NEWSLETTER OCTOBER 2013

Issue No. 31

Editor's Note

Thank you to all contributors to this edition of the IGI Newsletter.

Marie Fleming has stepped down as editor of the IGI Newsletter which will now be compiled by Claire Clifford and Jim Hodgson. We will continue to keep you updated with news, events but as always will rely on members for contributions including news articles, book reviews and photos.

Your Editorial Team – Claire and Jim!
Please submit article to Claire at cclifford@morce.ie

IGI News

The 2013 AGM saw the election of the new IGI Board and they have been assigned duties as follows:

Board Member	Responsibilities
EurGeol ***Gerry Stanley*** PGeo	**President;** IGN*; Membership; Comms† strategy; Education & outreach; Course accreditation.
EurGeol ***Andy Bowden*** PGeo	**Vice-President**; EFG delegate; CPD.
EurGeol ***Marie Fleming*** PGeo	**Hon. Secretary**; Chair of registration authority EFG; Comms† strategy; Education & outreach.
EurGeol ***Paul Gordon*** PGeo	Hon. Treasurer; PERC rep; Comms† strategy.
Non-Executive members	
EurGeol ***Catherine Buckley*** PGeo	EIS Guidelines.
Dr. ***Marie Cowan*** PGeo	Comms† strategy; Education & outreach.
EurGeol Dr. ***Peter Glanville*** PGeo	Membership; Comms† strategy; Education & outreach; Course accreditation.
Mairéad Glennon PGeo	Comms† strategy; Education & outreach.
Dr. ***Jim Hodgson*** PGeo	CPD; Newsletter.
EurGeol ***Ric Pasquali*** PGeo	EFG delegate; Insurance matters.

*IGN – Irish Geoscience Network.
†Comms – Communications.

All Board Members will continue to promote Membership of the IGI and in addition all Board Members contribute in their own specialist area to the development and running of short courses.

Upcoming IGI Short Courses

Four short courses are being planned for this year:

- GIS for geologists – a practical course in GIS using ArcGIS (31st October 2013)
- Pyrite in construction – a special course explaining the new national standards (November 4th 2013)
- Drilling course – a practical introductory course for recent graduates (February 2014)
- Communications for geoscientists – course being developed (March / April 2014)

The IGI Newsletter is an important form of communication with the Membership and I am pleased to accept the kind offer from EurGeol **Claire Clifford** PGeo to help with this along with **Jim Hodgson** PGeo.

Upcoming IGI Meetings

During the year there will be a number of meetings – some organised in association with other bodies. On October 19th and 20th and in cooperation with the Geological Survey of Ireland, the Irish Association for Economic Geology and the Irish Mining and Quarrying Society there will be the **Geo-gathering**, in Galway. This event is being run as part of the wider Gathering tourism initiative. The meeting will comprise a series of talks on aspects of geology on the Saturday with a field excursion to the Burren on the Sunday. Speakers confirmed include **Adrian Black**, NewExco, Australia; **Maeve Boland**, Director, Geoscience Policy, American Geosciences Institute, USA; **Derek Briggs**, Yale Peabody Museum of Natural History, USA; **Eibhlin Doyle,** Exploration and Mining Division, Ireland; **Dale Hendricks**, Hendrick Resources, Canada; **Murray Hitzman**, Colorado School of Mines, USA; **Kevin Quinn**, Tullow Oil, Asia/South America. The event will be introduced by **Koen Verbruggen**, Director GSI; and closed by **Christian Schaffalitzky**, Eurasia Mining. The Organising Committee is being led by MIT **Margaret Browne**. Please visit the website http://www.igi.ie/news/geo-gathering-2013.htm for further information and updates.

The IGI, along with the European Federation of Geologists, the Geological Society (London) and the Institute Materials, Minerals and Mining are the constituent bodies of PERC (The Pan-European Reserves Committee). The Committee meets twice a year in formal session and next March it will meet in Dublin. Apart from the Committee meeting there will be a short course offered on a reserves related topic. EurGeol **Paul Gordon** PGeo and EurGeol **Andy Bowden** PGeo are the IGI representatives on the Committee.

The Irish Geoscience Network (IGN) will again meet for its annual meeting in January or February 2014. The IGN is an informal meeting of all Irish geoscience associations, societies, geology Department's in Irish universities and geological surveys. The agenda for the meeting includes any topic of mutual interest and cooperation in meetings and organisational matters.

IGI Communications Strategy

The Board at its first meeting decided to develop a Communications Strategy and an Implementation Plan to achieve the strategy. The Strategy and Implementation Plan will explore who we want to communicate with, what we will be communicating and ways on how best to communicate. The Members of the group with the task of developing the Strategy and Plan are **Dr. Marie Cowan** PGeo, EurGeol Dr. **Peter Glanville** PGeo, **Mairéad Glennon** PGeo, EurGeol, **Paul Gordon** PGeo and EurGeol **Gerry Stanley** PGeo. We would welcome any input from the Membership on any matters related to communications.

The IGI will continue its membership of a number of committees including the GSI (EurGeol **Marie Fleming** PGeo) and GSNI (EurGeol Dr. **John Kelly** PGeo) consultative committees and the RIA Geosciences Committee (EurGeol Dr. **Deirdre Lewis** PGeo).

All in all it will be a very busy year and we hope that you can support as many of the activities and services that your Board will provide.

EurGeol Gerry Stanley PGeo (President)

IGI Membership

Congratulations to Dr. Marie Cowan, Dr. Robbie Goodhue, Mairead Glennon, Conor McKeon and Eamon O'Loughlin who were awarded the

professional title of PGeo and David Dingemans and Laurena Leacy who were awarded titles of PGeo and EurGeol. Jennifer Allen has joined as MIT.

The total IGI membership currently stands at 199 Professional Members for 2013.

