



THE UNIVERSITY OF  
WESTERN AUSTRALIA  
*Achieving International Excellence*

## PhD Scholarship in Geotechnical Engineering

### The University of Western Australia

#### “Safe, sustainable management of filtered tailings”

The Department of Civil, Environmental & Mining Engineering at The University of Western Australia is seeking applications from recent graduates in civil engineering, mining engineering, or equivalent with an Honours Degree (2A or Higher), or Masters Degree or equivalent to undertake full-time research towards a PhD degree.

The PhD candidate position can commence in November 2018.

**Value and duration:** Living allowance stipend of A\$32,800 (tax free in 2018), for a period of 3 years.

**Eligibility:** Applicants can be from Australia or overseas.

Please note that this scholarship is for a living allowance only. Australian/NZ students do not pay any tuition fees, but any prospective international student should also apply for a SIRF Scholarship to cover the cost of international student tuition fees and health care cover. Alternative funding opportunities are available to cover fees for international students.

(<http://www.scholarships.uwa.edu.au/home/postgrad/international/iprs>)

#### Project details

The project is funded by Minerals Research Institute of Western Australia (MRIWA) and five industry sponsors. The project will develop and verify a methodology for managing the deposition and compaction of filtered red mud and mine tailings to ensure long term geotechnical stability and sustainable closure of these storage facilities is achievable. Using Alcoa's Kwinana facility, where a large filtration plant has recently been commissioned, as a test site, the project will evaluate various techniques for evaluating the state of the red mud after compaction. It will couple these measurements with advanced geotechnical modelling to provide predictions of future geotechnical stability. Using the monitoring techniques developed in this project, these predictions will be constantly evaluated and verified, providing a feedback loop in order to ensure ongoing stability is ensured. Additionally, geotechnical centrifuge tests will be carried out to model the process of 'piggybacking', whereby a filtered material is placed (usually quite rapidly) on an existing tailings or red mud residue facility. Such an operation has many potential advantages, including improved utilisation of existing footprints, but is still unproven and has potential geotechnical instability risks if not properly implemented.

The project will provide the successful candidate with a niche qualification in an important field of mineral resource development.

We have an extremely well-equipped geotechnical laboratory, including cyclic simple shear and cyclic triaxial testing equipment, three geotechnical centrifuges, a range of consolidation and shear testing equipment, all supported by a high-class electronics workshop.

### **Applications**

Written applications should address the following:

- (a) applicant details, including name, address, telephone, email, and citizenship
- (b) academic qualifications
- (c) previous research experience, outlining skills acquired
- (d) previous research publications
- (e) relevant work or practical experience
- (f) a statement of interest in this field of research and in completing a PhD, which must be written in lay terms to be understood by non-scientific readers
- (g) contact details of three referees including name, position, institution/organisation, telephone and email address.

Written applications should use the following format:

- (a) Minimum size typeface to be used is 12pt
- (b) Times New Roman or Arial font
- (c) Academic transcript should be an original or certified copy
- (d) Only include publications accepted for publication in refereed journals and conferences
- (e) One original, plus four copies of the typed application, academic transcript and curriculum vitae should be sent by mail.

Applications should be directed to:

Prof Andy Fourie

Department of Civil, Environmental & Mining Engineering (M051)

The University of Western Australia

35 Stirling Highway

Crawley WA 6009

email: [andy.fourie@uwa.edu.au](mailto:andy.fourie@uwa.edu.au)

Closing date: Open until filled.

Further information

Prof Andy Fourie

[andy.fourie@uwa.edu.au](mailto:andy.fourie@uwa.edu.au)