Loughborough University

JOB TITLE: Research Associate in Multi-Scale Flood Modelling and Assessment
(Fixed-term for 11 months)
Job Ref: REQ190019

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

School/Department summary
Research and teaching in the School of Architecture Building and Civil Engineering (ABCE) is driven by 63 academic staff, 34 technical and clerical support staff, 40 contract researchers and over 120 doctoral students. The School benefits by having academic staff from a wide variety of backgrounds, with a resulting rich diversity of perspectives.

The undergraduate programmes include Civil Engineering, Construction Engineering Management, Commercial Management and Quantity Surveying, Architectural Engineering and Design Management, Air Transport Management, and Transport and Business Management.

At MRes level we train the next generation of multi-disciplinary researchers in energy demand. At MSc level, we offer programmes in Low Energy Building Services Engineering and Low Carbon Building Design as well as in Water and Waste Engineering, Construction Management, Transport Policy and Business Management. These programmes are all accredited by the Professional Institutions. The EPSRC Centre for Doctoral Training in Energy Demand will support over 50 PhD students.

In all courses the academic content is directly aligned to the needs of the industry and there is a high level of sponsorship in our portfolio of programmes. Our record of graduate employment is second to none and we have been ranked 1st or 2nd in the National Student Survey for the last 6 years. Further information may be found from - http://www.lboro.ac.uk/departments/civil-building/

In the 2014 Research Excellence Framework, the School was ranked fifth in the Architecture and Built Environment Unit of Assessment with 87% of the work judged as either "world leading" or "internationally excellent". Importantly, this was achieved whilst still returning 100% of staff; world class research pervades the School. The research environment was ranked first overall; Loughborough is the best place in which to build a career in energy research.

The international standing of our research is exemplified by our growing portfolio of collaborations with other leading universities and research institutes worldwide. These include: the UNSW Sydney, University of California at Berkeley, MIT, Chongqing, Hong Kong, Iowa State, Oklahoma State, RMIT, Georgia State and Penn State.

We are equally proud of our collaborations with industry where we count organisations such as Willmott Dixon, Electricite de France, The BRE, Honeywell, Anglia Water and Biffa. Built Environment research is increasingly informing government policy through, for example, the Department of Energy and Climate Change and The Committee on Climate Change. For more on our research go to: http://www.lboro.ac.uk/schools/cv/research/index.html

Project Description
The current international collaborative project, entitled "ValBGI: Valuing the benefits of Blue/Green Infrastructure for flood resilience, natural capital and sustainable urban development in Viet Nam", is funded by the UK Natural Environment Research Council (NERC) through the Newton Fund programme, "*Understanding of the Impacts of Hydrometeorological Hazards in Viet Nam*". ValBGI aims to work closely with stakeholders to co-develop an innovative modelling, assessment and valuation framework to examine the role of blue green infrastructure (BGI) in short- and long-term urban development and identify urban planning strategies that simultaneously promote flood resilience and investment into urban natural capital through the use of natural processes-based blue/green design

options. Building on existing fluvial and pluvial flood modelling work for the case study site in the Vietnamese city of Can Tho and the wider Vietnamese Mekong Delta, the project will develop and integrate new high-resolution hydrodynamic flood modelling, ecosystem service assessment and economic valuation approaches to achieve the overall research aim. Working closely with a multi-disciplinary project team from University of Stirling, Loughborough University, and in-country partners in Viet Nam, the Postdoctoral Research Associate will play a key role in the project to develop the mentioned high-resolution flood modelling strategy and subsequently use it to assess flood risk and quantify the benefits of BGI measures in Can Tho to inform urban development and decision-making.

Job Description:

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose
Working with an international, multi-disciplinary team, the Postdoctoral Research Associate will further develop and apply the Loughborough in-house flood modelling software HiPIMS to develop a new high-resolution hydrodynamic flood modelling strategy for assessing flood risk and quantifying the benefits of Blue/Green Infrastructure (BGI) measures in the Vietnamese city of Can Tho.

