Capability Statement
Offshore

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
## 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>Insituform Techologics Ltd</td>
<td>Millbay Docks, Plymouth</td>
<td>2004</td>
<td>£30,000</td>
<td>Rotary Open Hole, Factual Reporting.</td>
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<tr>
<td>Eon UK Plc</td>
<td>Isle of Grain, Essex</td>
<td>2006</td>
<td>£67,000</td>
<td>Cable Percussion, Static Cone Penetroeter, Water Monitoring, Laboratory Testing, Factual Reporting.</td>
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<tr>
<td>Peel Media Ltd</td>
<td>Media City Footbridge, Stockport</td>
<td>2008</td>
<td>£90,000</td>
<td>Cable Percussion, Trial Pits, Factual Reporting.</td>
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<td>Royal Parks Agency</td>
<td>Serpentine Outlet, Hyde Park</td>
<td>2010</td>
<td>£32,000</td>
<td>Trial Pit, Rotary Core, Laboratory Testing, Factual Reporting.</td>
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<td>David Langdon LLP</td>
<td>Alexander Dock, Liverpool</td>
<td>2010</td>
<td>£70,000</td>
<td>Cable Percussion, Rotary Core, Laboratory Testing, Factual Reporting.</td>
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<td>United Utilities</td>
<td>Sandon and Wellington Dock, Liverpool</td>
<td>2010</td>
<td>£400,000</td>
<td>Overwater Boreholes.</td>
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<tr>
<td>Cammel Laird Ltd</td>
<td>Cammell Laird - Mersey Pontoon</td>
<td>2011</td>
<td>£5,100</td>
<td>Dynamic Probe, Factual Reporting.</td>
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Example Projects

VIBRO CORING OPERATIONS FOR DREDGING ASSESSMENT AT FISHGUARD, USING MULTICAT VESSEL.
United Utilities
Liverpool – Sandon Dock

Geotechnics Limited was appointed as Framework Contractor for United Utilities for the new AMP5 period in 2010, following on from the successful working relationship developed during the previous AMP4.

As an example of the work being done, United Utilities Water plc required a site investigation to investigate ground conditions and contamination levels in and around Wellington Dock, Liverpool to support a planning application for a new treatment unit. River bed conditions extending approximately 300m out into the River Mersey for a new outfall structure also needed to be determined. Geotechnics Ltd were commissioned to carry out the works as ground investigation marine specialists under the Amp 5 Framework Agreement Term Contract.

Construction works will comprise:
Dredging out of Wellington Dock,
Removal of dock bed silts/clays to either the River Mersey (Dependent upon a Marine Management Organisation Licence Application) or to a suitably licensed landfill,
Backfilling of Wellington Dock with engineered fill
Construction of a new process treatment works to reduce Chemical Oxygen Demand (COD) of waste waters prior to being discharged into the River Mersey via the new outfall structure.

Managing Director John Booth (right) signs the AMP5 Framework Contract with Bill O’Connell, Category Buyer for United Utilities.
United Utilities commissioned a bathymetrical and magnetometer survey to determine river bed levels and any anomalies such as UXO and obstructions that could be a risk to both the investigation and construction schemes.

That survey information was provided by Geotechnics Ltd to aid the selection of a suitably large jack up platform to work in up to 20m of water tidal range and to withstand currents of up to 5m/s in the river.

Specialist marine contractors, Red7 Marine were asked to mobilise Haven Seajack 1 – an 18 x 18m modular platform with 27m long jack up legs to Wellington Dock in late January 2011.

Eight HGVs duly arrived and work began on erecting the giant meccano set in time to ensure the lock gates from the dock system into the river were open at or around 'slack water'!

Carmet Tug Company supplied two tugs, 'Audrey' and 'Vigour', to tow the Seajack through the docks system and out into the River Mersey. A safety vessel, 'Vigour' was also supplied for both staff crew changes at nearby Pier Head and to act as a support vessel in the case of an emergency.

