

3rd Water Sensitive Cities Conference Perth — 18-20 July 2017

#3wscc





### Welcome from the Chairman

As we pass the midway point, the CRC for Water Sensitive Cities (CRCWSC) is at an exciting cusp in its mission to change how the world's towns and cities manage water to benefit their sustainability, economic growth, quality of life, and the ecosystems that support urban places. We are celebrating the extensive bank of research achievements of the last 5 years. But we are also looking firmly ahead to a dedicated program of research and adoption activities that ensure that the invaluable knowledge produced is translated, applied, and made available for on-ground impact and implementation in transforming our streets, precincts, and cities.

There are bold new directions ahead too: while our priority will remain to deliver on our commitments to our partners, we are acutely aware of the potential for a greater reach throughout Australia and overseas, particularly the growing opportunities to use the knowledge and proof-of-concepts from our research to drive positive change in developing countries. It's this eye on the future, and on tangible impact, that guide our future plans and align with both national and international momentum towards Water Sensitive Cities.

On behalf of the Board, I welcome you warmly to the 3rd Water Sensitive Cities Conference. The next three days mark a unique opportunity for the CRCWSC to share work that will shape how we use new water sensitive knowledge. As delegates, you will receive some of the first insights into the emerging suite of new products, tools, and processes that will increasingly enable Water Sensitive City transitions, both in Australia and overseas. I hope you enjoy the presentations and networking opportunities ahead.

- Dr Cheryl Batagol, Chairman, CRC for Water Sensitive Cities

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## **Keynote speakers**

#### Mr Mike Rowe, Interim Director General, Department of Water and Environmental Regulation

Mike Rowe is the interim Director General of the Department of Water and Environmental Regulation in Western Australia, which was established on 1 July 2017. Mike moved into the new role following three years as the Director General of the former Department of Water. Prior to this, he was Executive Director of Policy at the Department of Regional Development.

Having worked in a variety of leadership, policy, advisory and delivery roles since 1993, Mike is an experienced member of the Western Australian Government's senior executive service. His experience spans a number of natural resource management portfolios such as agriculture, environment and water, as well as central agencies including the Public Sector Commission and the Department of the Premier and Cabinet.

Mike studied environmental science and holds postgraduate qualifications in social research and program evaluation, and public sector management.



#### Prof Rebekah Brown, Director, Monash Sustainable Development Institute

Professor Rebekah Brown is the Director of Monash Sustainable Development Institute, Monash University – a leading interdisciplinary research and education centre working collaboratively with government, industry and philanthropists to advance the knowledge, policy and practice of sustainable development.

Since early 2000, Rebekah has pioneered interdisciplinary research across the social and biophysical sciences in sustainable water management. She co-founded the water sensitive cities research platform at Monash University as a sustainable development solution to urban water challenges globally. Rebekah was instrumental in the establishment of the \$120M (AUD) Cooperative Research Centre for Water Sensitive Cities comprising 86 partner organisations and over 170 researchers, and was its Chief Research Officer and inaugural Society themed Program Leader.



#### Prof Zhiguo Yuan, Director, Advanced Water Management Centre, University of Queensland

Professor Yuan is the Director of the Advanced Water Management Centre (AWMC) at The University of Queensland. His research focuses on development of innovative solutions for urban water management through effective integration of fundamental science and applied engineering. Prof Yuan was a member of the CRCWSC Executive team and Leader of the Future Technologies Program. He has to date published over 300 fully refereed journal articles. He is also the founder of three biotechnology businesses and his research has delivered savings of over \$400 million to the Australian water industry. His research achievements and leadership have been recognised through national and international awards. He is an IWA and an ATSE Fellow and was named as one of Engineers Australia's Top 100 Most Influential Engineers for 2015. He was recently awarded the highly prestigious ARC Australian Laureate Fellowship.



## Location

#### **Perth Convention and Exhibition Centre**

**Level 3**, 21 Mounts Bay Road Perth, Western Australia 6000

Walking access into the Centre on Level 1 is via Mill Street or Mounts Bay Road. Level 2 can be accessed via the Elizabeth Quay Busport overpass. The Centre is also wheelchair accessible.

