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Reader in Geotechnical Engineering
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About

Dr Jefferson graduated from Loughborough University, with a BEng (hons) Degree in Civil Engineering. He then continued to read for a PhD in Geotechnical Engineering.

After completion of his doctorate in 1992, he worked for three years as a lecturer at Loughborough University. After which he joined Nottingham Trent University as a Lecturer/Senior Lecturer in 1995, becoming a Principal Lecturer in 2001 and a Reader in 2002. He joined the staff at the University of Birmingham in August 2004.

Teaching

Dr Jefferson is involved with teaching soil mechanics, geotechnical engineering and engineering geology at both undergraduate and postgraduate level. In addition he has teaching interests in waste management and sustainability.

Research

Research Interests

- Collapsible soils in particular loess from around the world including Eastern Europe, Central Asia and the UK. This work includes geomorphological/geological controls on loess formation and their geotechnical consequences, in-situ and laboratory assessment of loess behaviour, notably its collapsibility and ways to mitigate this collapse behaviour using a range of improvement techniques.
- Ground improvements including chemical stabilisation (including treatment of contaminated land) and densification, notably vibro-stone columns including use of alternative materials and the in-situ assessment of improvements gain using geophysical approaches.
- Assessment of various geohazards and their geotechnical consequences including rising ground water and its effects, collapse and behaviour of problematical soils, notably glacial tills.
- Sustainability in urban developments and in particular its impact on geotechnical engineering and the geotechnical process.

Dr Jefferson has been awarded grants worth more than £4 million and has published over 70 refereed journal and conference papers.

Current Research Projects

- Loess soil stabilisation
- Collapsibility in loess soils
- Ground Improvement using stone columns
- Assessment of improved ground using geophysics
- Shear strength of glacial tills
- Sustainability Assessments in urban Development
- Sustainability in the geotechnical process
- Sustainable urban redevelopment - Eastside

Other activities

External Appointments

- Vice President IAEG with responsibility for Northern Europe .
- Chair of IAEG commission – Problematic Soils and Underground Space
- UK member of ISSMGE Technical Committee 303 - Coastal and River Disaster Mitigation and Rehabilitation 211 - Ground Improvement and 214 – Foundation engineering for difficult soft soil conditions
- Member of the US Transportation Research Board – Transportation committee
- Member of the US Geo-Institute's panel on Engineering Geology and Site Characterization
- Member of three journal editorial boards – Proceedings of ICE, Ground Improvement; Engineering Geology; Quarterly Journal of Engineering Geology and Hydrogeology

Publications

Recent Publications

Hunt, D.V.L., Jefferson, I., Rogers, C.D.F., Bulter, D. & Memon F.A. (2011), Sustainable Infrastructure Planning For New Towns In Ireland. **Proceedings on the Institution of Civil Engineers Urban Design and Planning**, 164

Hunt, D.V.L., Jefferson, I. and Rogers, C.D.F. (2011), Assessing the sustainability of underground space usage - A toolkit for testing possible urban futures. **Journal of Mountain Science**, 8 (2): 211-222

Jefferson, I., & Gaterell, M. Thomas, A., Serridge, C.J. (2010), Emission assessment related to Vibro-stone columns. **Proceedings on the Institution of Civil Engineers, Ground Improvement**, 163: 71-77.

Holt, D.A., Jefferson, I., Braithwaite, P., & Chapman, D.N. (2010), Embedding Sustainability in Geotechnical Engineering: Part A - methodology. **Proceedings on the Institution of Civil Engineers, Engineering Sustainability**, 163: 127-135.

Madun, A., Jefferson, I., Chapman, D.N., Culshaw, M.G., Foo, K.Y. & Atkins, P.R. (2010), Evaluation of the multi-channel surface wave analysis approach for the monitoring of multiple soil-stiffening columns. **Near Surface Geophysics**, 8: 611-621.

Rogers, C.D.F., Thomas, A.M., Jefferson, I., & Gaterell, M. (2009), Carbon Dioxide Emissions due to Highway Subgrade Improvements. **Transport Research Record: Journal of the Transportation Research Board**, 2104: 80-87.

Hunt, D.V.L., Jefferson, I., Gaterell, M & Rogers C.D.F. (2009), Planning for sustainable utility infrastructure. **Proceedings on the Institution of Civil Engineers Urban Design and Planning**, 162: 187-201.

Northmore KJ, Jefferson I, Jackson PD, Entwisle DC, Milodowski AE, Raines MR, Gunn DA, Boardman DI, Zourmpakis A, Nelder LM, Rogers CDF, Dixon N, Smalley IJ, and Derbyshire E (2008), On-Site Characterisation of Loessic Brickearth Deposits at Ospringe, Kent, UK. **Proceedings on the Institution of Civil Engineers, Geotechnical Engineering**, 161: 3-17.

Hunt, D.V.L., Lombardi, D.R., Rogers C.D.F. & Jefferson, I. (2008), Sustainability indicators and their application in decision-making processes for Eastside, Birmingham, UK. **Engineering Sustainability, Proceedings on the Institution of Civil Engineers, Engineering Sustainability**, 161: 7-91.

Jefferson, I., Birchall, C, Hunt, D.V.L. & Rogers C.D.F (2007), *Sustainability Indicators for Environmental Geotechnics*, **Proceedings on the Institution of Civil Engineers, Engineering Sustainability**, 160: 57-78 , , 160: 57-78

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