

Example Report BGS Wallingford

Water Borehole – less than 20m³/day:

This report is designed for users proposing to drill a water borehole for the abstraction of water and/or the injection of water into an aquifer. It contains an evaluation of the geological formations beneath the site in terms of aquifer potential including groundwater yields, water levels and groundwater quality. It also contains recommendations on the design of the proposed water borehole and information on the legal requirements.

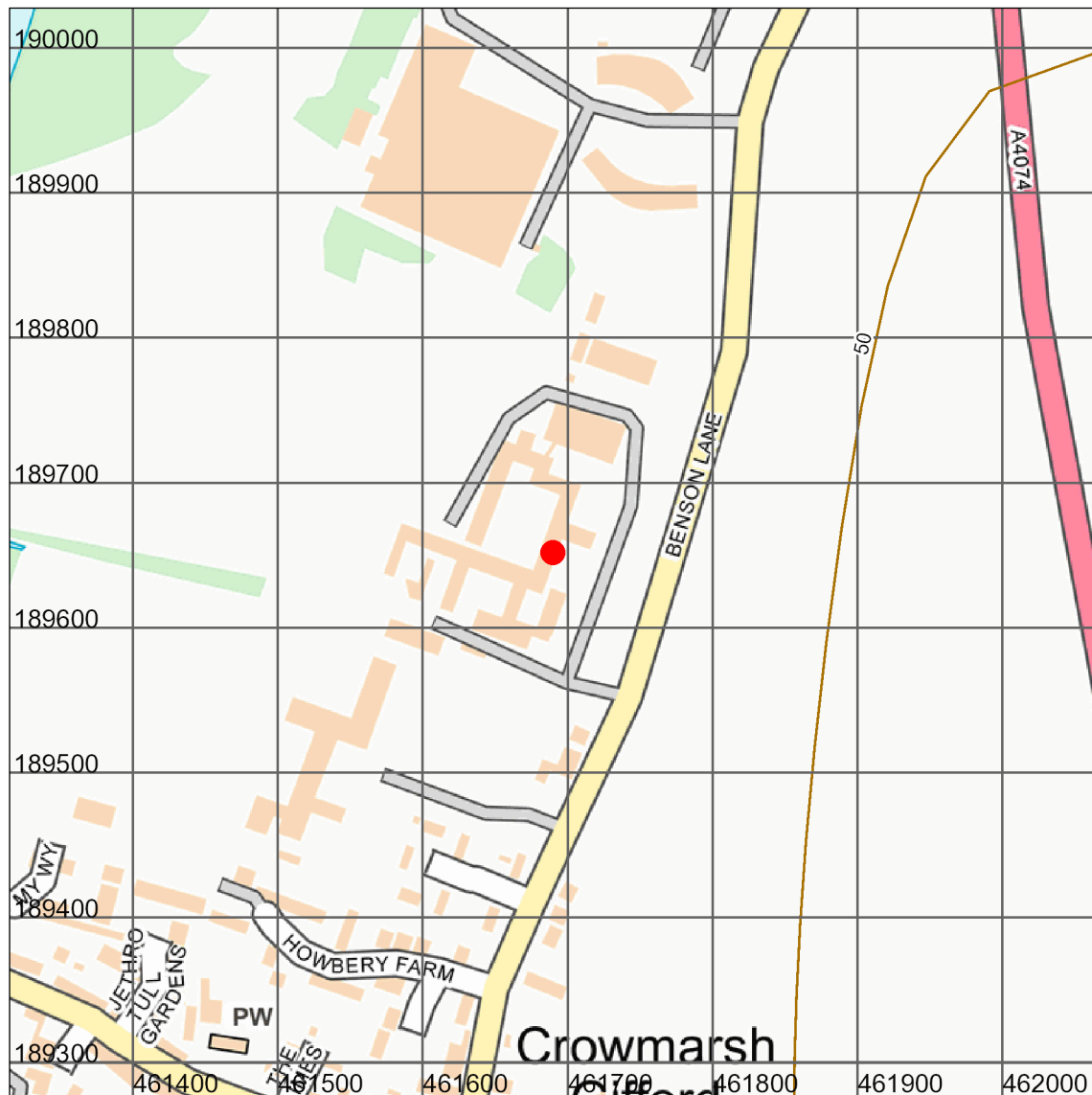
Modules:

Geological Map Extracts
Borehole Prognosis (point)
Groundwater Abstraction
Geoscience Data List

Report Id: *GR_999999/1*

Client reference:

Search location



Contains OS data © Crown Copyright and database right 2023. OS OpenMap Local: Scale: 1:5 000 (1cm = 50 m)

Search location indicated in red

Site Address:

British Geological Survey
Wallingford

Point centred at: 461690,189652

Geological Map Extracts 1:10,000 Scale

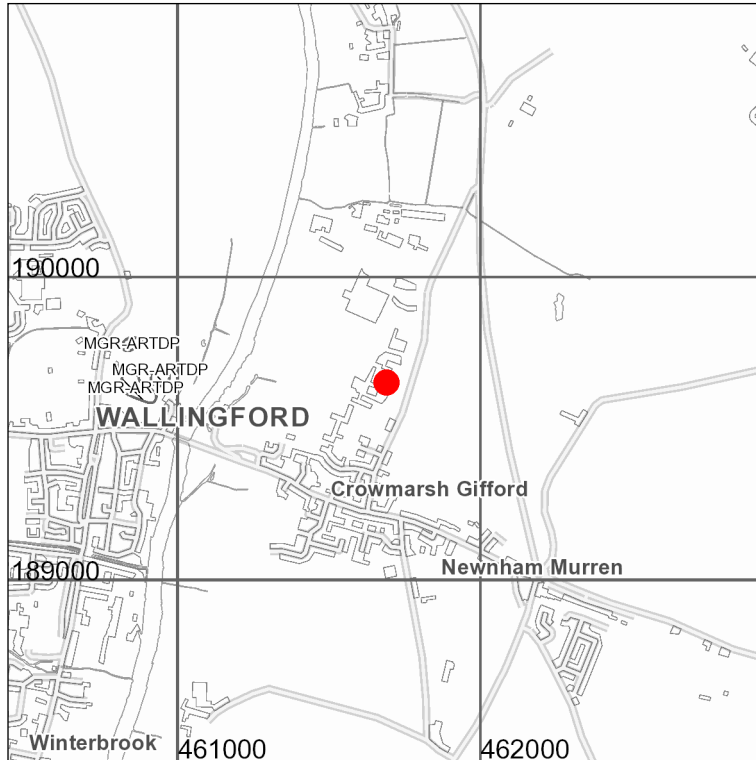
This part of the report contains extracts of geological maps taken from the 1:10 000 scale BGS Digital Geological Map of Great Britain (BGS Geology 10k). The geological information in BGS Geology is divided into four themes: artificial ground, landslide deposits, superficial deposits and bedrock, shown here in separate maps. The fifth 'combined geology' map superimposes all four of these themes, to show the uppermost geological formations.

