



Geotechnical Services

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www.campbellreith.com

CampbellReith's services:

- ◆ Structural
- ◆ Civil
- ◆ Environmental
- ◆ Geotechnical
- ◆ Highways & Transport

CampbellReith's in-house geotechnical group supports the practice's other disciplines as well as undertaking specific commissions. The group offers a wide range of services.

CampbellReith is a leading firm of consulting engineers providing structural, civil, environmental, geotechnical, highways and transportation consultancy services throughout the UK and overseas.

The practice has a reputation for the creative use of specialist technical knowledge and for providing innovative and efficient engineering designs. The multidisciplinary nature of the practice allows our geotechnical group to develop the most appropriate and effective solutions.

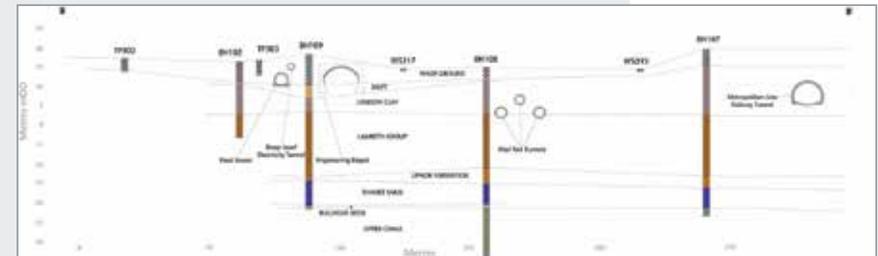
A member firm of the Association of Geotechnical and Geo-Environmental Specialists and the Association for Consultancy and Engineering, CampbellReith undertakes feasibility studies, surveys and appraisals, design and construction monitoring, as well as providing specialist report and advisory services including expert witness work.

The practice has extensive experience of working in project teams and ensuring co-ordination between internal and external engineering disciplines. CampbellReith's innovative and 'hands-on' approach to working means that the practice has an enviable track record for delivering a service of the highest quality, on time, whilst remaining cost efficient.

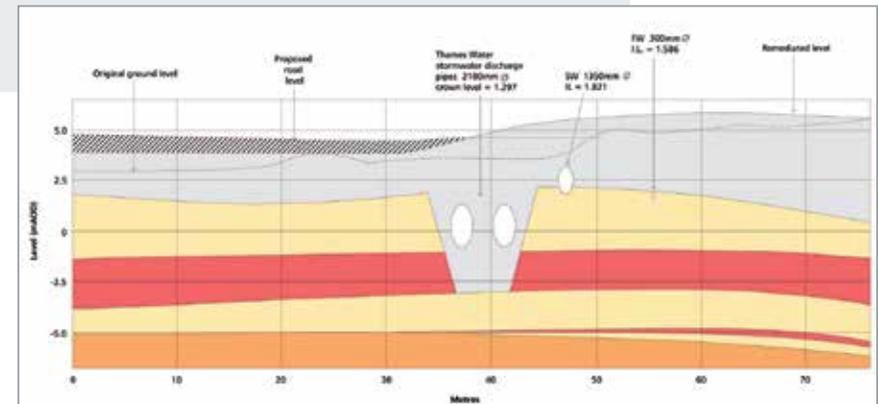
Operating out of offices in London, Surrey, Manchester, Bristol and Birmingham in the UK and Dubai in the UAE, the practice performs under Quality Management System accredited to design and contract supervision, across a broad range of development sectors.

