AGS WEBINAR

GROUND RISK: LANDSLIDE RISK REDUCTION

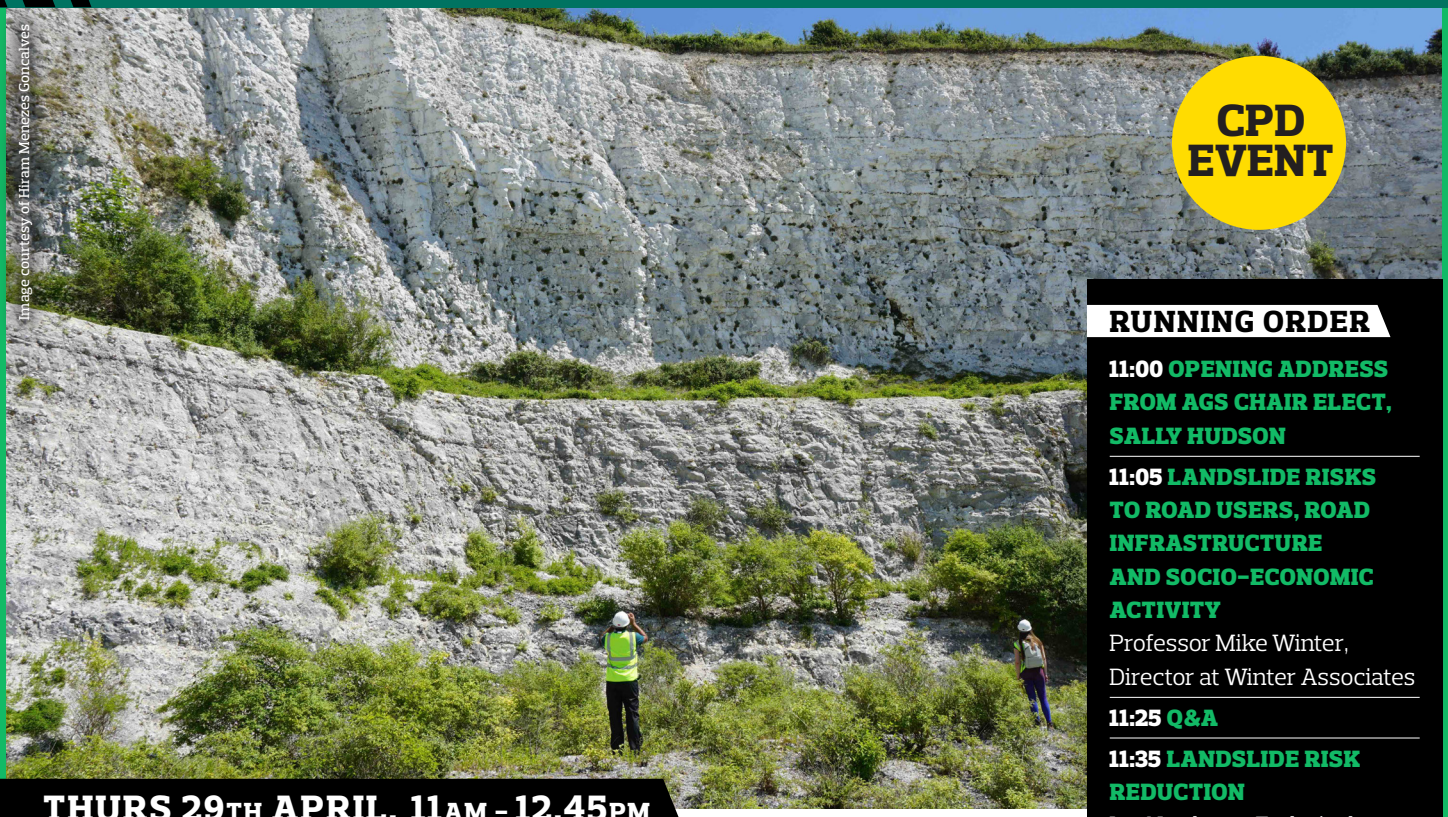

Image courtesy of Hiram Menezes Goncalves

CPD EVENT

THURS 29TH APRIL, 11AM - 12.45PM

Ground Risk: Landslide Risk Reduction, is a virtual CPD event organised by the Association of Geotechnical and Geoenvironmental Specialists, aimed at raising awareness of ground risks associated with slope instability such as landslides.

The webinar will explore risk assessments of landslide hazards and will investigate the practical features to look for in the field. Our three expert speakers will also provide insights into the instrumentation and monitoring of slope movements.

This interactive seminar is aimed at emerging and established geo-professionals who want to learn more about the performance of slopes, how to identify land instability hazards and assess the associated risks, and discover what can be done to monitor and mitigate the impacts. The webinar will also be of interest to those in the ground engineering sector who deal with the mitigation of ground instability risks and those in the profession who wish to learn more about landslide risk identification, assessment and impacts.