# **Getting to PCEC**



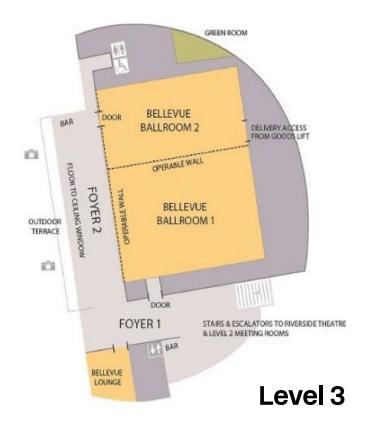
Elizabeth Quay train station is located at the doorstep of the Centre and services the Mandurah and Joondalup Railway Line. Other train stations within close proximity of the centre include:

- Perth Underground station (Mandurah and Joondalup Railway Line) located on the corner of William Street and Murray Street Mall.
- Perth Central station (Armadale-Thornlie Railway Line, Fremantle Railway Line and Midland Railway Line) located along Wellington Street (across from Forrest Place).
- An underground walkway connects the Perth Central station to the Perth Underground station.



#### **Buses**

Elizabeth Quay Busport is located adjacent to the Centre. Many bus services depart and arrive at the Elizabeth Quay Busport Including the free CBD 'Blue and Green CAT' service. Perth's other major busport is the Wellington Street Bus Station, located along Wellington Street next to the Perth Central train station.





# **Parking**

The City of Perth Convention Centre Car Park is located directly under the Centre and is open 24 hours, 7 days a week. Parking fees are available at an hourly rate (approx. \$6) and 10 hour maximum (approx. \$24), subject to change.



#### Taxi

Perth Convention and Exhibition Centre is approximately 30 minutes from Perth International Airport. The Centre is a designated Cab Spot location. A taxi phone is located at the Plaza Entry doors on Level 1. The Cab Spot number is 1088. Alternatively, to book a taxi, please contact:

Swan Taxis 13 13 30 Black and White Taxis 13 10 08

# Tuesday 18 July 2017 — Day 1

BelleVue Ballroom 2 Foyer

8:30 Registration

BelleVue Ballroom 2

9:00

#### **Session 1: Opening Plenary**

Session Convener: Ben Furmage, COFO, CRC for Water Sensitive Cities

#### **Welcome to County**

Dr Noel Nannup, Noongar Elder

#### CRCWSC at the midway point

Professor Tony Wong, CEO, CRC for Water Sensitive Cities

#### Keynote #1: Progress in the Transition of Perth into a Water Sensitive City

Panel of Perth-based Industry Leaders convened by Mike Rowe, Interim Director General, Department of Water and Environmental Regulation

WA Leaders Panel discussion, facilitated by Mike Rowe

- Paul Whyte, Department of Communities (Housing)
- Frank Marra, LandCorp
- David MacLennan, Department of Planning, Lands and Heritage
- · Ashley Vincent, Water Corporation

BelleVue Ballroom 2 Foyer

10:30 Morning Break (Poster Viewing)

### **Tuesday 18 July 2017 — Day 1**

BelleVue Ballroom 2

BelleVue Lounge

11:00

Session 2a: Engaging communities in water sensitive cities transition - the Elster Creek project
Session Convener: Professor Nigel Bertram, Monash University

This session will discuss the development of a community vision for the Elster Creek precinct and broader catchment in Elwood and the subsequent translation and development of this vision through a design-led process culminating in the exhibition 'Swamped' (City of Port Phillip Gallery, 2017). Presenters will discuss this design-engagement process from three different perspectives: community members, local government stakeholders and urban design academics. They will reflect on the potential of 'propositional' or 'projective design' research as a tool and process for meaningful community engagement and debate; and for generating tangible opportunities and ways forward from complex and often intangible problems. The presenters will also discuss the importance of analysing history and engaging deep local knowledge when considering plans for future adaptive actions.

#### **Speakers**

- · Renae Walton, City of Port Phillip
- Geoffrey Love, St Kilda Resident, Secretary, Elwood Floods Action Group
- · Nigel Bertram, Monash University
- Geoffrey London, University of Western Australia
- Briony Rogers, Monash University

Session 2b: Recent advancement in water technologies

Session Convener: Professor Zhiguo Yuan, The University of Queensland

Technology developments play a critical role in supporting the transition to a water sensitive city. Together, CRCWSC industry partners and researchers will showcase selected projects where drinking water, stormwater, and wastewater management technologies have been developed and implemented. Diverse water technologies which address issues of water scarcity, alternative water sources, and ageing infrastructure will be discussed; highlighting the collaborative approach which underpins the relevance of these technologies, and the cost-savings involved with adoption of these technologies. Specifically, the potential for significant water conservation and associated benefits will be demonstrated with applications of 'smart' water metering for anomaly detection in water usage patterns. Presenters will also discuss how advanced modelling tools for sewer corrosion and odour management are able to substantially extend sewer life and delay capital expenditure on infrastructure. And finally, the use of biofiltration systems for stormwater treatment and harvesting will be discussed in terms of design and performance parameters, highlighting the role these constructed systems play in water sensitive urban design.