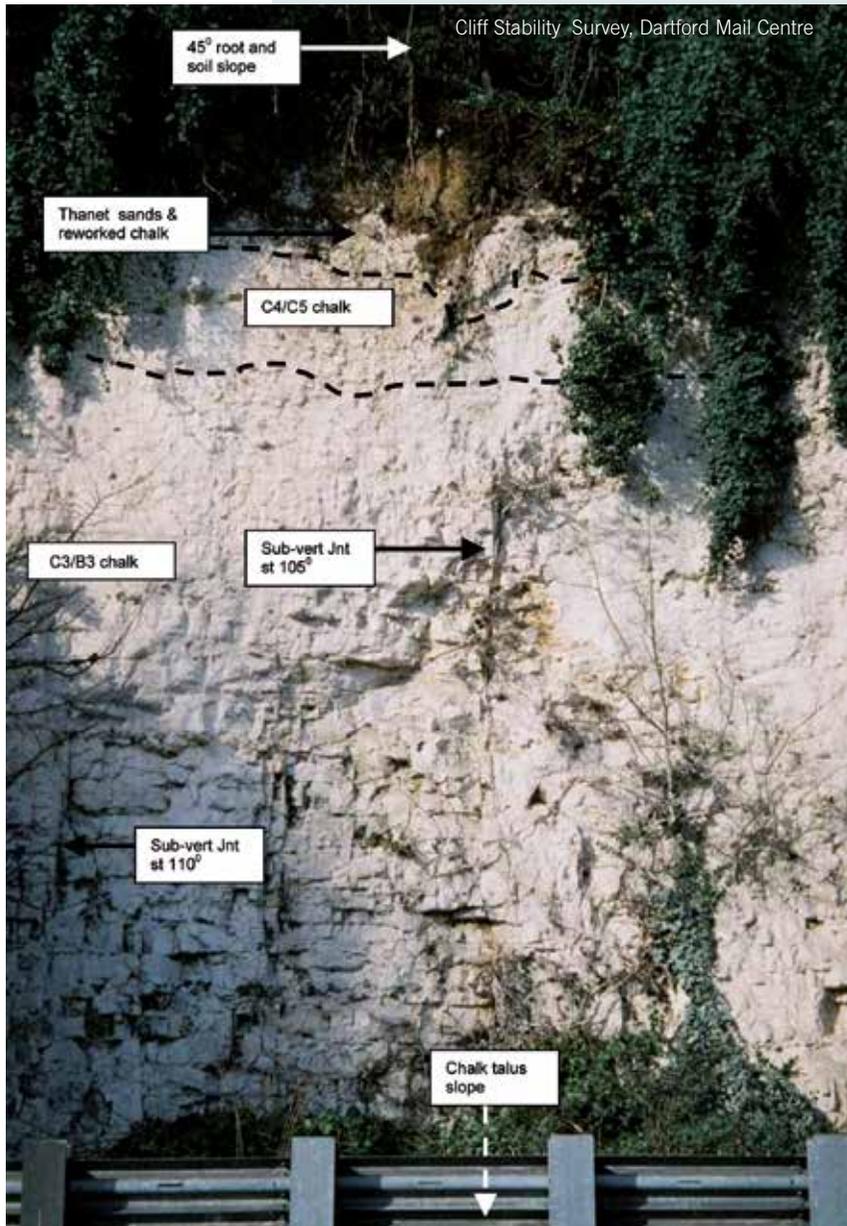


Left: Royal Albert Basin **Right:** Turner Contemporary 2, Margate



Top: Mount Pleasant **Bottom:** Royal Albert Basin





Courtesy of Vertical Technology Limited

We are fully aware of the risks to construction from unforeseen ground conditions. Through our extensive range of geotechnical services we can provide the knowledge and confidence our clients need when developing construction projects and investing in portfolios.

We undertake desk studies, design and manage site investigations for greenfield and brownfield sites, such as those underlain by mineworkings or extensive underground construction, and prepare geotechnical and geoenvironmental assessments.

Our geotechnical assessments provide recommendations on suitable economic foundation options, basement design and construction, ground stabilisation and improvement techniques and their likely performance, and other geotechnical elements. In all cases we strive to achieve the most sustainable geotechnical solution.

The comprehensive analysis of issues such as vertical and horizontal ground movements, determination of desiccation and heave, assessment of deep basement performance, retaining wall performance and slope stability can be undertaken, together with the impact of construction on surrounding infrastructure as appropriate to suit project specific requirements. Analysis and modelling are aided by the use of computer software packages including SLOPE, WALLAP and Vdisp.

We also undertake forensic investigations, such as those required to determine the causes of structural damage or slope instability.

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Services we offer:

- Ground Investigation
- Site Characterisation
- Geotechnical Evaluation
- Hazard Identification
- Geotechnical Options Appraisal
- Ground Movement & Damage Assessments
- Forensic Investigations & Reporting
- Development Planning

3 // Added Value

We can give you all the geotechnical information that you need for a given project and provide specifically designed solutions. By understanding the hazards in the ground our geotechnical services can offer the following added value:

- early identification of geotechnical hazards
- range of remedial options for cost and programme analysis
- reduced risks and programmes
- cost effective designs
- greater scope for more realistic and accurate planning
- optimised solutions
- sustainable development
- engineered fills and ground treatment
- minimising waste



Top: Canterbury College
Bottom: Page Road





Chatham Pump House

Under our term commission for SEEDA, we were appointed to undertake a desk study and intrusive ground investigation to determine the cause of severe cracking to a Victorian Pump House at the former Chatham Naval Dock Yard.

