Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability

Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 66 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW112_chesterfield_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground

15.2 Artificial and made ground (50k)

Records within 500m	0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.

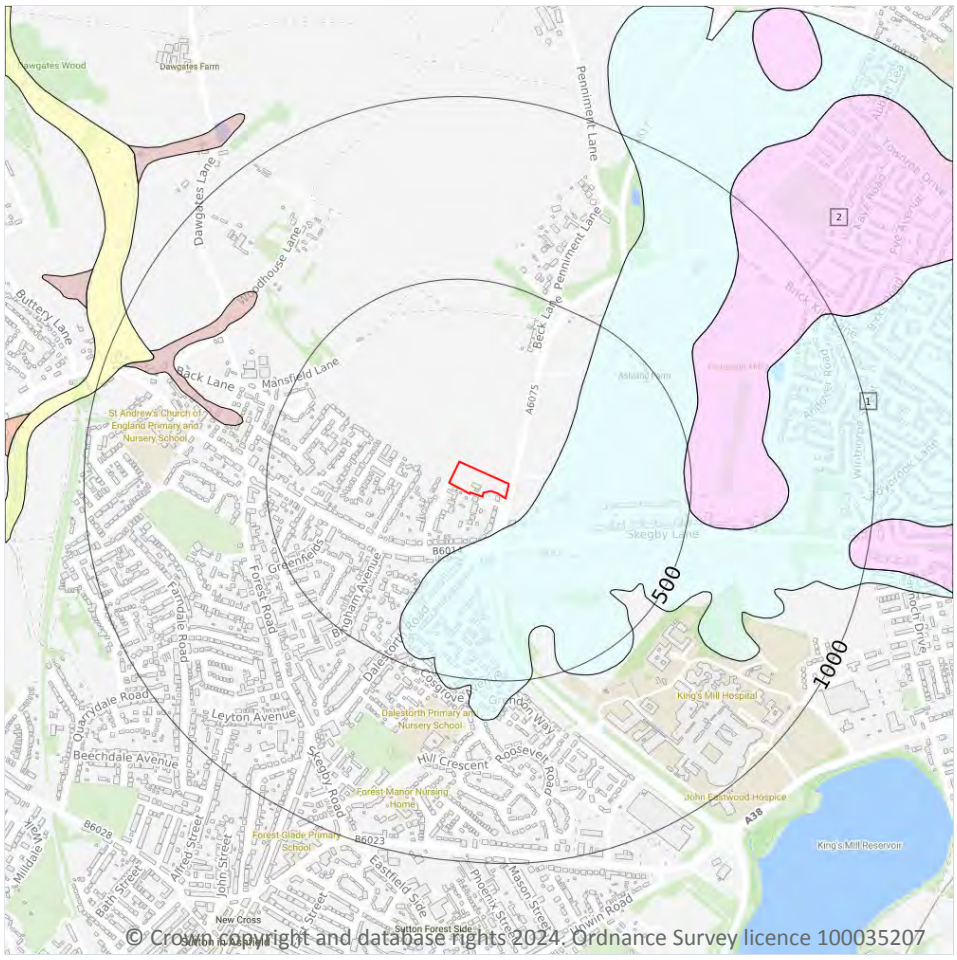
15.3 Artificial ground permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m	2

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 68 >**

ID	Location	LEX Code	Description	Rock description
1	69m SE	TILMP-DMTN	TILL, MID PLEISTOCENE	DIAMICTON
2	481m E	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

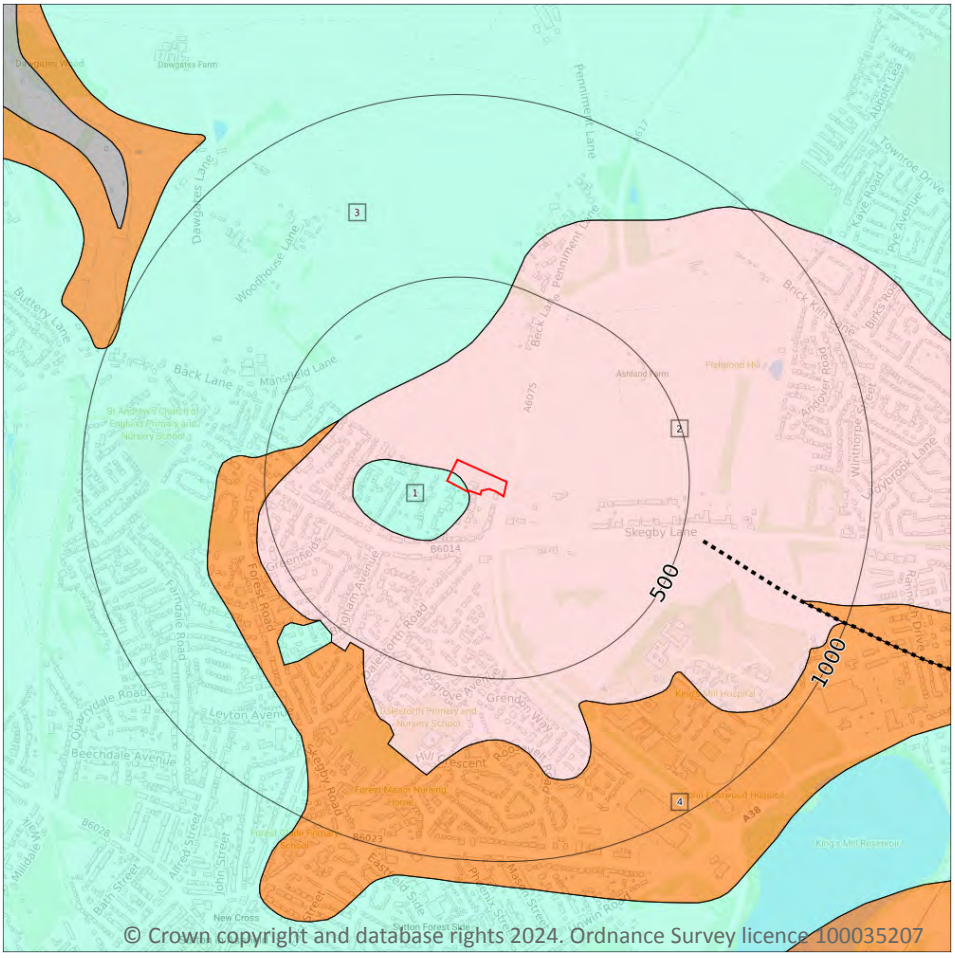
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m	4

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 70 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CDF-DOLO**	**CADEBY FORMATION - DOLOSTONE**	**-**
2	**On site**	**LNS-SDST**	**LENTON SANDSTONE FORMATION - SANDSTONE**	**-**
3	252m NW	CDF-DOLO	CADEBY FORMATION - DOLOSTONE	-
4	337m NW	EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Very High**	**High**
On site	**Intergranular**	**High**	**Moderate**

This data is sourced from the British Geological Survey.

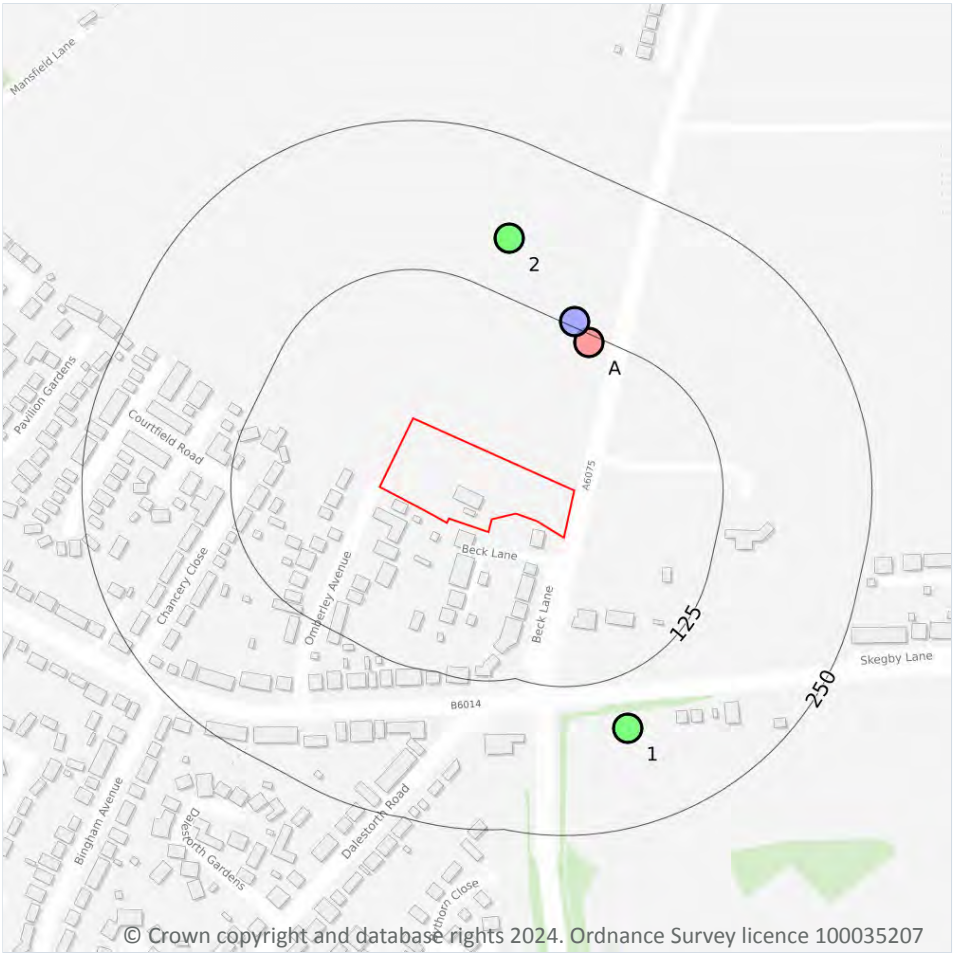
15.10 Bedrock faults and other linear features (50k)

Records within 500m	0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m **4**