More information about BGS Geology 10k is available here http://www.bgs.ac.uk/products/digitalmaps/DiGMapGB_10.html and information on the BGS geological classification schemes here <http://www.bgs.ac.uk/bgsrscs/>. The maps are labelled with two-part computer codes that indicate the name of the geological unit and its composition. Descriptions of the units listed in the map keys may be available in the BGS Lexicon of Named Rock Units (<http://www.bgs.ac.uk/lexicon/>). If available, these descriptions can be found by searching against the first part of the computer code used on the maps. Please consult the legend and the codes on the map in areas of complex geology. If in doubt, please contact BGS Enquiries for clarification.

In the map legends the geological units are listed in order of their age, as defined in the BGS Lexicon, with the youngest first. However, where units are of the same defined age they are listed alphabetically and this may differ from the actual geological sequence.

Artificial ground

This is ground at or near the surface that has been modified by man. It includes ground that has been deposited (Made Ground) or excavated (Worked Ground), or some combination of these: Landscaped Ground or Disturbed Ground.




Contains OS data © Crown Copyright and database right 2023

Scale: 1:25 000 (1cm = 250 m)

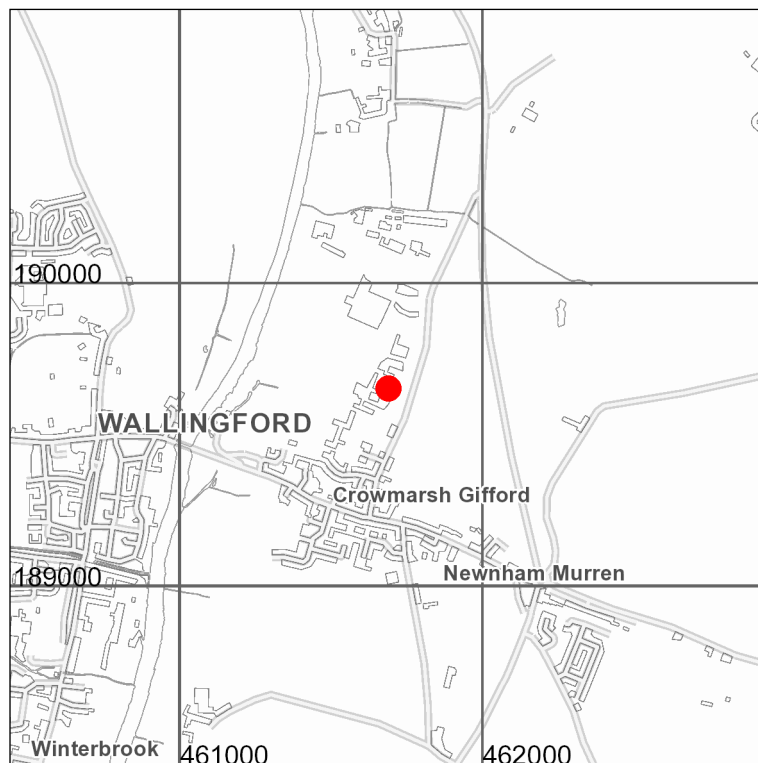
Search area indicated in red

Key to Artificial ground:

| Map colour | Computer Code | Name of geological unit | Composition |
|---|---------------|-------------------------|--------------------|
|  | MGR-ARTDP | MADE GROUND (UNDIVIDED) | ARTIFICIAL DEPOSIT |

Landslide deposits

These are deposits formed by localised mass-movement of soils and rocks on slopes under the action of gravity. Landslides may occur within the bedrock, superficial deposits or artificial ground; and the landslide deposits may themselves be artificially modified.



Contains OS data © Crown Copyright and database right 2023

Scale: 1:25 000 (1cm = 250 m)

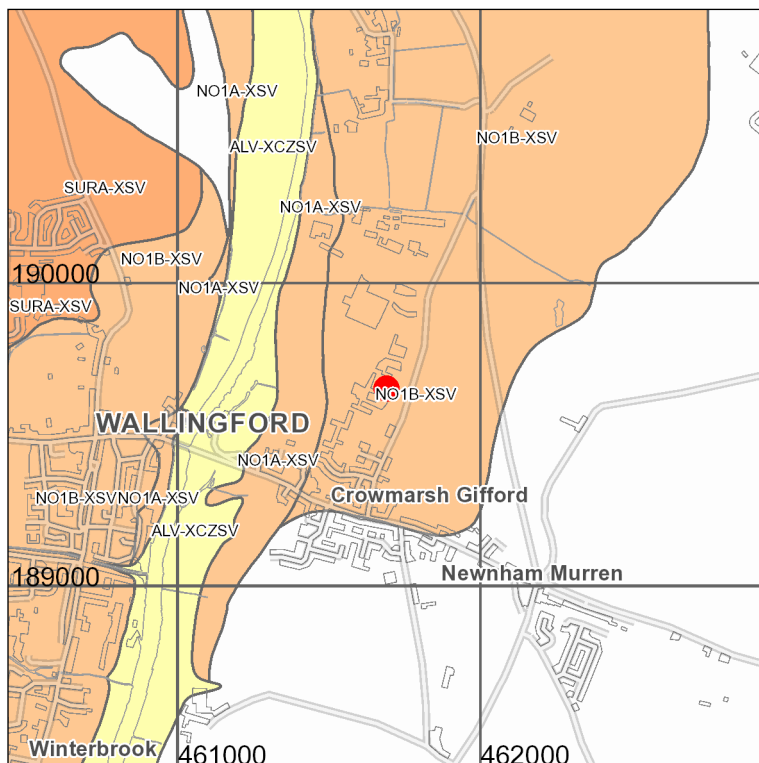
Search area indicated in red

Key to Landslide deposits:

No deposits found in the search area

Superficial deposits

These are relatively young geological deposits, formerly known as ‘Drift’, which lie on the bedrock in many areas. They include deposits such as unconsolidated sands and gravels formed by rivers, and clayey tills formed by glacial action. They may be overlain by landslide deposits or by artificial deposits, or both.