Event recording available for all registered delegates

RUNNING ORDER

11:00 OPENING ADDRESS FROM AGS CHAIR ELECT, SALLY HUDSON

11:05 LANDSLIDE RISKS TO ROAD USERS, ROAD INFRASTRUCTURE AND SOCIO-ECONOMIC ACTIVITY
Professor Mike Winter, Director at Winter Associates

11:25 Q&A

11:35 LANDSLIDE RISK REDUCTION
Ian Nettleton, Technical Director at Coffey Geotechnics

11:55 Q&A

12:05 INSTRUMENTATION FOR MONITORING THE PERFORMANCE OF CLAY SLOPES
Dr Andrew Ridley, Managing Director at Geotechnical Observations

12:25 Q&A

12:35 CLOSING ADDRESS

12:45 ENDS

SPONSORED BY

RST INSTRUMENTS

RST Instruments' fully integrated suite of geotechnical monitoring sensors gives our clients the reliable, real-time data they need to save time, money and, most importantly, reduce risk at every stage of their projects. For over 40 years, we've been a trusted partner to engineers, consultants and contractors, providing engineered instrumentation, custom solutions and matchless industry expertise to keep clients' projects–and reputations–safe. **www.rstinstruments.com**

STRUCTURAL SOILS

Structural Soils Ltd has evolved into an award winning national, multidisciplinary, integrated geotechnical and geoenvironmental site-investigation company with the proven capability, capacity and confidence to undertake contracts of any size, in any location and virtually any scope. In 2020, we won 'The Big 3' GE awards, Ground Investigation Specialist of the year, Contractor of the Year, Ground Investigation Project of the Year. For more information please visit www.soils.co.uk or contact us at **ask@soils.co.uk**

GEOTECHNICAL ENGINEERING

Geotechnical Engineering Ltd is the UK's largest privately-owned site investigation contractor, renowned for innovative ground investigation and pre-construction surveys. Established in 1961, this year marks the 60th anniversary of the companies creation. **www.geoeng.co.uk**

AGS WEBINAR

GROUND RISK: LANDSLIDE RISK REDUCTION

PRESENTATIONS

LANDSLIDE RISKS TO ROAD USERS, ROAD INFRASTRUCTURE AND SOCIO-ECONOMIC ACTIVITY

Presented by Professor Mike Winter, Director at Winter Associates Limited

Fast-moving, rainfall-induced debris flow events are relatively common in the mountainous areas of the UK. Their impacts encompass the economic and social as well as the physical risk to infrastructure and people. The assessment of such landslide hazards and risks forms an essential precursor to landslide risk reduction whether via management and mitigation. This is particularly the case when an authority is responsible for an infrastructure or building portfolio that may be affected by multiple hazards and/or hazard types.

Debris flows often sever (or delay) access to and from relatively remote communities for services and markets for goods; employment, health and educational opportunities; and social activities.

Semi-quantitative risk assessment, at the regional scale, and quantitative risk assessment, at the site scale, of the risks that debris flow hazards pose to road users will be described. Specific risks include road user fatality, road infrastructure damage and the socio-economic activities that road networks facilitate. Economic impacts will be quantified and the way in which their extent can be defined by the vulnerability shadow will be described along with emerging approaches to understanding infrastructure vulnerability.

If time allows, the effects of climate change on debris flow hazard and risk will also be considered in the context of likely changes to hazard frequency and/or magnitude and changes to risk.

A strategic approach to risk reduction allows a clear focus on the overall goal of risk reduction before homing in on the desired outcomes and the generic approach to achieving those outcomes.

LANDSLIDE RISK REDUCTION

Presented by Ian Nettleton, Technical Director at Coffey Geotechnics Limited, A Tetra Tech Company

Landslide risk reduction in areas with difficult access, high relief and complex terrain can be challenging, especially for extensive infrastructure networks, with competing demands on resources.

The key elements to successful risk reduction typically include the appraisal of landslide susceptibility; assessment of the hazard; and assessment of risk. These elements enable the need for risk reduction to be identified and quantified. This enables multiple landslide hazards, or other geohazards, to be appropriately prioritised for action and allocation of resources.

For the appraisal of landslide susceptibility, the approaches adopted, and their implementation, by major UK asset owners will be discussed.

For landslide hazard and risk assessment the determination of the type and extent of failure; the likely level of damage; and the temporal component are critical to enable informed risk reduction. The identification and interpretation of key site evidence is critical to enable appropriate and representative characterisation to be undertaken, and case examples will be presented.

Such hazard and risk assessment can then be used to determine the necessary and desirable actions to reduce that risk in the form of mitigation or management. Examples will be given of these along with some pitfalls to be wary of.

INSTRUMENTATION FOR MONITORING THE PERFORMANCE OF CLAY SLOPES

Presented by Dr Andrew Ridley, Managing Director at Geotechnical Observations Limited

Infrastructure embankments and cuttings are used to afford the passage of roads, railways, rivers and canals with a minimal need for changes in vertical alignment. In the cases of canals and railways in particular many of these earth structures were constructed before the development of modern soil mechanics. The change in condition of the materials used to construct them and their progressive deformation has a critical effect on their long-term serviceability and stability.

Finite element analyses show that the long-term stability of cuttings formed of plastic clays is influenced by gradual and slow swelling promoted by increasing pore water pressures that are initially decreased to negative values during excavation to form the slopes. Analyses also indicate that seasonal cyclic stress changes brought on by fluctuating pore water pressures cause plastic strains that can eventually lead to instability in embankments formed of plastic clays. If analyses such as these are to be used to assess the serviceability and stability of clay slopes (old and new) it is essential that they be fed with good monitoring data. This talk will present field measurements gathered during the last 20 years and describe how they were made.