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

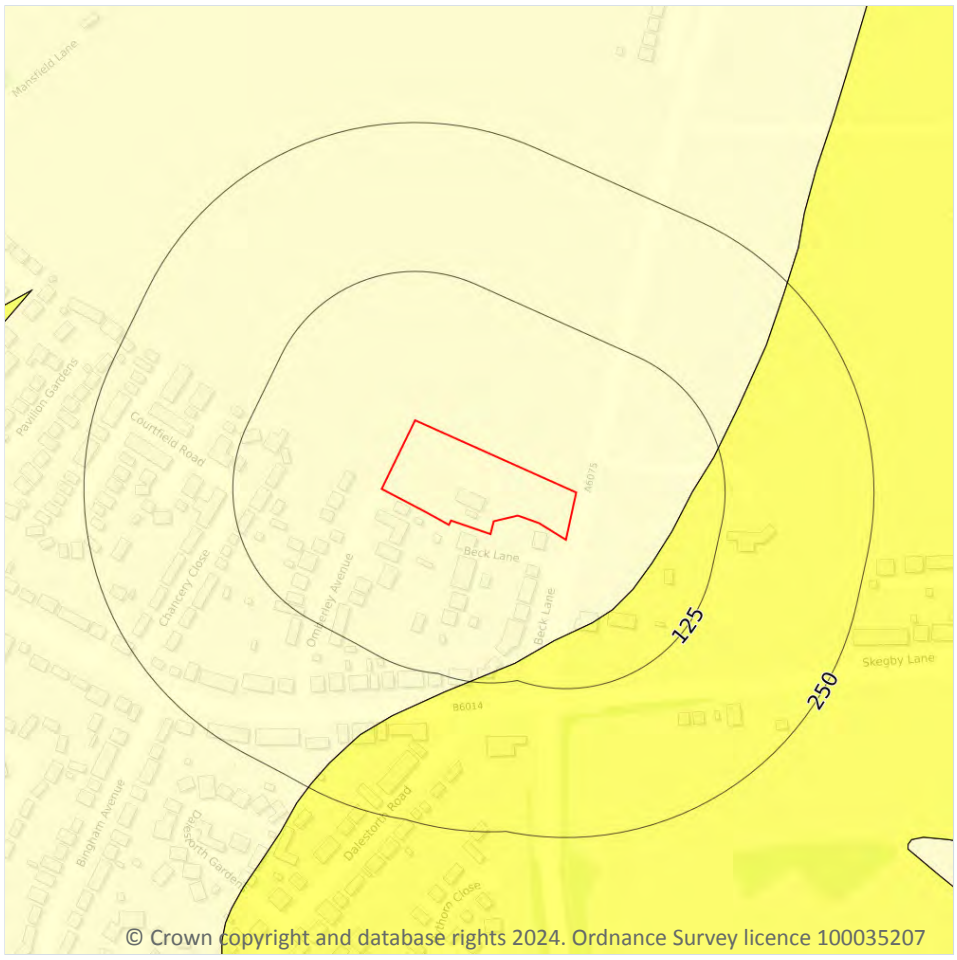
Features are displayed on the Boreholes map on **page 72 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	119m NE	450733 360820	SUTTON COLLIERY 30'S LEFT HAND A IST PIPER SEAM	103.16	N	229811 ↗
A	129m NE	450721 360837	SUTTON COLLIERY 30'S LAFT HAND B 1ST PIPER SEAM	7.31	N	229815 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	168m SE	450765 360496	SUTTON 20'S SUPPLY GATE A UGBH (360)	21.47	N	229808 ↗
2	171m N	450666 360907	SUTTON COLLIERY 30'S LAFT HAND C 1ST PIPER SEAM	15.01	N	229816 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m	1

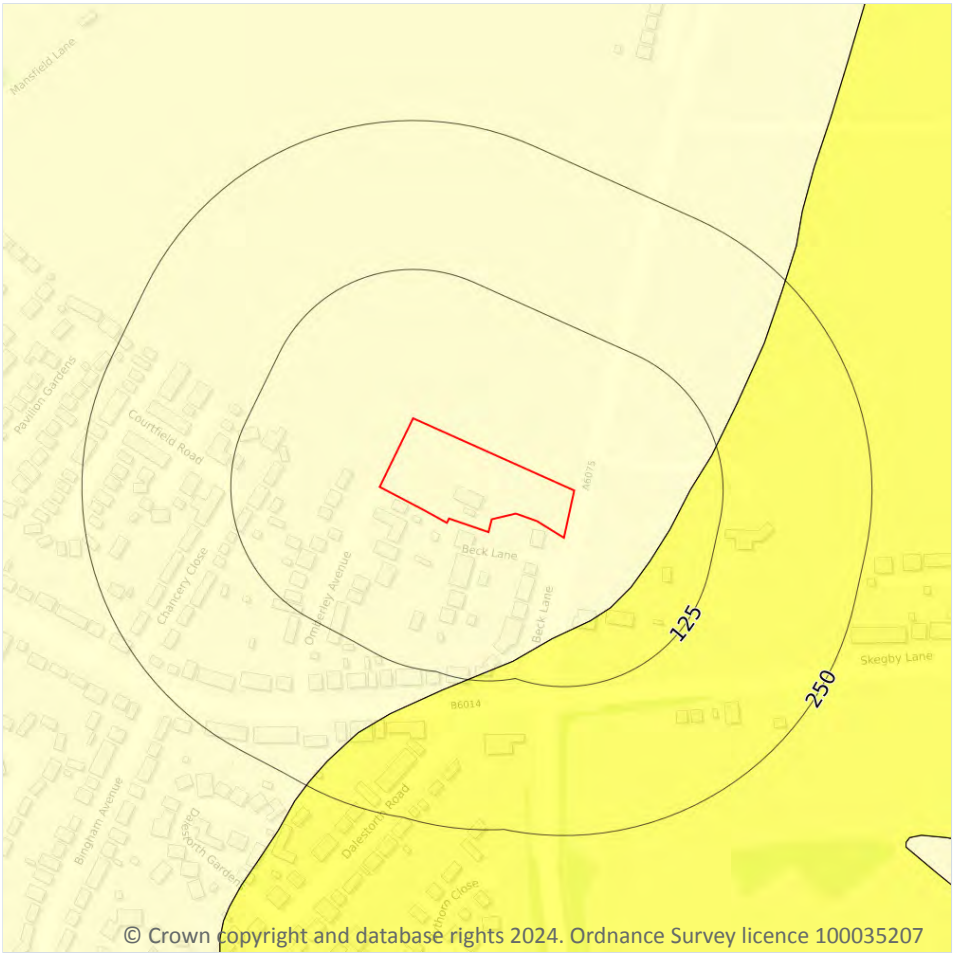
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 74 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

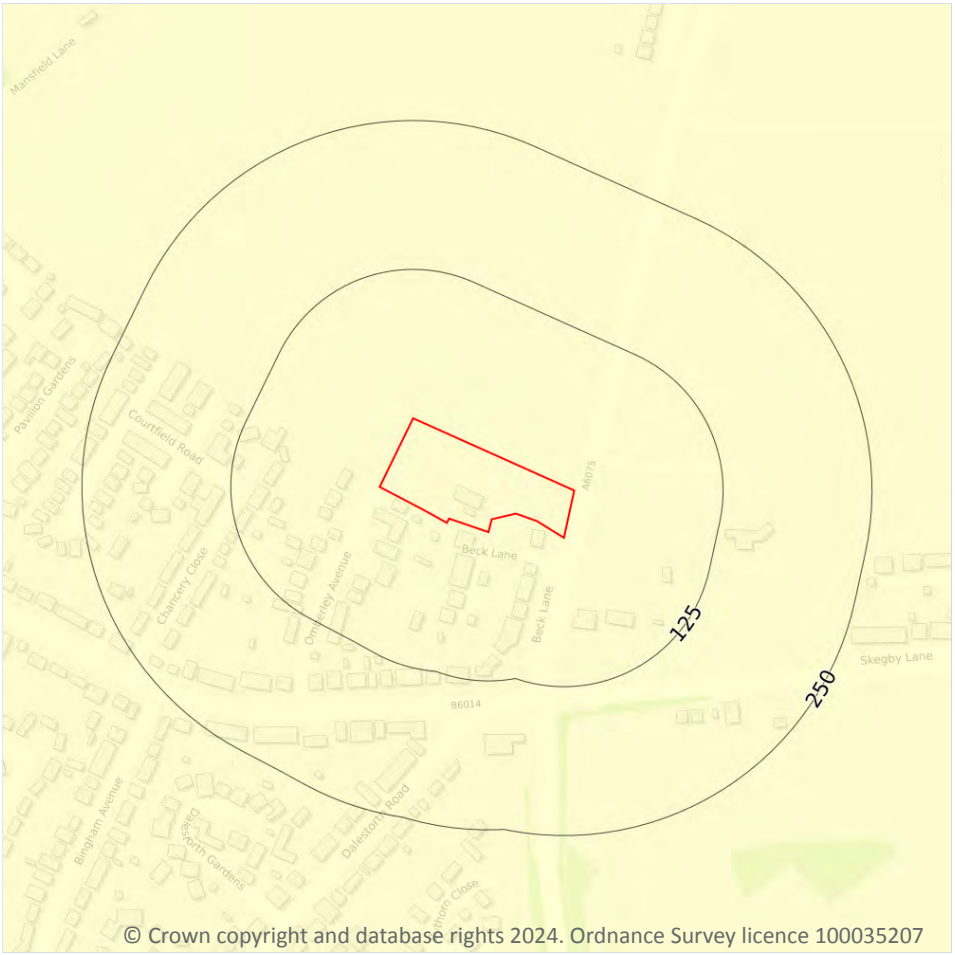
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 75 >**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

