise cities

Vision

"Perth highly values its water resources. The City of Perth leads by example in conserving and efficiently using water, replacing scheme water with groundwater or recycled water to optimise fit-for-purpose use of water wherever possible. The City invests in water saving technologies and practices, actively managing irrigation and other operational systems to respond to climatic and soil conditions."

Governance

The City of Perth's Environment Strategy works in conjunction with a suite of strategic and operational documents that guide the integration of environmental considerations with social advancement and economic prosperity within all city activities.

Knowledge & Capacity

The City of Perth works in collaboration with the Water Transition Network and the Cooperative Research Centre for Water Sensitive Cities. The exchange of knowledge and skills between agencies is critical in the adoption of best management practices within the city.

Planning Tools

An Environment Policy defines the City of Perth's commitments to creating an environmentally sustainable city.

The City of Perth Environment Strategy enables the City of Perth to achieve excellence in environmental management, and harness opportunities to deliver on the City's responsibilities for achieving an environmentally sustainable city.

Implementation Tools

A Water Sensitive City Transition Study will develop an evidence base, establish benchmarks and identify opportunities to facilitate the City's transition to a water sensitive city.