A Vision for a Water Sensitive City

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Inspired by the 2009 Transition to a Water Sensitive City Study Tour

Overview /

In April 2009 a group of emerging leaders from the Australian water sector travelled to Europe and Singapore to discover what it takes to create a Water Sensitive City.

The 'Transition to a Water Sensitive City' study tour was supported by a range of leading Australian water industry authorities and businesses, councils and research organisations from Melbourne, Sydney, Brisbane and Perth.

The tour aimed to strengthen knowledge-sharing networks that are so vital for bringing about change and adoption of best practice approaches.

The 'Transition to a Water Sensitive City' study tour generated a range of ideas to turn the desire for change into action. One of the most important lessons learned was the need to take a risk and to commit to action.

As a group of individuals from diverse backgrounds within the water and river health sector we have an active interest in the water future of our cities.

Through our Vision and the dissemination of the knowledge we gathered, we hope to inspire the changes needed to make the transition to a Water Sensitive City.

We have distilled our whirlwind two-week tour into a vision and a list of ideas, each of which is ready to be applied locally.

These ideas – technical solutions, alternative approaches to community involvement or ways to drive innovation – are already happening somewhere else in the world today.

We know that they can be done because we have seen it being done by someone else.

We strongly believe that harnessing these ideas brings us closer to realising our goal of Water Sensitive Cities. It will also drive further ideas and innovation as our cities become hubs of sustainability action.

The path towards the Water Sensitive City begins by embracing the themes presented in this report. Examples of real, practical projects are given to support each idea. Further suggestions are made in the accompanying 'Good Ideas' report.

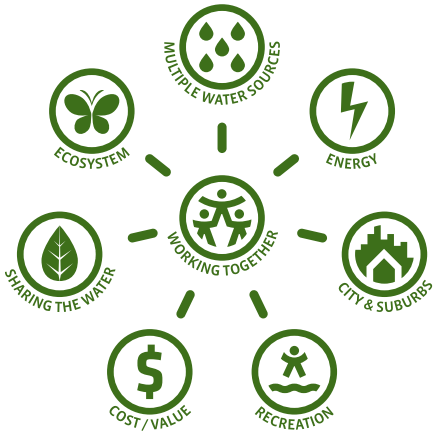
Of course good ideas mean very little without action and champions. The tour highlighted the importance of learning alliances – collaborations of research, demonstration and capacity building partners that are developing tomorrow's solutions to water security and sustainability challenges.

Our Vision for a Water Sensitive City /

Developing our vision was challenging, requiring individual reflection and group discussion. We think that our experience reflects the broader discussion needed across the water sector and beyond. We hope this vision stimulates discussion and look forward to debating its merits.

Our vision

Our Water Sensitive City is a place where built and natural environments are in harmony. It is a liveable city that reflects community values and has healthy waterways running through it. It is a place with an integrated urban water system with appropriate uses for rainwater, groundwater, surface water, wastewater, stormwater and potable water. It is a place where ecosystems, communities, organisations and infrastructure are resilient to future change.



Developing a Water Sensitive City is a great challenge. In our Water Sensitive City, we draw upon a wealth of knowledge to create technologies and strategies that help us achieve the balance between the natural and built environments.

We understand there is no single solution that can be employed, but rather a multitude of strategies that can be used to achieve our vision.

We will link our infrastructure systems at a variety of scales, from individual lots and neighbourhoods, to city-wide landscapes. Water will flow through urban areas in continual cycles of cleansing and reuse, meeting human and environmental needs.

Diverse infrastructure and technologies enable us to find solutions to fit local conditions, to adapt to environmental and social changes.