Contains OS data © Crown Copyright and database right 2023

Scale: 1:25 000 (1cm = 250 m)

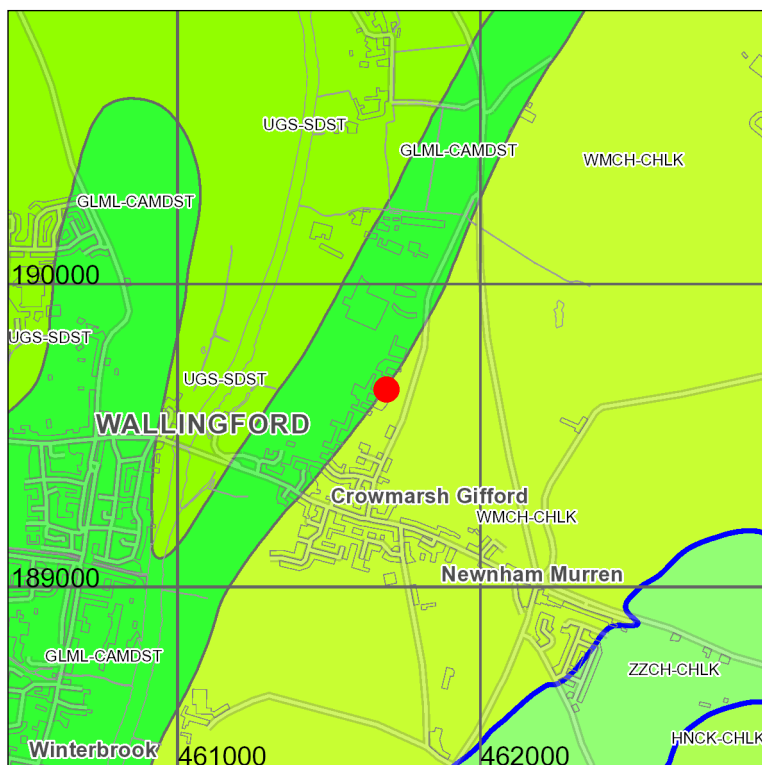
Search area indicated in red

Key to Superficial deposits:



| Map colour | Computer Code | Name of geological unit | Composition |
|---|---------------|---|-----------------------------|
|  | ALV-XCZSV | ALLUVIUM | CLAY, SILT, SAND AND GRAVEL |
|  | SURA-XSV | SUMMERTOWN-RADLEY SAND AND GRAVEL MEMBER | SAND AND GRAVEL |
|  | NO1A-XSV | NORTHMOOR SAND AND GRAVEL MEMBER, LOWER FACET | SAND AND GRAVEL |
|  | NO1B-XSV | NORTHMOOR SAND AND GRAVEL MEMBER, UPPER FACET | SAND AND GRAVEL |

Bedrock

Bedrock forms the ground underlying the whole of an area, commonly overlain by superficial deposits, landslide deposits or artificial deposits, in any combination. The bedrock formations were formerly known as the 'Solid Geology'.








Search area indicated in red

-  Fault
-  Coal, ironstone or mineral vein

Note: Faults are shown for illustration and to aid interpretation of the map. Because these maps are generalised from more detailed versions not all such features are shown and their absence on the map face does not necessarily mean that none are present. Coals, ironstone beds and mineral veins occur only in certain rock types and regions of the UK; if present here, they will be described under 'bedrock' below.

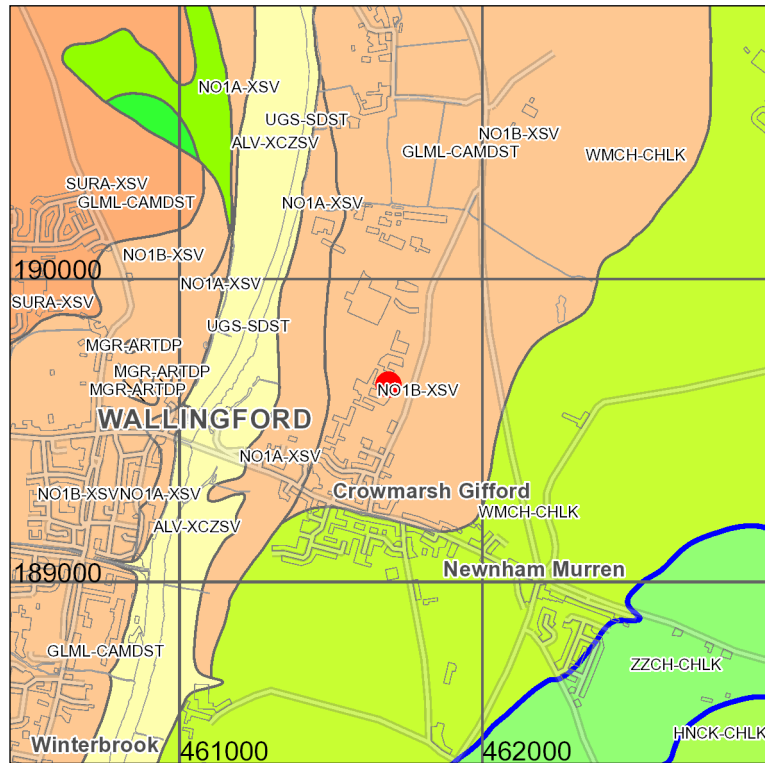
Contains OS data © Crown Copyright and database right 2023
Scale: 1:25 000 (1cm = 250 m)

Key to Bedrock geology:

| Map colour | Computer Code | Name of geological unit | Rock type |
|---|---------------|---|---------------------|
|  | HNCK-CHLK | HOLYWELL NODULAR CHALK FORMATION AND NEW PIT CHALK FORMATION (UNDIFFERENTIATED) | CHALK |
|  | ZZCH-CHLK | ZIG ZAG CHALK FORMATION | CHALK |
|  | WMCH-CHLK | WEST MELBURY MARLY CHALK FORMATION | CHALK |
|  | GLML-CAMDST | GLAUCONITIC MARL MEMBER | CALCAREOUS MUDSTONE |
|  | UGS-SDST | UPPER GREENSAND FORMATION | SANDSTONE |

Combined 'Surface Geology' Map

This map shows all the geological themes from the previous four maps overlaid in order of age.



Contains OS data © Crown Copyright and database right 2023
Scale: 1:25 000 (1cm = 250 m)

Search area indicated in red

Please see the Keys to the Artificial, Landslide, Superficial and Bedrock geology maps.



Borehole Prognosis

This module provides an evaluation of the expected geological sequence beneath a site to a depth appropriate for the specified use. This interpretation is based on the information available in the surrounding area. Due to natural geological variation the conditions encountered on drilling may differ. This module does not cover the possibility of artesian conditions or gas being encountered. (Information on artesian conditions is included in the 'Groundwater abstraction' and 'Hydrogeology – non abstraction' modules).

