City Water Stories:
Melbourne

the international water association

Population
- Current: 4.5 million. CBD has a resident population of 128,983 and on average 854,000 people use the city each day.

Geography
- 32 local government authorities spread over 9990.5 km² around Port Phillip Bay. City of Melbourne council area covers 37.7km². The Yarra River flows through the City of Melbourne and into Port Phillip Bay.

Main challenge
- Droughts, stormwater pollution and water supply challenges. Drier and hotter climates in the future, along with growing populations.

Main solution
- Ensuring community wide involvement and collaboration, along with diversified water resources for the growing populations.

A Drought that Fostered Change

Prior to the millennium drought (1997 to 2009) it was assumed that Melbourne's water supply was robust. Water supply from forested catchments and dams provided low cost protection against a variable climate. From 2006, in the midst of the drought, it became apparent that the supply was not as robust as once thought.

From 1996 to 2006 there was a gradual but continuous decline in Melbourne's water storage levels due to the decreased rainfall, especially in the historically high run-off periods of late winter and spring. Actual storage levels dropped to around 25% of total volume in June of 2007, 2008 and 2009. This equates to 1 year of supply. Without the major water consumption reduction measures implemented, it was projected that water storage levels would have dropped below 15%, 10% and 0% for the same periods.

These serious impacts from the drought drove alignment of purpose and effort around water management, which resulted in a step change in community and industry perceptions of water security. Melbourne now has a more inter-connected and collaborative water industry that recognises the key role water plays in a liveable, healthy, prosperous community.

A Healthy City in a Healthy Catchment

Melbourne effectively approaches the challenges of climate change and population growth whilst maintaining the world's most liveable city status through sharing knowledge, resources, and community involvement. After the millennium drought, greater emphasis was put on alternative water supplies – from desalination to stormwater harvesting for non-potable use – recognising cultural and social values as well as environmental and economic drivers.

A significant reason that Melbourne made it through the Millennium drought was the conservation action taken by the community. This was supported by infrastructure improvements such as reducing leaks in the water supply. A successful community education and action campaign provided a clear challenge to achieve a water use target of 155 L/person/day supported by regular updates and reinforcing the importance of individual contributions.

By continuing to build on a collaborative culture and with a proactive and adaptive approach to managing water supply and river health, Melbourne is focused on meeting the challenges of the future. With a population that is expected to grow to over 10 million by 2051 and a climate that will get hotter, drier and more variable, tough choices and trade-offs will need to be made. Adopting the UN Sustainable Development Goals and the Resilient Melbourne strategy are two examples of the actions that will help Melbourne achieve this.

Case Study: City of Melbourne's Urban Forest Strategy

This strategy recognises the social, economic and environmental contribution that plants and green spaces make to the city. The strategy's goal is to make Melbourne greener – to create a city within a forest rather than a forest within a city, promoting a resilient and liveable city. The City's sustainable water strategies and projects support the Urban Forest by: providing a reliable source of water for irrigation, resulting in increased canopy cover, biodiversity and urban cooling; increasing permeability and soil moisture; redirecting stormwater for irrigation use and to replenish groundwater; and increasing the amount of vegetation in the city.

CITY OF MELBOURNE

Melbourne's Journey to Become a Water-Wise City

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

1 Regenerative Water Services

Replenish Waterbodies & their Ecosystems

- ✓ Environmental flow regulations administrated by state and Federal agencies.

Reduce the Amount of Water & Energy Used

- ✓ Third pipe schemes using recycled water through new housing developments.
- ✓ Public and business water efficiency education campaigns.

Reuse, Recover, Recycle

- ✓ Extensive wastewater recycling schemes.
- ✓ Stormwater harvesting and reuse projects.

Apply a Systemic Approach for Integration with Other Urban Services

- ✓ IWM forums and plans at regional and local scales being developed as part of the new Water Plan.

Increase the Modularity of Systems and Ensure Multiple Options

- ✓ IWM plans tailored to meet the particular needs of local areas.

2 Water Sensitive Urban Design

Enable Regenerative Water Services

- ✓ State Planning Scheme for best practice stormwater management.
- ✓ Infill developments captured in inner city councils via local planning provisions.

Design Urban Spaces to Reduce Flood Risks

- ✓ Pilot project to design or retrofit urban space.
- ✓ On-lot rainwater tanks and stormwater harvesting system.
- ✓ Urban planning and design guidelines to provide for blue-green corridors.

Enhance Liveability with Visible Water

- ✓ Wetlands, raingardens and swales included in new development for water quality improvement.
- ✓ Improved accessibility to waterways. Implementing recirculation system in public fountains.
- ✓ WSUD to support increases in tree canopy cover and reduce UHI.

Modify & Adapt Urban Materials to Minimise Environmental Impact

- ✓ Testing of permeable paving and green roofs for Australian conditions. Passive irrigation of street trees using structural soils.

3 Basin Connected Cities

Plan to Secure Water Resources & Mitigate Drought

- ✓ Desalination plant.
- ✓ Annual Water Outlook.
- ✓ Investment in increasing irrigation efficiency with a share of water savings distributed to urban areas at times of critical human need.

Protect the Quality of Water Resources

- ✓ Secure, limited public access forested catchments supply most of Melbourne's drinking water.

Prepare for Extreme Events

- ✓ All hazards approach with strong connectivity across institutions and consistent framework.

4 Water-Wise Communities

Empowered Citizens

- ✓ Education campaign on wise water use & Target 155.
- ✓ Need to increase public understanding of the whole water cycle.

Professionals Aware of Water Co-Benefits

- ✓ On-going capacity and knowledge building and innovation programs.

Transdisciplinary Planning Teams

- ✓ Urban renewal sites, e.g. Arden Macaulay and Fishermans Bend.
- ✓ New intergovernmental committee overseeing Arden Macaulay.

Policy Makers Enabling Water-Wise Action

- ✓ State and local government have progressive water management policies.

Leaders that Engage and Engender Trust

- ✓ Leaders at three levels of government conscious of climate and population growth challenges and of maximising benefits with lease community cost.

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

Vision

Water is fundamental to our communities. We will manage water to support a healthy environment, a prosperous economy and thriving communities, now and into the future.

Governance

Collaborative policy development and joint action to deliver multiple benefits for each catchment.

State Government Water Plan provides for Integrated Water Management Plans to be developed at regional and local scales.

Knowledge & Capacity

Building knowledge and capacity within and between agencies and the community. Connecting locally, nationally and internationally to teach and learn.

High level commitment to developing leadership capacity.

Cooperative Research Centre for Water Sensitive Cities, funded from all levels of government and industry.

Planning Tools

Legislated catchment and water cooperation plans. State and local land use planning clauses. Updating flood models, tools and flood overlays. Water system optimisation models including climate change scenarios.

Implementation Tools

Looking for least cost, maximum benefit solutions that may be beyond business as usual approaches to become a resilient city that remains the world most liveable in the face of a changing climate.over the next four years towards the project.