PROCEEDINGS OF THE
17TH EXTRACTIVE INDUSTRY GEOLOGY CONFERENCE

HELD AT
EDGE HILL UNIVERSITY, ORMSKIRK, LANCASHIRE
5TH TO 8TH SEPTEMBER 2012

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EDITORIAL

The 17th Extractive Industry Geology conference was held at Edge Hill University in Ormskirk, Lancashire in September 2012, providing a unique forum for practitioners in the UK minerals sector to meet. In a break away from some recent conferences, the icebreaker reception, the packed 2 day conference with trade exhibition and the conference meal were all held on-campus, providing delegates with a high quality, relaxed environment. Fieldtrips were held across the northwest region to Sibelco's Dingle Bank silica sand quarry in Cheshire, Cemex's Shap Pink granite quarry and their Roan Edge high specification aggregates quarry in Kendal, Hanson's cement works and their limestone quarry at Clitheroe, and Tarmac's Arcow high specification aggregates gritstone quarry in Ribblesdale. The conference and fieldtrips were very well attended and a record number of companies exhibited trade stands; a great success.

A total of 40 oral papers and 5 posters were presented (2 additional oral papers were not presented due to illness). Of these, 21 of the oral presentations and 2 of the poster presentations are provided here as full papers. Edited abstracts for the remaining presentations are included. In a change to previous conference proceedings, guides from each of the field trips are also included.

Opening addresses were given by the EIG 2012 Chairman Craig Arditto and Steve Igoe, Pro Vice Chancellor (Resources) of Edge Hill University. Ken Hobden of the Mineral Products Association gave the first presentation, a review of the National Planning Policy Framework and its effect on the UK minerals industry. The Ansel Dunham Lecture was given by Andrew Bloodworth of the British Geological Survey. As Science Director for Minerals and Waste, Andrew is responsible for BGS research relating to mineral and metal resource management, the future safe geological disposal of radioactive waste and energy topics relating to renewables, energy storage and clean coal. He used his more than 30 years of experience at BGS to provide an interesting overview of the history of extractive industries in the UK and how these contributed to the development of the country and its position in the world. He then considered the current global situation and described how security of supply concerns are driving renewed interest in UK mineral developments.

A further keynote presentation was given by Viv Russell on behalf of QNJAC who opened the first of the geotechnical sessions. Three papers gave accounts of the locality, with two of them setting the scene on the local geology and mineral resources, extraction operations in the region and giving examples of well received quarry restoration schemes, whilst the third paper providing a detailed account of the local Williamson Tunnels, believed to be an early (Georgian) example of novel quarry restoration. Two geotechnical and two hydrogeology sessions were included in the programme to adequately provide for these popular subjects. Other sessions covered aggregates, industrial minerals and new mineral developments, which included an objective insight into the currently contentious issue of shale gas exploration and monitoring solutions. Other papers addressed environmental issues, planning policy and water legislation and technological advancements within the industry.

The Conference was managed by an organising committee with Craig Arditto as Chairman, Clive Mitchell as Secretary and Graham Smith as Treasurer and other members of the committee comprising Adrian Charters, Thomas Clifford, Jeremy Elvins, Simon McCurdy, Peter Scott, Andrew Smith, Anne Smith, Alan Thompson, Geoff Walton, Duncan Wardrop and Emily Hunger. A special mention must go to Gerry Lucas, local secretary of the organising committee at Edge Hill University. The organising committee were supported by the consultative committee, particularly Lee Clark, Richard Fox, David Harrison and Andrew Smith. Members of the committees and others who have kindly reviewed the manuscripts prior to accepting them for publication in these proceedings are thanked for their time and effort.

The success of EIG Conferences depends on sponsors for their financial support and assistance at a variety of different levels. On this occasion the sponsors included Blast Log Ltd, British Geological Survey, Cuesta Consulting Ltd, DustScan Ltd, Edge Hill University, GWP Consultants LLP, Lafarge Aggregates, Mineral Products Association, PGW&A LLP, Quarry Design, SRK Consulting and Tarmac.

Attendees at this and any future EIG Conferences may obtain a copy of these Proceedings at a cost of £10, for others the cost is £25. The individual papers will be made available at www.eigconferences.com

Editors
Emily Hunger, Rock Options Ltd.
Teresa Brown, British Geological Survey
Gerry Lucas, Edge Hill University
January 2014
The Ansel Dunham Lecture
A once and future extractive history of Britain
A. Bloodworth

LOCAL AREA INTRODUCTION
Williamson ‘Tunnels’, Edge Hill, Liverpool: An example of Georgian and early Victorian quarry restoration
G.R Lucas, D. Bridson and T. Jones

Lancashire minerals: A whistle stop tour of past and present workings and restorations
C. Lewis

KEYNOTE LECTURES
The National Planning Policy Framework and its effects on the minerals industry in the UK
K. Hobden

The role, purpose and future of the Quarries National Joint Advisory Committee (QNJAC) and its Geotechnical, Face and Stockpile Operations Subcommittee
V.G. Russell

MINERAL RESOURCES
Structural mapping and modelling of Dolyhir Quarry, Powys as a basis for a refined reserve assessment and quarry development strategy
I.E.K. Brewer, N. Lykakis and A.P. Wilkinson

Potash – Recent exploration developments in North Yorkshire

Stone mining on the Isle of Portland
M. Godden

Aggregates prone to causing pyrite-induced heave: How they can be avoided
M.L.J. Maher and C. Gray

Managing landscape change with respect to future mineral extraction in North Yorkshire
Dr. A. Thompson, J. Jackson, J. Garbutt and J. Quatermaine

HYDROLOGY AND HYDROGEOLOGY
Legislative changes affecting water handling in the minerals industry
D. Wardrop

Are your groundwater monitoring boreholes deep enough? – Water Impact Assessment in karstic limestones at Cauldon Quarry
S. Barnes, J. Elvins and N. White
Deepening of Torr Quarry: Assessing the hydrogeological impacts
*S. Hobbs*

Interpretation of groundwater data in the vicinity of a long established sandstone quarry
*F.C. Brassington*

Sustainable water management – implications for UK mineral extraction
*P.A. Ellis, A. Tait and M. Streetly*

Assessing the hydraulic performance of tailings management facilities
*H. Garrick, G. Digges La Touche, B. Plimmer and D. Hybert*

**TECHNOLOGICAL ADVANCES**

Low cost quarry management producing high gain biodiversity: Using GIS to quantify effective quarry management regimes
*G.R Lucas, P. Michell and N. Williams*

Recent advances in remote geological and geotechnical surveying
*A.P. Wilkinson*

Swinden Quarry: A case study of detecting, surveying and managing caves within quarries
*C.S. Arditto and M. Hudson*

**POSTERS**

The demand for construction aggregates in Zealand, Denmark: Forecast 2012-2036
*J.Q. Christensen*

The BGS 'Building Stone Data Capture' module: A planning tool for conserving our stone built environment
*E.A. Tracey*

**APPENDIX 1**

Edited Abstracts of other oral and poster presentations from the 17th Extractive Industry Geology Conference

**APPENDIX 2**

Edited Field Trip Guides from the 17th Extractive Industry Geology Conference