Capability Statement
Renewable Energy

Geotechnical and Geoenvironmental Specialists
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

<table>
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<tr>
<th>CLIENT</th>
<th>PROJECT</th>
<th>DATES</th>
<th>VALUE</th>
<th>ACTIVITIES</th>
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<tr>
<td>Magna Project Services</td>
<td>Devon Wind Power</td>
<td>2008</td>
<td>£40,000</td>
<td>Trial Pit, Geophysical Survey, Laboratory Testing, Factual Reporting.</td>
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<tr>
<td>West Coast Energy</td>
<td>Sober Hill Wind Farm</td>
<td>2010</td>
<td>£30,000</td>
<td>Trial Pit, Rotary Core, Laboratory Testing, Factual Reporting.</td>
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<td>University of Lancaster</td>
<td>Proposed Lancaster Windfarm</td>
<td>2009</td>
<td>£17,000</td>
<td>Cable Percussion, Rotary Drilling, Factual Reporting.</td>
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<tr>
<td>Balfour Beatty Power Networks Ltd</td>
<td>Stonefoot Windfarm Connection</td>
<td>2008</td>
<td>£3,000</td>
<td>Cable Percussion, Trial Pit, Factual Reporting.</td>
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<tr>
<td>United Utilities</td>
<td>Sandon/Wellington Dock</td>
<td>2010</td>
<td>£40,000</td>
<td>Overwater Boreholes.</td>
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<td>Waterman</td>
<td>Cockenzie Gas Feeder</td>
<td>2010</td>
<td>£75,000</td>
<td>Cable Percussion, Rotary, Factual Report.</td>
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<td>West Coast Energy</td>
<td>Barlockhart</td>
<td>2010</td>
<td>£4,000</td>
<td>Rotary Drilling, Difficult Access.</td>
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</table>
Example Projects

Stonefoot Windfarm Connection - 2009
Cable Percussion, Trial Pit, Factual Reporting

Sober Hill Windfarm – 2010
Trial Pit, Rotary Core, Laboratory Testing, Factual Reporting
Case Study – Solar Power Plant, Cornwall

Geotechnics Ltd were commissioned to undertake a ground investigation at a site close to the National Trust property of Lanhydrock, located between Bodmin and Lostwithiel in Cornwall.

The area in question comprises two fields belonging to Polmaughan Farm where it is proposed to construct a solar power plant comprising approximately 21,000 Photovoltaic (PV) panels, generating an estimated 4,888MWp.

Modules comprising a number of solar panels are to be installed in a series of rows running approximately east to west across the site. The modules, inclined at about 20º to 25º to the horizontal, will be supported on a series of two number struts / columns spaced along the length of the module at about 3m centres. The struts are to be founded on piles formed from sigma posts (w-section steel posts) or steel screw piles.

Information of the nature of the ground conditions for each of the supporting struts/columns was obtained by completing a mixture of percussive sample boreholes and dynamic probes, using a tracked 'Terrier' window sampling rig. Investigation points were completed on a grid basis at 25m intervals, across the whole site. This allowed, with the use of cross sections derived from the strata data obtained, a detailed 3D map to be made of the shallow, superficial materials and the depth at which competent bedrock was encountered. This is then used to determine which foundation solution would be the most appropriate and at what kind of depths foundations would need to extend to ensure adequate bearing capacities are available, and that foundations would be sufficient to overcome 'pull-out' loading caused by wind catching the panels.
Case Study – Fullabrook Wind Farm

The Government’s drive to increase the nation’s renewable energy capacity has led to an increased national demand for wind power and to a number of investigation projects by Geotechnics Limited from Scotland to the South West.

Devon Wind Power proposes to construct a major new onshore wind farm at Fullabrook Down, North Devon. Twenty two new Wind Turbine Generators (WTGs), each 110 metres high, with 45m long blades and 65m from ground to hub will be constructed. The new wind farm is understood to have an installed capacity of 66 megawatts and is expected to produce the equivalent of over 80% of domestic electricity consumption in North Devon and will serve the needs of nearly 30,000 domestic customers.

Geotechnics Ltd was approached by Magna Project Services Ltd on behalf of Devon Wind Power to undertake a site investigation and provide geotechnical advice for the design of the foundations for the new WTGs.

A Preliminary Geotechnical Appraisal comprising a desk study of the site together with trial pitting to assess geotechnical risks at each turbine location. A Multi-Channel Analysis of Surface Waves (MASW) geophysical survey was undertaken at ten of the locations to obtain dynamic stiffness modulii to assist in foundation design for dynamic loadings. The Preliminary Appraisal included an assessment of risks from natural and man made cavities, seismic and landslide hazards, liquefaction and soft ground. Outline foundation options were provided for each WTG, in addition to excavatability and information on re-use of site won material as haul road aggregate.

A rotary core borehole investigation together with the preliminary assessment and trial pit investigation will provide detailed foundation design parameters for the WTGs once the final specification for the turbines is formulated.
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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