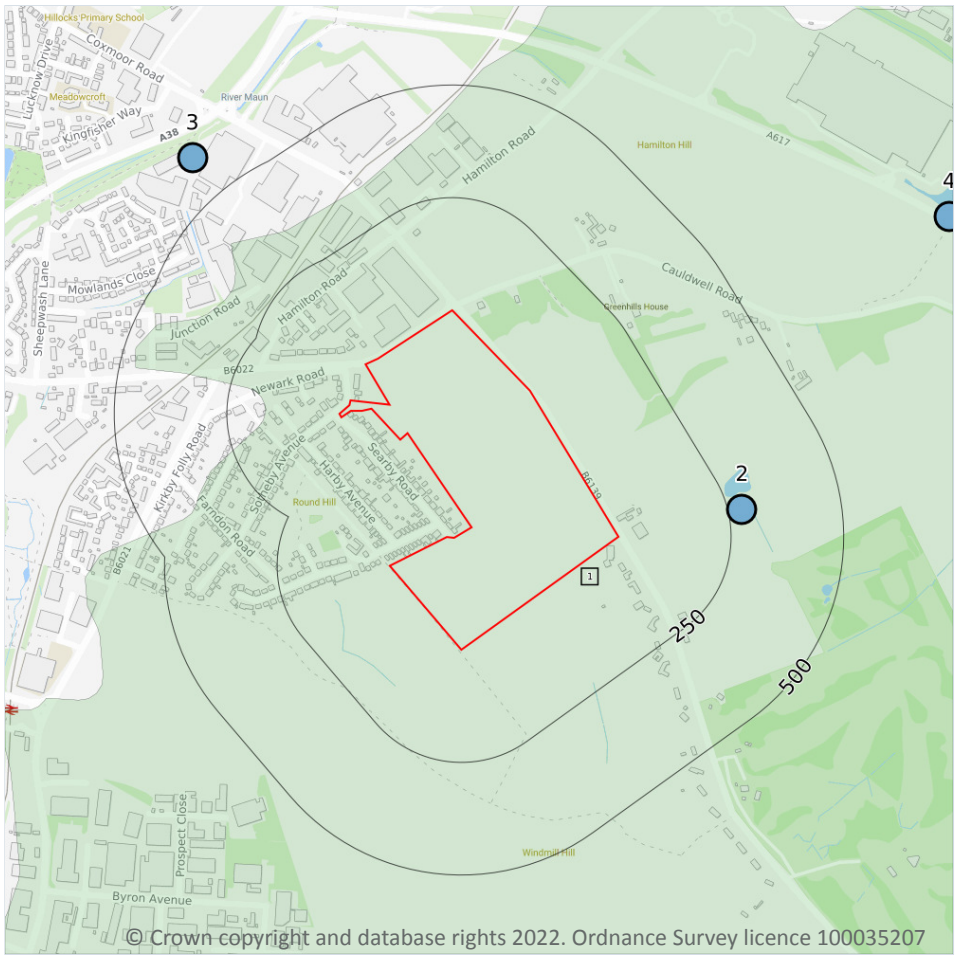
Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	4

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 57**

ID	Location	Details	
-	1413m N	Status: Historical Licence No: 03/28/70/0099 Details: Pollution Remediation Direct Source: Groundwater Midlands Region Point: KING'S MILL SERVICE STATION - BOREHOLE Data Type: Point Name: TOTALFINAELF UK LIMITED Easting: 451890 Northing: 359970	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/09/2001 Expiry Date: - Issue No: 1 Version Start Date: 20/09/2001 Version End Date: -
-	1413m N	Status: Historical Licence No: 03/28/70/0099 Details: Pollution Remediation Direct Source: Groundwater Midlands Region Point: KING'S MILL SERVICE STATION - BOREHOLE Data Type: Poly4 Name: TOTALFINAELF UK LIMITED Easting: 451880 Northing: 360010	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/09/2001 Expiry Date: - Issue No: 1 Version Start Date: 20/09/2001 Version End Date: -
-	1686m NE	Status: Historical Licence No: 03/28/70/0077 Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: LOWER OAKHAM - LAGOON Data Type: Point Name: JOHN BALL LTD Easting: 453220 Northing: 359240	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 26/03/1993 Expiry Date: - Issue No: 100 Version Start Date: 14/03/1997 Version End Date: -
-	1686m NE	Status: Historical Licence No: 03/28/70/0102 Details: Spray Irrigation - Direct Direct Source: Groundwater Midlands Region Point: LOWER OAKHAM - LAGOON Data Type: Point Name: ANTHONY SALATA Easting: 453220 Northing: 359240	Annual Volume (m^3): 10000 Max Daily Volume (m^3): 2000 Original Application No: - Original Start Date: 02/01/2003 Expiry Date: 31/03/2009 Issue No: 2 Version Start Date: 31/03/2005 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**4**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 57**

ID	Location	Details	
2	280m E	Status: Active Licence No: 03/28/70/0084 Details: Spray Irrigation - Storage Direct Source: Surface Water Midlands Region Point: COXMOOR GOLF CLUB - TRIBUTARY OF CAULDWELL BROOK Data Type: Point Name: COXMOOR GOLF CLUB Easting: 452220 Northing: 358150	Annual Volume (m^3): 5,500 Max Daily Volume (m^3): 37 Original Application No: - Original Start Date: 13/03/1997 Expiry Date: - Issue No: 100 Version Start Date: 03/12/2018 Version End Date: -
3	598m NW	Status: Historical Licence No: 03/28/70/0083 Details: Process water Direct Source: Surface Water Midlands Region Point: SUTTON IN ASHFIELD - RIVER MAUN Data Type: Point Name: EVE TRAKWAY LTD Easting: 451000 Northing: 358930	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 30/09/1996 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2000 Version End Date: -
4	996m NE	Status: Active Licence No: 03/28/70/0076 Details: Spray Irrigation - Storage Direct Source: Surface Water Midlands Region Point: LOWER OAKHAM - DRAIN TRIBUTARY OF CAULDWELL BROOK Data Type: Point Name: Summit Real Estate Ltd Easting: 452680 Northing: 358800	Annual Volume (m^3): 30,000 Max Daily Volume (m^3): 30,000 Original Application No: - Original Start Date: 26/03/1993 Expiry Date: - Issue No: 106 Version Start Date: 14/02/2018 Version End Date: -
-	1018m E	Status: Active Licence No: 03/28/70/0078 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: STONEHILLS FARM - CAULDWELL BROOK (RESERVOIR) Data Type: Point Name: CAMPFIELD FARMS LTD Easting: 452950 Northing: 357920	Annual Volume (m^3): 10,000 Max Daily Volume (m^3): 2,000 Original Application No: - Original Start Date: 30/11/1993 Expiry Date: - Issue No: 106 Version Start Date: 03/12/2018 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	1

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on **page 57**

ID	Location	Type	Description
1	**On site**	**3**	**Total catchment**

This data is sourced from the Environment Agency and Natural Resources Wales.

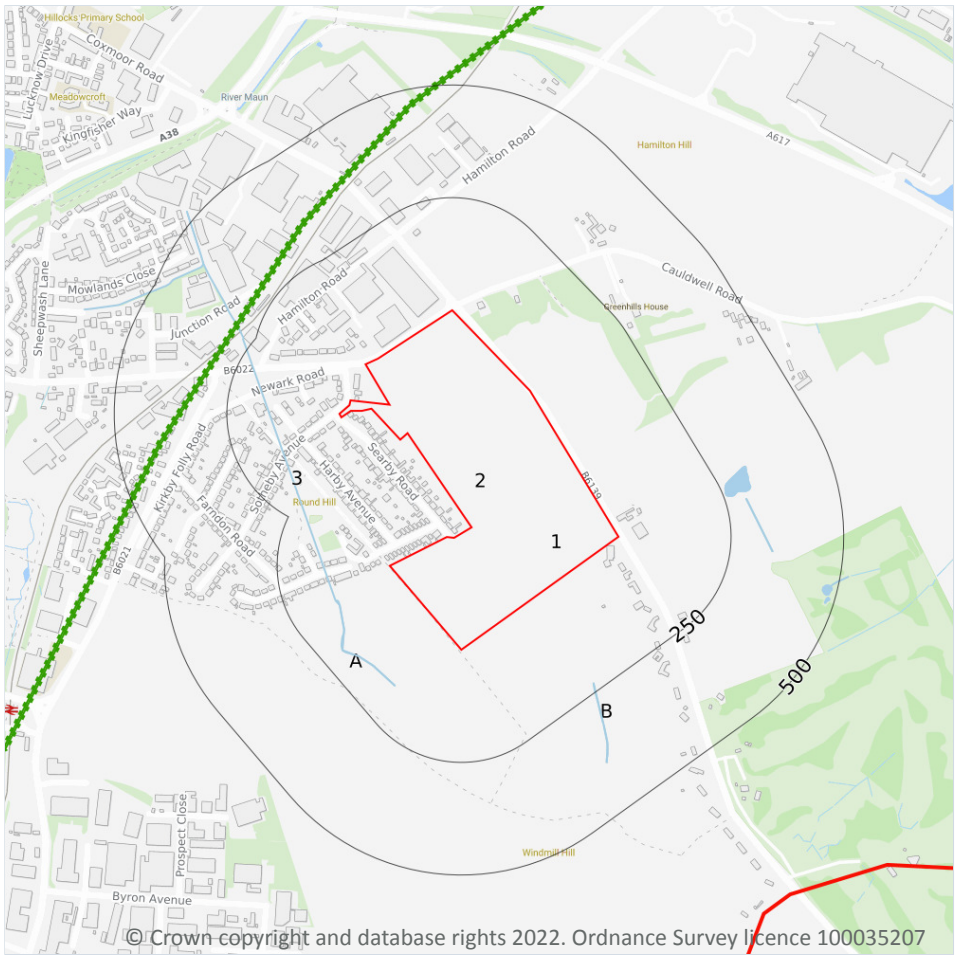
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**3**

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 61**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	139m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
3	139m W	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
B	230m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**2**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 61**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 61**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	**On site**	**River**	**Maun from Source to Vicar Water**	**GB104028052960**	**Idle River**	**Idle and Torne**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 61**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	628m NW	River	Maun from Source to Vicar Water	GB104028052960	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 61**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	**On site**	**Idle Torne - PT Sandstone Nottinghamshire& Doncaster**	**GB40401G301500**	**Poor**	**Poor**	**Poor**	**2019**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

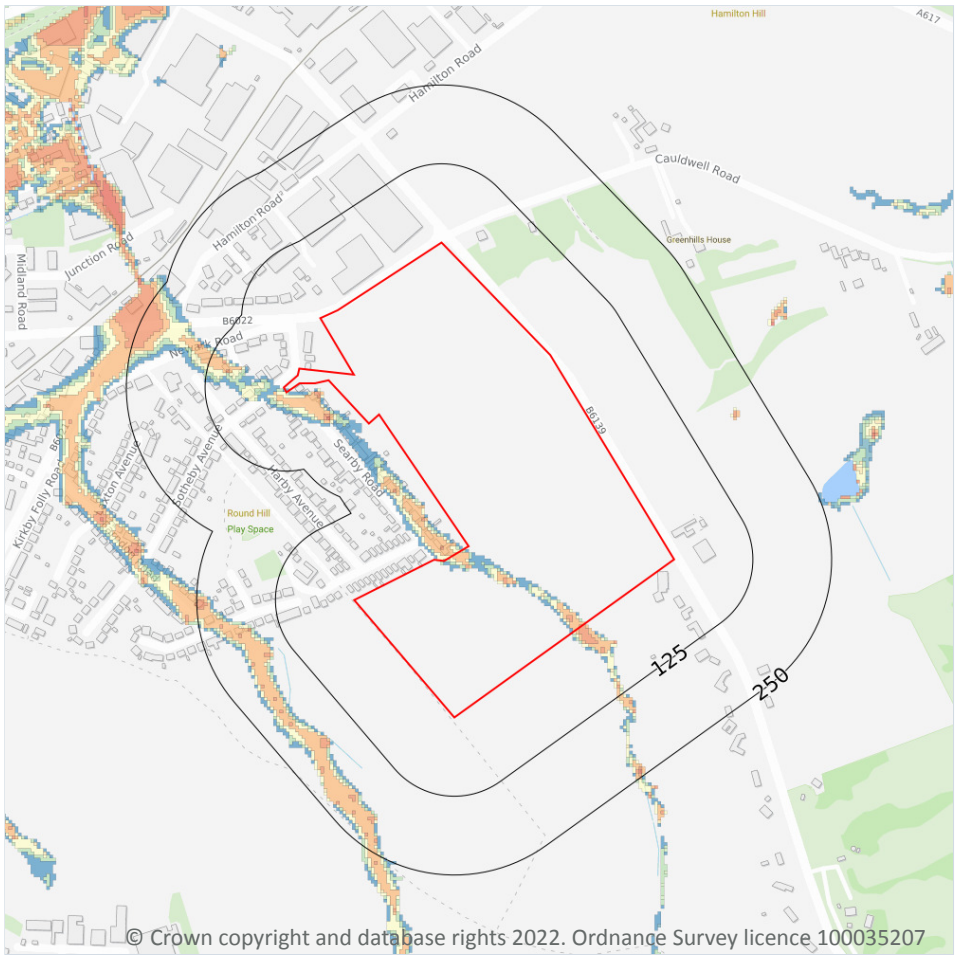
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, Greater than 1.0m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 67**