IGI Mutual Recognition Agreement with Geoscientists Canada

Ireland and Canada Enhance International Mobility for Professional Geoscientists

Dublin — The Institute of Geologists of Ireland (IGI) is delighted to announce the recent signing of a Mutual Recognition Agreement (MRA) with Geoscientists Canada, which took place at the Royal Irish Academy in Dublin, Ireland on May 1st 2013.

Representing the IGI at the event were President, Deirdre Lewis PGeo (centre) and Vice-President, Gerry Stanley PGeo (left), while Geoscientists Canada was represented by outgoing President, Greg Finn P.Geo. (right).

The Agreement will enhance the international mobility of professional geoscientists by facilitating licensed geoscientists in one country to be licensed in the other country, with greater ease. The Agreement allows Ireland's professional geoscientist designation ("PGeo") to be seen as equivalent to Canada's, similarly named, professional geoscientist designation ("P.Geo"), and vice versa. It will also help streamline professional registration of Irish geoscientists wishing to become licensed in Canadian jurisdictions and Canadian geoscientists wishing to become registered with the Institute of Geologists of Ireland.

The President of the Institute of Geologists of Ireland, Dr. Deirdre Lewis PGeo, said "This MRA is a very important achievement for the IGI and for geoscience on both sides of the Atlantic, given the international mobility of professional geologists. Many Irish geoscientists are currently working in Canada in the fields of minerals and hydrocarbon exploration, academic research and teaching, environmental geology and resource finance, while many Canadian geoscientists are also working here in Ireland, primarily in mineral exploration. This agreement will allow them to become licensed in their host countries and be recognised by statutory agencies and stock exchanges for official reporting purposes as "competent persons". We are delighted that we have reached this juncture with our colleagues in Geoscientists Canada".

The President of Geoscientists Canada, Timothy Corkery, P.Geo, stated "We are delighted to have been able to facilitate this important first international Mutual Recognition Agreement for the Canadian profession of geoscience and to be entering it with the Institute of Geologists of Ireland. This first Agreement, for us, is modelled very closely on a similar agreement signed for the engineering profession between Ireland and Canada in 2009. This parallelism makes particular sense in a Canadian context, given that many of Geoscientists Canada's constituent associations regulate both geoscientists and engineers together as part of the same professional body".

The Institute of Geologists of Ireland has had a mutual recognition agreement in place with the UK's Geological Society of London, which has responsibility for the Chartered Geologist ("CGeol") designation, since 2001. The IGI also retains MRAs with equivalent professional geoscientific bodies in Australia (AusIMM), United States (AIPG) and South Africa (SAPNSC). The Institute is an active member association of the European Federation of Geologists and is the designated national licensing authority for Ireland, for the European Geologist designation ("EurGeol").

Deirdre Lewis went on to say "This new agreement is the end result of much hard work that was initiated many years ago by my predecessors. Our thanks go to the many geoscientist volunteers and academic staff in Ireland and Canada who worked on this initiative, for their reciprocal contributions and effort, leading to this agreement".

The agreement, which was approved by the Board of the Institute of Geologists of Ireland in December 2012 and by the Board of Directors of Geoscientists Canada in March 2013, will take effect in Canada as it becomes ratified by Geoscientists Canada's constituent associations. The agreement will become effective immediately in Ireland.

Geoscientists Canada, the business name of the Canadian Council of Professional Geoscientists, is the national organisation of the 10 provincial and territorial associations that regulate the practice of geoscience in Canada.

The mission of both The Institute of Geologists of Ireland and Geoscientists Canada is to develop consistently high standards of practice of geoscience, to facilitate national and international professional mobility, and to promote recognition of professional geoscientists.

For further information, contact:

EurGeol **Dr Deirdre Lewis**, PGeo
+353 87 653 6405

IGI Summer Event

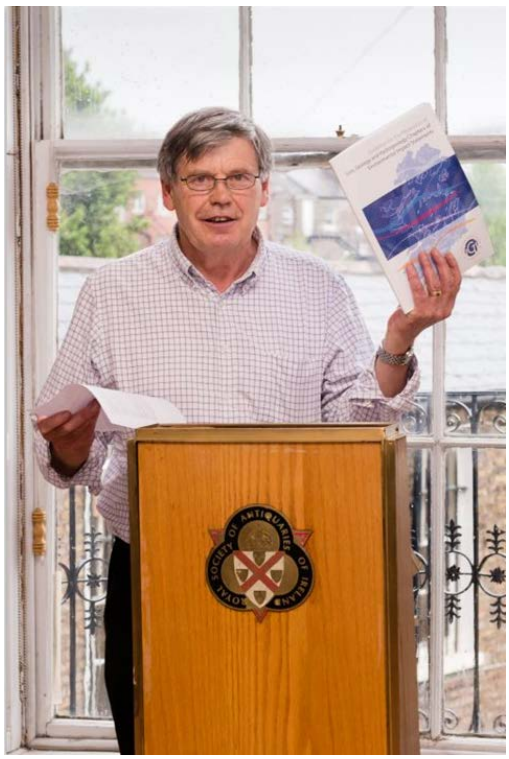
This year we held what we described as a Summer Event. This was primarily to acknowledge the contribution of EurGeol **Gareth Ll Jones** PGeo to the Institute over many years. However, we also used the occasion to announce the upcoming publication of revised Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impact Statements and to introduce the Membership to our new office at 3 Merrion Square. The Event was held on Friday 21st June with an attendance of approximately 50 persons.

The President welcomed all to the Event with special welcome to our guest of honour **Gareth** and his family – his wife Sheila, son David and his wife Richenda, Gareth's grand-children Hazel, Alexandra and Rhys. The IGI's immediate Past President EurGeol Dr. **Deirdre Lewis** PGeo was invited to make the presentation of the IGI Medal of Honour to Gareth. Deirdre marked the occasion with an excellent citation covering Gareth's long career in promoting the profession of geology. Gareth responded with an entertaining account of some of the milestones and memorable events throughout his involvement in working on improving the lot of the professional geologist.

Gareth receives the Medal of Honour from EurGeol Dr. Deirdre Lewis PGeo (immediate Past President).

