



Engineering Group of the Geological Society

Newsletter

November 2009

It is at this time of the year when we host either the Forum or the Glossop Lecture (and this year we are doing both!) that you realise that the Engineering Group remain one of the most active Specialist Group's within the Geological Society and also probably the most diverse. Geographically the coverage is worldwide, we are geologists afterall and must go beyond our desk (and our country), but looking back at the year's event and forward to next you realise that the subject matter is really quite extraordinary from highways, to dams and tunnels, to planning and legislation, to groundwater and its management, to geotextiles and concrete, to earthworks, to climate and geology change, quarrying, geothermal energy, ground storage energy, ground investigation and more....

Darren Page

dpage@otbeng.com



Rockfall protection on St Helena: the subject of this year's Glossop Award.

HIGHLIGHTS

- ...IAEG Commission Update...
- ...Meeting Reports...
- ...Annual Field Trip 2009 to the French Alps...
- ...The London Basin Forum...
- ... Working Party Update...



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

NEWS

10th Glossop Lecture 2009

This year's lecture is to be delivered by **Professor C. Paul Nathanail** from the University of Nottingham on 'Engineering geology of sustainable risk based land quality management' on 25th November 2009 at the Royal Geographical Society, London.

Glossop Award 2009

The Engineering Group of the Geological Society has awarded the 2009 Glossop Award to **Stacy English** of W. A. Fairhurst & Partners for her presentation 'Rockfall Protection of Jamestown Wharf, St Helena.'

The Glossop Award is an annual award made to an outstanding engineering geologist working in their profession, under the age of 30. W. A. Fairhurst & Partners were appointed by St Helena Government to undertake a rockfall protection scheme on a 200m high, 400m long basaltic cliff on the island of St Helena, South Atlantic Ocean. Stacy played a key role in each stage of the scheme from the early review of previous studies, through the field data collection and design process, preparation of tender documentation and supervision of the construction phase of the works. Due to unusual travel constraints, because the island has no airfield facilities, the initial site visit was limited in time and a high level of organisation was essential to ensure that all the necessary data was obtained for the design process. Initial activities included targeted rope access stability inspections and a number of field trials to gain an understanding of the behaviour of the failure masses. The cliff, which sits immediately above Jamestown Wharf, was characterised with respect to its geological formation, principle rock types and structural controls, together with the typical failure mechanisms and block sizes. Rock trials included trajectory surveys and vertical drop experiments to establish site specific parameters for rockfall models and for model calibration purposes. The final design included standard and reinforced rockfall containment netting together with rockfall catch fences to provide the required level of risk reduction to Jamestown Wharf, whilst ensuring a safe and efficient method of construction. The system was also designed to be straightforward to safely maintain, making it feasible for this to be carried out by specifically trained local labour resident on the island, without the requirement for constant intervention by external specialists.

The other shortlisted finalists for the 2009 Glossop Award were:

- **Andrew Brown** of Opus on 'Geotechnical Investigation and Analysis of a Backfilled Opencast Mine Site, Llanilid, South Wales'
- **Tom Casey** of Arup on 'Marine Ground Investigation & Engineering Geological Assessments, Forth Replacement Crossing, Scotland'
- **Paul Quinlan** of Scott Wilson on 'Slope Stability Assessment for Oil and Gas Pipelines, Sakhalin Island, Russia.'

The Glossop Award presentation by Stacy English will be given on Wednesday 25th November 2009 at the premises of the Royal Geographical Society London, prior to the 10th Glossop Lecture by Professor Paul Nathanail of the University of Nottingham on the 'Engineering geology of sustainable risk based land quality management.' The Glossop Lecture and Award will be preceded by the bi-annual Engineering Group Forum on 'Planning and Engineering Geology' and followed by the Glossop Dinner. See www.geolsoc.org.uk/engineering or contact david.waring@atkinsglobal.com for more details.

11th Glossop Lecture 2010

Professor Rory N Mortimore has accepted the Group's invitation to deliver the 2010 Glossop Lecture.

Hans Cloos Medal - Martin Culshaw

The Engineering Group is the UK Chapter of the IAEG (International Association for Engineering Geology and the Environment). The Group is delighted to record the award of the Hans Cloos Medal to **Prof Martin Culshaw**, visiting Honorary Professor in Engineering Geology at the University of Birmingham and an Honorary Research Associate at the British Geological Survey. Martin was the Engineering Group's 4th Glossop Lecturer in 2002.

The citation for the Hans Cloos Medal states "(the medal) is the senior award presented by the IAEG, given to an engineering geologist of outstanding merit in commemoration of the 'founder of geomechanics'. The recipient is a person of international repute who has made a major contribution to engineering geology in his/her written papers or to the development of engineering geology and/or the IAEG in their own area. Martin is the 18th winner of the medal and the 3rd from the UK. Twelve nationalities have won the medal and only the USA has previously provided three winners.

BS5930 – Ten Year Revision

David Norbury writes:-

To all those interested in investigation and testing as part of site investigation (senso lato).

As you will be aware there are a number of Standards coming out of Europe which will affect the way we investigate sites. Some of these changes are incorporated into Amendments 1 and 2 to BS 5930 but there are more to come, and BSI Committee B/526/3 now feel it is time to revise BS 5930 after 10 years. Accordingly we are forming a Working Group to get the revision process underway.

