



The  
Geological  
Society

North West Regional Group

# Newsletter

Autumn 2013



## **Your guide to Geological Society events in the North West - 2013/14**

### **Contents**

*Committee News*

*Looking back at 2012/13*

*What's happening in 2013/14*

*Social Media*

*Selected Abstracts for the 2013/14 Lecture Season*

*Our Friends in the North West*

*Combined Programme for 2013/14*

*Venue Information*



## Committee News

We welcome you back to the regional group for a new season of lectures and fieldtrips. We have had yet more new blood and new ideas into the committee this year.

We are proud to welcome 3 new committee members who joined following our AGM held in January. Our new members are:

Catherine Kenny (Atkins),  
Katherine Harrison (Manchester University) and  
Laura Pender (Environment Agency).

The current committee wishes to thank the outgoing committee members (Helen Beeden, Gillian Butler and Julian Ingram) who have supported the group for many years, providing the high calibre lectures we have got use to.

## Looking Back at 2012/13

I hope you all enjoyed our previous season of lectures, and judging by the numbers of members attending, we seem to be doing something right!

We have tried for the 2012/13 season a few new ideas, such as joining with our fellow regional Geological Association groups in North Wales and Liverpool. We also jointly presented the biannual Rankine Lecture with the ICE regional group.

Our regional specific talk was a tour de force lecture on the Cheshire brinefields by both Dave Wilshaw and Pauline Cook (Cheshire Brine Subsidence Compensation Board - Wardell Armstrong) and was both very entertaining and very informative. As with talks which have such local perspective, this was one that did significantly over run with no one leaving seats!!!

We were also very lucky to have Dr Laurance Donnelly give 2 No. talks on both fault reactivation as well as forensic geology. As always, Laurance provided great talks which provided a significantly more information to the papers presented in the QJEG, as well as the services geological sciences can provide to police forces around the world.

Our first joint lecture was with the ICE for the rerun of the Rankine Lecture by Professor Bolton. This is a prestigious event and lived up to expectation! We were very impressed with attendance for this event.

The first joint lecture with the regional Geological Associations was held at Chester University, with the North Wales Geology Association. This event is earmarked as a traditional geology lecture with Keith Nicholls talking about the great Ordovician extinction predominantly in North Wales, with cross reference to Scotland and Brittany.

When this talk was mooted initially, it was stated that although we are the Geological Society of London, no one wants to see a geological lecture, and from past experience attendance was dire. We were more than pleasantly surprised that we had such a large attendance to this meeting and have agreed to set this up as a regular annual meeting. The audience was made up by many students, as well as members of the Geological Society of London and Geology Association. The venue at Chester University was new to us and was exemplary. Although many of the members within our regional group are commercially based in the geotechnical and environmental spheres, it is well worth getting back to basics and remembering why we studied geology in the first place.

The second joint lecture with a regional group was held in Liverpool. Not having been to the regional Geological Association's meetings before, finding the lecture theatre was somewhat of a challenge, but when they were found, the facilities provided were excellent. I will be looking to put up signs in case members found it hard to find the venue. This talk comprised the rescheduled theological assessment of natural disasters. This talk provided an excellent alternative perspective on geology.

We were very lucky to have both Steve Wilson (EPG) and Russell Thomas (Parsons Brinckerhoff) to talk for our Christmas and AGM/January lectures. Both the topics of ground gas mitigation and forensic assessment of former gas works were of high significance for industry and had near sell out audiences in the Centre, Birchwood.

Our Spring lectures required amendment as Ed Hough was taken off general duties of the BGS to concentrate on a little known aspect of geology in the North West - Fracking! Ed was obviously very busy, and we were lucky to fit the Cheshire basin lecture in this slot.

Hazel Davidson presented an excellent lecture on the hazards of asbestos in soils. This was an important subject matter for geologists in the field working with brownfield sites.

Our final lecture of the season was run by the Environment Agency on the use of the Code of Practice and how the use of this tool has improved the standards of ground investigation.