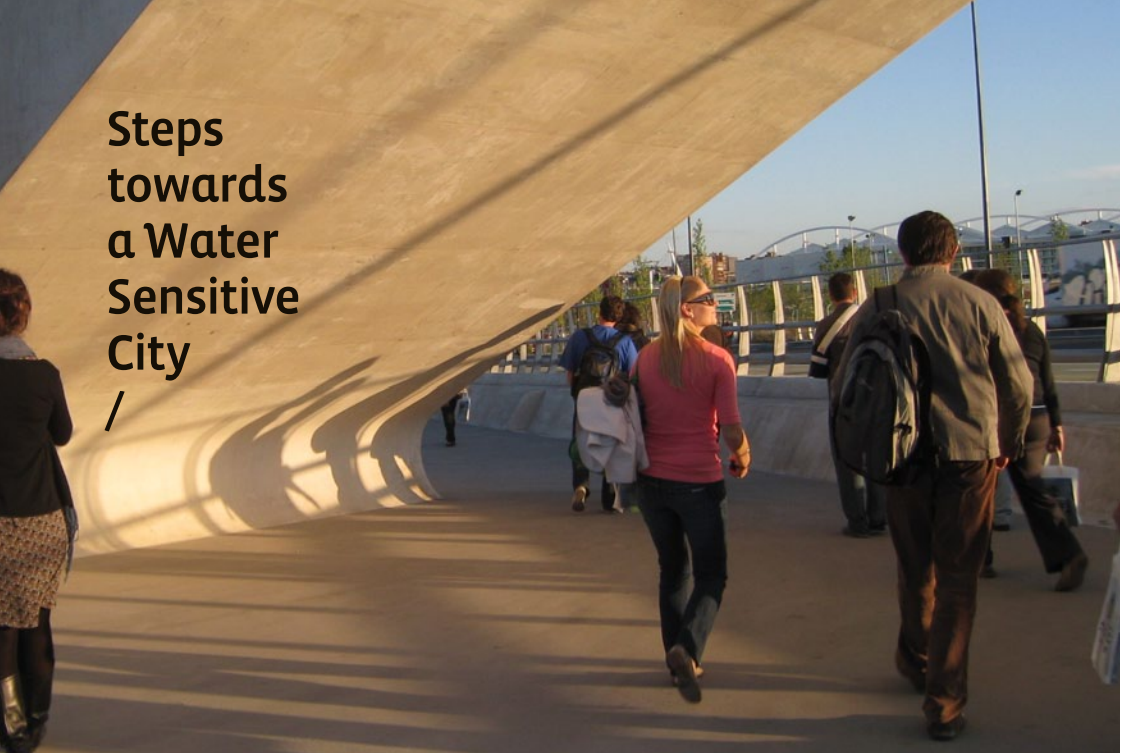
We will develop strategies which support holistic and flexible decision-making, and use tools and frameworks that reflect the full cost of social, economic and environmental impacts.

Our Water Sensitive City is a place where all community members value water and understand its role in sustaining human and biological life, as well as its cultural and economic values.

It is also a place where community, governments, business leaders, social leaders, planners, engineers, architects and artists collaborate for the greater good.

Finally, it is a place where we take responsibility for our impacts on waterways and the water cycle, and take actions to minimise these impacts.

In our vibrant and liveable city, we celebrate the achievements we have made, in developing and maintaining healthy aquatic and terrestrial ecosystems for ourselves and future generations.



Steps towards a Water Sensitive City /

Here we recommend ways to turn our vision for a Water Sensitive City into reality, accompanied by examples of how these recommendations are already being implemented overseas.

This is not the definite list of steps to achieve a Water Sensitive City, but they are significant actions that any city in Australia could adopt right now.

Personal water use: *Set a target that enables individuals to make a difference*

How?

Establish a 100 litres per person per day mains water consumption target, to distribute responsibility for sustainable water practices and empower the community.

What is already being done overseas?

Zaragoza in Spain suffers from drought in the same way that Australian cities do. A water saving program called Zaragoza: the water saving city: 100,000 commitments achieves water savings by encouraging a "water literate" community. The program enlists high profile citizens as champions, uses a web site to upload water saving ideas, and focuses on water savings in the family home. It aimed to get 100,000 people to sign up and already has 140,000 active participants. In 1992 average per capita daily water use in Zaragoza was 190 litres; by 2008 it was down to 105 litres. The city has now adopted a daily water use new target of 90 litres per person.

Water efficiency: *Set the benchmark for water efficiency*

How?

Implement 7 Star building efficiency and minimum standards for major water-using appliances in all new or renovated homes and businesses to eliminate unnecessary water and energy wastage.

What is already being done overseas?

The BedZED development in south London was established in 2002 to address the issue of winter fuel poverty by boosting the energy efficiency of social housing. Through the successful focus on sustainability as a marketing tool the development has also attracted commercial investment with private ownership now making up 50% of the mix. Through a combination of efficiency infrastructure and behaviour change strategies BedZED homes have achieved have an average water use level of 82 litres per person per day and BedZED homes use 80% less gas and 40% less electricity than standard homes. The efficiency standards achieved at BedZED set the benchmark for the UK's Level 6 housing code.