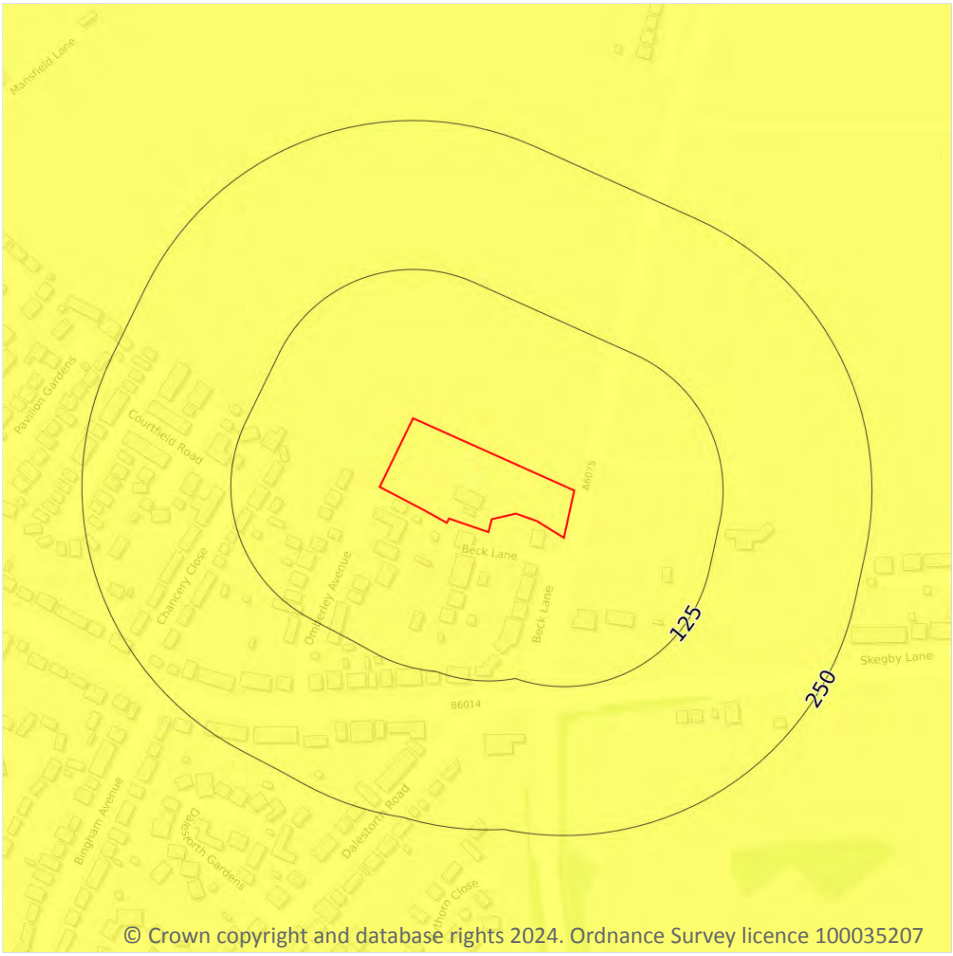
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 76 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

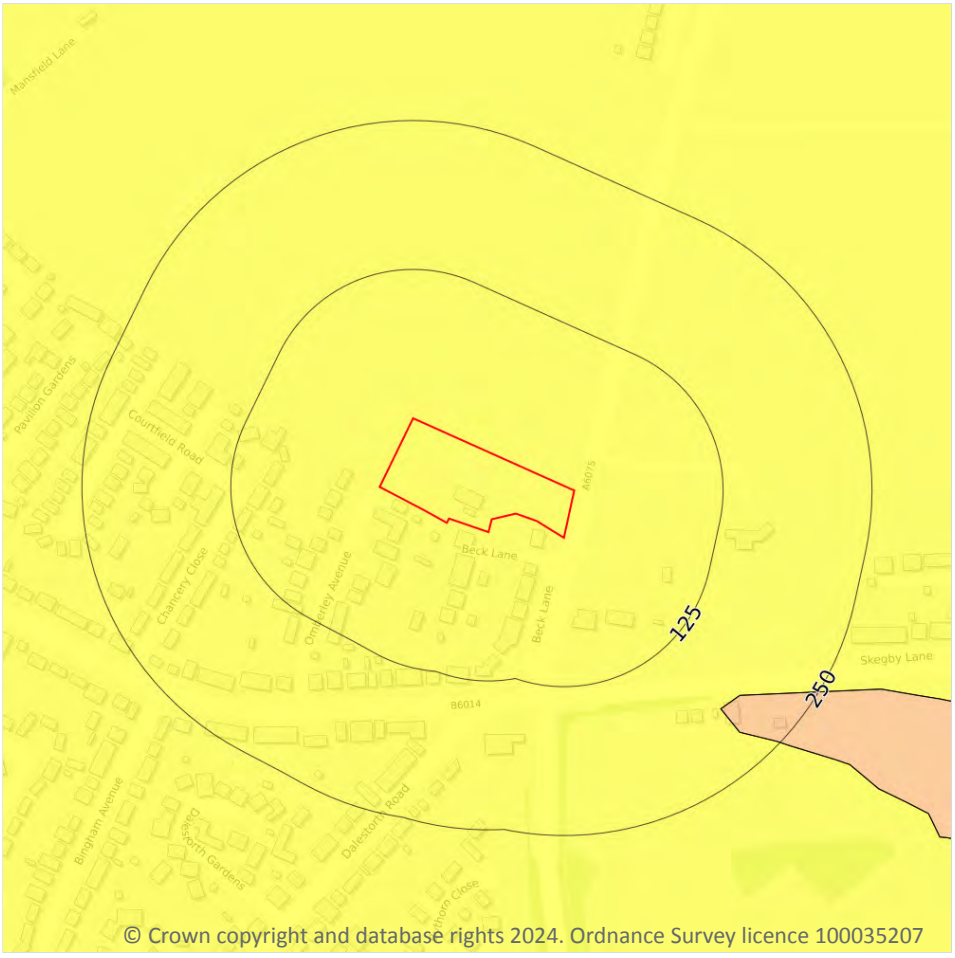
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 77 >**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



17.5 Landslides

Records within 50m	1

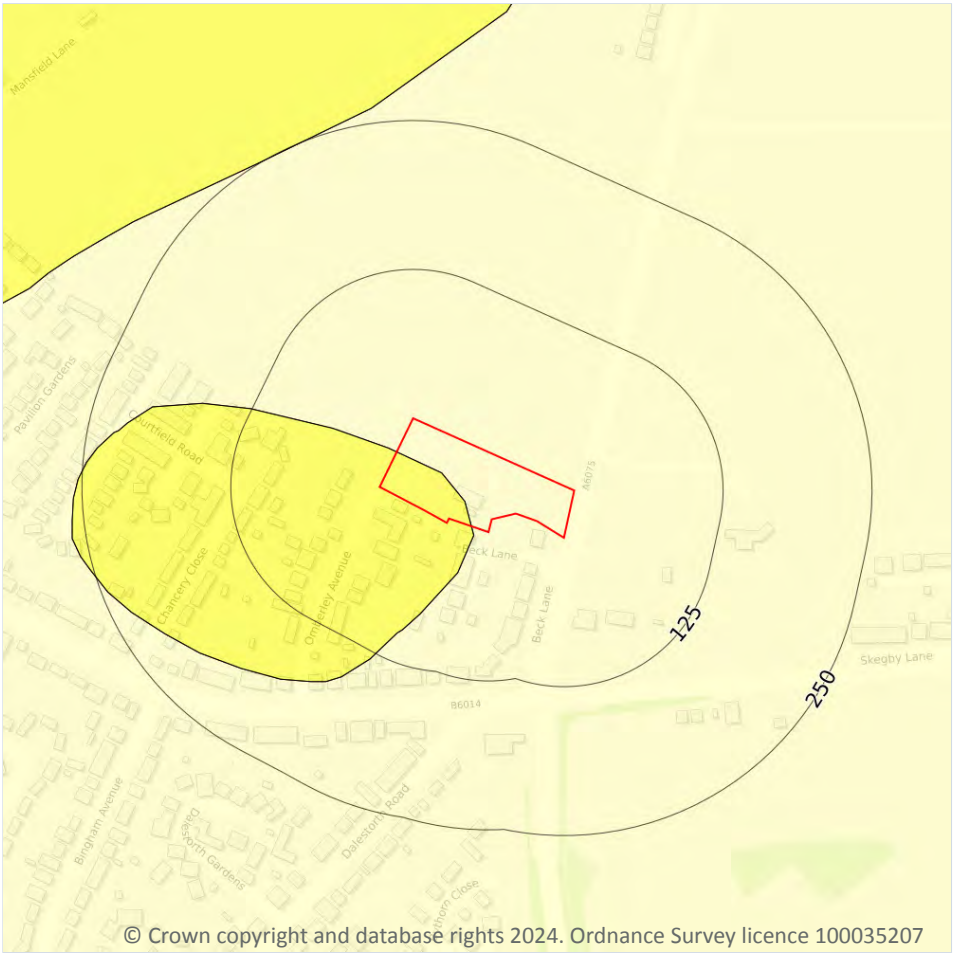
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 78 >**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	2

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

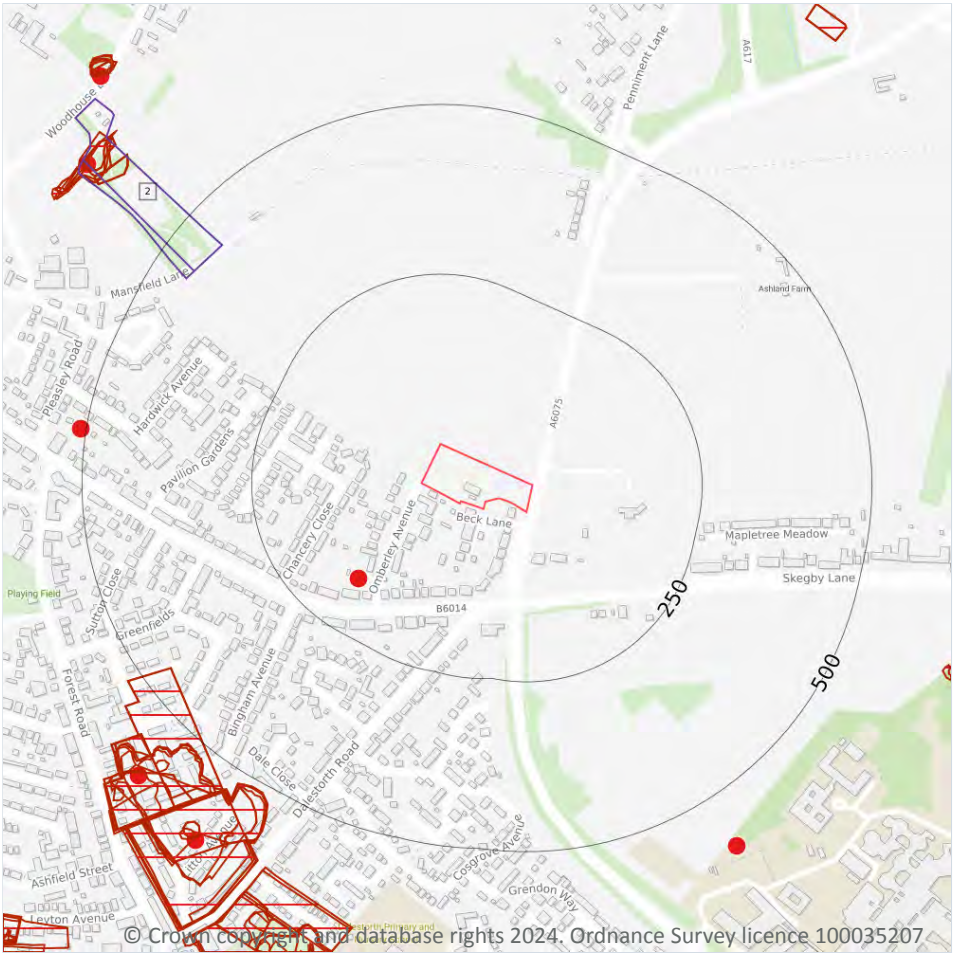
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 79 >**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