We are pleased to confirm that attendances are significant higher than the previous year with numbers ranging from 23 to 80. We have also been told that the attendance and interest to the chartership meeting was the best region in 2012. We hope that number of charterships within the regions remains buoyant.

We are also pleased to note that Edge Hill University have attended many of our lectures. Comments have been made to the committee that attendees are glad to see an array of lecture subjects being presented by the



regional group, including sorely missed traditional geology subjects.

It should be noted that the committee have many ideas on what types of lectures should be presented and these may be based on the committee's interests and experiences. The dropping of traditional/pure geology subjects was undertaken historically as these were noted not to get bums on seats. It is up to our members to both say what they would like to see as well as vote with their feet. Those lectures which are poorly attended are likely to be mothballed for those which attract significant numbers. Many of the venues charge a significant cost to host the events, and therefore it is important to be able to justify our costs to Burlington House.

We put on lectures for all of our members, as well as any willing member of the public, and we try to please the majority where possible as this allows us to request for funds to put these talks on. There are few things free these days, and our talks at the moment are one of those.

Many of the talks presented last season usually have a high ticket value when presented as part of a conference, and it is an ideal opportunity to hear the speaker, to gain up to date information of the subject, to learn new subjects, to gain CPD points as well as to network and meet your peers.

### **What's Happening in 2013/14**

The committee have been very busy this summer arranging the new programme for 2013/14. The programme this year is broad with pure geological talks which bring us back to why we studied geology in the first place, contamination, geotechnical engineering, industry guidance and much more!! From the previous years good reception for the joint ventures, we have maintained the meetings with the North Wales and Liverpool Geological Associations as well as the ICE regional group. The inclusion of the regional geological associations has allowed us to expand beyond the central area of our membership area.

As ever the programme may vary from that which we have planned. With all our best endeavours, there may be occasions when venues need rearranging, speakers may need to be rearranged due to unforeseen events, or dates may need slightly amending. I will be sending out fliers well in advance of the meetings and these will be the confirmation of the event. Please ensure you keep your e-mail details current with both myself as well as the Fellowship Services Manager - Mohammed Jahangir.

This year we are looking to put on a day seminar regarding 'Geology and On Shore Energy Security in the 21<sup>st</sup> Century - What can the North West contribute?' We are looking at hosting this event in April 2014. Details will be forthcoming. We will be looking for sponsors for this event.

We are also proposing a careers day in February with the opportunity for members who are in the job market, or will be entering the job market to hear from many key speakers on their varied experience in the geological world. We will be looking for companies who have active permanent job openings to be present for discussion with members at stands. This event is to be held at Manchester University.

We look forward to seeing you at the events we provide during this season.

For the programme, we have included the events from other groups which may be of interest to our members, and also to try and stop me double booking dates!

If you have any comments or questions regarding the events organised by the North West Regional Group please feel free to make contact using the details provided below.

We wish to thank again all the speakers who made our programme last year and hope you enjoy the programme for the up and coming year.

Best regards to you all on behalf of the Committee.

Nik Reynolds  
**Secretary to the Geological Society**  
**North West Regional Group**

For those who haven't guessed the photograph on the front is secondary crystallisation within dolomitised limestone from the Happy Valley car park by the pier at the base of the Great Orme, Llandudno.



## Social Media

Just a reminder that we also have an active Facebook and LinkedIn webpage which we encourage you to visit. We try and keep these sites up to date with information regarding meetings and other relevant interesting geological bits and bobs we find!!!

We have found that although members appear to have joined the LinkedIn service, no one is contributing or appears to see posts which have been made. We will post information regarding up and coming lectures, but will be keeping the Facebook page more up to date.



<https://www.facebook.com/groups/geologicalsociety.northwest/?ref=ts>

and

[http://www.linkedin.com/groups?gid=2737408&trk=hb\\_side\\_g](http://www.linkedin.com/groups?gid=2737408&trk=hb_side_g)

## Selected Abstracts for the 2013/14 lecture season

A selection of abstracts available at time of going to press. Prior to each talk a flyer will be made available to provide a reminder of the talk, abstract, and speaker biography and venue details.

