



Sponge City Trade Mission to Kunshan, Jiangsu Province, China



CRC for
Water Sensitive Cities

THE
AUSTRALIAN
WATER
PARTNERSHIP



Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme

CRCWSC's trade mission to Kunshan

BACKGROUND INFORMATION

The city

The City of Kunshan, a city of more than 1.6 million located 50km north-west of Shanghai, is one of the most economically successful county-level administrations in the greater Suzhou region. The City of Kunshan is a “water city”, with over 1000km of waterways defining the urban fabric of this beautiful water town. The total water surface area occupies about 23 per cent of its land.

Kunshan is one of China's “Third Tier Cities” located about an hour drive north west of Shanghai or the first stop on the bullet train between Shanghai and Beijing – the high-speed

train cuts travel time between the two cities to around fifteen minutes. It is this immediate connection to Shanghai that allows Kunshan to be highly connected and aspirational in its vision.

Kunshan was formerly an agricultural and water town, however, with China's rapid urban migration the city's focus has shifted toward that of industry, manufacturing and production. Focused intently on its future, newly built roadways, promenades and high-rise towers prepare for expected population growth (projected to be 3.3million in 2030).



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The problem

The landscape in and around Kunshan is polder, a low-lying tract of land enclosed by dykes with connection to waterways through gates and pumps. Over 100 polders are progressively established over decades to respond to city's low-lying, regularly inundated topography.



The rapid economic growth and urban development in the recent decades present a great threat to its water environment that have intrinsically defined the historical quality and liveability of the city. The water quality in its extensive network of constructed canals is inevitably degrading due to a combination of catchment pollution and poor circulation.



The City Water Group centrally manages water supply with 30-40% of local supply from lakes and the rest from Yangtze River, obtained at a high energy cost due to pumping.



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CRCWSC's Water Strategy

In addition to collecting all its wastewater to centralised treatment and recycling, the City realizes that managing its stormwater to reduce diffuse pollutant is equally important to preserve and sustain its unique water environment.

The overarching strategy is to manage the stormwater pollution at source and harvest as a resource for non-potable use so that the city can be transformed into a water supply catchment. This concept is coupled with polder-wide recirculation of canal water through precinct-scale wetlands nested within open space to maintain the water quality. This city-wide strategy is important to not only reduce the urban pollution into regional waterways but also mitigate flood risks for downstream cities in the same basin given the uncertainty imposed by future climate change.



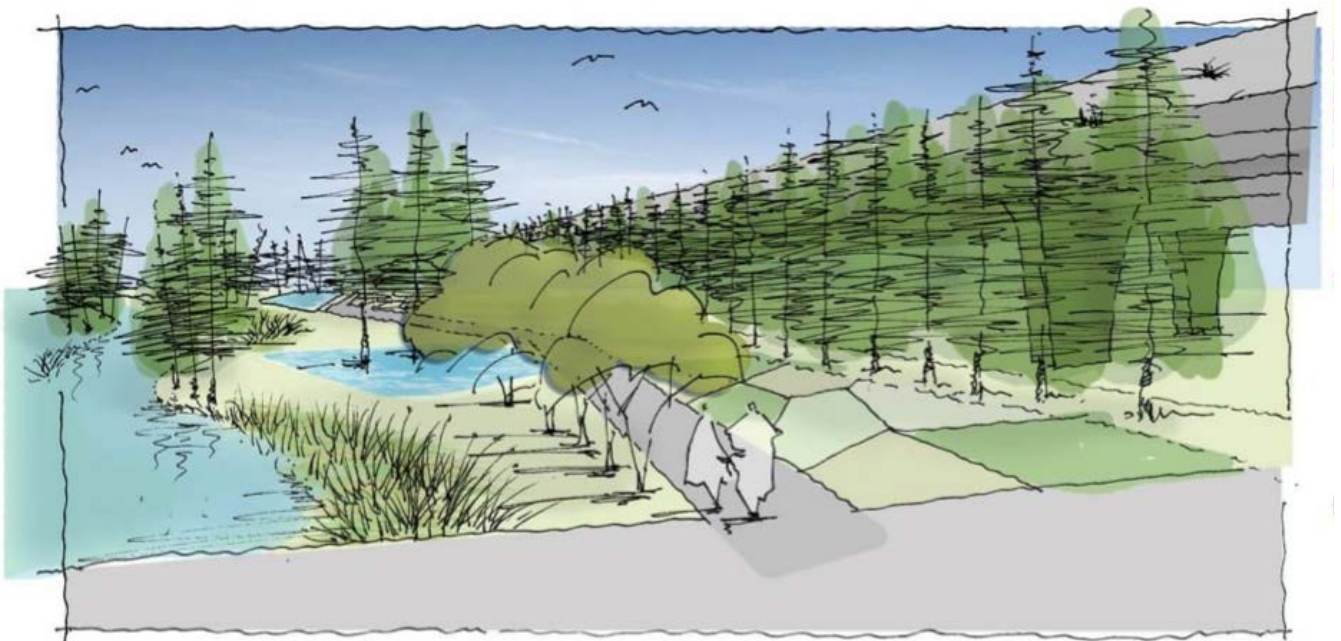
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CRCWSC's Open Space Strategy