Setting:

The site lies at an elevation of about 48 m above Ordnance Datum (OD) on the edge of the village of Crowmarsh Gifford. The proposed borehole site lies about 450 m east of the River Thames that flows approximately north to south at an elevation of about 44 m above OD. There are small drainage ditches in places on the nearby flood plain, and also a longer stream flowing from east to west, about 500 m north of the site

Geology

It is anticipated that the following succession of strata will be encountered in an 150 m deep borehole below the site:

| Unit | Typical composition | Potential for difficult ground i.e. possible running sands, possible undermining or possible dissolution | Thickness in metres | Depth in metres to the base of the unit |
|--|---|--|---------------------|---|
| Artificial ground | | | | |
| Made Ground | No Made Ground has been identified up to and including the most recent map compilation. However, owing to the development history of the site, it is likely that some Made Ground of limited thickness and variable composition (e.g. construction waste) may be present. | | Up to 1 | c. 1 |
| Superficial deposits | | | | |
| Northmoor Sand and Gravel Member (upper facet) | Sand and gravel | Possible running sands | Between 3 and 5 | c. 5 |
| Bedrock (below rockhead) | | | | |
| West Melbury Marly Chalk Formation | Grey marly (clay-rich) chalk with thin limestone beds | Possible dissolution | Up to 2 | c. 6 |
| Glaucconitic Marl Member | Pale brownish-grey clay-rich chalk marl with grains of glauconite; commonly contains phosphatic pebbles | | Up to 2 | c. 7 |

| | | | | |
|--|---|------------------------|----------------------|----------|
| Upper Greensand Formation | Dark green glauconitic sand and sandstone with a clay matrix underlain by whitish, micaceous, calcareous siltstone and fine-grained sandstone with some chert and siliceous sandstone ('malmstone') | Possible running sands | About 15 | c. 22 |
| Gault Formation | Grey, silty mudstone; silty towards top, gravelly at base | | About 60 | c. 82 |
| Lower Greensand Group | Coarse-grained, ferruginous, quartzose sand with small quartzite pebbles; locally passes into sandy clay | Possible running sands | 5 to 8 | c. 88.5 |
| Portland Formation | Sand and limestone | Possible running sands | Up to 2 (if present) | c. 89.5 |
| Kimmeridge Clay Formation | Silty mudstones, some sandy | | About 35 | c.124.5 |
| Corallian Group | Sand, sandstone, limestone and mudstone | Possible running sands | About 25 | c. 149.5 |
| West Walton and Oxford Clay Formations | Mudstone | | Over 90 | to base |

The borehole prognosis presented in the table above is the best estimate based upon available borehole information and regional knowledge. The paucity of deeper boreholes adjacent to the search site mean that much of the prognosis is estimated based upon regional knowledge and therefore carries a degree of uncertainty. Caution should therefore be used when using this prognosis. Additional uncertainty relating to the thickness for specific units where some regional variability is known, is indicated by qualifiers used within the table including 'up to' and 'about' or 'if present'. Where uncertainty is indicated, the 'Depth in Metres to the base of the unit' is calculated based upon the median thickness within the uncertainty range.

The thickness of the Northmoor Sand and Gravel Member beneath the search site is not known with certainty because there are no boreholes or trial pits at or adjacent to the site that penetrate the entire thickness of the natural deposits. Instead, a thickness of between 3 and 5 m is estimated based upon commonly observed thicknesses (not total thickness) in adjacent boreholes (e.g. SU68NW4) and

regional understanding.

Similarly, there is some uncertainty relating to the thickness of specific bedrock units. In particular, the Portland Formation may be either thin or entirely absent from the succession.

The blue line in this table indicates 'rockhead', which is the base of superficial deposits. This is the 'geological rockhead', as distinct from the 'engineering rockhead', which is the base of 'engineering soil' (in the sense of BS5930:1999).

For further definitions of stratigraphic terms that appear in the table above, on our maps and in our publications please see 'The BGS Lexicon' www.bgs.ac.uk/lexicon

Information on the distribution of contaminated ground is not held by BGS but by the relevant Local Authority.

Potential drilling hazards considered at your site

This section of the report only describes geological hazards that might be directly encountered by drilling at this site.

Running sand conditions hazard

Running sand conditions occur when loosely-packed sand moves as a result of water flowing through the spaces between the sand grains. The pressure of the flowing water reduces the contact between the grains and they are carried along by the flow. Excavations or boreholes in water-saturated sand are likely to encounter running conditions: the sand will tend to flow into the void. This can lead to subsidence of the surrounding ground.

Ground dissolution hazard

Some rocks are soluble in water and can be progressively removed by the flow of water through the ground. This process tends to create cavities, potentially leading to the collapse of overlying materials and possibly subsidence at the surface.

Groundwater Abstraction

This module is designed for users proposing to drill a water borehole for the abstraction of groundwater supplies and/or to inject water into an aquifer.

It contains an evaluation of the geological formations beneath the site in terms of aquifer potential including groundwater yields, water levels and groundwater quality. It also contains recommendations on the design of the proposed water borehole and information on the legal requirements.

Proposed yield is up to 20 m³/d (cubic metres per day)
Proposed use is for a smallholding including a potable supply

Groundwater Potential

A yield of 20 m³/d is equivalent to 0.56 l/s (2 m³/hr) pumping for 10 hours/day.

The Northmoor Sand and Gravel Member is likely to be partially saturated, with a rest water level about 2 m below ground surface (about 46 m above OD), indicating that a saturated thickness of between 2 to 4 m is present below the site. The superficial deposits should be capable of supplying a reasonable yield as the base of the deposit is likely to lie below river level and hence it will probably be in hydraulic continuity with the River Thames. A borehole adjacent to the river at Howbery Park [SU69SW284; SU 6135 9007] was 5.2 m deep and assumed to abstract from the superficial deposits, it yielded up to 18.9 l/s (68 m³/hr) for 2.1 m of drawdown after an unknown period of pumping in the 1960s. Water in these permeable deposits will be vulnerable to pollution from the ground surface.

The West Melbury Marly Chalk Formation and underlying Glauconitic Marl Member are both thin at this site and unlikely to provide any significant supply of water. Several of the boreholes in the area obtain their supplies from a mixture of the superficial sand and gravel deposits and underlying Upper Greensand Formation. The record for the production borehole at Hydraulics Research at Howbery Park [SU69SW297; SU 614 900] appears to indicate that the borehole had plain casing installed to 6 m, there was no casing between 6 m and 9 m through 2 m of clay and 1 m of gravels and sands (superficial deposits) which is unlikely, and then below 9 m, a further metre of gravels and sands and the Upper Greensand both had slotted casing installed against them. Another recent borehole [SU68NW328; SU 6166 8986] at Howbery Park had slotted casing installed between depths of 5 and 23 m, against the basal 4 m of the superficial sands and gravels and the whole of the Upper Greensand. The borehole was drilled at 500 mm diameter and fitted with 330 mm diameter slotted casing and a sand pack. The blowout yield was 12.6 l/s.

