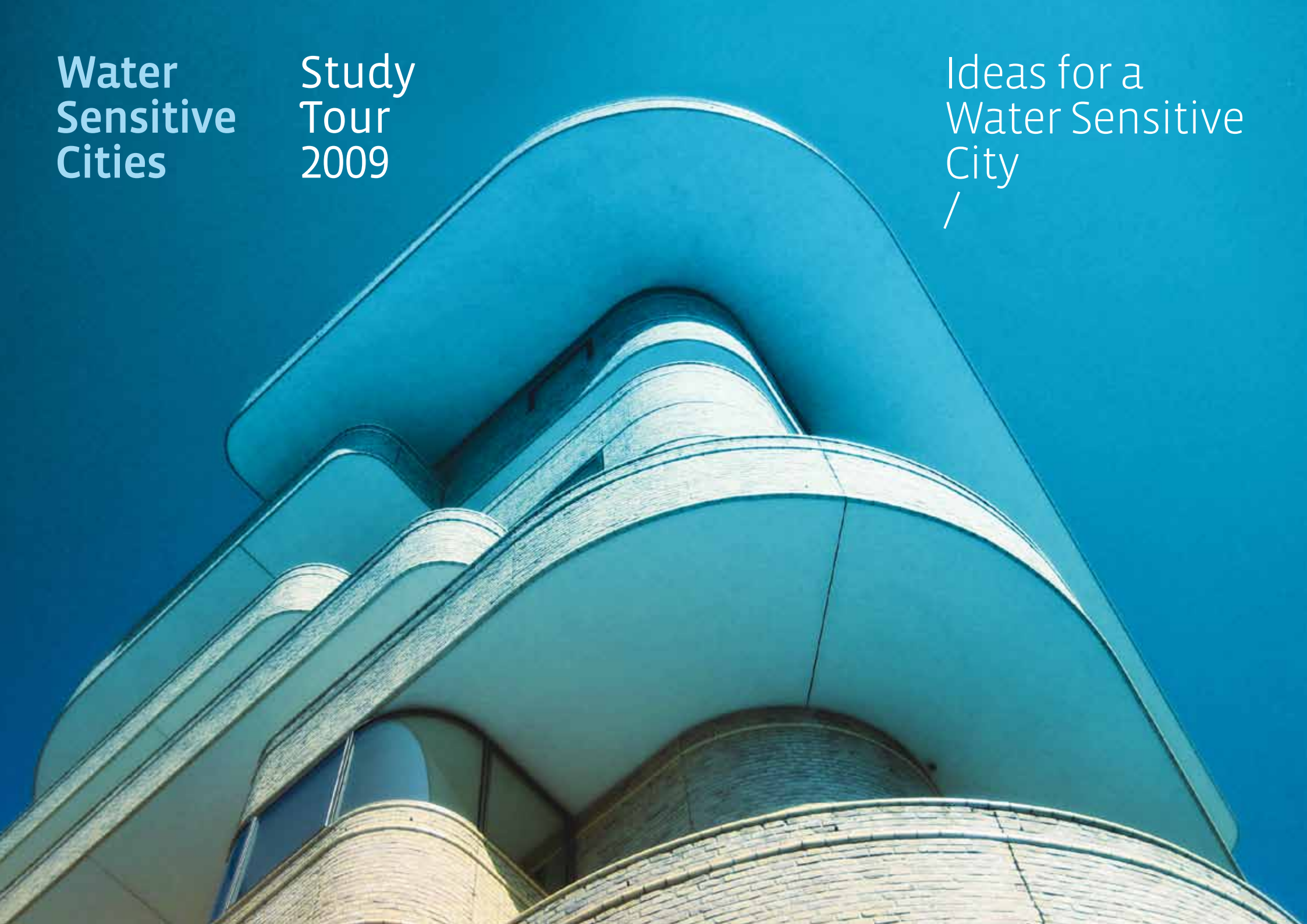
Water Sensitive Cities

Study Tour 2009

Ideas for a Water Sensitive City /



Contents

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Members of the Water Sensitive Cities 2009 (WSC09) study tour group. Top row: Jamie Ewert, Sarah Jones, Nina Barich, Emily Kaye, Mark Brennan, Matt Hardy, Alexandra Lee, Leonie Duncan, James Tay, Louisa Kinnear. Bottom row: Leigh Holmes, Nilmini DeSilva , Andrew Allan, Rob Catchlove, Susan van de Meene.

Introduction /

In 2009, a group of fifteen young Australian water professionals travelled to five countries in search of inspiration and ideas that could assist in the creation of a 'Water Sensitive City'. The group visited people and places in the Netherlands, Germany, Spain, United Kingdom and Singapore.

On their return, the group reflected on the experiences of the tour, and defined a vision for a Water Sensitive City:

"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."

The 'Water Sensitive Cities 2009' tour (WSC09) aimed to strengthen the knowledge-sharing networks that are so vital for bringing about change and adoption of best practice approaches to address the pressing challenges facing cities in Australia and around the world.

The 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 participants are from diverse professional and disciplinary backgrounds across the water sector and together we have an active interest in the water future of our cities.

Our tour focused on learning about:

- Innovative design and delivery of integrated water management / water sensitive urban design;
- Integrated resource management (water, energy, waste); and
- The drivers and strategies for such change (political, social, economic, technological, environmental, legal).

Purpose of this report

The group encountered many ideas on the tour, some specific to water and other ideas more broadly related to urban sustainability. One of the most important lessons learned on the tour was the need to take a risk and to commit to action. With this report we outline a wide range of ideas inspired from moments on our tour, to assist and inspire our peers and decision-makers to work together towards the goal of a Water Sensitive City. The ideas have been grouped into seven categories:

- Capacity Building
- Community Engagement
- Facilitating Change
- Champions and Leaders
- Technical Solutions
- Future Planning
- Other Great Ideas

The WSC09 study tour group would like to thank all the wonderful people who gave up their time to meet with the group and share their experiences.

This report is the second produced from the tour. Please visit www.watersensitivecities09.com to download the first report, *A Vision for a Water Sensitive City*.

Ideas for a Water Sensitive City /

Capacity Building

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1/

Create or join a learning alliance

Inspiration: SWITCH Program

Information exchange between all stakeholders in water management within cities, across Australia and internationally is essential to develop, share and implement new ideas and new approaches. A learning alliance provides opportunity to trial new approaches, and builds learning mechanisms and collaboration into the process. In a learning alliance, make sure there are ongoing, funded positions dedicated to support the alliance and learning outcomes. Partnerships should include people from regulatory authorities, utilities, consulting firms, research institutions, non-government organisations and the community.

Image: SWITCH is a program implemented and co-funded by the European Union with a goal to accelerate sustainable urban water management. It has 33 partners from 15 countries. SWITCH forms learning alliances by bringing together stakeholders and researchers in demonstration projects.

2/

Export water knowledge

Inspiration: Rotterdam (Netherlands) and Hamburg (Germany)

Setup a centre of expertise to export Australian urban water knowledge. Australia has advanced and valuable intellectual capital in urban water and waterway management, and community capacity building. Sharing this knowledge internationally will drive innovation and build valuable trade links in water expertise. Exporting Australia's knowledge of water efficiency, water sensitive urban design and integrated water management will help other countries develop Water Sensitive Cities and build our international profile for urban water management.

