



CRC for
Water Sensitive Cities

Sponge City Innovation Park

Location:
Kunshan,
Jiangsu Province,
China



Case Study — Prepared by Cooperative Research
Centre for Water Sensitive Cities, September 2018



Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme

Insight

Sharing of Australian research, leading-edge technology, and water sensitive city products with the City of Kunshan has allowed demonstration, incubation, local application and commercialisation in China

Project description

The Jiangsu-Victoria Sponge City Innovation Park is a 10 hectare site that will exhibit cutting edge water sensitive infrastructure and technology, with facilities for validating emerging sponge city technologies and products. The CRC for Water Sensitive Cities (CRCWSC) and its partners have been commissioned to lead the park's development and masterplanning, and to undertake landscape and building concept designs that will showcase CRCWSC innovation at building and public open space scales.

The Jiangsu-Victoria Sponge City Innovation Park will link with Kunshan City's Sponge City Performance Assessment and Testing Facilities; the two will collectively serve as the research demonstration and technology validation facility for Australian innovation for application in China. The CRCWSC will guide the operation of both the innovation park and technology validation facility. The project includes a range of water sensitive city initiatives, which will be built immediately, together and at scale – an opportunity which is rare in an Australian context.

The drivers

Collaborate internationally to create win-win partnership opportunities

- **Industry development** – Collaborate with international partners and catalyse water sensitive transitions for the world's cities and towns.
- **Access to new markets** – Strengthen pathways to market for Australian expertise and facilitate new partnerships with additional cities and associated China-based enterprises.
- **New learnings** – Learn from Jiangsu's approach to implementing programs that address urbanisation challenges at a large scale.
- **Demonstrate expertise** – Showcase Australian expertise in urban water management and water sensitive urban design (WSUD).



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Kunshan Demonstration Park - Reception,
Exhibition and Administration Building

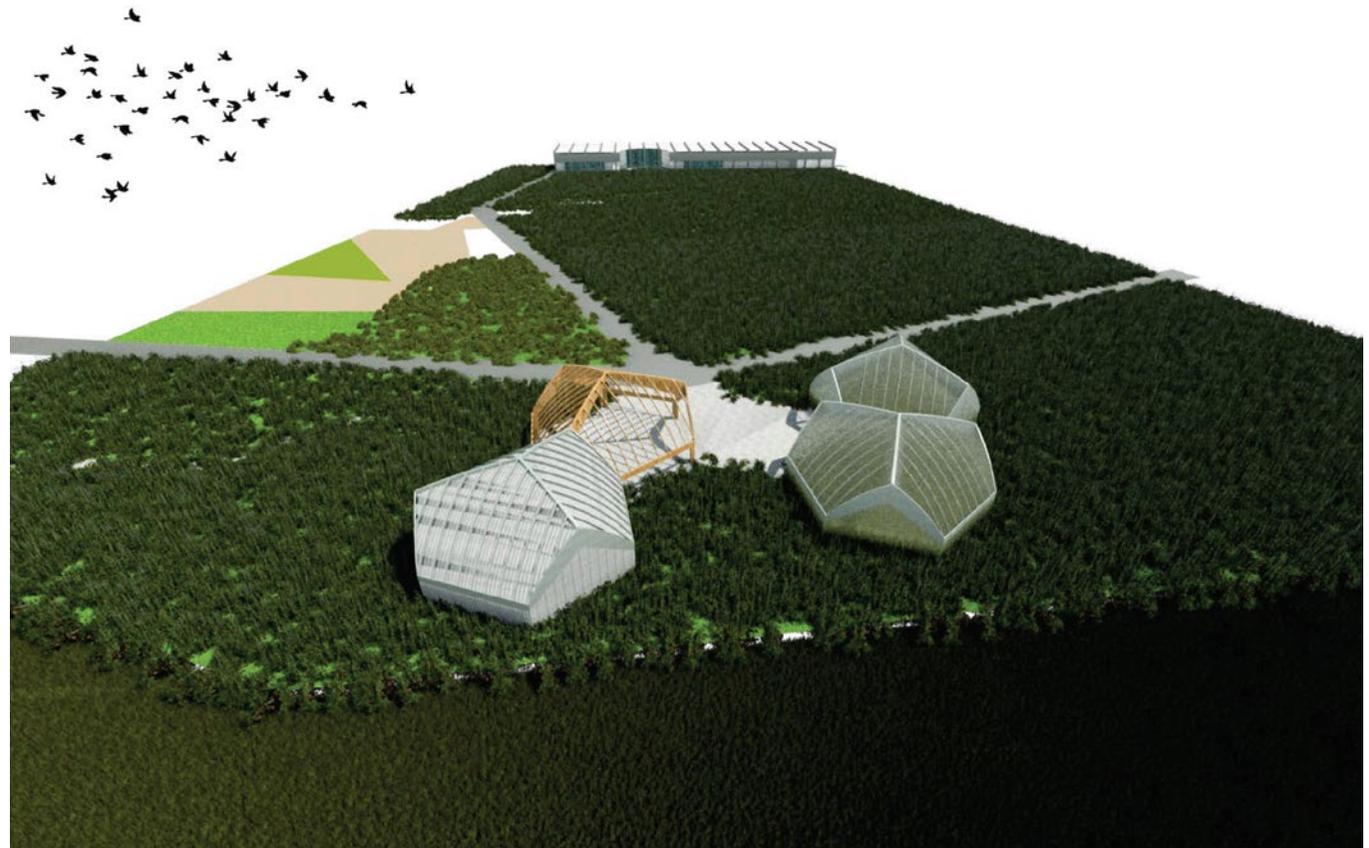
What does this case study demonstrate?