This notice is to seek:

1. Identification of items within the current BS 5930 which are wrong, out of date, need changing or adding to.
2. Volunteers who are willing to help us make the required changes. The more volunteers we get, the less text each of us will have to work on.

Please could all recipients of this message pass this on to others who might be interested, either personally or through any appropriate circulation lists/ specialist groups etc

Respondents to either of these points are invited to get in touch with **David Norbury** at david@drnorbury.co.uk to register their point or interest.

BS EN ISO 22476-9 Geotechnical investigation and testing - Field testing Part 9: Field vane test

David Norbury is seeking contributions on the above draft standard which has been circulated for comment. Copies of the standard and comment template can be obtained from David Norbury. Comments should be received by **15 January 2010** to allow time to collate the UK comments.

Balloon Debate

On 12 November the Graduate and Student Committee of the ICE held a cross institution event aimed at AS/A level students. This took the form of a 'Balloon Debate' in which graduate or young members of various institutions gave a presentation as to why their engineering is best/most important – in order to avoid being ejected from the overloaded balloon. Among those taking part were: IStructE, IChemE IMechE, NI, ICE, ACE. STEMNET assisted in identifying about 50 students who are taking engineering subjects.

The Engineering Geology was represented by **Catherine Taylor** of Mott MacDonald and **Victoria Sword-Daniels** of Arup who put together an excellent presentation and reported that they neither won nor came last. They were approached afterwards by fellow

competitors with comments like 'I didn't realise that your job was so interesting'!

11th IAEG Congress 2010, New Zealand

The Congress aims to showcase both tested and innovative local New Zealand knowledge to overseas colleagues as well as bringing state of the art practice to New Zealand. Special emphasis will be given to engaging with younger members of the profession to encourage them to register and contribute. The principle theme of the five day IAEG2010 is *Geologically Active* which includes *geohazards on the leading edge*, *geohazard management*, *role of the engineering geologist in the 21st Century* and *advances in geo-engineering*. More information can be found at www.iaeg2010.com.

Extractive Industries Conference 2010, Portsmouth

The 16th EIG Conference is to be held at the University of Portsmouth 8th to 11th September 2010. EIG conferences are a successful series of events held every two years and are designed to appeal to geologists, consultants, suppliers and other mineral professionals involved with the non - petroleum extractive industry, many of whom carry a wider remit than pure geology. The programme always reflects a breadth of interests from academic research to industrial case studies, always includes field visits, and always includes a conference dinner. The conferences are held in a University specifically in order to maintain strong links between educators and industry as well as provide opportunities for students to meet practising professionals in an informal setting. It is the pre-eminent event at which professionals can discuss, debate, challenge and learn about the issues of the day. Extractive Industry Geology primarily caters for the professional working in a highly competitive and cost-conscious industry. In recognition of this it is aimed to keep a standard conference package of two days registration and accommodation to a very affordable level such that organisations can support a number of delegates. Trade Exhibitions are an important part of EIG and these provide a unique shop window for drilling, geophysical, field, and laboratory equipment suppliers, consultants, publishers, and other providers of goods and services to this sector of the geological community. This unique conference series is organised by a voluntary local committee supported by a broader consultative committee of industry and academic professionals, from whom a Chairman for each event is drawn. More information can be found at www.eigconference.org.

Geological Society Council Nominations 20010/11

The closing date for receipt of nominations is 8 January 2010. The Engineering Group Committee wish to continue to have representation on Council from the engineering geology/applied geology community. Paul Maliphant is currently the only engineering geologist on council.

Who's Who: The Engineering Group Committee 2009

As of September 2009 the Engineering Group Committee comprised the following members:

Officers:

Ivan Hodgson – Chair
David Entwisle – Vice Chair
David Waring – Secretary
Simon Wheeler – Treasurer

Elected Members:

Richard Mellor – Publicity Sub-Committee
Ursula Lawrence
Guy Cassidy
Alex Kidd
Anna Morley (nee Pearson) – Meetings Sub-Committee
Andy Doe
Mike Whitworth – Forum Sub-Committee

Ex-officio Members:

Paul Maliphant – Council & Professional Committee
Mike Winter – QJEGH Editor

Co-opted Members

Patrick Cox – Shadow Treasurer
Chris Martin – Glossop Award Sub-Committee
Lee Jones – SETNET/Schools Development Initiative
Tracey Radford

Representative Members:

Rodney Chartres – National Geoscience Data Centre Advisory Group, Geological Society of America
Adrian Collings – Hazards Forum
Ian Jefferson – IAEG
Jim Griffiths – IAEG/Publications
Richard Fox – Applied Petrography Working Group
Darren Page – Editor Newsletter/Reference Conditions
David Giles – Training Sub-Committee
John Harris – Site Investigation Steering Group
Graham West – Hot Deserts Working Group

Corresponding Members

Alison Littlejohn – USA
Jim Gelder – Middle East
Mark Dawson – Australasia

Hot Deserts Working Party

All chapters have been drafted and the final manuscript has been submitted to the editors. It is anticipated that their report will be published late in 2010 and an international launch is planned in Bahrain. This working party is Chaired by Graham West.