The Glauconitic Marl may be of low permeability and this could hydraulically separate groundwater in the Northmoor Sand and Gravel Member from that in the Upper Greensand. One of the existing boreholes on the site [SU68NW302; SU 6154 8964] struck water in the superficial deposits at a depth of 2.8 m and also in the Upper Greensand at a depth of 6 m. It was plain cased to a depth of 11 m and is currently generally artesian, implying that at this site, the superficial deposits are not in hydraulic continuity with the Upper Greensand: the borehole recorded a 1.8 m thick clayey, sandy and glauconitic silt between 4.4 m and 6.2 m below ground level (presumably Glauconitic Marl Member).

Boreholes at Howbery Park have produced yields from the Upper Greensand of up to 15 l/s (54 m³/hr) for an unknown drawdown, and 11.8 l/s (42.5 m³/hr) for 12.5 m of drawdown during a 24 hour test from 20.3 m of saturated aquifer [SU69SW31; SU 6165 9023], and 13.6 l/s (49 m³/hr) for 14.2 m of drawdown after 7 days pumping from 16 m of saturated aquifer [SU69SW286; SU 6167 9015].

Water from two 15-16 m deep boreholes into the Upper Greensand at Wallingford Pumping Station [SU68NW25; SU 6023 8951 and SU68NW259; SU 6028 8947] had a total hardness of 370 mg/l and 513 mg/l (as CaCO₃), respectively. Water from a 14 m deep borehole into Upper Greensand at Benson [SU69SW32; SU 635 921] had a pH of 6.9, a total dissolved solids content of 363 mg/l, total hardness of 274 mg/l (as CaCO₃), permanent (non-carbonate) hardness of 52 mg/l (as CaCO₃), chloride ion concentration of 21 mg/l, nitrate of 4.4 mg/l (as NO₃), and total iron 500 µg/l, of which none was in solution. However, three analyses from boreholes at Fairmile Hospital, Wallingford [SU58NE24; SU 5980 8604 and SU58NE26; SU 5975 8607], undertaken between 1948 and 1952, reported no iron.

Water in the Lower Greensand is confined by the overlying Gault and is likely to be brackish. The water level rose to 50 m above OD (pre 1910) in a borehole at Warborough [SU59SE24; SU 5975 9415] and overflowed (water level more than 48 m above OD) in 1882 at Shillingford [SU59SE21; SU 5956 9293].

The borehole at Warborough produced brackish groundwater with a total dissolved solids content of 7780 mg/l and that at Shillingford had a total dissolved solids content of 1396 mg/l, in both cases over half of this was attributable to sodium chloride with concentrations in excess of the recommended drinking water limits of 200 mg/l and 250 mg/l, for sodium and chloride, respectively; so unsuitable for potable use without treatment. Wells at Newington [SU62NW23; SU 6101 9640 and SU62NW28; SU 6100 9684] also encountered poor quality water in the Lower Greensand (or Portland Formation).

The water at the base of the Corallian aquifer at a depth of 114 m at Shillingford [SU59SE21; SU 5956 9293] was reported to be 'palatable' when drilled in 1885, but there is no analysis to ascertain whether it would be considered suitable for potable

use nowadays; the yield was described as 'not sufficient'. However, a borehole at Stadhampton [SU69NW30; SU 6019 9854] overflowed with brackish water from the Corallian, yielding 1.4 l/s (5 m³/hr) for a drawdown to 23 m below the surface after 2 days pumping. Another borehole nearby [SU69NW29; SU 6024 9853] overflowed at 0.2 l/s (0.7 m³/hr) but again was not used due to the high salinity; this water had a total hardness of 143 mg/l (as CaCO₃), all temporary (carbonate).

Groundwater Vulnerability

The superficial Northmoor Sand and Gravel Member deposits are highly permeable and will be vulnerable to contamination occurring at the ground surface. The shallow water table means that any contaminants are likely to be transported rapidly through the unsaturated zone of the aquifer to the water table.

Groundwater in the Upper Greensand could be protected from surface pollution by the presence of the overlying, less permeable, Glauconitic Marl; however this is thin and has been breached locally by boreholes. Where the water level is artesian, surface pollution is unlikely to enter this aquifer.

Conclusion

It is likely that a yield of 20 m³/d would be available from a shallow borehole at this site. It is possible that this could be obtained from the superficial deposits (Northmoor Sand and Gravel Member), but due to the shallow water table and their high permeability and hence vulnerability to pollution from the ground surface, combined with a requirement for a potable supply, it may be preferable to case these deposits out and obtain the water from the underlying Upper Greensand. This will require a borehole, of 100 mm completed diameter, to a depth of about 30 m. The water should be of reasonable quality although iron may be present at elevated concentrations; this can be removed by aeration. A correctly designed and emplaced sand screen and filter pack will be required against the contributing horizons with all the formations above the Upper Greensand lined out.

According to the geological maps, the geology, and therefore the borehole potential, does not vary significantly across the site. The chances of drilling a successful borehole are therefore similar across the site.

This borehole prognosis is primarily based on information held in the National Well Record Archive; this contains records of boreholes submitted at the time of drilling. Therefore, the information held is often historical in nature; the Environment Agency may hold more up-to-date information. Often the water quality data held is also historical in nature and will not have been analysed for trace elements that, if present, could be in concentrations greater than the current maximum admissible amounts for a potable supply.

Borehole Location, Construction, Testing and Legal Obligations

Location:

It is good practice to site a borehole as far away as possible, and preferably upslope, from any potential sources of pollution, including septic or fuel tanks, soakaways, slurry pits and areas of intensive grazing. A minimum distance of 50 m between a water borehole and any potentially polluting activity is recommended.

Construction:

For boreholes abstracting from the superficial deposits, the top few metres should be cased out (the depth of plain casing depending on the aquifer thickness at the specific site). A borehole abstracting water from a bedrock aquifer should be sealed off through the superficial deposits by installing a length of plain casing to at least 5 m below the upper surface of the bedrock. The casing should be grouted effectively to form a sanitary seal in order to minimise the risk of poor quality surface or shallow groundwater entering the borehole.

