

Are you a student looking for an outstanding PhD opportunity with strong industry links and career opportunities at an equivalent graduate level salary? Are you an industry professional who is open to undertaking a PhD project while retaining employment and salary benefits?

PhD project ID: 1BPhD24-01

Date advertised: 10 September 2024

PhD project title: Opportunities and challenges for using brackish groundwater to increase agricultural productivity and resilience in the Murray-Darling Basin

Description of the topic of PhD project:

This project will develop novel, decision-centric approaches to support end users with the identification of opportunities in the Murray-Darling Basin with the highest potential for utilising brackish groundwater, as well as any associated challenges. Brackish groundwater is a potential solution to enhance water security in the Basin and to expand productivity. Better understanding of this potential requires a detailed assessment of the nature and scale of the opportunity associated with brackish groundwater, the interventions needed to utilise it (e.g. technologies and policies) and the potential for unintended consequences. There are many factors to be considered, such as varying levels of water treatment and associated costs, the salt-tolerance of different crops, brine disposal, changes in crop prices, water availability and pricing, surface/groundwater connectivity, ecological impact and the mix of industries able to derive mutually beneficial outcomes from brackish groundwater sources. A significant component of the project will involve consultation with a diverse range of experts including industry stakeholders and partners to identify the challenges and opportunities, as well as the approaches (e.g. sensitivity analysis, break-even analysis, optimisation) that are most suited to their quantification. Therefore, a key output of the project will be the development of methods that help integrate information from multiple diverse sources and present it in a form that best assists end users with the identification of the opportunities and challenges associated with using brackish groundwater. These approaches will be co-developed with end users to ensure they provide relevant, decision-centric information and applied to an end-user defined case study region to enable them to be tested and refined in a practical context.

Primary university supervisor(s):

Dr Michael Leonard / Prof. Holger Maier (The University of Adelaide)

Co-supervisors:

To be confirmed depending on student interests: Dr Matthew Knowling (The University of Adelaide), Prof Okke Batelaan (Flinders University)

Requisite qualifications and experience:

Candidates must have a qualification equivalent to an Australian H1 Honours degree (a prior research thesis that was at least six months of full-time credit and received an excellent mark, or a first author publication in a peer-reviewed international journal). Candidates with Masters or honours degrees in the following disciplines, or with equivalent research or work experience will be favourably considered: *Engineering (preferably Environmental, Civil or Systems), Science (preferably Computer, Environmental or Spatial)*

To determine your eligibility for studying at The University of Adelaide see:

<https://www.adelaide.edu.au/graduate-research/>

1BCRC industry partner(s) potentially involved:

Osmoflo, SA Department for Environment and Water (DEW), Duxton Water

ONE BASIN CRC PhD program

Are you looking at developing world-leading skills in helping communities tackle climate change, capitalise on the digital transformation and accelerate rural innovation? Are you interested in receiving training from internationally renowned experts, whilst working with industry partners in the iconic Murray-Darling Basin on real-world problems?

The One Basin Cooperative Research Centre (One Basin CRC) offers attractive PhD packages in a broad range of disciplinary fields and across multiple universities in Australia (Australian National University, Charles Sturt University, Flinders University, The University of Adelaide, The University of Melbourne, The University of Sydney). Our PhD graduates will be the future leaders in basin research and application. Our One Basin PhD program provides unprecedented leadership development opportunities, extensive industry networking, and the chance to establish a deep understanding of your chosen field. Key features of the One Basin CRC PhD Program are:

- A 3.5 year scholarship with the option of a 6 month-funded internship with an industry partner or equivalent part-time employment.
- A flexible funding package including a stipend as much as \$56,000 pa* and generous travel and operational costs, with potential additional income from working part-time with industry partners and further scholarship funding.
- The PhD program seeks to achieve gender balance and attract candidates from all walks of life, with Australians of Indigenous and Torres Strait Islander heritage particularly encouraged to apply.
- Opportunities for travel (including the possibility of international conferences), development and engagement with a strong research network that is being developed through the 10-year CRC.
- Each candidate will spend the majority of their time in one of the following research hubs: Loxton (South Australia), Mildura (Victoria), Griffith (NSW) and Goondiwindi (Queensland) with associated node in Narrabri (NSW).

Our PhD program will give you the professional skills and networks to accelerate your career in research or practice across the water, agriculture or environmental sectors.

** This is dependent on the host university policies, other available co-funding, and candidature experience and background. Candidates will receive a minimum stipend of \$35,000 pa and a further minimum \$20,500 (total) in operational funding (2024-25 rate). The exact allocation of the funding package between the stipend and support activities (such as conferences, travel to and from regional hubs) will be agreed to by the host university, PhD student and the 1BCRC. Applicants must be intending to apply for, and be highly competitive for, a Research Training Program (RTP) Stipend (or an equivalent scholarship). The student will enter the PhD program in 2025 and enrol on a full-time basis.*

An aerial photograph showing a winding river through a landscape with green fields and some buildings.

Apply via: onebasin.com.au