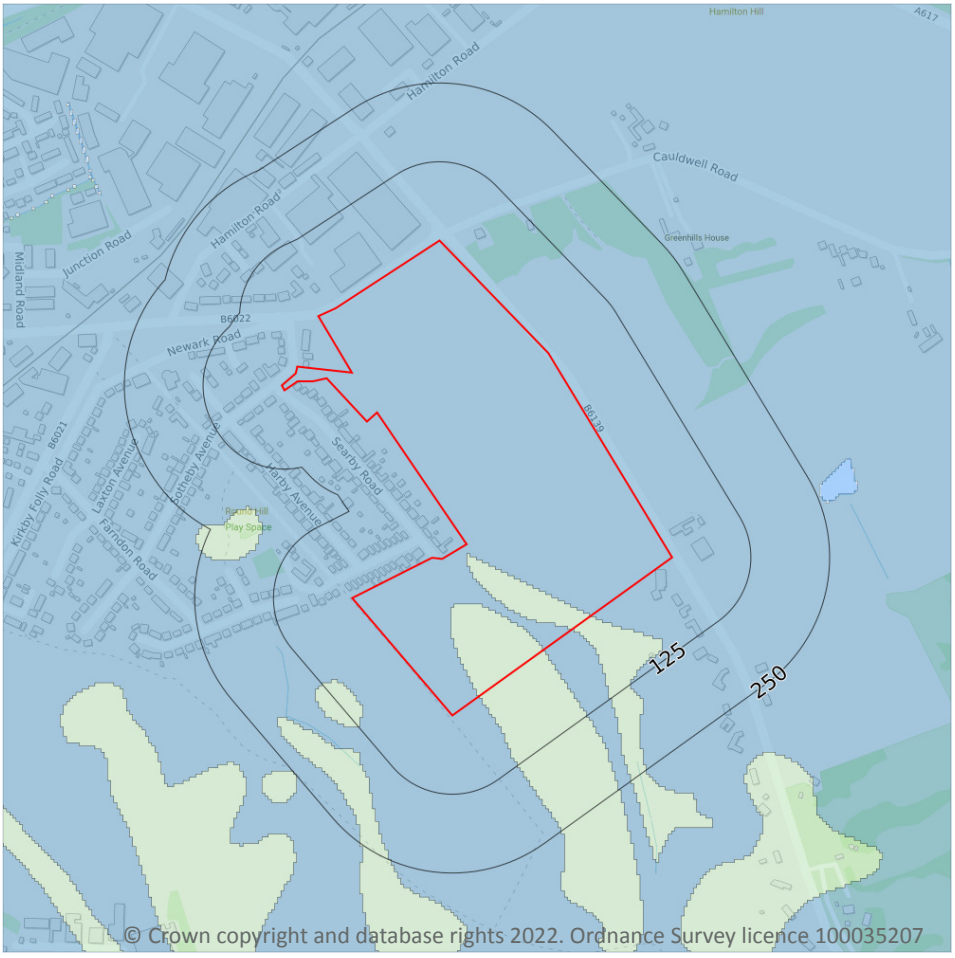
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on

a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

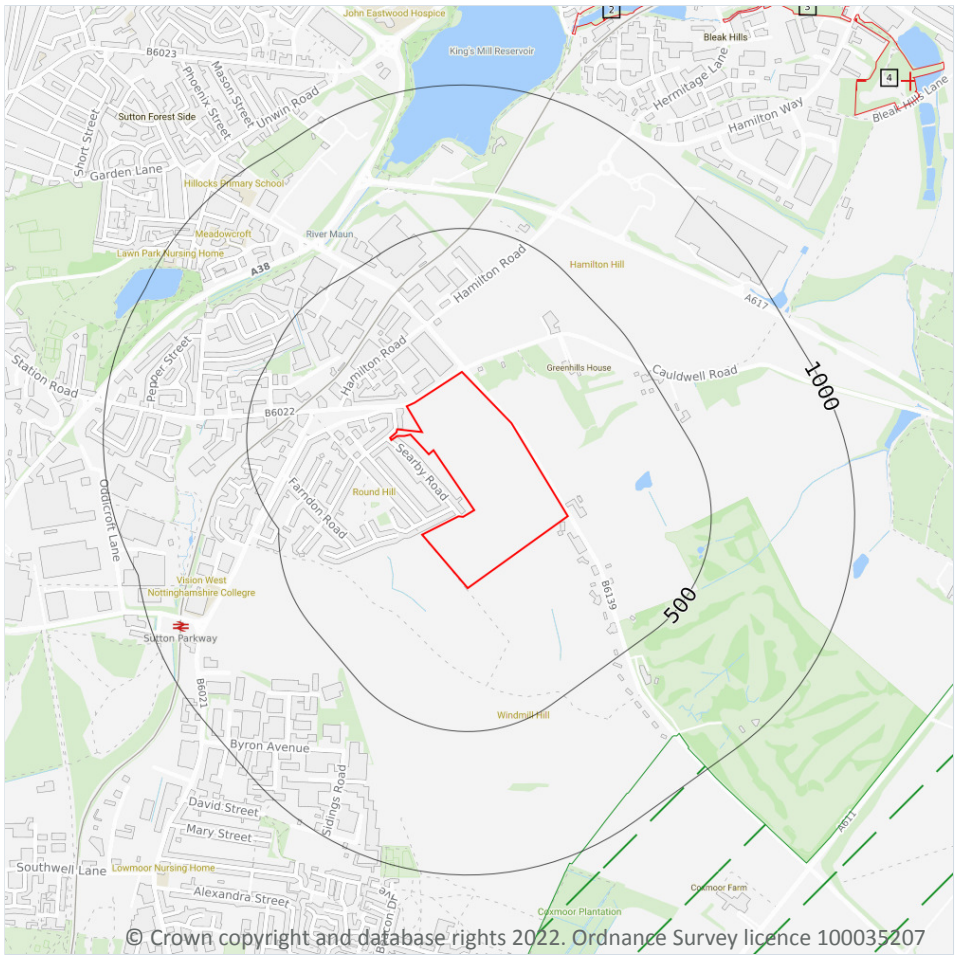
Highest risk on site	**Low**
Highest risk within 50m	**Low**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 69**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	4

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 70**

ID	Location	Name	Data source
2	1240m N	The Hermitage	Natural England
3	1524m NE	Oakham	Natural England
4	1608m NE	Oakham	Natural England
-	1953m NE	Quarry Lane	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	1

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 70**

ID	Location	Name	Woodland Type
-	1991m SE	Normanshill/thieves Wood	Ancient Replanted Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	1

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 70**

ID	Location	Name	Local Authority name
1	837m SE	Derby and Nottingham	Ashfield

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	9

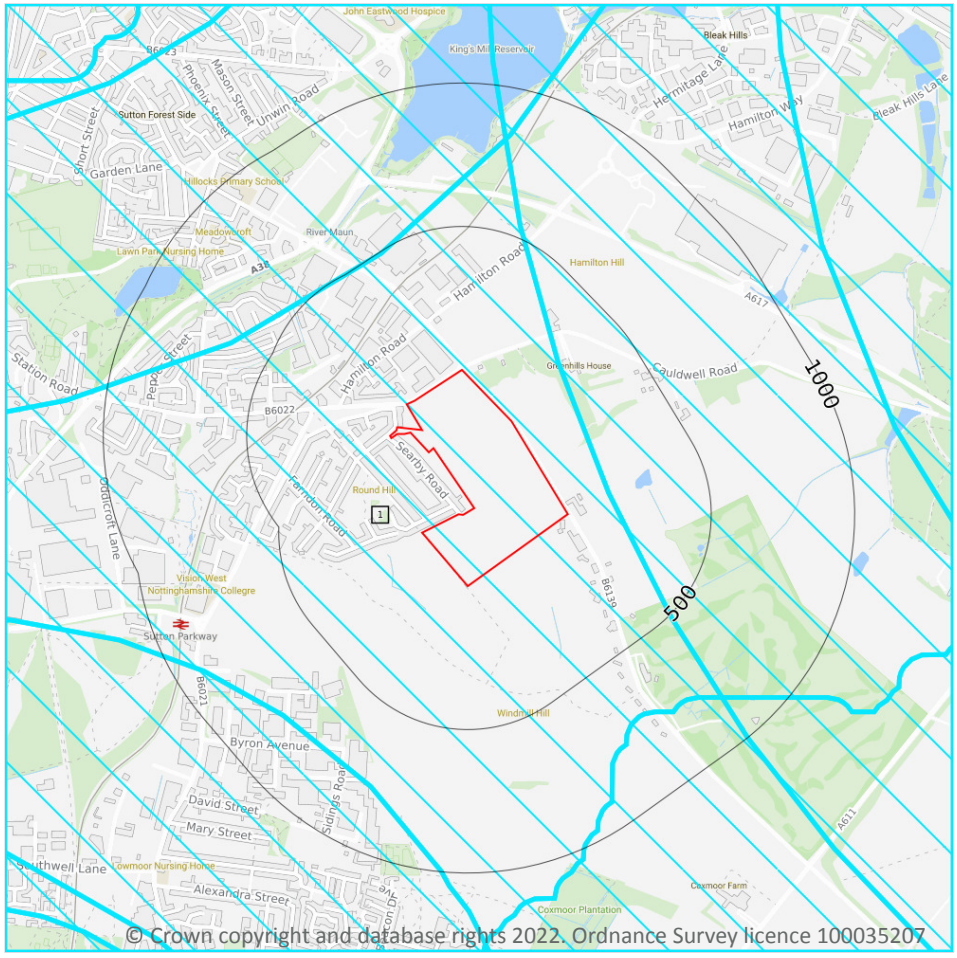
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	**Nottinghamshire**	**Groundwater**	**40**	**Existing**

Location	Name	Type	NVZ ID	Status
On site	**River Idle from River Ryton to River Trent NVZ**	**Surface Water**	**335**	**Existing**
784m SW	River Erewash from Gilt Brook to River Trent NVZ	Surface Water	316	Existing
784m SW	Attenborough NNR Eutrophic lake NVZ	Eutrophic Water	149	Existing
1743m N	Thoresby Lake Eutrophic lake NVZ	Eutrophic Water	145	Existing
1856m S	Nottinghamshire	Groundwater	40	Existing
1856m SW	River Erewash from Gilt Brook to River Trent NVZ	Surface Water	316	Existing
1856m SW	Attenborough NNR Eutrophic lake NVZ	Eutrophic Water	149	Existing
1857m S	River Idle from River Ryton to River Trent NVZ	Surface Water	335	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



10.17 SSSI Impact Risk Zones

Records on site	1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 76**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t.** **Combustion - General combustion processes >50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

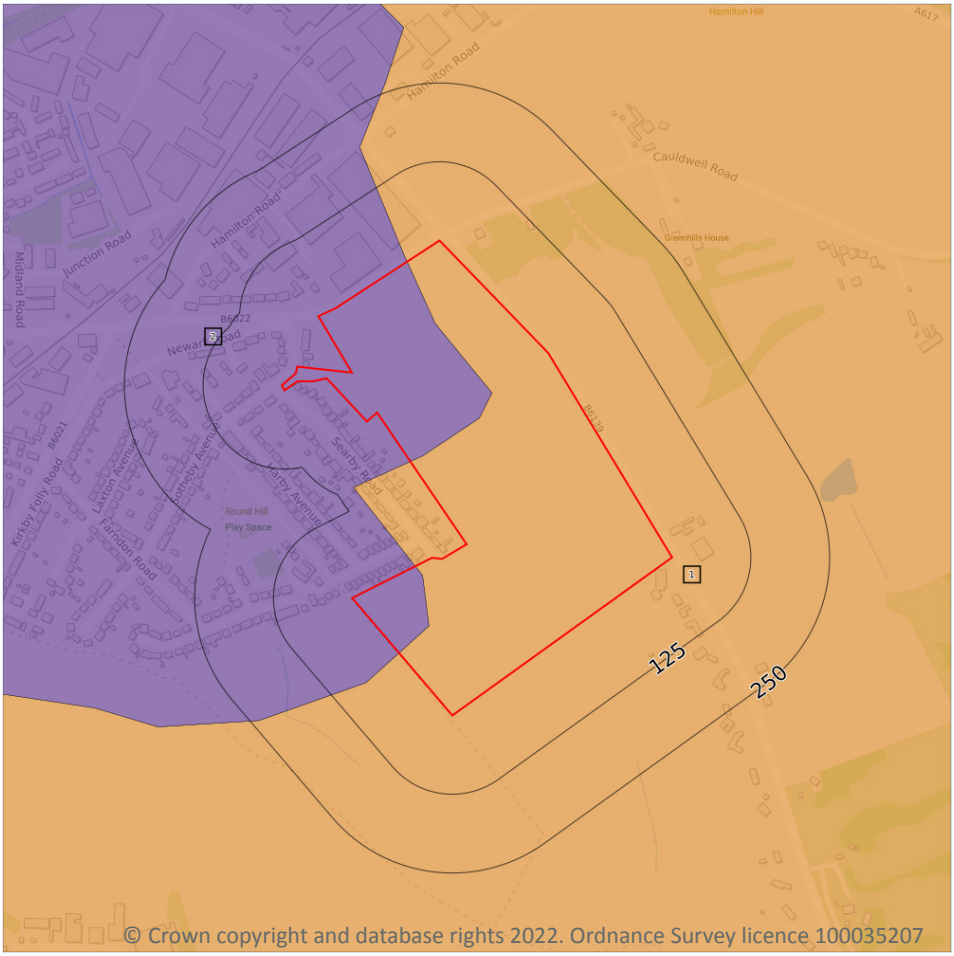
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	2

