



CRC for  
Water Sensitive Cities



4th water sensitive cities conference



Australian Government  
Department of Industry and Science

**Business**  
Cooperative Research  
Centres Programme

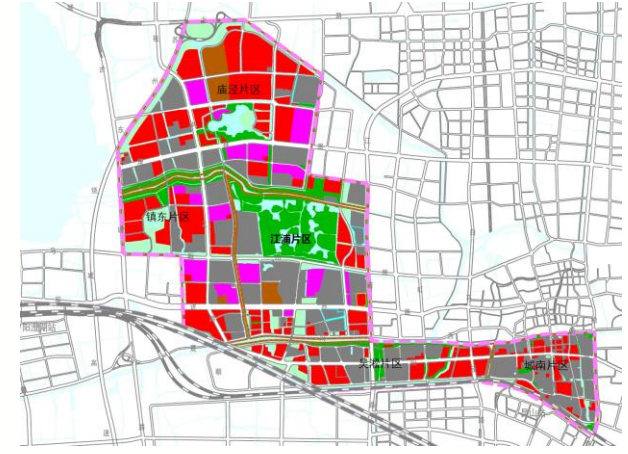
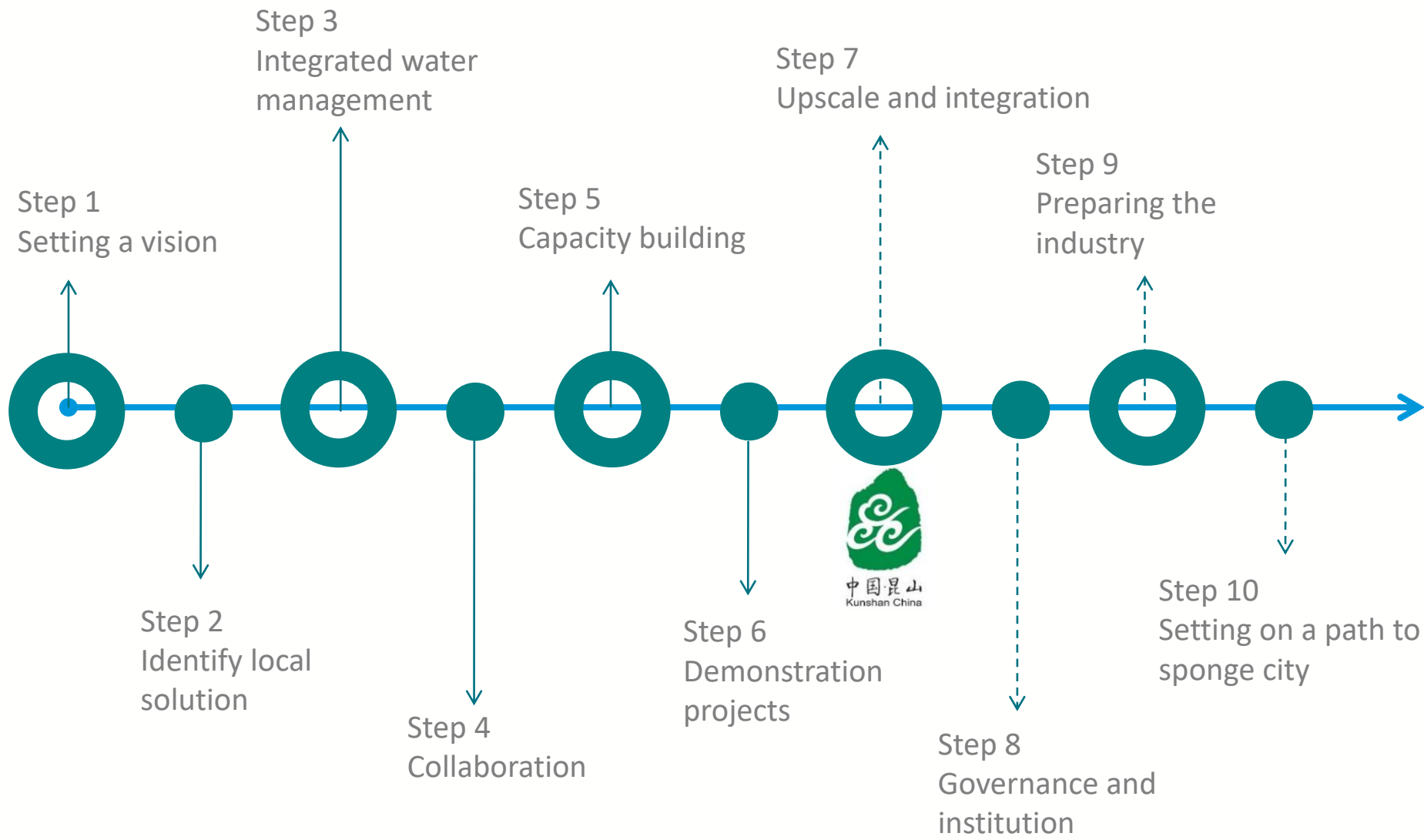
# Transitioning towards Water for Liveability: Kunshan's journey thus far

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**CRC for Water Sensitive Cities**

26 March 2019



# 10 steps action plan to deliver Sponge City initiates



## Sponge city demonstration zone of 23 KM2

- Provincial Demonstration zone
- 22.9 KM2 with 157 projects planned
  - 103 land development and road
  - 54 are water infrastructure
  - 91 completed projects by the end of 2018
  - 35 projects being built
  - 31 projects to be built

# 1. Institutional reform and policy development

## 1.1 Sponge city leadership committee and operating office

- 19 government agencies and
- 5 state owned enterprise

## 1.2 Policy

- **All new, modification and stage continuing projects need to be sponge city compliance**
- Sponge city requirement to be included in the sale of land contract
- Green area ratio increased by 5% as bonus if sponge city complied
- **Rebate from 15~20 RMB per m2 of non-building area complied**