Gareth and family: back row David, Richenda, Hazel, Alexandra; front row Gareth, Rhys and Sheila.

EurGeol **Andy Bowden** PGeo (Vice President) and coordinator of the Working Group who developed the **Guidelines for the Preparation of Guidelines for the Preparation of Soil, Geology and Hydrogeology Chapters of Environmental Impact Statements** formally announced the completion of the Guidelines. Copies of the guidelines were available for inspection on the day. The Guidelines when printed will be formally launched in the autumn. Andy paid tribute to the large group who developed the Guidelines and paid special tribute to EurGeol **Catherine Buckley** PGeo, EurGeol **Kevin Cullen** PGeo and Dr. **James Hodgson** PGeo whose tireless efforts resulted in the excellent final product. The Guidelines will be distributed to each Member of the Institute. The Institute gratefully acknowledges the financial support provided by the Environmental Protection Agency towards the printing of the Guidelines.



Andy, with Guidelines in hand, introduces them to the Institute

The President then provided some background on our new office. The office is being rented from the Royal Society of Antiquaries of Ireland (RSAI) and provides the IGI with a prestigious address in downtown Dublin. The President thanked UCD for the office space they provided and after a brief outline of the hunt for new premises invited the attendance to partake in some refreshments. A short guide of the facilities was also offered in which the Lecture Theatre, Board Room (where the proceedings took place), kitchen area and gardens were all presented.

The evening was very pleasant – made the more so by the reasonably cooperative weather and the sound of the live performance of Figaro emanating from Merrion Square (Dublin City Council's Opera in the Park Series). Many suggested that the Summer Event should become a regular addition to the IGI calendar and the Board is pleased to agree with the suggestion.

Gareth with grandson Rhys and his Medal of Honour.

EurGeol Gerry Stanley PGeo (President)

IGI Guidelines for the Preparation of EIS

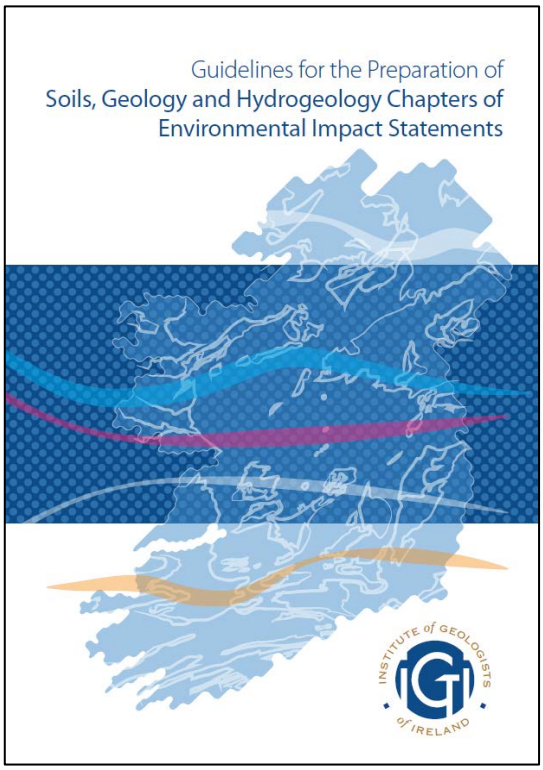
Introduction

The Institute of Geologists of Ireland (IGI) convened a Working Group in 2012 to review the Institutes' earlier 2002 guidelines on the preparation of Environmental Impact Statements (EISs). The revised guidelines reflect legislative changes and members' experiences in the production of EIS chapters on Soils, Geology and Hydrogeology since the 2002 Guidelines were produced.

The IGI publication is entitled *'Guidelines for the Preparation of Soils, Geology and Hydrogeological Chapters of Environmental Impact Statements, 2013.'* The Guidelines provide a methodology for the

assessment of potential impacts which proposed developments may have on soil, geological and hydrogeological environments. The recommended procedure outlined in the Guidelines requires that the information provided in an EIS should reflect the vulnerability of the receiving geological and hydrogeological environments to activities associated with the construction and/or the operation of a development.

The document includes a consideration of relevant national legislation and guidelines, interactions with other disciplines and recommended consultees. This article describes the principle components of the IGI Guidelines. Information on the availability of the published document is provided at www.igi.ie



Recommended Procedure

Many developments which require an EIS will have no significant impact on the geological /hydrogeological environment, such as developments which are removed from areas of geological heritage and which are connected to services. On the other hand, developments such as mines, quarries, significant groundwater abstractions and discharges to groundwater would naturally impact on subsurface resources.

It is important therefore to identify at the outset the:

- Relative scale of the development;
- Range of activities associated with the development;
- Type of the receiving geological/hydrogeological environment;
- Vulnerability of the receiving geological/hydrogeological environment;
- Interaction/ relationship between the development site and nearby protected environments.

By compiling the above information, and where necessary with appropriate site investigations and studies, it should then be possible to determine;

- Whether the development has the potential to impact on the receiving geological/hydrogeological environment;
- The significance, type, duration and quality of any potential impacts;
- Mitigation measures;
- The significance, type, duration and quality of any residual Impact.

The IGI recommended procedure is described in a Flow Chart (Figure 1) and consists of 4 Elements subdivided into 13 Steps which are described in the following sections.

