



Engineering Group of the Geological Society

Newsletter

April 2012

Welcome to the April 2012 edition of the EGGS Newsletter. With the New Year well underway it is a good time to reflect on some of the milestones achieved in 2011 and highlight some of the exciting events that are scheduled for 2012.

We are always pleased to hear from our members regarding what you would like to read about in our newsletter. Please contact Susan Greene below with your suggestions for future editions.

Susan Greene
susan.greene@urs.com



Annual 2011 EGGS Field Trip to South Wales

HIGHLIGHTS

- ...Meeting Reports...
- ...Annual Field Trip 2011 to South Wales...
- ...Glossop Lecture...
- ...UK Register of Ground Engineering Professionals



Geological Society
Burlington House
Piccadilly
London SW1V 0JU
Tel: +44 (0)20 7434 9944
Fax: +44 (0)20 7439 8975
Email: enquiries@geolsoc.org.uk
Web: www.geolsoc.org.uk

Registered Charity No. 210161

Engineering Group of the Geological Society
Correspondence Address
Mr David Waring, EGGS Secretary
Atkins Consultants Limited,
Woodcote Grove,
Ashley Road, Epsom
Surrey, KT18 5BW
Tel: +44 (0) 1372 726140
Fax: +44 (0) 1372 754499
Email: engineering.group@geolsoc.org.uk
Web: www.geolsoc.org.uk

Engineering Group Awards

Glossop Medal - 12th Glossop Lecture 2011

This year's lecture was delivered by Professor Edward Bromhead on 'Reflections on the residual strength of clays with special reference to bedding-controlled landslides.'

The lecture explored the geotechnical conditions that give rise to slowly-moving compound landslides with a component of their basal shear surfaces following a particular bed (or 'slide-prone horizon'. Such landslides are common in southern England, occurring in infrastructure cuttings and natural slopes, particularly coastal slopes and elsewhere where the requisite structural conditions exist. Both historical and modern case records of this type of landslide were presented in brief.

Following this, the genesis of the slide-prone horizons was considered, taking into account some of the principles of sequence stratigraphy, and contrasting such an explanation with a volcanogenic hypothesis.

The lecture covered some of the difficulties of identifying slide-prone horizons in the field, analysing compound landslides, and dealing with the movements of these landslides up to and including complete stabilisation. Since slide-prone horizons usually lurk inside thicker beds of stiff clays (i.e. in weak mudrocks) then they are perhaps even more difficult to find prior to sliding than the proverbial needle in a haystack, although after sliding the task is somewhat simplified.

Even now, nearly a half-century after Skempton's seminal Rankine Lecture that introduced the concept of residual strength of clays to the wider geotechnical profession, the corpus of data is rather limited. Some of the data sets are shown to exhibit remarkable similarities, and the implications of this and other aspects of behaviour on what can be inferred to be the origin of these features.

Glossop Award 2011

The Engineering Group of the Geological Society has awarded the 2011 Glossop Award to **Sophie Gibb** of Key GeoSolutions Ltd for her presentation 'Application of pre-split blasting to final faces in hard rock quarries'.

This study assessed the health and safety and economic implications of using pre-split

blasting in the generation of final quarry faces in UK quarries, as opposed to using standard bulk blasting. Pre-splitting is a controlled blasting method involving the simultaneous detonation of a row of closely-spaced, lightly-charged holes which are designed to form a separation surface between the rock to be blasted and the rock to remain.

The fracture forms the final excavation face. Pre-splitting has been underemployed in quarrying because it is perceived to be too costly for rock extraction.

