

Program A Quarterly Report – Q4 FY1516

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| Program Title: | Society |
| Program Leader: | Dr Kelly Fielding |
| Report for Quarter ending: | 30 June 2016 |

Overall summary of Program

- Multiple projects have requested extensions to complete milestones/deliverables – A2.1, A2.2, A3.1, A3.2, A3.3
- Projects now finished – A1.1, A1.2, A1.3, A4.1, A4.3

Key Findings

A1

- Similar to past studies water conservation treatment interventions lead to more water saving for households with high baseline water use. Additionally, while cost-based treatments are effective after the first mailer some socially-oriented treatments require repeated letters to maintain water conservation.
- Optimal policy mixes for the case study catchments: the initial results indicate that linking septic tanks to main sewerage will be a cost-effective policy for reducing nutrient emissions. Behaviour change policies may also be cost-effective, but there is limited evidence on how long innovations persist.

A2

- The concept of a social gradient in water use is being developed based on analysis from Paul Satur's PhD on social inequality.
- Jargon, language and use of images influence people's responses to information about water sensitive urban design (WSUD). E.g., providing information using consumer-friendly language and images can increase support for WSUD. Using jargon terms (e.g., biofiltration) can reduce support in some groups.

A3

- A report on risk in relation to decentralised water systems found the following:
- At least eight different ways exist through which decentralisation of water activities can occur. *The focus was on situations where consumer water services are provided by either a private or a community-owned water service provider.*
- The current model whereby legal risks are sought through public water utilities suggests that anyone seeking to recover damages for harm suffered faces significant practical difficulties in doing so. But public utilities have generally been good at both preventative risk management and making good on harm suffered and they therefore enjoy high public trust.
- A direct relationship between a private or community entity and water consumers is currently rare. The new legal arrangements required would bring harm recovery problems to the fore, as well as introducing some new issues. Neither the current legal and regulatory frameworks nor the legal risk allocation mechanisms inherent in these models are suitable for such innovations. Most Australian state governments would therefore need to scrutinise and rethink existing legal and regulatory frameworks before supporting such decentralised innovations.
- Whilst future innovative WSC practices may not give rise to any new harms, any new 'hydro-social contract' will still clearly need to control for the four broad categories of harm: public health, flooding, environmental health and security of supply.
- Decentralised WSC innovation may therefore indeed be a risky business when seen from a legal perspective. Yet, innovation in urban water management is vital and we should not be deterred. We need

to proceed cautiously and ensure that appropriate legal and regulatory frameworks are in place to allow such innovation to occur in a socially as well as commercially optimal ways.

- There are several potential policy options which could be considered by governments in order to reallocate the risks of water sensitive innovations and to mitigate or manage possible adverse legal consequences of innovative water supply arrangements. These involve better harm prevention, a reallocation of liabilities for harm, or the development of informal recovery mechanisms. Suitable solutions will need to reflect the differing political, historical, legal and institutional features of the individual States and Territories.

A4

- Case study analysis of co-governance initiatives demonstrates the inherent complexities of these initiatives and identifies the need for internal organisational attention to be directed towards: (i) building institutional capacity to engage with the community and to understand the level of ongoing involvement in any co-governance arrangement; (ii) analyse and involve all relevant stakeholders – the detailed stakeholder profiling significantly contributed to the effectiveness of engagement strategies; and (iii) work to build trust, local capacity and long-term commitment.
- Further performance improvements of DAnCE4Water enabled modelling of the impacts of increased urbanisation and climate change on the metropolitan area of Melbourne at parcel level detail, allowing the effectiveness of decentralised and centralised management options to be tested from parcel to city scale. It was shown that increased residential and commercial demand can be compensated for by utilising rainwater harvesting tanks and increasing appliance efficiency. However, it was also shown that a significant water demand reduction can lead to issues for maintaining the water quality in the water supply network. Assessing the robustness of flood adaptation options in Scotchman’s Creek showed that a delay in their implementation will lead to an increased flood risk under a range of future scenarios.

