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 $51,300 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. 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 2024 and enrol on a full-time basis.*

Apply via: onebasin.com.au/phd-programs

PhD project ID: 1BPhD23-09 **Date advertised:** 8 September 2023

PhD project title:

Characterisation of the inorganic and microbial water quality envelope for successful water banking in the MDB for agriculture, town water supply and environmental benefit

Description of the topic of PhD project:

After more than a decade since the end of the millennium drought, within the MDB water security remains an unresolved challenge for rural communities, irrigators, and the sustainability of water-sensitive ecosystems. One option to enhance water supply security is through water banking, where basin aquifers are recharged during periods of surface water surplus for later use via managed aquifer recharge (MAR). The type and location of a water banking scheme requires careful planning to be successful and sustainable. This includes the evaluation of physical parameters such as water source availability for recharge (e.g. river waters during floods, treated wastewater, urban stormwater) and available aquifer storage. However, in order to reliably identify regions where water banking schemes could be successfully implemented and sustainability operated within the MDB, research needs to address the following key water quality considerations:

1. Characterisation of the chemical and microbial water quality of available recharge water in the basin, namely, i) river water under flood conditions and ii) urban stormwater.
2. Characterization of the water quality of recovered banked water under different injectant to ambient groundwater mixing ratios, from fresh to highly saline groundwaters. Specifically, regarding inactivation of pathogens and their indicators.
3. Evaluation of 'fit for purpose' banked water quality for, i) agricultural applications, ii) town water supply and iii) environmental benefit.
4. Synthesis of the above to identify specific areas of likely success and sustainability of water banking for agricultural, town water and environmental benefit across the basin, based on the quality of banked water.

Primary university supervisor(s):
Prof. Howard Fallowfield, or Assoc. Prof. Ilka Wallis (Flinders University)

Co-supervisors:
Dr Declan Page (CSIRO); Prof. Willem Vervoort (University of Sydney)

Requisite qualifications and experience:
Candidates with Master or Honours degrees in the following disciplines, or with equivalent research or work experience will be favourably considered: *microbiology, chemistry, environmental science, environmental health.*

To determine your eligibility for studying at Flinders University see:
https://www.flinders.edu.au/study/postgrad

1BCRC industry partner(s) potentially involved:
CSIRO, South Australian Department for Environment and Water (DEW), Coleambally Irrigation