

# Cooperative Research Centre for Water Sensitive Cities

## IRP5 Workshop: Knowledge-based water sensitive city solutions for groundwater impacted developments

Thursday 6<sup>th</sup> April, 2017

Meeting Room 10, J Block, UWA University Hall, 130 Winthrop Avenue, Crawley WA 6009

### Purpose and expected main outcomes:

1. Agreed overall scope, priorities and structure of the project
2. Agreed plan for developing a full proposal
3. Accepting nominations for the Project Steering Committee

**Facilitator:** Professor Jurg Keller

### Program:

Time	Activity	Notes
8:00 – 8:15	<b>Registration</b> - arrival tea and coffee	
8:15 – 8:45	Welcome / Introductions <ul style="list-style-type: none"> <li>• Welcome and introduction of participants</li> <li>• Overview of workshop purpose and format</li> </ul>	Jurg Keller
8:45 – 9:30	Summary of relevant outputs and findings from Tranche 1 research: B2.4 Hydrology and nutrient transport processes in groundwater/surface water systems B2.2/3 Protection and restoration of urban freshwater ecosystems: informing management and planning C4.1 Integrated multi-functional urban water systems	Carolyn Oldham
9:30 – 10:00	Q&A and discussion on research activities to date	Plenary
<b>10:00 – 10:30</b>	<b>BREAK – Morning tea</b>	
10:30 – 11:15	Needs assessment and expected outputs/outcomes <ul style="list-style-type: none"> <li>• Summary of needs identified in T2 consultations, meetings, workshops</li> <li>• Industry partners assessment of needs and expected project outputs</li> </ul>	Jurg Keller Suzanne Brown Richard Elliot Andrew Chapman
11:15 – 12:15	Discussion on overall scope, target audience and expected outputs/outcomes from new project	Group/plenary discussion
<b>12:15 – 12:45</b>	<b>BREAK - Lunch</b>	
12:45 – 13:30	Case Studies <ul style="list-style-type: none"> <li>• Purpose of case studies in overall project approach (testing &amp; refining approaches, matching outputs to needs from end users)</li> <li>• Existing and new ideas</li> <li>• Process for developing and selecting relevant case studies</li> </ul>	Jurg Keller Plenary discussion
13:30 – 14:15	Project approach and proposed adoption pathways <ul style="list-style-type: none"> <li>• Discussion on the best approaches and research/expertise areas required to achieve relevant project outputs</li> <li>• Consider/identify best industry engagement and adoption pathways</li> </ul>	Group/plenary discussion
14:15 – 14:30	Project Steering Committee - Role and membership	Jurg Keller
14:30 – 14:45	Outline of the plan to develop the full proposal	Jurg Keller
14:45 – 15:00	Summary of the outcomes from the day and follow-up actions	Jurg Keller
<b>15:00</b>	<b>Workshop close</b>	

