# PhD proposal from The Waterway Ecosystem Research Group at The University of Melbourne

I'm writing to you for your support in finding an exceptional candidate for an exciting PhD Project at The University of Melbourne. I would sincerely appreciate it if you could forward this on to anyone you think might be eligible and interested in undertaking post-graduate studies, or those that may know of such a person.

The Waterway Ecosystem Research Group at The University of Melbourne (Burnley Campus) is seeking a student interested in multi-disciplinary research around urban water management. The project – **Long-term performance and willingness to maintain distributed stormwater control measures (SCMs) –** is funded as part of a collaboration with Melbourne Water, an internationally-regarded waterway management leader. The collaboration offers the student an opportunity to be part of a highly productive research-industry network and to significantly contribute to both the body of knowledge and to best practice in the management of stormwater.

Melbourne Water has recorded over 50,000 SCM's in its region over the last 10 years, but it can not quantify the long-term performance of these systems, nor what influences their performance or how they are maintained over time. This project will explore the underlying reasons for the failure or success of SCMs, comparing the influence of different land tenure, SCM size and their 'origin' (ie. how they were funded or conceptualised).

Applicants must have an excellent academic record in order to be competitive for an Australian Postgraduate Award ($28,000 per year, tax-free). A tax-free top-up stipend of $5,000/yr is also available, as is the opportunity to earn additional money through occasional tutoring. The successful candidate would ideally have a background in sociology, psychology, environmental management or engineering. A working knowledge of water sensitive urban design and integrated water management is desirable.

Enquiries can be directed to Dr. Darren Bos, (dbos@unimelb.edu.au) or Dr. Peter Morison (Peter.Morison@melbournewater.com.au).

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**Project description**: Stormwater Control Measures (SCMs) are now a common feature in urban landscapes, used to improve the quality of stormwater and reinstate natural flow regimes in a catchment. Although the benefits of SCM's are widely touted, their long-term reliability is largely unsubstantiated despite an abundance of anecdotal reports. Critical to the ongoing performance of SCMs is the amount of maintenance they receive. Maintenance effort of SCMs is known to vary greatly in both quality and frequency, the effect of which is significant and likely a major impediment to the progress of integrated water management in Australia. With existing policies and programs encouraging the ongoing installations of SCMs, it is imperative that influences on maintenance and the resulting reliability of SCMs is identified, in order to: inform models of performance; reduce the risk to the credibility of water sensitive urban design; and identify and overcome barriers to effective maintenance. The core objectives of this project, are therefore, to: identify the likely failure rate of SCMs; and identify the causes of those failures (and successes). In achieving these objectives, the project will inform future programs and policies so that they may address the causes of these failures and improve the reliability of SCMs. The project will provide a critical analysis of return on investment in stormwater management, and inform policy to improve long-term maintenance and reliability. Specifically, this project will examine both the socio-institutional and practical constraints to maintenance of SCM's, including how the maintenance is influenced by i) the motivations of the responsible manager, and ii) the capacity of the manager to deliver the necessary maintenance. The latter includes the manager's understanding and knowledge of the maintenance requirements, as well as the availability of resources to complete required works. The project will explore maintenance effort for different types of 'managers', including both private home owners (e.g. those with rain-water tanks or rain-gardens installed as part of distributed WSUD program, like Little Stringybark Creek) and the staff of public agencies (especially local government). The project will also explore the issues relating to maintenance at a range of different scaled SCMs (allotment and neighbourhood) and land tenures (private and public), potentially across different parts of Australia.

Some questions of particular interest to the project include:

- Are there differences in maintenance effort between mandatory and voluntary conception programs?
- How does the level of incentive offered in voluntary programs influence maintenance effort?
- How does motivation and capacity change over the life of a SCM?
- Is the community's relationship with the SCM influenced by the type of program installing the SCM, especially Greenfield, where community chooses to live with SCM's already established, vs. retrofits, where community is being asked to adopt the SCM's.
- Is there a relationship between the motivation of managers and their capacity/resourceing? That is, do passionate managers find the necessary resources, or are they de-motivated by resource restrictions?

Relevant papers

Freni, G., Mannina, G., & Viviani, G. (2010). Urban Storm-Water Quality Management: Centralized versus Source Control. Journal of Water Resources Planning and Management, 136(2), 268-278.

Leinster, S. (2006). Delivering the final product - establishing vegetated water sensitive urban design systems. Australian Journal of Water Resources 10(3), 321-329.

Sénéchal, C., Guillon, A., Kovacs, Y., & Lovera, M. (2010). Sustainability of source control facilities; five proposals intended for lawmakers, facilities managers and town and country planners. In Proceedings of Novatech 2010, Lyon, France, 27th June - 1st July 2010: GRAIE.