Ecosystem services will be delivered by embedding four elements (water, forest, food and culture) into functional open spaces, and therefore creating an urban mosaic of ecological landscapes for the city. Each functional open space will have its own hierarchy and emphasis in terms of the four elements, responding to specific local context and the size of land parcel itself. One inner-ring ecological corridor is proposed to be created through the restoration of existing waterways, and one outer-ring ecological corridor is proposed to be created along the corridor of an elevated city ring road currently being constructed. These two proposed ecological corridors will link key open spaces and provide city-scale landscape connectivity that frames the future implementation of internal blue and green corridors with the many polders within the city.

This open space strategy, underpinned by water sensitive urban design, will establish important and functional green infrastructure to support and sustain the City's future economic growth and liveability. At a 4-day intensive workshop in March, a CRCWSC research team inspected key sites and developed a conceptual city-wide open space strategy. The long-term strategy aims to provide the city with ecosystem services by improving water quality, enhancing landscape connectivity, creating biodiversity, introducing food production into the landscape, and influencing the urban microclimate.



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The Proof of Concept

Wetland cells are integrated into the public realm landscape to clean stormwater and maintain the water quality of a large ornamental water pool through re-circulation.

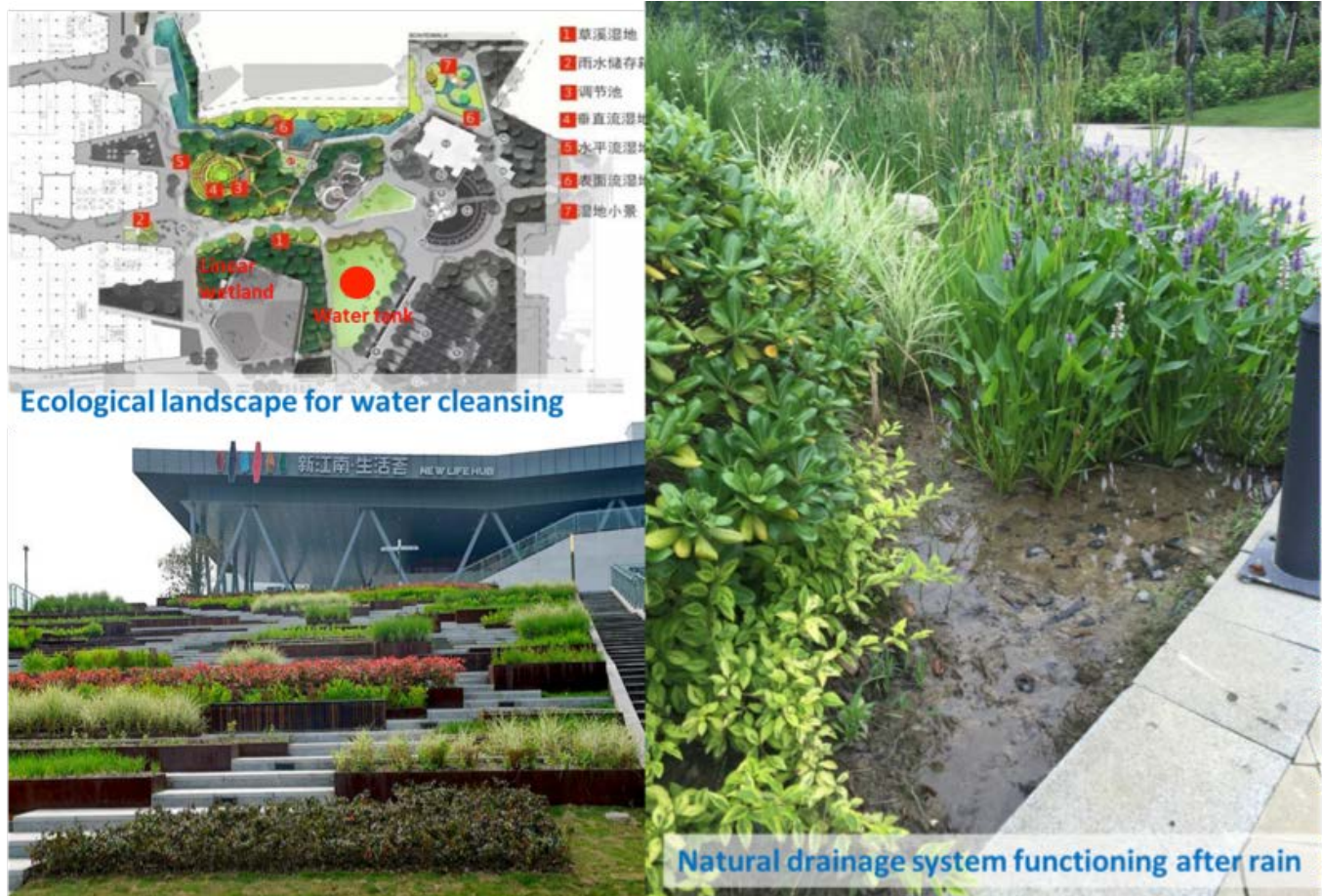


Biofilters are incorporated into the road verge to treat stormwater and detain peak flow.



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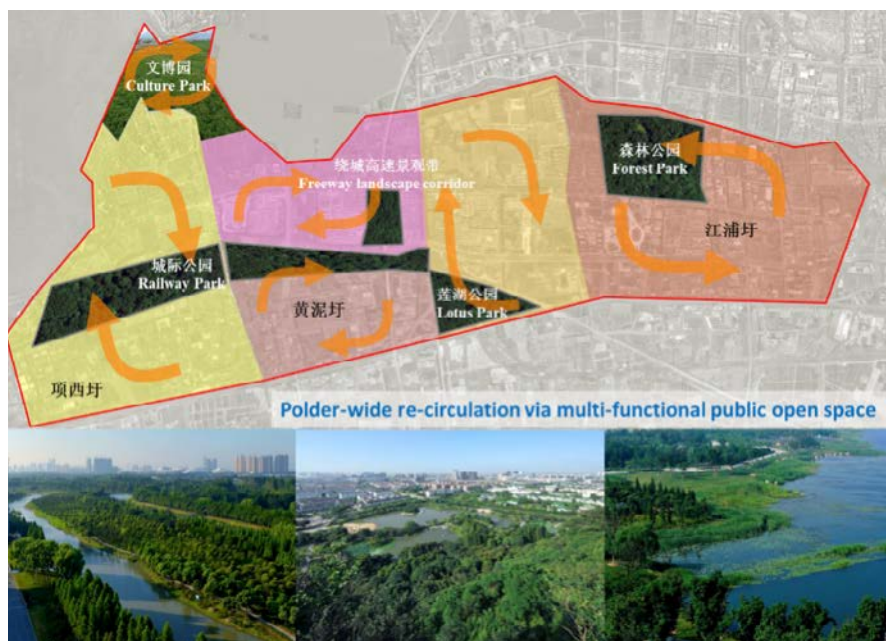
Natural drainage system in a local park features appealing native plants and grasses to trap and filter stormwater and recycled for irrigation.