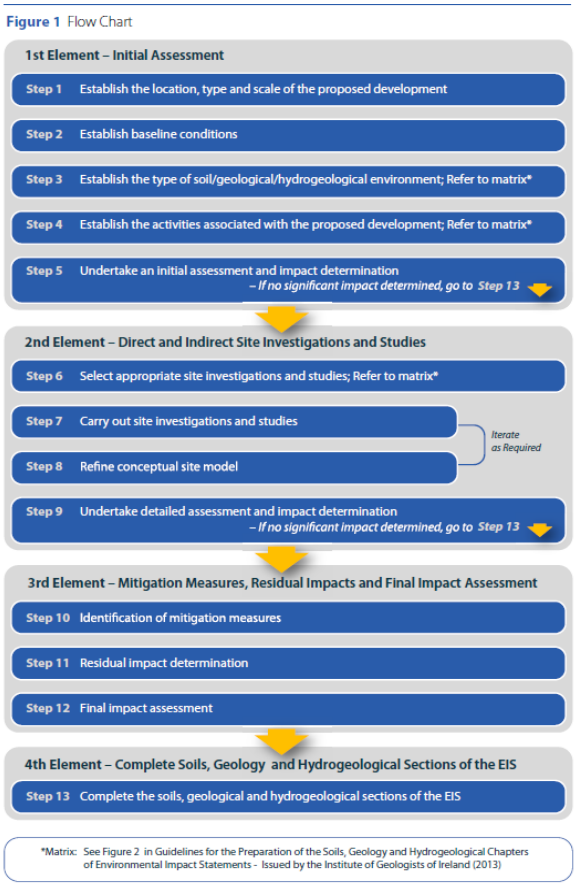


Figure 2 Flow Chart

Element 1: Initial assessment (Steps 1 to 5)

The objective of Element 1 is to compile the available and relevant information which, together with a site visit, would allow for the determination of the type and scale of the proposed development, the range of related activities and the type and vulnerability of the receiving geological / hydrogeological environment. The compilation of the available geological and hydrogeological information into a preliminary Conceptual Site Model (CSM) for the development site and its environs is central to establishing baseline conditions.

An accompanying Matrix (Figure 2) aligns the investigations to be carried out with the Type of Geological / Hydrogeological environment and the potential Activities which may be undertaken on the development. This ensures that level of investigation undertaken considers both the nature and vulnerability of the receiving subsurface environment and the development's characteristics.

The Matrix (Figure 2) provides a useful basis on which to select a suitable range of direct and indirect site investigations and hydrogeological studies that could be carried out to further develop the CSM. A key aspect of the Matrix is that the scope of the recommended works and studies increases both in variety and complexity as the receiving environment becomes more vulnerable to potential impacts.

A range of generic Geological/Hydrogeological Environments has been assembled in the accompanying Matrix (Figure 2) to describe and encompass the variety of subsurface environments likely to be found in Ireland.

The generic Types of Geological/Hydrogeological Environments classified in the Matrix are:

- **Type A** - Passive hydrogeological environments e.g. areas of thick low permeability subsoil, areas underlain by poor aquifers, recharge areas, historically stable geological environments;
- **Type B** - Naturally dynamic hydrogeological environments e.g. groundwater discharge areas, areas underlain by regionally important aquifers, nearby spring rises, areas underlain by permeable subsoils;
- **Type C** – Man-Made dynamic hydrogeological environments e.g. nearby groundwater abstractions, nearby quarrying or mining activities below the water table, nearby waste water discharges to ground, nearby geothermal systems;
- **Type D** – Sensitive Geological / Hydrogeological Environments e.g. potentially unstable geological environments, groundwater source protection zones, karst;
- **Type E** – Groundwater dependent eco systems e.g. wetlands, nearby rivers with a high groundwater component of base flow.

A range of generic Activities which could impact on the geological/hydrogeological environment has been assembled in the Matrix (Figure 2).

The generic Activities identified are outlined below;

- Earthworks;
- Storage / Transmission of leachable or hazardous materials;
- Lowering of groundwater levels by pumping or drainage;
- Discharges to ground;
- Excavations of materials above the water table;
- Excavations of materials below the water table;
- Landspreading;
- Abstraction / Discharge of energy (heat) from/to the ground.

The Matrix is produced at A3 in the published Guidelines. An extract from the Matrix is produced here by way of example only and the reader is referred to the published Guidelines to access the entire Matrix.

Figure 2 Activities /Environments Matrix

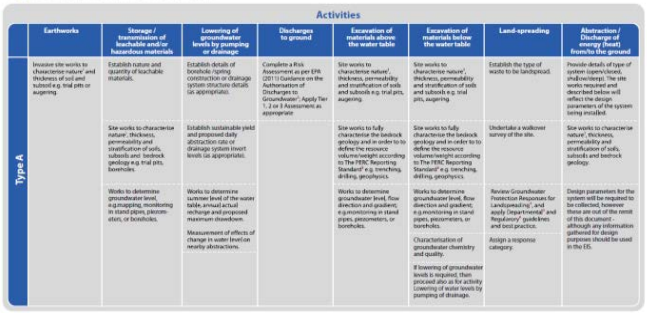


Figure 2 Activities/Environments Matrix

An Initial Assessment and Impact Determination should be prepared that summarizes the information compiled so far and then reviewed to determine whether the proposed development would result in any impact on the receiving geological / hydrogeological environment. The Significance of the impact should be defined using terminology consistent with national guidelines.

Based on the results of this assessment, it will be necessary to proceed to Element 2 or to proceed directly to Element 4.

Element 2: Direct and indirect site investigation and hydrogeological studies (Steps 6 to 9)

While the Matrix (Figure 2) suggests the minimum amount of work which may be needed, professional judgement will be required to select the appropriate range of direct and indirect site investigations and studies. This work will further inform the CSM and quantify the impact of the proposed development on the receiving geological / hydrogeological environment. The range and scope of the planned investigations must reflect;

1. The scale of the proposed development,
2. The range of activities likely to occur during the construction and operation of the development and
3. The type and vulnerability of the receiving geological / hydrogeological environment

Based on the results of these additional investigations the CSM should be refined and updated and the potential impacts defined.

Element 3: Mitigation measures and residual impacts (Steps 10 to 12)

The 3rd Element of the recommended procedure builds on the outcome of the preceding two elements, by identifying mitigation measures to address potential impacts and then assessing the significance of any residual impacts.

Element 4: Complete the EIS (Step 13)

The EIS should be completed based on the information compiled in previous sections. The CSM should be updated with all available information, impact identified, mitigation measures developed and residual impacts determined. The significance of any residual impact should be determined with particular reference to national guidance documents based on the importance of the feature to be protected and the magnitude of the impact on the receiving geological / hydrogeological environment.