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 80**

ID	Location	Classification	Description
1	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
2	On site	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	3

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

Location	Reference	Scheme	Start Date	End date
On site	**AG00348527**	**Entry Level plus Higher Level Stewardship**	**01/06/2011**	**31/05/2021**
10m NE	AG00516238	Entry Level Stewardship	01/10/2013	30/09/2018
149m E	AG00348527	Entry Level plus Higher Level Stewardship	01/06/2011	31/05/2021

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks

Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	3

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 83**

ID	Location	Main Habitat	Other habitats
1	15m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	16m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	20m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	1

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 83**

ID	Location	Type	Habitat
2	129m E	Network Enhancement Zone 1	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

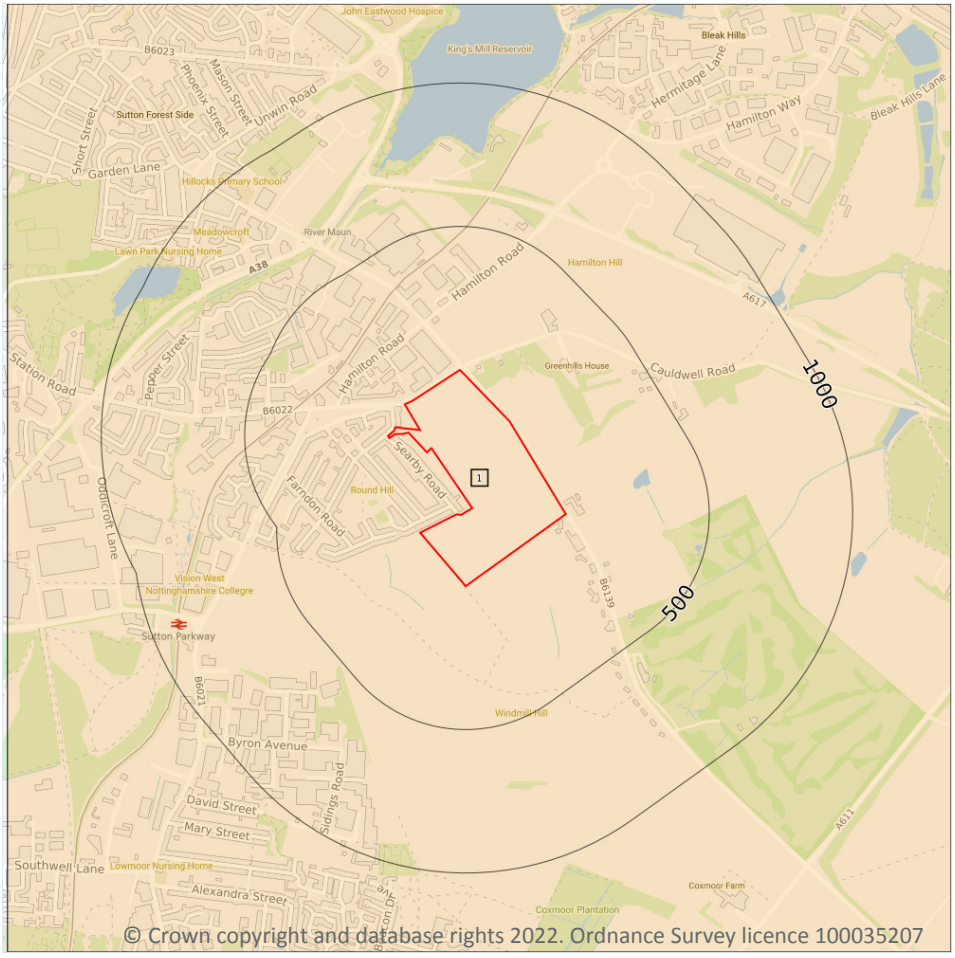
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



14.1 10k Availability

Records within 500m	1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 85**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Partial**	**Full**	**No coverage**	**SK55NW**

This data is sourced from the British Geological Survey.

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

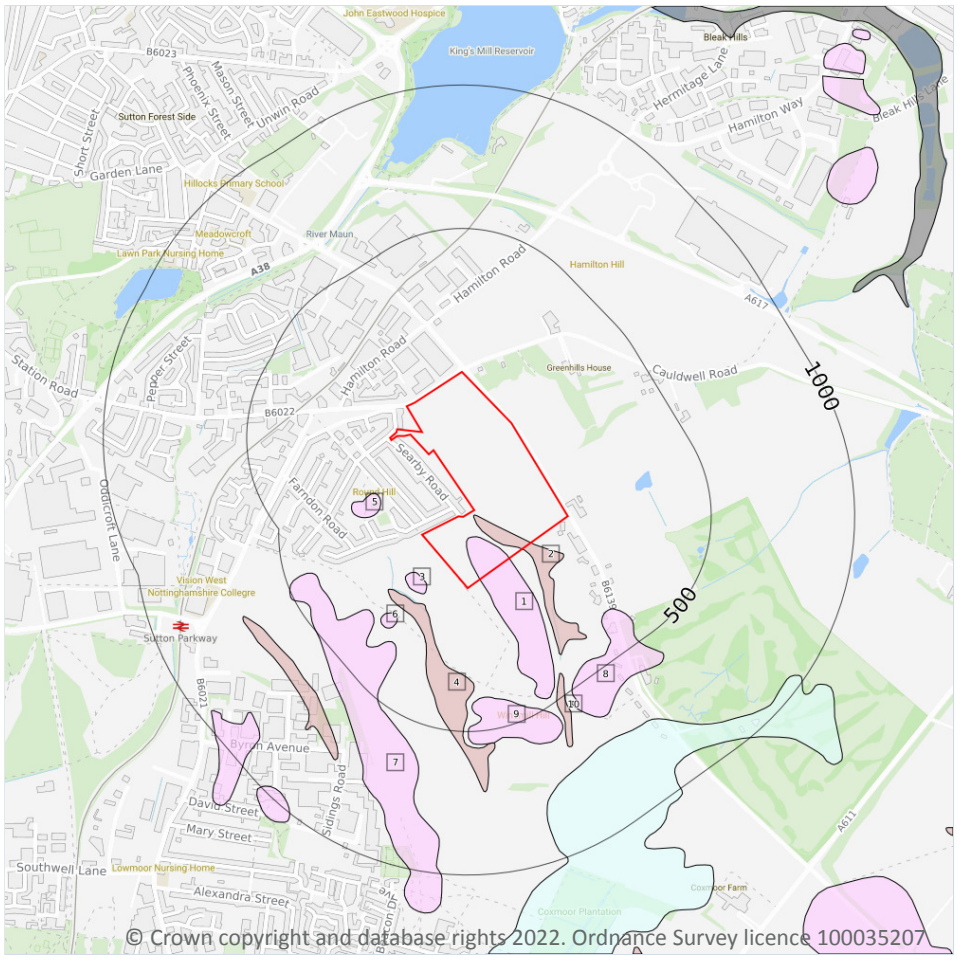
14.2 Artificial and made ground (10k)

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



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m	10

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.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 87**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFDU-XSV**	**Glaciofluvial Deposits - Sand And Gravel**	**Sand And Gravel**
2	**On site**	**HEAD-XSZ**	**Head - Sand And Silt**	**Sand And Silt**
3	98m SW	GFDU-XSV	Glaciofluvial Deposits - Sand And Gravel	Sand And Gravel
4	153m SW	HEAD-XSZ	Head - Sand And Silt	Sand And Silt

ID	Location	LEX Code	Description	Rock description
5	174m NW	GFDU-XSV	Glaciofluvial Deposits - Sand And Gravel	Sand And Gravel
6	250m SW	GFDU-XSV	Glaciofluvial Deposits - Sand And Gravel	Sand And Gravel
7	310m SW	GFDU-XSV	Glaciofluvial Deposits - Sand And Gravel	Sand And Gravel
8	348m SE	GFDU-XSV	Glaciofluvial Deposits - Sand And Gravel	Sand And Gravel
9	385m S	GFDU-XSV	Glaciofluvial Deposits - Sand And Gravel	Sand And Gravel
10	429m SE	HEAD-XSZ	Head - Sand And Silt	Sand And Silt

This data is sourced from the British Geological Survey.

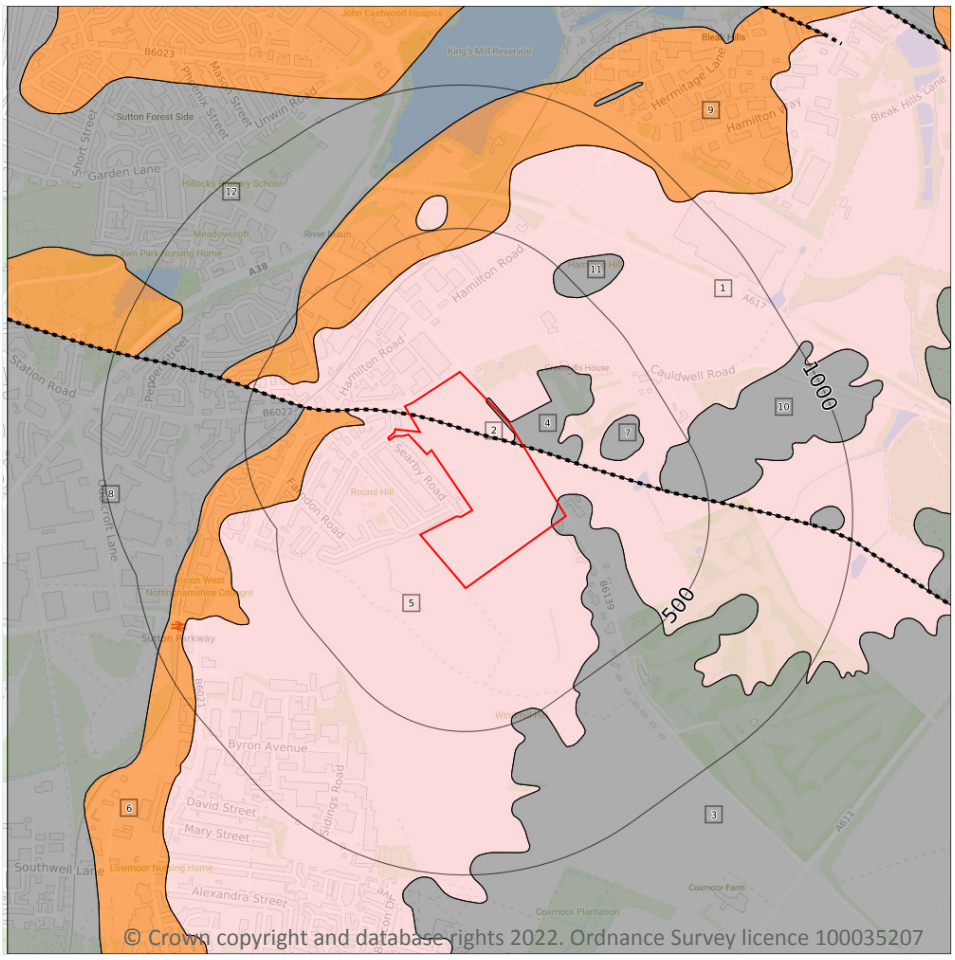
14.4 Landslip (10k)

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



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m	11

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.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 89**

ID	Location	LEX Code	Description	Rock age
1	On site	LNS-SDST	Lenton Sandstone Formation - Sandstone	Early Triassic Epoch - Late Permian Epoch [Obsolete name]
3	On site	NTC-SDST	Nottingham Castle Sandstone Formation - Sandstone	Early Triassic Epoch
4	On site	NTC-SDST	Nottingham Castle Sandstone Formation - Sandstone	Early Triassic Epoch

ID	Location	LEX Code	Description	Rock age
5	**On site**	**LNS-SDST**	**Lenton Sandstone Formation - Sandstone**	**Early Triassic Epoch - Late Permian Epoch [Obsolete name]**
6	95m NW	EDT-MDSD	Edlington Formation - Mudstone And Sandstone	Late Permian Epoch [Obsolete name]
7	217m NE	NTC-SDST	Nottingham Castle Sandstone Formation - Sandstone	Early Triassic Epoch
8	310m W	CDF-DOLMST	Cadeby Formation - Dolomitic Limestone	Late Permian Epoch [Obsolete name]
9	316m W	EDT-MDSD	Edlington Formation - Mudstone And Sandstone	Late Permian Epoch [Obsolete name]
10	349m E	NTC-SDST	Nottingham Castle Sandstone Formation - Sandstone	Early Triassic Epoch
11	436m NE	NTC-SDST	Nottingham Castle Sandstone Formation - Sandstone	Early Triassic Epoch
12	467m NW	CDF-DOLMST	Cadeby Formation - Dolomitic Limestone	Late Permian Epoch [Obsolete name]