### Summer Field Trip National Mining Museum, Overton, Wakefield

Sunday 16 September 2013

Although we are slightly out of area, we consider the National Coal Mining Museum a great source of information for a previous industry steeped in geology. We have arranged 2 special events which will be a trip down the drift mine at 11am (nominal charge), with a lecture at 2pm. These are events not usually provided at this facility and have been arranged specially for the Geological Society of London. There will be plenty of activities for all of the family, including going down the coal mine (not the drift), visiting the pit ponies, a nature trail, a small indoor soft play area, an outdoor play area, and there is an exhibition on the "Hidden Life of Coal Traders".



This event is open to all members as well as the whole family - grandchildren, children, parents and grandparents.



### A Journey to the Burgess Shales - Dr Jacqui Malpas.

Joint Lecture with the North Wales Geology Association.

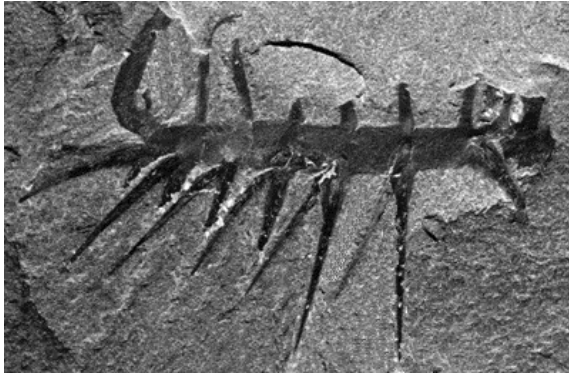
Thursday 26 September 2013  
Chester University, Chester

Since discovering geology as an Open University undergraduate I have dreamt of visiting the most famous fossil site in the world; The Burgess Shale. This trip was my 60th birthday present.

The Burgess Shale was discovered as the result of two decisions. The first was Canadian Pacific Railway chose to run their line through the Rockies via Kicking Horse Pass; the second was that the Geological Survey of Canada sent their most experienced geologist, Richard McConnell, to map the geology on either side of the line. Thus in 1886, McConnell was the first geologist to find and collect from the Burgess Shale of Mt. Stephen, which overlooks the village of Field, British Columbia. McConnell's report attracted the attention of Charles Walcott a palaeontologist with the United States Geological Survey.



Walcott eventually found the Phyllopod Bed Fossil Ridge, between Wapta Mountain and Mount Field, the main Burgess Shale site, in 1909, 23 years later. Charles Walcott's diary of 31st August 1909 reads '*Out with Helena and Stuart collecting fossils from the Stephen Formation. We found a remarkable group of Phyllopod Crustaceans. Took a large number of fine samples to camp.*'



<http://paleobiology.si.edu/burgess/hallucigenia.html>

The Burgess Shale, with its remarkable preservation of a diverse fauna with soft-body as well as skeletal parts was previously unknown. This site and its fossils provide an unique insight into animal life of the early Cambrian Period.

This talk will illustrate some of the history of the site and an overview of the fossils and how they changed the way the evolution of animal life of the Cambrian Period is understood and interpreted.

*Dr Jacqui Malpas graduated from the Open University in 1998, and followed this with a doctorate at Manchester University reading marine flooding surfaces in Sinai, Egypt. Jacqui spent 2 years post doctorate auditing Regionally Important Geodiversity Sites (RIGS) in North East Wales, and latterly produced and implemented the Geodiversity Action Plan for the Clwydian Range and Dee Valley Area of Outstanding Natural Beauty.*

## **Reflections on the residual strength of clay soils with special reference to bedding control landslides - Professor Bromhead**

Joint Lecture with the ICE Northwest Group  
16 October 2013

Renold Building, Manchester

This Glossop Lecture is about landslides and their slip surfaces at residual strength in clays. Particularly in southern England, but also elsewhere, landslides in infrastructure cuttings and many natural slopes are commonly found to be slowly moving compound

landslides with a component of their basal shear surfaces following a particular bed (or 'slide-prone horizon'). A selection of both historical and modern case records of this type of landslide are presented briefly.