Leadership and profile:
Celebrate leadership and establish a city sustainability profile

How?

Establish awards programs and city expos that recognise leadership in becoming a water sensitive city to showcase innovation and promote Australian cities as international leaders in the field.

What is already being done overseas?

The German government has an annual award to recognise innovative new ideas. “365 Orte im Land der Ideen” calls for 365 new ideas each year; one for each day of the year. Berlin’s Block 6 housing development was a 2009 winner in recognition of their innovative greywater treatment system.

The city of Hamburg is now preparing to be the crowned ‘Green Capital of Europe in 2011’ following a nomination by Hamburg Water. The 2011 award provides an opportunity to put the city on show and develop a sense of pride in its leadership on smart water management, such as the city’s new Jenfeld housing development. Jenfeld will include on-site treatment of greywater and blackwater and a vacuum toilet system which is expected to use 80 percent less water than the standard.

Collaboration:
Team up with non-traditional partners

How?

Australian cities should join existing international Water Sensitive City ‘learning alliances’ made up of different research partners and pilot cities to be at the forefront of technology and innovation.

What is already being done overseas?

SWITCH is a global action research program with 33 partners from 15 countries. The goal is to catalyse change towards more sustainable urban water management in the “City of the Future”. SWITCH is based on pilot projects that feature research, learning and collaboration (action learning).

Wilhelmsburg Island is the site of a SWITCH Learning Alliance in Hamburg, and was selected by the Learning Alliance because it is designated as a site of major redevelopment. Flood protection, social inclusion and water sensitive urban design are all significant elements of the redevelopment and therefore a focus of the Learning Alliance. The Learning Alliance comprises lawyers, builders, farmers, communications advisors, engineers, port authority experts, planners and more.

City-wide strategies:
Think city-wide and focus on liveability

How?

Develop a city liveability strategy that integrates city-wide planning with the management of water, energy and other elements of sustainability.

What is already being done overseas?

A multi-disciplinary approach supported the success of the Rotterdam Water Plan and Rotterdam Climate Initiative. Together the plan and initiative looked at water issues, climate change impacts, economic development and social issues as interlinked elements. They aimed to turn the prevailing socio-economic decline and climate change pressures of Rotterdam into an opportunity across the whole city. The Water Plan and Climate Initiative are great examples of how Rotterdam has established itself as a world leader in climate change adaptation and rebuilt the city landscape and population demographics.

Link water and energy:
Promote innovation through the water and energy industry partnerships

How?

Build upon pilot projects that have dual energy and water objectives, such as developing energy recovery from wastewater.

What is already being done overseas?

In Germany, Hamburg Water is generating energy from a range of projects. A demonstration project in Hamburg recovers energy from wastewater. The project has shown that energy recovery is economically viable when service provision includes charges for power and water for every household. The project includes on-site stormwater and rainwater harvesting and solar power generation, all provided through Hamburg Water. Trials of geothermal heat recovery for wastewater treatment digesters and sewer heat exchangers are also underway, as Hamburg Water drives innovation in energy and water management.

Water Centre:
Provide a space for learning and interaction

How?

Create a Water Centre to provide a physical space for conversations, demonstrations and learning on water in order to raise community literacy and encourage participation in decision making.

What is already being done overseas?

Singapore's Public Utility Board strives for a high level of water literacy amongst citizens. Design for their NEWater plant – where treated wastewater is purified for potable supply – began with determining where the plant's public education centre would be placed. For PUB, the technological side of the plant's design was simple, it was their desire to maximise the educational experience for visitors that required more thought. The resulting visitor centre employs interactive multimedia displays and exhibits. It is PUB's mission that by the time very child in Singapore has finished school they will have toured the plant twice.

In Zaragoza Spain, the centrally-located Water Library houses a broad range of reference materials for the public to access. It also hosts regular gatherings of the 'New Water Commission', facilitated by the local water authority, which brings together various elements of civil society – entrepreneurs, NGOs, scientists, trade unions – to help develop strategies for better managing the city's water.

Healthy waterways:
Recognise that healthy cities rely on healthy waterways

How?

Deliver the ecological water needs of waterways as part of a broader generational campaign that capitalises on the economic and social values of healthy waterways.

What is already being done overseas?

The 25 year Mersey Basin Campaign set out to improve the appalling water quality of the Mersey River. The campaign not only revived a river once described as being "clinically dead", it also became the catalyst for the economic recovery of Liverpool and Manchester (UK). The restoration of the Mersey River saw the return of iconic species like salmon to the river for the first time in decades. This was soon followed by the return of businesses, led by the British Broadcasting Commission's decision to base itself on the banks of the Mersey River.