#### **Speakers**

- · Keshab Sharma, University of Queensland
- · Zhiguo Yuan, University of Queensland
- Rachel Cardell-Oliver, University of Western Australia
- Nick Wilkinson, City of Canning
- Belinda Hatt, Monash University
- · Bill Capati, City of Gold Coast

BelleVue Ballroom 2 Foyer

### Tuesday 18 July 2017 — Day 1

BelleVue Ballroom 2

**Session 3a: The Water Sensitive Cities Index** Session Convener: Chris Chesterfield, CRC for Water Sensitive Cities

This session will explore the recently developed Water Sensitive Cities Index which has been designed to benchmark cities based on performance against a range of urban water indicators that characterise a water sensitive city. Topics to be covered will include the purpose of the Index, how it has been developed and what it looks like (goals and indicators, and web platform). Index benchmarking results will be presented for a number of Australian and international cities. A panel of speakers will discuss their experience using the Index and how it is contributing to their planning to become more 'water sensitive'. The next stages in the development and application of the Index will also be outlined.

#### **Speakers**

- · Chris Chesterfield, CRC for Water Sensitive Cities
- Sara Llovd, E2Designlab
- Lindsey Brown, Foundry
- Briony Rogers, Monash University
- Christian Urich, Monash University
- Jeremy Manning, City of Swan
- Giles Pickard, City of Subiaco
- Natalie Lees, City of Mandurah
- Antonietta Torre, Department of Water and **Environmental Regulation**

Session 3b: Urban development and managing surface and groundwater interactions: insights from Perth-based research and practices Session Convener: Professor Carolyn Oldham, The University of Western Australia

This session will provide a synthesis of findings from project B2.4. At the start of this project, solutions to the challenges posed by high groundwater were constrained by knowledge gaps and data paucity and therefore created uncertainty in predictions of catchment responses to management approaches. Project B2.4 started to tackle these knowledge gaps by a) quantifying groundwater recharge from, and discharge into, urban catchments and WSUD elements (constructed wetlands, retention basins and living streams) over storm events and seasons; and b) quantifying the performance of WSUD elements impacted by groundwater. Presenters will highlight what they have learnt from the data collected over the last three years. A panel from state and local governments will discuss how they have utilised these findings for improved management of groundwaterconstrained areas. Finally, attendees will have a chance to discuss how new understanding of water pathways in urban areas with high groundwater could be used.

#### **Speakers**

- · Jennifer Stritzke, Department of Water and **Environmental Regulation**
- John Savell, Department of Communities (Housing)
- Neil Burbridge, City of Armadale
- · Carolyn Oldham, University of Western Australia
- Carl Davies, University of Western Australia

BelleVue Ballroom 2 Fover

15:00 Afternoon Break (Poster Viewing)

### Tuesday 18 July 2017 — Day 1

BelleVue Ballroom 2

elleVue Lounge

15:30

Session 4a: Formulating transition plans Session Convener: Dr Briony Rogers, Monash University

This session will explore the envisioning and transition planning process being developed as part of the first integrated research project of tranche 2, designed to provide strategic guidance for cities and towns on their water sensitive city transition journey. It will present the conceptual basis of the transition strategy framework, tools and development process as well as showcase results from six different case study cities. Industry partners from each city will highlight key insights, including their unique water stories, water sensitive benchmark and vision, and priority objectives for driving their city's water sensitive transition. The session will conclude with the panel of speakers reflecting on their experiences during the process, key outcomes of each case study and how their transition strategy will be taken forward.

