



**GSL Public Lecture:
'Reading the ground' to
reduce hazards and
risks in engineering
projects with Andrew
Hart**

**Thursday 3 December
18.00 GMT**

‘Reading the ground’ to reduce hazards and risks in engineering projects

The landscape around us is a product of a long and complex geological and geomorphological history, which is recorded in the soils and rocks beneath our feet as well as by the landforms we see around us. This sometimes-hidden history can be revealed by learning to 'read the ground', and piecing together the clues to unravel that history and what we see before us.

But what is 'reading the ground', and why is it important for engineering projects? Using examples from across different regions of the world, Dr Andrew Hart of Atkins will describe how engineering geoscientists use a combination of desk study information, the interpretation of available aerial photography and satellite imagery, and engineering geological and geomorphological field mapping to tease out those clues and 'read the ground' of a project area.

He will explore how learning to 'read the ground' and develop ground models for our project areas can open our eyes to the geological and geomorphological history of an area, and examine how this information can be used for engineering design and risk reduction.

Andrew Hart, Atkins’ Ground Engineering practice



“Engineering Geology is driven by a need to understand the ground conditions of our sites and how that might affect the design - from roads and schools to offshore renewables. Much of this work however, is hidden from the public, so the GSL Public Lectures are a great opportunity for us to share our work with the public, and also identify cross-over with other geological disciplines.”

Dr Andrew Hart is a Chief Engineering Geologist and Geomorphologist in Atkins’ Ground Engineering & Tunnelling practice, based in the UK. Atkins is an international engineering and environmental design and management company.

Andrew has more than 22 years’ experience in assessing the impacts of ground conditions, geohazards and other geo-engineering constraints on a wide variety of infrastructure projects such as mountain roads, pipelines, railways and offshore wind farms, as well as for disaster risk reduction projects. His work has often meant working across large project areas, mostly overseas, while collaborating with other technical specialists, engineering design teams, client organisations and other stakeholders.

Reading List

- Beaven, P.J. & Lawrance, C.J., 1973. The Application of Terrain Evaluation to Road Engineering, Reprint from the Conference on Road Engineering in Asia and Australasia, held at Kuala Lumpur, 11th -16th June, 1973
- Brunsdon, D., 2002. Geomorphological roulette for engineers and planners: some insights into an old game, Quarterly Journal of Engineering Geology, 35, 101-142.
- Cooke, R.U. & Doornkamp, J.C., 1990. Geomorphology in Environmental Management. 2nd Edition, Oxford University Press
- Dearman, W.R. & Fookes, P.G., 1974. Engineering geological mapping for civil engineering practice in the UK, Quarterly Journal of Engineering Geology, 7, 223-256.
- Fookes, P.G., 1997. the First Glossop Lecture: Geology for Engineers: the Geological Model, Prediction and Performance, Quarterly Journal of Engineering Geology and Hydrogeology, 30, 293-424.
- Fookes, P.G., Lee, E.M. & Griffiths, J.S., 2007. Engineering Geomorphology: Theory & Practice, Whittles Publishing
- Fookes, P.G., Baynes, F.J. & Hutchinson, J.N., 2000. Invited Lecture: Total geological history: a model approach to the anticipation, observation and understanding of site conditions. GeoEng 2000, an International Conference on Geotechnical & Geological Engineering, Melbourne, 1, 370-460.
- Griffith, J.S., & Stokes, M., 2008. Engineering geomorphological input to ground models: an approach based on Earth systems. Quarterly Journal of Engineering Geology and Hydrogeology, 41, 73-91.
- Hearn, G.J., 2019. Geomorphology in engineering geological mapping and modelling, Bulletin of Engineering Geology and the Environment, 78, 723-742.
- Hutchinson, J.N., 2001. The Fourth Glossop Lecture: Reading the Ground: Morphology and Geology in Site Appraisal, Quarterly Journal of Engineering Geology and Hydrogeology, 34, 7-50.
- Mitchell, C.W., 1992. Terrain Evaluation, 2nd Edition, Routledge
- Smith, M.J., Paron, P., & Griffiths, J.S., 2011. Geomorphological Mapping: Methods and Applications. Developments in Earth Surface Processes (15). This includes Hearn, G.J. & Hart, A.B. – Geomorphological Contributions to Landslide Risk Assessment: Theory and Practice, 107-149.

GSL Papers:

- Collapsible Soils in the UK
egsp.lyellcollection.org/content/29/1/187

- Liquefaction susceptibility maps for the Aqaba–Elat region with projections of future hazards with sea-level rise qjeqh.lyellcollection.org/content/early/2020/11/03/qjeqh2020-039
- Submarine landslides: mapping the susceptibility in European seas qjeqh.lyellcollection.org/content/early/2020/10/21/qjeqh2020-027
- Developing conceptual models for the recognition of coseismic landslides hazard for shallow crustal and megathrust earthquakes in different mountain environments – an example from the Chilean Andes qjeqh.lyellcollection.org/content/early/2020/09/18/qjeqh2020-023/
- Towards a national-scale assessment of the subaqueous mass movement hazard in Canada sp.lyellcollection.org/content/500/1/97
- Spatio-temporal network modelling and analysis of global strong earthquakes ($M_w \geq 6.0$) jgs.lyellcollection.org/content/177/5/883

OPEN ACCESS

- Uncertainty assessment applied to marine subsurface datasets qjeqh.lyellcollection.org/content/early/2020/11/23/qjeqh2020-028
- A multi-disciplinary investigation of the AFEN Slide: the relationship between contourites and submarine landslides sp.lyellcollection.org/content/500/1/173
- The influence of clay content on submarine slope failure: insights from laboratory experiments and numerical models sp.lyellcollection.org/content/500/1/301

New Publication:

- Geological Hazards in the UK: Their Occurrence, Monitoring and Mitigation www.geolsoc.org.uk/spe29