Geo-Hazards Working Party

The aim of this working party is to utilise the expertise within the Engineering Group to provide a 'one-stop' resource for UK geohazard related information and awareness. Key objectives are; to provide a link between Geohazard Experts to those industries, professions and communities that interact or encounter geological hazards in the UK and overseas; to engage with that 'end-user communities' in order to provide a useable resource for their specific geohazard related requirements; to improve communication between specialists, and between hazards practitioners and the wider communities.

Unlike previous Working Parties this one will be web-hosted. A trial website is currently under construction see <http://www.ukgeohazards.info/>. The website will hopefully become an international resource for geohazard information and awareness. Contributions are welcomed. For further information contact the Working Party Chair, David Giles (David.Giles@port.ac.uk).

'Petrography is good for you!'

Richard Fox reports:-

APG representatives sit on two British Standards Institution Committees for Aggregates (B/502) and Concrete (B/517). BS EN 12620 (Aggregates for concrete) is about to be published and contains a sections on recycled aggregates. Discussions were on-going concerning the designation and classification of 'dangerous substances' for construction products. Committee B/502 reported that no European consensus has been agreed regarding the definitive test method for determining the alkali content of cements and concretes.

Glossaries of terms for both aggregates and concrete are being produced and will be published on the Group's website

www.aggregatepetrographygroup.com

A non-technical 'Guide to Concrete Petrography' has been completed and will go to the publishers in January 2010.

The principle objectives of the APG are as follows:

- To review, and where necessary recommend modification to national and international standards relating to petrography.
- Prepare practical guideline and code of practice documents relating to petrographic investigation of materials.
- To insure the highest professional standards are maintained by petrographers and to prepare a list of qualified professional petrographers for access by industry.
- To organise training programmes and meetings to promote competency in petrographic investigation methods.
- To publicise and promote the usefulness and value of petrographic methods to a wider professional audience.

Membership of the Group is open to applied petrographers and members of other professional groups who make use of and have an interest in petrographic information. Membership is currently free and members from other parts of Europe are particularly welcome.

The next meeting of the Applied Petrography Group will be held on 15th February 2010.

For more information contact Richard Fox
richard.fox@rfoxassociates.co.uk

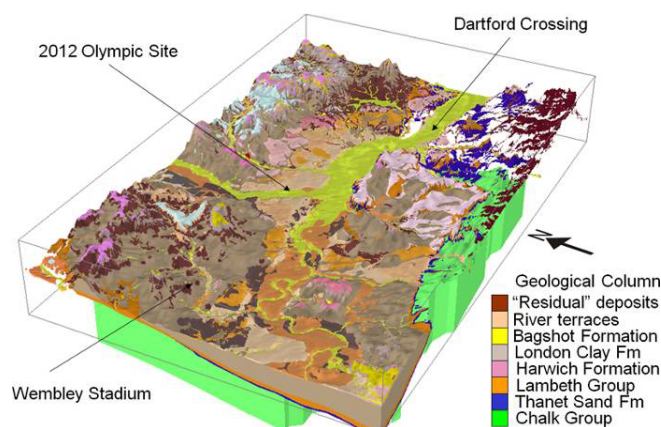
Ground Reference Conditions Working Party

Darren Page reports:-

This working party has been set up to review the use of ground reference conditions or geotechnical baseline reports. Currently in the UK, geotechnical baseline reports are generally not used, except on relatively few major construction contracts. The idea of using ground reference conditions to provide a baseline for construction contracts is not new and was originally recommended for use in the UK back in 1976. The idea was further developed in the USA and current guidance is given in the ASCE 'gold book' 'Geotechnical Baseline Report for Construction: Suggested Guidelines' (2007). The working party will review the ASCE guidelines and provide commentary on their applicability and use in the UK.

The working party proposes to consult widely within industry and report its findings at a meeting to be held on 18th May 2010 at Burlington House. For further information contact the Working Party Chair, Darren Page dpage@otbeng.com.

LONDON BASIN FORUM



The London Basin Forum arose from the 9th Glossop Lecture given in 6 November 2008 by Michael de Freitas where he illustrated some of the evidence that suggests the Basin is compartmentalised by steeply dipping faults. These seem to originate from the basement, are probably associated with reactivation of the Variscan Front beneath London, and resulted in pull-apart basins operating during the latter part of the Mesozoic and into the Cainozoic.

Some of the most obvious evidence appears to come from the trace of the tributaries of the Thames implying that their location is also related in some way to faults in the basement, and suggesting that deformation of the London area by glacial loading to the north may have impressed the trace of faults at depth to ground level. Many anomalies are found in the London area not least "scour hollows" into the London Clay, some of which are almost certainly pingos, and these seem to be coincident with trace of faults suggested from other lines of evidence. Elevated areas of Chalk also appear to be related to these faults. Horizontal shear surfaces exist which were generated during deposition. Drawdown of water in the Chalk can be seen to produce rectangular 'cones' of depression, and so on. These and other features all point towards there being something very basic about the geology of the Basin which has not yet been appreciated. To do this requires input from the geological and geotechnical community as a whole and the first expression of this was at the 1st Glossop Workshop which followed the Glossop Lecture on 19 November. At this it was agreed that a Forum should be initiated and this is open to all without charge.

The embryo Forum had its first meeting as such on 25 March 2009 and from that it was agreed this web site should be developed for all who express an interest in the work and for those wish to contribute to its progress.