The success of the Mersey Basin Campaign was a major influence on the European Union's subsequent development of River Basin Management Plans. One of the key objectives of these plans is to deliver minimum ecological flows to rivers across Europe. This shows that investment in the health of the environment has direct economic benefits by becoming a focal point for economic renewal.

Water neighbourhoods:
Decentralised systems deliver flexibility and resilience at local scales

How?

Implement decentralised water systems in all urban development opportunities, new and renewal.

What is already being done overseas?

The Flintenbreite ecovillage in Lubeck, Germany, has integrated blackwater, greywater and stormwater treatment systems, and a biogas generator. This neighbourhood scale development enables collection and reuse of nutrients from blackwater in agriculture, wetland treatment of greywater for irrigation reuse, and infiltration of stormwater into groundwater via swales. Biogas is generated from the blackwater and used onsite for heating. The main sewer system provides a backup in case of onsite system failure. Reduced water consumption of 60 litres per person per day at Flintenbreite demonstrates a successful integrated water management system at the neighbourhood scale, with flexible water treatment and reuse and which enhances local resilience by reducing energy and water consumption and providing a variety of water sources.

Personal reflections from the tour group /

The tour provided an opportunity for each participant to develop their personal leadership qualities. Individuals developed through the choice of roles in organising the tour, exposure to new ideas and contribution to strategic debates about the future of Water Sensitive Cities. The tour participants have shared their reflections of leadership below.

Andrew Allan

Strategic Water Engineer, Manningham City Council and President, Stormwater Victoria

"Anything is possible and the context in which a solution is offered is important. Water Sensitive Cities must connect with inhabitants and provide integrated solutions which embrace diversity. Localised solutions promote action through a direct association with needs and environments. We saw many examples where change was driven from the bottom up. A connective framework that integrates a mosaic of local solutions across a larger area must be the essence of a truly Water Sensitive City."

Nina Barich

Senior Engineer, Aurecon

"I was inspired by the prevalence of the European vision of the water cycle as a closed circuit. Cities we visited viewed water as a valuable resource, and not just in the drinking water form. Greywater and blackwater is not a "waste", rather a resource for flushing toilets or a potential source of energy. The other inspiration from the European views on water is the fit-for-purpose debate regarding the end use and the source of water. Are the Australian standards for water quality appropriate for the end-use?"

Mark Brennan

Landscape Architect,
Boroondara City Council

"The tour comprised a diverse group of peopleand professions, brought together by a common interest and passion. Through the process of planning and undertaking the trip, we have come to value and respect each other not only as professionals, but more importantly as people. It is my hope and intention, that we continue our journey of both professional learning and friendship."

Rob Catchlove

Social Researcher, Melbourne Water

"I was standing inside the Water Library in Zaragoza hearing about the historical significance of the building. The Spanish Inquisition papers were signed in this building, the beginning of a bloody period of Spain's history, something the clean sandstone of the building seemed to contradict. Since being back in Melbourne I continually think about how we can create a place that manages to bring together the historical significance of a city, the politics and today's citizens like Zaragoza has done."

Nilmini DeSilva

Natural Systems Manager,
Fairfield City Council

"I was inspired by everyone we met and the stories they so willingly shared. The common thread for me was that a small group of committed people really could make a difference. Often, they achieved outcomes in spite of the structures that might otherwise have constrained less committed people. I think the other resounding message was that creating a Water Sensitive City needed the integrated input of all involved: Engineers, planners, landscape architects, social planners and artists!"

Leonie Duncan

Healthy Rivers Campaign Manager,
Environment Victoria

"After Europe I was struck more than ever by the dryness of the Australian landscape. I felt a renewed sense of urgency for water to be returned to the struggling remnant ecosystems that we are lucky enough to still have. I also felt hopeful. In many respects Australia leads on water policy, we have some great pilot initiatives to build upon, and the already obvious impacts of climate change provide a strong imperative to act."

Jamie Ewert

River Health Team Leader,
Melbourne Water

"I returned with a changed view of risk. The tour was an opportunity to hear about sustainability issues, but it was also about leadership. We heard examples of individuals pushing through barriers to get things done. They talked about knowing what you want, accepting risks and keeping an eye on the bigger prize. I learnt what could be achieved by being more comfortable with risk; moving forward using your instinct and when opportunities arise."

