

# GEOPHYSICS AS A GROUND INVESTIGATION TOOL

Liverpool University is delighted to invite RSK's award-winning ground investigation experts to give a free seminar on the latest developments in geophysical technologies and techniques, and their use in state-of-the-art ground investigations.

The seminar will provide a detailed overview of the most commonly used geophysical techniques and how the data should be acquired and processed effectively in a commercial environment.

Networking sessions will enable delegates to share their experiences.

There will be the opportunity for delegates to tour the Department of Earth, Ocean and Ecological Sciences and learn more about their research in these areas.

## DATE

16 October 2013

## VENUE

Jane Herdman Building, 4 Brownlow Street,  
University of Liverpool, Liverpool L69 3GP

Both morning and afternoon sessions  
have been formally endorsed for  
continuous professional development  
training by The Geological Society.



The  
Geological  
Society

*endorsed training course*

## AGENDA

- 09:30–10:00 Registration and coffee
- 10:00–13:00 Commonly used and useful geophysical techniques
- 13:00–14:00 Complimentary lunch and networking
- 14:00–16:00 Understanding and managing the risks of unforeseen ground conditions

## MORNING SESSION

### Commonly used and useful geophysical techniques

This hands-on session introduces the most commonly used near-surface geophysical techniques. Delegates will see and use Liverpool University's equipment outside (weather permitting) to appreciate the practicalities, the do's, the don'ts and the challenges of collecting good geophysical data. Toolbox talks will also cover the basic physical principles and the application of each technique to common site investigations. Survey targets will be discussed and the requirements of specifying and planning the survey will be set out.

### OBJECTIVES

- Provide basic knowledge about each of the commonly used near-surface geophysical techniques
- For each technique, provide an understanding of the processing and manipulation of the data before it is interpretable, with emphasis on common difficulties and pitfalls
- For each technique, provide an understanding of the interpretation of the data with emphasis on the context of the data, what can be interpreted with confidence and what may be speculative
- Provide an understanding of how to use information from historical data and maps, previous site investigations or complementary geophysical datasets to obtain the most information from the geophysical data and to understand its limits



## AFTERNOON SESSION

### Understanding and managing the risks of unforeseen ground conditions

Encountering unforeseen ground conditions mid-project can be an expensive problem. Buried obstructions, waste, contamination, mineshafts, solution features, soft ground, landfills, storage tanks, unexploded ordnance, archaeological features and difficult geology may variously lie in wait.

Buried services are often early concerns. Managing the health and safety risks means getting the right information at the right time. A well-designed investigation can pick up much more than just services at the same cost.

Each project is different. This session will demonstrate how the latest developments in surveying and geophysics can be tailored to understand and reduce the specific risks encountered at any particular stage in a project.

A graphical approach to visualising information and risk will be used to discuss the value and usefulness of different types of intrusive and geophysical site investigation data. Interactive sessions will illustrate when and when not to use geophysics, and, if it is used, how best to integrate it into a site investigation approach. Detailed case studies will illustrate the lessons and objectives.

#### OBJECTIVES

- Provide an understanding of how to use information from historical data, maps and previous site investigations to develop a conceptual model of where additional site investigation information is needed
- Provide an appreciation of the relative value of intrusive and geophysical site investigation techniques in delivering information about ground conditions at a site
- Describe a rationale for deciding whether to use geophysics as part of a site investigation
- Provide an overview of the most commonly used geophysical techniques and best practice in using them as part of an integrated site investigation
- Provide awareness of the importance of integrating all the available information into the interpretation of the geophysical data, which is just one part of the site investigation data for producing the interpretative ground model

#### TARGET AUDIENCE

Professional, technical and management staff in the following areas: infrastructure asset management; utilities; airports, road and rail; civil engineering; construction management and contracting; conventional, nuclear and renewable power generation and distribution; and environmental management. Those with an interest in the commissioning and use of geophysical survey data in the above sectors. Undergraduate and postgraduate students in geosciences and engineering



The University of Liverpool originated the first UK undergraduate geophysics programme, and it remains one of the leading programmes. Almost all its recent undergraduates went on to geophysics-related employment, some of them to applied positions in exploration and environmental geophysics and site investigation. The university is delighted to host this event, for both the educational benefit of its students and to increase the knowledge and understanding of geophysical methods in the wider industrial and engineering communities.

**Places are strictly limited.**

**For further information and to book, please contact**  
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#### CHAIR

**Professor Richard Holme, Professor of Geophysics,**  
**University of Liverpool**

#### COURSE LEADER

**Dr George Tuckwell CGeol CSci, Director, RSK**

#### COURSE RESOURCES

**A reference for geophysical techniques and applications.**



*Best scoping or operation  
of a site investigation  
Highly Commended*



*Health and Safety  
Award finalist*



*Ground Investigation  
Specialist of the Year 2012*