Potentially the most difficult aspect of the investigation was the outfall works in the river. Careful planning and timing was required to ensure that the boreholes in the deepest water were completed at neap tides.

Over a period of 5 days four 10m boreholes, positioned along the route of the proposed 300m long outfall were successfully drilled through the river bed sediments and into the underlying Sherwood Sandstone.

Haven Seajack 1 came back into the dock system on 31st January – mission accomplished and bang on programme!
Jack up, River Mersey - Sandon Dock, Liverpool
United Utilities Liverpool – Wellington Dock

Meanwhile, within Wellington Dock Geotechnics Ltd were busy carrying out over-water works on a smaller scale using a spudded pontoon barge. Water depth here was generally less than 9m deep, and a total of eleven boreholes were carried out, again using a combination of cable percussion and rotary techniques to depths varying between approximately 13.40m and 24.90m below dock base level. Samples were taken at pre-determined depths within the dock silts/clays for chemical analysis to determine whether materials could be removed from site to the River Mersey Estuary (subject to a Marine Management Organisation Licence Application) or whether they would have to be removed to a suitably licensed landfill.

Landside boreholes around Wellington Dock were also required - a total of seventeen were needed to be drilled to investigate the backfilled nature of the dock walls and to determine contamination levels of both the soils and groundwater. Each borehole was drilled with a combination of cable percussion and rotary techniques to depths of between 20.40m and 29.70m below ground level. Dual monitoring installations, one deep and one shallow, were installed to monitor ground water and gas regimes over a period of three months. Eight automatic water level loggers were installed to monitor tidal variations over a period of one month.

The wealth of experience exhibited from Geotechnics Ltd's own staff teamed with approved specialist contractors resulted in a high quality and professional investigation in a demanding and potentially risky environment.
Offshore Survey in the German Bight

Geotechnics Limited was approached by Osiris Projects to assist them in completing an offshore survey for a number of windfarm interconnector cable routes in the German Bight for TenneT Offshore GmbH, a major European electricity transmission system operator. Geotechnics was to supply geotechnical engineers aboard the MV Poseidon to carry out logging, sampling and in situ testing during vibrocore operations and Katy Fothergill, Chelan Ellis and Laurence Page rose to this challenge. Working as part of a multi-disciplinary international team, a total of 351 exploratory hole locations along 13 cable routes within a 25,000km² area off the west coast of Germany were investigated. The sampling was carried out using the Osiris newly purchased GeoCorer 6000 Vibrocorer. The work was carried from the 29th August 2011 to the 1st October 2011. The Vibrocore locations were drilled approximately every kilometre along the proposed routes, or at areas of interest highlighted by previous geophysical surveys. The Vibrocorer was lowered by a winch from the A frame located at the stern of the ship and winched to the seabed, where the coring commenced. Once full depth of penetration or refusal was achieved the corer was brought back to the surface. Each sample was drilled using a 6m length barrel and sample recovery varied from 3m up to 6m. Back on deck, the sample liner was extracted from the barrel. On board, Geotechnics Limited geologists cut each tube into 1m segments, carried out thermal resistivity testing, preliminary logging and then sealed and labelled each tube ready for transportation to Geotechnics Limited's office in Chester.

At the office, each 1m sub-sample tube was opened up longitudinally in two parallel lines using a power cutter on a bench which was specially constructed to hold the sample whilst undertaking this tricky task. The sample was then photographed within a lined enclosure, which gave uniformity of lighting and photographing distance, and logged in detail. Following this exercise specimens were selected from each sample and sent to Geotechnics Limited's UKAS soils laboratory in Coventry for particle size distribution and other classification tests. The Specification required that test procedures complied with the German DIN Standards and hence procedures for doing so were devised, after appropriate translation, and software programming. Tests were done in the Company’s Special Testing laboratory by designated staff.

The project required flexibility by the staff to adapt to conditions off-shore and the vagaries of the weather in this moving environment!! On shore, the requirement for efficient transport, logging and testing was also met and as a result Geotechnics is now well set to continue into the next phase of such work.
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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