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**1**

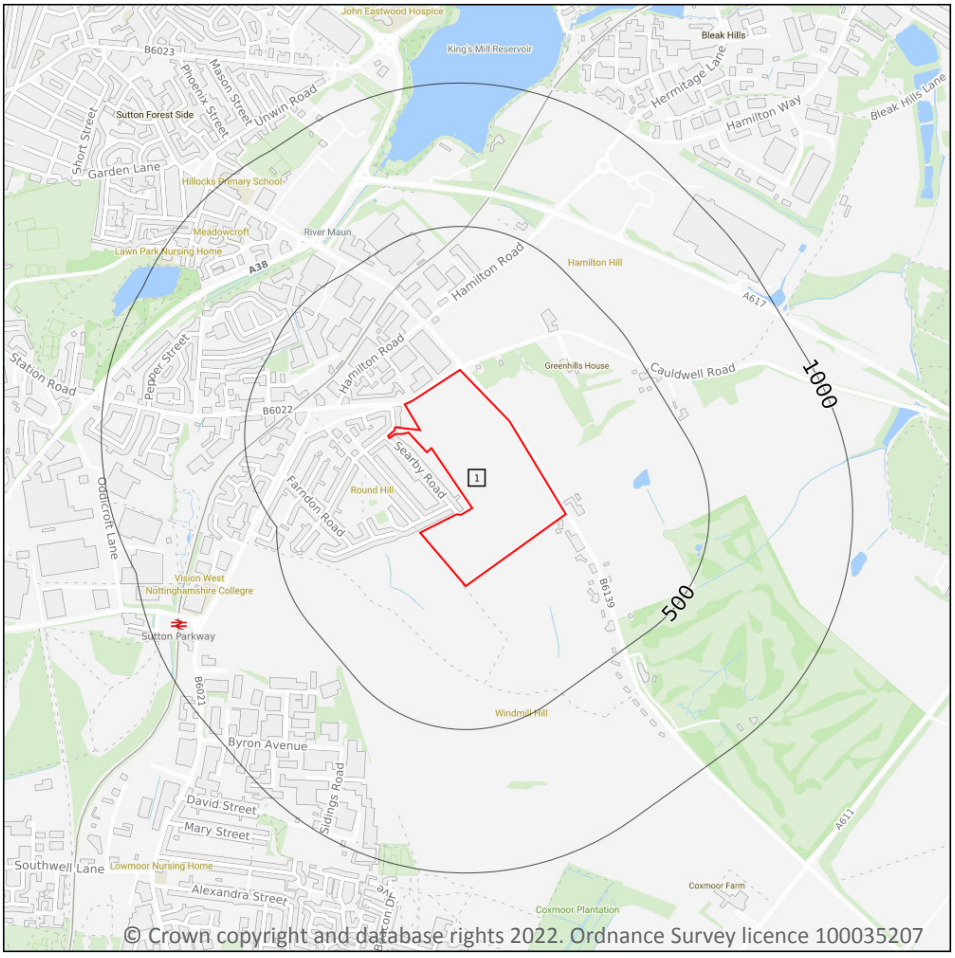
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 89**

ID	Location	Category	Description
2	**On site**	**FAULT**	**Normal fault, inferred**

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

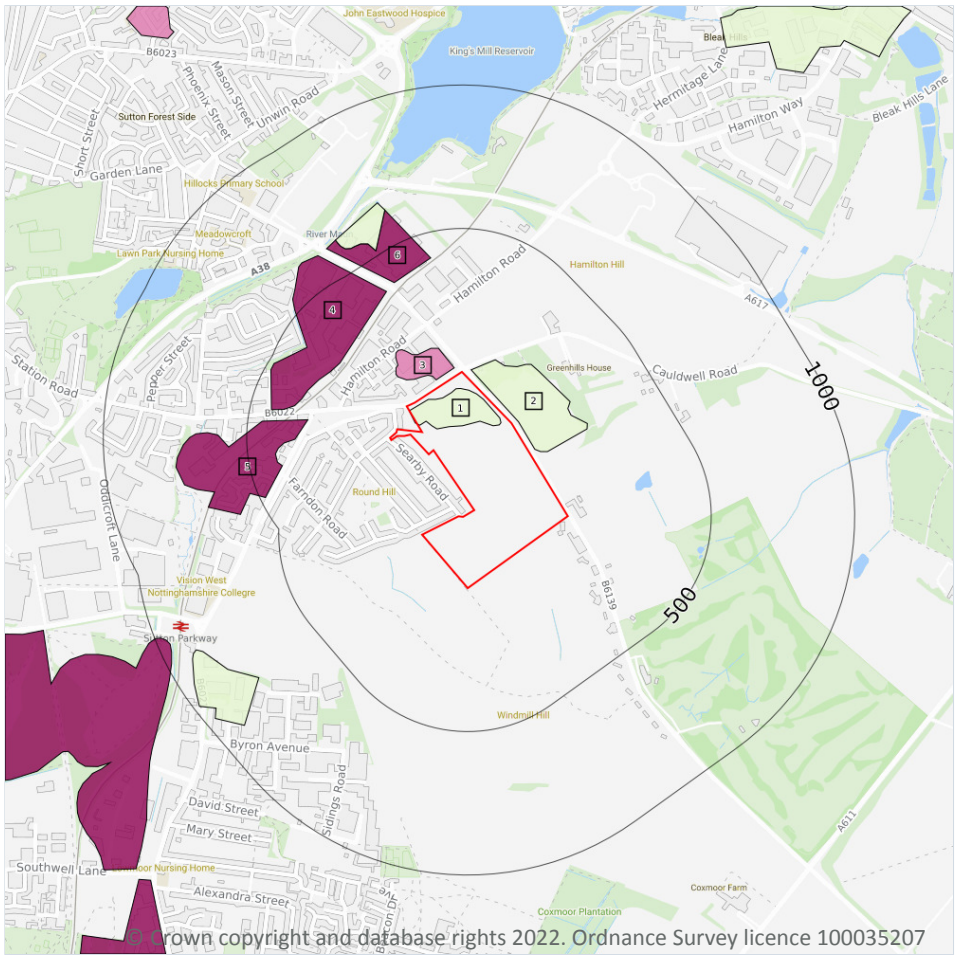
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 91**

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 **6**

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.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 92**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**WMGR-ARTDP**	**INFILLED GROUND**	**ARTIFICIAL DEPOSIT**
2	21m NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	26m NW	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
4	277m NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

ID	Location	LEX Code	Description	Rock description
5	294m W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
6	390m NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

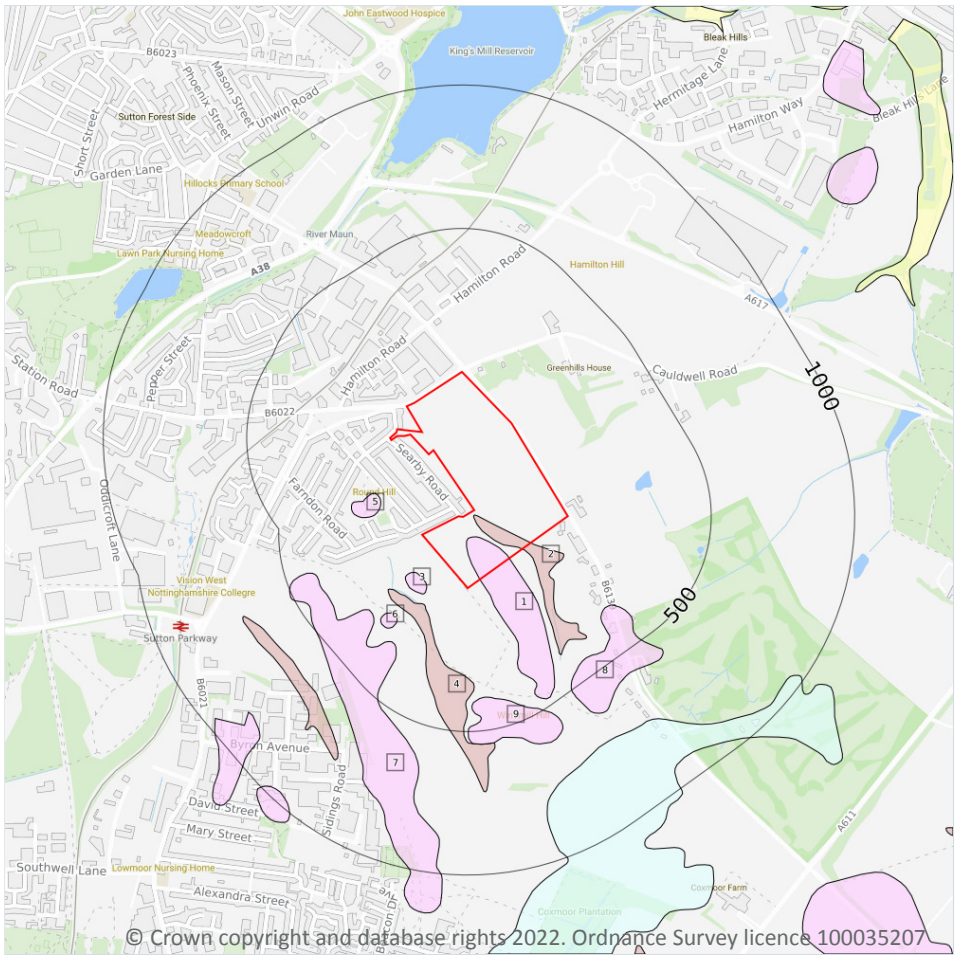
Records within 50m	**2**

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Very High**	**Low**
21m NE	Mixed	Very High	Low

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	9

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 94**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFDMP-XSV**	**GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE**	**SAND AND GRAVEL**
2	**On site**	**HEAD-DMTN**	**HEAD**	**DIAMICTON**
3	97m SW	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	153m SW	HEAD-DMTN	HEAD	DIAMICTON
5	174m NW	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
6	250m SW	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
7	311m SW	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
8	335m SE	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
9	385m S	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 **2**

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).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Low**
On site	**Intergranular**	**Very High**	**High**

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.

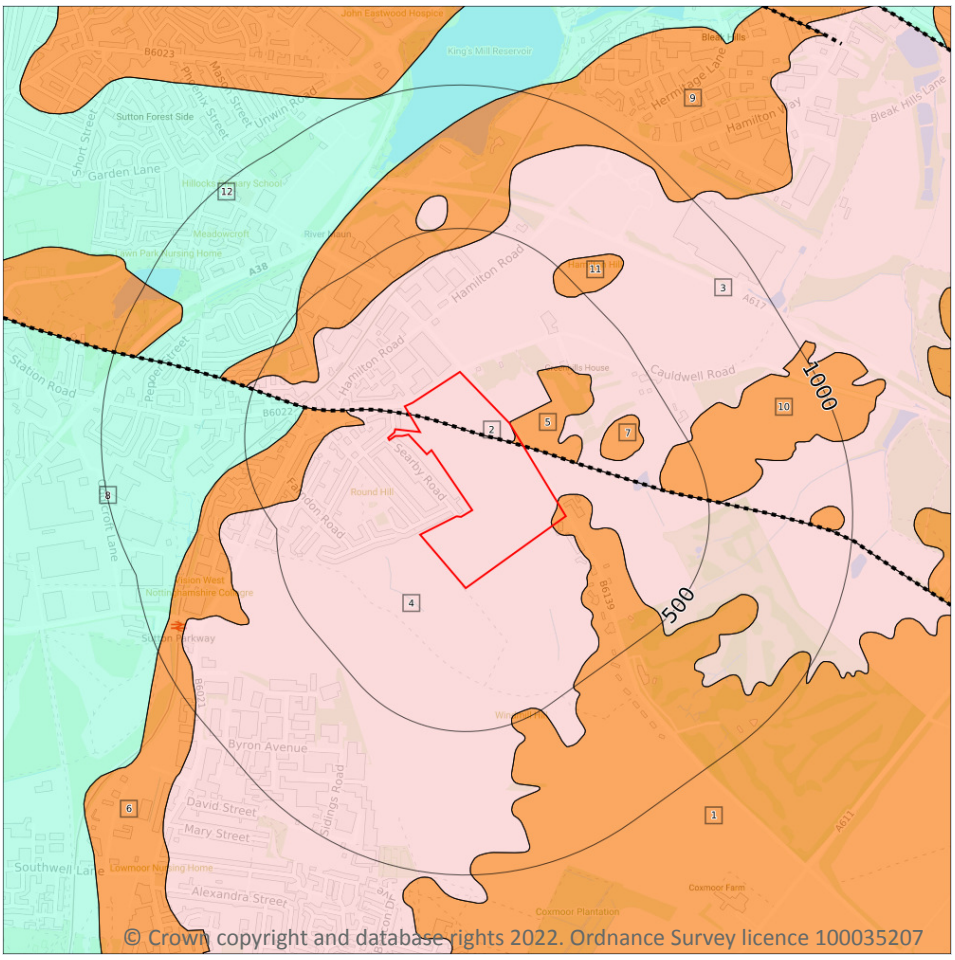
15.7 Landslip permeability (50k)

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	11

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 97**

ID	Location	LEX Code	Description	Rock age
1	On site	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN
3	On site	LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE	-
4	On site	LNS-SDST	LENTON SANDSTONE FORMATION - SANDSTONE	-
5	On site	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN

ID	Location	LEX Code	Description	Rock age
6	96m NW	EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE	-
7	216m NE	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN
8	309m W	CDF-DOLO	CADEBY FORMATION - DOLOSTONE	-
9	317m W	EDT-MDSD	EDLINGTON FORMATION - MUDSTONE AND SANDSTONE	-
10	350m E	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN
11	436m NE	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN
12	467m NW	CDF-DOLO	CADEBY FORMATION - DOLOSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**3**

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	**Mixed**	**High**	**Moderate**
On site	**Intergranular**	**High**	**Moderate**
On site	**Mixed**	**High**	**Moderate**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**1**