Image: Rotterdam's climate change and urban water initiatives have helped other delta cities such as New Orleans in the United States to develop their own climate change initiatives and evacuation plans.

3/

Form a competence network

Inspiration: Hamburg Water (Germany)

Form a 'competence network' made up of private and public sector organisations to promote information sharing and innovation. German water authority Hamburg Water has formed a competence network that develops knowledge in areas such as generating energy from existing systems and adapting existing infrastructure to changing conditions. The knowledge gained from a competence network can also be used to assist developing countries.

Image: The WSC09 tour group arriving at Hamburg Water.

4/

Develop and maintain informal networks

Inspiration: Govert Geldof and Gerdrik Bruins (Netherlands)

Create informal opportunities to network and exchange information with stakeholders in water management. Professional bodies and associations play a key role in fostering and promoting improved practice and new ideas. Equally important are informal networks of colleagues and like-minded individuals who can inspire new ideas and provide invaluable support. This allows change to occur through relationships and networks rather than bureaucratic channels.

Image: Civil engineer Gerdrik Bruins describes how perseverance and informal networks were central to his achievements in creating sustainable water sensitive urban design in Ruwenbos (Enschede, Netherlands).

5/

Create a water charter

Inspiration: Zaragoza (Spain)

Engage in discussion with water experts and the community in your area to create a 'social conscience' around water. As occurred in Zaragoza, Spain, this process of creating a school of thought could result in a 'water charter' for your city that would set the agenda for future decision making around sustainable development. A charter would raise the profile of water and what water means, and help create a higher social conscience within that city.

Image: During the Zaragoza Water Expo in Spain the water tribune (left) was a place for reflection and discussion and ultimately the 2008 Zaragoza Charter emerged.

6/

Allocate time for reflection

Inspiration: Dr Detlef Virchow; Inwent program (Germany)

Using different strategies to design stakeholder engagement or participation can keep participants happy, feeling positive about the experience and lead to more successful engagement. Rather than having workshops on one day, they can be organised for the afternoon, overnight and then the morning of the following day. Organising workshops like this provides participants time to reflect on the workshop, to get to know each other, and can lead to more beneficial outcomes.

Image: WSC09 tour group participants Alexandra Lee and Sarah Jones take time to reflect on urban water management at Ruwenbos (Enschede).

7/

Capacity building programs that train the trainer

Inspiration: Inwent program (Germany)

Industry development in the Australian water sector is based on technical skills and personal leadership. This could easily be complemented by capacity building and facilitation, similar to the German Inwent program. Inwent is a capacity building program that develops water management expertise in the Middle East and North Africa. It promotes problem solving, creates enabling structures, fosters social responsibility and provides access to knowledge. Inwent focuses on training future trainers. Participants who complete the Inwent training return to their organisation to train their peers and influence their managers. The aim is to develop emerging leaders so that the development and spread of new ideas is sustainable.

Image: RDM Campus in Rotterdam – located in a former shipyard – which brings together educational institutions and companies to develop innovative and sustainable outcomes.

Community Engagement

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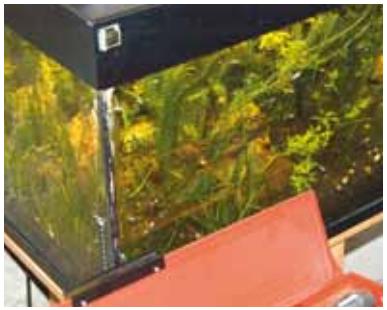

8/

Create a water mascot

Inspiration: Fluvi, the water mascot from Zaragoza (Spain)

Creating a water mascot can help capture public attention and support for water saving initiatives. The city of Zaragoza, Spain, experiences regular water shortages. The local water authority Ayuntamiento de Zaragoza has the Zaragoza community on track with water saving in the home. One of the key communicators of this water saving effort is Fluvi – the city's water mascot. Fluvi started life as the mascot for the 2008 Water Expo in Zaragoza, and now appears on every water bill in the city as happy or sad Fluvi, depending on whether the household's water consumption is meeting targets. Before 1992, people from Zaragoza used an average of 190 litres per person per day. Water saving strategies have almost halved consumption to 105 litres. The city-wide target is now 90 litres. Water saving strategies focussed on specific target groups to educate and raise awareness.

Image: Fluvi – the water drop mascot from Expo Zaragoza 2008, an international exhibition of water and sustainable development in Spain. Image courtesy of Expo Zaragoza 2008.

9/

Develop a river aquarium

Inspiration: Mersey Basin Campaign, Manchester (UK)

The importance of establishing a connection to the local landscape and providing an education source for the community was a key message from the tour. In Manchester, the 25 year Mersey Basin Campaign has engaged the community and business in efforts to clean up the Mersey River.

The campaign's greatest day of success was the return of salmon to the river. Using fish and other aquatic animals as a key indicator of a river's health is a simple means of connecting the river systems and the community. Understanding that rivers provide habitat for humans as well as the creatures living within the river can be communicated through a river aquarium, located in public space and positioned to highlight the dynamic relationship between the river and city.

Image: The cleanup of the Mersey has attracted a new generation of facilities on the banks of the river including the Imperial War Museum and the BBC in Manchester (UK).

10/

Use a fish tank to prove greywater isn't fishy

Inspiration: Block 6 housing estate, Berlin (Germany)

Concerns over the quality of water produced by greywater treatment processes can be a major barrier to greater use of this valuable resource. Providing people with opportunities to see the greywater being put to use is a good way to overcome this barrier. At Berlin's Block 6 housing estate, greywater from bathrooms, kitchens and laundries is treated on-site and returned to homes for flushing toilets. On permanent display in the Block 6 treatment plant is a tank full of the treated greywater that sustains a healthy population of fish and aquatic plants.

Image: At Berlin's Block 6 housing estate the presence of these happy fish helps reassure residents and visitors about safety and hygiene standards of the housing estate's treated greywater.

11/

Share stories to build unity and confidence

Inspiration: House of Stories, Enschede (Netherlands)

Stories are a powerful tool to bring life to lessons of the past and paint pictures in our mind of the future. For example, sharing our individual stories with each other after a crisis – such as a flood, drought or fire – can help people face the future with a greater sense of unity and confidence. Providing a physical 'home' for these stories can make the process even more effective. In the suburb of Roombeek in the Dutch town of Enschede the 'House of Stories' provides a permanent home for the memories, photos, artwork and poems that emerged as the community grieved the impact of a factory explosion and helps to support the town's ongoing recovery and growth. The sharing of individual stories about water, its importance and place in our community can assist our transition to a Water Sensitive City at a personal, grass roots level.

Image: On 13 May 2000 a fireworks factory explosion in the Roombeek area of the Dutch town of Enschede left 23 people dead, with thousands more injured and homeless. As part of the rebuilding process the 'House of Stories' was established to help support the town's ongoing recovery and growth.

12/

Engage with young people

Inspiration: Wilhelmsburg Island, Hamburg (Germany)

Provide opportunities for urban planners and decision makers to become aware of the ideas and expectations of young people and integrate their ideas into the process of urban renewal and the transition to a Water Sensitive City. In Wilhelmsburg, Hamburg, a community engagement program included the production of a film featuring young local people aged 13 to 25, talking about their ideas on what they would like Wilhelmsberg to become. Suggestions included new places for sports or 'chill-out' areas, additional public seating areas, alternative illumination of Veddel's and Wilhelmsburg's railway stations or walls on which graffiti is permitted. The film provided guidance for urban planners and gave young local people a sense of ownership and engagement with the urban space.