Matt Hardy

Senior Environmental Engineer, BMT WBM, eWater

"The study tour was a unique opportunity to reflect on water management in Australia and compare and contrast our practices with others. Walking in the evening air of Sheffield, we passed the River Sheaf, cascading over a stone weir and snaking its way between the brick-lined confines of Victorian factories. While Australia has its share of constructed waterways it occurred to me that unlike the cities I had seen, Australian urban centres still maintained a closer connection with their natural heritage, and we should strive to preserve this connection as we develop our cities and towns. The importance of inter-disciplinary teams had never been clearer!"

Leigh Holmes

Design Engineer, CPG Australia

"I was sitting in a meeting trying to explain the advantages of Water Sensitive Urban Design (WSUD) a couple of months after our trip. It was at this point where I reminisced about our tour of Manor Lodge Park in Sheffield with Roger Nowell. Roger was a pioneer and champion of what the UK refers to as SUDS, their version of WSUD. He had managed to implement SUDS, although not without resistance from many people. I have a passion to transform our cities into a water conscious society, and I realised we can make our visions a reality if we have patience and persistence."

Emily Kaye

Manager, Clearwater

"I was interested in the different techniques and messages used to engage a range of people in sustainable water management. In Rotterdam they used messages about climate change and city renewal to market their vision to community and politicians. In Hamburg, a 'Pimp my City' campaign engaged young adults in city visioning and in Zaragoza celebrities launched a successful, community driven water saving campaign. A Water Sensitive City requires the support and input of a whole range of people. I'm inspired to ensure sustainable water management dialogue is not just restricted to the usual suspects in water management."

Louisa Kinnear

Policy and Strategy Analyst, Water Corporation WA

"One of the stand-out moments for me was in Hamburg talking to Johan Eckhert, who argued that smaller, decentralised solutions build in a flexibility that allows easier adaptation to uncertainty over time. This was further reiterated by the chair of the SWITCH program at the University of Birmingham. I believe there is a strong, global push for smaller, localised solutions to address uncertainty brought about by climate change. A Water Sensitive City is one that can tailor solutions to local needs and still build in flexibility to better adapt to changes in climate and other variables over time."

Alex Lee

Landscape Architect, CPG Australia

"As a landscape architect, one of my key roles is to understand the value of people and their connection to place. I anticipated that travelling across the globe was going to give me an insight on water issues on a global scale through technical solutions and the 'big scale' picture. Unexpectedly the point driven home for me repeatedly was the importance of community and the power of an individual to facilitate change. The need to connect the community to the landscape in which they are living is a powerful and important tool that can drive and deliver sustainable outcomes."

James Tay

Grad Engineer, Water Corporation, WA

"This trip has further consolidated my opinions on Australia being among the leaders in water use efficiency, and Water Sensitive Urban Design (WSUD). Yet it baffles me that we are not recognised enough for our efforts in this area internationally. Australia can make use of our vast talents in WSUD, waterway restoration and water efficiency and much more to work with other countries; to brand Australia as a champion of the Water Sensitive City."

Susan van de Meene

PhD Candidate, Monash University

"I was challenged to think creatively and positively about the change that we as individuals and as a group could stimulate, and how we help could shape our Water Sensitive Cities. We saw examples of the power of individuals, both in the public eye and behind the scenes, who were passionate about their vision and worked tirelessly to make it reality through persistence and lateral thinking. This is great inspiration to share and carry forward."

Sarah Walker

South East Queensland Healthy Waterways Partnership

"I felt empowered. After seeing and hearing about the role that individuals and their networks played, I really took away the sense that if I want South East Queensland to become a water sensitive region, I can play a key role in that. There's nothing gained by waiting for other people to do it, but everything to gain by perseverance! I also felt relieved at the recognition that it will take time – to learn that change will occur over a longer timeframe rather than a short timeframe.

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melbournewater.com.au

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boroondara.vic.gov.au

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www.clearwater.asn.au

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www.environmentvictoria.org.au

Fairfield City Council
www.fairfieldcity.nsw.gov.au

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manningham.vic.gov.au

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monash.edu.au

Municipal Engineering Foundation Victoria
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Stormwater Industry Association of Victoria
www.stormwater.asn.au/vic

Stormwater Industry Association of Queensland
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For more information about Water Sensitive Cities and the 2009 study tour, see www.watersensitivecities09.com

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