SITE INVESTIGATION

Reference: CS-32

GWP Consultants has extensive experience in the design and supervision of geotechnical, hydrogeological and mineral exploration Site Investigation (SI) programmes in the UK and internationally. GWP is also very experienced in sampling, geological and geotechnical logging, scheduling suitable tests for recovered materials and in the analysis of related data. All site investigation operations, testing and logging are undertaken in accordance with Eurocode 7, Part 2.

High quality intrusive and non-intrusive SI data is essential for many GWP jobs. Designing the most appropriate and cost effective site investigations is something GWP is very experienced in, being fully conversant with various drilling techniques, hydrogeological and geotechnical test methods and piezometer installation. GWP has experience in most ground conditions including tip material, made ground, sand and gravels, clays, hard rock and in artesian conditions.

Site investigation methods used include:

- Scanline surveys and collection of discontinuity data (by hand or using the ShapeMetrix photogrammetry system) to provide geotechnical data.
- Trial pitting to observe ground conditions and to undertake channel sampling, plate load tests and soakaway tests.
- Intrusive sand and gravel investigations using shell and auger, flight auger or ODEX (rotary) drilling techniques, depending on ground conditions and sampling requirements.
- Hard rock investigations using standard or wireline core drilling or openhole drilling with targeted core drilling. Down hole geophysical surveys (resistivity and gamma) are often used to confirm the stratigraphy and position of clay or coal horizons.
- Hydrogeological in hole testing including permeability tests, packer tests, pumping tests and geotechnical in-hole tests including SPTs.
- Installation of vibrating wire piezometers, single and multi-level standpipe piezometers and inclinometers.
- Geological and geotechnical core logging.
- Sampling of materials for testing, from rock cores, sand and gravel samples etc. Scheduling of tests and data analysis.

Massive failure of endwall of opencast coal site

Selective experience

Drilling design, supervision and testing of groundwater abstraction boreholes.

At multiple sites in the UK, GWP has prepared water well drilling and testing tender documentation and has supervised the well drilling in chalk using cable tool percussion and rotary openhole techniques. Pump testing and borehole development work has been supervised and GWP has liaised with regulatory authorities in relation to discharge consents and abstraction licences for the boreholes.

Sand and gravel mineral resource drilling.

GWP has significant experience in the design and supervision of drilling programmes in sand and gravel deposits. Geological structure of the units, anticipated groundwater conditions and the testing requirements of the samples produced determines the drilling method used, with ODEX, continuous flight auger and shell and auger techniques available. Disturbed samples are bagged according to stratigraphic units or pre-determined depths and often undergo Particle Size Distribution (PSD) testing.

Coal measures, geotechnical core logging.

GWP has carried out detailed coal strata core reconstruction and geotechnical logging over multiple drilling programmes to identify the presence of intraformational shear zones which can act as failure planes in the strata. Logging data is used to inform the pit design and working directions.

Limestone quarry extension; geotechnical core drilling.

After a significant failure in the active quarry a comprehensive drilling programme was undertaken in the proposed extension area comprising 10 cored boreholes to a maximum depth of 115m, geophysical in hole surveys and single standpipes installed in some boreholes. All borehole core was geotechnically and geologically logged in detail to confirm the local stratigraphy (which differed to the stratigraphy identified on the local BGS geological sheet) and to identify joint sets and faulting to be used to inform the structural model of the site and ultimately the quarry design parameters.

Hydrogeological investigations, Nigeria.

GWP designed and supervised a seven month programme of groundwater investigations, including the drilling, construction and testing of two pumping wells, in-situ borehole packer testing, multi-level piezometer installatio, pumping test on nearby supply wells, geophysical surveys and hydro-chemical analysis. Geological and numerical groundwater models were constructed from the resulting bank of data and was used to inform a de-watering strategy and to identify the potential limits on deepening and lateral expansion of a limestone quarry.

Key contacts

For details and to discuss your requirements, please contact one of the following:

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