This study has four objectives:

1. Compare the condition (back-break, under-break and joint dilation) of quarry faces produced after pre-splitting and bulk blasting.
2. Determine post-blast face geometry (both pre-split and bulk blasted) and assess the influence of face geometry on the trajectory of potential rockfalls.
3. Generate a quarry design for a hypothetical site incorporating final faces generated through pre-splitting and through bulk blasting.
4. From the quarry designs, quantify the volume of rock quarried and profit/loss generated through pre-splitting versus bulk blasting. Bardon Hill Quarry, Leicestershire, was chosen as an ideal study location because of the complex geological/geotechnical structure of the rock mass, and because it employs both pre-splitting and bulk blasting. Bardon Hill extracts Pre-Cambrian (Charnian) igneous and meta-sedimentary rocks (Bardon Breccia).

Quarry face profile data for pre-split and bulk blasted faces within Charnian rock were provided by blasting supervisors. These data were entered into the RocFall programme (Rocscience Inc.) which statistically predicts rockfall trajectories. Digital photogrammetry was employed to quantify joint dilation after pre-splitting and bulk blasting.

Results demonstrate that pre-splitting causes less damage to quarry faces making them less vulnerable to future damage from weathering and blast vibrations. Joint dilation after pre-splitting is lower on average than after bulk blasting. Back-break and under-break for pre-split faces are around three times lower than for bulk blasted faces.

Pre-splitting generates face geometries that are less likely to promote the projection of rockfalls beyond rock trap bunds. RocFall analyses demonstrated that the average proportion of rocks captured by rock trap bunds was not statistically different between pre-split and bulk blasted faces.

However, 3 out of 20 bulk blasted faces were potentially dangerous with rockfall retention levels as low as 18.6%. Rock trap bunds should retain =95% of dislodged rocks. Only one presplit face failed to meet this threshold (88.3%).

Using data from the back-break and RocFall analyses, the average standoff/rocktrap zone was calculated for pre-split and bulk blasted faces. Two simple quarry layouts were designed and demonstrate that pre-splitting allows 8.4% more rock extraction than bulk blasting (after 10 extraction lifts) because bulk blasting requires wider quarry benches to account for greater back-break/under-break and greater distance from face to rock trap bund. For a £1/tonne profit margin pre-splitting is 0.3% less profitable than bulk blasting after 10 lifts. At £2.50/tonne, pre-splitting is 3.9% more profitable, and at £5.00/tonne is 5% more profitable.

*Research completed as part of applicant's M.Sc. in Geotechnical Engineering & Management.

We would also like to congratulate the other shortlisted finalist for the Glossop Fiona Todd of Grontmij on "Modelling of a thermal plum: A case study in Selby, North Yorkshire".

13th Glossop Lecture 2012

Ruth Allington has accepted the Group's invitation to deliver the 2012 Glossop Lecture.

News

UK Register of Ground Engineering Professionals

The UK Register of Ground Engineering Professionals was launched at the BGA annual conference held at the Institution of Civil Engineers in London in June 2011.

It is already seeing a significant number of applicants and is currently on target to reach 50 registrants by the end of 2011. Many more have expressed an interest, confirming the very encouraging start to this important scheme.

The register is a database of information giving the names and contact information for individuals, who have been recognised by their peers as having certain levels of competence in ground engineering.

The UK Register of Ground Engineering Professionals (UKRoGEP) provides external stakeholders, including clients and other professionals, with a means to

identify individuals who are suitably qualified and competent in ground engineering.

Registrants may be consultants, contractors, from public bodies or academia. They may be involved in various sub-disciplines and employed on various projects that fall under the broad heading of ground engineering.

UKRoGEP registrants must have an appreciation of other disciplines and interests that extend beyond, but interface with, ground engineering. They must be able to demonstrate how ground engineering interacts with other technical professions.