Image: Youth from Wilhelmsburg Island, Hamburg, put their creative ideas about the future of their neighbourhood on film. Placing value on the ideas and expectations of young people is important in ensuring that the Water Sensitive Cities we create are responsive and inclusive.

13/

Open water treatment sites to the public

Inspiration: NEWater Plant (Singapore)

Help the community to see how the urban water cycle is managed and to understand and see for themselves the treatment technologies. This understanding can help to reduce fear or negative perceptions of new approaches to water management.

In Singapore, the NEWater Water Reclamation Plant treats municipal wastewater for indirect potable reuse and industry. A visitor centre allows safe public access to the treatment areas, and showcases the advanced technology treatment. In addition, the plant features an education centre and a themed park, all dedicated to public awareness and education. All school-age children visit the centre at least once as part of school-based water education programs.

Image: The visitor centre at the NEWater plant in Singapore showcases membrane filtration modules behind glass panels, while interactive display screens explain the reverse osmosis process.

14/

Water information for all

Inspiration: Zaragoza (Spain), Hamburg (Germany)

By establishing a water hub in a central, highly visible location, the public perception of access to water knowledge and information will change. Water information becomes clear, transparent and accessible to all the members of the community. An informative, interesting and interactive space facilitates learning and can provide both formal and informal meeting spaces. A water hub, like the one in Zaragoza, Spain, provides opportunity for real engagement and dialogue between water managers and the community about water sensitive cities.

Image: In its 500 year old history this building in Zaragoza, Spain has been many things – it housed prisoners in the Spanish Inquisition, then nuns many years later. In its latest role, it houses water information and acts as a public water library for the community.

15/

Amenity not just functionality

Inspiration: Enschede (Netherlands), Berlin (Germany)

Allow and encourage public interaction with water by limiting signage and structures discouraging access, such as barriers and handrails. By designing water infrastructure that engages the community as well as providing functionality and safety, an emotional connection between the community and water is established. This connection encourages community interaction, support and ownership which are important parts of a Water Sensitive City.

Image: A water feature in Potsdamer Platz, Berlin. This pool is part of a stormwater filtration system and also acts as a feature and pathway. The design of this space minimised use of handrails and barriers to encourage a closer relationship between the public and the water.

16/

Bring stormwater to the surface

Inspiration: Hamburg Water (Germany), Flintenbreite, (Germany) and Ruwenbos, Enschede (Netherlands)

By bringing water to the surface (rather than hiding it in underground pipes) stormwater becomes visible. This visibility helps people become more aware of how much stormwater is generated from their properties and local areas. People may then be encouraged to make better use of this precious resource, such as capturing roof runoff for irrigation of gardens, toilet flushing etc. Stormwater handled in this way can also become a feature of the landscape, to increase the level of interaction people have with water in their daily lives.

Image: Raising awareness of water – a roof down pipe discharges to the pavement in the Flintenbreite development in Germany.

17/

Make community involvement hands-on and fun

Inspiration: Manor Fields Park, Sheffield (UK)

Encourage greater community involvement in projects by making involvement hands-on and fun.
An example encountered on the tour was a competition held to build the best model of a sustainable urban drainage system for Manor Fields Park in Sheffield. This was a fun exercise where the local community really engaged with the site and the concept of sustainable urban drainage by making models from clay, cotton wool and watercress.

Image: Integration of soft landscaping, stone and water in Manor Fields Park, Sheffield. (left)

18/

Podcasting self-guided tours

Inspiration: Manchester and the Mersey Basin Campaign (UK)

Self-guided tours using podcast technology are a simple and effective method for engaging the public to explore our urban waterways and interpret the complex ecosystems they support. This engagement can lead to an improved awareness of our impacts on urban waterways and increased community ownership. People exploring the Rochdale Canal in Manchester, UK, add a new element to a relaxing waterside stroll by listening to interesting podcasts of waterway features, history and environment.

Image: Podcast markers along the Rochdale Canal, Manchester (UK).

19/

Community engagement is an important part of the process

Inspiration: Rotterdam Climate Initiative (Netherlands)

Ensure the community engagement component of strategic plans has adequate funding and prominence. An often repeated mistake concentrates effort only on the technical issues surrounding water management. It is just as important to focus on the processes required to allow community and stakeholder views to combine with technical inputs. This delivers meaningful change with broad consensus. Communication should be meaningful and two-way, encouraging solutions which deliver community outcomes.

Image: A key component of the Rotterdam Climate Initiative was the involvement of a 'process manager' instead of the conventional focus on technical solutions.

20/

Invest the time for greater returns

Inspiration: Manor Fields Park, Sheffield (UK) and Wilhelmsburg Island, Hamburg (Germany)

Take time to develop mutual respect between sustainable urban water professionals and community members. Without trust and respect, the relationships, and therefore projects, can fail. Investing time, being persistent and using a variety of strategies to develop this trust and respect enables relationships to form. In Sheffield, UK, gaining community trust and support for a regional park renewal project was difficult. This was overcome by a personal approach, persistence and time, which resulted in a great outcome.

Image: Sheffield City Council landscape architect Roger Nowell (centre) explains to study tour members Mark Brennan and Alexandra Lee how he gained community trust and respect at the Manor Fields Park, Sheffield, UK by door-knocking residents when community meetings failed.

21/

City models – the big picture

Inspiration: Wilhelmsburg Island, Hamburg (Germany)

Create large physical models of the city that display the current and future plans of the city and the water cycle. People love large, interactive city models – they are engaging and help create a thinking process around city visioning. The use of lights, different textures, and colours bring these models to life. These city models should be displayed at prominent locations and accompanied by other forms of engagement. A large scale model of Wilhelmsburg Island in Hamburg, Germany, helps local residents understand the benefits of water sensitive urban design.

Image: A large scale model of Wilhelmsburg Island in Hamburg Germany, which is a site of large scale urban renewal based on water sensitive urban design principles.

22/

Include social scientists and psychologists in your projects

Inspiration: Roombeek, Enschede (Netherlands)

Use social scientists and psychologists in urban design projects. Projects benefit from the involvement of multiple disciplines. In the water industry it is now normal practice to have engineers, landscape architects and builders working together. It is less common for social scientists and psychologists to be involved. When there are sites that have strong cultural and emotional significance to the local population it would be appropriate to use these disciplines in the design and implementation of a project. In Enschede, Netherlands, the site of a fireworks explosion that killed 23 people in 2000 has undergone huge redevelopment, and included input from social scientists and psychologists. This input helped create a built environment that reflects culture and history, and brings people together in a healing manner.

Image: Photos within the 'House of Stories' at Roombeek in Enschede, Netherlands. Social scientists and psychologists were part of the redevelopment project to rebuild infrastructure and community spirit following the fatal 2000 fireworks explosion at Enschede. The House of Stories helps heal community spirit through sharing stories.

23/

Improving community water literacy

Inspiration: Singapore

Targeted education and marketing programs should be undertaken to improve community water literacy. This will enable greater community engagement in debating different water management strategies of Water Sensitive Cities, such as desalination and indirect potable reuse. In Singapore the NEWater visitor centre includes a purpose-built education facility integrated with the advanced water treatment plant to help the community understand water treatment technology and the safety of indirect potable re-use.

Image: Helping the community understand and trust water treatment technology: the NEWater visitor centre in Singapore.

