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**YORKSHIRE REGIONAL GROUP OF  
THE GEOLOGICAL SOCIETY**

**Evening Meeting, Wednesday 21 May 2014  
Meet from 6.30pm, talk at 7.00pm**

**ASSESSMENT AND DESIGN MITIGATION FOR ROCKFALLS  
(Reprise of the Glossop Award 2012)**

**THOMAS CLIFFORD  
(ATKINS)**

**The Brewery Tap, 18-24 New Station Street, Leeds LS1 5DL  
(opposite Leeds railway station)**

In multiple studies rockfall has been identified as causing comparable mortality and morbidity rates to all other mechanisms of rock slope failures. As rockfall causes such a significant hazard there is a need to reliably assess and design for it. It is common practice to use 'rule of thumb' design or computer software, based on assumed parameters, in the assessment process. Inaccuracies cause the underestimation of risk, or conversely, incur significant costs through over design, therefore it is critical to determine the reliability of the current standard.

The study's first objective was to establish a robust empirical dataset as there are only a few published rockfall calibration tests. This led to the presenter undertaking one of the largest known computer calibrated rockfall testing programmes. The testing programme was designed to measure the influence of lithology, face height, angle, debris and rock trap design. This presentation reflects upon the knowledge gained from the empirical testing, associated computer simulation and its application for quarry, highway & railway design through case studies. The presentation concludes with considering a new assessment and design approach to managing rockfall. The project won the 2012 Glossop Award and in the same year won the R. Y. Parkinson Award from the Institute of Quarrying Lancashire Branch for Thomas' method of design of rockfall mitigation.

Thomas Clifford read Geology at the University of Liverpool before joining Aggregate Industries where he was responsible for the safe design for a range of quarries. Starting out as a geologist he completed a part-time MSc Geotechnical Engineering course at the University of Birmingham in order to become a geotechnical specialist. In 2013 he joined Atkins, where he works as a Senior Geotechnical Engineer.

Next meetings:

- 7<sup>th</sup> June 2014 – Field Trip at Ogden Reservoir, Halifax (Contact: Chris Evans – [rockreaders@gmail.com](mailto:rockreaders@gmail.com)).
- 18<sup>th</sup> June 2014 at The Brewery Tap, Leeds. James Lawrence of the Nuclear Decommissioning Authority will talk about geological disposal of radioactive waste.

Details of the venue can be found at:

<http://www.brewerytapleeds.co.uk/>

Contact details: James Barr      Email: [Yorkshireregionalgroup@gmail.com](mailto:Yorkshireregionalgroup@gmail.com)