Related articles also providing fuller information may be seen at:

- [*GS UKRoGEP Article 3rd March 2011*](#)
- [*GS UKRoGEP Article 3rd March 2011*](#)
- [*Geotechnical Risk Management adding Value to Construction Projects*](#)
- [*UKRoGEP Up and Running*](#)
- [*http://www.geolsoc.org.uk/page10218.html*](http://www.geolsoc.org.uk/page10218.html)

The Geotechnical article can be found at

[*http://gallery.mailchimp.com/2c483c7aa6dc3b26f30eff209/files/theGeotechnicaSeptember2011.pdf?utm_source=Equipe+Information&utm_campaign=9ec1ed9c53theGeotechnica_Issue_4_September_2011_6_2011&utm_medium=email*](http://gallery.mailchimp.com/2c483c7aa6dc3b26f30eff209/files/theGeotechnicaSeptember2011.pdf?utm_source=Equipe+Information&utm_campaign=9ec1ed9c53theGeotechnica_Issue_4_September_2011_6_2011&utm_medium=email)

Working Parties and Action Group Updates

Managing Geotechnical Risk Action Group By Paul Maliphant

A Managing Geotechnical Risk Action Group has been set up within the EGGS.

Claire Syme, in her editorial comment in the November 2011 issue of Ground Engineering suggested that we need to improve our understanding of the needs and difficulties of other sectors and stakeholders. This is the conclusion reached by a number of leading ground engineers who are undertaking a review of risk in geotechnical engineering.

Ten years ago the seminal document Managing Geotechnical Risk was written by Prof Chris Clayton.

Since then we have entered a recession, are under pressure to reduce construction costs and adapt to a low carbon economy.

These changes on their own introduce a level of risk but there is a view that geotechnical risk continues to be an underlying issue despite the evidence that shows ground is hazardous and does impact on the cost and delivery of projects.

Conceptual ground models, geotechnical risk registers and numerical ground models produced by competent professionals are all aimed at reducing geotechnical risk and therefore cost. Yet there is still a concern that these are not at the heart of the decision making process.

These two concerns were shared by a group of leading ground engineers who took the view that action was needed now not only to address the understanding and impact of geotechnical risk but also to place this risk in context. Hence the need to create a dialogue with other construction professionals. This is the purpose of a seminar to take place in February 2012 which is intended to act as a platform for those professionals to present their view of risk and help place geotechnical risk in context.

Tim Chapman's (Arup) article, also in the November issue of Ground Engineering, raises the issue of communicating the importance of ground investigation so that clients save money and avoid risk. This message has been in existence for many years most notably with the document Without Site Investigations Ground is a Hazard produced in 1993 and aimed at clients.

The review group led by Barry Clarke, (University of Leeds, Vice President ICE) and Paul Malliphant, (Halcrow, Vice President Geological Society) includes representatives from AGS, IOM3, CIRIA, BTS, BGA, covering all areas of the industry. The aim of this group is to raise awareness of geotechnical risk by communicating with other construction professionals and placing it in context of the low carbon economy and wider project risks to generate sustainable value through innovation and collaboration.

The seminar in February 2012 is the first of a number of planned activities to integrate geotechnical risk in the decision making process. It will help construction professionals understand the relative importance of geotechnical risk and how the value of ground investigation, design and construction can be realised by others.

The geotechnical community has, for many years, argued the case for improved ground investigations,

development of ground models and the use of engineers and geologists demonstrably competent in ground engineering. Yet there is still concern that these messages are not being heard and acted upon. The case in 1993 for improvement was supported by evidence of cost overrun, contract delays, failure to perform as expected and even catastrophic failure. Since that time the construction industry has changed. There is need to gather new evidence to demonstrate the continuing importance of ground engineering to reduce risk. This is the second aim of the review group.

Changes Afoot in Ground Investigation

By Paul Emerson

In response to the demands of Eurocode 7, Geotechnical Design, Part 2 Ground Investigation and testing, and particularly its underlying Standard EN 22475-1 the British Drilling Association (BDA) during 2010 convened a Technical Advisory Committee to develop a quality management scheme for land drilling in the ground investigation industry. The scheme was based on existing Highways Agency schemes and is intended for organisations providing drilling services that include sampling, in-situ testing etc. Two British Standards (BS 22475-2 and -3) published in early 2011 make requirements for organisations and personnel in ground investigation and testing to be adequately competent, and undergo conformity assessment by a third party. Thus the BDA's initiative to follow both EC7 and resultant British Standards has been timely and necessary.