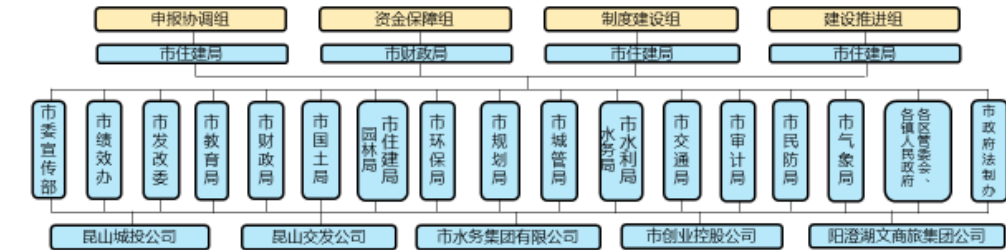
## 1.3 Governance throughout the land development process

- Sale of land
- Project register
- development completion assessment
- Operation and maintenance
- minoring and performance assessment

### 试点工作进展 组织机构保障 制度机制完善 规划技术指引 建设实施推进

#### 组织机构保障 组织机构引领——成立海绵城市建设试点工作领导小组及领导小组办公室

机构设置完善，成立**昆山市海绵城市建设试点工作领导小组**，细化各部门在海绵城市建设中的分工和职责。



成立**昆山市海绵城市建设领导小组办公室**，**统筹规划、住建、水利、交运等部门，共同推进海绵城市建设工作**；领导小组办公室设在市住建局，由各成员单位抽调技术骨干组成，涵盖市政工程（给排水工程、道路工程）、园林景观、环境工程、水力工程等专业，其中博士1人、硕士5人、本科2人；主要负责海绵城市建设工作**部门协调、文件起草、宣传推广、专项方案及施工图核查、施工指导、工程验收**等环节。

### 试点工作进展 组织机构保障 制度机制完善 规划技术指引 建设实施推进

#### 制度机制完善 政策制度制定——全流程监管，各环节覆盖，落实海绵城市建设

完善全流程监管，覆盖**土地出让、项目立项、建设验收、运营维护、监测评估、资金引导**等环节；

> 全市范围新建、改建、续建项目全面落实海绵城市；  
 > 海绵城市相关要求纳入土地出让环节；  
 > 绿地率计算可以在原标准折算率上提高5%；

> 区镇、社会资本投资项目，财政予以奖励：  
 > 房地产开发项目按15元/平方米计算拨付；  
 > 公建项目按20元/平方米计算拨付；  
 > 工矿企业工程项目按照15元/平方米计算拨付；  
 > 总用地面积扣除建筑占地面积后的实际面积予以奖励。

<Kunshan Sponge City Construction Practices Annual Report 2018>

# 1. Institutional reform and policy development

## 1.3 Sponge city approval process is included in

- Planning Permit
- Building Permit
- Construction Completion Verification Certificate

## Review and approval by Sponge City Committee office

## 1.4 Completion and performance assessment

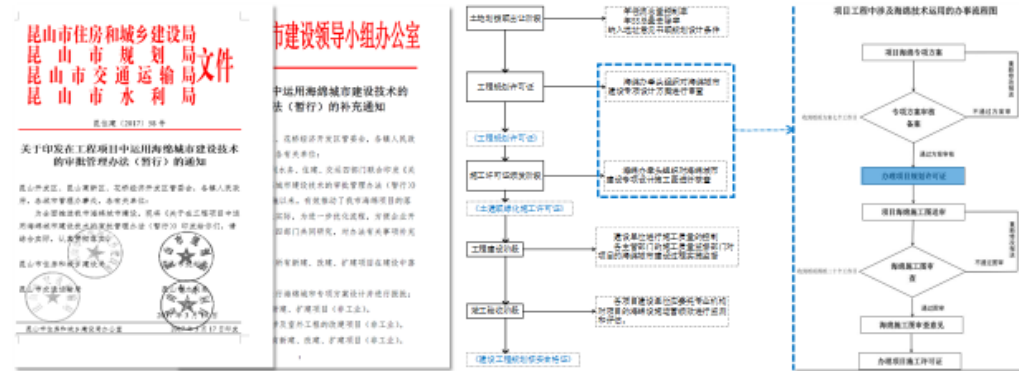
- Publish requirements for construction and completion assessment of sponge city projects in Kunshan
- **Close the loop from planning objectives to completion outcome for better quality control**

试点工作进展 组织机构保障 制度机制完善 规划技术指引 建设实施推进

制度机制完善

专业技术核查——将海绵城市要求纳入“两证一书”

2017年3月发布审批管理办法（暂行），6月发布审批管理办法（暂行）补充通知，将海绵城市建设要求纳入“两证一书”环节。



试点工作进展 组织机构保障 制度机制完善 规划技术指引 建设实施推进

制度机制完善

竣工验收把控——发布海绵城市建设施工及竣工验收要点，把控建设效果

2018年，昆山市海绵办根据实际需求，与各部门研究探讨，总结施工过程监管工作经验，组织编写《昆山市建设项目海绵城市建设施工及竣工验收要点（试行）》，于2018年9月正式发布实施。《验收要点》不仅注重验收单体设施的建设好坏，更重视评判海绵城市建设项目建成后的体系性、完整性，使我市海绵城市在建设管理上形成了从规划目标出具到实施效果验证的闭环。



<Kunshan Sponge City Construction Practices Annual Report 2018>

# 2. Technical support and guideline for industry

## 2.1 Sponge City Planning with targets and indicators underpinned by overcharging strategy

- Entire runoff control strategy
- Whole of polder integrated water management strategy
- 17 planning documents and technical guidelines

## 2.2 local R&D and technical guidelines

- 25 technical report and locally translated guidelines
- Kunshan bioretention construction guidelines with local case studies