#### **Speakers**

- · Briony Rogers, Monash University
- · Katie Hammer, Monash University
- Chris Chesterfield, CRCWSC
- · Chris Manning, Townsville City Council
- Amy Lomax, City of Gold Coast
- Elliot Stuart, Department of Environment, Land, Water & Planning
- Phil Birtles, Sydney Water
- Greg Ingleton, SA Water
- · Sharon Dignard, Water Corporation

Session 4b: Economic Valuation of Water Sensitive Cities

Session Convener: Professor David Pannell, The University of Western Australia

This session provides a range of insights into the economics of water sensitive cities. It starts with an overview of completed research on monetary valuation of intangible benefits from water sensitive practices, mostly drawn from CRC projects. The results from a case study that has evaluated millions of potential strategy combinations for reducing nutrient pollution in the Canning River in a rapidly developing region of Perth will be examined, followed by reflections from an end user of the research. Finally, the presenters will outline the CRC's new economics project, which will involve working closely with end users to develop a comprehensive economic evaluation framework and applying it to a range of case studies.

#### **Speakers**

- · David Pannell, University of Western Australia
- Maksym Polyakov, University of Western Australia
- Ursula Kretzer, Department of Water and Environmental Regulation
- · Sayed Iftekhar, University of Western Australia

BelleVue Ballroom 2 Foyer

17:00

Close

River View room 5 (level 2)

Water Sensitive Cities Participants Dinner - Hosted by Water Corporation



# Wednesday 19 July 2017 — Day 2

BelleVue Ballroom 2 Fover

Session 5: Keynotes - Emerging applications of water sensitive cities principles and practices - Hosted by **Department of Communities (Housing)** 

Session Convener: Professor Tony Wong, CRC for Water Sensitive Cities

Keynote #2: Water sensitive cities and human health outcomes in developing countries Prof. Rebekah Brown, Director, Monash Sustainable Development Institute, Monash University

#### **Keynote #3: Methane bioconversion to liquid chemicals**

Prof. Zhiguo Yuan, Director, Advanced Water Management Centre, University of Queensland, 2017 ARC Laureate



BelleVue Ballroom 2 Foyer

10:30

Morning Break (Poster viewing)

BelleVue Ballroom 2

BelleVue Lounge

Session 6a: CRCWSC International 11:00

> Session Convener: Jianbin Wang, CRC for Water Sensitive Cities

This session presents the CRCWSC's and its partner's international engagement activities on a global scale, particularly in the Asia-Pacific region and China. Attendees will hear about how: the International Water Centre influences global policies and practices, and cultivates the next generation of WSC leaders; the CRCWSC's engagement with major financial institutions, such as the Asia Development Bank, provide opportunities for Australian WSC research to influence on-ground projects affecting a wide range of communities, including slums; the CRCWSC's enduring and productive partnership with the Chinese incubator city of Kunshan has resulted in multiple awards, and the creation of a portal to validate Australian technology and provide the Australian industry with pathways into Chinese markets.

#### **Speakers**

- Jianbin Wang, CRC for Water Sensitive Cities
- Mark Pascoe, International WaterCentre
- Kerrie Burge, CRC for Water Sensitive Cities
- Tony Wong, CRC for Water Sensitive Cities

Session 6b: Tools for achieving integrated planning and decision-making

Session Convener: Dr Christian Urich, Monash University

This session will discuss how tools for integrated planning and decision-making can be used to provide support for water sensitive developments ranging from high-level strategy development, to options evaluation, and more detailed planning and implementation of water sensitive solutions. The session will also explain how tranche 1 research outputs can be utilised by industry using the Water Sensitive Cities Toolkit and DAnCE4Water. Case study applications of these tools will highlight their capabilities to support planners, designers and engineers to assess the multiple benefits of green infrastructure solutions. By introducing the Tools and Products subprogram, this session will give participants the opportunity to shape the next phase in the development of integrated planning and decision-making tools.

#### **Speakers**

- · Christian Urich, Monash University
- Peter Bach, Monash University
- Mellissa Bradley, Water Sensitive SA

BelleVue Ballroom 2 Foyer

12:30 Lunch Break (Exploring the CRC for Water Sensitive Cities website)

## Wednesday 19 July 2017 — Day 2

BelleVue Ballroom 2

BelleVue Lounge

13:3

# Session 7a: From research synthesis to practice and implementation

Session Convener: Jamie Ewert, CRC for Water Sensitive Cities

How can I understand what the research is telling me and how can I apply these ideas in my projects? The CRCWSC is asked these questions a lot and so the Research Synthesis activities were developed to meet this need. This session will explain the CRCWSC's research synthesis activities and show how these activities combine design thinking with interdisciplinary research to craft real-world solutions. The process is also shown to build stakeholder commitment along the way. The session will present the Ideas for Aquarevo (Melb) and Solutions for Norman Creek (Bris) research synthesis projects and show how these ideas have since been taken forward.