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The application at larger scale

The same concept is further applied at a larger scale to convert public open space into multi-functional infrastructure for water quality management, habitat biodiversity and flood detention demonstrating public open space provides eco-system services beyond their traditional amenity values to the urban environment.



The multi-functional corridor integrates blue, green and grey infrastructure and form an iconic and integral part of urban ecology and at same time provide important passage for safe conveyance of floods. These corridors are created as a result of coordinated planning and implementation between various stakeholders.



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Kunshan became CRCWSC's first incubator city in China

On Friday 17 January in Kunshan, China, a three-party Memorandum of Understanding (MoU) between the CRC for Water Sensitive Cities (CRCWSC), the Kunshan City-construction Investment and Development Company (KCID) and the Planning Bureau of the City of Kunshan was signed. The MoU represents a combined commitment by the two Kunshan City agencies for city planning and city construction to “extensively use their future projects as incubators of new planning, design concepts and new technologies that are generated out of the CRCWSC and thus providing the opportunity to test research concepts and findings at a city-scale”.

The MoU obligates the City of Kunshan, through these two agencies, to annually identify and resource at least one major integrated project for investigation with the CRCWSC to showcase new water sensitive planning and design concepts and implement innovative technologies. Discussions have already commenced to identify projects for 2014. Potential projects to be considered are expected to vary in scope to include city and peri-urban planning, precinct-scale design and developments, design and construction of public realm ecological landscapes, flood management strategies and waterway restoration methods and templates.

