**PhD Project: *Understanding the role of small headwater streams in urbanising catchments for supporting waterway health***

The University of Melbourne, Waterway Ecosystem Research Group.

Supervisors: Dr Sam Imberger, Dr Matthew Burns, Professor Tim Fletcher and Assoc. Prof. Chris Walsh.

Headwater streams, where catchment runoff first accumulates sufficiently to create overland flow paths, represent a dominant part of the river network by length. These smallest streams are primary sources of streamflow, important sources of organic matter to downstream waters and act as ‘hot spots’ for retention and transformation of nutrients such as nitrogen and carbon. Their contribution to regional aquatic biodiversity has also been shown to be disproportionally large. While small headwater streams are likely to be extremely important for maintaining downstream river and bay health, they are particularly vulnerable to degradation or loss in rapidly urbanizing cities such as Melbourne. Despite this recognition, we still lack a clear understanding of their ecological structure and function and hydrologic behavior.

Two complementary PhD projects are available to investigate and quantify the magnitude of the values and services provided by small headwater streams. **PhD Project One** will focus on investigating the ecological structure and function, including (but not limited to) water quality, biota and nutrient processing. **PhD Project Two** will focus on investigating the hydrologic behavior including the initiation of flow, partitioning of surface and subsurface flows and water ages and sources. The projects will be undertaken as part of the Melbourne Waterways Research Practice Partnership (MWRPP) and based in the Waterway Ecosystem Research Group (WERG) *– a world leading research group.* This will provide the successful applicants with a uniquely valuable work environment as part of a multidisciplinary team of eco-hydrologists, geomorphologists, stream ecologists and riparian ecologists. Furthermore, the close partnership with Melbourne Water will facilitate collaborative research and the effective translation of findings into policy and management; with ultimate benefits for stream health and the liveability of urban communities.

We are offering **two PhD top-up Scholarships** of $15,000 per annum, plus fieldwork expenses of $5,000 per annum for a highly competent and enthusiastic student to undertake this research. The students will need to obtain an Australian Postgraduate Award (APA) scholarship at the University of Melbourne (or be competitive for an international postgraduate scholarship: IPRS, MIRS). Thus, a first-class honours or master’s degree, and/or evidence of publishing in international peer-reviewed scientific journals will be essential. Information regarding scholarships and admission for the University of Melbourne can be found here: <https://study.unimelb.edu.au/find/courses/graduate/doctor-of-philosophy-science/>

The successful applicants will have an appreciation of aquatic ecology or catchment hydrology and good quantitative skills, ideally with basic literacy in R (or a willingness to develop such skills). Importantly, this project requires an independently-motivated candidate with excellent communications skills as you will be required to work effectively with researchers across disciplines and industry practitioners. The preferred starting date for this project is early-2020.

Applicants should submit an expression of interest, including a 500-word personal statement outlining your interest in the research and relevant skills and experience, a CV, academic transcript and contact details for two academic referees. Please send your EOI to: Dr Samantha Imberger, The University of Melbourne, [Samantha.Imberger@unimelb.edu.au](mailto:Samantha.Imberger@unimelb.edu.au)

If your EOI is successful, you will apply for the postgraduate program through the Faculty of Science.  For domestic applicants, the Faculty’s deadline is 31 October 2018, and for international applicants the deadline is 30 September 2018.

**Closing date for expressions of interest is midnight September 22th 2019 for both international and domestic applicants.**