



香港岩土及岩土環境工程專業協會
ASSOCIATION OF GEOTECHNICAL &
GEOENVIRONMENTAL SPECIALISTS (HONG KONG)



香港
分部

Development of an Acoustic Emission Early Warning System for Slope Stability

Presented by Professor Neil Dixon

Department of Civil and Building Engineering, Loughborough University, Leicestershire LE11 3TU

Venue: Seminar Room, 3/F, Mariners' Club, Middle Road,
Tsim Sha Tsui
Time: Wednesday, 15 September 2010, 6:30 pm

Synopsis:

Slope failures world-wide cause many thousands of deaths each year and damage built environment infrastructure. There is a clear need for low cost instrumentation that can provide an early warning of slope instability to enable evacuation of vulnerable people and timely repair and maintenance of critical infrastructure. Current instrumentation systems are either too expensive for wide scale use or have technical limitations. An approach, Assessment of Landslides using Acoustic Real-time Monitoring Systems (ALARMS), has been developed and demonstrated through research. The approach uses measurement of acoustic emission (AE) generated during the onset of slope failure to provide quantitative information on slope displacement rates. The talk will introduce the concept of AE monitoring, it will describe research to quantify AE rates and describe recent field trials of a unitary AE slope displacement rate sensors. Results from continuous AE monitoring of an active landslide will be presented to show AE rates have comparable trends to displacement rates measured using an inclinometer.

About the Speaker:

Neil Dixon is Professor of Geotechnical Engineering in the Department of Civil and Building Engineering at Loughborough University. He has conducted research and published over 100 papers in the areas of slope failure mechanisms, in situ measurement of soil and waste properties, instrumentation development, landfill barrier design and impacts of climate change on slopes. He is an editorial board member of three international journals and is currently an elected Council Member of the International Geosynthetics Society and Chairman of the IGS, UK Chapter.





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Landslides in Scotland: Hazard Assessment, Ranking, Management and Mitigation

Presented by Dr Mike Winter

Transport Research Laboratory, Craighouse Campus, Craighouse Road, Edinburgh, EH10 5LG

Venue: Seminar Room, 3/F, Mariners' Club, Middle Road,
Tsim Sha Tsui

Time: Wednesday, 15 September 2010, 6:30 pm

Synopsis:

The widely-reported Scottish debris flow events of August 2004 were caused by rainfall substantially in excess of the norm, with some areas experiencing over 300% of the 30-year monthly average and storm intensities of up to 150mm/hour. A small number of these intersected the trunk (strategic) road network, and 57 people were airlifted to safety at Glen Ogle. While there were no major injuries the social and economic impacts were severe, in particular the severance of access to and from remote communities.



The need to acknowledge such natural processes and act accordingly was recognised by Transport Scotland. Accordingly a study was commissioned with the overall purposes of systematically assessing and ranking the hazards posed by debris flow and of developing a management and mitigation strategy for the Scottish trunk road network. The ranking system is intended to allow the future effects of debris flow events to be appropriately managed and mitigated as budgets permit, thus ensuring that the exposure of road users to the consequences of future debris flows is minimised.



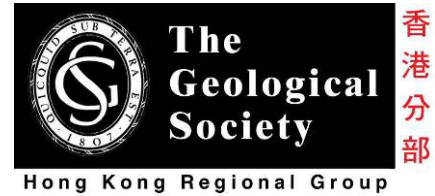
The work undertaken to satisfy these key objectives will be described. This includes a pan-Scotland GIS-based susceptibility assessment and extensive interpretation of the results to determine hazards. The determination of the vulnerability of the elements at risk in order to determine a ranking of the hazard locations will also be described.

The approach to management and mitigation focuses primarily upon exposure reduction. This is achieved via the *detection* of events or likely events and the *notification* of the appropriate authorities to enable them to take appropriate *action* (DNA). Hazard reduction is also envisaged. This includes engineering measures that protect the road, reduce the opportunity for debris flow to occur, or the realignment of the road. However, such environmentally-intrusive, high cost measures are likely to be relatively few and need to be justified in the context of wider budgetary and programme constraints.





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About the Speaker:

Mike is Head of Ground Engineering at the Transport Research Laboratory, Regional Director for Scotland, and a Senior Fellow of the TRL Academy. He is a Chartered Geologist, a Chartered Civil Engineer, and a Fellow of the Institution of Civil Engineers. His main areas of research expertise include soil properties, earthworks, soil slope stability, landslides, and the use of waste geomaterials in civil engineering, with particular interests in spent oil shale, PFA and tyre bales.

Mike's work has made major contributions to many of the procedures, practices and methodologies that are current in these areas. He has led many failure investigations, acted as an expert witness in earthworks-related contractual claims and sat on national and international committees and steering groups. In September 2004 Mike was appointed as the lead external consultant for the Minister for Transport's Working Group tasked with developing the response to the debris flow events which affected Scotland's trunk road network in August of that year.

His work has been published internationally in over 100 professional journal and conference papers, and published reports. It has been widely implemented in specifications and standards. He has presented on every continent with the notable exception of Antarctica, but is open to offers to redress this omission.

Mike is Chief Scientific Editor of the Quarterly Journal of Engineering Geology & Hydrogeology, a former Chair of the Scottish Geotechnical Group and a Core Member of the International Society for Soil Mechanics & Geotechnical Engineering's TC3 (Geotechnics of Pavements). He has been involved in the organisation of a number of international conferences and is currently co-leading (with Derek Smith) the UK bid to hold the European Conference on Soil Mechanics & Geotechnical Engineering in Edinburgh, which will next be held in Athens: otherwise known as "... the Edinburgh of the South".

No prior registration is required (although space at the venue is limited so you are recommended to arrive early in order to secure a seat)

CPD certificates will be provided.