The geotechnical conditions that give rise to this occurrence are discussed, and the dominant factor relates to the dip of the strata, which must be of low inclination for the landslide mass to remain in place over the critical clay bed in the geological sequence after sliding has been initiated. Observations of the slip surfaces in the field lead to the conclusion that the bedding-controlled elements of this type of landslide develop along thin, *slide-prone* or *slide-susceptible*, horizons in the bedding.

The question of what caused the formation of those horizons in the first place is answered by putting forward two hypotheses to explain why bedding-controlled slip surfaces form where they do, and considering the evidence for or against each of them. The conclusion is reached that despite the attractiveness of the concept that these slip surfaces form by a progressive failure mechanism at the junction of two materials with dissimilar properties, the alternative concept that they occur where there is a bed of slightly enhanced smectite content better fits the observations.

The mechanisms for such local changes in clay mineralogy are linked to inputs of volcanic ash at the time of deposition. Definitive proof of concept is, however, lacking, but taking into account how clay sediments are deposited in sedimentary basins, this paper makes suggestions for future lines of enquiry.

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 datasets are shown to exhibit remarkable similarities, and the implications of this tend to support the preferred explanation of the origin of slide-prone horizons.



<http://qiegh.lyellcollection.org/content/46/2/132/F11.large.jpg>



## **Assessment and Design Mitigation for Rockfalls in Quarries by Thomas Clifford**

Joint Meeting with the Institute of Quarrying

Thursday 21 November 2013

Williamson Lecture Theatre, Manchester University.

In multiple studies rockfall has been identified as causing comparable mortality and morbidity rates to all other mechanisms of rock slope instabilities. With rockfall causing such a significant hazard there is a need to reliably assess and design for it.

It is common practice to use 'rule of thumb' design or computer simulation software, based on assumed parameters, in the assessment process. With inaccuracies causing the underestimation of risk, or conversely, incurring significant costs through over design, it is critical to determine the reliability of the current standard.

With a limited number of relevant computer calibration tests published, the study's first objective was to establish a robust empirical dataset. This led to the presenter undertaking one of the largest known computer calibrated rockfall testing programmes. The testing programme was designed to measure the influence of lithology, face height, angle, debris and rock trap design.

This presentation reflects upon the knowledge gained from the empirical testing, associated computer simulation and its application for quarry, highway & railway design through case studies. The presentation concludes with considering a new assessment and design approach to managing rockfall.

Thomas Clifford, Senior Geotechnical Engineer, Atkins, (previously Senior Geologist & Geotechnical Specialist at Aggregate Industries)



## **Mentoring and Sponsors for Chartership - Geological Society of London.**

tbc

Williamson Lecture theatre

The numbers of people applying for Chartership (CGeol and CSci) show no signs of falling, and so we need to increase the number of available Scrutineers. Anyone who has been Chartered for five or more years may apply to become a Scrutineer. The more recruits we get, the less often you will be asked! We hope to call on your services once (maximum twice) per year.

Chartership applicants of all kinds are encouraged to look for a Mentor within their employment organisation and to have him or her act as a Sponsor. Many candidates have found it impossible to locate an in-house Mentor and so have struggled to appreciate fully what is involved applying for Chartership.

The Society is also looking for encourage more mature professionals to obtain their chartership for both their personal career progression as well as becoming a possible mentor within their organisation.

This is an excellent opportunity to learn what will be required to become a mentor, as well as what is expected of prospective applicants.