Testing:

Any new borehole should be subject to a pumping test to determine the yield and drawdown of the water level. For a borehole designed for a single domestic property, it is recommended that a pumping test of at least 3 hours duration, or at least as long as the anticipated daily pumping period, is carried out, during which both the pumping rate and water level are monitored. For domestic supplies for more than one property, a longer pumping test of at least 6 to 12 hours is more appropriate. For larger supplies the Environment Agency are likely to require a test of several days duration, as well as the monitoring of nearby water sources before, during and after test pumping.

Water quality:

It is recommended that a water sample, taken during the final stages of the pumping test, is sent for full analysis to a reputable laboratory. They, or if a potable private supply is envisaged the Environmental Health Officer of the local council, should be able to advise on the range of analyses to be undertaken, which would normally include pathogenic indicator bacteria, iron, manganese and nitrate. An adequate and well-maintained disinfection treatment system would be considered advisable for any supply intended for potable use.

Legal requirements:

While BGS may assess the groundwater potential at this site, the prerogative of granting a licence rests with the Environment Agency, West Thames area. Currently all sources abstracting 20 m³/d or more require an abstraction licence. A 'Consent to Investigate Groundwater' must be obtained from the Environment Agency prior to a licensable borehole being drilled; this consent permits drilling and pump testing. If a borehole is drilled to more than 15 m depth there is a statutory requirement (Water Resources Act, 1991) for the driller to supply full information to the Wallingford office of the BGS for inclusion in the National Well Record Archive. A form for supplying the required information is enclosed.

Maximum admissible concentrations and values for selected parameters in drinking water under the Private Water Supply (England) Regulations 2016 and Private Water Supply (Wales) Regulations 2017

| Microbiological parameters | Concentration or value |
|---|--|
| Enterococci (number/100 ml) | 0 |
| <i>Escherichia coli</i> (<i>E. coli</i>) (number/100 ml) | 0 |
| <i>Pseudomonas aeruginosa</i> ⁽ⁱ⁾ | 0 |
| Colony count @ 22°C ⁽ⁱⁱ⁾ | 100 |
| Chemical parameters | Concentration or value |
| Arsenic (µg/l) | 10 |
| Benzene (µg/l) | 1 |
| Boron (µg/l) | 1 |
| Bromate (µg/l) | 10 |
| Chromium (µg/l) | 50 |
| Copper (mg/l) | 2 |
| Fluoride (mg/l) | 1.5 |
| Lead ((µg/l) | 10 |
| Mercury (µg/l) | 1 |
| Nickel (µg/l) | 20 |
| Nitrate (as mg/l NO ₃) | 50 |
| Nitrite (as mg/l NO ₂) ⁽ⁱⁱⁱ⁾ | 0.5 |
| Pesticides-individual (µg/l) ^(iv) | 0.1 |
| Pesticides-total (µg/l) | 0.5 |
| Polycyclic aromatic hydrocarbons (µg/l) | 0.1 |
| Selenium (µg/l) | 10 |
| Trichloroethene and tetrachloroethene (perchloroethylene) (µg/l) | 10 |
| Total trihalomethanes (µg/l) | 100 |
| National requirements | Concentration or value |
| Aluminium (µg/l) | 200 |
| Colour (mg/l Pt/Co) | 20 |
| Iron (µg/l) | 200 |
| Manganese (µg/l) | 50 |
| Odour and taste | Acceptable to consumers and no abnormal change |
| Sodium (mg/l) | 200 |
| Tetrachloromethane ((µg/l) | 3 |
| Turbidity (NTU) ^(v) | 4 |
| Indicator parameters | |
| Ammonium (as mg/l NH ₄) | 0.5 |
| Chloride (mg/l) | 250 |
| <i>Clostridium perfringens</i> (including spores) (number/100 ml) | 0 |
| Coliform bacteria (number/100 ml) ^(vi) | 0 |
| Colony count @ 22°C | No abnormal change |
| Electrical conductivity (SEC) @ 20°C (µS/cm) | 2500 |
| pH ^(vii) | ≥6.5 and ≤9.5 |
| Sulphate (mg/l) | 250 |
| Total organic carbon (TOC) | No abnormal change |
| Radioactive substances | Concentration or value |
| Indicative dose (mSv) | 0.1 |
| Radon (Bq/l) | 100 |
| Tritium (Bq/l) | 100 |

Notes

- (i) in bottled water
- (ii) in bottled water, otherwise indicator parameter is no abnormal change
- (iii) 0.1 mg/l at treatment works
- (iv) except aldrin, dieldrin, heptachlor and heptachlor epoxide where the limit is 0.03 µg/l
- (v) where influenced by surface water, 1 NTU indicator value
- (vi) 0/250 ml for bottled water
- (vii) not aggressive, ≥ 4.5 and ≤ 9.5 for bottles and containers

Geoscience Data List

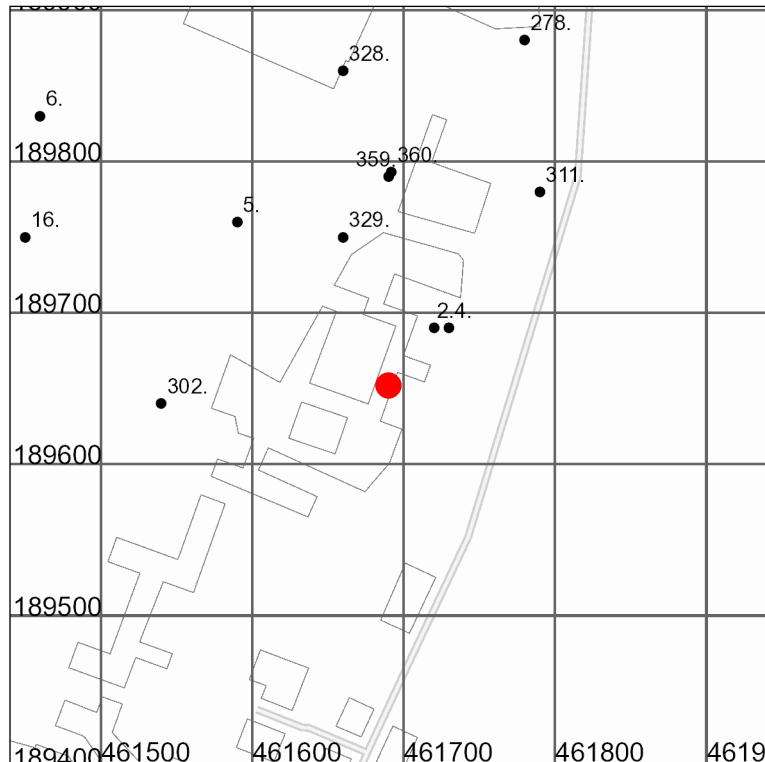
List of available geological data

This part of the report lists the principal data sets held in the National Geoscience Records Centre that are relevant to your enquiry and explains how to obtain copies of the records. Users can make their own index searches using the BGS web page (go to 'Online shops' at www.bgs.ac.uk). This will give access to the BGS Bookshop, Publications catalogue, GeoRecords (borehole browser) and GeoReports.

