

Summary of SERG Meeting 15th May 2018

HS2: Overcoming Geotechnical Issues Along Phases One & Two

Nick Sartain presented to SERG at the offices of Atkins Global in Croydon. The subject of the presentation was about the technical challenges of High Speed 2, phases 1 and 2.

The challenges centred around five main topics:

1. The scale of the project;
2. The Performance specification;
3. Reliability requirements;
4. The amount of ground related data and
5. The environmental sensitivity requirements when constructing a project of this size.

High Speed two is Europe's largest construction project at almost 570km (Phase 1 230km and Phase 2 approx 340km) with all the earthworks, tunnels, viaducts and infrastructure crossings that entails. The geotechnical performance of the volumetrically stable earthworks for settlement, including creep settlement, are challenging. Particular attention has been paid to stiffness requirements both to resist the effects of Rayleigh waves and to accommodate the change between relatively soft earthworks and stiffer structures. Ground engineering is a key component of reliability and includes considerations of weathering, influence of vegetation and climate change in order to maintain the volumetrically stable earthworks throughout the 120 year design life. Ground investigations have already commenced which will generate a lot of data. This will be boosted significantly during construction with not only the instrumentation and monitoring to demonstrate compliance with the ground movement requirements but also from the continuous compaction control during construction of the earthworks. The earthworks are part of a sustainability strategy that aims to maximise re-use in part through the placement of landscaping to mitigate the impact of visual and noise impacts. In summary this all makes for a technically challenging project that is pushing the boundaries of engineering practice.

The meeting was well attended with attendees from both the geology and engineering fields and thanks must go to Atkins Global for hosting this fascinating presentation.

See next page for Flyer





**The
Geological
Society**

-serving science & profession

South East Regional Group

Meeting

Date: 15th May 2018

Location: Atkins, Croydon. 17.30 for 18.00 start. Light refreshments will be provided.

HS2: overcoming geotechnical issues along Phases One and Two

Nick Sartain, Head of Geotechnics, HS2 Ltd.



HS2 is the proposed second high speed railway for the UK. It presents an opportunity for a step-change in public transport, relieving congestion on the existing rail and road network, reducing journey times, bringing people closer together, and providing the impetus to rebalance the UK's economy. The design and construction represents a huge engineering challenge in terms of both scale and complexity, with Phase One (London to Birmingham) scheduled to open in 2026 and with routes to Manchester and Leeds to open in 2033. This presentation will describe some of

the geotechnical challenges on the project, in particular those that are related to very high train speeds but also those which are necessary to deliver modern infrastructure which will outlive the 21st Century. Topics will include geodynamics, ground movements, earthworks, slopes, geohazards, and geotechnical data management.

Nick Sartain is the Head of Geotechnical Engineering at HS2 where he is responsible for the specification, integration and assurance of geotechnical workstreams on the project. He has 20 years of experience in geotechnical design including earthworks, foundations, slope engineering, seismic engineering and geotechnical risk assessment. Nick has published a number of technical papers on a variety of topics, was a principal author of the ICE's Specification for Piling and Embedded Retaining Walls 3rd Edition and is the deputy editor of the ICE's Geotechnical Engineering Journal.



LOCATION: Atkins, No.1 Croydon, 12-16 Addiscombe Road, Croydon, CR0 0XT. Sign in on the ground floor and again at Atkins reception on floor 14. Meeting is on 16th floor.

www.geolsoc.org.uk/serg

Please let us know if you plan to attend: southeast@geolsoc.org.uk