Non-Technical Summary

In Ireland, a Non-Technical Summary (NTS) is required to accompany the EIS. The NTS should include, in layman's language, a brief summary of the geological and hydrogeological environments present

and the activities associated with the proposed project that could impact on these environments.

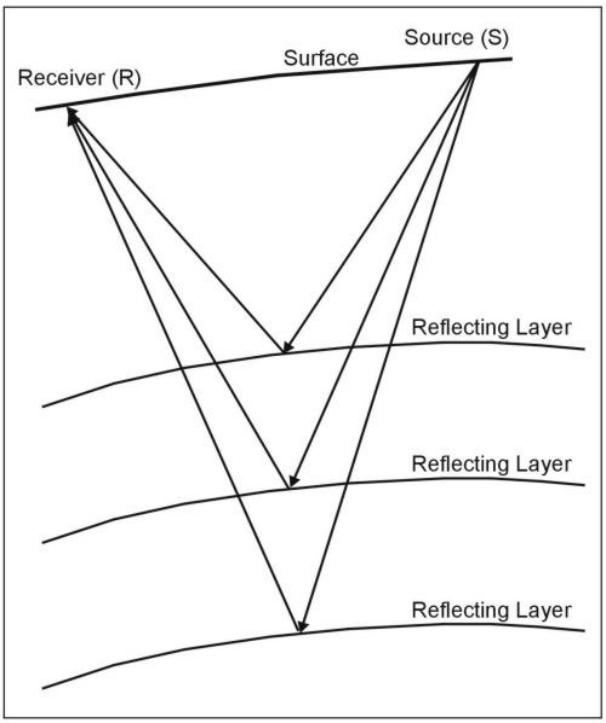
IGI Guidelines for the Preparation of Soils, Geology and Hydrogeology chapters of EIS.

EurGeol Kevin T. Cullen PGeo. Hydrogeological Consultant, Dublin*
EurGeol Catherine Buckley PGeo, ARUP, Dublin *
* On behalf of the Institute of Geologists of Ireland EIS Guidelines Working Group.

Seismic Surveys in Mineral Exploration

The petroleum industry has been using seismic surveys to image bedrock for many years, but it is a technique that has only recently come into use for mineral exploration. There were a number of reasons for the delay. It was prohibitively expensive, with high acquisition charges and costly and time-consuming processing and interpretation. The techniques available couldn't provide a coherent picture of what is usually more complex geology than the petroleum industry encounters. In Ireland, an additional problem was that acquisition involved bulky, high impact machinery which was more suited to open desert or plains than the smaller fields and narrow roads of the Irish countryside. Recent advances have meant that processing times have come down and the overall footprint of a survey is reduced.

Seismic Reflection is the technique used in such surveys, whereby vibrations travel downwards from ground level, encounter a reflecting surface and return to ground level where the signal is picked up by a receiver (geophone). The source is a single point, whereas there are multiple receivers at varying distances from the source. The receivers are connected up in an array and send a signal back to a central processor. The readings from each receiver are combined and processed, finally resulting in a SEG-Y file which can be viewed and manipulated in a variety of software packages, include some free viewers. SEG-Y is a file format developed by the Society of Exploration Geophysicists.



Taken from US EPA.

There are a number of different source types, ranging in sophistication from hammer and plate to explosives, to multi-frequency vibrating plates. In the mid-90s, Tara Mines conducted a series of seismic surveys in partnership with German Company DMT, as part of an EU-backed project. Explosives were used as a source and while they produced an excellent signal and the occasional spectacular/amusing moment, the technique is time-consuming and probably not cost-effective.


Seismic Survey mobile control centre

While the majority of land-based seismic surveys are 2D, i.e. on a single line or profile, usually utilising roads/tracks, a recent exciting development has been the introduction of 3D seismic surveys. An Australian

company, Hi-Seis, has developed a 3D system which can work in Irish terrain due to its smaller footprint and ability to gather data using a machine-borne hammer or small vibration truck (mini-vibe) rather than the much larger vehicles used by most seismic contractors. In the summer of 2011 the system was used on Lundin Mining's Kilbricken Deposit, in Co. Clare and produced an impressively detailed 3D model of faults and major lithological contacts, particularly that between the Waulsortian Limestone and the underlying Argillaceous Bioclastic Limestone. It is important that there is good geological (drill hole) control in an area, as it is otherwise difficult to tell which reflector is which, but once that is in place it becomes quite straightforward to make geological interpretations, particularly when it comes to locating and identifying faults.

'Mini vibe' – A tractor-sized vehicle with centrally located vibrating plate. Can easily access most Irish fields.

As well as Lundin, Tara Mines, Xstrata and Teck-Connemara have all conducted 2D seismic surveys in recent years, with varying results. Thick overburden appears to be a problem with which the technique struggles, although this author is not fully *au fait* with the details of those surveys. It is expected that there will be further advances in seismic surveys for mineral exploration, with more survey companies realising that the mineral industry has plenty of potential for their use. Hi-Seis is particularly focussed on the minerals industry and it is likely that they will lead the way, at least in the short term.

Hydrapulses (tractor with hammer attachment) before being deployed on 3D survey in Co. Clare. Control centre to the left. Drill rig in background.

EurGeol Paul Gordon PGeo

IAH Conference Report 2013 "Groundwater and Catchment Management"

The 33rd Annual IAH (Irish Group) Conference was hosted at the Tullamore Court Hotel in April 2013. The main theme of the conference was groundwater and catchment management, which was broken down into three main areas: (i) the catchment approach; (ii) catchment science, and (iii) catchment management.