Key Communication Activities

- A1.1 Melbourne Water; Anke Leroux discussed the valuation of non-market benefits of stormwater harvesting with Betty Allegria and shared sources of information with her
- A1.1 Joint work on intrinsic risk preferences was presented at the annual EAERE conference in Zurich.
- A1.3 There has been regular communication in this quarter between UWA and DPAW (Peter Adkins, Jennifer Stritzke) and the Department of Water (Peta Kelsey, Joel Hall).
- A1.3 There will be a presentation at the WA Dept of Parks and Wildlife in August to finalise the results and request final feedback on the cost and biophysical parameters used in the abatement cost model
- A2.1 Jo Lindsay and Paul Satur participated in a workshop providing advice on the monetised benefits tool being developed by the SA state government.
- A2.2 Project staff have met four times with staff from CityWest Water and made an in-principle agreement to collaborate in a behaviour change intervention.
- A2.2 PhD candidate Sarah Kneebone presented A2.2 prioritisation work at the 9th Making Cities Liveable Conference in Melbourne on 28 June 2016
- A2.3 Angela Dean presented at the Liveable Cities Conference on “Community support for water sensitive urban design”
- A2.3 Angela Dean presented at the UQ Water Forum on “Engaging communities in waterway protection through effective communication”
- A2.3 Kelly Fielding presented at the UQ Water Forum on “Stormwater is find but I’m not comfortable with recycled water”
- A3.2 Team members presented a paper to the European Consortium for Political Research Regulatory Governance Conference in Tilburg, Netherlands.
- A3.2 Team members at Monash University presented to the Monash University Faculty of Law covering the project activities
- A3.3 The first science-to-policy capacity building workshop was held in Melbourne with 15 CRCWSC researchers and 4 expert practitioners
- A4.2 Ongoing engagement with the WA Department of Water to plan implementation workshops and to inform the development of the “Water Sensitive Transition Network”

- A4.2 Briony Rogers presented visioning process at a one-day masterclass on building flood resilient communities as part of the integrated Elwood project
- A4.2 Briony Rogers presented “An integrated approach to enhancing urban flood resilience in Elwood, Melbourne” at OzWater in Melbourne
- A4.2 Briony Rogers presented the visioning process and building flood resilience in Elwood to Architecture masters students at Monash University
- A4.3 DAnCE4Water was demonstrated during a one-day masterclass on building flood resilient communities as part of the integrated Elwood project
- A4.3 Meetings with interested stakeholders were conducted to discuss the potential applications including:
 - Department of Environment, Land, Water and Planning to scope the potential for applying the urban water cycle model at city scale to test the impacts of land use policies
 - Melbourne Water to support their current flood risk assessment framework
 - Melbourne Water together with eWater exploring links of DAnCE4Water to eWater’s Source model to improve water demand forecasting
 - City West Water developing a research application to improve the commercial and industrial demand forecasting component

| Project | Key Developments and Summary |
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| <p>Project A1 Project Leader: David Pannell (UWA) incorporating:</p> <ul style="list-style-type: none"> • A1.1 – Cities as Water Supply Catchments Economic Valuation Sub-Project Leader: Lata Gangadharan (MU) • A1.2 Valuation of economic, social and ecological costs and benefits Sub-Project Leader: James Fogarty (UWA) • A1.3 Economic incentives and instruments Sub-Project Leader: Lata Gangadharan (MU) | <p>A1.1 – Project delayed: a 12 month extension has been approved due to earlier delays in data collection. Project is now complete.</p> <ul style="list-style-type: none"> • In Q4 we continued existing work on the willingness to pay for benefits of local stormwater infrastructure. • Daniel Brent, Zack Dorner and Anke Leroux have submitted a paper on the link between water source preferences and individual risk attitudes to an international, peer reviewed journal. • We have completed our econometric analysis of the impact of short-term weather variation on WTP for stormwater management. • A draft paper on the drivers of WTP is in the final editing process and we will submit a request for publication to the CRC in due course. • The portfolio model has been extended to allow for inflow and rainfall projections from four climate change scenarios using climate explorer. data from around 40 global climate models depending on the scenario. • The following industry notes were completed and submitted to the CRC: <ul style="list-style-type: none"> ○ Quality and security: Community preferences for new water supply sources ○ The impact of short-term weather variations on the valuation of local stormwater management projects ○ Valuing the benefits of local stormwater management <p>A1.2 – Project on track with milestone added. Project complete subject to delivery and approval of final milestones.</p> <ul style="list-style-type: none"> • Synthesis report has been submitted in response to industry partners’ desire for a synthesis report and the business case for the water sensitive city. • Project field work in China completed but more work is needed to finalise the comparison between Australian and Chinese preferences and values. • One of our post-docs accepted a permanent position elsewhere <p>A1.3 – Project scope has been redefined. Project complete subject to approval of final milestones.</p> <ul style="list-style-type: none"> • Working papers on field experiments are now complete • Industry note on social norms is now complete |