Location	Hazard rating	Details
On site	**Very low**	**Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	1

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining and ground workings map on **page 81 >**

ID	Location	Details	Description
1	168m SW	Name: Dalestorth Address: Dalestorth, Skegby, MANSFIELD, Nottinghamshire Commodity: Dolomite Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	0

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	1

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

Features are displayed on the Mining and ground workings map on **page 81 >**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
2	435m NW	Old Skegby	Limestone	Surface mineral working	Valid	12/52

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of

risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	1

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	**The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.**

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

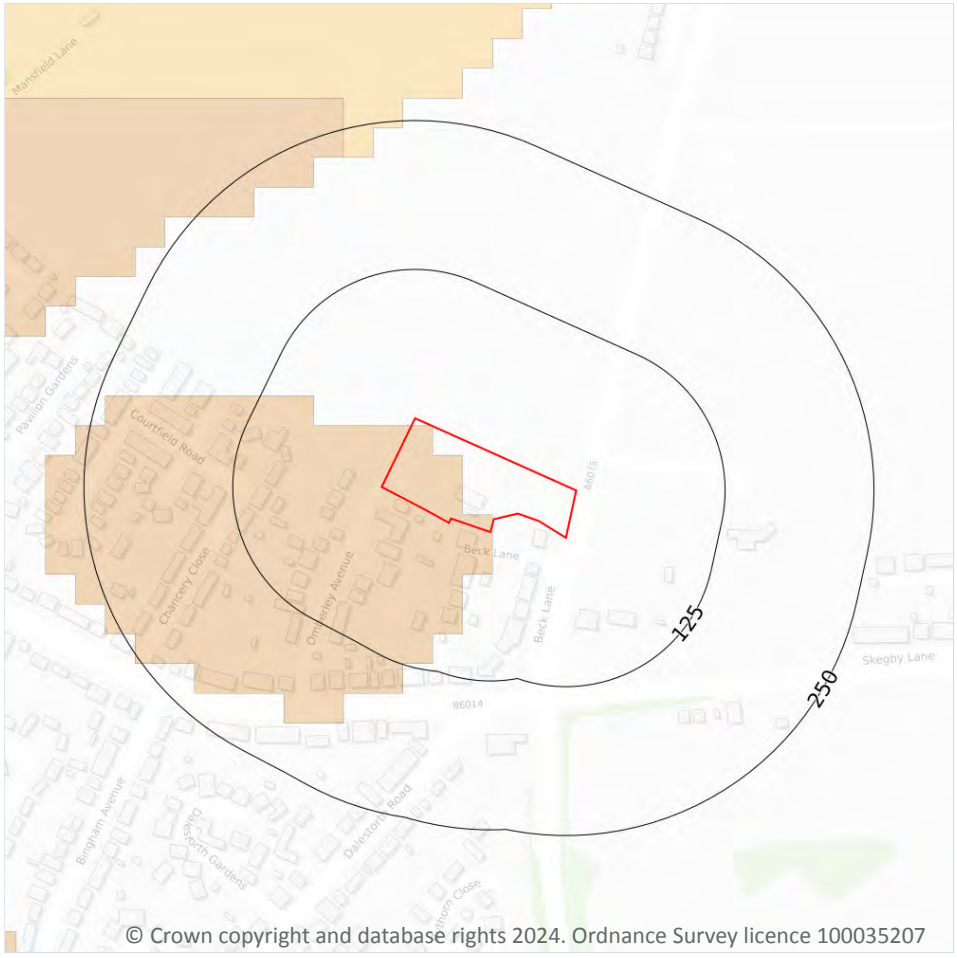
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

20.1 Radon

Records on site	2

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 88 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 5% and 10%**	**Basic**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None**

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m **2**

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 mg/kg**

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m **8**

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	**11**	**1.9**	**66**	**45**	**0.6**	**52**	**23**	**18**	**5**
On site	**11**	**1.9**	**64**	**44**	**0.6**	**52**	**23**	**17**	**5**
On site	**11**	**1.9**	**63**	**43**	**0.6**	**52**	**23**	**17**	**5**
On site	**11**	**1.9**	**63**	**43**	**0.6**	**52**	**22**	**17**	**5**
On site	**12**	**2.1**	**72**	**49**	**0.6**	**52**	**25**	**20**	**6**
On site	**12**	**2.1**	**71**	**49**	**0.6**	**52**	**25**	**20**	**6**

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
44m NW	12	2.1	71	49	0.6	52	26	20	6
46m N	11	1.9	65	45	0.6	52	24	18	6

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	**1**

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

Location	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Lead (mg/kg)	Tin (mg/kg)	Sample Type
50m E	11.0	0.6	51.6	22.1	16.9	62.6	5.4	Topsoil

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	0

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference ↗.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.

APPENDIX D

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire

Number
WS1

Excavation Method
Drive-in Windowless Sampler

Dimensions

Ground Level (mOD)

Client
Griffiths Services and Developments Ltd

Job Number
IV.77.23

Location

Dates
04/10/2023

Engineer
VS

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	TOPSOIL.		
0.20	E1				0.40	Dense orange yellow gravelly fine to coarse SAND with fine to medium, subanglar to subrounded sandstone lithorelics.		
0.80	E2							
1.00-1.45	SPT N=44		5,3/5,14,13,12		(1.60)			
2.00-2.44	SPT 50/285		10,11/13,13,12,12		2.00	Complete at 2.00m		

Remarks
Borehole refused at 2.00mbgl on hard strata.
Groundwater not encountered during drilling.
Borehole backfilled with arisings on completion.

Scale (approx)
1:25

Logged By
VS

Figure No.
IV.77.23.WS1

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site	Number
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire	**WS2**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL.		
0.20	E1				0.30	Dense orange brown gravelly fine to coarse SAND with fine to coarse, subrounded to subangular sandstone lithorelics.		
					(0.70)			
0.80	E2							
1.00-1.45	SPT N=50		4,5/6,14,17,13		1.00	Complete at 1.00m		

Remarks
Borehole refused on hard strata at 1.00mbgl.
No groundwater encountered during drilling.
Borehole backfilled with arisings on completion.

Scale (approx)	Logged By
1:25	VS

Figure No. IV.77.23.WS2

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site	Number
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire	WS3

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL.		
0.20	E1				0.30	Medium dense orange yellow gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
0.70	E2							
1.00-1.45	SPT N=22		4,4/5,5,5,7		(1.70)			
2.00-2.34	SPT 50/190		13,13/16,22,12		2.00	Complete at 2.00m		

Remarks
Borehole backfilled with arisings on completion.
No groundwater encountered during drilling.
Borehole refused on hard strata at 2.00mbgl.

Scale (approx)	Logged By
1:25	VS

Figure No. IV.77.23.WS3

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site	Number
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire	WS4

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30) 0.30	TOPSOIL.		
					(0.70)	Dense orange brown gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
1.00-1.21	SPT 25*/95 50/115		19,6/30,20		1.00	Complete at 1.00m		

Remarks
Borehole refused on hard strata at 1.00mbgl.
No groundwater encountered during drilling.
Borehole backfilled with airisings on completion.

Scale (approx)	Logged By
1:25	VS

Figure No. IV.77.23.WS4

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site	Number
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire	**WS5**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						TOPSOIL.		
0.20	E1				(0.50)			
					0.50	Dense orange brown gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
0.60	E2				(0.50)			
1.00-1.23	SPT 25*/85 50/145		20,5/22,28		1.00	Complete at 1.00m		

Remarks
Borehole refused on hard strata at 1.00mbgl.
No groundwater encountered during drilling.
Borehole backfilled with arisings on completion.

Scale (approx)	Logged By
1:25	VS

Figure No. IV.77.23.WS5

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire

Number
WS6

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	TOPSOIL.		
					0.50			
					(0.50)	Dense orange brown gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
1.00-1.10	SPT 25*/50 50/50		25/50		1.00	Complete at 1.00m		

Remarks
Borehole refused on hard strata at 1.00mbgl.
No groundwater encountered during drilling.
Borehole backfilled with arisings on completion.

Scale (approx)	**Logged By**
1:25	VS

Figure No.
IV.77.23.WS6

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site	Number
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire	WS7

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	TOPSOIL.		
					0.50 (0.20)	Firm red brown silty CLAY.		
					0.70 (0.30)	Dense orange brown gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
1.00-1.20	SPT 25*/66 50/135		25/25,25		1.00	Complete at 1.00m		

Remarks
Borehole refused on hard strata at 1.00mbgl.
No groundwater encountered during drilling.
Borehole backfilled with arisings on completion.

Scale (approx)	Logged By
1:25	VS

Figure No. IV.77.23.WS7

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire

Number
WS8

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50) 0.50	TOPSOIL.		
					(0.50) 1.00	Dense orange yellow gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
1.00-1.38	SPT 50/230		9,14/20,15,13,2			Complete at 1.00m		

Remarks
Borehole backfilled with arisings on completion.
No groundwater encountered during drilling.
Borehole refused on hard strata at 1.00mbgl.

Scale (approx)	Logged By
1:25	VS

Figure No.
IV.77.23.WS8

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire

Number
WS9

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	MADE GROUND: Gravel roadway with topsoil.		
0.20	E1				0.50			
					(0.50)	Dense orange yellow gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
0.70	E2				1.00			
1.00-1.25	SPT 25*/105 50/145		18,7/22,28			Complete at 1.00m		

Remarks
Borehole backfilled with arisings on completion.
No groundwater encountered during drilling.
Borehole refused on hard strata at 1.00mbgl.