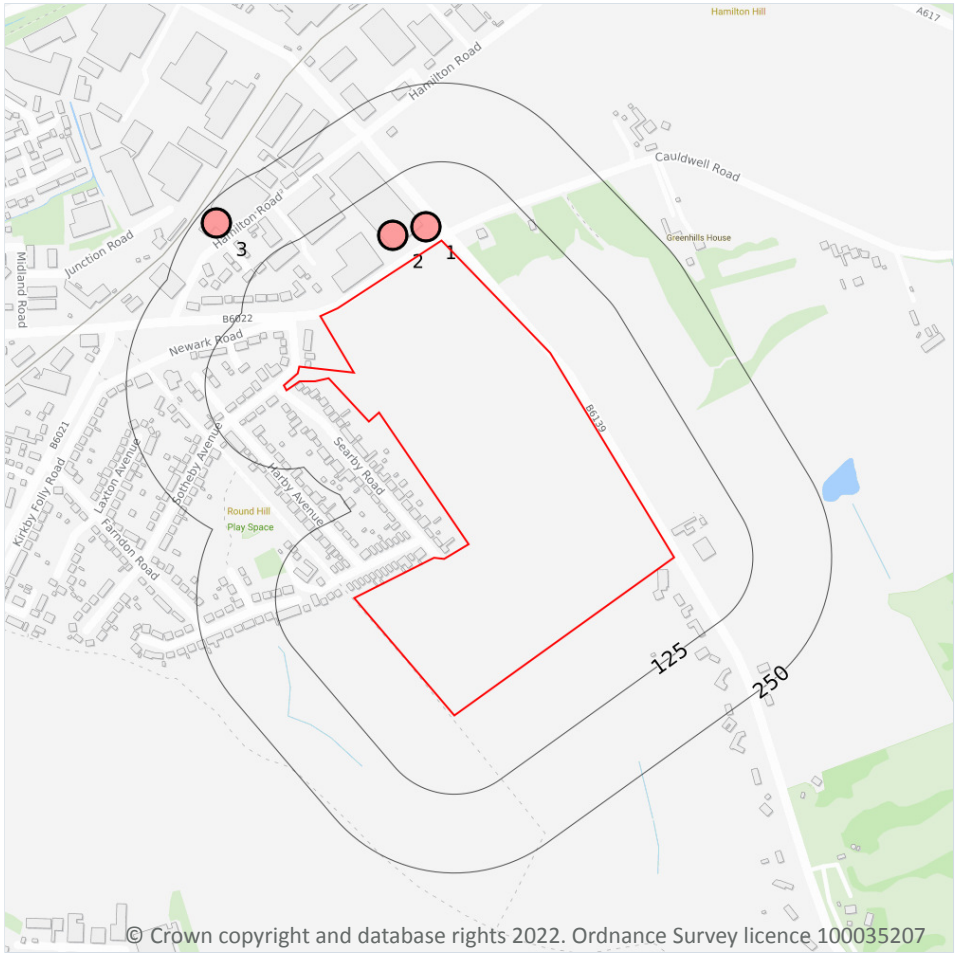
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 97**

ID	Location	Category	Description
2	**On site**	**FAULT**	**Fault, inferred**

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	3

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.

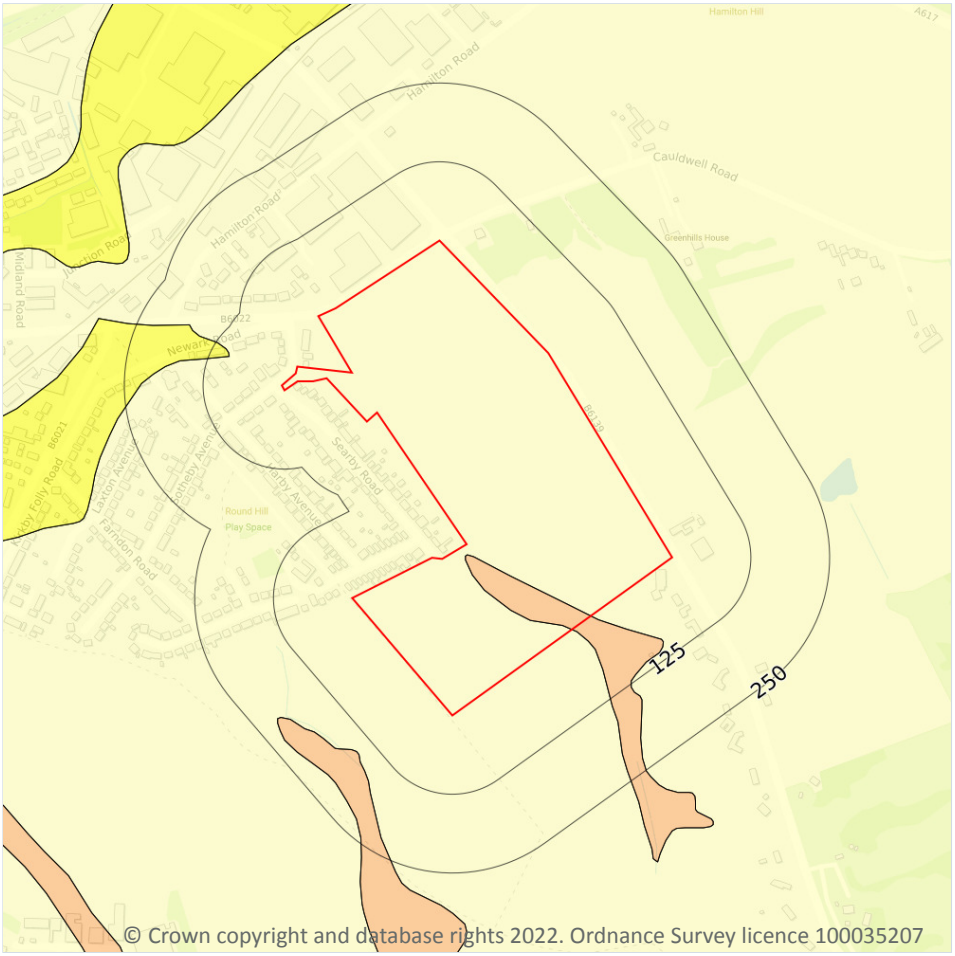
Features are displayed on the Boreholes map on **page 99**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	32m NW	451552 358614	BRITISH GLUES & CHEMICALS BH	87.17	N	228923
2	49m NW	451500 358600	SUTTON-IN-ASHFIELD	87.17	N	229060

ID	Location	Grid reference	Name	Length	Confidential	Web link
3	222m NW	451220 358620	SUTTON-IN-ASHFIELD	77.11	N	229061

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	2

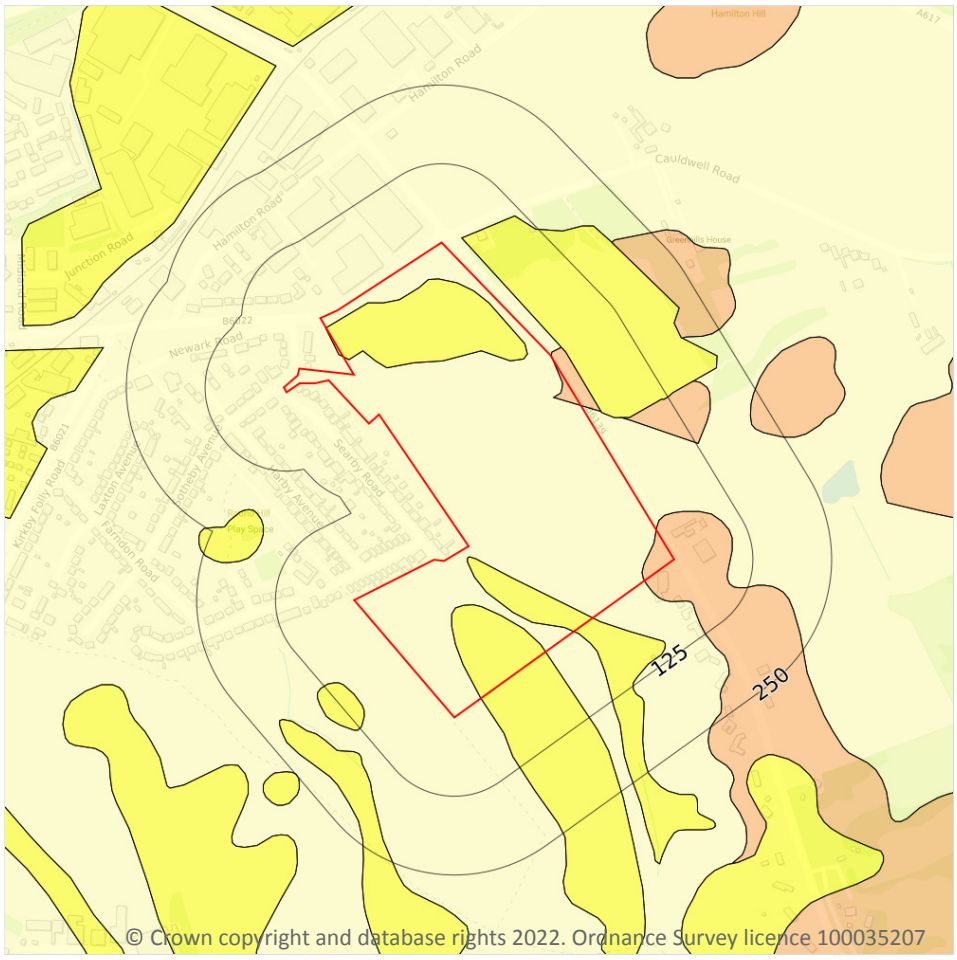
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 101**

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

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	5

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.

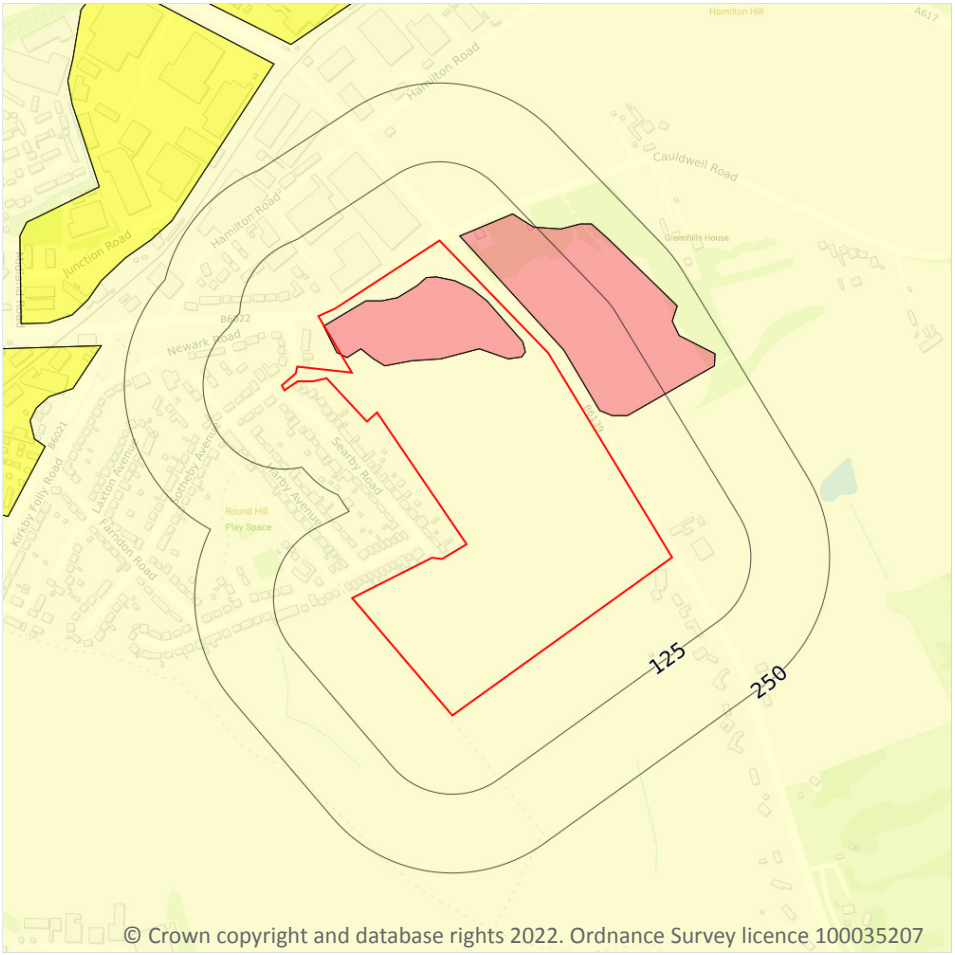
Features are displayed on the Natural ground subsidence - Running sands map on **page 102**

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.**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**
21m NE	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
45m NE	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.

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	3

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.

