



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Natural and Agricultural Sciences
Geology Department

Postdoctoral Position at University of Pretoria on the Project *Enhancing Sustainable Groundwater Use in South Africa (ESGUSA)* on Managed Aquifer Recharge in Polokwane

Informed and research-based approaches to MAR will augment safe and reliable water supply for urban and rural communities in dry areas under increasing population and climate pressure. An existing MAR scheme recharged with reclaimed water has shown to be an excellent candidate for enhancing water supply and providing a feasible study site. The postdoc will be involved in the following activities:

- Collection of existing operational, hydrogeological, and chemical data from the MAR facility in Polokwane.
- Identification of best monitoring and pumping wells for monitoring of pumping rates, groundwater levels and chemical parameters.
- Definition of sampling and analysis program for the selected wells. Candidate parameters for analytical analysis include arsenic, organic carbon, heavy metals, nitrate, phosphate, pathogens and contaminants of emerging concern. An identified issue is that dissolved organic carbon in wastewater triggers reductive mineral dissolution mobilizing heavy metals including arsenic to the groundwater.
- Development and application of local flow and reactive transport model to the MAR scheme to establish a coherent interpretation of the field data focusing on critical contaminants.
- Identification of best operational practice for the MAR scheme in order to ensure sustainable and safe water supply.
- Broadening the findings through a first-line assessment of the potential for using treated wastewater for MAR as an element in the safe, reliable, and sustainable augmentation of water supplies in other areas of South Africa.

Requirements:

- PhD in Hydrogeology, Hydrogeochemistry or equivalent hydrogeological research-based doctoral level qualification.
- Evidence of publication of peer reviewed publications.
- Research focus in water science with a strong socioeconomic and environmental link.
- Travel arrangements in place to locate to Pretoria for extended periods of time.
- Full dedication and commitment to the project and its academic research and socioeconomic outcomes.

Supervisor: Prof Matthys A. Dippenaar, University of Pretoria.

Co-supervisor: Søren Jessen, Associate Professor, University of Copenhagen; Karsten H. Jensen, Professor, University of Copenhagen.

Submissions: 17 June 2022

Project duration: 1 July 2022 until 31 December 2024