24/

Drivers for change

Inspiration: Netherlands

Find opportunity in crisis when looking for drivers of change. People of the Netherlands have a rich history of water management, yet a degree of complacency about water management issues has emerged among the current generation that has not had first-hand experience of flooding. With the increasing urgency to plan for the effects of climate change and an expected increase of water in their landscape, water authorities are reviewing the capacity of the Netherlands' water management systems. As water authorities engaged the community on this issue, they found the devastating Hurricane Katrina in New Orleans had reminded people that they are at the mercy of nature. The physical impact of Katrina has challenged complacency about water management, and assisted water authorities to develop messages about changes in water management that the community can understand.

Image: Day one of the tour and the group learn first-hand about the Dutch water control devices such as dykes and polders.

25/

Barefoot landscape architecture

Inspiration: Manor Fields Park, Sheffield (UK)

Get to know local areas for rejuvenation or rehabilitation, and in the process, get to know the local community. This helps to build relationships and knowledge that can help transform wasteland into valuable community assets that provide open space and water cycle benefits. Sheffield City Council has created an inspiring, safe landscape in Manor Fields Park that was once a derelict area. Council landscape architect Roger Nowell introduced us to the concept of 'barefoot landscape architecture', which he employed in the rejuvenation of the park. Barefoot landscape architecture is becoming immersed in the site and knowing it intimately. Although 'barefoot' is not meant literally, it does suggest that by walking barefoot through a landscape one comes to know the place more intimately.

Roger worked closely with the community and contractors, and his regular presence at the site and conversations with local residents helped the local community re-engage with the site and participate in its rejuvenation. Manor Fields Park is now a welcoming place where water is celebrated and integrated into the landscape. The site provides opportunities for people to interact with water, as well as flood mitigation and stormwater quality improvement.

Image: Sheffield City Council landscape architect Roger Nowell explains the process for rejuvenating Manor Fields Park in Sheffield, UK. (above)

Image: Example of a water feature that utilises storm water, in Manor Fields Park, Sheffield, UK. (right)

Facilitating Change

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26/

Be loud and proud!

Inspiration: Zaragoza (Spain) and Hamburg (Germany)

Stage our own international city expos and play a part in big, international events to boost the profile of water in our cities. These events provide opportunities to showcase achievements, share knowledge and discuss the lessons learnt from innovative water projects. They create a much needed 'buzz' around water which helps raise awareness of water related issues and encourages water literacy. The city of Zaragoza in Spain hosted Expo Zaragoza 2008, an international exhibition of water and sustainable development, and continues to achieve great results in working towards water targets of 90 litres per person per day.

Image: A 25 hectare water park in Zaragoza, Spain which was built as part of Expo Zaragoza 2008.

27/

Influence others

Inspiration: BedZED (London, UK)

Influence others through the promotion of innovative projects with the ultimate aim of institutionalising new practices. New and innovative residential developments happen around the world, but to really make a significant change and create a Water Sensitive City we must influence others and lift the level of standards. In BedZED (UK) one of the measures of success that they have applied to this development is the number of times that it gets mentioned in policy debates. The owners and developers of this development believe they were successful when it influenced a new set of standards across the UK.

Image: The BedZED housing estate's success in water sensitive urban design, energy efficiency and reducing water consumption, helped set new standards across the UK.

28/

Turn a water threat into a water opportunity

Inspiration: Rotterdam (Netherlands)

Turn a 'water threat' into a 'water opportunity'. The City of Rotterdam turned a threat into an opportunity through the Rotterdam Water Plan. Rotterdam identified the increasing risk of flooding from severe rain events and rising sea levels as a significant water threat. Rotterdam has also experienced declining population, due to a shortage of attractive urban dwellings, amongst other factors.

The Rotterdam Water Plan addresses the water threat and at the same time makes Rotterdam a more attractive place to live. The use of spatial planning and urban design addresses flooding issues and maximises access to Rotterdam's under-used riverfront, to create attractive locations for new high quality urban dwellings.

Image: The Maas River in Rotterdam – safer and more attractive through urban design. (above)

Image: The Hotel New York waterfront is a great example of a high quality interface with the Maas River. (right)


LINCOLN

29/

Waste as a resource

Inspiration: Hamburg University of Technology (Germany)

Use wastewater as a resource. Wastewater can generate energy through the heat it contains. It can also be treated and reused as an alternative water source and the solids that are removed from the wastewater during the treatment process can be converted into organic fertiliser. Wastewater should be considered as a source of income rather than simply waste. In the Hamburg University of Technology in Germany urine is separated in the toilet bowl, increasing the ease of recovery of this valuable source of high quality nitrogen.

Image: Urine separation toilets at Hamburg University of Technology.

30/

Reward and recognise innovation

Inspiration: Germany

Promote and reward Australian innovation in water management practices. A Water Sensitive City requires innovative technology and will generate new businesses and services industries. An 'idea a day' award program, such as the German 365 Good Idea Awards, would be an excellent way of showcasing Australian innovation to the world.

Image: The Block 6 housing development in Germany incorporates many water efficiency initiatives. It was recognised as an innovative approach to residential water management through the German 365 Good Idea Awards.

31/

Politicians can stimulate change

Inspiration: Sant Cugat (Spain)

Provide politicians with great demonstration projects when promoting sustainable urban water management. Political support helps achieve change and without it, new and innovative projects may fail. To build politicians' support consider what they may want or need in terms of demonstration projects. Politicians will appreciate your efforts and this can translate into support for innovative water management actions.

Image: Deputy Mayor of Sant Cugat City Council, Marta Subira i Roca has been crucial in leading the change that Sant Cugat (Spain) has undertaken in relation to water sensitive cities.

32/

Demonstrate success

Inspiration: Ruwenbos, Enschede (Netherlands)

Show people real-life examples of new ideas and approaches. People sometimes hesitate to embrace new technologies or strategies. To reassure people and develop their trust in the new approach, take the time to show examples of how the new ideas will work. For example, a tour of your showcase projects or other successful projects will demonstrate how they operate and the benefits they bring. At Enschede (Netherlands), stakeholders were taken on a tour of a similar development in Germany to demonstrate the success of the ideas that would be applied at the Ruwenbos development.

Image: Civil engineer Gerdrik Bruins describes to the WSC09 group how a tour of projects in Germany was critical in winning support for his progressive water management proposals for the Ruwenbos development in Enschede.

33/

Empower the community

Inspiration: Ruwenbos, Enschede (Netherlands)

Rather than relying solely on regulatory signage to enforce behaviour, allow communities more room to self-regulate when it comes to water and acceptable behaviour. The Dutch community of Ruwenbos in the town of Enschede set their own socially acceptable behaviour in the generation of stormwater. Stormwater flows above ground and drains to communal open space. Stormwater pollution generated by individual residents is visible and open to scrutiny by neighbours. As a result, behaviour such as using excessive detergent when washing cars in driveways is discouraged, as the suds are visible in the street and in the local open space where the children play.

Image: Stormwater generated by residents in Ruwenbos flows along the surface of laneways that drain to communal open space areas. This encourages people to reduce stormwater pollution from domestic activities.