The London Basin is probably one of the most intensively investigated pieces of ground on the surface of the earth. Countless boreholes have been drilled for site investigations, aggregate evaluation and water supply; many 100s of kilometres of tunnels have been drilled for railways, cable and sewage and water pipelines. Yet the geology of the London Basin is still poorly understood with unforeseen ground conditions costing developers vast sums of money.

The London Basin Forum aims act as a gateway to collate this information and provide it as a paradigm: a baseline model against which commercial and other geological models could be calibrated.

The London Basin Forum will work **collaboratively** drawing together information dispersed throughout the geological community to produce a model which will relate the development of the London Basin to the physical, mechanical and chemical properties of its rock units. It will provide engineers, geotechnical and environmental specialists with a thorough understanding of how the geological development of the London Basin has and will influence the behaviour of the ground in the past, present and future.

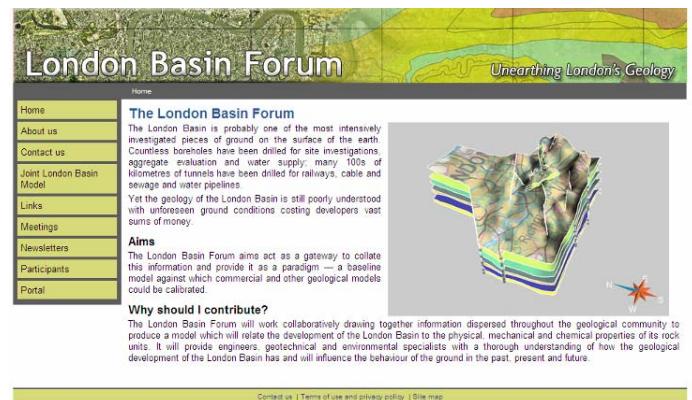
The ultimate aim of the working party is to publish an atlas for the London Basin and develop a London Basin Model. An atlas would have the following unique features:-

- a content unrestricted by journal precedent and reputation - we can include what we want, how we want it; classical structural geology, sedimentology and stratigraphy, hydrogeology, neo-tectonics, geotechnics etc.
- a content that can differ in detail as a function of the quality of the data available for any particular subject:
- a content that can also differ in amount so that brief explanations of local examples of the implications of geology can be dropped into larger and broader ranging geological discourses: and
- a content that can differ in extent so that the geographical boundaries of the London Basin do not become a hindrance; thus aspects of the basement can extend beyond the shores of the UK, the Chalk can utilise the entire extent of the region and the Tertiaries can concentrate on the area of central London where they are known best.

Currently, the working party comprises the following 'core' members:-

Neill Hadlow (inward data control)
 John Cosgrove & Richard Ghail (Basement)
 Rory Mortimore (Chalk)
 Jackie Skipper & Chris King (Palaeogene)
 Ursula Lawrence & Phil Gibbard (Quaternary)
 Kate Royse (Holocene and the BGS input)
 Willy Burgess (Ground water)
 Andrew Thompson (outward data & Atlas input)

A website has been set up, kindly hosted by the British Geological Survey where more information on the London Basin Forum can be found www.bgs.ac.uk/londonBasinForum/home.html.



Engineering Geologist's Training Guide

The second edition of the Engineering Geologist's Training Guide was published on-line in March 2008. The first edition of the Guide was the first training guide produced by the Geological Society. The second edition has been completely revised and brought up-to-date by the Engineering Group in the light of .

- changes in technical requirements and professional practice of Engineering Geologists;
- revisions to the GSL's requirements and procedures for the granting of CGeol status;
- introduction of the GSL's CPD scheme, which is available as an on-line record through the GSL web-site; and,
- the proposed introduction of a Registration for Ground Specialists.

The training guide can be downloaded from the Society's website: <http://www.geolsoc.org.uk/gsl/site/GSL/lang/en/cgeol> (at the bottom of the page).

MEETING REPORTS by Ursula Lawrence

Excavation of the 34th street station

Joint evening meeting of EGGs, ICE - New York Local Association and British Tunnelling Society on 17th June.

The 34th St. Station Cavern, for the No.7 Line extension and the Grand Central Station Caverns for the East Side Access Project are currently under construction in New York. Both projects represent major extensions to the existing infrastructure and involve significant engineering challenges including rock excavations under both historic and famous buildings – Grand Central Station. The presentation described the GI and subsequent detailed design work that was undertaken for the initial rock support to the caverns. A summary sheet was developed that showed the characteristics of the rock and rock mass and how that translated into support designs and rock bolt arrays for that section. The presentation demonstrated how the back analysis of joint properties such as persistence and spacing lead to the development of a refined ground model and a better appreciation of the rock mass behaviour in the Manhattan Schist, Granites and Gneissic rocks. The performance of the initial ground supports was discussed and the experience gained from the design and excavation of these large span and shallow rock caverns was presented. The construction of the caverns demonstrated how detailed geological mapping can be used to verify design assumptions.

2nd International Seminar on Earthworks in Europe. Joint meeting EGGs, IHT, Int Geosynthetic Society, World Road Association (PIARC).