A Technical Advisory Committee, chaired by Professor Barry Clark drew members from government agencies, representative bodies and across industry including clients, consultants and contractors meeting several times during 2010.

The resulting scheme, known as, Land Drilling Sector Assessment Scheme (LD-SAS) has been approved by UKAS which will deliver the scheme through its own accredited Certification Bodies. The BDA proposed UKAS in recognition that it is fully independent of any sectional interests, has rigorous procedures, and that for any scheme to succeed it would have to enjoy full industry ownership and participation.

Organisations providing drilling services to the ground investigation sector wishing to apply will be awarded certification if they match specific activity requirements for workmanship, adherence to normative standards, best practice, testing, workforce qualifications and competence, plant & equipment conformance, etc.

It is anticipated major benefits will ensue for clients, consultants and drilling organisations not least because the scheme falls under UKAS thus providing the highest level of third party certification; it will also provide industry benchmarks through cross-industry ownership and consensus; focus on quality as an objective; provide and maintain a properly trained and competent workforce, and institute a basis for continuous improvement.

Quaternary Research Association By David Giles

The Quaternary Research Association is an organisation comprising archaeologists, botanists, civil engineers, geographers, geologists, soil scientists, zoologists and others interested in research into the problems of the Quaternary. The majority of members reside in Great Britain, but its membership is international, including most European countries, North America, Africa and Australasia.

The QRA was founded in 1964 as the Quaternary Field Study Group and its name was changed to the Quaternary Research Association in 1968. Today the QRA has a membership of over 1000, with a large and thriving postgraduate student membership. The QRA has an active meetings programme, including the Annual Discussion Meeting each January, field meetings, usually held in April and May or September and the annual Postgraduate Symposium. Members receive the Quaternary Newsletter and Circular three times a year, which contain short research papers, reports on meetings, abstracts, reviews and news on forthcoming meetings, events and a range of other information. The QRA also publishes field guides to accompany its field meetings and a series of technical guides which provide up-to-date coverage of technical developments in the field. The Journal of Quaternary Science, founded in 1985, is published by Wiley-Blackwell on behalf of the Association. The Association also operates a number of grants schemes to support research by its members and also administers the Bill Bishop Award (for a postgraduate researcher) and the Lewis Penny Medal, which recognizes an outstanding early career scientist.

QRA Membership

Membership is open to anyone interested in the advancement of education and research into the Quaternary period. The Association currently has around 1000 members.

Our prices for the 2012 year

Institutional £35.00

Ordinary £20.00

Student £10.00

Retired £10.00

<http://www.qra.org.uk/about/membership>

ANNUAL FIELD TRIP

The Annual Field Meeting by David Giles, Field Meeting Convenor

This years Engineering Group Field Meeting returned after a gap of 9 years to South Wales to visit some classic sites of interest along with aspects of the regeneration of the region. Nearly 50 delegates assembled in Cardiff University on the Friday evening to hear an introductory talk on the local geology and mining heritage from Dr Pete Brabham from the School of Earth and Ocean Sciences. The first day of the meeting was led by Dr Laurance Donnelly of Wardell Armstrong who, supported by Pete Brabham, took the group on a tour of some key landslide sites around Blaina as well as detailing fault reactivation occurring on the hill tops either side of the valleys. Some interesting geomorphology was explained in detail with a good discussion on their triggering mechanisms. Both East Pentwyn and Bournville landslides were clambered over, sometimes precariously! Luckily a suitable pub was found at the bottom to calm nerves!

On the Saturday evening all the delegates met for the meeting dinner in the Angel Hotel Cardiff which also hosted the participants.