Scale (approx)	**Logged By**
1:25	VS

Figure No.
IV.77.23.WS9

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire

Number
WS10

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						TOPSOIL.		
0.20	E1				(0.50)			
0.50	E2				0.50 (0.10) 0.60	Firm red brown silty CLAY.		
					(0.40)	Dense orange brown gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
1.00-1.23	SPT 50/75		20,5/50		1.00	Complete at 1.00m		

Remarks
Borehole backfilled with arisings on completion.
No groundwater encountered during drilling.
Borehole refused on hard strata at 1.00mbgl.

Scale (approx)	**Logged By**
1:25	VS

Figure No.
IV.77.23.WS10

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site	Number
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire	WS11

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL.		
0.20	E1				0.30	Dense orange brown gravelly fine to coarse SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
					(0.70)			
1.00-1.45 1.00	SPT N=10 E2		1,0/1,2,3,4		1.00	Firm red brown silty CLAY.		
					(0.70)			
					1.70	Complete at 2.00m		
2.00-2.16	SPT 25*/30 50/125		25/25,25					

Remarks
Borehole backfilled with arisings on completion.
No groundwater encountered during drilling.
Borehole refused on hard strata at 2.00mbgl.

Scale (approx)	Logged By
1:25	VS

Figure No. IV.77.23.WS10

IVY HOUSE environmental

Chartered Environmental Surveyors & Environmental Consultants
Scotland Farm, Ockbrook, Derby DE72 3RX
Telephone. 01332 661987

Site	Number
Land off Beck Lane, Sutton in Ashfield, Nottinghamshire	WS12

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Griffiths Services and Developments Ltd	IV.77.23
	Location	**Dates** 04/10/2023	**Engineer** VS	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	TOPSOIL.		
0.20	E1				0.30	Dense red brown very silty slightly gravelly fine SAND with fine to coarse, subangular to subrounded sandstone lithorelics.		
0.50	E2							
1.00-1.45	SPT N=10		2,2/3,2,3,3,2		(1.70)			
2.00-2.43	SPT 50/275		2,8/12,14,14,10		2.00	Complete at 2.00m		

Remarks
No groundwater encountered during drilling.
Borehole backfilled with arisings on completion.
Borehole refused on hard strata at 2.00mbgl.

Scale (approx)	Logged By
1:25	VS

Figure No. IV.77.23.WS10

October 12th 2024 - Land at Beck Lane, Skegby -
Percolation Testing

SK1

0.65 brown, locally slightly clayey, slightly gravelly SAND. Gravel is fine to coarse, angular to sub-rounded concrete, quartzite and glass.
1.7 Stiff, reddish brown CLAY.

SK2

0.4 Brown, gravelly SAND. Gravel is fine to coarse, angular to sub-rounded glass, concrete and quartzite.
0.7 Firm, reddish brown, slightly sandy SILT.
1.4 Loose to medium dense, brown and light brown, slightly gravelly SAND with low cobble content. Gravel is fine to coarse, sub-angular to sub-rounded sandstone. Cobbles are of sandstone.

SK3

0.3 Brown, gravelly SAND. Gravel is fine to coarse, angular to sub-rounded glass, concrete and quartzite.
0.6 Loose to medium dense, orangish brown, slightly silty, slightly gravelly SAND. Gravel is fine to coarse, sub-rounded quartzite.
1.5 Stiff, reddish brown CLAY.

SK4

0.35 Brown, slightly silty, slightly gravelly SAND with low cobble content. Sand is fine to coarse, sub-rounded quartzite. Cobbles are of quartzite.
0.75 Firm, friable, reddish brown, slightly silty, slightly sandy CLAY.
1.1 Dense, slightly gravelly to gravelly, light brown SAND. Gravel is fine to coarse, sub-angular sandstone.
1.25 Strong, yellowish brown and brown SANDSTONE.

SK5

0.3 Brown, slightly silty, slightly gravelly SAND with low cobble content. Sand is fine to coarse, sub-rounded quartzite. Cobbles are of quartzite.
0.6 Firm, friable, reddish brown, slightly silty, slightly sandy CLAY.
1.2 Medium dense to dense, brown and light brown, slightly gravelly SAND. Gravel is fine to coarse, sub-angular sandstone.
1.5 Strong, yellowish brown and brown SANDSTONE.

APPENDIX E

Richard Sutton
Ivy House Environmental Ltd
Linden
Potter Street
Spondon
Derby
DE21 7LH

Normec DETS Limited
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-11942

Site Reference:	Beck Lane, Sutton In Ashfield
Project / Job Ref:	IV.77.23
Order No:	None Supplied
Sample Receipt Date:	08/10/2024
Sample Scheduled Date:	08/10/2024
Report Issue Number:	1
Reporting Date:	14/10/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 24-11942	**~Date Sampled**	01/10/24	01/10/24	01/10/24	01/10/24	01/10/24
Ivy House Environmental Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Beck Lane, Sutton In Ashfield	**~TP / BH No**	TP1	SA1	SA2	SA3	SA4
~Project / Job Ref: IV.77.23	**~Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	**~Depth (m)**	0.20 - 0.40	0.30	0.30	0.30	0.30
Reporting Date: 14/10/2024	**DETS Sample No**	742644	742645	742646	742647	742648

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	**MCERTS**	7.3	7.4	7.7	7.4	7.6
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	364	233	346	339	333
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	0.04	0.02	0.03	0.03	0.03
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	27	14	< 10	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.03	0.01	< 0.01	< 0.01	< 0.01
Organic Matter (SOM)	%	< 0.1	**MCERTS**	4.3	2.9	3.9	3.8	3.5
Arsenic (As)	mg/kg	< 2	**MCERTS**	15	11	11	13	12
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	0.6	0.5	0.6	0.5	0.6
Chromium (Cr)	mg/kg	< 2	**MCERTS**	17	17	16	20	20
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	29	46	59	45	40
Lead (Pb)	mg/kg	< 3	**MCERTS**	47	48	85	145	58
Mercury (Hg)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	17	20	18	19	19
Selenium (Se)	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	**MCERTS**	24	24	24	28	26
Zinc (Zn)	mg/kg	< 3	**MCERTS**	139	88	107	126	107

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-11942	**~Date Sampled**	01/10/24	01/10/24	01/10/24	01/10/24	01/10/24
Ivy House Environmental Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Beck Lane, Sutton In Ashfield	**~TP / BH No**	TP1	SA1	SA2	SA3	SA4
~Project / Job Ref: IV.77.23	**~Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Order No: None Supplied	**~Depth (m)**	0.20 - 0.40	0.30	0.30	0.30	0.30
Reporting Date: 14/10/2024	**DETS Sample No**	742644	742645	742646	742647	742648

Determinand	**Unit**	**RL**	**Accreditation**					
Naphthalene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	0.20	< 0.1
Pyrene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	0.18	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	**MCERTS**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	**MCERTS**	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
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Tel : 01622 850410

Soil Analysis Certificate - Organochlorine Pesticides						
DETS Report No: 24-11942	**~Date Sampled**	01/10/24	01/10/24	01/10/24		
Ivy House Environmental Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied		
~Site Reference: Beck Lane, Sutton In Ashfield	**~TP / BH No**	TP1	SA2	SA4		
~Project / Job Ref: IV.77.23	**~Additional Refs**	None Supplied	None Supplied	None Supplied		
~Order No: None Supplied	**~Depth (m)**	0.20 - 0.40	0.30	0.30		
Reporting Date: 14/10/2024	**DETS Sample No**	742644	742646	742648		

Determinand	Unit	RL	Accreditation					
Aldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
alpha-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
beta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
cis-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
delta-HCH	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Dieldrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Endosulfan A	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Endosulfan B	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Endrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
gamma-HCH (Lindane)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Heptachlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Heptachlor epoxide	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Hexachlorobenzene (HCB)	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Isodrin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Methoxychlor	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
o,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
o,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
o,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
p,p' - DDD	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
p,p' - DDE	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
p,p' - DDT	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
trans-chlordane	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Trifluralin	mg/kg	< 0.02	NONE	< 0.02	< 0.02	< 0.02		

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Maidstone
Kent ME17 2JN
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Soil Analysis Certificate - Organophosphorus Pesticides						
DETS Report No: 24-11942	**~Date Sampled**	01/10/24	01/10/24	01/10/24		
Ivy House Environmental Ltd	**~Time Sampled**	None Supplied	None Supplied	None Supplied		
~Site Reference: Beck Lane, Sutton In Ashfield	**~TP / BH No**	TP1	SA2	SA4		
~Project / Job Ref: IV.77.23	**~Additional Refs**	None Supplied	None Supplied	None Supplied		
~Order No: None Supplied	**~Depth (m)**	0.20 - 0.40	0.30	0.30		
Reporting Date: 14/10/2024	**DETS Sample No**	742644	742646	742648		

Determinand	**Unit**	**RL**	**Accreditation**					
Azinphos-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Chlorfenvinphos, alpha	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Chlorfenvinphos, beta	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Chlorpyriphos-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Diazinon	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Dichlorvos	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Dimethoate	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Fenitrothion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Fenthion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Malathion	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Mevinphos, (E)	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Mevinphos, (Z)	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Parathion-ethyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Parathion-methyl	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		
Phorate	mg/kg	< 0.1	NONE	< 0.1	< 0.1	< 0.1		

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-11942	
Ivy House Environmental Ltd	
~Site Reference: Beck Lane, Sutton In Ashfield	
~Project / Job Ref: IV.77.23	
~Order No: None Supplied	
Reporting Date: 14/10/2024	

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
742644	TP1	None Supplied	0.20 - 0.40	15.8	Brown sandy clay with stones
742645	SA1	None Supplied	0.30	15.9	Light brown sandy clay with stones
742646	SA2	None Supplied	0.30	18.4	Light brown sandy clay with stones
742647	SA3	None Supplied	0.30	20.6	Light brown sandy clay
742648	SA4	None Supplied	0.30	15	Light brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S
~Sample details provided by customer and can affect the validity of results

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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-11942

Ivy House Environmental Ltd

~Site Reference: Beck Lane, Sutton In Ashfield

~Project / Job Ref: IV.77.23

~Order No: None Supplied

Reporting Date: 14/10/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

~Sample details provided by customer and can affect the validity of results

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List of HWOL Acronyms and Operators
DETS Report No: 24-11942
Ivy House Environmental Ltd
~Site Reference: Beck Lane, Sutton In Ashfield
~Project / Job Ref: IV.77.23
~Order No: None Supplied
Reporting Date: 14/10/2024

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Det - Acronym

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Analytical Report Number : 23-68079