#### **Speakers**

- Jamie Ewert, CRC for Water Sensitive Cities
- David Bergmann, South East Water
- Nick Morgan, Brisbane City Council
- · Richard Simmons, Brisbane City Council

Session 7b: Designing liveable cities through heat mitigation

Session Convener: Professor Nigel Tapper, Monash University

This session features CRC researchers and a key CRC industry partner. Professor Nigel Tapper will present an overview of key research outcomes from the urban climate program of the CRC, while Drs Kerry Nice and Asieh Motazedian will provide insight into climate model use and development in support of WSUD-based urban cooling. Finally, a Melbourne Water representative will provide an overview of their Cooling Melbourne initiative and the insights provided by CRC research.

#### **Speakers**

- Nigel Tapper, Monash University
- · Kerrie Nice, Monash University
- Asieh Motazedian, Monash University & Brimbank City Council
- · Beth McLachlan, Melbourne Water

BelleVue Ballroom 2 Foyer

15:00

Afternoon Break (Poster viewing)

BelleVue Ballroom 2

15:30

#### **Session 8: Summary and Closing**

Session Convener: Professor Tony Wong, CRC for Water Sensitive Cities

An overview of IRP3 and IRP4 Prof. Jurg Keller, CRO

Panel Q&A CRC Board Directors and Prof. Tony Wong, CEO

Closing Remarks Dr. Cheryl Batagol, Chairman of the CRC Board

16:30

Close

16:45

#### Evening WSUD Tour (Optional) - Hosted by Syrinx

in action, so don't forget your umbrella!

Join us on a winter evening tour along the Swan River foreshore to observe water sensitive solutions championed by the City of Perth. The tour will commence at the Perth Convention and Exhibition Centre Plaza, where we will board the coach and drift to the Point Fraser Stormwater Wetland to walk around as the sun sets. We will then make our way to Elizabeth Quay raingardens (likely by coach) to learn more about the Biolfilters designed by Syrinx for the Metropolitan Redevelopment Authority. Take the opportunity to discuss stormwater at length while the alcoholic water flows at the Reveley Bar, where drinks and food are kindly supplied by Syrinx.

Please meet at the registration desk at 16:45 sharp. We may be lucky enough to see these stormwater systems

If you wish to attend please contact: admin@crcwsc.org.au

SYRINX

## Thursday 20 July 2017 — Day 3

BelleVue Ballroom 2

BelleVue Lounge

8:30

Training Session 1: Designing green infrastructure for heat mitigation and multiple benefits using the WSC Toolkit

Session Convener: Dr Peter Bach, Monash University Training Session 2: Engaging stakeholders in a water sensitive city

Session Conveners: Tracy Schultz, The University of Queensland and Paul Satur, Monash University Site Visit 1: White Gum Valley

Hosted by The University of Western Australia



#### **Hosted by Landcorp**



The WSC Toolkit is a simple-touse rapid assessment tool for identifying the multiple benefits of a range of water sensitive urban design technology and green infrastructure options in urban environments. Justifying the multiple benefits of implementing such water sensitive assets in urban development projects (be it greenfield or retrofit) is often quite challenging. With the WSC Toolkit, practitioners gain a new quantitative and visual means of illustrating how water sensitive technologies can deliver a range of benefits in addition to their core function. These include improving stream health and ecology, reducing minor flooding to protect against stream erosion, mitigating urban heat and understanding the likely economic benefit in terms of willingness to pay based on the local demographic. The ability to understand how these benefits may change in the future with the impact of climate change is an added feature. Overall, the Toolkit allows users to customise a suite of different assessments in order to build a more holistic, interdisciplinary and integrated picture of their water sensitive city and communicate this more effectively to other stakeholders on their project.

The transition to water sensitive cities will require not only a technical progression of water resources, but also a societal one to ensure practitioners and communities can work collaboratively to deliver integrated resource management outcomes. Yet in modern, urban settings where community needs, experiences and capacities are diverse, how do we ensure this dialogue? This workshop will draw on the key outcomes from the CRCWSC A2 Projects to provide information and guidelines on how to engage diverse community and organisational stakeholders. The workshop will highlight the role of existing water use cultures in influencing both community and stakeholder experiences, needs and capacities, present research on Australia's current levels of water literacy and consider evidencebased guidelines, tools and pathways for more effective and meaningful forms of engagement that can enrich capabilities for water sensitive outcomes. This workshop will include hands-on activities to develop targeted communication messages incorporating the principles and guidelines presented.