The conference was opened by David Drew, President of the IAH (Irish Group), who introduced the keynote speaker Bob Harris, of DEFRA and University of Sheffield. Bob outlined the catchment based approach and was followed by Donal Daly of the EPA, who proposed a healthy catchment initiative for Ireland. Together, Bob and Donal showed how the approach can be used to attain policy objectives, and the likely direction of future work. Both speakers stated the case for widening engagement with society at large and the importance of localised community interaction.

Mark Whiteman of the Environment Agency gave a technical presentation on the application of groundwater modelling tools in catchment management, and Steve Buss of ESI Ltd. described how a private water company are measuring the

effect of land use management on groundwater nitrate concentrations using a catchment strategy. Prior to lunch, a number of postgraduate students availed of the opportunity to summarise their ongoing research in the field of hydrogeology.

The second session provided an interesting insight into the research underpinning the catchment approach in both Ireland and the UK. Per-Erik Mellander of Teagasc outlined the Teagasc Agricultural Catchments programme; Jenny Deakin of Trinity College Dublin highlighted case studies of poorly-drained and karstic catchments as part of the Pathways Project; Tiernan Henry of National University of Ireland Galway presented a case study of a coastal catchment. Melinda Lewis of the British Geological Survey also discussed the complexities involved in groundwater conceptual models for UK test catchments.

At the end of a hard day, weary delegates were treated to an evening of whiskey tasting and an evening meal as part of a tour at the superbly renovated Tullamore Dew Distillery.

The third session on day two addressed the more practical application of the catchment approach. The session opened with a presentation by Eva Mockler and Ian Packham of University College Dublin showcasing a catchment management tool being developed to investigate critical source areas. Unfortunately Phil Jordan had to withdraw due to ill health, and Alice Melland of Teagasc ably stepped in to discuss implementation of programmes of measures in Ireland. Lærke Thorling of the Geological Survey of Denmark and Greenland gave a very informative presentation on trend reversal of nitrate concentrations in Danish groundwater.

Although the standard throughout was very high, the final conference session came in for special praise from all delegates, as people began to see the fruits of their efforts combined. Anne Goggin of Limerick County Council described how the catchment approach is being used to improve groundwater and surface water quality in Limerick, whilst Bernie O'Flaherty of Monaghan County Council showed how catchment management is being applied to protect drinking water sources in Monaghan. Of note was the communication and engagement between local authority, stakeholders and end users. Similarly, Tim Besien of the Environment Agency provided evidence of how catchment measures are being implemented and effectively monitored in the UK.

A technical workshop, which immediately followed the conference, proved to be a welcome and worthy addition to the schedule. This took place in an informal and interactive environment, and provided an opportunity for delegates to learn about some lesser-practiced or newly developed field techniques. Alex Rolston of Dundalk IT described the perils of attempting to install shallow piezometers in a wetland environment, and Janke Nitsche of Queen's University talked about the application of various downhole methods in boreholes to identify hydraulically active intervals.

The annual IAH Conference in Ireland is well established in the diary of delegates, and having to contend with several other water-related seminars on the same weekend did not detract from the attendance. The voluntary nature of the organising committee means the conference can continue to offer great value for money. I would like to thank the IAH conference sub-committee (Eleanor Burke of Malone O'Regan, Cecilia Gately, John Dillon of Tobin Consulting Engineers and Katie Tedd of EPA) for their hard work, and the other IAH members whose contributions throughout did not go unnoticed. On behalf of the committee we all extend our gratitude to speakers for the time and effort that goes into preparing such high quality papers and for making the long journeys to get to Tullamore. The IAH (Irish Group) is also grateful for the continued support from exhibitors.

As always, any feedback and suggestions in relation to the forthcoming conference will be greatly appreciated, as we aim to address topical groundwater issues. The Tullamore Court Hotel has once again been reserved for the 2014 IAH conference (April 22nd and 23rd April) and we look forward to seeing you there.

IAH Conference Report 2013
Colin O'Reilly, IAH Conference Secretary

The proceedings of the 2013 conference are available for download at:
http://www.iah-ireland.org/current/pastevents.htm

Secrets to a Successful Geoscience Career

The IGI hosted a talk by Patrick McAndless of Imperial Metals, Canada on Wednesday 31st July 2013 at the Geological Survey of Ireland. Having given the talk to over 80 groups in North America, the IGI was pleased to welcome Patrick to Dublin for his first Irish presentation. Patrick shared his secrets for geoscientific career development to an audience of over 20 geoscientists and geoscience students of all ages from around the country. Patrick's talk, which drew on his 40 years experience as a geoscientist, gave advice for effectively promoting personal skills, experiences and achievements in an eye-catching way. He encouraged radically rethinking CV presentation and emphasised the importance of LinkedIn as the modern-day portal to your online CV. Patrick's take-home message was the importance "being successful" rather than "achieving success"– that through passion, hard work, personal improvement and persistence, the quality of your work will stand to you every day of your career. As the saying goes, if you enjoy your job, you'll never have to work a day in your life!

Patrick McAndless is currently Vice President, Exploration at Imperial Metals Corporation based in Vancouver, Canada. Patrick can be contacted by email: pmcandless@imperialmetals.com.

L-R: Patrick McAndless pictured with IGI past president Gareth Jones, Secretary Marie Fleming, board member Mairéad Glennon and President Gerry Stanley.

Mairéad Glennon PGeo

Events

The Gathering 2013-Events

The Forgotten State of Industry? Irish Industrial Landscapes and Heritage in a Global Context, 17th October 2013.

This is an exciting 2-day International Conference taking place in the Glendalough Hotel, Co. Wicklow, gathering together speakers and audiences from across Europe and beyond. It will be an opportunity to share experiences of managing and presenting our historical industrial landscapes (including mining landscapes) which are often poorly understood and vulnerable as a result. Conference to be held as part of the 'Metal Links: Forging Communities Together' Project by the Glendalough Mining Heritage Project with assistance from the Mining Heritage Trust of Ireland. Contact: mailto:dburns@wicklowcoco.ie and www.facebook.com/glensoflead

Geoscience 2013

This annual event will be held on the 26th and 27th November 2013 at the Geological Survey of Ireland, Beggars Bush, Dublin 4.