Project / Site name:	Land off Beck Lane Sutton in Ashfield	**Samples received on:**	09/11/2023
Your job number:	IV 77 23	**Samples instructed on/ Analysis started on:**	09/11/2023
Your order number:		**Analysis completed by:**	21/11/2023
Report Issue Number:	1	**Report issued on:**	21/11/2023
Samples Analysed:	4 soil samples		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-68079
Project / Site name: Land off Beck Lane Sutton in Ashfield

Lab Sample Number				2874273	2874274	2874275	2874276
Sample Reference				WS1	WS5	WS10	WS12
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.20	0.20	0.20
Date Sampled				04/10/2023	04/10/2023	04/10/2023	04/10/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	14	24	15
Total mass of sample received	kg	0.001	NONE	0.9	0.9	1	0.9
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	IZJ	IZJ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8	7.3	7.8	6.7
Total Sulphate as SO4	mg/kg	50	MCERTS	570	620	340	460
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0047	0.0051	0.0107	0.0097
Organic Matter (automated)	%	0.1	MCERTS	2.4	3.5	9.9	3.2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.07	0.07	0.3	0.17
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.13	0.16	0.53	0.4
Pyrene	mg/kg	0.05	MCERTS	0.12	0.16	0.47	0.36
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.06	0.08	0.21	0.2
Chrysene	mg/kg	0.05	MCERTS	0.06	0.1	0.37	0.24
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.09	0.11	0.45	0.29
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.05	0.14	0.11
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.07	0.1	0.3	0.21
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25	0.13
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.33	0.17

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	0.83	3.58	2.28

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	13	10	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.8	1.2	0.5
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	22	22	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	47	52	88	35
Lead (aqua regia extractable)	mg/kg	1	MCERTS	48	59	140	58
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	22	24	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30	31	28	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	160	230	82

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-68079
Project / Site name: Land off Beck Lane Sutton in Ashfield

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2874273	WS1	None Supplied	0.2	Brown clay and sand with vegetation.
2874274	WS5	None Supplied	0.2	Brown clay and sand with vegetation.
2874275	WS10	None Supplied	0.2	Brown loam with gravel and vegetation.
2874276	WS12	None Supplied	0.2	Brown loam with gravel and vegetation.

Analytical Report Number : 23-68079
Project / Site name: Land off Beck Lane Sutton in Ashfield

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser.	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report

Analytical Report Number : 23-68079
Project / Site name: Land off Beck Lane Sutton in Ashfield

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS1	None Supplied	S	2874273	c	Hexavalent chromium in soil (Lower Level)	L080-PL	c
WS1	None Supplied	S	2874273	c	Organic matter (Automated) in soil	L009-PL	c
WS1	None Supplied	S	2874273	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WS1	None Supplied	S	2874273	c	pH in soil (automated)	L099-PL	c
WS10	None Supplied	S	2874275	c	Hexavalent chromium in soil (Lower Level)	L080-PL	c
WS10	None Supplied	S	2874275	c	Organic matter (Automated) in soil	L009-PL	c
WS10	None Supplied	S	2874275	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WS10	None Supplied	S	2874275	c	pH in soil (automated)	L099-PL	c
WS12	None Supplied	S	2874276	c	Hexavalent chromium in soil (Lower Level)	L080-PL	c
WS12	None Supplied	S	2874276	c	Organic matter (Automated) in soil	L009-PL	c
WS12	None Supplied	S	2874276	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WS12	None Supplied	S	2874276	c	pH in soil (automated)	L099-PL	c
WS5	None Supplied	S	2874274	c	Hexavalent chromium in soil (Lower Level)	L080-PL	c
WS5	None Supplied	S	2874274	c	Organic matter (Automated) in soil	L009-PL	c
WS5	None Supplied	S	2874274	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WS5	None Supplied	S	2874274	c	pH in soil (automated)	L099-PL	c

APPENDIX F

LABORATORY TEST CERTIFICATE
MATERIALS LABORATORY

MAT test Site Services Limited
Materials Testing & Consultancy

Our Reference: 02/24/165

Clients Reference: IV.77.23 **Certificate No:** 02/24/165

Order No:

To: Richard Sutton

Client: Ivy House Environmental
Linden
Potter Street
Spondon
Derby
DE21 7LH

Dear Sirs,

FIELD TESTING

Introduction

We refer to samples taken from Land off Beck Lane, and delivered to our laboratory on 7th October 2024.

.

Contract Details

Tested By	:	Mattest Limited
Our Test Reference	:	SA1 - SA3
Clients Job Reference	:	IV.77.23
Date Tested	:	21st - 28th October 2024
Source	:	Ex site

Test Results;

Please see attached reports

Comments;

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks;

Report Checked By:

John Pullar
Technical Manager South

Unit 10, Queenslie Point,
Queenslie Ind Estate,
Glasgow, G33 3NQ.

Tel: 0141 774 4032
Fax: 0141 774 3552
Email: site@mattest.org

Registered in Scotland 214905
VAT Reg. No. 761 9492 95

Approved for Issue Date: 31/10/2024

UKAS TESTING
2545

MATtest Limited
materials testing & consultancy

10 Queenslie Point
Queenslie Industrial Estate
120 Stepps Road
Glasgow
G33 3NQ

Tel: 0141 774 4032

email: info@mattest.org
Website: www.mattest.org

LABORATORY TEST CERTIFICATE

Certificate No : **24/1157 - 01-1**

To : **Ellis Robinson**

Client : **Ivy House Environmental**
Scotland Farm
Ockbrook
Derby
DE72 3RX

LABORATORY TESTING OF SOIL

Introduction

We refer to samples taken from Land off Beck Lane, Sutton in Ashfield and delivered to our laboratory on 16th October 2024.

Material & Source

Sample Reference	:	See Report Plates
Sampled By	:	Client
Sampling Certificate	:	Not Supplied
Location	:	See Report Plates
Description	:	See Page 2
Date Sampled	:	Not Supplied
Date Tested	:	16th October 2024 Onwards
Source	:	IV.77.23 - Land off Beck Lane, Sutton in Ashfield

Test Results

As Detailed On Page 2 to Page 4 inclusive

Comments

The results contained in this report relate to the sample(s) as received
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation
This report should not be reproduced except in full without the written approval of the laboratory
All remaining samples for this project will be disposed of 28 days after issue of this test certificate

Remarks

Approved for Issue

T McLelland (Director)

Date 30/10/2024

UKAS TESTING
2643

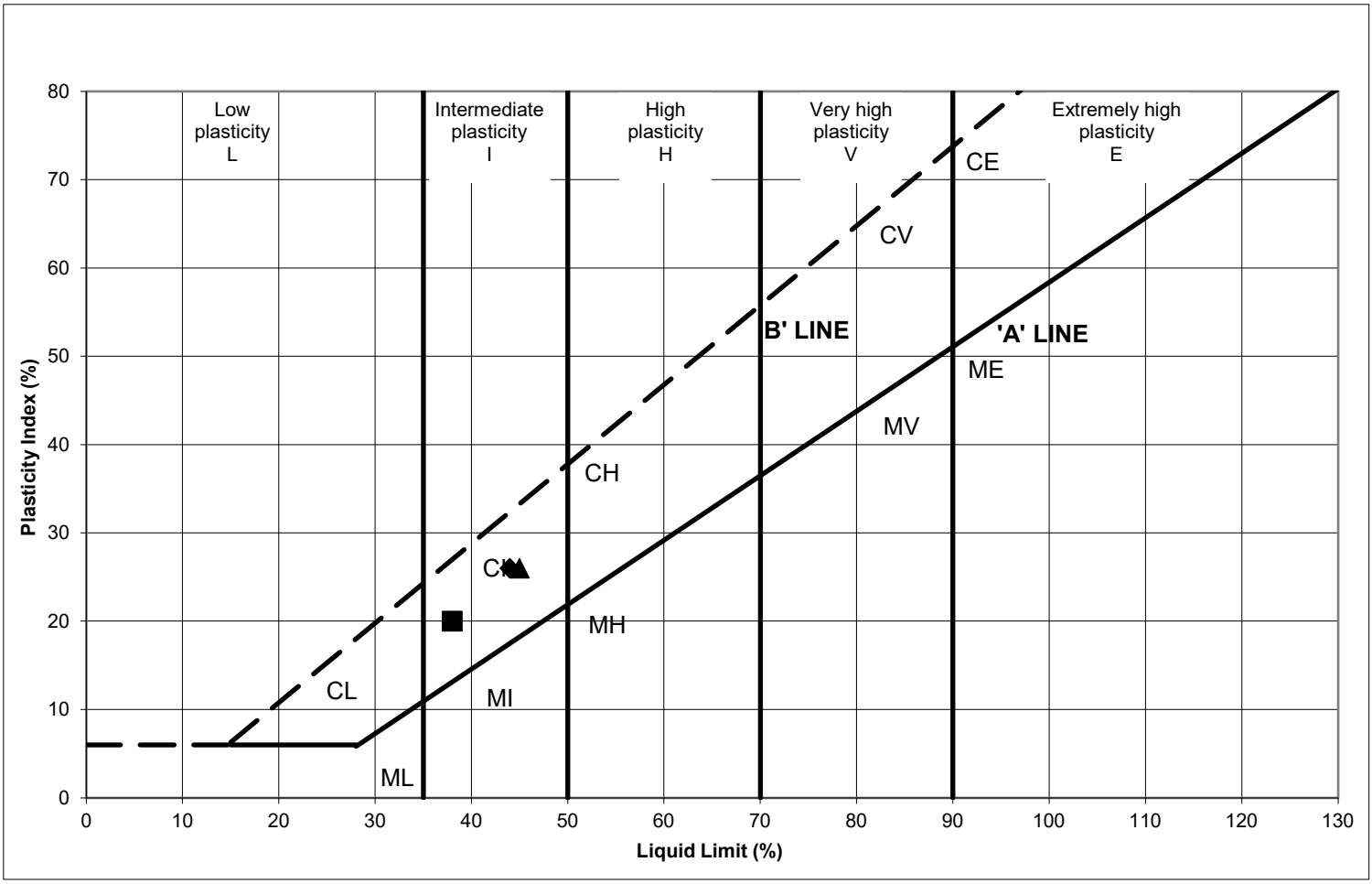
BOREHOLE	SAMPLE	DEPTH (m)	SAMPLE DESCRIPTION
SA1	S0013	0.70	Reddish brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium.
SA2	S0014	0.70	Reddish brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium.
SA3	S0015	0.80	Reddish brown slightly gravelly slightly sandy CLAY. Gravel is fine to medium.