The desk study indicated the Pump House to be supported on timber piles, and revealed that they had been subjected to significant changes in load due to the dewatering of the area during the construction of the Medway Tunnel.

A conceptual model indicated that much of the cracking was likely to have occurred shortly after construction, with significant further movement occurring during dewatering.

The information allowed the client to develop the masterplan and accurately cost necessary remediation.

Lightmoor Urban Village

Parts of this 260 acre site, earmarked for a new urban village, were characterised by previous opencast and suspected shallow mine workings.

We designed and supervised phased intrusive ground investigations which took place as proposals for the village developed. The initial phases of investigation allowed the identification of potential hazards to inform the planning of the development.

Later, more targeted phases were designed to provide permeability characteristics for input into a Sustainable Urban Drainage Scheme (SUDs) and

design data for the proposed primary road network, including recommendations in relation to mining related risk.

An initial appraisal of geotechnical matters for each proposed development plot was also made to assist potential development partners in their bidding. This involved assessments in relation to foundation design (including ground improvement options and piling), mining related risks and associated remedial actions, gas protection requirements and buried concrete design.



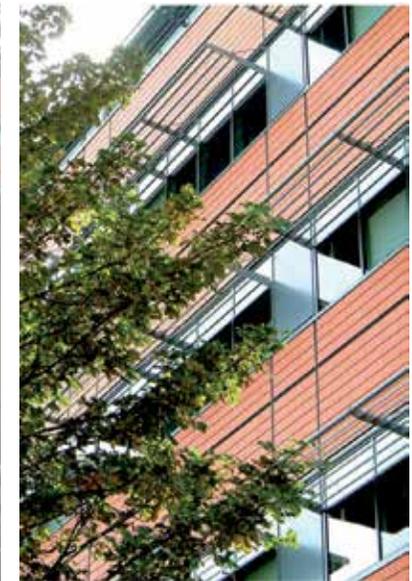
The Royal London Hospital

An intrusive ground investigation was designed and supervised by our engineers for a new pathology and pharmacy block at The Royal London Hospital in Whitechapel. The project involved replacing a Victorian school and 1960s office building with a modern purpose built facility with seven above ground storeys and a basement.

It was necessary to restrict ground movements around the site during the excavation of the basement to prevent damage to an adjacent building and a shallow brick railway tunnel of the East London Line only 4.50m from the basement excavation.

In addition to providing advice for the design of the foundations and the basement retaining wall, we were able to undertake detailed analysis to satisfy London Underground that there would be no detrimental effect on the tunnel from the demolition of the existing structures, the excavation of the basement and the loading regime associated with the new structure.

Close liaison between our geotechnical and structural project engineers allowed the demolition and construction works to be phased to minimise the impact of these activities on the surrounding infrastructure.



Kensal Road

Under our framework agreement with Octavia Housing and Care, we were asked to act as structural and geotechnical engineers for the redevelopment of a vacant site on Kensal Road, West London.

The site is located adjacent to the Grand Union Canal, with an occupied five storey building present on the eastern boundary. The development comprises a mixed office and residential block with a single level basement extending across the whole site area.

We designed and supervised a ground investigation to permit the design of the piled foundations, the contiguous bored pile basement retaining wall and other geotechnical elements. The retaining wall was constructed with very tight tolerances

on ground movements. The observational method was implemented rather than carrying out pre-emptive underpinning of adjacent foundations. This combined regular monitoring of inclinometers and survey targets.