Geoscience 2013 is the annual two day event held by the Geological Survey of Ireland, the State's geoscience body. Minister of State Fergus O'Dowd will open the meeting, which will: feature the latest developments from public, private and research sectors in Irish geoscience, with thematic sessions on groundwater, minerals, geohazards, marine & urban geology, and include updates from the INFOMAR and

TELLUS Border projects and the Geoscience Ireland business cluster; look ahead to future projects under the Geoscience Initiatives 2 and Geoscience Research opportunities; include workshop sessions on GSI's work and research programmes. The meeting will be of interest to a broad range of participants, including: Local Authorities, Government policymakers, State Agencies involved in planning, environmental protection and human health; Third Level Institutes and other funding bodies; Private sector companies who use geoscience data in engineering, environmental and other studies.

Registration is free and to register your interest, please visit: http://geoscience2013.eventbrite.ie

IMQS Annual Dinner Dance 2013

This year's IMQS Annual Dinner Dance will be returning to the traditional venue of The Burlington Hotel, Dublin 4 and will be held on Saturday night, November 23rd 2013. Further details available at www.imqs.ie

This black-tie event is always an enjoyable, social occasion where members of the industry get the opportunity to meet up with old colleagues and make new friends!

Tellus Border

Tellus Border Results and Research Conference, 24th October 2013. Hillgrove Hotel, Monaghan

Results and interpretations of the new geochemistry and geophysical data and associated research projects will be presented at this final Tellus Border Conference. See www.tellusborder.eu for further details.

Courses and Seminars

Upcoming IGI Short Courses

GIS for geologists – a practical course in GIS using ArcGIS will be held in NUI Maynooth on the 31st October 2013. Places are limited to 16 participants.

Pyrite in construction – a special course explaining the new national standards on the 4th November 2013. Only a few places remain.

Contact Marie Fleming (marie.fleming@arup.com) to reserve a place and for payment details on both of these IGI Short Courses.

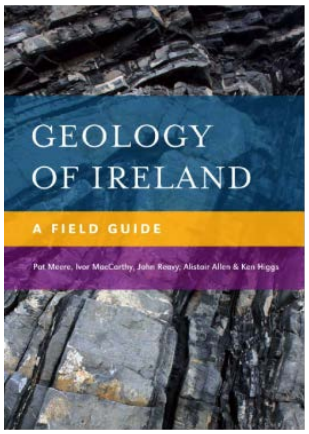
Irish Geoscience Graduate Programme calendar of courses for 2013 – 2014 including details on course modules, credits and fees are available at: http://www.iggp.ie/modules.html

Geothermal Association of Ireland Conference

The 3rd Conference of the Geothermal Association of Ireland will be held on Wednesday, 13th Nov 2013 at the Newpark Hotel, Kilkenny.

New Book

Geology of Ireland – A Field Guide



The book is organised in two parts: an Introduction and as the title suggests a Field Guide. The introduction sets out the principles of geology including definitions and descriptions of igneous, sedimentary and metamorphic rock types, palaeontology and deformation and structural geology together with a section on Pleistocene environments and glacial processes. This introduction provides an excellent introduction to geology for the amateur and also a good refresher for the practicing geologist.

The main focus of the book is the field guide part which sets out 17 field trips that will enable the reader to venture out and explore some of the classic sites of Irish geology. Emphasis is placed on understanding the processes that formed the rocks that define the landscape of the island of Ireland. Each of the 17 field trip sections includes an overview of the geology within the field trip area and an itinerary of localities together with practical information such as logistics and directions. The detailed geological descriptions and interpretations provided for specific localities are supported with detailed full coloured maps, photographs and diagrams.

If nothing else, the step-by-step itineraries provided for each field trip can be used as a guide for a walking trip however don't expect the non-geologists to remain as enthusiastic about bedding planes and shelly fragments after the first few localities. This highlights the one short-coming of the book which is the omission of the usual field trip pit-stop at the local hostelry; luckily we were on Field Trip 4 and on home ground in Killarney.

Overall this book provides an excellent guide to many of the classic geological sites in Ireland and some of the most iconic landscapes including the Burren. The book is reasonably priced at €19.99 and I would recommend this book to anyone looking for a concise guide to the geology of Ireland – and geology students considering their mapping project location!

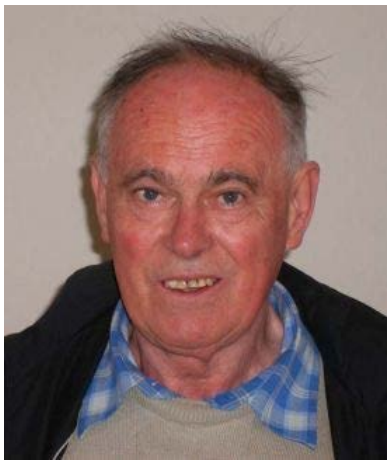
About the authors: Practising field geologists **Dr. Pat Meere**, **Dr. John Reavy** and **Prof. Ken Higgs** (Associate Professor of Geology at University College Cork) who lecture in Geology at University College Cork together with **Dr. Ivor MacCarthy** and **Dr. Alistair Allen** are retired lecturers in Geology at University College Cork are perfectly placed to examine the rocks that make up the island of Ireland

Geology of Ireland – A Field Guide by Pat Meere, Ivor MacCarthy, John Reavy, Alistair Allen and Ken Higgs is published by The Collins Press, price €19.99. It is available in all good bookshops and online from www.collinspress.ie

EurGeol Claire Clifford PGeo

Obituary
Michael John (Ben) Kennedy
1940-2013

Michael John Kennedy, known universally as 'Ben', died suddenly and unexpectedly in Dublin on 24th July 2013. Born in London in 1940, his university education was at Trinity College Dublin where he took his BA (Mod) degree and his PhD in Geology. His doctoral research was on the Dalradian structural geology of western Ireland, and he was the first PhD student of the late Professor Adrian Phillips. On completing his PhD in 1966, he was awarded a National Research Council of Canada postdoctoral fellowship to carry out research at the Geological Survey of Canada in Ottawa. This work, on the Fleur de Lys Supergroup of Newfoundland, extended and correlated his Irish Dalradian research across the Atlantic to the North American part of the Caledonian Orogenic mountain belt.



