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Exploring Elwood's flood challenges: A Collaborative Approach for a Complex Problem

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2nd Water Sensitive Cities Conference

Brisbane 8-9 September, 2015

'Abstract template'

One member of each research project is invited to give a 12 minute oral presentation at the 2015 Water Sensitive Cities Conference, in line with the preliminary program provided.

Presenters are required to submit an extended abstract of 500-600 words (plus images if appropriate) that will be published in the conference program. Please ensure there is a clear link to industry need and application in both your abstract and presentation and consider the highly diverse nature of the audience and minimise the use of overly technical concepts and jargon.

Please complete the table and abstract template provided below and submit to: brisbane@crcwsc.org.au strictly no later than 31 July, 2015. Once your abstract has been accepted, you will be sent a powerpoint presentation template that must be used at the conference.

Questions or inquires can be directed to brisbane@crcwsc.org.au

Thank you !

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|---|---|
| CRCWSC research project # | A4.2, A4.3, B4.1, B4.2, D5.1 |
| Title of abstract / presentation | Exploring Elwood's flood challenges: A collaborative approach for a complex problem |
| Full name of author/s | Briony C. Rogers ^{1,2,3} , Nigel Bertram ^{1,4} , Alex Gunn ^{1,2,3} , Roland Löwe ^{1,5} , Catherine Murphy ^{1,4} , Rutger Pasman ^{1,4} , Mohanasundar Radhakrishnan ^{1,6} , Christian Urich ^{1,3,7} , Karsten Arnbjerg-Nielsen ^{1,5} |
| Organisation/s / affiliations | 1. Cooperative Research Centre for Water Sensitive Cities 2. School of Social Sciences, Monash University 3. Monash Sustainability Institute, Monash University 4. Monash Art Design and Architecture (MADA) 5. Technical University of Denmark (DTU) 6. UNESCO-IHE Institute for Water Education 7. Department of Civil Engineering, Monash University |
| Full name of proposed presenter | Briony C. Rogers, Nigel Bertram, Karsten Arnbjerg-Nielson |
| Do you give permission for your presentation to be recorded? | Yes |
| Do you require any special audio- visual requirements? | No |
| Other comments: (including any requests to change position in the program) | This session is part of 1A, which involves the following: A4.2 presentation 15 mins D5.1 presentation 15 mins Integrated case study presentation 15 mins (Briony, Nigel, |

| | |
|--|--|
| | <p>Karsten)</p> <p>Facilitated panel discussion on interdisciplinary and place-based approaches to research 30 mins, involving research team and industry partner(s), e.g. Sam Innes from City of Port Phillip?</p> <p>The abstracts for A4.2 and D5.1 have been submitted separately, this abstract is for the integrated case study presentation and facilitated panel discussion.</p> |
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Exploring Elwood's flood challenges: A Collaborative Approach for a Complex Problem

Briony C. Rogers^{1,2,3}, Nigel Bertram^{1,4}, Alex Gunn^{1,2,3}, Roland Löwe^{1,5}, Catherine Murphy^{1,4}, Rutger Pasma^{1,4}, Mohanasundar Radhakrishnan^{1,6}, Christian Urich^{1,3,7}, Karsten Arnbjerg-Nielsen^{1,5}

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Keywords: climate change adaptation, envisioning, flood risk, modelling scenarios, strategy testing, urban densification

Abstract:

The delivery of water sensitive practices requires the water system to be understood as an integral part of the urban landscape, providing water and ecological services that meet society's needs for water supply, sanitation, flood protection, amenity, recreation and ecosystem health. Through the embedded nature of water sensitive *urban* design, novel multi-functional solutions can be found at the interface between environmental engineering and urban design approaches that benefit local communities. The identification and delivery of such opportunities is best facilitated by a collaborative place-based approach that integrates multiple disciplines and community participation to co-design strategies that fit the local cultural, geographical and ecological context.

This presentation discusses how CRCWSC research teams across social science, architecture and environmental engineering are collaborating to identify opportunities for increasing the sustainability and liveability for the flood prone suburb of Elwood in Melbourne, while increasing its resilience to pluvial flooding. Elwood was selected as the location for this integrated case study because it is facing a range of long-term planning challenges, has a history of water management issues such as flooding and pollution, and is home to an active and vocal community engaged in flood and sustainability issues.

