

Engineering Geological and Drilling Considerations

The information provided below is based on the interpretation of maps and records held by the British Geological Survey. It is intended to be used as a preliminary guide for highlighting issues the site geology may pose for drilling and ground engineering. The information and comments provided are not intended to be used for design purposes or as a substitute for appropriate ground investigation.

Engineering Consideration	Should be considered at this site	Comments
Trafficability	Y	Clays within the Alluvium, Oadby Till Formation, Blue Anchor Formation and Branscombe Mudstone Formation may 'putty' when wet.
Excavatability	N	
Thickness of superficial deposits greater than 5 m	N	
Greater than 5 m of weathered bedrock	Y	Rockhead, variably weathered to clay or clay matrix with harder lithorelicts, likely to be encountered down to c. 10 m depth.
Variable rockhead	N	
Bedrock geology likely to be chemically/physically altered from original material.	N	
Variable lithology in bedrock geology	Y	Majority of site underlain by bedrock of mudstone, but thin layers of siltstone and sandstone are likely to be present at depth.
Presence of highly fractured zones in the rock mass	N	
Very to extremely strong rock strength	N	
Aggressive sulphate conditions	Y	Possibility of high sulphate content with associated problems for buried concrete.
Running sand conditions at depth	N	

Geotechnical characteristics

The main geotechnical issues related to drilling are the nature and strength of the bedrock geology; the thickness and nature of the superficial deposits and the effective depth to hard rock drilling.

No site investigation reports or boreholes in proximity to the report area were found to have information on the drilling rate.

No site investigation reports or boreholes in proximity to the report area were found to have detailed information on the specific strength of formations. A few boreholes close to the report area were found to have descriptive information on the strength of the artificial, superficial and bedrock formations encountered. Indications of the strength and density of the artificial, superficial and bedrock deposits expected at this site are given in the table below:

BSI 1999. BS5930. *Code of practice for site investigations*. Amendment 1. British Standards Institution, London.

	Strength based on BS5930 (1999)	Typical range of SPT blow N Values	Typical range of UCS Values (MPa)
Made Ground	Variable	N/A	N/A
Alluvium	Very Soft to Stiff / Loose to Dense	4 - 50	<0.04 – 0.30
Oadby Till Formation	Firm to Hard	8 - >30	0.08 – 1.0
Blue Anchor Formation	Firm to Very Weak	8 - >30	0.08 - 5
Cropwell Bishop Formation	Firm to Medium Strong	8 - >30	0.08 - 50

Geotechnical information and datasets

In addition to borehole, shaft and well records held in the BGS National Geoscience Data Centre, some 50 400 Site Investigation reports describing geotechnical data from over 420 000 boreholes provide a geotechnical information source for UK bedrock and superficial deposits. Additional Site Investigation reports (both digital and analogue) are being acquired annually. Drilling information and in situ and laboratory-derived geotechnical parameter data extracted from these reports are held in the Corporate National Geotechnical Properties Database. Currently, some 182 400 geotechnical data 'sample suites' from 67 000 boreholes are held in the database, with approximately 25 000 parameter records from 6000 boreholes being added on average each year.

Where geotechnical information is required for sites not currently entered into the National Geotechnical Properties Database, a search of the original site investigation reports and related boreholes can be undertaken. A small percentage of the borehole and site investigation records are held as commercial-in-confidence for various reasons and cannot be released without the written permission of the originator. If any of the records you need are listed as confidential apply in the normal way. If possible, the BGS Enquiry Service staff will release the data or provide you with the information needed to contact the originator.

For enquiries principally requiring geotechnical related information please contact the Keyworth office.