### 试点工作进展 组织机构保障 制度机制完善 规划技术指引 建设实施推进

#### 规划技术指引 顶层规划引领——昆山海绵城市专项规划高质量通过论证，成为全国样本

编制完成《昆山市海绵城市建设实施方案》及《昆山市海绵城市专项规划》。其中，《专项规划》基于昆山现有实践经验，创造性地提出了“全过程径流控制策略”、“圩区循环策略”等综合策略，构建了多层次、多目标的海绵城市建设指标体系，目前已获市政府批复并实施。

2018年3月，住建部印发《关于做好海绵城市专项规划编制有关工作的通知》

，《**昆山海绵城市专项规划入选全国范本，全国共3个城市入选。**



#### 住房和城乡建设部司函

关于做好海绵城市专项规划编制有关工作的通知

为深入贯彻落实党中央、国务院决策部署，加快推进海绵城市建设，现就做好海绵城市专项规划编制有关工作通知如下：一、总体要求。海绵城市专项规划是海绵城市建设的顶层设计，是指导海绵城市建设的重要技术文件。专项规划编制要坚持以人为本、绿色发展理念，坚持问题导向、目标导向、结果导向，突出科学性、前瞻性、可操作性。二、编制要求。专项规划编制要紧密结合城市实际情况，突出海绵城市建设特色，注重与国土空间规划、城市总体规划、控制性详细规划等相衔接。三、实施保障。各地要切实加强组织领导，明确责任分工，加大资金投入，强化技术支撑，确保专项规划编制工作高质量完成。

### 试点工作进展 组织机构保障 制度机制完善 规划技术指引 建设实施推进

#### 规划技术指引 施工技术指南——结合昆山实际编写海绵设施施工指南，总结提升、指导工程建设

昆山基于全面推广海绵城市建设阶段海绵城市施工现场经验不足的现状，结合昆山海绵城市工程建设中遇到的问题及积累的经验，编写《**昆山市生物滞留池建设指南**》，以**图文并茂、通俗易懂的形式，明确施工要点**。该指南于**2018年9月发布，并于2018年11月进行宣贯**。植草沟、雨水湿地等其他海绵设施建设指南也正在陆续编写讨论中。



<Kunshan Sponge City Construction Practices Annual Report 2018>

# 3. Progress with great deal of demonstration projects (taking advantage of exiting program)

## 3.1 Sponge City demonstration zone

- 22.9 KM2 in the west region starting in March 2017
- 15.6 KM2 in the east region starting in October 2017
- 190 completed projects by the end of 2018 (residential, parks, civil infrastructure, public development and waterways)

## 3.2 Streamline the approval processes

- <Development Design Approval Framework and key review points> received 363 with 345 approved
- <Development Construction Drawings Approval framework and key check points> received 264 with 224 approved

## 3.4 Steering committee

- Chaired by the Deputy Mayor
- Steering committee meeting over 20 times
- Provincial demonstration zone projects are listed as Major projects
- Supported and audited by Major Project Office



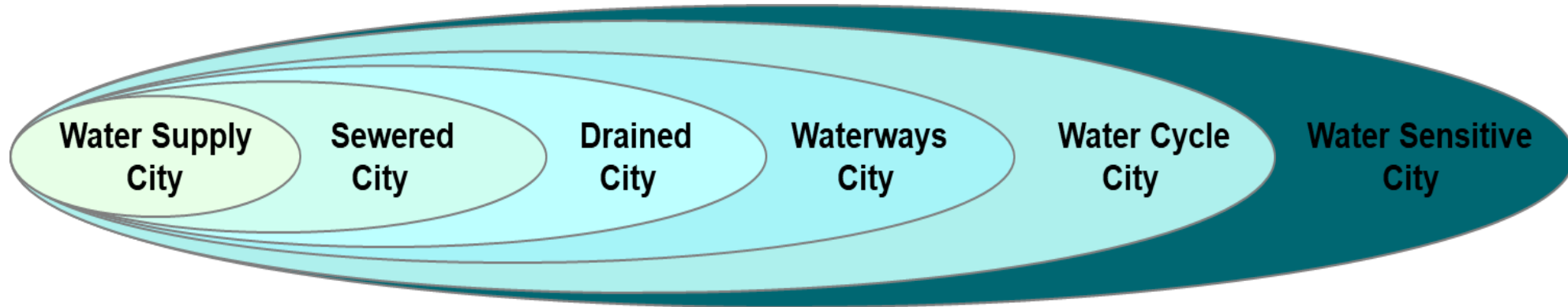
# Multi-functional Wetland at District scale @ Kunshan