China-Australia Water Sensitive City Summit in Kunshan on 1-2 July

The summit was organised by the City of Kunshan, Southeast University-Monash University Joint Centre for Water Sensitive Cities and CRC for Water Sensitive Cities, and co-hosted by the Jiangsu Government Department of Housing and Urban-Rural Development and the Victorian Government Department of Economic Development, Jobs, Transport and Research.

The event, which focused on research and joint initiatives of the CRCWSC and its collaborators, was attended by 450 delegates consisting of 350 senior government officials and 100 industry leaders from Jiangsu Province.

Victorian Minister for International Education Steve Herbert opened proceedings after a word of welcome from Mayor Du of Kunshan. Minister Herbert's speech was followed by an opening address from Director-General Dr Lan Zhou of the Jiangsu Provincial Department of Housing and Urban-Rural Development. All presentations were simultaneously translated for delegates.



The Summit acknowledged the naming of Kunshan as one of China's Ecological Garden Cities earlier this year and showcased the contribution of CRCWSC in making this achievement possible. The event consisted of one and a half days of technical presentations and a half-day field trip to inspect five of 35 constructed or partly-constructed water sensitive projects where the CRCWSC has contributed to the planning, design and/or implementation.

In her closing remarks, Ms Batagol referred to the enduring partnership established between the CRCWSC and the City of Kunshan that has, over the past four years, significantly transformed the city both structurally and institutionally. “That partnership is now underpinned by mutual respect and trust,” Ms Batagol said.



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Kunshan's National Ecological Garden City Award

Kunshan has been named one of China's Ecological Landscape Garden Cities in early 2016.

The ten on-ground demonstration projects and an ecological landscape framework developed by CRCWSC for the city core area have been instrumental in winning Kunshan this award. The award follows a comprehensive assessment by the national expert judging panel, who complimented Kunshan for its "(1) advanced ecological development concept, (2) distinguished water town character (3) clear sponge city oriented strategy and (4) matured infrastructure."

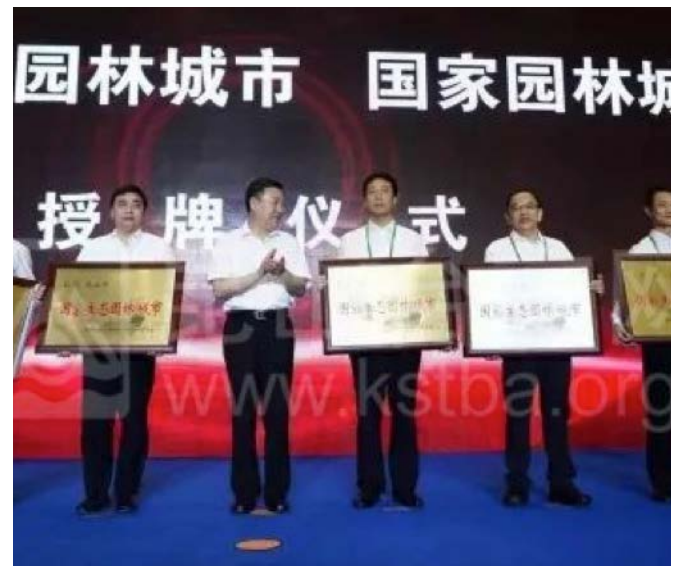
The Ministry of Housing and Urban-Rural Development first initiated the Ecological Landscape Garden Cities acknowledgement program in 1992 but this is the first time the Chinese government has identified and formally acknowledged specific cities under the program.

This renewed commitment to environmental protection in China is in keeping with a wide-ranging set of ecological reforms to develop what the Chinese government calls an 'ecological civilisation', which aims to reconcile contradictions between economic development and the environment.

Mr Jichun Zhou, Director General of the Kunshan City Housing and Urban-Rural Construction Bureau, thanked the CRCWSC for their support in applying the results of cutting-edge research on water sensitive cities to the urban construction of Kunshan city. "CRCWSC has made outstanding contributions to our city in the process of successfully becoming the national ecological garden city and pilot sponge city which is highly regarded by the Ministry of Housing and Urban-Rural Development and Jiangsu Provincial Department of Housing and Urban-Rural Development," Mr Zhou said.

Kunshan's UN Habitat award

In 2010, the city was recognised for its efforts in improving living conditions in towns and cities by being listed in the United Nation HABITAT 2010 Scroll of Honour, the UN's most prestigious award in human settlements development.



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More reference to read

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