The second international seminar followed on from the annual meeting of the World Road Congress meeting, also in London. The two day event was held in the Royal Geographical Society building and took over much of the building with rooms set aside for both trade stands and poster displays. The presentations were delivered in either French or English with simultaneous translation into both languages. This facility was very successful and the event was well attended with over 150 delegates from throughout Europe. It was opened by Ginny Clarke, Chief Highways Engineer, for the Highways Agency and consisted of a mixture of major project case histories and details of both specifications and current research activities. There was much comparison of how

techniques had been applied differently throughout Europe giving thought for all. Special interest was shown in the innovative use of waste materials as lightweight fill e.g. compressed tyres bales. The evening dinner was held at the science museum and both food and venue were thoroughly enjoyed by all. The caterers remarked that the engineers took longer than planned to come through the exhibit halls to the food! A selection of the presentations and technical posters will be collated into an Engineering Group Special Publication due out in 2010.

Engineering Geology of the Quaternary Deposits 31 March 2009. Joint meeting between the Engineering Group and the Thames Valley Regional Group

Following on from the success of their previous conferences the Thames Valley Regional Group turned their attention to the Quaternary of the London Basin and the south east. The presentations covered many aspects including the stratigraphy, lithology and variability in engineering properties and demonstrated both through research projects and case histories.

The conference was opened by Dr Danielle Schreve discussing climate change during the Quaternary and the effect that it has had on the ground conditions near and at surface. Many presentations stressed the variation in the properties of the Quaternary deposits however trends were discernible when looked at in appropriate scales or aspects.

The conference was well attended with varied and interesting presentations giving delegates much to talk about during break sessions. All agreed that the conference was a resounding success.

Lean Construction Best Practice in infrastructure Engineering

27 January 2009 EGGs and IHT

Lean Construction is a process improvement technique, which relies upon a systematic and critical review of processes aimed at minimising variation and achieving a very low level of defects to get the job done right first time. Five projects were showcased as best practise examples covering road construction and rail embankment remediation: The presentations detailed how the processes on each were studied and improvements implemented to bring about time a cost saving through increased efficiency and minimisation of waste, rather than compromising on quality.

Initially more experienced staff seemed reluctant to embrace the idea but when their suggestions were not only listened to but taken on board and subsequently

resulted in real improvements both in terms of productivity, and site relations most were convinced.

The event was held at the Royal Spa in Leamington Spa and attendance was very good. The breaks resulted in a lot of discussion on the application of the principals to other projects.

Engineering Hydrology – Predictions management, dewatering and legislation 14 January 2009 Burlington House

The aim of this one day seminar was to cover topical and relevant issues that have to be considered by both hydrogeologists and engineering geologists in many engineering projects, ranging from building construction, quarrying and mining to predicting the effects of construction on groundwater and the mitigation of any potential environmental impacts. The projects covered varied both technically and geographically from Karst hydrogeology in South Africa to groundwater management at Sellafield and from groundwater sampling, through analysis and modelling to changing legislation. Changes to the legislative framework will have a big impact on major engineering projects as new regulations apply to construction dewatering. The regulations were the subject of much discussion both during and after the seminar. Major projects constructed over long periods will be affected as the new laws will apply to both new and ongoing sites. Although discussion revealed that many of these were already preparing for the new legislation.

London Basin Forum

In the 9th Glossop Lecture (de Freitas 2009) the results of research into possible relationships between encounters of unexpected ground conditions for example in the River Terrace Deposits or the Lambeth Group and the hypothesis that many of these could be associated with a structural framework inherited from lineaments within the basement related to movements in the Variscan. Additionally it is reasonable to expect that such weaknesses would be remobilised under appropriate stress conditions. This model provides a framework against which the known geology of the London Basin and its anomalies can be tested. An open forum now exists for drawing together evidence presently dispersed throughout the geological community that has worked in the Basin. The London Basin Forum was established to act as the receptor of this information and knowledge.

We are immensely fortunate in having the following agree to lead their particular subject.

Professor John W Cosgrove, Imperial College London; (Basement and structures)

Emeritus Professor Rory N Mortimore, Brighton University & RN Mortimore Ltd.; (pre-Chalk and Chalk)

Dr Christopher R King, CR King Ltd; (London Clay Formation)

Dr Jacques A Skipper, Geotechnical Consulting Group; (Lambeth Group)

Professor Philip Gibbard, Cambridge University, *Dr Ursula Lawrence*, Cross Rail and *Don Aldiss* (British Geological Survey); (Quaternary)

Dr Kate Royse, British Geological Survey; (Recent and Environmental aspects)

Emeritus Reader Dr Michael de Freitas, Imperial College London & First Steps Ltd., (Chairman)

The specialists will collate the data relevant to their specialism and co-ordinate with the others in the development of the Atlas for the London Basin which is aimed to be published in 2014. This will present the findings essentially as a series of maps, recording the history of the Basin and its relationship with features of known geological, hydrogeological, geotechnical and geo-environmental significance.

de Freitas, M. H. (2009) *Geology; its principles, practice and potential in Geotechnics*. 9th Glossop Lecture. *Quarterly Journal of Engineering Geology and Hydrogeology*. **42**, (in press).

A further presentation launching the atlas and how it can be used will be made on 28 October 2009 at Burlington House.

2009 Jubilee Symposium on Polymer Geogrid Reinforcement – Identifying the direction of future research.

8th September 2009 ICE.

In the early 1980s Tensar International Limited collaborated with leading universities to investigate the potential applications of geogrids in a programme supported by the Science & Engineering Research Council. This research broke new ground and led directly to the successful introduction of geogrids into the construction sector. A symposium in 1984 launched the new technology and its potential uses in embankments, retaining walls and pavements.