## Outline for Workshop Discussion, 6 April 2017

### Integrated Research Project 5: Water sensitive urban development in groundwater affected areas

<b>Aim:</b>	Developing solutions that deliver overall beneficial water-sensitive city (WSC) outcomes for areas with high groundwater levels
<b>Output:</b>	Innovative solutions and integrated strategies that are specifically aimed at managing urban development in areas with high levels of groundwater in a way that supports environmental, social and economic values
<b>Perceived Challenges:</b>	<ul style="list-style-type: none"> <li>- <b>increasing pressure to develop greenfield sites</b> close to cities when the ‘easy’ sites are already developed. Hence, we need to know if and how to undertake <b>cost-effective water sensitive urban design in areas with high groundwater</b> including questions around how to:             <ul style="list-style-type: none"> <li>a) design stormwater management systems, for both low and high rainfall events</li> <li>b) impacts on infrastructure and cost of long term maintenance;</li> <li>c) consider suitable alternative water supply options</li> <li>d) construct and maintain subsurface storage and infrastructure</li> <li>e) effectively integrate local/decentralised and centralised water infrastructure in such situations</li> </ul> </li> <li>- <b>need to manage water quality</b> downgradient of high groundwater development areas, particularly where there are:             <ul style="list-style-type: none"> <li>a) impacts on Groundwater Dependant Ecosystems or other environmental values,</li> <li>b) fluctuations in water level that exacerbate pollutants (eg salt water intrusion, nutrients, acid sulphate soils)</li> </ul> </li> <li>- <b>need to reuse drainage (or dewatering) groundwater from developments (or activities)</b> in a water sensitive manner</li> <li>- <b>need to be responsive to rising groundwater levels</b> in areas hydraulically connected to sea levels or where infiltration is used to dispose of stormwater</li> <li>- likely <b>competing interests and different perspectives</b> between private developers, councils, water regulators, water utilities and public in the way high and fluctuating groundwater levels are managed in the short and long term;</li> </ul>
<b>Possible Objectives and Research Needs:</b>	<ul style="list-style-type: none"> <li>- <b>Generate evidence/methodologies to achieve best practice WSUD</b> in high groundwater environments</li> <li>- <b>Provide support for policies and guidelines</b> on how to employ WSUD in developments in high groundwater areas</li> <li>- <b>Approaches/solutions that minimise water quality impacts</b> in areas down gradient of high groundwater levels.</li> <li>- <b>Modelling tools that consider groundwater and surface water interactions</b> and helps plan WSUD in areas with high groundwater levels</li> <li>- Approaches on <b>integrated (de/centralised) water management options</b> (cross-jurisdiction) suitable for high groundwater sites</li> <li>- <b>create multi-purpose (no regret) water infrastructure solutions</b> that are able to capture future technology, social or economic development opportunities;</li> <li>- <b>develop novel urban design approaches</b> that build on and enhance the novel, optimally integrated infrastructure solutions for high groundwater areas</li> </ul>



<p><b>Potential Case Study Areas or topics:</b></p>	<ul style="list-style-type: none"> <li>- High groundwater impacting on land development or infrastructure (Fishermans Bend, Wungong, other greenfield developments in WA, infill development at Lakelands)</li> <li>- Managed groundwater provides opportunity for re-use (eg Wungong, Bendigo)</li> <li>- High groundwater impacts on performance of stormwater management systems (Port Adelaide, Wungong)</li> <li>- Altered groundwater levels due to urbanisation and/ or climate change (Port Adelaide, infill development at Lakelands)</li> <li>- Saline groundwater impacts (Fishermans Bend, Bendigo, many greenfield sites in WA)</li> <li>- Urbanisation impacting on groundwater dependent ecosystems (Northern Beaches, Brisbane City, City of Casey).</li> <li>- A case study where a greenfield site with high groundwater has successfully used WSUD and the outcomes/learnings from this approach.</li> </ul>
<p><b>Questions to be addressed in workshop:</b></p>	<ul style="list-style-type: none"> <li>- Given the complexity, diversity and scale of the challenges, what are <b>key priorities</b> to focus on that have a good chance to create actual impact on developments in areas with high groundwater?</li> <li>- What should the <b>final output/product(s)</b> look like to be of specific use and relevance for industry partners?</li> <li>- Who would be the <b>key end-users</b> of these outputs, in which organisations (councils, consultants, developers, DoW etc.)?</li> <li>- What are the <b>key skills/expertise inputs</b> that are required to address these issues? Which existing CRCWSC T1 project outputs should/could be utilised in this project?</li> <li>- How does this project best <b>connect/interact with existing/planned CRCWSC activities</b> such as Transition Strategies (IRP1), economic evaluation (IRP2), integrated planning (IPR3), infill project (IRP4) as well as Tools and Products (TAP) and Knowledge Application and Translation (KAT) activities?</li> <li>- Which <b>industry sectors and regional participants</b> should be represented in the Steering Committee and how could they provide relevant, broad-based input into the project?</li> </ul>