*Dr Bill Gaskarth is the Chartership Officer for the Geological Society of London.*

## **Underground Bridgewater Canal System in Northwest Manchester - Mr Glen Atkinson**

Thursday 5 December 2013

Williamson Lecture Theatre, Manchester University

The Duke of Bridgewater had extensive resources of coal within the Salford area and had problems with distribution as well as groundwater. The engineer John Gilbert was decisive in connecting the extensive coal workings with approximately 47 miles of underground canals on 4 No. levels using revolutionary inclines to transfer barges and coal skiffs between levels. The underground canals were connected to the Bridgewater Canal (constructed by James Brindley 1759-1764) allowing the Duke to distribute the resources to Leigh, Manchester and Runcorn. The engineering works undertaken required the innovation of water management within the mine system, the connectivity of the seams being worked, and the outer canal system during the 18<sup>th</sup> and 19<sup>th</sup> Century. Considering the initial works for drainage soughs commenced in 1729, and the commission of John Gilbert in 1757



<http://www.daveweb.co.uk/canal4.htm>

We would strongly recommend this lecture for ground investigation engineers working in the North West as this canal system may pose a hazard to development and mitigation may be required.

*Glen is a local historian who has an extensive knowledge of the underground canal system and has been lucky enough to enter the canal before the entrances were sealed. I can guarantee this talk will be entertain and should not be missed!*



<http://www.daveweb.co.uk/canal4.htm>

**Please note that all dates and venues are provisional and may be amended due to unforeseen circumstances. The Northwest Regional Group will forward fliers nearer the date of the lecture to confirm both venue and date. Should events be cancelled, a notification will be forwarded via e-mail.**

## Our Friends in the North West

### Manchester Geological Association [www.mangeolassoc.org.uk](http://www.mangeolassoc.org.uk)

Formed in 1925 to bring together professional and amateur geologists in and around Manchester, the Association is actively concerned in the conservation of key geological sites in the area. The Association organise field excursions during the summer to places such as the Lake District, Scotland, Peak District and North Wales. In the winter monthly lectures are held by expert speakers at the School of Earth, Atmospheric and Environmental Sciences at the University of Manchester. Quarterly newsletters giving full details of trips and other news are mailed to members.

### Liverpool Geological Society

[www.liverpoolgeologicalsociety.org.uk](http://www.liverpoolgeologicalsociety.org.uk)

Formed in 1859 the Society still flourishes, and is still composed overwhelmingly of ordinary people who have an interest in geology in all its many aspects - from volcanoes to floods, deserts and seas, mountains and glaciers, minerals and rocks, and fossils. Ever since the Society's first open meeting, on 10th January 1860, The Liverpool Geological Society has invited the knowledgeable and famous to come and tell all those interested in the wonders of the world and its even more amazing history, beginning some 4,600,000,000 years ago. All LGS indoor meetings are held the modern James Parsons Building at Liverpool John Moores University, Byrom Street Campus. The LGS offers programme illustrated practical sessions and field trips.

### North Wales Geology Association

[www.ampyx.org.uk/cdgc/cdgc](http://www.ampyx.org.uk/cdgc/cdgc)

The North Wales Geology Association was established in 1994 to act as a focus for geologists in the North Wales area, to focus attention on the geology of North Wales and to promote the understanding of Geology within North Wales. The Association and draws upon the rich international experience of members, both amateur and professional, to create a wide-ranging programme of events. It is a branch (Local Group) of the Geologists' Association, an organisation that has existed for almost 150 years promoting the cause of the informed amateur geologist. Meetings are held along the North Wales Coast area on a monthly basis, indoors during the Winter and outdoors as appropriate during the Spring and Autumn. The Association also co-operates closely with the North Wales branch of the Open University Geological Society, whose meetings are primarily field-based.

### North West Branch of the Open University Geological Society

[www.ougs.org](http://www.ougs.org)

The North West Branch is one of the largest OUGS branches, in terms of membership, with 238 members at the end of 2010. The branch covers a large geographical area from North Wales to the Scottish Border and includes the Isle of Man. However, the majority of the branch members live in the central urban region, around Merseyside, Greater Manchester and Preston. The group is very active, organising monthly field trips from late February to October and lectures and/or social events during the winter months. If you are new to geology, one of the best ways to gain experience is to come along to the field trips where you will not only see real geology in its natural state but will also meet and learn from other members. If you are a more experienced geologist the group also looks forward to any input you are able to give.