SUMMARY OF SAMPLE DESCRIPTIONS

BOREHOLE	SAMPLE	DEPTH (m)	WATER CONTENT (%)
SA1	S0013	0.70	29.4
SA2	S0014	0.70	27.8
SA3	S0015	0.80	27.3

Tested in accordance with BS 1377 - 2 : 2022 : Clause 4.1

SUMMARY OF WATER CONTENT TEST RESULTS



Symbol	Borehole	Sample	Depth	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% Passing 0.425mm Sieve	Remarks
■	SA1	S0013	0.70	29.4	38	18	20	71	Clay with intermediate plasticity
◆	SA2	S0014	0.70	27.8	44	18	26	73	Clay with intermediate plasticity
▲	SA3	S0015	0.80	27.3	45	19	26	71	Clay with intermediate plasticity
●									
□									
◇									
△									
○									
×									
✳									

All samples were tested in accordance with BS 1377 - 2 : 2022 : Clause 5.3 and 6
All samples were washed on a 0.425mm test sieve prior to test.

SUMMARY OF ATTERBERG LIMITS TEST RESULTS

Certificate of Analysis

Certificate Number 24-22441-2 *Issued:* 28-Oct-24

Client MATTest Ltd.
10 Queenslie Point
120 Stepps Road
Glasgow
G33 3NQ

Our Reference 24-22441-2

Client Reference ~ 24/1157

Order No ~ MATSC6524

Contract Title ~ Land off Beck Lane, Sutton in Ashfield

Description 3 Soil samples.

Date Received 21-Oct-24

Date Started 21-Oct-24

Date Completed 28-Oct-24

Test Procedures Identified by prefix DETSn (details on request).

Notes **This report supersedes 24-22441-1; Sample info updated at client request**
Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 24-22441-2
Client Ref ~ 24/1157
Contract Title ~ Land off Beck Lane, Sutton in Ashfield

			Lab No	2411317	2411318	2411319
			Sample ID ~	SA1	SA2	SA3
			Depth ~	0.70	0.70	0.80
			Other ID ~	S0013	S0014	S0015
			Sample Type ~	SOIL	SOIL	SOIL
			Sampling Date ~	07/10/2024	07/10/2024	07/10/2024
			Sampling Time ~	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Inorganics						
pH	DETSC 2008#		pH	8.1	7.9	7.7
Sulphate, Total Potential as SO4	*	0.03	%	0.05	< 0.03	< 0.03

Information in Support of the Analytical Results

Our Ref 24-22441-2
Client Ref ~ 24/1157
Contract ~ Land off Beck Lane, Sutton in Ashfield

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2411317	SA1 0.70 SOIL	07/10/24	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2411318	SA2 0.70 SOIL	07/10/24	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2411319	SA3 0.80 SOIL	07/10/24	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
# -MCERTS (accreditation only applies if report carries the MCERTS logo).
$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

APPENDIX G

IVY HOUSE environmental
Scotland Farm, Ockbrook, Derby, DE72 3RX
rps@ivyhouseenv.co.uk • www.ivyhouseenv.co.uk • 01332 661 987

GENERIC ASSESSMENT CRITERIA

SHEET 1	SOIL - INORGANIC GAC
SHEET 2	SOIL ORGANIC & INORGANIC GAC (1 - 6% SOM)
SHEET 3	UK DRINKING WATER STANDARDS (UKDWS)
SHEET 4	ENVIRONMENTAL QUALITY STANDARDS (EQS)
SHEET 5	WHO TPHCWG STANDARDS (Water)
SHEET 6	WATER PIPE INSTALLATION STANDARDS (WRAS)

Generic Assessment Criteria

Land Use Scenario					
Contaminants	**Residential With Produce**	**Residential Without Produce**	**POS (Resi)**	**Commercial**	**Source**
Arsenic	37	40	79	635	
Cadmium	11	85	120	230	
Chromium VI	6	6	8	34	
Chromium III	910	910	1500	8840	
Copper	2400	7100	12000	71700	
Lead	200	310	630	2300	
Mercury, elemental	1	1	16	83	**S4UL**
Mercury, inorganic	40	56	120	3640	
Mercury, methyl	11	15	40	409	
Nickel	180	180	230	980	
Vanadium	410	1200	2000	9000	
Zinc	3700	40000	81000	730000	
Selenium	250	430	1100	13000	
Asbestos Fibre	>0.001%	>0.001%	>0.001%	>0.001%	**LOD**

Note:
All figures are in mg/kg
LQM/CIEH/S4UL Adopted.
Soil type chosen is sandy loam, pH 7
LOD - Limit of Detection

IVY HOUSE environmental

Generic Assessment Criteria

Contaminants	Land Use Scenario												
	Residential With Produce			Residential Without Produce			POS (Resi)			Commercial			Source
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	
Arsenic			37			40			79			635	S4UL
Cadmium			11			85			120			190	S4UL
Chromium VI			6			6			8			33	S4UL
Chromium III			910			910			1500			8600	S4UL
Copper			2400			7100			12000			68000	S4UL
Mercury, elemental			1			1			16			58[25.8]	S4UL
Mercury, inorganic			40			56			120			3640	S4UL
Mercury, methyl			11			15			40			407	S4UL
Nickel			180			180			230			980	S4UL
Vanadium			410			1200			2000			9000	S4UL
Zinc			3700			4000		81000	81000			73000	S4UL
Selenium			250			430		1100	1100			12000	S4UL
Benzene*	0.087	0.17	0.37	0.38	0.7	1.4	72	72	73	27	47	90	S4UL
Ethylbenzene*	47	110	260	86	190	440	24000	24000	25000	570[518]	13, 000[1220]	27, 000[2840]	S4UL
Phenol	280	550	1100	750	1300	2300	760[11000]	1500 [35000]	3200[37000]	760[31000]	1500[35000]	3200 [37000]	S4UL
*Toluene	130	290	660	880	1900	3900	56000	56000	56000	56000[869]	110, 000[1920]	180, 000[4360]	S4UL
*Xylene, o	60	140	330	88	210	480	41000	42000	43000	6600[478]	15000[1120]	33000[1350]	S4UL
*Xylene, m	59	140	320	82	190	450	41000	42000	43000	6200[625]	14000[1470]	31000[1350]	S4UL
*Xylene, p	56	130	310	79	180	430	41000	42000	43000	5900[576]	14000[1350]	30000[1350]	S4UL
Benzo(a)pyrene*	2.20	3	3	3	3	3	5.7	5.7	5.7	35	35	36	S4UL
Dibenzo(a,h)anthracene*	0.24	0.28	0.3	0.3	0.3	0	0.57	0.57	0.58	4	4	4	S4UL
Acenapthene*	210	510	1100	3000	4700	6000	15000	1500	1500	84, 000	97000	100, 000	S4UL
Acenapthylene*	170	420	920	2900	4600	6000	15000	1500	1500	83, 000	97, 000	100000	S4UL
Anthracene*	2400	5400	11000	31000	35000	37000	74000	74000	74000	52, 000	54, 000	54, 000	S4UL
Benzo(a)anthracene*	7.2	11	13	11	14	15	29	29	29	170, 000	170, 000	180, 000	S4UL
Benzo(b)fluoranthene*	2.6	3.3	3.7	4	4	4	7.1	7.2	7.2	44	44	45	S4UL
Benzo(g,h,i)perylene	320	340	350	360	360	360	640	640	640	3900	4000	4000	S4UL
Benzo(k)fluoranthene*	77	93	100	110	110	110	190	190	190	1200	1200	1200	S4UL
Chrysene*	15	22	27	30	31	32	57	57	57	350	350	350	S4UL
Fluoranthene*	280	560	890	1500	1600	1600	3100	3100	3100	23000	23000	23000	S4UL
Fluorene*	170	400	860	2800	3800	4500	9900	9900	9900	63000[30.9]	68, 000	71, 000	S4UL
Indeno(1,2,3-c,d)pyrene*	27	36	41	45	45	46	82	82	82	500	510	510	S4UL
Phenathrene*	95	220	440	1300	1500	1500	3100	3100	3100	22, 000	22, 000	23, 000	S4UL
Pyrene*	620	1200	2000	3700	3800	3800	7400	7400	7400	54, 000	54K	54, 000	S4UL
Napthalene*	2.3	5.6	13	2	6	13	4900	4900	4900	190[76.4]	460[183]	1110[432]	S4UL
Aliphatic C5 - C6*	42	78	160	42	78	160	570[304]	590, 000	600, 000	3200[304]	5900[558]	12000[1150]	S4UL
Aliphatic C6 - C8	100	230	530	100	230	530	600, 000	610, 000	620, 000	7800[144]	17000[322]	40K[736]	S4UL
Aliphatic C8 - C10	27	65	450	27	65	150	13000	13000	13000	2000[78]	4.8K[190]	11K[451]	S4UL
Aliphatic C10 - C12	130[48]	330[118]	760[283]	130[48]	330[118]	770[283]	13000	13000	13000	9700[48]	23K[118]	47000[283]	S4UL
Aliphatic C12 - C16	1100[24]	2400[59]	4300[142]	1100[24]	2400[59]	4400[142]	13000	13000	13000	59K[24]	/82K[59]	90000[142]	S4UL
Aliphatic C16 - C35	65000[8.48]	92, 000[21]	110000	65000[8.48]	92000[21]	1100[24]	250000	250, 000	250, 000	1600000	1700000	1800000	S4UL
Aliphatic C35 - C44	65000[8.48]	92, 000[21]	110000	65000[8.48]	92000[21]	110000	250, 000	250, 000	250, 000	1600000	1700000	1800000	S4UL
Aromatic C5 - C7 (benzene)	70	140	300	370	690	1400	56, 000	56, 000	56, 000	26000[1220]	46000[22600]	86000[4710]	S4UL
Aromatic C7 - C8 (toluene)	130	290	660	860	1800	3900	56, 000	56, 000	56, 000	56000[869]	110000[1920]	180000[4360]	S4UL
Aromatic C8 - C10	34	83	190	47	110	270	5000	5000	5000	3500[513]	8100[1500]	17000[3580]	S4UL
Aromatic C10 - C12	74	180	380	250	590	1200	5000	5000	5000	16000 [364]	280000[899]	34000 [2150]	S4UL
Aromatic C12 - C16	140	330	660	1800	2300[419]	2500	5100	5100	5000	36, 000[169]	37, 000	38, 000	S4UL
Aromatic C16 - C21	260	540	930	1900	1900	1900	3800	3800	3800	28, 000	28, 000	28, 000	S4UL
Aromatic C21 - C35	1100	1500	1700	1900	1900	1900	3800	3800	3800	28, 000	28, 000	28, 000	S4UL
Aromatic C35 - C44	1100	1500	1700	1900	1900	1900	3800	3800	3800	28, 000	28, 000	28, 000	S4UL
											28, 000	28, 000	S4UL

