

**Report prepared for:**

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## Geological Assessment - Standard

This report is aimed at customers or clients carrying out preliminary site assessments, who require a brief indication of the geology and related geological subsidence hazards around the site.

The report, prepared by BGS geologists, is based on analysis of records and maps held in the National Geoscience Data Centre (NGDC), and includes descriptions of rock types, natural subsidence hazards and mining & quarrying hazard if present. It also contains a listing of the key geoscience data sets held in the NGDC for the area around the site.

The report does not, however, consider radon hazard or hydrogeology at the site (these are described in the Detailed Geological Assessment report, available separately).

Note that for some sites, the latest available records may be quite historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

Client's Reference: *RF 14657*  
*P.O. 06033D-PO-06917 REV 00*

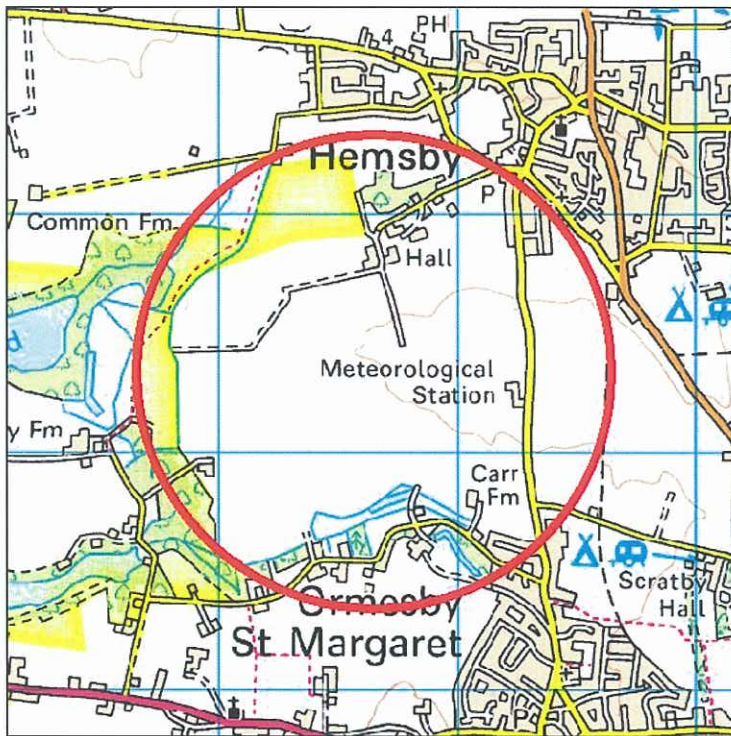
SLP ENERGY			
PROJECT No. <i>06033D</i>			
REF. No. <i>020 404 2</i>			
BFR		MAR	
BSM		PCH	
DED		PSM	✓
DFU		RHA	✓
DLO		RHU	
ITA		RNC	
JGA			
<i>SKE</i>	✓	P/FILE	✓

### Section 1: Location and extent of report area

Area centred at: 648655,316332

Radius of site area: 1000 metres

This report is based on the above location details. However, where the client has submitted a site plan, it is used for the assessment in Sections 2 and 3.



Scale: 1:30000 (1cm = 300m)



SITE LOCATION

**Section 2: Geological Factors for the site**

This table lists some of the principal geological factors that may affect a site, and is based on interpretation of data available to BGS at the time of compilation; additional information may be available in BGS files. The information is designed to act as a checklist and should not be used in place of a detailed site investigation.

Factor	May be significant within site area (Y/N)?	Comments
Shrink-Swell Clay Hazard	Y	May be a potential hazard in Lowestoft Formation diamicton if present
Landslide Hazard	N	
Ground Dissolution Hazard	N	
Compressible Ground Hazard	N	
Collapsible Ground Hazard	N	
Running Sand Hazard	Y	Potential hazard within sands in the Corton Formation
Shallow mining	N	
Artificial ground	Y	May locally be present
Natural land gas	N	

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### Section 3: Description of the Geology of the site

#### Artificial Ground:

Neither our 1:50 000 map nor our 1:10 000 map show any Artificial Ground at any of the 4 sites. However, some artificial ground may be expected, particularly at site 3 adjacent to the Meteorological Station.

