



The
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North West Regional Group

Meeting

Thursday 14th April 2016

Crag End Landslide – Movement and Mitigation!

A 300m long section of the B6344 road connecting Rothbury to the A697 in Northumberland has been closed to vehicles since 26th December 2012 due to a landslide following one of the wettest periods on record. The landslide comprised several non-circular translational landslips occurring within land to the north of the road owned by the National Trust, extending approximately 70m south of the road. The River Coquet at the toe of the slope and the majority of the site was within the River Coquet and Coquet Valley Woodlands SSSI. An existing 90m section of sheet pile retaining wall had failed resulting in significant tension cracking along the carriageway and distortion of the wall capping beam.

The client, Northumberland County Council, was keen to re-open the road as soon as possible as residents were faced with a substantial detour to access Rothbury. The local economy depends heavily on tourism which had been badly hit by the road closure.

VBA has designed and implemented a solution comprising two main elements – a deep dewatering system to reduce the risk of instability by lowering artesian groundwater pressures, and an anchored bored pile retaining wall to support the road in the event of a slip. The team faced numerous challenges including variable ground conditions, high groundwater and difficult access on a constrained site.

This talk will be split into three parts. Part 1 will give an overview of the project, discussing the geology and hydrogeology, challenges faced during intrusive ground investigations, causes of instability and the landslide mechanism. Part 2 will cover the technically complex bored pile anchored retaining wall design, provide an overview of the chosen passive dewatering system, and discuss the design challenges faced. Part 3 will present an overview of construction work and discuss the challenges faced working at a remote site with limited working space.

CPD: These events may be considered for contributing to a recognised Continuing Professional Development (CPD) scheme as part of personal development. Delegates should check their individual scheme requirements.

Image: <http://www.bgs.ac.uk/landslides/rothbury.html>



Paul Berry (senior geotechnical engineer, Atkins, Newcastle-Upon-Tyne)

Paul is a chartered geologist with 11 years Geotechnical experience and manages geotechnical work in Atkins Newcastle office. Paul has experience of the design and analysis of geotechnical structures, including but not limited to; shallow foundations, retaining walls, embankments, cuttings and soil and rock slopes. He has also experience of slope stability analysis, interpretative reporting and detailed geotechnical design for highways construction. He is currently supervising the construction of the remedial reconstruction works which will allow the B6344 to be re-opened following a major landslide.

Harriet Kirk (senior geotechnical engineer, Atkins, Leeds)

Harriet is a chartered civil engineer in Atkins' Leeds office and has been responsible for the design of the bored pile retaining wall at Crag End.

Jonathan Archer (site engineer, Volker Stevin)

Jonathan has a BSc (Hons) in Civil Engineering with 10 years' experience in the industry. He is currently undertaking his MSc (Hons) in Civil Engineering. His other qualifications include CSCS Graduate, CITB Construction Site Manager Safety Certificate and LOLER Appointed Person. Jonathan has been working as a site engineer for the construction of the Crag End Landslip remediation works since May 2015.

Organised by the North West Regional Group of the Geological Society of London. For further information contact the Group Secretary, Catherine Kenny at: geologicalsociety.northwest@gmail.com

Lecture start promptly at 6:30pm (food available in the pub).

Venue: Pied Bull Hotel, 54 High St, Newton-le-Willows WA12 9SH

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