Sunday began with a poignant stop opposite Aberfan which reminded everyone present of the hazards that exist within and on the ground. Pete Brabham gave a fascinating running commentary on the coach on all of the former mining and industrial sites along our route, many of which are no longer recognisable. The final stop of the morning was a trip down the Big Pit Coal Mining Museum complete with Davy Lamps, torches and hard hats. After lunch the meeting concluded with a short walking tour around the Cardiff Bay Regeneration Scheme.

Thanks go to Dr Peter Brabham and Dr Laurance Donnelly for putting together such an enjoyable and informative meeting. The Prize for Best Dressed Engineering Geologist went to Bert Jones who, despite being in his 70's, turned up in suit and tie each day and out paced many of the younger members on the scramble up the hills!



Laurance Donnelly explaining the mechanisms for large scale fissure development on Mynydd James



A view across Aberfan to the site of the 1966 tragedy.



Chairs, past and present, of the Engineering Group recovering as only engineering geologists know how.



Big Pit Mining Museum, site of underground visit.

The EGGS would like to thank David Giles for once again preparing and organising a very successful and enjoyable field trip that was enjoyed by all.

Meeting Reports

Integrating Geological Understanding into Onshore Pipelines

By Paul Emerson

The Engineering Group convened a day-long seminar on Tuesday, 18th October 2011, titled 'Integrating Geological Understanding into Onshore Pipelines'. The meeting was well attended with approximately sixty delegates from a variety of backgrounds including, clients, design consultants, contractors and suppliers of specialist services to the pipeline industry. The aim of the meeting was to raise the profile of engineering geology in the specialist fields of pipeline design and construction.

The success of the seminar has resulted in future collaboration with the Remote Sensing Group during a three-day seminar to be held at Burlington House in December 2012, there has also been discussion around convening an international pipelines conference similar to that held at the ICE in 2004. Keep your eye out for future updates and listings on the calendar for upcoming events.

Our sincere thanks go to all the speakers and delegates who between them made for an extremely informative and successful meeting.'

Engineering Group Committee

Who's Who: The Engineering Group Committee 2011-2012

As of October 2011 the Engineering Group Committee comprised the following members:

Officers:

David Entwisle – Chair

Helen Scholes – Vice Chair

Alex Boorer – Secretary

Ursula Lawrence – Treasurer, IHT, London Basin Forum

Elected Members:

Matthew Eynon – Publicity Sub-Committee

Paul Bailey – Forum Sub-Committee

Alex Kidd – Meeting Sub-Committee

Paul Emerson

Tom Casey – Glossop Meeting

John Perry

Co-opted Members

Chris Martin – Chair of Glacial and Periglacial Working Party

Tracey Radford – Strategic Review and 50th Anniversary

Margaret McBride – Regional Groups

David Waring

Alison Barmas

Ex-Officio Members

Paul Maliphant – Member of the Geological Society Council

Representative Members:

M Winter – Editor QJEGH

Matthew Free – Hazards Forum

I Hodgson – UK Register of Ground Engineering Professionals

R Chartres – British Geological Survey Independent Knowledge Exchange (formerly NGDC) Advisory Group

I Jefferson – IAEG UK Representative

J Griffiths – IAEG Commission 22/Brooks Editorial Committee/QJEGH Editorial Board

R Fox – Applied Petrography Working Group

J Gelder – International Relations Middle East

M Dawson – International Relations Australasia

J Harris – Site Investigation Steering Committee

D Giles – Geohazards Working Party/Field Meetings/Training and CPD

G West – Hot Deserts Working Party

S Greene – EG Newsletter

Charlene Knox – Environmental Network

Helen Reeves – IAEG(UK) and FIGS

FORTHCOMING ENGINEERING GROUP EVENTS

Events

April 2012

The Olympics and Paralympics 2012

Joint TVRG/EGGS

Eton College Rowing Centre, Windsor

Conferences

25-29th March 2012

GeoCongress 2012; State of the Art and Practice in Geotechnical Engineering

Oakland Marriott City Center, Oakland, California USA

<http://content.geoinstitute.org/GeoCongress2012.html>

5 – 8th September 2012.