34/

It's OK to try something new

Inspiration: Ruwenbos, Enschede (Netherlands)

Develop trust among stakeholders so stakeholders are confident to try new ideas. Trying new technologies and strategies in urban water management for the first time can be difficult, often requiring existing regulations to be challenged. In challenging these regulations, strong stakeholder networks are required. Only by generating this support will we be able to try these new ideas and learn from the trials for future implementation. Developing stakeholder support was essential to implement the innovative urban design at Ruwenbos, the Netherlands.

Image: Through planning the WSC09 tour, the group developed trust among participants, that each person would organise high quality activities and contribute to a great tour overall. Activities such as riding bikes along canals near Amsterdam – a first-time experience for many study tour participants – provided new and interesting perspectives on water issues. (left)

35/

Target communications to each audience

Inspiration: Mersey Basin Campaign, Manchester (UK)

Target your communication style and message to each audience. Communication is critical for influencing people and gaining co-operation. The water sector and broader community stakeholders have different styles and needs for communication. By targeting your communication style and message to each audience, your message will have greater impact and information will be transferred more effectively. For example, effective, targeted communication has been a core part of the success of the highly regarded Mersey Basin Campaign in the UK. The 25 year campaign delivered significant environmental, social and economic results by engaging community, businesses and government in the restoration of the Mersey River in Manchester and Liverpool.

Image: WSC09 participants experienced different communication styles on the tour, such as this informal walking tour by Lucy Rogers, the Rochdale Canal Development Manager at The Waterways Trust, along the Rochdale Canal in Manchester (UK).

36/

Market the value of a water sensitive city

Inspiration: Hamburg (Germany) and Rotterdam (Netherlands)

Marketing strategies can be effective in garnering support in numerous areas and therefore should be used to convert critics of Water Sensitive Cities into supporters. The multiple economic, social and environmental benefits of water sensitive developments should form the basis of marketing plans. Communities that can engage with water management at the local level become a powerful tool for promoting the benefits to prospective residents. Numerous strategies were used in the cities visited on the tour, including Rotterdam (Netherlands) and Hamburg (Germany).

Image: On Wilhelmsburg Island in Hamburg, Germany World War II air raid shelters have been converted into housing as part of urban renewal. This model was used to communicate concept design ideas.

37/

Gain personal commitments from high profile people

Inspiration: Zaragoza (Spain)

Gain support from high profile people, such as councillors, celebrities and other visible leaders. When high profile people 'walk the talk' and make personal commitments that demonstrate desirable behaviour, people in the community are likely to adopt their behaviour. Such commitments can include achieving a water consumption target, installing rainwater tanks or using sustainable transport

Image: During the international Expo Zaragoza 2008 – Water and Sustainable Development exhibition in Spain, many high profile leaders and celebrities, including sports people, made public commitment to reducing water consumption. Image courtesy of Expo Zaragoza 2008

38/

Integrated solutions management

Inspiration: Rotterdam (Netherlands)

Move beyond integrated water management to 'integrated solutions management', where solutions to water issues help resolve other important issues. Linking water management with key macro issues and drivers in society, such as the liveability of our cities, increasing population and climate change, requires planners to 'think outside the box'. Such approaches can gather broad support from the community and politicians.

Image: The Rotterdam Water Plan used water management solutions to manage climate change threats and reduce socioeconomic decline.

39/

A small number of leaders can make a change

Inspiration: Netherlands

Develop supportive networks and frameworks which in turn enable a critical mass who can lead change. Change is about leadership and empowering a core number of individuals so they can motivate others. It is human nature for a majority to follow the lead of others. Social research has demonstrated that it may take as few as 15 per cent of committed individuals within the broader population to promote change.

Image: Water champions from the Netherlands – Marius Palsma, Govert Geldof and Gerdrik Bruins (left to right). Persistent efforts to bring about change in urban water management have delivered results, turning unconventional ideas into examples of leading water management.

40/

Undertake a water challenge

Inspiration: Zaragoza (Spain) and Germany

Start a water challenge, at work or within a community group. Challenge people to compare water bills at regular intervals and see who can achieve the biggest savings. Savings can be achieved through conservation or alternate water sources (but not by using the toilet and showers at work!). As an incentive the company could cover the cost of the lowest bill or the one showing the greatest percentage reduction.

Image: Greywater recycling, as undertaken at Block 6 in Germany, is an example of alternative water use that can be used to reduce mains water consumption

41/

Create an imperative for change

Inspiration: Birmingham University (UK)

Create an imperative for change. People can be averse to changing thier behaviour so we must clearly communicate the need and benefits of change. To transform our cities into water conscious societies, the community must first grasp why they need to change. Often change occurs in response to a crisis and optimal solutions for the long term sustainable water management may not be available or possible, therefore we should change before it is too late.

Image: The offensive nature and environmental costs of litter in waterways is a convincing imperative for change.

42/

Spend equal time on marketing

Inspiration: Rotterdam Climate Proof and Water Plan (Netherlands) and Zaragoza (Spain)

Spend equal time on marketing. It is important to spend as much time on marketing ideas as it is on developing and testing them: success depends on showing that it can be done. In Australia we have many technically sound water resource strategies, but few have been comprehensively implemented. There is a place for marketing and communications experts in our traditional engineering approaches to water planning. In the Netherlands, Rotterdam has developed a city-wide strategic plan for climate change and water management. The Rotterdam model is based on three pillars: knowledge; action; and marketing.

Image: Rotterdam Climate Proof has adopted three pillars to change and one of these is marketing. This image has been used by the organisation as a tool to promote innovative changes to the city and water management. www.rotterdamclimateinitiative.nl

43/

Fewer standards, more rules of thumb

Inspiration: Enschede (Netherlands)

Focus future standards on outcomes without specifying too much detail. The development of new approaches to water management is often accompanied by standards and regulations. While these are important, international experience tells us that over-reliance on standards promotes a 'lowest common denominator' outcome. Optimal outcomes derive more from innovation; from 'rules of thumb' that allow solutions to evolve to match desired outcomes. Future standards should focus on outcomes with less emphasis on the detail of how these outcomes are achieved.

Image: In the Netherlands, architects rebuilding the neighbourhood of Roombeek in Enschede had a simple brief – rebuild to the citizens' needs.

Champions and Leaders /

44/

Network of champions

Inspiration: Enschede (Netherlands)

Create an informal community network of champions. By helping community members become more water literate, we enable community champions to encourage ownership and acceptance of new ideas by other members of the community. By building water literacy and providing support, community members are able to 'champion the cause', such as a new rain garden in their local street.

Image: Ruwenbos: A housing development in Enschede, Netherlands where the community has a sense of ownership and pride of the water treatment systems integrated in the physical space of their housing community. (left)

45/

Give your campaign a time limit

Inspiration: Mersey Basin Campaign, Manchester (UK)

Set a deadline for achievement. There's nothing like the power of a deadline to get things done. In 1985 UK politician Michael Heseltine championed the birth of the Mersey Basin Campaign and declared the river would be restored in 25 years. Setting the deadline helped achieve remarkable results. This river clean-up campaign has delivered profound results for waterway health and a range of social, economic and policy arenas. A campaign highlight was return of salmon and otters to the Mersey River in 2003, back for the first time since the industrial revolution.

Image: In its 25 years the Mersey Basin Campaign has been pivotal in Liverpool's revival

46/

If at first you don't succeed...

