Capability Statement
Industrial and Commercial

Geotechnical and Geoenvironmental Specialists

www.geotechnics.co.uk
Geotechnics Limited offers a service tailored to your requirements.

- Pre-purchase site assessment and reconnaissance, helping Clients to understand and manage risk, and providing vital information to assist in commercial negotiations
- Geotechnical and geoenvironmental desk studies and Conceptual Models to comply with current legislation and planning constraints
- The planning and execution of detailed intrusive investigations, together with the design of geotechnical and geochemical testing at our own and other specialist NAMAS/UKAS accredited laboratories
- The design, installation and monitoring of the latest award winning instrumentation schemes to measure groundwater, gas, slope stability, ground movement, and material/structure interactions
- The analysis and interpretation of data from these investigations to give practical advice and recommendations
- Design of innovative award winning engineering design solutions.
- Site testing, monitoring, and controls

What we can do for your scheme:

- Provide professional and pragmatic advice
- Work to agreed budgets and timescales
- Save you time and money with innovative ideas
- Contribute to your design process directly, at an early stage and then throughout the project
- Liaise with other professionals to provide integrated solutions
- Offer an understanding of the commercial advantages of efficient programming to either maintain your business activities or bring them on stream at the earliest opportunity

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Examples of Recent Projects

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<th>CLIENT</th>
<th>PROJECT</th>
<th>DATES</th>
<th>VALUE</th>
<th>ACTIVITIES</th>
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<tr>
<td>Pinnacle Consulting Engineers Ltd</td>
<td>Tesco – Various Sites</td>
<td>2000 – to current date</td>
<td>£2 million plus</td>
<td>Cable Percussion, Rotary Open Hole, Rotary Core, Trial Pit, Window Sampling, Soakaway Tests, Stand Pipe, Gas &amp; Water Monitoring, Laboratory Testing, Factual Reports and Interpretative Reports.</td>
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<tr>
<td>Pam Brown Associates Ltd</td>
<td>Sainsburys – Various Sites</td>
<td>2001 to current date</td>
<td>£395,100</td>
<td>Cable Percussion, Concrete Core, Window Sampling, Rotary Open Hole, Rotary Core, Inspection Pit, Laboratory Testing, Factual and Interperative Reports.</td>
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<tr>
<td>United Utilities</td>
<td>Various sites – AMP4 &amp; AMP5 Framework</td>
<td>2005 to current date</td>
<td>£7 million to date</td>
<td>Cable Percussion, Inspection Pit, Dynamic Cone Penetrometers, Dynamic Probe, In Situ CBR, Plate Loads, Permeability Testing, Static Cone Penetration Tests, Windowless Sampler, Gas &amp; Water Monitoring, Soakaway Tests, Factual Reports.</td>
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<tr>
<td>Shropshire County Council</td>
<td>Tern Valley Business Park, Shropshire</td>
<td>2008</td>
<td>£21,000</td>
<td>Cable Percussion, In Situ CBR, Windowless Sampler, Rotary Open Hole, Soakaway tests, Trial Pits, Gas /Water Monitoring.</td>
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<tr>
<td>Gifford / Peel Media</td>
<td>Media City, Manchester</td>
<td>2009</td>
<td>£90,000</td>
<td>Cable Percussion, Factual Reports.</td>
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<td>Kier Construction Ltd</td>
<td>Portland Port, Dorset</td>
<td>2010</td>
<td>£10,400</td>
<td>Concrete Core, Rotary Core, Factual Reports.</td>
</tr>
<tr>
<td>Jacobs Engineering UK Ltd / Mpact</td>
<td>Manchester Metrolink</td>
<td>2008-2010</td>
<td>£1.5 million</td>
<td>Cable Percussion, Dynamic Cone Penetrometers, Dynamic Probe, In Situ CBR, Plate Loads, Permeability Testing, Static Cone Penetration Tests, Windowless Sampler, Factual Reports.</td>
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Case Study
Geotechnics’ Spurs Investigation

In July 2009 Geotechnics Ltd was invited to tender for the Ground Investigation for the proposed redevelopment of Tottenham Hotspur’s White Hart Lane ground. The work required was extensive but a key element was that it would have no adverse effect on match days.