Extractive Industry Geology Conference (EIG 2012).

Edge Hill University, Ormskirk, Lancashire.

A copy of the first circular can be downloaded below. [Download the Extractive Industries Geology Conference first circular here](#) (.pdf429 Kb)

10 - 12 September 2012.

2nd International Conference on Transportation Geotechnics.

Hokkaido University, Sapporo, Japan. A draft of the second announcement can be downloaded below. [Download the International Conference on Transportation Geotechnics flyer here](#) (.pdf2362 Kb)

Engineering Group events are arranged to be held both at Burlington House and at various venues around the UK. Full details of the meetings are posted on the Geological Society's website in advance of the meeting.

It is strongly recommended that you check with the Group's website (www.geolsoc.org.uk/) immediately prior to the event, as details do sometimes change at very short notice.

Half day meetings at Burlington House normally commence at 1330hrs and evening meetings at 1730hrs. Tea and biscuits are served at 1300hrs and 1700hrs in the Lower Library preceding the meeting.

Half Day and evening meetings are free. There may be a modest charge for one-day events.

ENGINEERING GROUP PUBLICATIONS

The following Geological Society publications are new 2010 publications currently in stock at the Geological Society Bookshop (<http://bookshop.geolsoc.org.uk>)

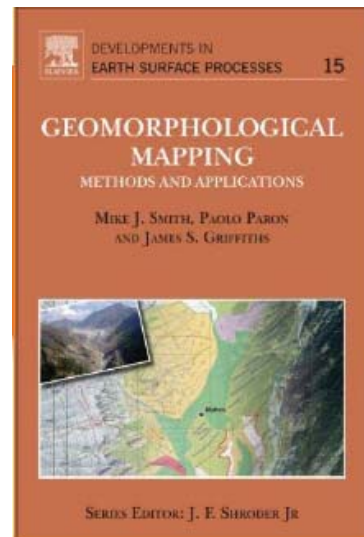
EGSP24 Slope Engineering for Mountain Roads – Author Dr Gareth Hearn – published Nov 2011

SP351 Slope Tectonics – Editor M Jaboyedoff – published May 2011

SP356 Martian Geomorphology – Editors M R Balme et al – Published August 2011

Other Publications

Geomorphological Mapping: Methods and Applications.



Geomorphological Mapping

Methods and Applications

Mike Smith School of Geography, Geology and the Environment, Kingston University, UK

Paolo Paron School of Geography and the Environment, Oxford University, UK & UNESCO-IHE, Institute for Water Education, Delft, The Netherlands

James Griffiths School of Earth, Ocean and Environmental Sciences, University of Plymouth, UK



KEY FEATURES

- First comprehensive book on geomorphological mapping
- Extensive case studies that will appeal to professionals, academics and students
- Brings together material on digital mapping (GIS and remote sensing), cartography and data sources with a focus on modern technologies (including GIS, remote sensing and digital terrain analysis)

ENGINEERING GROUP DISCUSSION LIST

Engineering Group of the Geological Society Discussion List – JISCMail.

The Engineering Group of the Geological Society has established a discussion list to help promote and facilitate discussion and information distribution amongst the UK Engineering Geology community.

If you would like to join this free forum please send the following 1 line email to listserv@JISCMAIL.ac.uk subscribe

GEOLSOCENGGROUP@jiscmail.ac.uk
YOUR_FIRSTNAME
YOUR_LASTNAME

For example: subscribe
GEOLSOCENGGROUP@jiscmail.ac.uk William Smith

IF YOU HAVE ALREADY JOINED THE LIST THEN THERE IS NO NEED TO REJOIN

<http://www.jiscmail.ac.uk/help/using/index.htm>

Posting to a List

To send a message to a JISCmail list, address it to LISTNAME@jiscmail.ac.uk where LISTNAME is the name of the list you wish to post to. When the JISCmail servers receive your email, they will attempt to deliver it to all the subscribers on the list. If delivery cannot be achieved you will normally be sent an email back explaining what the problem was.

