## Project 8 - Advancing characterisation of shallow groundwater conditions by hydrogeophysical techniques

**Location:** The project will be based at Flinders University, Adelaide, SA

**Required area of expertise/background:** An Honours degree or MSc degree in Geophysics, Geology, Hydrology, Hydrogeology, Atmospheric Science, Environmental Sciences/Engineering, Biological Sciences, or relevant fields with excellent understanding of physics and mathematics. Experience with geophysics will be highly valued.

**Project: Project Description (Max 200 words):** One of the strong research foci at Flinders University is in the area of applied groundwater research. Within the groundwater research group, i.e. the Flinders node of NCGRT, we use a wide array of field and modelling techniques to improve the understanding of hydrogeological processes, including quality states as well as groundwater flow assessment. Collecting the right geophysical data has the potential to greatly increase our understanding of subsurface aquifer characteristics and groundwater conditions. Flinders University and the University of Adelaide are working together in developing, testing and integrating geophysical data sets into groundwater modelling to increase data density and thereby reduce uncertainty.

In this PhD project the focus will be on testing the suitability and accuracy of different hydrogeophysical methods (frequency and time domain electromagnetic induction, electrical resistivity tomography, ground penetrating radar, etc.) for rapid assessment of shallow groundwater conditions (water table depth, soil profile/moisture, water quality, subsurface structure) under a variety of soil and vegetation types. The research will contain both field and modelling aspects and hence will require a combination of practical and theoretical skills. The PhD project will directly contribute to and be part of the Goyder Institute for Water Research project titled 'Sustainable Expansion of Irrigated Agriculture and Horticulture in Northern Adelaide Corridor'. It will therefore focus on characterising how sensitive shallow groundwater is to increased irrigation in study areas between the Gawler and Light Rivers. This research provides opportunities for collaboration with other project partners in CSIRO, SARDI and DEWNR.

**2017 RTP full time RTP Stipend Rates* ($26,682). Approximate annual top-up amount:** Up to $10K is available for an excellent candidate.

**Principal Supervisor:**

This is a collaborative research project

**Co Supervisors:**
Prof Okke Batelaan - Flinders University
Dr Eddie Banks - Flinders University
Dr Michael Hatch - Flinders University / University of Adelaide

Flinders UNIVERSITY

NATIONAL CENTRE FOR GROUNDWATER RESEARCH AND TRAINING

THE UNIVERSITY of ADELAIDE
SUB CRUCE LUMEN