#### Superficial Deposits:

All four sites are underlain by Superficial Deposits. These were deposited about 600 000 years ago by ice sheets that once covered the area.

Our maps show (see below) that all four sites are underlain by fine-grained sands of the Corton Formation. The sands are locally chalky. The sands are likely to have a maximum thickness of several metres and overlie Corton Formation diamicton. The diamicton consists of stiff very silty, sandy, brown clay with little or no chalk. The diamicton typically ranges in thickness from about 2 metres up to about 6 metres, but we have no information relating to specific sites. The diamicton may be underlain locally by up to a further few metres of fine-grained sands of the Corton Formation or it may be directly underlain by bedrock. Running sand conditions may be present within the sands of the Corton Formation, especially if a perched water table is present overlying the relatively impermeable Corton diamicton.

Our map (see below) shows that Lowestoft Formation diamicton has been mapped overlying the Corton Formation adjacent to sites 1 and 3. This comprises silty, variably sandy, flinty, chalky, stiff brown to grey clay. It is possible that very thin developments of this deposit may underlie these two sites.

#### Rockhead Depth:

The depth to rockhead (bedrock) is not known with any degree of certainty, but it is estimated to be up to about 10 m below the surface.

#### Bedrock Geology:

Bedrock throughout the area is Crag Group, comprised of fine- to coarse-grained ferruginous sands and fine to coarse flint gravels. Locally the deposit may be shelly. The Crag group is up to 60 m thick in the district and overlies up to 50 m of Palaeogene Thames Group Claystone and siltstone.

#### Additional Geological Considerations:

Running sand may be present within the sands of the Corton Formation.

#### Hydrogeological Information

A hydrogeological assessment can be obtained as part of the Geological Assessment Detailed report, which costs £400 (incl. VAT and delivery). The detailed hydrogeological assessment describes aquifer characteristics, groundwater levels, water table fluctuations, groundwater quality and groundwater vulnerability in the context of the geological assessment.

### Natural Land Gas

Section 2 indicates whether or not there is any potential susceptibility of the report area to surface or near-surface emissions of methane and/or carbon dioxide from natural sources or mining. Where methane and carbon dioxide emissions do occur at the surface most appear to be derived from abandoned shallow coal mines although a number of recorded incidences originate from peat and other natural deposits of organic materials, such as in buried ponds or river channels. It should be noted that the exact extent of potential sources of natural land gas, particularly that of peat and other organic deposits, can be difficult to predict.

An indication of potential for gas emissions does not necessarily indicate that there is a problem. That would depend on (1) the quantity of gases in the source rocks or superficial deposits, (2) whether they have been released and (3) whether there are pathways for transmission and locations for accumulation.

The relatively small number of gas emission incidents from coal mining and natural sources recorded in most areas of the UK suggests that the hazard is relatively minor and of local significance compared, for example, with the extensive problems associated with mining related subsidence or gas problems associated with landfill sites. However, in some parts of the coal fields, such as in parts of Northumberland, a relatively high number of gas emission sites have been identified, so the gas hazard is correspondingly greater. Whereas specific problems with methane and carbon dioxide from natural sources and mining can cause severe and, sometimes, expensive or dangerous problems, most gas emissions from natural sources and mining can usually be dealt with readily if they do arise.

A Residential Property or Non-Residential Property, Commercial or Development Site (maximum of 25 hectares) coal mining search from the Coal Authority ([http://www.ppsearches.co.uk/coal\\_mining\\_searches.htm](http://www.ppsearches.co.uk/coal_mining_searches.htm)) will indicate whether any shafts or adits, which may act as pathways for gas, are located within 20 m of the boundary of the property or site. Where the Coal Authority is aware that a property or site being the subject of a search, has been affected by mine gas, this information will be included in the Coal Mining Search Report.

If the report area is potentially susceptible to surface or near-surface emissions of methane and/or carbon dioxide from natural sources or mining, (1) caution should be exercised in forward planning on the basis that hazards from natural methane and carbon dioxide impose a constraint on development by virtue of public health or safety implications; (2) developers need to be aware that potential problems may be associated with gas emissions; (3) employers at some places of work may have responsibilities under the Health and Safety at Work etc Act 1974 to monitor gas levels; and (4) there may be a need to consult an appropriate specialist or to seek further information through desk studies and/or site investigations.

