



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

**Research Fellow in Geotechnical Engineering and Asset Management,
Faculty of Engineering & Physical Sciences**



Salary: Grade 7 (£33,797 – £40,322 p.a.) Due to funding restrictions, an appointment will not be made above £35,845

Reference: EPSCV1003

Closing deadline: 07 January 2020

Fixed-term for up to 24 months, available from the end of January 2020, to end by 31 December 2022

We will consider flexible working arrangements

Research Fellow in Geotechnical Engineering and Asset Management

School of Civil Engineering

Are you an ambitious researcher looking for a new challenge? Do you have expertise in the analysis and assessment of embankments and cuttings? Do you want to join an expanding geotechnical research team at the University of Leeds?

Infrastructure is fundamental to our economy and society. Geotechnical assets, of which there are over 100,000 km in the UK, are a major component of this infrastructure and fundamental to the delivery of critical services over long distances (e.g. road & railway earthworks, pipeline bedding, flood protection structures). However, failure is still commonplace; the costs are high; and our vulnerability to these failures is significant. For example, in 2015 there were 143 earthwork failures on the GB rail network; the cost of repairing these is 10 times greater under emergency conditions than when carrying out planned works; and if we get it wrong train derailments may occur. Despite this, the exact causes and timing of failures are poorly understood, and therefore difficult to mitigate. This leads to unanticipated failures, which cause severe disruption and damage reputations. These challenges will be exacerbated by future climate change and trends to use geotechnical assets in higher load bearing, higher frequency patterns, with reduced timescales for maintenance.

At the [University of Leeds](https://www.leeds.ac.uk) we are championing research into our infrastructure and cities, with expertise in climate resilience of infrastructure and high speed rail in particular. We are looking for a geotechnical engineer to join our team working on the resilience of geotechnical infrastructure assets.

We are a partner in the [ACHILLES](#) (Assessment, Costing and enHancement of long lfe, Long Linear assEtS) programme grant, with a vision for the UK's infrastructure to deliver consistent, affordable and safe services, underpinned by intelligent design, management and maintenance. The programme aims to:

1. Understand deterioration of engineered soils;
2. Link deterioration to performance over a range of spatial and temporal scales;
3. Systematically upscale process modelling from material to asset to network;



4. Enable sensor technologies for deterioration characterisation and monitoring;
5. Understand scientific value of data derived and status of uncertainty and heterogeneity across all scales; and
6. Integrate outputs into design and decision-making.

As part of that programme we are seeking to appoint a geotechnical researcher to work alongside [Dr Fleur Loveridge](#) to deliver aspects of the forecasting and decision support elements of the research programme. In particular you will lead research in:

- Understanding the effect of heterogeneity on earthwork behaviour at different scales, and how this relates to uncertainty in performance at the network scale;
- The accuracy and appropriateness of earthworks asset data, including what is absent and the quantification of the benefits of better data;
- How different intervention measures can be used to reduce the rate of earthworks deterioration and how this should be measured and monitored;
- Translation of research into design and asset management guidance to aid decision making.

The research programme is multidisciplinary across multiple institutions and you will also be required to work with a range of collaborators including in the areas of climate science, statistical analysis, infrastructure systems and economic modelling.

What does the role entail?

As a Research Fellow, your main duties will include:

- Generating and pursuing independent and original research ideas in the field of geotechnical engineering and asset management;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Carrying out analysis of earthwork performance, including both limit equilibrium, numerical analysis and statistical analysis;
- Interpreting network scale data and failure data for geotechnical assets;
- Assisting in supervision of PhD students working on the project or related projects;
- Evaluating methods and techniques used, and results obtained by other researchers and to relate such evaluations appropriately to your own work;



- Leading the preparation papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Participating in dissemination and knowledge transfer events, conferences, project meetings and workshops, including presenting and discussing your own research and that of the team;
- Working both independently and also as part of a larger team of researchers and industrial partners;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As a Research Fellow, you will have:

- A PhD (or close to completion), or equivalent research experience, in geotechnical engineering, or a closely allied discipline;
- A strong background in geotechnical engineering analysis and simulation;
- Knowledge of a range of commercial and/or open source software for geotechnical analysis;
- Ability to take the initiative in developing your own research;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;
- A proven track record of peer-reviewed publications in high impact factor journals;
- Excellent written and verbal communication skills including presentation skills;
- Proven ability to manage competing demands effectively, responsibly and without close support;
- A proven ability to work well both individually and in a team;
- Willingness to travel within the UK and internationally to work closely with academic and industrial project partners;
- A strong commitment to your own continuous professional development.



You may also have:

- Knowledge and expertise in slope stability analysis, slope failures and remediation techniques;
- Knowledge and experience of applying statistical techniques in engineering;
- Knowledge of unsaturated soils;
- Experience of collaborative working, including with industry partners;
- Experience of pursuing external funding to support research;
- Experience of supervision of others;
- Experience in geotechnical practice.

How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised [closing date](#).

Contact information

To explore the post further or for any queries you may have, please contact:

[Fleur Loveridge](#), University Academic Fellow

Tel: +44 (0)113 343 2248

Email: F.A.Loveridge@leeds.ac.uk

Additional information

Faculty and School Information

Further information is available on the research and teaching activities of the [Faculty of Engineering and Physical Science](#) and the [School of Civil Engineering](#).

A diverse workforce

The Faculty of Engineering is proud to have been awarded the [Athena Swan Silver Award](#) from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our [equality and inclusion webpage](#) provides more information.



Working at Leeds

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.

Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at disclosure@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