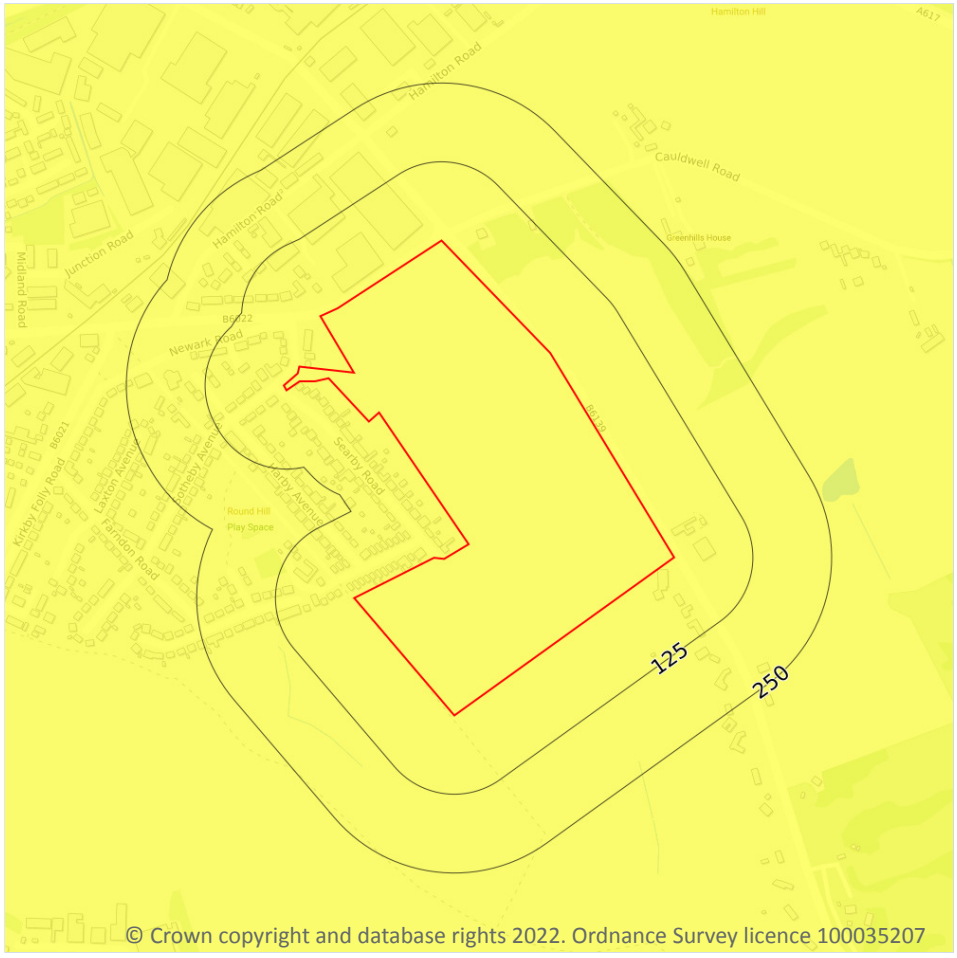
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 104**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**Moderate**	**Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.**

Location	Hazard rating	Details
21m NE	Moderate	Compressibility and uneven settlement hazards are probably present. Land use should consider specifically the compressibility and variability of the site.

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

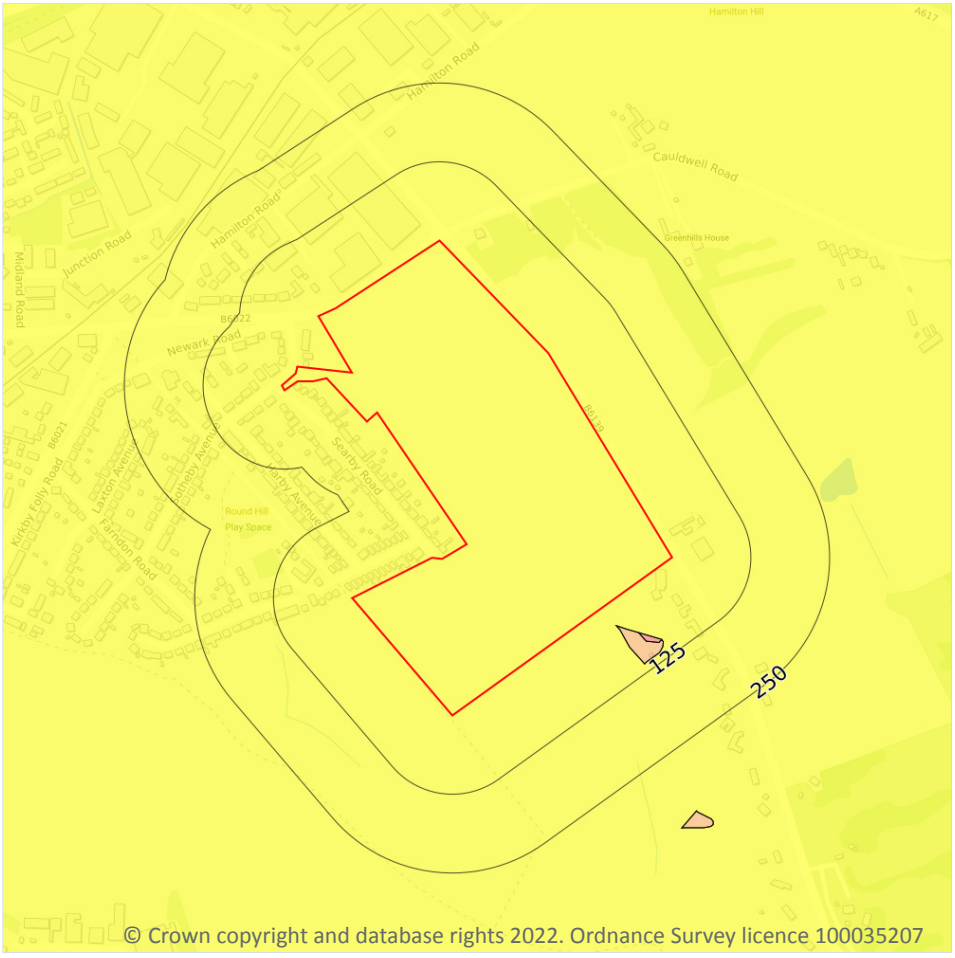
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 106**

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



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	2

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.

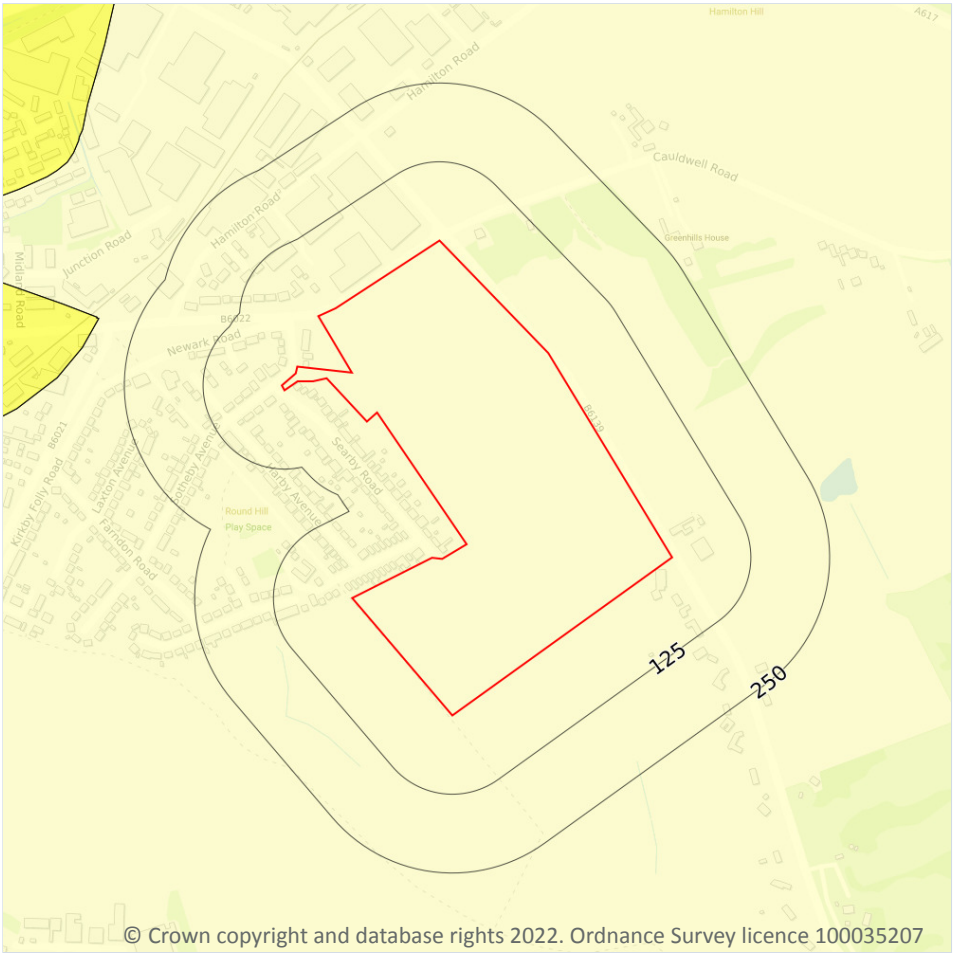
Features are displayed on the Natural ground subsidence - Landslides map on **page 107**

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.**

Location	Hazard rating	Details
37m SE	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

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	1

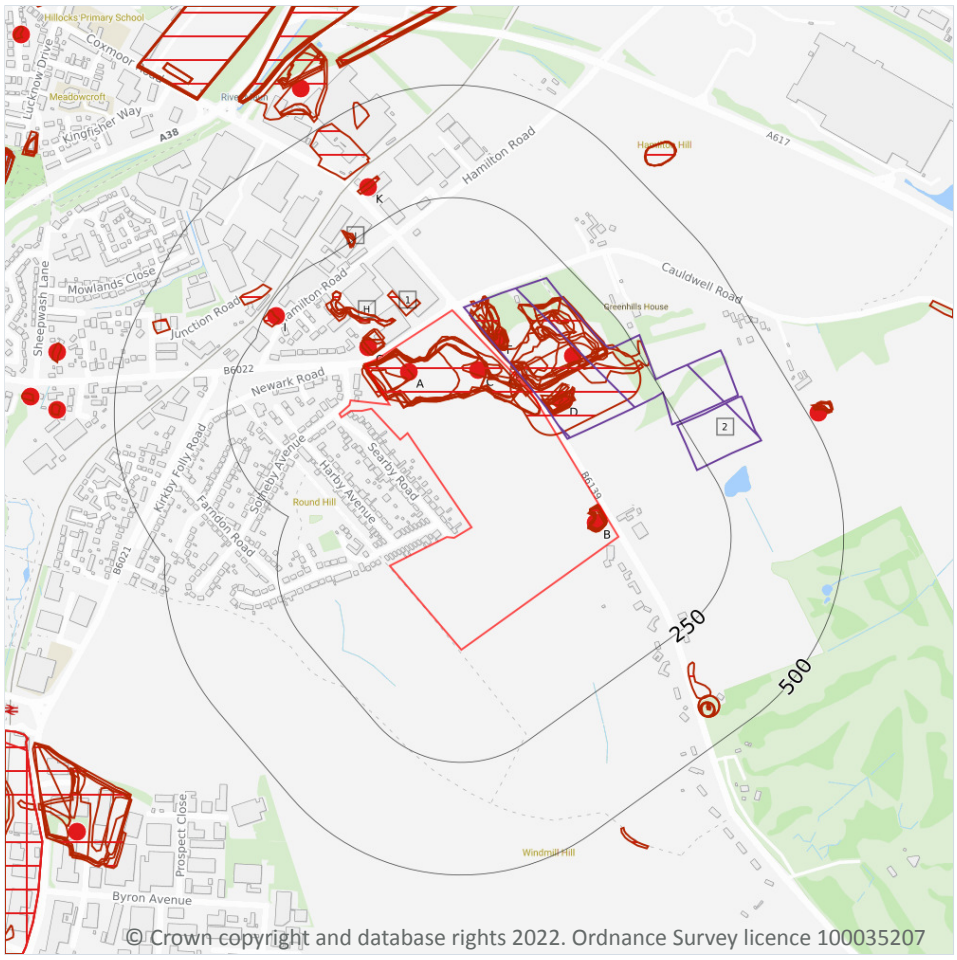
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 109**

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.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities

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 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.

18.2 BritPits

Records within 500m	10

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, ground workings and natural cavities map on **page 111**

ID	Location	Details	Description
A	**On site**	**Name: Forest Lane Sand Pit** **Address: SUTTON-IN-ASHFIELD, Nottinghamshire** **Commodity: Sand** **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**
B	**On site**	**Name: Coxmoor Road Sand Pit** **Address: SUTTON-IN-ASHFIELD, Nottinghamshire** **Commodity: Sand** **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**
C	**On site**	**Name: Redhouse Sand Pit** **Address: SUTTON-IN-ASHFIELD, Nottinghamshire** **Commodity: Sand** **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**
F	31m NE	Name: Forest Lane Sand Pit Address: SUTTON-IN-ASHFIELD, Nottinghamshire Commodity: Sand 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
G	32m NW	Name: Forest Lane Sand Pit Address: SUTTON-IN-ASHFIELD, Nottinghamshire Commodity: Sand 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

ID	Location	Details	Description
D	49m NE	Name: Forest Lane Sand Pit Address: Sutton Forest Side, SUTTON-IN-ASHFIELD, Nottinghamshire Commodity: Sand 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
D	122m NE	Name: Sutton Address: Caudwell Road, SUTTON-IN-ASHFIELD, Nottinghamshire Commodity: Sandstone 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
D	122m NE	Name: Sutton Address: Caudwell Road, SUTTON-IN-ASHFIELD, Nottinghamshire Commodity: Sandstone 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
I	227m NW	Name: Blackmires Lane Sand Pit Address: SUTTON-IN-ASHFIELD, Nottinghamshire Commodity: Sand 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
K	330m NW	Name: Blackmires Farm Sand Pit Address: SUTTON-IN-ASHFIELD, Nottinghamshire Commodity: Sand 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.

18.3 Surface ground workings

Records within 250m	**66**

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.