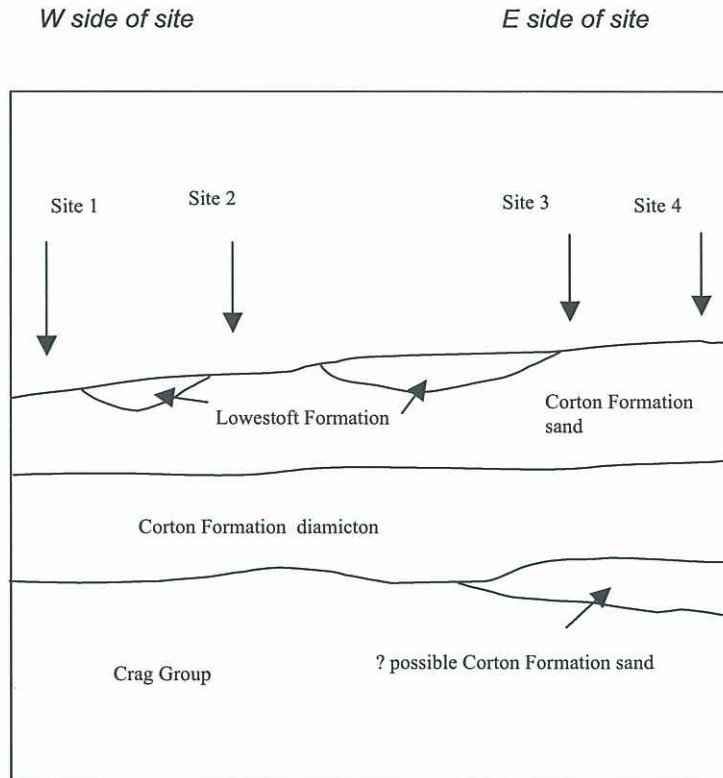
The information in this report should not be used in place of a site investigation. The existence of gas emissions at specific sites can only be established by detailed site investigation. The level of risk from methane or carbon dioxide in a particular building or underground cavity can only be established by monitoring the spaces in which it may accumulate.

### Radon

Two separate reports, for £45 (incl. VAT and delivery) and £220 (incl. VAT & delivery) are available describing the level of Radon Protective Measures required during the construction of new dwellings, or extensions to existing properties, at the site. The first is a lower resolution (1:250,000 or 1:50,000 scale) search generated automatically using the BGS Radon Protective Measures GIS, while the second is a higher resolution (1:50,000 or 1:10,000 scale) search carried out manually by BGS geologists for the site area. The determination for radon protective measures in these reports follows the two stages described in *BR211 Radon: Guidance on protective measures for new dwellings (1999 edition)*.

**Section 4: Schematic Geological Cross-Section of the Site**

Not to scale



This sketch represents an interpretation of the geometrical relationships of the main rock units described in the text. Not to scale.

### Section 5: Geological maps

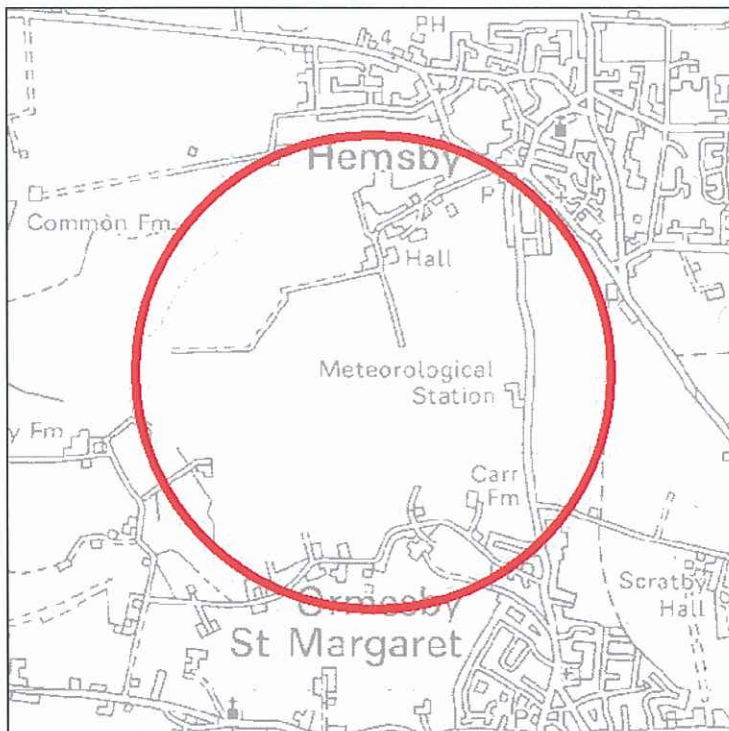
Extracts of geology maps around your site are provided in this section, taken from the BGS Digital Geological Map of Great Britain at the 1:50,000 scale (DiGMapGB-50). The first four maps show separately the four main layers of geology that may be present in an area – **artificial (man-made) deposits**, **landslip deposits**, **superficial deposits** and **bedrock**. The fifth 'combined geology' map shows all four rock layers superimposed on the same map, to show the rocks that occur at the surface just beneath the soil.