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| | <ul style="list-style-type: none"> Finalising results for nutrient abatement in the Swan-Canning. There has been cross checking of parameters with the Department of Parks and Wildlife as a basis for a model sensitivity analysis. Two papers have been drafted, the first on the time series history of nutrient emission in Southern River (a gauged sub-catchment of the Swan-Canning). The second paper gives the main results on the cost-effectiveness analysis. |
| <p>Project A2 Project Leader: Kelly Fielding (UQ) incorporating:</p> <ul style="list-style-type: none"> A2.1 Understanding social processes to achieve water sensitive futures Sub-Project Leader: Jo Lindsay (MU) A2.2: Accelerating transitions to Water Sensitive Cities by influencing behaviour Sub-Project Leader: Liam Smith (MU) A2.3 Engaging communities with Water Sensitive Cities Sub-Project Leader: Kelly Fielding (UQ) | <p>A2.1 – Project delayed: an extension has been granted to 30 September 2016 for deliverables, and 31 March 2017 for PhD student funding</p> <ul style="list-style-type: none"> The following paper has been published: Dean A, Fielding K, Lindsay J, Newton F and Ross H (2016) ‘How social capital influences community support for alternative water sources’ <i>Sustainable cities and society</i> <p>A2.2 – Project delayed: an extension has been granted to 31 Dec 2016 for deliverables</p> <ul style="list-style-type: none"> We have secured a partnership for the field study/intervention with an industry partner. We are currently finalising the scope of this work. PhD candidate submitted paper: “Impact-likelihood matrix: a policy tool for behavioural prioritisation” PhD candidate Nita Smith submitted submitted revised manuscript to Journal of Environmental Psychology. <p>A2.3 – Project delayed: an extension has been granted to 7 October 2016 for deliverables</p> <p>The focus is on dissemination & final data collection:</p> <ul style="list-style-type: none"> Two peer-reviewed papers have been accepted: <ul style="list-style-type: none"> Dean, et al. Knowledge about water: Who has better knowledge and is this associated with water-related attitudes and behaviors?, <i>PLOS ONE</i> Dean et al, How social capital influences community support for alternative water sources <i>Sustainable Cities and Society</i> Completed the first stage of a two-stage experiment about impact of water-related terminology on communication outcomes |
| <p>Project A3 Project Leader Brian Head (UQ) incorporating:</p> <ul style="list-style-type: none"> A3.1 Better governance for complex decision-making Sub-Project Leader: Brian Head (UQ) A3.2: Better Regulatory Frameworks for Water Sensitive Cities Sub-Project Leaders: Arie Freiberg, Graham Hodge & Pam O’Connor (MU) | <p>A3.1 - Project delayed: extension granted to UQ to 31/8/16 for deliverables</p> <ul style="list-style-type: none"> Collaborative paper bringing together researchers from A3.1 and A3.2 submitted: <i>Managing perceived risks in urban water innovation: Precinct scale stormwater and recycling projects, Landscape and Urban Planning</i> Report on “Governance structures and strategies to support innovation and adaptability” published Finalisation of joint article (A3.1 and A3.2) on risks in developmental stages of alternative water systems in Fitzgibbon (Qld) and Kalkallo (Vic). Replacement of key researcher expertise (ex-Bettini) by two part-time RAs Short delay requested to complete final milestones during next quarter using small carry-over <p>A3.2 - Project delayed: extension granted to UWA to 31/10/16 for deliverables</p> <ul style="list-style-type: none"> Report submitted to CRC for publication “The risky business of water sensitive city innovation: a legal analysis of risk allocation” Team members at UWA published an article “Legal duties for restoration of waterways and wetlands” in <i>New Water Policy and Practice</i>, vol 2 no 2. |