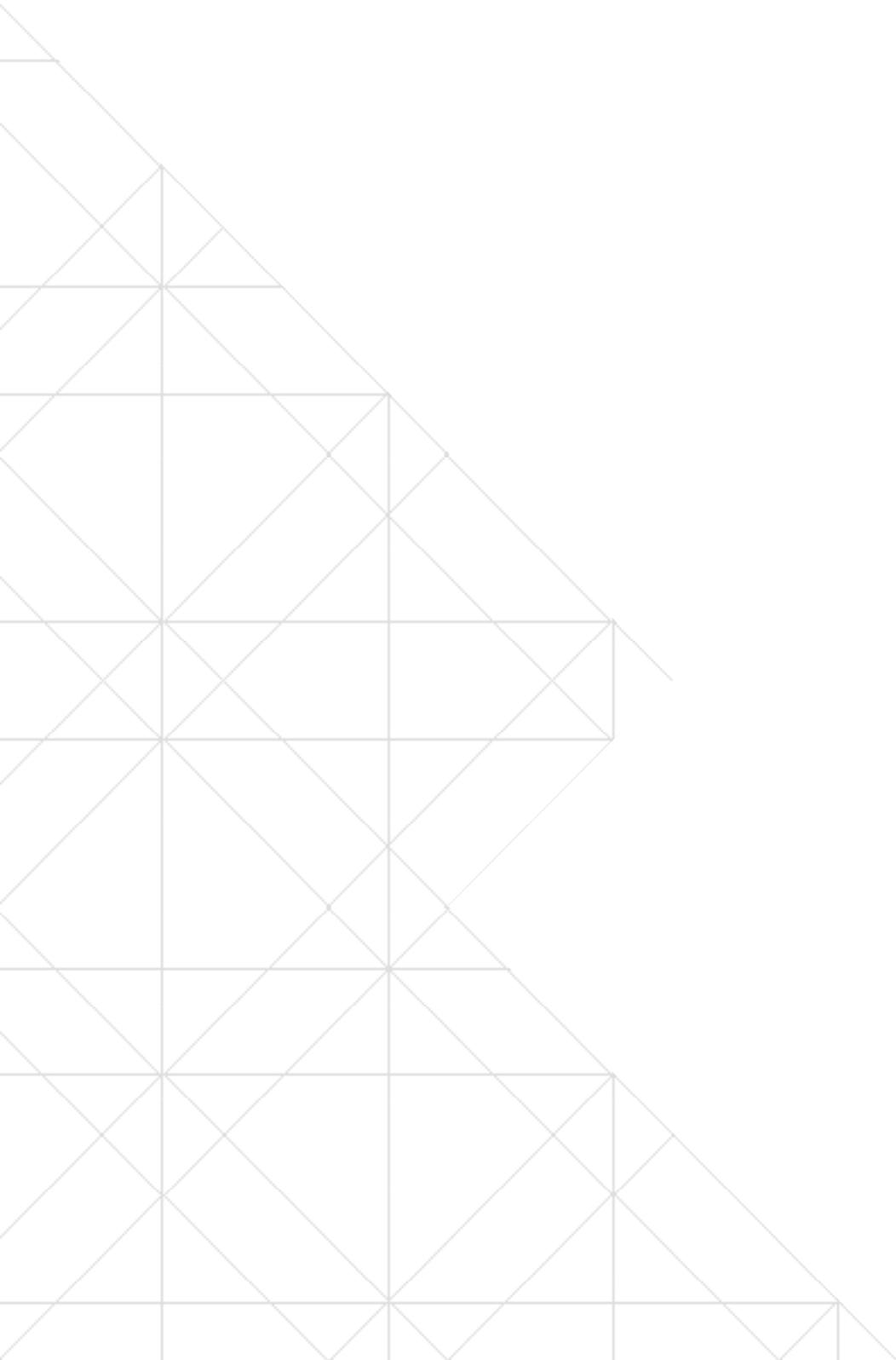
We devised a system of amber and red triggers which would initiate contingency measures if these displacements were exceeded. Wall movement during the construction of the basement was not to exceed 7mm. Actual movements were less than 5mm and no damage to the adjacent structure was recorded. The overall programme shortened by approximately 3 weeks by reducing the enabling works, a 50% cost saving was achieved by adopting the observational method as compared to the underpinning.



Top: Madjeski Hotel Extension
Bottom: Page Road



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|----------------------------------|--|---------------------------------------|
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| Amec | Fraser Brown MacKenna Architects | Norwest Holst Construction Ltd |
| Aspire Defence | Galliford Try | Notting Hill Housing Trust |
| Associated British Ports | Galway Racecourse | Octavia Housing and Care PCHA |
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| EPR Architects | | |
| Fenland District Council | | |



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