

# engineering geology



**CAPITA SYMONDS**

successful people, projects and performance

# providing a better understanding of ground conditions

Our engineering geology services give you a better understanding of the composition, character and geotechnical or environmental properties of the materials underlying a site, contributing to reduced ground risk and allowing ground information to be used reliably.

From a large applied earth science resource incorporating highly qualified experienced specialists in engineering geology, geomorphology and hydrogeology, we are able to provide sound technical input to any project interfacing with the ground. We are also able to consult or utilise specialists in other areas, such as planning, ecology or archaeology, to identify early project opportunities from potential constraints. Support services including health & safety, sustainability, waste and project management are on hand to provide appropriate input to both design and site-based work.

Our technical capabilities and experience combined with knowledge of appropriate standards and legislation, and nationwide coverage through local offices, allows us to deliver a service tailored to a project, and consistent with the principles of value engineering. Our services include:

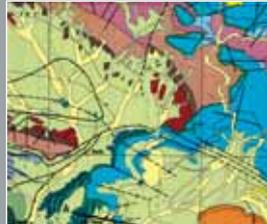
- Assessment and remediation of ground **geohazards** such as limestone, karst or gypsum dissolution features and man-made voiding
- Background **desk studies** for geotechnical and contamination assessment purposes
- Engineering, environmental and geomorphological **walkover surveys** to identify and map topographic and other relevant surface features
- Evaluation of the performance and properties of **geomaterials**, including building stone, aggregates, and general rock and soil (to standards and guidance published by BSI, BRE and HA)
- Full process **site investigations** and interpretation, focusing on obtaining high quality and representative ground information (to BS5930, Eurocode 7 and/or HA standards)
- Practical advice and support on **earthworks** design and evaluation through inspection of existing features to construction quality assurance of new
- Production of conceptual **ground models**, extending to 3D visualisation using digital data
- Provision of support in design and assessment of the ground for soft/hard rock tunnelling and **underground excavation**, including definition of reference conditions
- Slope and cliff **stability assessments** and stabilisation designs in coastal and inland settings (including Planning Policy Guidance Note 14)
- Specialist applications including **research** in earth science and ground-related disciplines, expert witness services, **forensic ground engineering** and **geotechnical assessments** (Quarry Regulations 1999)

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## Desk Studies

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Our desk studies evaluate available information to establish a credible conceptual ground model identifying features for further investigation and assessing ground risk before getting to site - a fundamental first step in successful site investigation, imperative for projects interfacing with the ground.



## Geomorphological Studies and Mapping

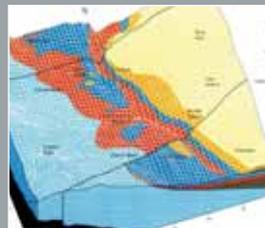
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Our geomorphological input is an essential component of the conceptual ground model with proven importance in geotechnical risk management. It has applications on most projects at almost any scale but is particularly beneficial in linear infrastructure projects and assessment of route corridors.

## Site Investigation

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Site investigation is part of integrated multidisciplinary professional services specifically designed to identify and scope ground hazards that may represent serious potential project risks. It is part of the process of building a representative ground model, essential for projects interfacing with the ground.



## Ground Models

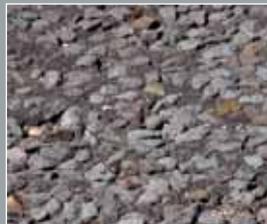
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A critical tool in developing an understanding of ground conditions and the impacts of construction or earthworks. As data is accumulated, our models may extend in complexity from concepts to attributed 3D digital models. Visualisation is also an aid to understanding the ground.

## Geomaterials

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By understanding naturally occurring materials and determining their origin, occurrence and characteristics, we are better able to predict their engineering performance as construction materials. Our techniques include petrography, laboratory analysis and engineering geological interpretation.



## Slope and Land Instability

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We can identify potential instability through natural or man-made mechanisms, such as cambering, dissolution, coastal recession, mining or subsidence. Using a range of disciplines we design an appropriate stabilisation solution, accommodating the constraints and in keeping with the environment.

## Tunnelling and Underground Excavations

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Capita Symonds has considerable experience in immersed tube tunnel design and cut and cover excavations. Our engineering geology unit expertise in underground excavation design is applied to ground modelling, soil/rock mechanics, ground settlement assessment, rock mass characterisation, face mapping, and support identification.



## Applied Research and Specialist Services

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We have a substantial track record in undertaking cutting-edge applied industrial research, particularly to support the minerals industry. These capabilities are also extended to provide leading professional services including acting as expert witness in ground-related issues and forensic geological and geotechnical consulting.

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[www.capitasymonds.co.uk/earthscience](http://www.capitasymonds.co.uk/earthscience)

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