The Jubilee anniversary symposium invited researchers and practitioners to present an overview of their current and ongoing research or work since 1984 and where the current challenges and research opportunities existed. The use of Geogrids was covered in the following applications, Unpaved Roads and surfaces, Roads and Railways, Walls and Steep Slopes.

Many excellent presentations were given that provided an excellent state of the art review and the break sessions were buzzing with discussion from the large number of attendees. The website for the event (<http://www.tensar.co.uk/jubilee-symposium/index.html>) provides downloads of papers of the presentations from both the current and 1984 symposia

**Annual Field Meeting
ENGINEERING GEOLOGY OF THE FRENCH
ALPS, GRENOBLE**

Friday 5th June – Monday 8th June

A field trip to France was only going to be judged on the food and it didn't disappoint. Some spectacular geology too! The sheer scale of the geological risks facing Alpine communities whilst technically understood can only remain very difficult to truly comprehend.

Expertly run, as always, by **David Giles** and a lot of fun. Thanks also to **David Entwisle** and **Darren Page** for keeping the vehicles on the road and making it back in time for the ferry (but only just).

Social highlights include:-

- Pre-dinner drinks (in and out of the rain, apparently there was supposed to be great view from the veranda)
- The cheese course (hard was definitely better than soft)
- Pedalo racing (won by Atkins both the race and the bargaining)
- Chartreuse (it's green and therefore must be drunk!)
- Crepes

Engineering geological highlights include:-

- Dam engineering (not without problems current and historical)
- Rock engineering
- Landslides (large!)
- Slope stabilisation and protection
- Rock falls and rock fall protection
- Retaining walls
- Tunnels
- Facies changes in glacial sediments

For details of localities visited and background information visit

http://userweb.port.ac.uk/~gilesd/Pages/engineering_group_french_alps.htm



'Bright copper kettles...'



'Anyone an igneous petrologist?'





IAEG Commisions

IAEG Commission C20: Risk based contaminated land management

Sustainable urban land management involves innovative methods of construction and facilities management coupled with resource efficient and effective mitigation of legacy issues such as old structures and foundations or soil and groundwater contamination. Land contamination is a legacy of historic industrial processes and waste disposal activities. It is both economically and ecologically unnecessary to remove all historic contamination. Instead an approach based on the assessment of the risks posed by such contamination and mitigation of unacceptable risks is becoming internationally accepted.

Technologies to assist in ground characterisation and soil and groundwater remediation have been developed notably in the USA, Germany, Netherlands and UK. Mature policies and standards have been in place for both ongoing and new land uses in Western Europe, North America and Australia.

The overall aim of the IAEG Commission on Risk Based Contaminated Land Management is to achieve increased understanding of the role of engineering and environmental geologists and of other related professionals in the chacterisation, assessment and remediation of naturally and anthropogenically contaminated land and water. This will be achieved through a range of activities such as those listed below. The intent is both to ensure that geo-professionals worldwide are better informed and equipped to contribute to risk based land management and other professionals understand – and commission – the services of geo-professionals.

Activities:

1. 'grow' a network of interested geo-professionals through the setting up of a JISCMail email server: The email listserv is up and running and anyone interested can join it at <https://www.jiscmail.ac.uk/cgi-bin/webadmin?SUBED1=IAEG-C20&A=1>
2. develop a catalogue of key technical guidance relevant to the services offered by geo-professionals (eg development of conceptual models, design of site

investigations, selection and verification of remediation strategies)

3. disseminate good practice in characterisation, assessment and remediation
4. promote the role of geo-professionals to other professionals in the land contamination management sector (eg chemists, engineers, surveyors, lawyers, insurers, developers & builders)
5. develop a succinct guide on the principles of risk based contaminated land management to inform geo-professionals
6. develop a succinct guide of the role of geo-professionals aimed at other professionals highlighting the need for geo-professional expertise

Timescale

The aim would be to present draft versions of both Guides at the 11th Congress of the IAEG in Auckland. Opportunities for face to face discussions would be sought at annual intervals at appropriate technical conferences etc appropriate to the composition of the commission such as IAEG events and other events.

Feedback on the above and expressions of interest in being involved or being kept informed would be most welcome.

Professor Paul Nathanail

University of Nottingham

paul@lqm.co.uk

IAEG Commission C22: Landscape Evolution and Engineering Geology



Anderson & Trigg (1976) in their collection of case studies in engineering geology stated "It is becoming increasingly accepted that civil engineering works must be in harmony with the environment in which they are placed, not only aesthetically, but physically, and that the environment is largely determined by geological factors." In

the same volume they went on to say, *"The basic task of the engineering geologist is to collect data relating to the stability of the geological environment, taking into account the fact that this environment is itself changed by the engineering works."* The emphasis placed on the need to investigate the stability of the geological environment is an interesting one, as many 'geological' processes take place on a million year plus timescale (e.g. sedimentation and lithification, isostatic change, volcanic intrusion), although the concept of 'geohazards' involves recognition of geological processes that can occur on much shorter timescale (e.g. fault movement, extrusive volcanic activity, landslide, earthquake, ground subsidence). Geohazards, therefore, are the subset of geological processes that affect humans in the short term and all relate to changes in the geological environment that can occur within the design life of a construction project. What is also apparent is that geohazards are all liable to have a significant and immediate effect on the nature and properties of the surface of the earth (either on land or underwater), that is, they are likely to change the shape of the terrestrial or submarine landscape. However, within the history of the development of the contemporary landscape such short term or immediate changes resulting from geohazards need to be seen within the framework of the overall evolution of landscapes. In this broader context it is recognised that 'geological' processes are not the only ones involved in the creation and evolution of landforms, there are also climatic, hydrological, and biological processes to be taken into account. The long term interaction of all these processes created the contemporary landscape, and the investigation of the way this has evolved is part of the discipline of geomorphology.