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Sand Pits**	**1938**	**1:10560**
A	**On site**	**Sand Pit**	**1898**	**1:10560**
A	**On site**	**Sand Pit**	**1878**	**1:10560**
A	**On site**	**Sand Pits**	**1921**	**1:10560**
A	**On site**	**Pond**	**1950**	**1:10560**
A	**On site**	**Sand Pits**	**1921**	**1:10560**
A	**On site**	**Unspecified Disused Pit**	**1991**	**1:10000**
A	**On site**	**Unspecified Disused Pit**	**1974**	**1:10000**
A	**On site**	**Unspecified Pits**	**1967**	**1:10560**
A	**On site**	**Refuse Heap**	**1950**	**1:10560**
B	**On site**	**Old Sand Pit**	**1938**	**1:10560**
B	**On site**	**Sand Pit**	**1878**	**1:10560**
B	**On site**	**Old Sand Pit**	**1921**	**1:10560**
B	**On site**	**Old Sand Pit**	**1950**	**1:10560**
B	**On site**	**Old Sand Pit**	**1921**	**1:10560**
B	**On site**	**Unspecified Pit**	**1991**	**1:10000**
B	**On site**	**Unspecified Pit**	**1974**	**1:10000**
B	**On site**	**Unspecified Pit**	**1967**	**1:10560**
C	**On site**	**Sand Pit**	**1878**	**1:10560**
D	**On site**	**Unspecified Disused Pit**	**1974**	**1:10000**
E	**On site**	**Sand Pit**	**1898**	**1:10560**
E	**On site**	**Cuttings**	**1878**	**1:10560**
D	6m NE	Sand Pits	1921	1:10560
D	9m NE	Refuse Heap	1950	1:10560
F	10m NE	Sand Pit	1878	1:10560
E	10m NE	Sand Pits	1898	1:10560
D	11m NE	Sand Pits	1921	1:10560
D	11m NE	Sand Pit	1898	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
D	13m NE	Old Sand Pit	1921	1:10560
F	13m NE	Unspecified Ground Workings	1921	1:10560
D	13m NE	Unspecified Pit	1950	1:10560
F	13m NE	Sand Pits	1898	1:10560
G	13m NW	Sand Pit	1878	1:10560
D	14m NE	Old Sand Pit	1921	1:10560
F	14m NE	Unspecified Pit	1950	1:10560
D	15m NE	Sand Pits	1938	1:10560
F	15m NE	Sand Pits	1921	1:10560
D	16m NE	Sand Pit	1878	1:10560
D	16m NE	Unspecified Pit	1991	1:10000
D	16m NE	Unspecified Ground Workings	1967	1:10560
G	17m NW	Ponds	1898	1:10560
F	17m NE	Unspecified Quarry	1967	1:10560
F	17m NE	Unspecified Disused Pit	1974	1:10000
F	17m NE	Sand Pits	1938	1:10560
D	18m NE	Old Sand Pit	1938	1:10560
F	20m NE	Sand Pits	1921	1:10560
F	24m NE	Refuse Heap	1950	1:10560
G	29m NW	Unspecified Pit	1950	1:10560
F	40m NE	Sand Pits	1898	1:10560
1	46m NW	Filter Beds	1898	1:10560
H	50m NW	Unspecified Ground Workings	1991	1:10000
H	50m NW	Unspecified Ground Workings	1974	1:10000
H	50m NW	Unspecified Ground Workings	1967	1:10560
D	66m NE	Sand Pits	1898	1:10560
H	78m NW	Unspecified Ground Workings	1950	1:10560
D	94m NE	Unspecified Ground Workings	1950	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
H	113m NW	Unspecified Pit	1878	1:10560
D	116m NE	Unspecified Heap	1967	1:10560
D	119m NE	Cuttings	1921	1:10560
D	121m NE	Sand Pit	1878	1:10560
D	156m NE	Unspecified Heap	1967	1:10560
I	216m NW	Sand Pit	1878	1:10560
J	239m NW	Unspecified Heap	1921	1:10560
J	240m NW	Unspecified Heap	1921	1:10560
J	240m NW	Unspecified Heap	1921	1:10560
J	243m NW	Unspecified Heap	1938	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	**3**

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 111**

ID	Location	Land Use	Year of mapping	Mapping scale
11	891m SW	Colliery	1950	1:10560
12	904m SW	Unspecified Mine	1967	1:10560
-	994m SW	Colliery	1921	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**2**

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, ground workings and natural cavities map on **page 111**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
D	5m NE	Greenhill Sand Quarry	Sand and gravel	Surface mineral working	Valid	14/9/48
2	226m NE	Greenhill Sand Quarry	Sand and gravel	Surface mineral working	Refused	14/9/48

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 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.

18.8 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.

18.9 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.

18.10 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.

18.11 Gypsum areas

Records on site	**0**

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	**0**

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

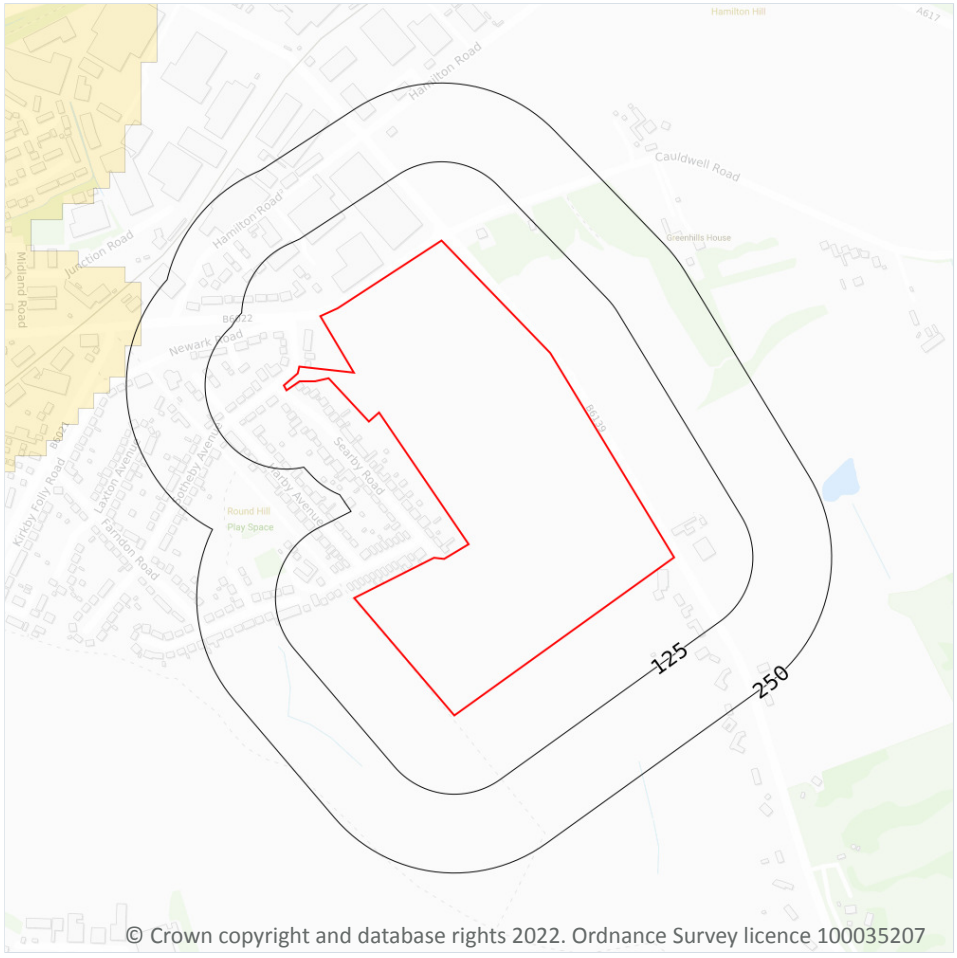
18.13 Clay mining

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 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%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 119**

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

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m **16**

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 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 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**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 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**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**20 - 40 mg/kg**	**15 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**20 - 40 mg/kg**	**15 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**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 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**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 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**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 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**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**40 - 60 mg/kg**	**15 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**
5m SE	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.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m **55**

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	10	1.8	69	47	0.4	49	47	18	8
On site	10	1.8	72	49	0.3	50	42	17	7
On site	11	1.9	69	47	0.3	48	56	19	9
On site	11	1.9	61	42	0.2	43	40	17	7
On site	11	1.9	79	54	0.4	53	85	22	14
On site	7	1.2	93	64	0.6	63	33	16	6
On site	7	1.2	102	70	0.6	67	37	16	7
On site	7	1.2	106	73	0.6	67	38	16	7
On site	7	1.2	69	47	0.5	59	26	14	5
On site	7	1.2	126	87	0.8	75	44	17	7
On site	7	1.2	126	87	0.8	75	44	17	7
On site	7	1.2	96	66	0.6	63	35	16	6
On site	7	1.2	49	34	0.4	52	19	13	4
On site	7	1.2	116	80	0.7	71	41	17	7
On site	7	1.2	39	27	0.3	43	15	12	3
On site	8	1.4	53	36	0.4	44	30	15	6
On site	8	1.4	68	47	0.4	51	27	15	5
On site	8	1.4	53	36	0.4	53	21	13	4
On site	8	1.4	49	34	0.4	49	19	13	4
On site	8	1.4	39	27	0.3	47	16	13	4
On site	8	1.4	53	36	0.4	46	21	14	4
On site	8	1.4	53	36	0.3	44	21	14	4

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	**8**	**1.4**	**72**	**49**	**0.5**	**60**	**27**	**15**	**5**
On site	**8**	**1.4**	**44**	**30**	**0.3**	**50**	**18**	**12**	**4**
On site	**8**	**1.4**	**87**	**60**	**0.5**	**59**	**33**	**16**	**6**
On site	**8**	**1.4**	**39**	**27**	**0.3**	**45**	**17**	**13**	**4**
On site	**8**	**1.4**	**74**	**51**	**0.5**	**55**	**28**	**15**	**5**
On site	**8**	**1.4**	**42**	**29**	**0.4**	**39**	**21**	**14**	**5**
On site	**8**	**1.4**	**40**	**27**	**0.3**	**50**	**15**	**11**	**3**
On site	**8**	**1.4**	**39**	**27**	**0.3**	**54**	**16**	**11**	**3**
On site	**8**	**1.4**	**100**	**69**	**0.6**	**64**	**37**	**16**	**6**
On site	**8**	**1.4**	**62**	**43**	**0.4**	**55**	**23**	**14**	**5**
On site	**9**	**1.6**	**65**	**45**	**0.4**	**48**	**49**	**18**	**9**
On site	**9**	**1.6**	**35**	**24**	**0.3**	**40**	**15**	**13**	**4**
On site	**9**	**1.6**	**65**	**45**	**0.3**	**48**	**28**	**15**	**5**
On site	**9**	**1.6**	**36**	**25**	**0.3**	**43**	**15**	**13**	**4**
On site	**9**	**1.6**	**60**	**41**	**0.4**	**47**	**47**	**18**	**9**
8m N	12	2.1	69	47	0.3	47	62	20	10
10m S	8	1.4	40	27	0.3	44	16	13	4
18m E	7	1.2	117	80	0.7	71	42	17	7
19m NW	11	1.9	90	62	0.6	58	127	26	20
22m N	12	2.1	54	37	0.2	38	34	15	6
25m N	11	1.9	59	41	0.2	41	34	15	6
27m W	7	1.2	37	25	0.3	39	17	12	4
34m SW	8	1.4	36	25	0.3	54	14	10	3
36m NE	9	1.6	72	49	0.3	51	30	15	5
38m SW	7	1.2	36	25	0.3	47	14	11	3
38m S	9	1.6	37	25	0.3	45	15	12	4
38m S	9	1.6	36	25	0.3	42	15	13	4

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)
40m W	7	1.2	39	27	0.3	45	15	11	3
45m SE	8	1.4	70	48	0.5	58	25	14	5
45m SW	8	1.4	39	27	0.3	63	15	10	3
46m NW	9	1.6	52	36	0.4	46	43	19	8
48m W	7	1.2	32	22	0.3	36	12	11	3
49m NW	12	2.1	96	66	0.5	59	147	27	22

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

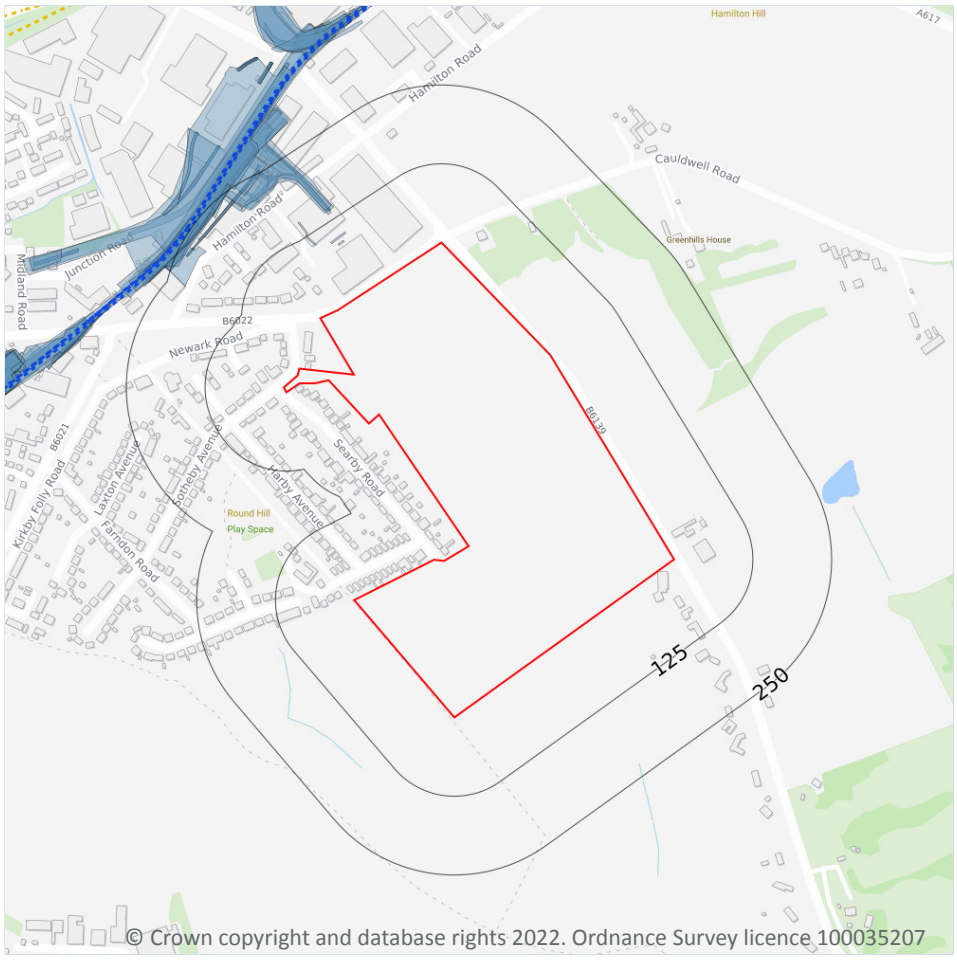
Records within 50m	**2**

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
On site	**7.0**	**0.8**	**76.4**	**45.5**	**17.3**	**131.1**	**7.5**	**Topsoil**
19m S	8.8	0.3	40.1	15.1	13.2	34.2	3.7	Topsoil

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 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.