Each case study has been selected to demonstrate specific solutions, benefits or enabling structures that support the creation of water sensitive cities. This case study focuses on:

Leadership and influence

The innovations

- **Water quality management** – The recirculation wetland manages water quality and keeps water moving in the adjoining polder canal.
- **Best practice riparian restoration** – The riparian ecotone establishes the exemplar template of how a riparian zone can be restored. It shows the diversity of ecological transition from aquatic, deep marsh and shallow marsh to terrestrial plants.
- **Streetscape interventions** – The central median biofilter shows how the streetscape will capture road runoff for stormwater attenuation and pollution reduction.
- **Resource recovery** – The nutrient recovery glass house will produce nursery plants irrigated using nutrient-rich recycled water from the decentralised wastewater treatment facility. Excess heat and CO₂ gas from wastewater treatment facility will be captured to improve the productivity of nursery plants.
- **Stormwater treatment tree pits** – The structural soil tree pit will provide sufficient quality soil volume for healthy tree roots and growth in an urban environment, as well as treat stormwater.
- **Swamp forest wetlands** – The swamp forest wetland will add a vertical dimension to the traditional stormwater wetland and provide visual screening for the overhead power lines.
- **Wetland integration** – Together, the sub-surface wetland and surface wetland will form an ecological landscape around the administration building precinct. It will also help to clean up the canal, which is subject to black and odour problems.



Glass House in Kunshan's
Demonstration Park

The outcomes

|  Cities providing ecosystem services |  Cities as water supply catchments |  Cities comprising water sensitive communities |
|---|---|--|
| <ul style="list-style-type: none"> • Restore water quality in adjacent waterway – Purification of an urban waterway via recirculation wetland. • Restore riparian zones – Restoration of the riparian zone of an urban waterway. • Nutrient cycling – Nutrient recovery glass house that recycles resources from wastewater treatment facility. • Increase permeability of urban areas – Structure soil tree pit that provides healthy tree canopy and treats stormwater. | <ul style="list-style-type: none"> • Passive irrigation – Stormwater captured, treated and reused for irrigation. • Wastewater recycling – Community productive garden, utilising recycled water. | <ul style="list-style-type: none"> • Education and collaboration – Multifunctional event and exhibition spaces to communicate knowledge and innovative technology. • Industry Development – Training facility for Sponge City capacity building. |

Business case

| Costs | Benefits |
|--|--|
| <ul style="list-style-type: none"> • Total investment nearly 100 million yuan (AUD \$16 million). | <ul style="list-style-type: none"> • Develop, apply and commercialise Australian urban water technologies. • Collaborate, research and validate sponge city / WSUD technologies at a range of scales and in different climates. • Strengthen pathways to market for Victorian and Australian expertise and facilitate new partnerships with additional cities and associated China-based enterprises. |

The lessons

- Collaboration with international partners can facilitate introduction of techniques and products in a different environment and at a large scale, and provide additional test sites for research.
- Introduction of Australian water sensitive city knowledge and expertise to other countries can assist cities in 'leap frogging' stages of transition, jumping to delivery of infrastructure with better performance and broader benefits at a lower cost.

Transferability

Validate the success of a variety of technologies at range of scales, both in China and in Australia. Demonstrate the value of mutual benefitting partnerships and how they may be grown and managed.

Project collaborators

- Jiangsu Department of Housing and Urban-Rural Development
- Kunshan Municipal People's Government
- Kunshan Bureau of Housing and Urban-Rural Development
- Kunshan Hi-Tech Zone
- Liveability Victoria International (DELWP)
- Trade Victoria
- CRC for Water Sensitive Cities
- Realm Studios
- E2Designlab
- BKK Architects

Awards

- Award for Excellence in Innovation 2017 - CRC Association, Canberra, Australia



Glass house

Additional information

More information on the Sponge City Innovation Park can be found at:

- [CRCWSC Flythrough Video](#)
- [CRCWSC Victoria-Jiangsu cooperative partnership](#)
- [Our Jiangsu - Kunshan rated national model for sponge city planning](#)
- [Jiangsu Now - Kunshan listed as national 'model sponge city'](#)