Note:
All figures are in mg/kg
LQM/CIEH/S4UL Adopted.
Soil type chosen is sandy loam, pH 7
All inorganic determinands calculated using 6% SOM
[SOL] Solubility Saturation Limit
[Vap] Vapour Saturation Limit

IVY HOUSE environmental

UK Drinking Water Standards (UKDWS)		
Parameter	**Concentration**	**Units**
Acrylamide	0.1	µg/l
Aluminium	200	µgAl/l
Ammonium	0.5	mgNH4/l
Antimony	5	µgSb/l
Arsenic	10	µgAs/l
Benzene	1	µg/l
Benzo(a)pyrene	0.01	µg/l
Boron	1	mgB/l
Bromate	10	µgBrO3/l
Cadmium	5	µgCd/l
Chromium	50	µgCr/l
Chloride (i)	250	mgCl/l
Conductivity (i)	2500	µS/cm at 20°C
Copper(ii)	2	mgCu/l
Cyanide	50	µgCN/l
1, 2 dichloroethane	3	µg/l
Epichlorohydrin	0.1	µg/l
Fluoride	1.5	mgF/l
Hydrogen ion	6.5 - 9.5	pH value
Iron	200	µgFe/l
Lead (ii)	10	µgPb/l
Manganese	50	µgMn/l
Mercury	1	µgHg/l
Mineral Oil (TPH) (x)	10	µg/l
Nickel (ii)	20	µgNi/l
Nitrate (iii)	50	mgNO3/l
Nitrite (iii)	0.5	mgNO2/l
Phenol	0.5	µg/l
Polycyclic aromatic hydrocarbons (vii)	0.1	µg/l
Selenium	10	µgSe/l
Sodium	200	mgNa/l
Sulphate (i)	250	mgSO4/l
Tetrachloroethene and Trichloroethene (viii)	10	µg/l
Tetrachloromethane	3	µg/l
Trihalomethanes: Total (ix)	100	µg/l
Vinyl chloride	0.5	µg/l
Zinc	5000	µg/l

Pesticides (iv, v)		
Aldrin	0.03	µg/l
Dieldrin	0.03	µg/l
Heptachlor	0.03	µg/l
Heptachlor epoxide	0.03	µg/l
other pesticides	0.1	µg/l
Pesticides: Total (vi)	0.5	µg/l

Notes:

i) The parametric value refers to the residual monomer concentration in the water as calculated according to specifications of the maximum release from the corresponding polymer in contact with the water. This is controlled by product specification.

ii) New level for Lead has been in force since 25/12/2013. See also regulation 6(6)

iii) See also regulation 4(2)(d)

iv) See the definition of “pesticides and related products” in regulation 2

v) The parametric value applies to each individual pesticide.

vi) "Pesticides: Total" means the sum of the concentrations of the individual pesticides detected and quantified in the monitoring procedure.

vii) The specified compounds are:
- benzo(b)fluoranthene
- benzo(k)fluoranthene
- benzo(ghi)perylene
- indeno(1,2,3-cd)pyrene.

viii) The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

ix) The specified compounds are:
- chloroform
- bromoform
- dibromochloromethane
- bromodichloromethane.

The parametric value applies to the sum of the concentrations of the individual compounds detected and quantified in the monitoring process.

x) Revoked

References for UKDWS and EQS

Drinking Water Inspectorate Advice for consumers leaflet. DWS, Jan 2010
Thames Water Drinking Water Standards. TW website, accessed May 2016
Technical Guidance Manual for Licensing Discharges to Water: Annex G Environmental Quality Standards (EQS) List, Scottish Environmental Protection Agency, October 2004
Hydrogeological Risk Assessment for Landfills, Appendix 8: Selected Water Quality Standards, Environmen Agency, 2003
Petroleum Products in Drinking-water, Background document for development of WHO Guidelines for Drinking-water Quality, WHO (WHO/SDE/WSH/05.08/123)
Water Supply (Water Quality) Regulations 1989 (SI 1989/1147) (as amended)
Water Supply (Water Quality) Regulations 2000 (SI 2000/3184) (as amended).
Directive 2008/105/EC

Environmental Quality Standards (EQS) Groundwater Thresholds for List 1 & 2 Substances

Table 1: Environmental Quality Standards (EQS) for List 1 Dangerous Substances	
Substance	**All Freshwater EQS (ug/l)**
Mercury	1
Cadmium	5
Hexachlorocyclohexane	0.02
Carbon tetrachloride	12
Total DDT	0.025
pp DDT	0.01
Pentachlorophenol	0.4
Dieldrin	see total
Isodrin	see total
Aldrin	see total
Endrin	see total
Total 'Drins	0.01
Hexachlorobenzene	0.01
Hexachlorobutadiene	0.1
Chloroform	2.5
1,2-dichloroethane	10
Trichlorethylene	10
Perchlorethylene	10
Trichlorobenzene	0.4

Table 2a: Environmental Quality Standards (EQS) for List 2 Dangerous Substances

Substance	EQS Type	All Freshwater EQS (ug/l)	Substance	EQS Type	All Freshwater EQS (ug/l)
1,1,1-Trichloroethane	Annual average	100	Fenitrothion	Annual average	0.01
1,1,2-Trichloroethane	Annual average	400	Flucofuron	95 percentile	1
2,4-D (ester)	Annual average	1	Iron (dissolved)	Annual average	1000
2,4-D (non-ester)	Annual average	40	Lead (dissolved)	Annual average	Hardness related (see table 2b for details)
2,4-Dichlorophenol	Annual average	20	Linuron	Annual average	2
2-Chlorophenol	Annual average	50	Malathion	Annual average	0.01
4-Chloro-3-methyl-phenol	Annual average	40	Mecoprop	Annual average	20
Arsenic (dissolved)	Annual average	50	Mevinphos	Maximum concentration	0.02
Atrazine & Simazine	Annual average	2	Naphthalene	Annual average	10
Azinphos-methyl	Annual average	0.01	Nickel (dissolved)	Annual average	Hardness related (see table 2b for details)
Bentazone	Annual average	500	Omethoate	Annual average	0.01
Benzene	Annual average	10	PCSDs	95th percentile	0.05
Biphenyl	Annual average	25	Permethrin	95th percentile	0.01
Boron (dissolved)	Annual average	2000	pH	95th percentile	6 - 9
Chloronitrotoluenes	Annual average	10	Sulcofuron	95th percentile	25
Chromium (dissolved)	Annual average	Hardness related (see table 2b for details)	Toluene	Annual average	50
Copper (dissolved)	Annual average	Hardness related (see table 2b for details)	Triazaphos	Annual average	0.005
Cyfluthrin	95th percentile	0.001	Tributyltin	Maximum concentration	0.02
Demeton	Annual average	0.5	Trifluralin	Annual average	0.1
Dichlorvos	Annual average	0.001	Triphenyltin	Maximum concentration	0.02
Dichlorvos	Maximum concentration	-	Vanadium (dissolved)	Annual average	Hardness related (see table 2b for details)
Dimethoate	Annual average	1	Xylene (m and p, o)	Annual average	30
Endosulphan	Annual average	0.003	Zinc (total)	Annual average	Hardness related (see table 2b for details)
Ammonia (as NH3)		15			

Table 2b: Environmental Quality Standards (EQS) for hardness related List 2 dangerous substances

		EQS (ug/l) for Hardness bands (mg/l CaCO3)					
Substance	**EQS type**	**0-50**	**>50-100**	**>100-150**	**>150-200**	**>200-250**	**>250**
Freshwaters, suitable for all fishlife							
Copper (dissolved)	Annual average	0.5	3	3	3	8	12
Nickel (dissolved)	Annual average	8	20	20	40	40	40
Vanadium (dissolved)	Annual average	20	20	20	20	60	60
Chromium (dissolved)	Annual average	2	10	10	20	20	20
Lead (dissolved)	Annual average	4	10	10	20	20	20
Zinc (total)	Annual average	8	15	15	50	50	50

TPHCWG WATER VALUES

TPHCWG Fraction	Assessment Value (µg/l)	
Aliphatic > C5 – C6	15,000	
Aliphatic > C6 – C8	15,000	
Aliphatic > C8 – C10	300	
Aliphatic > C10 – C12	300	
Aliphatic > C12 – C16	300	
Aliphatic > C16 – C21	300	
Aliphatic > C21 – C34	300	
Aromatic > C5 - C7 *	10	Assumed to be 100% Benzene
Aromatic > C7 - C8	700	Assumed to be 100% Toluene
Aromatic > C8 - C10	300 / 500	Assumed to be either: Ethylbenzene (300) or Xylenes (500)
Aromatic > C10 – C12	90	
Aromatic > C12 – C16	90	
Aromatic > C16 –C21	90	
Aromatic > C21 – C25	90	

Contaminant Thresholds for Subsurface Water Pipes

Contaminant	Material selection Threshold Level (mg/kg dried soil)
Corrosion	
Sulphate (SO4)	2000
Sulphur (S)	5000
Sulphide (S)	250
pH	<pH5, >pH8
Toxic Substances	
Antimony (Sb)	10
Arsenic (As)	10*
Cadmium (Cd)	3
Chromium (hexavalent) (Cr)	25
Chromium (total)	600
Cyanide (free) (Cn)	25*
Cyanide (complexed) (Cn)	250*
Lead (Pb)	500
Mercury (Hg)	1
Selenium (Se)	3
Thiocyanate (SCN)	50
Organic Contaminants	
Coal Tar	50
Cyclohexane extractable	50
Phenol	5
Poly Aromatic Hydrocarbons	50
Toluene extractable	50
TPH DRO (diesel, kerosene)	100
Petrol	10
Mineral oils	1000

* It is not recommended that water pipes should be laid in sites where these substances are identified or suspected

Ref: Water Regulations Advisory Scheme (WRAS) (No. 9-04-03 Issue 1)