More information on DiGMapGB-50 and how the various rock layers are classified can be found on the BGS website ([www.bgs.ac.uk](http://www.bgs.ac.uk)), under the DiGMap and BGS Rock Classification Scheme areas. Further descriptions of the rocks listed in the map keys can also be obtained by searching against the Computer Code on the *BGS Lexicon of named Rock Units*, which is also on the BGS Website at by following the 'GeoData' link. The computer codes are labelled on the maps to try and help in their interpretation (with a dot at the bottom left hand corner of each label). However, please treat this with caution in areas of complex geology, where some of the labels may overlap several geological formations. If in doubt, please contact BGS enquiries.

The geological formations are listed broadly in order of age in the map keys (youngest first) but only to the formation level (a formation is a package of related rocks). Within formations, please be aware that individual members may not be ordered by age.

#### Artificial deposits

These include deposits moved and disturbed by man.



Scale: 1:30000 (1cm = 300m)



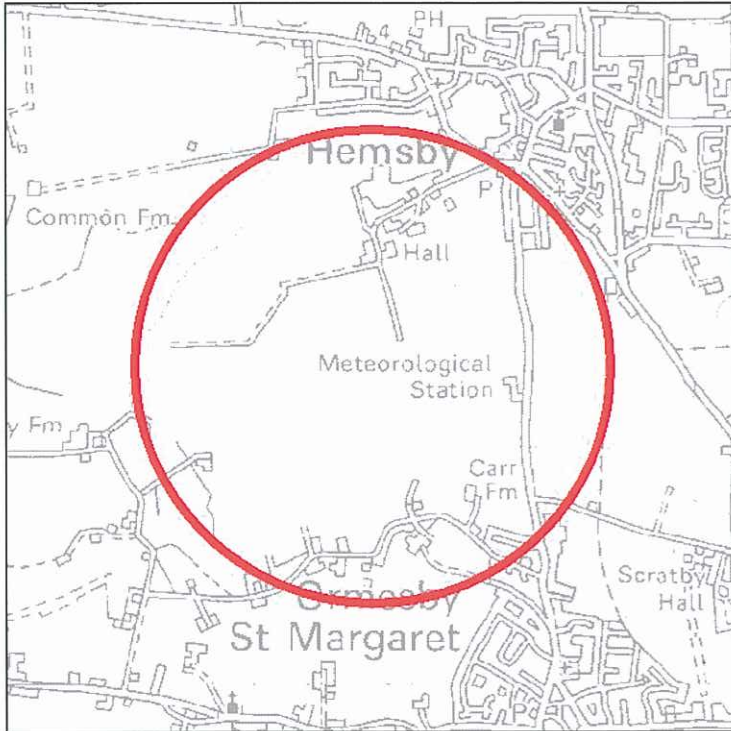
SITE LOCATION

#### Key to Artificial deposits:

No deposits are mapped in the search area

**Landslip deposits**

These include natural deposits formed by sliding and mass-movement of soils and rocks on hill slopes (an alternative term for Landslip deposits is 'Mass Movement Deposits')



Scale: 1:30000 (1cm = 300m)



SITE LOCATION

**Key to Landslip deposits:**

No deposits are mapped in the search area