The  
Geological  
Society

*servicing science & profession*

North West Regional Group  
Newsletter, Autumn 2013

Over the past years field trips have taken the group to many parts of the British Isles (the Outer Hebrides in 2009) and they have also had the opportunity to visit more exotic geological areas worldwide such as Iceland, Italy (the Island of Elba in 2010), France and Hawaii. As well as providing interesting, enjoyable trips the group hope to provide useful practical experience for those involved with geological studies.

**Geo-Conservation UK: The Association of UK RIGS Groups**  
[www.ukrigs.org.uk](http://www.ukrigs.org.uk)

GeoConservationUK has a membership of over 50 Local Geoconservation Groups, lately known as RIGS Groups (Regionally Important Geological and geomorphological Sites) across the British Isles. GeoConservationUK exists to promote local "Geo" sites for education and public benefit and works towards a British Isles perspective, focusing on the common purposes and issues of local interest to Groups. Local RIGS Group details can be found online.

**University of Manchester, School of Earth, Atmospheric and Environmental Sciences**  
[www.seaes.manchester.ac.uk](http://www.seaes.manchester.ac.uk)

Geology and related Earth Sciences have been studied at Manchester since 1851. Today the School is one of the largest Earth Sciences teaching and research centers in the UK, with around 30 academic staff and a similar number of specialist researchers and support staff. Research in the Department is funded by most of the major research councils (NERC, EPSRC, STFC, BBSRC), by the Royal Society, and by the petroleum, mineral and nuclear industries. The Department is housed in the Williamson Building on Oxford Road, at the centre of the campus, where the excellent facilities include lecture theatres, library- reading room, computer suites and laboratories for teaching and research. The latter include newly refurbished laboratories for isotope geochemistry, and for petroleum geoscience and (as part of the interdisciplinary Williamson Research Centre) new laboratories for high P/T work, geomicrobiology, geochemical kinetics, mineral and surface analysis, solution analysis and rock and mineral sample preparation.

**University of Liverpool, Department of Earth and Ocean Sciences**  
[www.liv.ac.uk/earth](http://www.liv.ac.uk/earth)

The Department is highly rated for both teaching and research. In the most recent Research Assessment Exercise (Dec 2008) the department is rated as having 75% of academic staff as world leaders or of internationally recognised excellence in research. The department consistently achieves the highest ratings in government evaluations of teaching quality