Subscriber's Corner

Subscriber's Corner is a powerful tool for managing your subscriptions, especially when you are subscribed to many lists. It may seem more detailed to use at first but, once you get used to it, is much more flexible than other methods.

Subscribe

On the left-hand navigation bar, type in the list name, or part of the list name, in the 'Narrow selection' field. Change 'Show' to "All lists" and then click on Submit. You should then see a table of one or more lists. Tick the box to the left of the list you want to join, at the bottom of the table change the listbox to "Subscribe" and click on 'Submit changes'.

Unsubscribe

Tick the box to the left of the list you want to leave, at the bottom of the table change the listbox to "Unsubscribe" and click on 'Submit changes'.

Change settings

Under 'Report Columns', tick the settings you wish to change and click on 'Submit'.

The table of lists should now have extra columns for each of the settings you ticked. Tick the box to the left of the list you want to amend, at the bottom of the table change the listbox for the setting(s) you wish to alter and click on 'Submit changes'.

If you would like to know more about JISCMail and the service that it provides log on to www.jiscmail.ac.uk

ABOUT THE ENGINEERING GROUP

Established in 1963, as the first specialist group of the Geological Society, the Engineering Group provides the main focus in the UK for geologists concerned with practice and study of geology across a range of applications including; construction and the built environment, mining and mineral extraction, land use and environmental planning, waste disposal, the management of geohazards and environmental engineering. It includes at its core engineering geology and hydrogeology, the theme of the Geological Society's leading international journal, *Quarterly Journal of Engineering Geology and Hydrogeology*.

The Groups aims are to:-

- Provide a forum for the exchange of ideas and networking for research, education, training and business.
- Promote recognition of the role of the chartered geologist within society
- Represent member's interests in professional matters
- Guide training and career development of professional geologists
- Provide a resource base for those in education, research and practice worldwide
- Promote and support learning and research both in the UK and Internationally

The Group's members form the largest proportion of the chartered membership of the Geological Society and the training and development of professional

geologists is paramount to our aims. The Group maintains strong links with the professional associations for geotechnical engineers, highway engineers, the Society's Regional Groups and Environmental Network and others with an interest in engineering geology. The Group promotes co-operation with engineering geologists overseas and is the UK representative of the **International Association of Engineering Geology** (IAEG). The Group represents the Geological Society on the **Hazards Forum** and is a core member of **Ground Forum** established to promote and coordinate activities across the learned professional societies occupied with ground engineering. The Group confers the prestigious **Glossop Lecture** every year.

OUR INSIGNIA AND WILLIAM SMITH



Our insignia features William Smith (1769-1839), the 'father of English geology'. Born in Oxfordshire the son of a blacksmith, William Smith trained as a surveyor and came to prominence during the upsurge of canal construction in the end of the

18th Century. It was during the construction of canals around Bath that Smith recognized that the strata around could be placed in a repeatable certain order based on their fossil content. Smith travelled widely across the UK collecting samples and specimens and noting their disposition - his goal to produce a geological map of England and Wales. He achieved his goal, not without some controversy, in 1815. Smith's achievements were not only those of a geologist but also those of a civil engineer and surveyor – he was the UK's first pre-eminent engineering geologist. The Society now awards the William Smith medal in his commemoration each year for the highest achievement in applied geology.

HOW TO JOIN

The Group currently has no formal membership as all members of the Geological Society may attend any of our events. However, should you not be a member of the Geological Society and wish to join, please contact the Society's Membership Secretary at Burlington House.

Members of the Society can also pay their fees for the **International Association for Engineering Geology and the Environment** (IAEG) through the Society. To join the IAEG see <http://www.iaeg.info/> and contact Rachel Boning (rachel.boning@geolsoc.org.uk). Members receive a copy of the Bulletin.