At present most civil engineering projects take place on the land, in rivers and lakes, or in the coastal and nearshore zone. They predominantly lie within 100 metres of the ground surface (the main exceptions are deep tunnels, deep sea drilling and production rigs, and cross-ocean cables). Thus the overwhelming majority of construction works will interact with the landforms that make up terrestrial and nearshore landscapes. Recognition of this close link between the features of the landscape and civil engineering has led to the development of engineering geomorphology, a subject where practitioners are able to provide practical support for engineering decision-making with respect to project planning, design and construction (Fookes et al., 2007). A core component of that support comes from the recognition that the earth surface is not a static environment and landscapes change over time through weathering and surface processes such as

erosion, sediment transport and deposition. Despite this, there are many examples of civil engineering projects where the extant conditions are regarded as being static within the design life of a project. Hence this Commission by the President of the IAEG (Dr F Baynes, 2006-2010) to provide a practical evaluation of the way landscape evolution can be included in project studies and investigations undertaken by engineering geologists supported by the still relatively few engineering geomorphologists. This work will also provide a basis for CPD training plus guidance for University programmes that include or specialise in teaching engineering geology.

Professor Jim Griffiths

University of Plymouth

jim.griffiths@plymouth.ac.uk

David Giles

University of Portsmouth

dave.giles@port.ac.uk

IAEG Commission C25: Use of engineering geological models

The commission is looking for published examples of the use of engineering geological models as part of its aim of producing guidance on this subject. The commission will examine the use of models from the conceptual stage of a project through to its construction and maintenance.

Steve Parry would be grateful if members can email details of papers, in particular case histories, which they think would be appropriate for inclusion in a review of the subject.

Steve Parry

GeoRisk Solutions,

Hong Kong

parrysteve@gmail.com

FORTHCOMING ENGINEERING GROUP EVENTS

25th November 2009 One Day Conference

'Engineering Group Forum - Engineering Geology in Planning'

Speakers: Various

Royal Geographical Society, London

Convenor: Malcolm Whitworth (Malcolm.Whitworth@port.ac.uk)

25th November 2009 Evening Meeting

10th Glossop Lecture

'Engineering geology of sustainable risk based land quality management'

Speaker: Professor C. Paul Nathanail, Professor of Engineering Geology at the University of Nottingham

2009 Glossop Award

Stacy English of W. A. Fairhurst & Partners

'Rockfall Protection of Jamestown Wharf, St Helena.'

Royal Geographical Society, London

Convenor: Chris Martin (chris.martin@arup.com)

8th December 2009 Evening Meeting

'Basally reinforced platforms for piled embankments; Dutch and UK case studies'

Hartmut Hangen (Heusker) and Martin Curd (Scott Wilson)

Joint Meeting with International Geosynthetics Society

Burlington House

Convenor: Alex Kidd (alex.kidd@highways.gsi.gov.uk)

19th January 2010 Evening Meeting

'Groundwater management in tunnelling'

Speakers: TBA

Burlington House

Convenor: Guy Cassidy (guy.cassidy@jacobs.com)

16th February 2010 Evening Meeting

'Ground investigation for the Forth Replacement Crossing'

Speakers: Paul Mellon (Transport Scotland), Alistair Chisholm

(Arup), Stewart Drennan (Jacobs)

Burlington House

Joint with British Geotechnical Association

Convenor: Andrew Doe (DoeA@halcrow.com)

6th March 2010 Evening Meeting

'Energy Series - Carbon Capture'

Joint with Hazards Forum

Burlington House

Convenor: Adrian Collings (Adrian.Collings@arup.com)

23rd March 2010 One Day Seminar

'Highway Engineering in the 21st Century' (Provisional Title)

Speakers: TBA

Coventry Techno Centre

Joint with Institution of Highways & Transportation

Convenor: Ivan Hodgson (Ivan.Hodgson@scottwilson.com)

20th April 2010 Half Day Seminar

'Engineering geology and terrain evaluation'

Speakers: TBA

Burlington House

Convenor: Malcolm Whitworth (Malcolm.Whitworth@port.ac.uk)

18th May 2010 Evening Meeting

'Geotechnical Baseline Reports'

Speakers: TBA

Burlington House

Convenor: Darren Page (dpage@otbeng.com)

15th June 2010 Evening Meeting

Annual General Meeting followed by

'Geology and rock engineering design'

Speakers: TBA

Burlington House

Convenor: Lee Jones (ldjon@bgs.ac.uk)

July 2010 Weekend

Annual Engineering Group Field Meeting

Venue: **Durham (and thereabouts)**

Convenor: David Giles (email: David.Giles@port.ac.uk)

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.

Evening meetings are free. There may be a modest charge for half-day and one-day events.