CRCWSC + E2DesignLAB

Photo credit: KCID

## From Water for Life to Water for Liveability



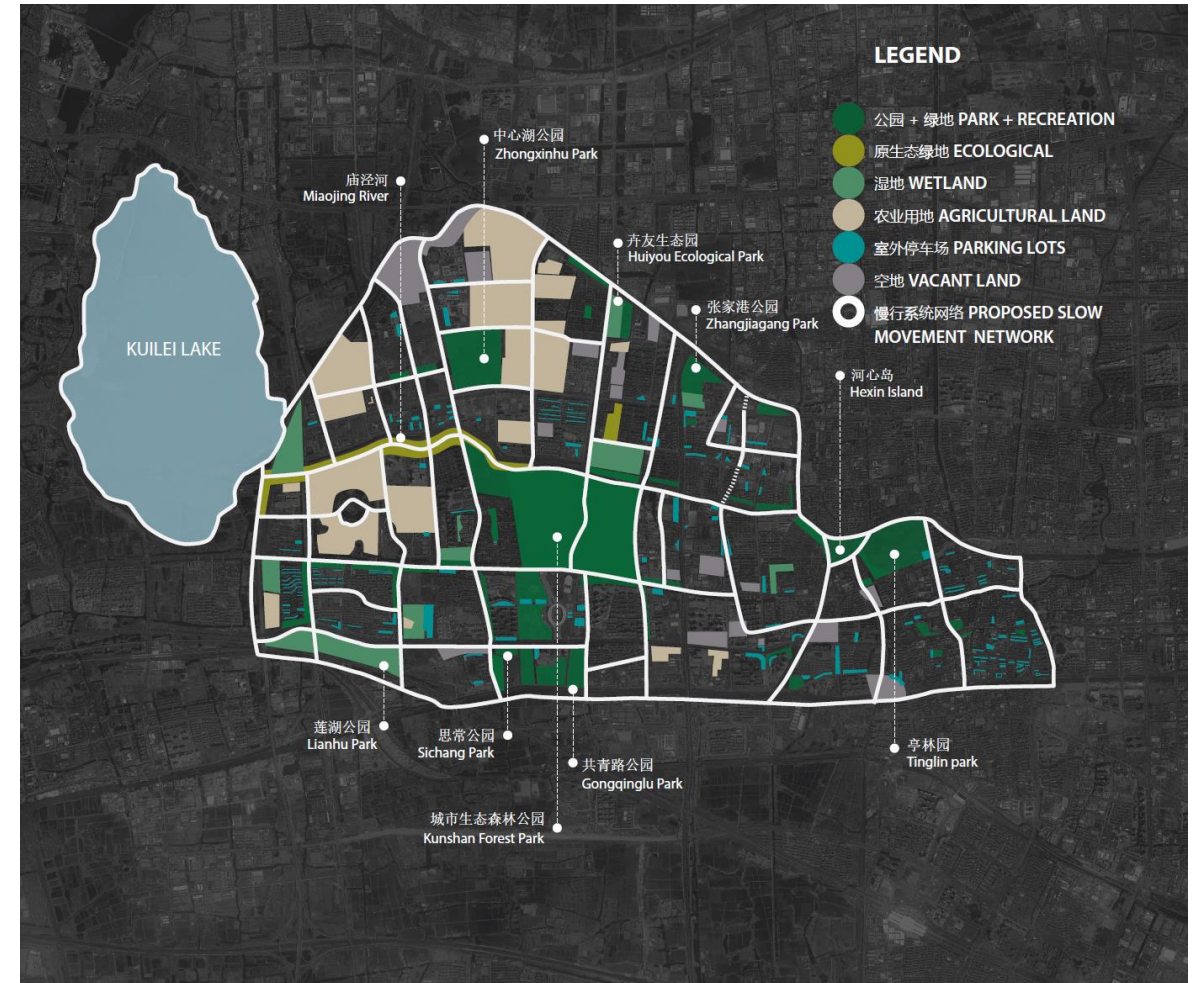


# Multi-functional Ring Road corridor @ Kunshan

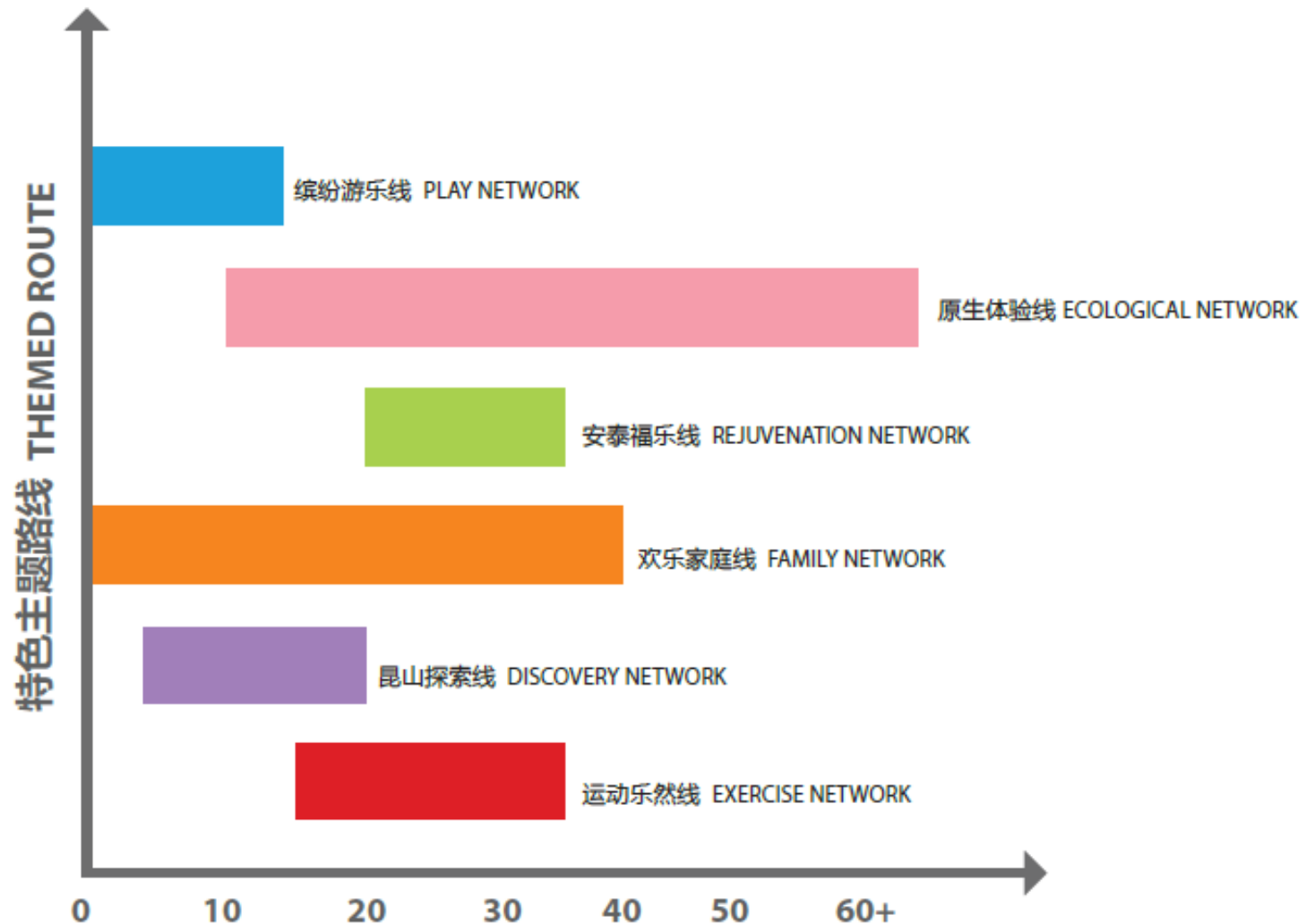


Photo credit: KCID

# Multi-functional corridor as part of slow movement network



# Slow movement network with different themes



六个不同的路线将满足不同年龄段的使用需求  
SIX DIFFERENT THEMES CATER TO DIFFERENT AGE GROUPS