Job Duties
Research
- To work with the project team, especially the local partners in Vietnam, to further develop the Loughborough in-house high-performance hydrodynamic flood model HiPIMS by coupling with the existing 1D river network and flood models set up for the Vietnamese Mekong Delta and city of Can Tho to develop a new urban flood risk modelling and assessment tool for the case study site (i.e. Can Tho), taking into account the effects of fluvial flooding and tidal change.
- To work with the local partners and develop new tools to collect and process data from different sources to support model development, calibration and validation.
- Working with the ValBGI team to co-design urban development scenarios and perform a series of simulations/workshops for the scenarios to assess the current and future flood risk and quantify the benefits of BGI measures in the Vietnamese city of Can Tho.
- To write and publish high-quality journal papers to report novel research outputs.

General, technical
- To assist PI/Co-Is in project management and help prepare project delivery plan and progress reports.
- To write research papers suitable for publication in high-quality academic journals and for presentation at specialist scientific conferences and reports (if necessary) for dissemination of research outputs to non-technical audience.
- To report research progress and work efficiently with the wider ValBGI team to ensure successful delivery of the proposed research.
- To attend and contribute to project meetings and other engagement events.

General and administrative
- To work effectively with relevant administrative, technical and academic staff in the School and across the University.
- To engage in training programmes in the University (e.g. through Staff Development) which are consistent with your needs and aspirations and those of the project team and the host School.
- To carry out other specific duties as may be reasonably requested by the project leaders and that are commensurate with the nature and grade of the post.

Points to Note
The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions
All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility
Reports to: Professor Qiuhua Liang

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below.
Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1 – Application
2 – Test/Assessment Centre/Presentation
3 – Interview

Essential Criteria

Area	Criteria	Stage
Experience	Background in engineering or science.	1,3
	Research experience in computational hydraulics and developing robust hydrodynamic models for research and application purposes.	1,3
	Experience of developing and applying hydrological and hydrodynamic models for flood inundation modelling and impact/risk assessment.	1,3
	Publication of academic articles or papers on engineering or science topics.	1
Skills and abilities	Ability to undertake the duties and responsibilities of the post.	1,3
	Proven programming skills in developing hydrodynamic flood inundation models.	1,3
	Excellent written and oral communication skills in English.	1,2
	Ability to work independently and as part of a team.	3
Training	Willingness to undertake appropriate further training and to adopt new procedures as and when required.	1
Qualifications	A PhD in computational hydraulics or other relevant areas	1
Other	Commitment to observing the University's Equal Opportunities policy at all times.	1,3
	Willingness to travel.	3

Desirable Criteria

Area	Criteria	Stage
Experience	Experience of using C++ and GPU high-performance computing languages (e.g. CUDA) to develop numerical models.	1,3
	Teaching and / or supervising students in relevant areas.	1,3
	Writing research proposals for funding from internal/external sources.	1,2,3
Skills and abilities	Knowledge of pluvial and fluvial flood risk management.	1,3
	Knowledge of using natural-based solution, e.g. Blue/Green Infrastructure (BGI), for flood risk mitigation.	1,3
	Ability to efficiently work with datasets from different sources using GIS and other data management tools.	1,3
	Ability to work with communities and stakeholders	1,3
Qualifications	Academic degrees in hydraulics/hydrology, or related fields	1

Conditions of Service

The position is full-time and fixed term for 11 months. Salary will be on Specialist and Supporting Academic Grade 6, £30,395 - £32,236 per annum, at a starting salary to be confirmed on offer of appointment. Subject to annual pay award.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Grades 6 and above staff details of which can be found here.

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which are available at http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure---page.html.

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html

In addition, the University is supportive, wherever possible, of flexible working arrangements.
We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see http://www.lboro.ac.uk/services/hr/athena-swan/

Applications

The closing date for receipt of applications is **19 February 2019**.