"One Planet Living" - living within the limits of this planet's available natural resources - has been at the core of the development of the 2.82 ha precinct in the City of Fremantle. This bus tour will take attendees to consider four areas of the precinct: the public open space; a reengineered stormwater basin; Gen Y Housing and SHAC (affordable housing for artists and creatives by Access Housing); and Moquet Vista verge tree and swale. Each area will be considered for its commitment to improved urban water management, reduced and fit-for-purpose water use, energy efficiency, strengthening community living and enhanced biodiversity.

Please meet at 8:30 sharp on Level 2 in the central foyer near the staircase.

## Thursday 20 July 2017 — Day 3

BelleVue Ballroom 2 Foye

10:30 Morning Break

BelleVue Ballroom 2

BelleVue Lounge

11:00 Continuation of Training Session 1

Continuation of Training Session 2

BelleVue Ballroom 2 Foyer

12:00 Lunch

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BelleVue Ballroom 2

BelleVue Lounge

12:45

Training Session 3: Designing groundwater-sensitive urban developments

Session Conveners: Prof. Carolyn Oldham, The University of Western Australia and Helen Brookes, Urbaqua Training Session 4: Stormwater characterisation and harvesting

Session Convener: Dr Belinda Hatt, Monash University

#### Hosted by The University of Western Australia



This capacity-building workshop will focus on two key areas of knowledge required to design groundwater-sensitive urban developments:

- understanding the urban water balance in high groundwater environments; and
- understanding redox conditions in the urban landscape and their impact on reducing nutrient discharge into receiving waters.

The workshop will use case studies to practically apply the information presented, and will explore two CRCWSC reports: "Performance of two urban stormwater biofilters in an area with seasonally high groundwater"; and "A guide for monitoring the performance of WSUD elements in areas of shallow groundwater."

The workshop will be delivered in partnership with industry leaders who have experience designing and implementing urban water management systems (such as wetlands, biofilters and living streams) in high and contaminated groundwater environments.

The benefits of harvesting and reusing stormwater include increased water supply security as well as provision of ecosystem services. However, the quality of stormwater varies widely and this has implications for treatment requirements to minimise public health risks.

This interactive workshop will focus on two areas:

- understanding the chemical, microbial and toxicological quality of stormwater, the influence of catchment characteristics on pollutant concentrations and the human health risks associated with untreated stormwater; and
- selection of appropriate passive, low-energy treatment technologies to produce fit-for-purpose water supplies.

Case studies and practical lessons for Water Sensitive Citie

# **Past Water Sensitive Cities Conferences**

# Melbourne 2014









Brisbane 2015











# **Essential Participants**







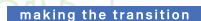












## Other participants















































































Yarra























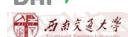




















# **SME** associate partners

























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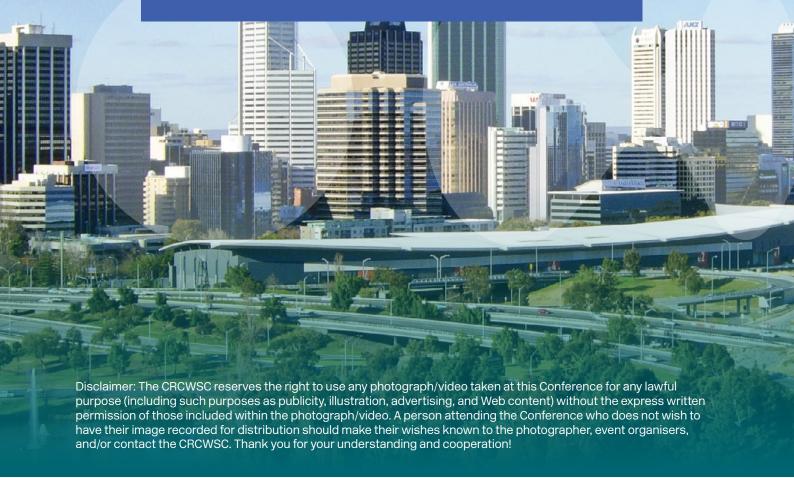








https://www.surveymonkey.com/r/3WSCconf



### **Cooperative Research Centre** for Water Sensitive Cities

- Level 1, 8 Scenic Boulevard Monash University Clayton VIC 3800
- www.watersensitivecities.org.au



3rd water sensitive cities conference

making the transition

Case studies and practical lessons for Water Sensitive Cities