# Play Network



# Rejuvenation Network



# Discovery Network



# Wild Network



# Family Network



# Exercise Network



# [Case study #1] Multi-functional Road Corridor



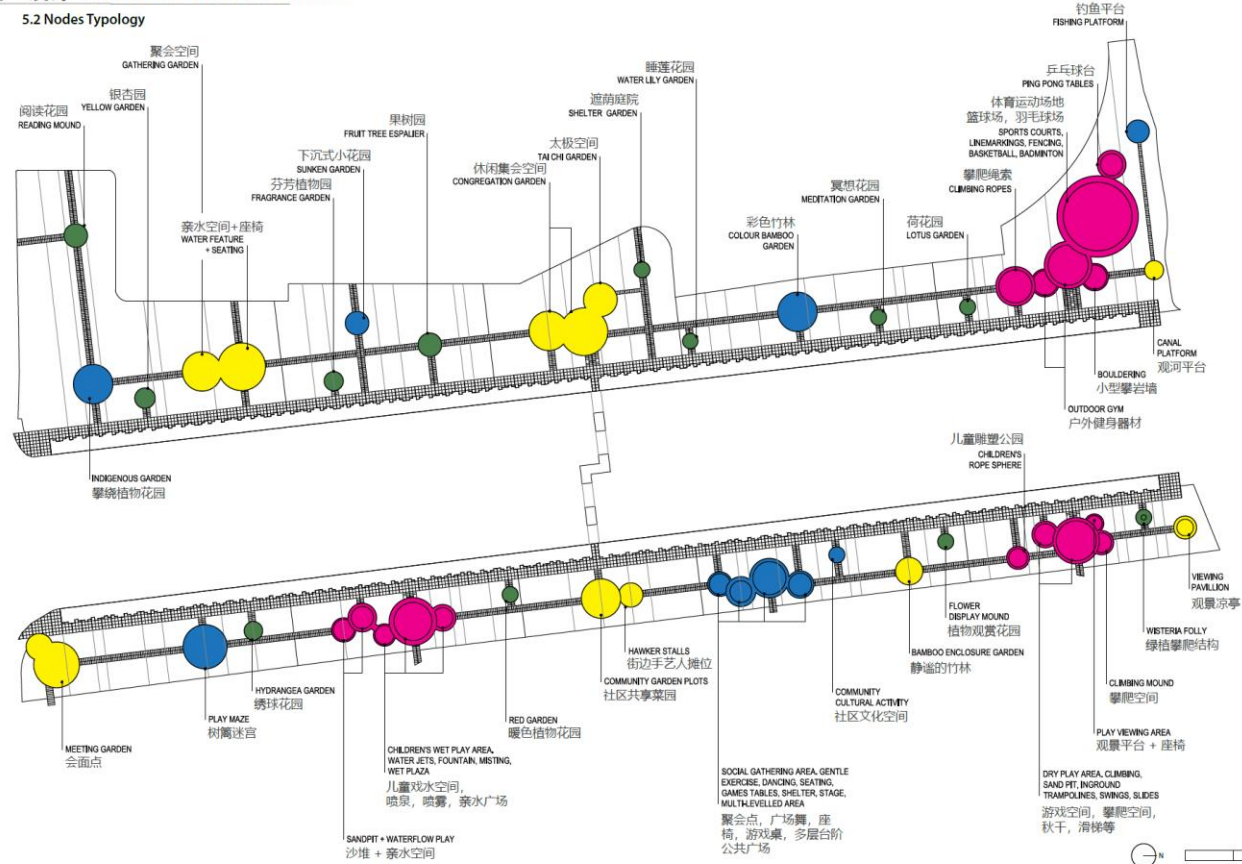
- LEGEND:
- EXISTING URBAN FOREST 城市绿化带
  - PROPOSED WATER FEATURE 景观水渠
  - PROPOSED OPEN SPACE 景观开放空间
  - URBAN INFLUENCE 城市影响
  - PATHWAY - 2.5M WIDE 2.5米宽人行径
  - PATHWAY - 7.5M WIDE 7.5米宽人行径



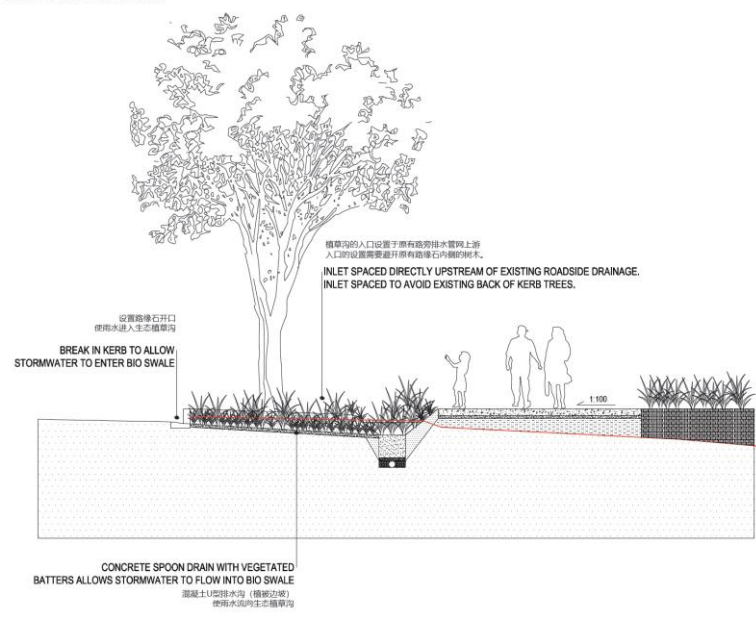
# [Case study #1] Multi-functional Road Corridor