The anticipated geology comprised Terrace Gravels, London Clay, Lambeth Group and Thanet Sands with Chalk at depth. The tender for the work required rotary coring of most boreholes for much of their depth. However, Geotechnics’ experience of rotary drilling in the Lambeth Group and Thanet Sands was such as to lead them to submit an alternative tender with significant cost savings whilst maintaining or even enhancing the quality of the technical output. The Thanet Sands are infamous for the problems they cause during drilling but at this site it was considered practical to use predominantly cable percussive techniques with only two boreholes required to penetrate to significant depths into this stratum.

The Client and the Engineer, Buro Happold, were interested in the alternative and the contract was awarded to Geotechnics Limited. The work also involved dynamic sampling, pavement coring, trial pitting and in situ CBR testing. Instrumentation included shallow standpipes, deep Vibrating Wire Piezometers and water level monitoring transducers for continuous monitoring of shallow ground water levels. Geotechnics Engineers for the project were Rob Webster and Dan Fry and the management of the site work was by Ian Boyle.

Prior to and during site work Geotechnics Limited had to maintain close liaison with both the Highway Authority and the occupants of business units on the site to ensure the minimum disruption. Laboratory testing was undertaken at Geotechnics’ UKAS accredited laboratory in Coventry and a factual report was provided in November 2009. Monthly site monitoring has continued over the twelve month period following the site work.

In February 2010 Geotechnics Ltd was invited to prepare a quotation for the Phase 2 works which built on the knowledge gained from the first phase and addressed developing features of the design. Particular attention was given to dynamic sampling as standard equipment had limited success in the dense Terrace Gravels due to limited rates of penetration and instability at depth. In order to overcome these problems and to permit access to the concourse areas, a mini rotary rig with hollow stem auger was mobilised and sampling carried out through this. Site works were successfully completed May 2010.

This project extends the Company’s track record in the investigation of major stadia in the north London area having undertaken the complex investigations for the new Arsenal Emirates stadium some years ago. We are proud to have contributed to this prestigious scheme and hope that it Spurs the club to greater success in the future!
Case Study - Geotechnics’ Instrumentalists

Geotechnics Ltd has recently won a major instrumentation project for providing and installing soil monitoring equipment for the London Gateway project at the site of the former Shell Haven refinery near Stanford Le Hope in Essex where land is being reclaimed and developed by DP World into the UK’s first major deep sea container port. Large scale land reclamation is needed to build the new port and it is understood that some 30Mm3 of sand is being dredged from the adjacent river channel which is being taken to depths of 17m to allow access to large ships and used to create the new facility. The instrumentation will allow management of the filling and reclamation work which is being undertaken in two main phases as land becomes available.

The site which is on the northern bank of the Thames is underlain by a significant thickness of Alluvium. Some 211 boreholes are being drilled to depths of up to 18m below existing ground level for the installation of vibrating wire piezometers and magnetic extensometers. The extensometer holes are required to be to be drilled through the Alluvium and 1m into the underlying Terrace Gravels in which the datum magnets will be placed. Spider target magnets are being installed using a system developed by Geotechnics. They are being installed into the lower Alluvium, intermediate peat/organic clay horizon and upper Alluvium with plate magnets being placed at ground level.

The soil profile is being logged by an engineer as the hole is drilled and this logging used to identify the detailed variations within the Alluvium and allow installation of vibrating wire piezometers at appropriate levels in adjacent boreholes. Geotechnics’ team of Ian Boyle, Leigh James, Nick Tarrant and Joe Pollert is undertaking this work. At selected locations holes will be extended into the lower Alluvium and additional piezometers installed. The piezometers will be provided with extended cables so that they can be taken subsequently to a terminal box.

The extensometer pipe will be extended by adding new sections as filling progresses and the terminal boxes will be raised with them. All monitoring will be logged by the Client as work proceeds and continued until settlement is confirmed as being adequately complete.