ENGINEERING GROUP PUBLICATIONS

The following is a complete list of titles produced by the Engineering Group. Those marked with an asterisk are available for purchase from the **Geological Society Bookshop** the remainder may be found in the Library.

EGSP 1: Aggregates: Sand & Gravel (1985)
 EGSP 2: Site Investigation Practice: Assessing BS 5930 (1986)
 EGSP 3: Groundwater Engineering Geology (1986)
 EGSP 4: Planning & Engineering Geology (1987)
 EGSP 5: Engineering Geology of Underground Movement (1988)
 EGSP 6: Field Testing In Engineering Geology (1990)
 EGSP 7: Quaternary Engineering Geology (1991)
 EGSP 8: Engineering Geology of Weak Rocks - *publ by Balkema* (1993)
 EGSP 9: Aggregates: Sand & Gravel (2nd edition) (1993)
 EGSP 10: Engineering Geology of Construction (1995)
 EGSP 11: Engineering Geology of Waste Disposal (1995)* *Limited*.
 EGSP 12: Modern Geophysics in Engineering Geology (1997)*
 EGSP 13: Advances in Aggregates and Armourstone Evaluation (1998)*
 EGSP 14: Contaminated Land & Groundwater (1998)
 EGSP 15: Geohazards in Engineering Geology (1998)*
 EGSP 16: Stone: Building Stone, Rockfill and Armourstone in Construction (1999)*
 EGSP 17: Aggregates: Sand & Gravel (3rd edition) (2001)*
 EGSP 18: Land Surface Evaluation in Engineering Practice (2001)*
 EGSP 19: Geophysics in Engineering Investigations - *publ by CIRIA* (2002)*
 EGSP 20: Coastal Chalk Cliff Instability (2004)*
 EGSP 21: Clay in Construction (2006) *
EGSP 22: Engineering Geology for Tomorrow's Cities (Dec 2009)*

PHRTS: Tropical Residual Soils (1997)*
 MPB36: Coastal Defence and Earth Science Conservation (1998)
 KIMAP: Mapping in Engineering Geology (2002)*

The following Geological Society publications are currently in stock at the **Geological Society Bookshop** (<http://bookshop.geolsoc.org.uk>). Generous discounts are available to members.

Titles in Engineering Geology

SP157: Chemical Containment of Waste in the Geosphere, (1999)
 MPB39: Issues in Environmental Geology: a British Perspective, (1998)
 SP52: Phosphorite Research and Development, (1990)
 SP205: Natural Stone, Weathering Phenomena, Conservation Strategies and Case Studies, (2003)
 SP236: Energy, Waste & the Environment: A Geochemical Perspective, (2004)
 SP261: Fractal Analysis for Natural Hazards (2006)
 SP266: Function of Soils for Human Societies and the Environment (2007)
 SP271: Building Stone Decay: From Diagnosis to Conservation (2007)
 SP279: Natural and Anthropogenic Hazards in Karst Areas (2007)
 SP283: Mapping hazardous terrain using remote sensing (2007)
 SP296: Landscape Evolution: Denudation, Climate and Tectonics over Different Time and Space Scales (2008)
 SP313 Underground Gas Storage: Worldwide Experiences and Future Development in the UK and Europe (2009)
 SP322 Geohazards in Rocky Coastal Areas (2009)

Titles in Hydrogeology

SP115: Global Continental Changes: the Context of Palaeohydrology (1996)
 SP128: Groundwater Contaminants and their Migrations (1998)
 SP182: Groundwater in the Celtic Regions: studies in hard rock & Quaternary hydrogeology (2001)
 SP130: Groundwater Pollution, Aquifer Recharge and Vulnerability (1998)
 SP189: Palaeowaters in coastal Europe: evolution of groundwater since the late Pleistocene (2001)
 SP193: Sustainable Groundwater Development (2002)
 SP198: Mine Water Hydrogeology and Geochemistry (2002)
 SP225: 200 Years of British Hydrogeology (2004)
 SP288: Climate change and groundwater (2008)

Titles in Geomechanics

SP263 Fluid flow and solute movement in sandstones (2007)
 SP270 Fractured reservoirs (2007)
 SP284 Rock physics and geomechanics in the study of reservoirs and repositories (2007)
 SP289 The relationship between damage and localisation (2007)

CONTINUING PROFESSIONAL DEVELOPMENT

It is our intent to list here issues relating to CPD including guidance on its administration and opportunities as to where and how to refresh or gain new knowledge and experience. The Geological Society website (www.geolsoc.org.uk) lists a range of CPD courses and this should also be consulted (follow the links on the Career page).

Listing here does not confer approval by either the Geological Society or the Engineering Group.

The following companies organise training courses that are particularly aimed at early career Engineering Geologists. Further information can be gained from the relevant websites by clicking on the company names.

[First Steps](#) organises training courses for engineers on the practical aspects of ground investigation and design. In addition the site provides career help and information

[Equipe Training](#) provides training courses on the practical aspects of Ground Investigation.

[David Norbury](#) provides information and training on the implementation of the New European Standards into UK practice.

[School of Earth and Environmental Science](#) University of Portsmouth provides training courses in Geotechnical Engineering and Engineering Geology

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 others with an interest in engineering geology. The Group promotes co-operation with engineering geologists within Europe 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.

IAEG

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.