Inspiration: Gerdrik Bruins, Enschede (Netherlands)

Don't be discouraged by initial resistance or ridicule. Civil engineer Gerdrik Bruins' proposal to treat stormwater at the surface and discharge it to local rivers and creeks was greeted with great scepticism. Traditional stormwater management in Enschede connected the underground stormwater system to the sewer. Undeterred, and convinced of the benefits of this sustainable development idea, Gerdrik and a few supporters set out to persuade people within the local council – other engineers, and political leaders. When this failed he arranged an informal bus tour of a small stormwater infiltration development in Germany (only a few hundred kilometres away). Tour group members saw for themselves the infiltration development and the benefit of Gerdrik's proposal. On their return Gerdrik had approval for what has today become a leading example of sustainable water sensitive urban development.

Image: The Ruwenbos development (Enschede, Netherlands) has a series of linear landscaped open spaces called 'wadis' that collect storm water runoff from the local area. The wadis have a dual purpose of providing space for recreation and storm water detention and infiltration.

47/

Process managers not just project managers

Inspiration: Rotterdam Climate Proof (Netherlands)

Engage a process manager. Sustainable urban water management projects can be complex, requiring particular skills and significant effort. Expertise regarding technical areas and project management is often emphasised. However managing the process over the lifetime of the project is just as important. A successful process manager will be strategic, effective at networking and communicating with stakeholders, and able to see the 'big picture'. Having a dedicated person focused on managing the process can enable more successful outcomes and stimulate more projects

Image: John Jacobs was employed as the Process Manager to develop the climate adaptation plan for Rotterdam (Netherlands) called Rotterdam Climate Proof. This plan helped manage city-wide climate change threats and socio-economic decline by addressing water management issues.

48/

Encourage leadership through awards

Inspiration: Hamburg Water, Hamburg (Germany)

Create an awards scheme to reward a company or individual's efforts towards achieving a Water Sensitive City. The publicity generated for award finalists and winners can make it easier to gain political and financial support for green projects and practices. For example, the German city of Hamburg is 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 green solutions.

Image: Hamburg, Germany is preparing to be the crowned 'Green Capital of Europe in 2011', following a nomination by Hamburg Water

49/

Build networks by starting with the future leaders

Inspiration: Hamburg (Germany)

Form networks of junior or new employees. Working with stakeholders that you do not normally work with or you traditionally have had conflicts with can be hard. This can be changed by forming a network of junior employees. They have a far greater chance of developing relationships, working together, and not being influenced by the negative history that could be part of a network with more senior staff.

Image: The WSC09 study tour united a group of emerging leaders from across Australia's water sector and allowed them to build networks with their international peers.

Technical Solutions /

50/

Energy producing homes

Inspiration: Flintenbreite, Lübeck (Germany)

Domestic homes can generate power. Rather than supplying power to homes from distant power plants, homes can generate their own power to reduce their ecological footprint. In Australia, we have been aware of the solar energy option for some time. However there are other energy producing options such as 'biogas'. Biogas is produced from black water, and a heat exchanger can be used to convert the gas to electricity. Heat exchangers also produce heat, which can be used to heat homes..

Image: Sustainable homes in the ecological housing estate of Flintenbreite, Germany. The estate includes a biogas plant for the generation of heat and electricity.

51/

Energy appropriate water treatment

Inspiration: Llobregat EDR Plant, Barcelona (Spain)

In a Water Sensitive City the role of energy appropriate technologies will be important, especially in the context of localised water treatment and recycling solutions. An integrated framework of suitable technologies with reduced energy inputs should be established. These treatments should be developed in the context of an integrated assessment framework. As an example, the Llobregat water treatment plant in Barcelona uses electro-dialysis reversal to treat brackish water. It is estimated this technology uses 75 per cent less energy than desalination of seawater to provide a similar volume of water.

Image: In Barcelona the Llobregat water treatment plant uses electro-dialysis reversal as an appropriate energy technology for the treatment of brackish water.

52/

Make the connection between water and energy

Inspiration: Hamburg (Germany)

Help people understand the connection between water and energy. In Germany, Hamburg Water has made the connection between water and energy by investigating and trialling technologies that reduce the net carbon footprint of residents and businesses. These technologies could be readily implemented in Australia, and include energy production from biogas (then sold back to residents where the wastewater is collected), heating sludge for digestion and water via geothermal energy, and harnessing heat from wastewater to increase temperature of water supplying houses in winter.

Image: While the connection between different renewable energy sources is not new – the Dutch have used wind energy to pump water for centuries, we need to seek new opportunities for linking water and energy to develop synergies and efficiencies.

53/

Green roofs

Inspiration: Berlin (Germany), Rotterdam and Amsterdam (Netherlands), and BedZED (London, UK)

Start stormwater management with a green roof. In many Europeans cities, stormwater management begins on the roof. A green roof provides a permeable surface that absorbs rainfall, reduces urban runoff, and improves water quality in the water that is discharged. Green roofs also add biodiversity and habitat in urban areas and can assist in reducing the urban 'heat island' effect.

Image: Strolling on a Green Roof at Waternet in Amsterdam.

54/

Trial energy recovery from wastewater

Inspiration: Hamburg and Flintenbreite, Lübeck (Germany)

Investigate and set up trials of heat exchange technology and processes to recover the heat energy from wastewater. Wastewater is 10 to 20 degrees warmer than potable mains water. A heat exchange process can be used to recover this energy and use it to heat the water entering residential developments. In Germany, Hamburg Water estimates this has the potential to reduce residential energy use associated with the water system by up to 50 per cent.

Image: The ecovillage of Flintenbreite in Lübeck (Germany) is a demonstration project which includes energy production from waste water. Residents have also achieved a water consumption rate significantly lower than the German average.

55/

Provide financial incentives for household actions

Inspiration: Berlin (Germany) and Zaragoza (Spain)

Provide financial incentives, such as discounts on rates or rebates, for households that take action that contributes to achieving a Water Sensitive City. Such action could include disconnecting impervious areas to reduce or improve stormwater runoff, creating green roofs and walls, and installing rainwater tanks. The financial incentives could include a government grant for green roofs or walls – possibly per square metre – since green roofs and walls can help counter the 'heat island' effect and act as insulation

Image: Green roofs and walls were a common feature in Germany.

56/

Water pricing strategy

Inspiration: EU Water Framework Directive and Zaragoza (Spain)

Adopt a water pricing strategy that is a true reflection of the community benefits of water usage. Ensure the user pays for the full social, economic and environmental resource value of water consumed and wastewater discharged from their site. Price measures should award consistent reductions in use and penalise increasing levels of waste discharge. This will encourage a behavioural change as well as recover costs. In the Spanish city of Zaragoza, residents receive a discount on water bills for consecutive months of water savings.

57/

Recycling and reuse of water in industry and agriculture

Inspiration: Catalan Water Agency (Spain)

Adopt a strategy where recycled water is the principal supply stream for industry and agricultural use. In Spain, the Catalan Water Agency will only allow irrigation of agriculture using recycled water. They call it 'regenerated water' to reduce negative perceptions associated with the term recycled water. Regenerated water costs are also subsidised for agricultural use.

Image: A food garden in the Water Park in Zaragoza, Spain, that is irrigated using surface water that is treated in the park.

58/

Real-time meters inside homes

Inspiration: BedZED (London, UK)

Install real-time water and energy meters in visible locations inside homes and apartments. This enables residents to see the rate at which they use water and energy, and appreciate which activities consume more than others. Such awareness should encourage reduced consumption. In London, residential apartments in the award winning BedZED development include real-time water and energy meters in visible locations, which make people more aware of water and energy use.