This integrated approach combines latest research on engaging with communities to better understand their concerns, aspirations and ideas for water sensitive practices, new approaches to sustainable urban densification and the activation of such urban forms for increasing flood resilience, and advances in engineering modelling that simulate interactions between urban form and water management solutions to test the performance and robustness of proposed solutions. The specific contributions of individual CRCWSC projects are outlined below and summarised in Figure 1:

- A4.2 is facilitating a series of three transition scenario workshops with local community members, aiming to examine the significant long-term challenges and objectives of water management in Elwood. These workshops, each approximately three hours long and taking place in July, August and September 2015, draw on principles of envisioning and backcasting and will develop a community-led strategy for achieving a water sensitive Elwood in 2065.
- Based on these community visions and strategies, D5.1's contribution is design-led, working with the tangible social, environmental and experiential implications of water-based issues. Through an iterative process, the content and ideas of the workshops are being documented with follow-up design synthesis between workshops. This process aims to raise awareness of potentials and processes through visualising and analysing change scenarios in a cumulative manner. These scenarios range in scale from catchment-wide thinking to key local Elwood sites identified for

immediate action. The generated imagery will include maps, diagrams, schematic designs and other material.

- A4.3's DAnCE4Water, an emerging CRCWSC computational decision-support tool, has been set up to simulate urban development scenarios for the Elwood catchment and coupled with B4.1's flood risk assessment framework, underpinned by the MIKEUrban modelling software that assesses flood risk in space and time. These tools will be used to analyse the interactions between Elwood's urban forms and flood risk, allowing the flood mitigation potential (and associated costs and benefits) of decentralised stormwater solutions and innovative urban designs (identified through D5.1, for example the redirection of overland flow paths) to be tested under different scenarios of urban development and climate. They will also inform analysis of the overall costs and benefits of different adaptation pathways in B4.2, involving the sequencing of sets of possible adaptation strategies in response to changes in climate, land use, demography and socio economics.

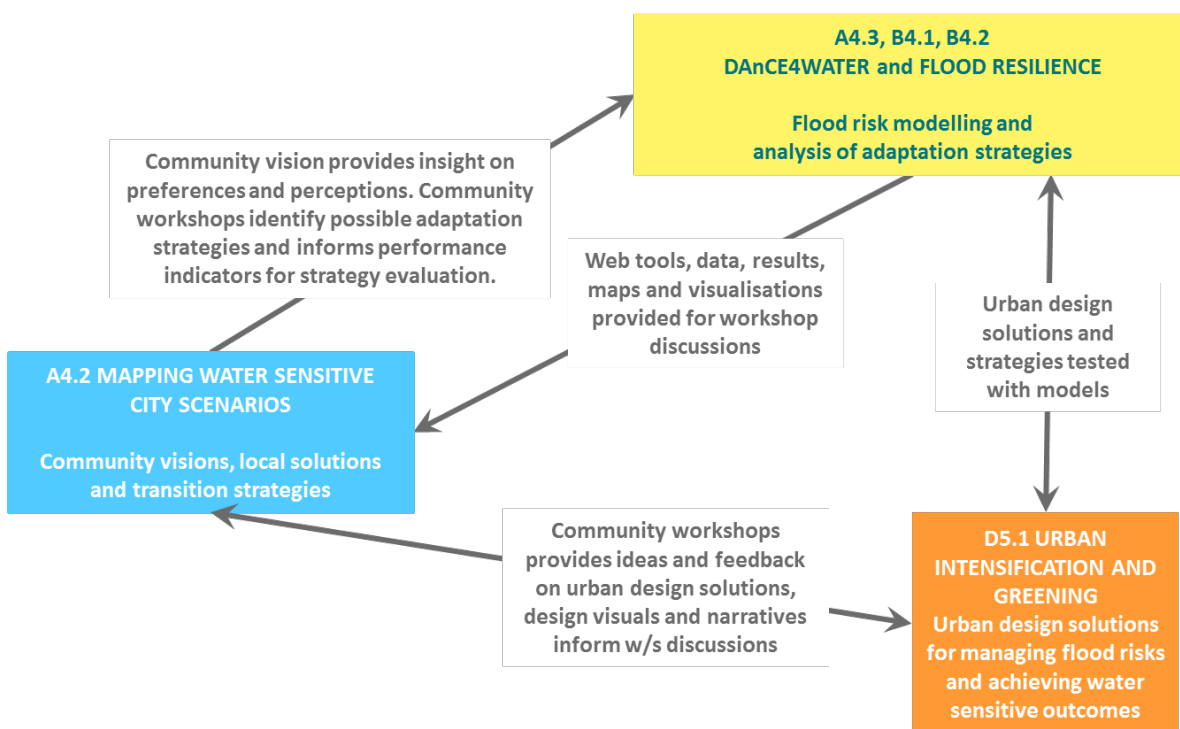


Figure 1. Collaboration between CRCWSC research projects focused on the Elwood catchment

As this research is currently in progress, the session will present integrated findings to date and facilitate a panel discussion reflecting on the experience and value of taking this collaborative interdisciplinary place-based approach to developing solutions and strategies for addressing specific issues in a local context.