For current pricing see these internet pages or contact us using the list found at the back of this report.

Note that this report contains selective datasets and is not a definitive listing of all data held in BGS.

Borehole location map



Contains OS data © Crown Copyright and database right 2023
Scale: 1:5 000 (1cm = 50 m)

Borehole records

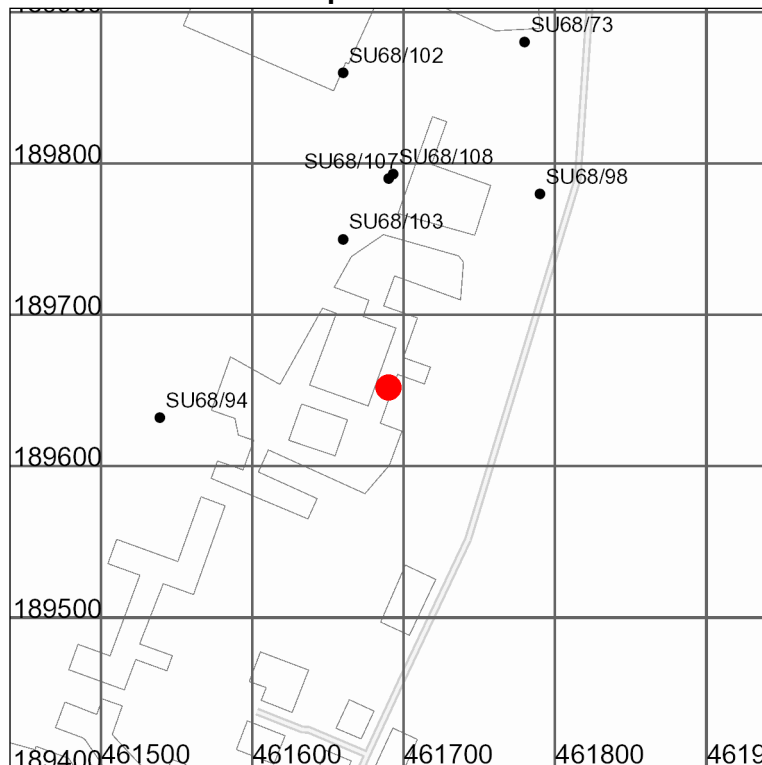
Number of records in map area: 12

In the following table a blank 'Length' field indicates that the borehole is confidential or that no depth has been recorded digitally.

Enquiry staff may be able to provide you with contact details for the originator if you wish to seek release of confidential information.

| Borehole registered no | Grid reference | Borehole name | Length (m) |
|------------------------|----------------|---|------------|
| SU68NW16 | SU 61450 89750 | HOWBERRY PARK CROWMARSH | 4 |
| SU68NW2 | SU 61720 89690 | HOWBERRY PARK BH6 BENSON OXON | 8.83 |
| SU68NW278 | SU 61780 89880 | HYDRAULICS RESEARCH STATION | 2.59 |
| SU68NW302 | SU 61540 89640 | WALLINGFORD TEST BORE, MACLEAN BUILDING | 53 |
| SU68NW311 | SU 61790 89780 | HR WALLINGFORD, HOWBERRY PARK OBH | 30 |
| SU68NW328 | SU 61660 89860 | H R WALLINGFORD, HOWBERRY PARK | 25 |
| SU68NW329 | SU 61660 89750 | MACLEAN BUILDING, CROWMARSH GIFFORD | 6 |
| SU68NW359 | SU 61690 89790 | CEH WALLINGFORD WAL84 | 5 |
| SU68NW360 | SU 61692 89793 | CEH WALLINGFORD WAL85 | 4.8 |
| SU68NW4 | SU 61730 89690 | HOWBERRY PARK TH4 BENSON OXON | 3.04 |
| SU68NW5 | SU 61590 89760 | HOWBERRY PARK TH5 BENSON OXON | 2.43 |
| SU68NW6 | SU 61460 89830 | HOWBERRY PARK TH6 BENSON OXON | 4.26 |

Water well location map



Contains OS data © Crown Copyright and database right 2023
Scale: 1:5 000 (1cm = 50 m)

Water Well records

Number of records in map area: 7

All of these records are registered in the main Borehole Records collections (see Borehole Records Table and map above), but please note that some may be duplicate or part duplicate copies. This map shows records of water wells and boreholes in the National Well Record Archive held at Wallingford (WL) or Murchison House (MH). Each record has a Well Registration number which should be quoted when applying for copies.

Additional index information may be held for the Water Well Records as shown below, indicating the information that can be found on the well record itself. If fields are blank, then the well record has not been examined and its contents are unknown. A 'Yes' or a 'No' indicates that the well record has been examined and the information indicated is, or is not, present. This information should help you when requesting copies of records.

Water Well records

| Well Reg No. | BH Reg No. | Name | Easting | Northing | Depth (m) | Date | Aquifer | G | C | W | Ch |
|--------------|--------------|---|---------|----------|-----------|------|--|-----|-----|-----|----|
| SU68/73 | SU68NW278/BJ | HYDRAULICS RESEARCH STATION | 461780 | 189880 | 2.6 | | SUPERFICIAL DEPOSITS | No | Yes | Yes | No |
| SU68/94 | SU68NW302/BJ | INSTITUTE OF HYDROLOGY, CROWMARSH GIFFORD | 461539 | 189632 | 53 | 1979 | UPPER GREENSAND FORMATION | Yes | Yes | Yes | No |
| SU68/98 | SU68NW311/BJ | H R WALLINGFORD, HOWBERY PARK OBH | 461790 | 189780 | 30 | 2004 | UPPER GREENSAND FORMATION | Yes | Yes | Yes | No |
| SU68/102 | SU68NW328/BJ | HOWBERRY PARK, WALLINGFORD | 461660 | 189860 | 25 | 2008 | SUPERFICIAL DEPOSITS and UPPER GREENSAND FORMATION | Yes | Yes | Yes | No |
| SU68/103 | SU68NW329/BJ | MACLEAN BUILDING, CROWMARSH GIFFORD | 461660 | 189750 | 6 | | NOT ENTERED | No | Yes | Yes | No |
| SU68/107 | SU68NW359/BJ | CEH WALLINGFORD WAL84 | 461690 | 189790 | 5 | 2011 | SUPERFICIAL DEPOSITS | Yes | Yes | Yes | No |
| SU68/108 | SU68NW360/BJ | CEH WALLINGFORD WAL85 | 461693 | 189793 | 4.8 | 2011 | SUPERFICIAL DEPOSITS | Yes | Yes | Yes | No |

