

Project 9 - Urban-scale modelling of groundwater quality evolution

Location: The project is based at Flinders University, Adelaide, SA or University of Western Australia, Perth, WA.

Required area of expertise/background: An Honours or MSc in Environmental Engineering, Hydrogeology, Geochemistry or a related discipline with a strong interest in numerical modelling of solute and reactive transport processes. The candidate should have a solid understanding of both hydrogeological and geochemical processes and some experience in numerical groundwater flow and/or geochemical modelling.

Project: Project Description (Max 200 words):

This PhD project seeks to develop model approaches to undertake large-scale reactive transport simulations with the Perth Regional Aquifer Model (PRAMS) to support a better quantitative understanding of past, present and future groundwater quality evolution. The model approaches will be tested for selected subdomains of PRAMS. For example, disturbance or drainage of potential acid sulfate soils can result in the release of acidity and degradation of infrastructure, water resources, and the environment. On a local scale experimental data and numerical modelling of soil processes have previously shown acidification ($\text{pH} < 4$) to affect the shallow groundwater quality. In collaboration with the WA Department of Water, this PhD research may investigate the larger-scale impacts of groundwater acidification. In addition, the PhD research may also quantify the hydrochemical changes that result from large-scale groundwater replenishment.

2017 RTP full time RTP Stipend Rates* (\$26,682). Approximate annual top-up amount: Subject to funding availability. \$7,000 pa. top-up plus \$10,000 pa. for operating costs (\$17,000 pa. in total).

Principal Supervisor:

This is a collaborative research project.

Co Supervisors:

[Dr Henning Prommer](#) - UWA SEE / CSIRO Land and Water

[Dr Adam Siade](#) – University of Western Australia

[Dr Ilka Wallis](#) - Flinders University



NATIONAL CENTRE FOR
GROUNDWATER
RESEARCH AND TRAINING



Flinders
UNIVERSITY



THE UNIVERSITY OF
WESTERN AUSTRALIA
Achieve International Excellence