Image: Real-time water and energy meters inside BedZED apartments, London help people save water and energy. In this example, meters are displayed in a kitchen cupboard at eye level.

59/

Membrane bioreactors

Inspiration: Sant Cugat (Spain)

Membrane bioreactors (MBRs) provide new opportunities for local, decentralised water treatment solutions. Extensive research and advances in membrane technology have allowed MBRs to be made much smaller and more resistant to variations in volume and concentration of wastewater. MBRs can treat a variety of wastewater types and are commonly manufactured in modules that can be put together like building blocks to suit the scale of operation required. MBRs have great potential for improvement in the future – this technology has great potential for decentralised use.

Image: A package MBR plant treating greywater for an apartment block of 80 units in Sant Cugat, Spain. MBRs have a very small footprint and treat greywater to a very high quality.

60/

Recycle greywater for toilet flushing

Inspiration: Sant Cugat (Spain)

Use greywater for flushing toilets. New buildings, both residential and commercial, should incorporate a greywater system where the treated water is utilised for toilet flushing. Treated greywater is a more appropriate source of water for toilet flushing than drinking water. Separation of the greywater from blackwater in the construction of a new building increases the affordability of the proposal.

Image: Sant Cugat Council in Spain requires greywater recycling in new residential apartment buildings.

61/

Use stormwater as drinking water

Inspiration: Singapore

Consider using stormwater as a source of water for drinking or other uses. Cities are catchments and can provide sources of water. Unlike other cities where there may be a stigma associated with drinking any form of recycled water, Singapore is a world leader in this area. Water treatment technology is always improving and drinking treated stormwater may make people realise water from their own backyard may eventually end up back in their taps.

Image: Marina Barrage is one of 16 catchments in Singapore. This dam collects stormwater from Singapore streets for treatment and reuse as another source of potable water. (right)

62/

Blue dye in recycled greywater

Inspiration: Sant Cugat and Barcelona (Spain)

Make greywater blue. The Sant Cugat regional council near Barcelona in Spain requires a greywater recycling system for all developments with more than eight units. These systems put blue dye in the recycled water so that the residents are aware that the toilet water is not potable. The blue colour also reduces the risk of cross-connections and the possibility of the recycled water being used for inappropriate purposes.

Image: Turning greywater blue resolves risk of cross connections and makes it easy to identify non-potable recycled water.

63/

Recycled water in our catchments

Inspiration: Singapore and Germany

Consider using recycled water as a 'top up' water source. As Australian water supplies are reduced by prolonged drought conditions, alternative water sources are required. For example, waste water can be treated to a drinking water standard. Like Singapore and Germany, we can ensure our catchments have a readily available supply by using recycled water to 'top up' water storages in centralised and decentralised systems.

Image: The NEWater treatment plant in Singapore transforms waste water into Class A recycled water. 98 per cent of this treated water is used by industry and 2 per cent is returned to the drinking water catchments.

64/

Selective greywater reuse

Inspiration: Sant Cugat (Spain)

Rationalise grey water reuse by using only laundry and shower water. This will optimise greywater treatment and storage system sizes, and ensure a cost effective solution. Kitchen water has a tendency to be more variable in quality and for a typical greywater system ample water can be harvested from the shower and laundry.

Image: In Sant Cugat, Spain, greywater systems are mandatory for all developments with more than eight units.

65/

Send flow restrictors to all households

Inspiration: Catalunya (Spain)

Send bulk flow restrictors to households to reduce consumption. In Spain, the Catalan Water Agency sent out one million flow restrictors, aiming to reduce water consumption in the Catalunya area. The restrictors reduce flow from taps and provide a simple and effective way to help residents reduce water consumption.

Image: Reducing consumption: flow restrictors help Catalunya residents save water around the home.

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Future Planning /

66/

Climate inclusive planning

Inspiration: Rotterdam (Netherlands)

Change our approach to urban design. We must become 'climate inclusive ' so that the cities we design and build are adaptable to climate change. This includes managing risks such as increases in temperature, reduced rainfall, more extreme weather and flooding. Risk of flooding is one of the many serious water management and climate change issues being successfully addressed by the Netherlands' city of Rotterdam through urban design and planning.

Image: Rotterdam is adapting to climate change by addressing water management through spatial planning and urban design.

67/

Support social equity through water pricing

Inspiration: Zaragoza (Spain)

Make social equity the foundation of water pricing mechanisms and structures. Our water pricing structures reflect the society we live in. By setting water prices so that we ensure vulnerable people are not disadvantaged regarding water we can make a positive contribution to social sustainability. The Spanish city of Zaragoza introduced a water pricing mechanism which links per capita consumption to water tariff structures without disadvantaging vulnerable people (such as large families) while maintaining conservation, efficiency, simplicity and full cost recovery principles.

Image: In Spain, Zaragoza's innovative pricing mechanism enhances social equity.

68/

Embed sustainable water management in planning and building codes

Inspiration: Sant Cugat (Spain)

Plan now for the city of the future. Planning and building regulations are very important in ensuring that sustainable water systems are built into every home, office block, factory and street. Cities have long renewal cycles – building replacement cycles can range from 30 to 100 years – so it is important that our goals for the next century start today with planning and building codes. Local, State and Federal governments in Australia need to establish a shared vision of the Water Sensitive City of the future, and adjust planning and building regulations now to ensure new developments will contribute to achieving this vision.

Image: The best way to ensure new developments include enhanced water and energy measures is through the planning and building permit processes.

69/

Plan for future flexibility

Inspiration: Wilhelmsburg Island, Hamburg (Germany) and University of Birmingham (UK)

Water management infrastructure is an expensive but essential element of any future city. Improved forward planning and insight into how cities of the future might function are necessary to construct 'flexible' infrastructure that can adapt to system changes. Such changes are likely to be driven by population growth, climate change and technological advances. One approach is to acknowledge the future is uncertain and accept that we cannot know the right solution for a problem that has yet to emerge. This emphasises investment in multiple options allowing for alternate approaches in the future, even acknowledging that some of these may not actually be used.

Image: Compared with underground pipe systems, this open drainage system in Wilhelmsburg Island, Germany, provides greater flexibility for increasing system capacity in the future. (left)

70/

Invest in research and development

Inspiration: Singapore and Germany

Invest in research and development for continual improvement of our water systems. No matter how effective or efficient a system may be, there is always room for improvement. Singapore – one of the world's leading cities in terms of water treatment – continues to invest in research and development.

Image: Reverse Osmosis Desalination research and development at the NEWater plant, Singapore.

71/

Water planning begins with land use planning

Inspiration: University of Birmingham (UK) and Hamburg (Germany)

Recognise the importance of land use planning in sustainable water management. Research at the University of Birmingham in UK emphasises the importance of land use planning in achieving sustainable water management. This research complements the SWITCH learning alliance (see Idea # 1) which is contributing to an innovative urban development on the River Elbe in Hamburg. The research examines the challenges of retrofitting cities with new, sustainable options when water planning is often constrained by the existing urban form. University researchers advocate including resource, transport and other sustainability considerations into the planning of road networks, block sizes and other aspects of land use planning. This increases future options for layout of water pipes and creation of space for water in the urban landscape.

Image: The IBA Hamburg development on the River Elbe in Hamburg, Germany, is a SWITCH project incorporating 'future-proof' water sensitive urban design.