Geotechnics’ expertise in instrumentation has developed considerably over recent years and instrumentation work on the Weymouth Relief Road featured in last year’s Ground Engineering awards. It is regularly making use of monitoring as a logical extension of the site investigation and soil testing process, allowing the use of modern technology to address the uncertainties of geotechnical prediction and aid efficient and sustainable construction.
**SUSTAINABLE SEATON**

**Earth Works in Our Favour**

An exciting regeneration project in the town of Seaton in East Devon has taken place on the site of a former holiday park to provide the basis for both a new Tesco store, associated parking and roads, and a future housing development.

Geotechnics Limited designed and implemented a comprehensive first phase ground investigation for the site and this was supplemented by monitoring of a trial embankment as design proposals emerged. Working as part of the team led by the Client Tesco, and involving Structural Engineers Pinnacles and Main Contractors ISG Pearson, Geotechnics developed a strategy which involved the design, supervision and monitoring of an earthworks operation based on treatment by surcharging of the soft alluvium which underpins the site. This obviated the need for piled foundations for the structure, allowing the use of a raft foundation to support the structure and floors, and a comprehensive treatment of both the car park area and associated roads. The housing development is to take place later.

In order to comply with flood risk assessments, the importation of 300,000m³ of fill material was required to bring the site up to some 2m above the pre-existing levels. Bringing the material in by road was not practical due to the volumes required and the likely disruption which this would cause to the local residents. The solution was to deliver dredged sand from the site via barges and a temporary pipeline, incorporating a bridge structure, which was operated by Westminster Dredging. Bringing the material by sea has avoided 30,000 ton movements on local roads and meant that the work could be done in a relatively short period for such a large scale operation. Monitoring of settlement of the development area during the placement period was carried out using both Pile and Plate and Horizontal Profile Gauges to provide the means of control and allow assessment of the effects of the surcharge. When deemed appropriate, surcharge loads were moved to other parts of the site and the site and ancillary works constructed. Monitoring of vertical movement is to continue for some time. Testing of the fill material was undertaken in an on-site laboratory, and included particle size distribution, density, and moisture-content tests. In situ CBR evaluations and Plate Bearing Tests were also undertaken.

The project illustrates that phased investigation and team working can have major cost and environmental benefits.

The approach adopted complements the challenges of sustainability for the scheme as a whole, which includes the use of timber, bricks and columns for the store as well as innovative site design. The geotechnical work was managed by Anna Simpson, the company’s South West office in Exeter, together with Principal Engineer Tim Thorburn and site staff Ian Tucker, Chloé Ellis and Caroline Ogilvie.

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**Geotechnics probes docks**

Geotechnics has successfully completed investigation works for a redevelopment project at the Port of Liverpool, UK.

One of the port’s most significant exports is scrap and recycled metal, so when owner-operator Peel Ports decided to deepen the berths in the Alexandra Dock to accommodate larger vessels, the condition of its walls and base required assessment.

Geotechnics was appointed to carry out the investigative works, including four over-water boreholes to measure the depth of the silt and sediment that would need to be removed from the bed. This would also reveal the depth and condition of the underlying sandstone strata.

Cable percussion boring and rotary drilling was carried out from a spudded pontoon on barge using a standard Pikon Wayfarer boring rig and a Mobile Drill B24 rotary rig.

The condition of the dock walls, their depth and foundations were also critical to the scheme designer, R G Parkins and Partners. Quayside level is +12.2m Chart Datum. The base of the wall was expected to be at about -3.25m Chart Datum, and the proposed dredged level is -2.9m Chart Datum, so there were concerns that the walls would lose frontal lateral support.

The investigation called for rotary core holes to be drilled from the coping stone level through a Victorian mass concrete wall and into the foundations.

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Image created by Ian Thomas.

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Project Experience - Industrial and Commercial
What we can do for your scheme:

- Provide professional, pragmatic and timely advice backed by professionals with a wealth of experience
- Work to agreed budgets and timescales with the object of saving you time and money with innovative ideas
- Contribute to your design process directly at an early stage and throughout the project
- Liaise with other professionals to provide integrated solutions

Geotechnics believes that a reliable knowledge of ground conditions is the key to efficient and safe construction bringing the commercial advantages of efficient programming, increased certainty, and early completion
For further information on any of our services, please contact us; we’d be happy to help. For more data on the Company including Third Party accreditation and Quality systems see associated file.

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