### Combined Programme for 2013/14

15/09/13	National Coal Museum – Methods of coal mining in the northwest and their decommissioning	National Coal Museum	NWGS	Field Trip National Coal Museum
26/09/13	A Journey to the Burgess Shales.	Dr Jacqui Malpas	NWGS/ NWGA	Beswick Lecture Theatre, Chester University
16/10/13	Reflections on the residual strength of clay soils, with special reference to bedding-controlled landslides	Professor Bromhead	NWGS/ NWGA	Renolds Lecture Theatre, Manchester University
19/10/13	Mineralisation and Fluid Flow in the Peak District	tbc	MGA/ YGS	The Dome, Devonshire Campus, University of Derby, Buxton.
25/10 to 03/11 Autumn Half Term				
TBC	Chartership mentor and sponsorship	Bill Gasgarth	NWGS	Williamson
13/11/13	Engineering Geology of Dams	Tim Blower	ICE	Birchwood
21/11/13	Assessment and Design Mitigation for Rockfalls in Quarries – Glossop Lecture Revisited	Mr Thomas Clifford	NWGS/ IoQ	Williamson
16/11/13	The Broadhurst Lectures – Geology in the Sun – The Mediterranean Islands	Numerous	MGA	Williamson
05/12/13	Underground Bridgewater Canal System in the Northwest	Glen Atkinson	NWGS	Williamson
11/12/13	Mining the Yard Seam in New Mills in the 18 <sup>th</sup> and 19 <sup>th</sup> Centuries	Dr Derek Brumhead	MGA	Williamson
11/12/13	Ground Improvement : Developments and innovations – a UK perspective.	Colin Serridge	ICE	Renolds Building
21/12/13 – 05/01/14 Christmas Holidays				
8/01/14	Bridgewater Quay Collapse, Somerset	Somerset Council	ICE	Foster Building, Preston
25/01/14	tbc	tbc	MGA	Williamson
16/01/14	Construction over abandoned mine workings – the updated CIRIA SP32 (RP940) +AGM	Dave Parry (WRG Nottingham)	NWGS	Birchwood
05/02/14	“Review of the potential implications to construction posed by pyrite oxidation”	Dr Mourice Czerewko (URS)	ICE	Renold Building
12/02/14	Quicklime, Cement and a Short History of Quarrying +AGM	Peter del Strother	MGA	Williamson
13/02/14	Incoming – Learning to love the meteorite	Dr Ted Nield	NWGS/ LGA	Liverpool John Moores, Lecture Theatre 137.
15/02 to 23/02 Spring Half term				
03 or 05/03/14	The use of bituminous hessian geomembrane in the rapid construction of airstrips in the Far East during World War II	Dr Bill Craig and Eugene Gallagher	ICE	James Parsons Building, Liverpool John Moores
12/03/14	Living in Europes Supervolcano: Volcanic hazard and emergency management in the Bay of Naples	Dr Martin Degg	MGA/ Geographical Association	Lecture Theatre B of the Roscoe Building (adjacent Williamson)
13/03/14	SVOC and DNAPL – challenges for contamination in bedrock	Hazel Davidson	NWGS	Williamson
11/04 to 27/04 Easter Holidays				
17/04/14	Geological Factors in Major Landslides and Slope Stability	Steve Hencher	NWGS	The Swan, Winwick
19/04/14	Blackpool Tanks	United Utilities	ICE	Birchwood
07/05/14	Crossrail	tbc	ICE	Renold Building
09/05/14	tbc	TBA	NWGS	Williamson
23/05-08/06 Whitsun Half Term				

NWGS – Northwest regional group of the Geological Society of London MGA – Manchester Geological Association

ICE – Northwest regional group of the Institute of Civil Engineers NWGA – North Wales Geological Association



## Venue Information

### **Northwest Regional Group of the Geological Society**

**Williamson Building**, Oxford Road, Manchester M13 9PL (Building 52 on the below map).  
This building is situated opposite the Manchester Museum.

**Birchwood Centre**, Birchwood Park, Warrington WA3 6YN  
<http://www.thecentreatbirchwoodpark.co.uk/location.aspx>

**The Swan**, Golborne Road, Winwick, Warrington, Cheshire, WA2 8LF  
<http://www.chefandbrewer.com/pub/swan-winwick-warrington/c1916/>

**Lecture Theatre 137**, James Parsons Building, John Moores University, Byrom Street, Liverpool L3 3AF  
<http://www.liverpoolgeologicalsociety.org.uk/lgslocation.php>

**Beswick Lecture Theatre**, Chester University, Chester CH1 4BJ  
<http://www.chester.ac.uk/sites/files/chester/Open%20Day%20Campus%20Map.pdf>

### **North Wales Geological Association (all events usually start at 7:30pm)**

**Pensychnant**, Sychnant Pass, Conwy, North Wales LL32 8BJ  
<http://www.pensychnant.co.uk/page7.html>

**Llandrillo Technical College**, Llandudno Road, Rhos-on-Sea, LL28 4HZ  
<http://www.llandrillo.ac.uk/the-colleges/coleg-llandrillo/rhos-on-sea/contactfind-us/>

**Treborth Botanic Garden Laboratory**, University of Bangor, Bangor, Gwynedd LL57 2RQ

### **Northwest Regional Group of the Institute of Civil Engineers**

**Renold Building**, University of Manchester M1 3BB (Building 12 on the following map)

**John Dalton Building**, Manchester Metropolitan University, All Saints Campus, Oxford Road, Manchester M15 6BH

**Foster Building**, University of Central Lancashire, Preston PR1 2HE

**James Parsons Building**, John Moores University, Byrom Street, Liverpool L3 3AF  
<http://www.liverpoolgeologicalsociety.org.uk/lgslocation.php>