72/

Pilot projects at a city-wide scale

Inspiration: Rotterdam (Netherlands) and Hamburg (Germany)

Think big with pilot projects. Use 'demonstration cities' as pilots to translate research results and new ideas into tangible, socially-relevant demonstration activities. For example, Rotterdam itself has become a pilot project, tackling water and climate change issues across the whole city. This city-wide response was triggered by fundamental challenges to the city's future – falling population and climate change – and created investment which changed the city's profile.

Image: Rotterdam has established a 'Delta Cities Alliance' to tackle climate change with cities facing similar challenges across the globe to help prevent flooding in the city.

73/

Integrate natural and built systems

Inspiration: Rotterdam (Netherlands)

Create opportunities to integrate the natural and built environments. This can be achieved through solutions that adapt the built environment to the risks posed by the natural environment. Examples include floating houses, rain garden roundabouts, green roofs, permeable pavements, natural hedges for fences, and bio-swales that replace concrete drains. When faced with the threat of rising water levels from climate change the city of Rotterdam in the Netherlands saw an opportunity to integrate natural and built environments – solutions considered include floating houses and 'water plazas'. The 'water plaza' concept would not only invite human access but would act as an urban recreational space utilising stormwater as a feature. The water plaza would be a dynamic space, which changes as it fills with stormwater during heavy rain events to help prevent flooding in the city.

Image: Water feature in Enschede which invites human interaction.

74/

Cradle to cradle

Inspiration: Enschede (Netherlands), Hamburg (Germany), and BedZED (London, UK)

Cradle to cradle advocates using resources in a way that allows products to ultimately become an input for something else, rather than a waste to be thrown away. Resources are used in a way that creates further opportunity for something new. In a Water Sensitive City, cradle to cradle water policy or investment could help meet a city's energy, food and nutrient needs. There are opportunities for the cradle to cradle approach. In the Netherlands, the open grassed swales used to treat stormwater runoff in the Ruwenbos housing development also serve as valuable open space for local people. In Germany, Hamburg Water is investigating recovering heat energy from wastewater to then use it to heat the water entering residential developments.

Image: The Bedzed housing development in London utilised a high proportion of reused building materials – materials that could have otherwise been considered as waste.

Other great ideas /

75/

Pool bikes, not cars

Inspiration: Zaragoza, Sant Cugat and Barcelona (Spain)

Many organisations have a pool car system. A pool bike system provides a cheaper, healthier, environmentally friendly – and sometimes faster – alternative for short trips. Staff at Sant Cugat Council in Spain have access to a company bicycle as an additional transport option.

Image: The integration of off-road cycle paths in urban open space in Sant Cugat, Spain. The provision of such dedicated cyclist infrastructure makes cycling between city locations so much easier.

76/

New uses for water space

Inspiration: RDM Campus, Rotterdam (Netherlands)

Consider water space. Pressure on the land in urban areas increases to provide space for both humans and nature. Water space on rivers, lakes and bays can provide space for floating homes, floating gardens and floating wildlife refuges..

Image: Testing the floating house concept at RDM Campus, Rotterdam.

77/

Multiple benefits are the target

Inspiration: Wilhelmsburg Island, Hamburg (Germany)

Implement solutions with multiple benefits. Urban water management often focuses on one part of the urban water system. By looking for opportunities to implement solutions with multiple benefits we can achieve great social, environmental and economic prosperity.

Image: Relocating this dike for flood protection also benefited the environment by recreating the river's floodplains on Wilhelmsburg Island, Hamburg (Germany).

78/

Meeting places that connect with nature

Inspiration: Amsterdam (Netherlands)

Create meeting rooms and places that mirror the business you are in and the principles in which you believe. Such spaces inspire creativity, demonstrate commitment and are powerful places to discuss the challenges of the future.

The Waternet office in Amsterdam is one such place. Waternet is responsible for all water services in Amsterdam and the surrounding area. The Waternet office in Amsterdam connects the built and natural environments, with wonderful views of the River Amstel and strong connection with water.

Image: Inspiring – the Waternet office in Amsterdam.

79/

Hedges not fences

Inspiration: Ruwenbos, Enschede (Netherlands)

Grow hedges instead of building fences. Fences mark boundaries, exacerbate flooding issues, do little to encourage biodiversity and serve no purpose in cooling hot cities in which trees have been replaced by concrete and structures. Hedges and vegetated treatments can reduce stormwater flow blockages which contribute to local flooding. A Water Sensitive City should promote solutions which provide multiple sustainable outcomes, enhance urban aesthetics and still provide boundary demarcation.

Image: Hedges provide an attractive, multi-function alternative to fences.

80/

Biodegradable showbags

Inspiration: Zaragoza (Spain)

Try biodegradable showbags for an environmentally friendly option. Biodegradable bags can be made from organic materials, such as potatoes. Use of these bags promotes a sustainable product or organisation. Showbags are a great marketing tool that can also sell your product or service as being sustainable.

Image: A showbag from the Zaragoza Water Park in Spain. The showbag is made from potatoes and is 100 per cent biodegradable.

81/

Integrated appreciation of the urban landscape

Inspiration: Kees Vernooij – urban designer and bike courier (Amsterdam)

Truly integrated cities draw on many sources of knowledge and shared information. To contribute to a Water Sensitive City you don't necessarily have to focus only on water. Cities and their complex systems do not function in isolated units, and understanding one system can help support and develop other systems. Development of a Water Sensitive City requires contributions from many people with diverse backgrounds and knowledge of different systems and disciplines. People like Amsterdam bike courier and council urban designer Kees Vernooij, whose knowledge of pathways and planning systems combine beautifully to provide unique insights into the relationships between Amsterdam's curvilinear brick-paved streets and water canals.

Image: Kees Vernooij – bike courier and urban designer.

82/

Recruiting consensus

Inspiration: WSC09 Study Tour

Broaden the conversation about the Water Sensitive City beyond those that are already engaged. The vision of a Water Sensitive City will be challenged by prejudice, resistance to change or disengagement. Yet the Water Sensitive City can provide a mix of integrated solutions across communities. Experience shows that once people understand that the Water Sensitive City has something to offer they are likely to become advocates. Their testimony and perspective then becomes an important tool for enrolling others.

Image: In Hamburg the WSC09 group visited the offices of the local water utility, Hamburg Water. As part of Hamburg's bid to become the Green capital of Europe it became necessary to have examples of sustainable infrastructure to showcase to the world. Hamburg Water had been successful in engaging local politicians to allow them to trial a number of innovative water and energy treatment technologies.

83/

Community gardens

Inspiration: Community gardens of Europe

Bring people together with community gardens. Through the combination of local context and sustainable water sources, community gardens can be a focal point for a Water Sensitive City. As our cities become denser and opportunities to grow fresh fruit and vegetables on private land diminish, community gardens can provide this opportunity in a supportive social environment. Community gardens put people in touch with the earth, with the resource requirements of food production and with each other. Community gardens are also great places to share gardening knowledge and share a meal with people from your neighbourhood.

Image: Community gardens can bring people together in a Water Sensitive City.

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melbournewater.com.au

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www.clearwater.asn.au

CPG Australia
au.cpg-global.com

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www.environmentvictoria.org.au

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www.fairfieldcity.nsw.gov.au

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Manningham City Council
manningham.vic.gov.au

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Municipal Engineering Foundation Victoria
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Stormwater Industry Association of Victoria
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