KEY:

Aquifer = The principal aquifer recorded in the borehole

G = Geological Information present on the log

C = Borehole construction information present on the log

W = Water level or yield information present on the log

Ch = Water chemistry information present on the log

Boreholes with water level readings

Number of records in map area: 1

| Reference | Easting | Northing | Location | Start_date | End_date | Readings |
|-----------|---------|----------|--------------------------------|------------|----------|----------|
| SU68/73 | 461780 | 189880 | HYDRAULICS RESEARCH STATION | 1960 | 1971 | 15 |

Locations with aquifer properties

Number of records in map area: 0

BGS holds no locations with aquifer properties for the selected area

Site investigation reports

Number of records in search area: 4

Additional laboratory and test data may be available in these reports, subject to any copyright and confidentiality conditions. The grid references used are based on an un-refined rectangle and therefore may not be applicable to a specific site. Borehole records in these reports will be individually referenced within the borehole records collection, described above.

| Number | Site investigation title |
|--------|--|
| 13340 | WHITE CROSS FARM, WALLINGFORD |
| 36074 | PRIORY MEADOWS CROWMARSH |
| 39056 | HOWBERRY FARM CROWMARSH |
| 54083 | STATION ROAD INDUSTRIAL ESTATE WALLINGFORD |

National Grid geological maps (1:10 000 and 1:10 560 scale)

Number of records in search area: 1

| Map | Type | Survey |
|--------|------|--------|
| SU68NW | C | 1974 |

County Series geological maps (1:10 560 scale)

Number of records in search area: 2

| Map | Type | Published |
|-----------------|------|-----------|
| Berkshire16SE | | 1910 |
| Oxfordshire49SE | C | 0 |

New Series medium scale geological maps (1:50 000 and 1:63 360 scale)

Number of records in search area: 2

| Sheet number | Sheet name | Type | Published |
|--------------|------------------|------|-----------|
| 254 | Henley-on-Thames | C | 1980 |
| 254 | Henley-on-Thames | C | 1905 |

Old Series one inch geological maps (1:63 360 scale)

Number of records in search area: 1

| Sheet number | Sheet name | Type | Published |
|--------------|------------|------|-----------|
| 13 | Bampton | S | 1859 |

Hydrogeological maps (various scales)

Number of records in search area: 1

| Map | Scale |
|----------------------|-----------|
| South West Chilterns | 1:100,000 |

Geological Memoirs

Number of records in search area: 1

| Geological memoir | Date |
|--------------------------------|------|
| Henley on Thames & Wallingford | 1908 |

Technical reports

Technical reports may be available for this area. Please email sales@bgs.ac.uk for further information.

Waste sites

Number of records in search area: 0

Listing of some 3500 waste sites for England and Wales identified by BGS as part of a survey carried out on behalf of the Department of the Environment in 1973. Later information may be available from the Local authority.

BGS holds no records of waste sites for the selected area

BGS non-coal mining plans

Number of records in search area: 1

This listing shows mining plans, including abandonment plans. The coverage is not comprehensive.

| Record Type | Plan No. | Title |
|-------------|----------|---|
| KP | 18191 | WESTPHALIAN A & B OF THE COALFIELDS OF ENGLAND & WALES (INCLUDING CANONBIE) |

Contact Details

Keyworth Office

British Geological Survey
Environmental Science Centre
Nicker Hill
Keyworth
Nottingham
NG12 5GG
Tel: 0115 9363100
Email: enquiries@bgs.ac.uk

Wallingford Office

British Geological Survey
Maclean Building
Wallingford
Oxford
OX10 8BB
Email: enquiries@bgs.ac.uk

Edinburgh Office

British Geological Survey
Lyell Centre
Research Avenue South
Edinburgh
EH14 4AP
Tel: 0131 6671000
Email: enquiry@bgs.ac.uk

Terms and Conditions

General Terms & Conditions

This Report is supplied in accordance with the GeoReports Terms & Conditions available on the BGS website at <https://shop.bgs.ac.uk/georeports> and also available from the BGS Enquiry Service at the above address.

Important notes about this Report

- The data, information and related records supplied in this Report by BGS can only be indicative and should not be taken as a substitute for specialist interpretations, professional advice and/or detailed site investigations. You must seek professional advice before making technical interpretations on the basis of the materials provided.
- Geological observations and interpretations are made according to the prevailing understanding of the subject at the time. The quality of such observations and interpretations may be affected by the availability of new data, by subsequent advances in knowledge, improved methods of interpretation, and better access to sampling locations.
- Raw data may have been transcribed from analogue to digital format, or may have been acquired by means of automated measuring techniques. Although such processes are subjected to quality control to ensure reliability where possible, some raw data may have been processed without human intervention and may in consequence contain undetected errors.
- Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.
- Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
- The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
- Data may be compiled from the disparate sources of information at BGS's disposal, including material donated to BGS by third parties, and may not originally have been subject to any verification or other quality control process.
- Data, information and related records, which have been donated to BGS, have been produced for a specific purpose, and that may affect the type and completeness of the data recorded and any interpretation. The nature and purpose of data collection, and the age of the resultant material may render it unsuitable for certain applications/uses. You must verify the suitability of the material for your intended usage.
- If a report or other output is produced for you on the basis of data you have provided to BGS, or your own data input into a BGS system, please do not rely on it as a source of information about other areas or geological features, as the report may omit important details.
- The topography shown on any map extracts is based on the latest OS mapping and is not necessarily the same as that used in the original compilation of the BGS geological map, and to which the geological linework available at that time was fitted.
- Note that for some sites, the latest available records may be 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.

Copyright:

Copyright in materials derived from the British Geological Survey's work, is owned by UK Research and Innovation (UKRI) and/ or the authority that commissioned the work. You may not copy or adapt this publication, or provide it to a third party, without first obtaining UKRI's permission, but if you are a consultant purchasing this report solely for the purpose of providing advice to your own individual client you may incorporate it unaltered into your report to that client without further permission, provided you give a full acknowledgement of the source. Please contact the BGS Copyright Manager, British Geological Survey, Environmental Science Centre, Nicker Hill, Keyworth, Nottingham NG12 5GG. Telephone: 0115 936 3100.

© UKRI 2023 All rights reserved.

This product includes mapping data licensed from the Ordnance Survey® with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright 2023. All rights reserved. Licence number 100021290 EUL



Report issued by
BGS Enquiry Service