## 5.0 节点D 设计 5.0 AREA D ARRANGEMENT

### 5.2 节点类型 5.2 Nodes Typology



7.2 生态植草沟剖面A 7.2 Bio Swale Section A



# [Case study #2] Multi-functional river and road corridor

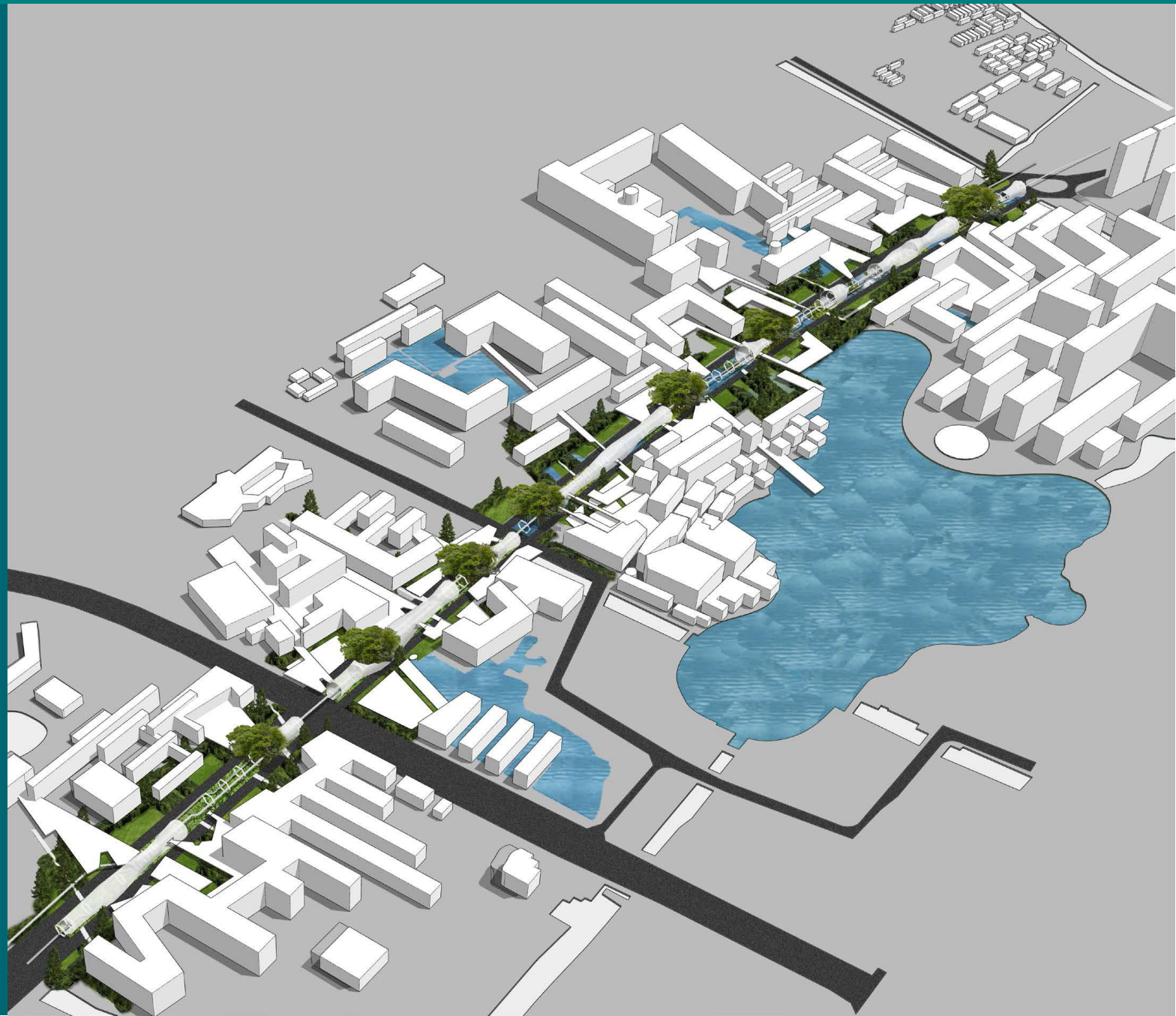


# [Case study #2] Multi-functional river and road corridor

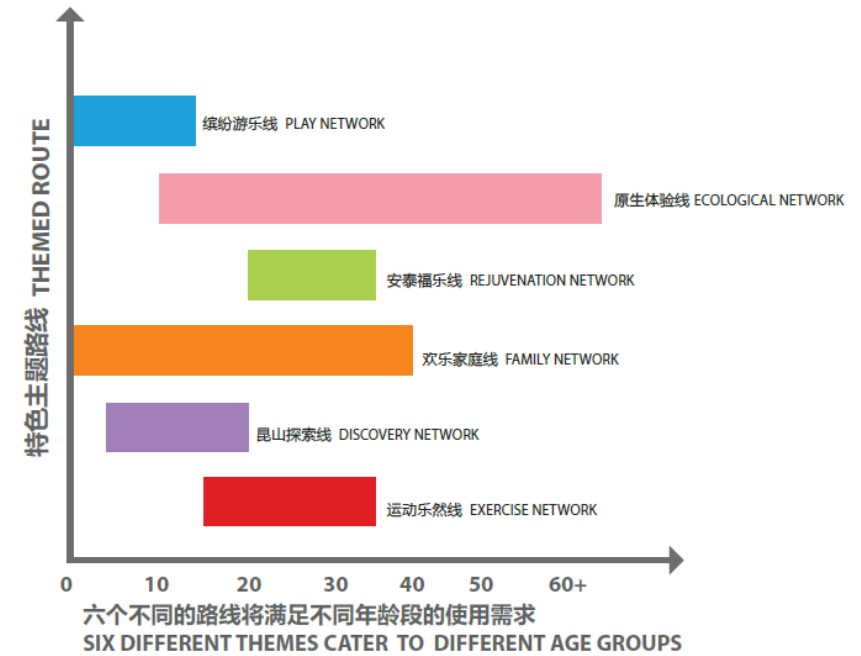




# [Case study #2] Multi-functional river and road corridor



# Multi-functional corridors forming slow movement network



Synthesize our research and ideas in a digital way

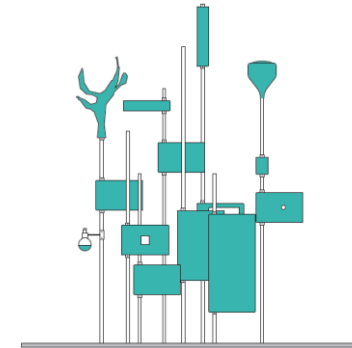
Transform Kunshan as a Smart City and Water Sensitive community.



(1) Online platform



(2) Mobile App



(3) Information point

# Water Sensitive City Explorer: (1) Online platform


## Menu

- Slow Movement Network
- Rejuvenation Route**
- Exercise Route
- Play Route
- Discovery Route
- Family Route
- Wild Route
- Cooling Line

- Pol
- Air Quality
- Thermal Impact
- People Counting
- Amenity

## City Explorer

Search



Today, 2019 Mar 8 10:03

Temp: 27°  
RH: 62%  
PH2.5: 27 **GOOD**

### Rejuvenation Route

Circle 1 Length: 5km  
Walk Time: 1 hr 1 min  
Cycle Time: 16min

Rejuvenation Route - (35yrs+)  
Rejuvenation routes will be aimed at a more middle aged and elderly age group and be orientated around providing visitors with a space in which to find respite in the urban environment. These routes will entail:

- Picturesque, peaceful walks
- Pampering and wellness facilities
- Yoga, tai chi, and square-dancing spaces
- Health food outlets
- Meditation spaces
- Therapeutic shopping outlets
- Areas for spiritual engagement (i.e. temples) and reflection

**Feedback** 😊 😐 😞 🗉

We can co-create the city ...  
Tell us what on your mind ...

# Water Sensitive City Explorer: (1) Online platform

## City Explorer

LOGIN 中文

- Slow Movement Network
- Pol
- Sites**
- Corridors
- Food
- Culture
- Mall
- Events
- Air Quality
- Thermal Impact
- People Counting
- Amenity

Temp: 27°  
RH: 62%  
PH2.5: 27 **GOOD**

### Culture Plaza Wetland

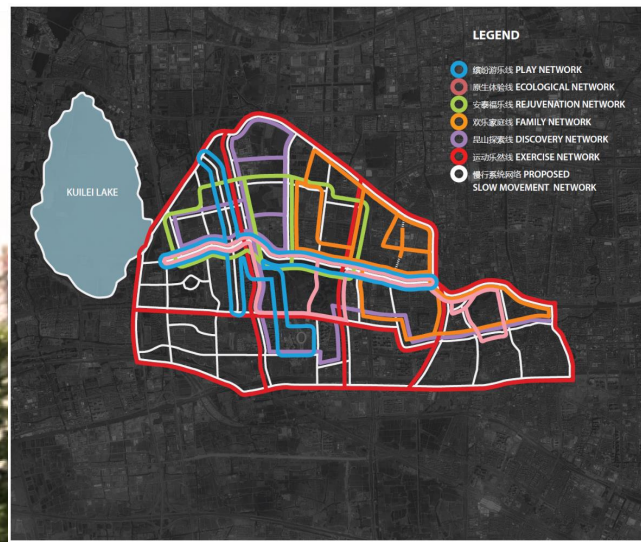
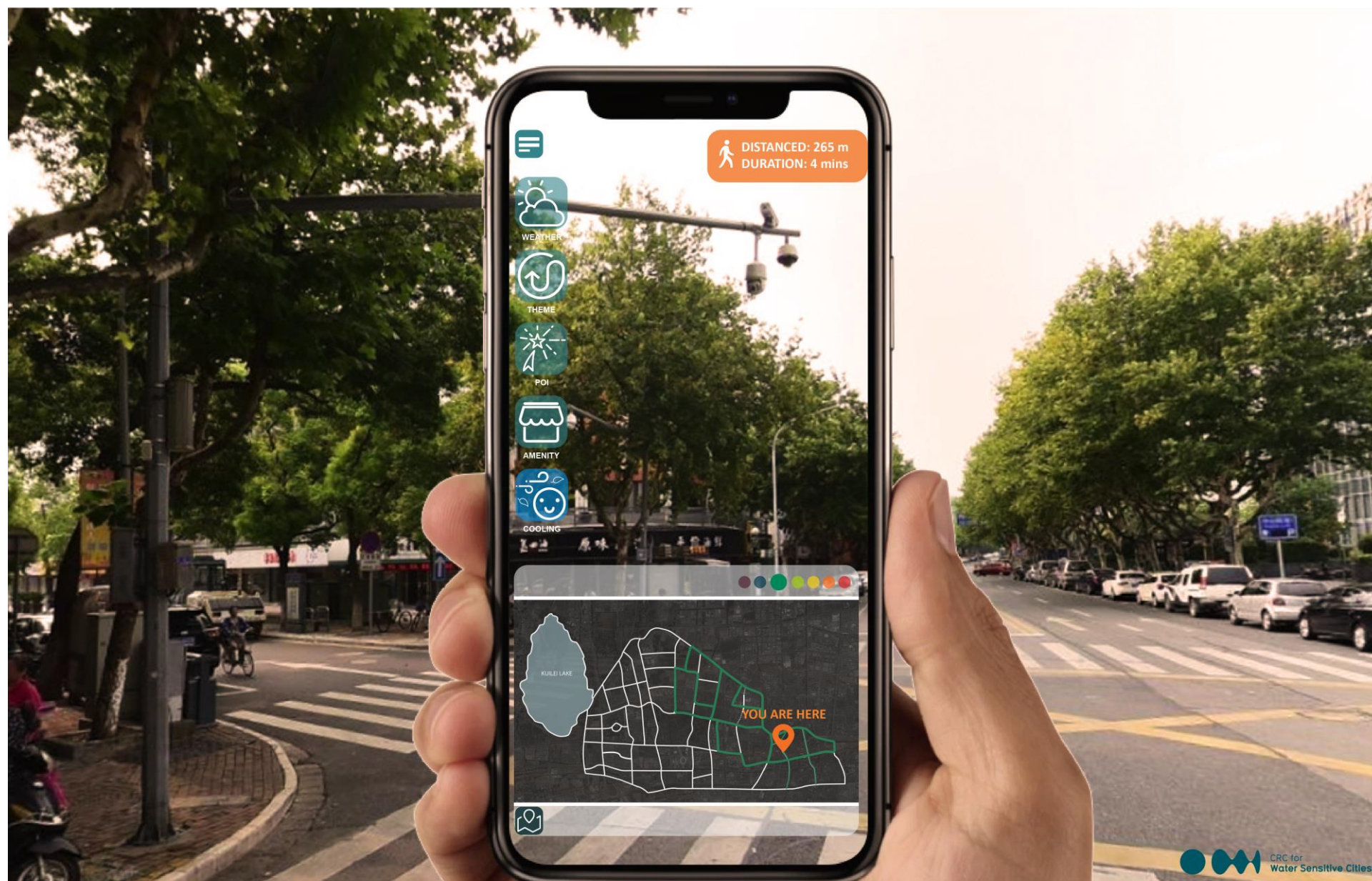
Kunshan Culture and Art Center is an important cultural project in Kunshan with a total area of 119,000 square meters. The precinct also includes a public plaza that integrates the new icon building with the joining waterway and existing sports facilities. Central to this plaza is the constructed wetland system which has been integrated within contemporary landscape character of the plaza and functions as an ecological landscape that not only provides (vegetation) biodiversity that is usually lost in the highly urbanized development area but also forms a green infrastructure that delivers multiple benefits to the precinct on top of its aesthetic and landscape value.