| Project | Key Developments and Summary |
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| <ul style="list-style-type: none"> A3.3 Strategies for influencing the political dynamics of decision-making <p>Sub-Project Leaders: James Walter & John Thwaites (MU)</p> | <p>A3.3 – Project on track and due to be completed 31 December 2016</p> <ul style="list-style-type: none"> Victorian Case Study still in review Two journal articles have been accepted by the journal of Environmental Science and Policy, likely to be published in Q2 FY1617 First science-to-policy capacity building workshop was conducted May 24 – part 2 to be conducted in July Critical discussions of A3.3’s contribution to the work of Tranche 2 |
| <p>Project A4 Project Leader Briony Rogers (Monash) incorporating:</p> <ul style="list-style-type: none"> A4.1 Cities as Water Supply Catchments – Society and Institutions <p>Sub-Project Leaders: Rebekah Brown & Meredith Dobbie (MU)</p> <ul style="list-style-type: none"> A4.2 Mapping Water Sensitive Cities Scenarios <p>Sub-Project Leaders: Briony Rogers & Rebekah Brown (MU)</p> <ul style="list-style-type: none"> A4.3 Socio-technical modelling tools to examine urban water management scenarios <p>Sub-Project Leader: Ana Deletic (MU)</p> | <p>A4.1 – Project was completed 31 December 2015 but awaiting final deliverable</p> <ul style="list-style-type: none"> The report <i>‘Achieving Sustainable Urban Water Management through co-governance: A case study of Marrickville Council</i>, by Ms Sylvia Tawfik was submitted for publication to the CRCWSC. The final synthesis document which will capture A4.1 outputs and align them with the guidance manual is 95% complete, and will be submitted by Aug 16. <p>A4.2 – Project on track. Currently on hold for six months as project leader (Briony Rogers) is away on maternity leave</p> <ul style="list-style-type: none"> Budget and milestones for FY1617 will be integrated into the Tranche 2 project IRP1 – WSC Transition Strategies and Implementation plans. Budget and case studies being discussed and the first steering group meeting will be held in July Focused on developing a guidance manual for visioning processes <i>Integrated Elwood project</i>: Ongoing work from modellers and architects informed by Elwood vision. Showcase held in June 2016 <i>Perth-based city-scale workshops</i>: Ongoing engagement with the Water Sensitive Transition Network to develop the Transition Strategy and Implementation Plan <p>A4.3 – Project completed 30 June 2016</p> <ul style="list-style-type: none"> Overall project delivered; beta version of software and documentation is available on the DANCE4Water website for testing by stakeholders. Several research papers are currently being finalised and the results are being presented at international conferences. The software was demonstrated during a one-day masterclass on building flood resilient communities as part of the integrated Elwood project together with A4.2, B4.1/4.2 and D5.1. Meetings with interested stakeholders (including the Department of Environment, Land, Water and Planning, Melbourne Water, City West Water, eWater and Jacobs) were conducted to discuss potential applications. DANCE4Water will be applied in the synthesis workshop ‘Ideas for Norman Creek’ Research Synthesis Workshop. |

| Key Risk | Management actions |
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| <p>A2.2 In principle agreement for intervention. Intervention format not yet confirmed. Delays in identifying partner and initiating intervention study may further delay achievement of milestones</p> | <p>Working closely with partner staff to agree on intervention format and method</p> |

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| <p>A3.1 Key researcher resigned in Q3</p> | <p>Part-time expertise recruited</p> |
| <p>A3.3 Delayed feedback from CRC on one of the major deliverables is impeding the final completion of deliverables</p> | <p>Follow up on CRC approval</p> |
| <p>A4.1 The overrun of the final synthesis report has been due to largely unforeseen circumstances</p> | <p>Project leaders are now liaising more frequently to have this report finalised by August 2016</p> |