In 1967 he took the post as Assistant Professor at Memorial University of Newfoundland. Four years later he was promoted to Associate Professor and in 1974 was appointed Professor of Geology. During his time at Memorial he was closely involved in the growth and expansion of the Geology Department into one of the largest in Canada. Ben contributed to Newfoundland geoscience by being a founding member of the Newfoundland Section of the Geological Association of Canada. Not only was he key to its initial success from an organizational point of view but, along with such other stalwarts as John Dewey, Hank Williams and Nick Rast, he was instrumental in establishing the Newfoundland Section as one of the major geoscience forums in Canada, and an inspiration to the whole geoscience community. When he left Memorial, his work and personality ensured an enduring and affectionate legacy.

In 1976 he moved to the Department of Geological Sciences at Brock University, St Catherine's Ontario where he held the post of Chairman of the Department of Geological Sciences. During his four years at Brock University Ben was instrumental in revitalising teaching and research in Geological Sciences and in instilling an ethos of excellence and collegiality.

In 1980 Ben was appointed to the Chair of Geology at University College Dublin and the Headship of the Department of Geology, and returned to Ireland. His international experience and infectious enthusiasm transformed the Department. He was an extraordinarily supportive Head of Department and mentor to all his colleagues in UCD and beyond. His door was always open for advice and support. He encouraged and facilitated a new culture of research, and supervised a considerable number of PhD students himself. He developed and fostered an enduring sprit of camaraderie among all staff in his department – academic, research, technical and administrative – as well as loyalty and enthusiasm among students and graduates. He was an inspiring and entertaining teacher fondly remembered by a generation of students and graduates. So many brilliant memories of Ben have been recounted in the past few weeks by former students, ranging from his suggestion that they could practice their stereonet plotting skills in the toilets of UCD using the transparent toilet paper that was standard issue until a few years ago, to his unique singing skills, most especially his unique rendition of the ballad "Easy and Slow", on field trips.

Ben shielded his academic staff from the growing burden of paperwork and administration, facilitating and encouraging us to pursue our teaching and research, while absorbing a huge administrative load himself as the Department developed and grew. He managed this in a unique way. He preferred to spend valuable time talking and encouraging people rather than dealing with paperwork. When such mountainous documentation filled his desk his innovative solution was to buy an additional desk on

which further circulars, documents and papers could be heaped out of harm's way!

In 1999, he was elected Dean of Science at UCD, a position he held until his retirement in 2005. Ben led the Faculty of Science with great success for six years - encouraging, changing and developing teaching and research in all science disciplines and helping to build and foster genuine collegiality among all 14 departments in the Faculty. However, he never lost his link with the Geology Department/School, visiting us regularly to catch up on the latest geological gossip.

Following his retirement from UCD in 2005 Ben worked in the Dublin Institute for Advanced Studies as Co-ordinator of the Irish Geoscience Graduate Programme, a collaborative initiative on graduate research training involving geoscience schools/departments in six Irish universities and one research institute. He enjoyed this immensely as it allowed him to continue his role as a mentor and enthusiastic supporter of geoscience teaching and research training throughout Ireland.

Ben's contributions to his beloved geological discipline, and to university life in Ireland and in Canada, have been immense. He was an excellent field geologist with a keen and observant eye for complex and detailed geological structures and fabrics. He earned an international reputation in structural geology and tectonics, especially in the development of the Appalachian/Caledonian orogenic belt, and published at the highest level in international journals, including Nature, the Geological Society of London, the Geological Society of America and the Canadian Journal of Earth Sciences. His standing in the wider geosciences has been recognised by the many committee posts he held in over the years. These included President of the Newfoundland Section of the Geological Society of Canada; Co-Chair of the Appalachian/Caledonian Committee of the International Geodynamic Project; President of the Irish Geological Association; Chairman of the Royal Irish Academy's National Committee for Geology. He served on numerous national and international research grant review panels.

Ben loved to get out of the office to engage his twin passions of fly fishing and geological field work. On the way back from a trout fishing expedition he would often drop in on a field class in Connemara, in the west of Ireland. He never came empty-handed, bearing gifts of half a dozen freshly caught trout and a bottle of gin before going to the pub to quiz the students, have a pint or few and sing from his vast repertoire of geological and other (sometimes dubious) songs to the amusement and amazement of students and locals alike.

One of Ben's most engaging charms was his mischievous sense of humour. All his geological colleagues in Ireland have their own special memory and examples of this, ranging from the unique voicemail message recorded on his first mobile phone to the hilarious letters he wrote purporting to come from an old college graduate offering innocently outrageous gifts to the Department and the University.

He was a great family man who was immensely proud of his family; his wife Deirdre, his children Robin, Mark and Emma and his twin sister Sally. The birth of each of his grandchildren was recorded by Ben on the noticeboard in the coffee room of the Department of Geology, in true fisherman's fashion, recording the weight and the length as well as the name!

Ben was much more than a scholar and a gentleman. All who knew him learned an enormous amount from him and owe him an immense debt of gratitude. He was observant, calm and measured. He always saw the bigger picture. He was extraordinarily generous with his time and his advice. Ben was a unique colleague, mentor and especially friend. Geoscientists in Ireland and Canada, and generations of graduates all over the world, were privileged to have fallen under his spell during their careers. We will miss him greatly as a result of his sudden and untimely passing.

Pat Shannon
UCD School of Geological Sciences
University College Dublin

Newsletter published by:

Institute of Geologists of Ireland
63 Merrion Square, Dublin 2, Ireland.
Phone: +353 1-662 4914
Email: info@igi.ie.
www.igi.ie