

# Capability Statement

## Geotechnical Services



Green Cat Renewables



Green Cat Renewables Limited has extensive experience in all aspects of geotechnical assessment, from scoping a site investigation and drilling boreholes, through in situ and laboratory testing to interpretation and advice.

Primarily used to support the company's design and construction of its wind and hydro projects, the geotechnical team can also provide a stand-alone service to clients for a wide range of projects, from a simple house to large industrial developments, and including all renewable energy schemes.

To satisfy the demanding requirements of a wind turbine, a site investigation is essential to evaluate the bearing capacity, amount of settlement, stress levels, deformation levels, overall stability, durability and dynamic behavior of the foundation. The investigation must be designed to provide sufficient technical information, but still be economic. It would be easy simply to dig and bore several holes to recover and test a large number of samples, as well as carry out expensive on-site tests. While this approach would provide good quality data, it is not likely to be cost effective. Instead, Green Cat Renewables Limited work closely with the turbine manufacturers and adopts the more economic "phased" approach to the work.

A similar approach is adopted with work for hydro schemes. A topographic survey combined with trial excavations and detailed walkovers allow selection of the most appropriate weir location, pipe route and turbine location. Advanced warning of features, such as shallow rock or unstable ground, allows realistic budgets to be set and reduce the risk of high additional costs associated with unforeseen ground conditions.

Hydrological and hydrogeological conditions are assessed as part of the geotechnical investigation. The flow of water over and through the ground is considered and permeability and infiltration (soakaway) tests may be carried out.

- Desk-top studies to assess the geological conditions, including mineral stability.
- Logging trial pits and soil and rock samples to BS5930
- Field testing (CBR, plate load, permeability, infiltration (soakaway), percolation, vane shear strength, redox potential and resistivity)
- Peat probing and peat slide assessments
- Field installations (piezometers, gas and water monitoring standpipes, inclinometers and extensometers)
- Laboratory testing (particle size distribution, moisture content, plasticity index, moisture condition value, sulphate content and pH value)
- Bearing capacity
- Dynamic soil and rock parameters (wind turbine and machine bases)
- Formation level examinations
- Slope stability assessment
- Selection of rock and recycled materials for use as aggregates
- Specialist foundations such as piles and vibro
- Earthworks including excavations, reuse of soils, embankments, instrumentation and monitoring.

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