Today, 2019 Mar 8 10:03

### Feedback

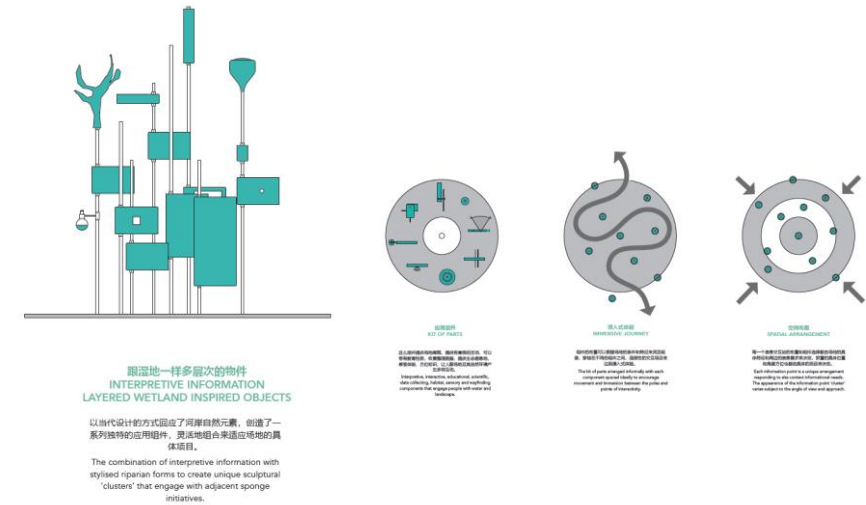
We can co-create the city ...  
Tell us what on your mind ...

# Water Sensitive City Explorer = (2) Mobile App



**Augmented Realty  
for Way finding**

# Water Sensitive City Explorer: (3) Information point



## 1. Information station

- To public
- From public
- Engage with slow movement network
- How better explore the city

## 2. Monitoring station

- Air quality
- People counting
- Heat stress

# Incubating interdisciplinary research beyond water



中国昆山  
Kunshan China



CRC for  
Water Sensitive Cities

**REALM**  
studios

*Urban Planning and Design*



E2DESIGNLAB

*Water Sensitive Specialist*

PHORIA

*Augmented Reality*

**inspire design.**

*Virtual Reality*

 **evolveplus**

*People counting*

 **mapbox**

*Mapbox Specialist - Steve Bennett*

*Graphic Design – Ms. Tiange Wu*



# Thank you

## Tapping into water sensitive opportunities: New knowledge in action

In locations including China, the CRCWSC's established international relationships are already yielding success. As a knowledge partner under the Asian Development Bank's "Future Cities Program", we have identified specific, evidence-based activities to increase the sustainability and resilience of cities in Fiji, Myanmar, and Vietnam – while complementing existing practices and infrastructure projects.

For example, we have implemented our Water Sensitive Cities Index to rate the current Water Sensitivity of Suva, Mandalay, and Ho Chi Minh City. The tool enabled us to collaboratively identify key future projects for improving each city's rating, and strengthen its "leapfrogging" trajectory into a more water sensitive future. The ultimate goal for these local contexts? Improving the health and livelihoods of their inhabitants – especially those in the most vulnerable communities.

**The cities of the future  
must be water sensitive.**  
*We have the real-world  
solutions to get you there.*

By applying new knowledge and tools from urban water management, we help to create and transform cities to deliver urban landscapes that are increasingly sustainable, resilient, productive, and liveable.

Cooperative Research Centre for Water Sensitive Cities

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**Business**  
Cooperative Research  
Centres Programme