21.2 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.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	27

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.

Features are displayed on the Railway infrastructure and projects map on **page 124**

Location	Land Use	Year of mapping	Mapping scale
85m NW	Railway Sidings	1957	1250
94m NW	Railway Sidings	1957	1250
106m NW	Railway Sidings	1900	2500
135m NW	Railway Sidings	1921	10560
140m NW	Railway Sidings	1900	2500
140m NW	Railway Sidings	1916	2500
140m NW	Railway Sidings	1921	10560
143m NW	Railway Sidings	1898	10560
208m NW	Railway Sidings	1917	2500
209m NW	Railway Sidings	1899	2500
210m NW	Railway Sidings	1967	10560
213m NW	Railway Sidings	1917	2500
223m NW	Railway Sidings	1974	1250
224m NW	Railway Sidings	1957	2500
228m NW	Railway Sidings	1957	1250
235m NW	Railway Sidings	1957	1250
235m NW	Railway Sidings	1974	10000

Location	Land Use	Year of mapping	Mapping scale
236m NW	Railway Sidings	1957	2500
236m NW	Railway Sidings	1938	10560
237m NW	Railway Sidings	1938	2500
237m NW	Railway Sidings	1957	1250
238m NW	Railway Sidings	1974	1250
238m NW	Mineral Railway Sidings	1986	1250
240m NW	Railway Sidings	1950	10560
242m NW	Railway	1870	-
244m NW	Railway Sidings	1878	10560
245m NW	Railway Sidings	1986	1250

This data is sourced from Ordnance Survey/Groundsure.

21.5 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.

21.6 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.

21.7 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.

21.8 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.

21.9 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.

21.10 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: https://www.groundsure.com/terms-and-conditions-jan-2020/.

Appendix D: RLE Technical Note 'Permeability Testing and Ground Gas Monitoring'

RODGERS LEASK ENVIRONMENTAL
Consulting Geotechnical & Environmental Engineers

Technical Note

Project:	Low Moor Road, Sutton In Ashfield
Document No:	P16-549
Client:	Hallam Land Management Ltd
Subject:	Technical Note – Permeability Testing and Ground Gas Monitoring
Date:	13th September 2017
Prepared by:	A McVey – Senior Geo-Environmental Consultant
Authorised by:	Stewart Friel – Director

1.0 Introduction

In March 2017, Rodgers Leask Environmental Ltd (RLE) was commissioned by Hallam Land Management Ltd to undertake site investigation works at Low Moor Road, Sutton in Ashfield. The site investigation focussed on the northeast portion of land referred to as the RR parcel.

It is understood the site is to be redeveloped for a residential end use.

2.0 Objectives

The objectives of this investigation are to:

- Undertake window sample and cable percussive boreholes to determine depth of Made Ground in the former landfill area.
- Install boreholes with gas monitoring apparatus to enable assessment of the ground gas regime in the northern portion of the site in the area of the former landfill so that recommendations for gas protection measures can be provided.
- Undertake soil infiltration testing to determine the soil infiltration rate of the underlying natural strata and assess suitability for soakaway drainage. One fill per trial pit was required to inform preliminary infiltration rates for soakaway design.
- Give an indication of approximate pile lengths in the area of the former landfill in the north of the site.
- Conclusions and recommendations for further works if considered to be required.

3.0 Site Setting

The Site is located to the southwest of Sutton-in-Ashfield, Nottinghamshire. The Site centre co-ordinates are at approximately 451556E, 357656N.

British Geology Survey (BGS) digital mapping indicates that there is a record of in-filled ground comprising artificial deposits recorded within the northern portion of the site. This is described by the Environment Agency (EA) as a disused sand quarry which was used for land filling between 1980 and 1983. Deposited waste was described as 'inert waste' consisting largely of unaltered once buried waste such as glass, concrete, bricks, tiles, soil

and stones.

One area of superficial deposits is mapped on site encroaching onto the southwest portion of the site described by the BGS as glaciofluvial sand and gravel deposits.

The entire site is underlain by bedrock comprising the Lenton Sandstone Formation typified by red/brown with buff mottled fine to medium sandstone.

4.0 Site Investigation Works

4.1 Site Works

An intrusive investigation was carried between the 18th and 20th May 2017 by RLE and comprised the following scope of works:

- A total of six soakage trial pits (TPSA01 to TPSA04 inclusive) were excavated across the southern portion of the site to enable soil infiltration testing.
- A total of 2no CP boreholes (CP01 & CP02) were advanced in the area of the former landfill to determine the type and depth of Made Ground in the landfill and to enable subsequent ground gas monitoring to be carried out.
- A total of 8no WS boreholes (WS01 to WS08) were advanced in the approximate area of the former landfill to determine the type and extent of Made Ground in the landfill and to enable subsequent ground gas monitoring to be carried out.

The approximate location of the exploratory holes are indicated on the exploratory hole location plan, ref: P16-549 -100-A contained in **Enclosure 1** of this report.

4.2 Ground Conditions

The ground conditions encountered comprised Made Ground Topsoil / natural Topsoil overlying granular and cohesive Made Ground deposits overlying weathered Lenton Sandstone Formation deposits. Details of the findings are summarised as follows:

Strata Encountered	Depth encountered to top of strata (range, m)	Depth encountered to base of strata (m) [range, m]	Thickness of strata (m) [range, m]
MADE GROUND TOPSOIL Encountered across the northern half of the site in the areas of the former landfill. Comprising dark brown sandy topsoil with gravel of quartzite and occasional brick.	0	0.2 to 0.6	0.2 to 0.45
TOPSOIL Encountered across the southern half of the site comprising dark brown sandy Topsoil.	0	0.2 to 0.6	0.2 to 0.6

Strata Encountered	Depth encountered to top of strata (range, m)	Depth encountered to base of strata (m) [range, m]	Thickness of strata (m) [range, m]
MADE GROUND Encountered in the northern portion of the site. Typically consisting of sand and gravels of brick, concrete, coal, limestone, quartzite and occasional clay. Within CPBH101 pockets of topsoil were encountered between 1.0m and 2.7mbgl and in CPBH102, fragments of wood were encountered between 0.4mbgl and 6.0mbgl.	0.2 to 0.6	0.8 to 8.6	0.35 to 8.30
LENTON SANDTONE FORMATION Encountered below the Made Ground in the northern half of the site and the topsoil in the southern half of the site recovered as orange brown and reddish brown sand with occasional quartzite and sandstone gravels. A stiff reddish brown clay (similar in appearance to completely weathered mudstone) was encountered in the base of 2.no soakaway test pit locations (TPSA01 and TPSA04). A band of clay was also encountered in TPSA03 between 0.2m and 0.5mbgl.	0.2 to 8.60	Not proven by boreholes	Not proven by boreholes

Groundwater was not encountered at any of the exploratory hole locations.

No visual or olfactory evidence of contamination was encountered during the investigation works.

A detailed description of ground conditions encountered is contained within the exploratory hole logs presented within **Enclosure 2** of this report.

4.3 Soil Infiltration Testing

A total of six soakage trial pits (TPSA01 to TPSA06 inclusive) were excavated across the southern portion of the site (outside the landfill area) to enable soil infiltration testing. All trial pits were excavated using a JCB 3CX type excavator. Trial pits were excavated to depths of between 1.3m bgl and 1.6m bgl ensuring vertical sides which were trimmed square.

An RLE Engineer directed and logged the infiltration testing of the soakage trial pits under guidance of BRE Digest 365 'Soakaway Design' and in accordance with BS5930 2015 'Code of Practice for Site Investigations'. BRE 365 states 'the soakaway should discharge from full to half volume within 24 hours in readiness for subsequent storm inflow.'

Using a water bowser, all soakage trial pit locations were rapidly filled with water, ensuring the flow did not cause the collapse of the side walls. The water level and the time taken for

the pits to drain were recorded. Each pit was filled once to allow for preliminary infiltration rates to be calculated. Where possible, each pit was left for 24 hours to assess if each pit would discharge from full to half volume in readiness for subsequent storm inflow.

Rodgers Leask Ltd, commissioned to design the proposed drainage strategy, was consulted prior to undertaking the intrusive works in order to establish the required locations for the infiltration tests.

As recommended in the BRE document, the determination of infiltration rates can use the design method adopting the results determined from 75% to 25% effective depth. However, the time taken to drain to 75% was not reached within 4 of the trial test pits (TPSA02, TPSA03, TPSA04 and TPSA06). Where 75% of the effective water depth was not achieved during the test, the data gathered at these locations was used to extrapolate the time taken to drain to75% of the effective water depth so that an infiltration rate can be derived.

In the remaining 2 locations (TPSA01 and TPSA05), 75% of the effective water depth was achieved allowing actual infiltration rates to be calculated. The actual and derived soil infiltration rates are summarised in **Table 1** below and the data is presented in **Enclosure 3.**

Table 1: Soil Infiltration Test Results

Location	Water Level at Beginning (m bgl)	Soil Infiltration Rate (f) (m/s)	Water discharged from Full to Half Volume within 24 Hours	Soil Horizon
TPSA01	0.3	1.28×10^{-05}	Yes	Sand and Clay - Lenton Sandstone Formation
TPSA02	0.32	$*2.02 \times 10^{-06}$	*Yes	Sand - Lenton Sandstone Formation
TPSA03	0.5	$*3.02 \times 10^{-06}$	*Yes	Sand and Clay - Lenton Sandstone Formation
TPSA04	0.25	$*1.51 \times 10^{-06}$	*Yes	Sand and Clay - Lenton Sandstone Formation
TPSA05	0.25	7.87×10^{-06}	Yes	Sand - Lenton Sandstone Formation
TPSA06	0.28	$*4.24 \times 10^{-06}$	*Yes	Sand - Lenton Sandstone Formation

*Infiltration rates derived from extrapolated data.

4.4 Ground Gas Monitoring

The risk to end users from ground gas has been assessed in accordance with the following documents:

- British Standards BS8485:2015 – Code of practise for the design of protective measures for methane and carbon dioxide ground gases for new buildings;
- CIRIA C665: Assessing risks posed by hazardous ground gas to buildings, 2007.

A minimum of 12 gas monitoring visits over a period of 6 months is recommended in accordance with CIRIA C665. This assessment is based on a moderate generation potential (former inert landfill) and a high sensitivity development (residential). However, as an initial assessment, a total of 6 gas monitoring visits have been conducted over a period of 3 months.

Gas monitoring has been carried out using a Geotechnical Instruments GA2000 infra-red landfill gas analyser with integral flow measuring capability. Monitoring has been carried out within all of the boreholes on site on dates ranging between the 27th April 2017 and 19th July 2017. Gas monitoring was predominantly carried out where atmospheric pressure was >1000mb but with pressure noted to be falling. However, it should be noted that gas monitoring has been carried out on three occasions where the barometric pressure was recorded <1000mb (lowest recorded at 987mb whilst pressure was in a falling state). A summary of the maximum borehole hazardous gas flow rates for carbon dioxide and methane recorded during each monitoring visit undertaken is presented below in **Table 2** and the gas monitoring data sheets are presented in **Enclosure 4.**

Table 2: Ground Gas Monitoring Results Summary

Monitoring Visit	Max. CH_4 Concentration* (%v/v)	Max. CO_2 Concentration* (%v/v)	Max. Steady Gas Flow Rate (l/hr)	Borehole Hazardous Gas Flow Rate, Q_{hg} CH_4 (l/hr)	Borehole Hazardous Gas Flow Rate, Q_{hg} CO_2 (l/hr)
27.04.17	<0.1	7.7	0.1	0.0001	0.0077
02.05.17	<0.1	5.8	<0.1	0.0001	0.0058
17.05.17	2.1	7.6	<0.1	0.0021	0.0076
26.05.17	2.2	9.1	<0.1	0.0022	0.0091
29.06.17	3.4	6.3	<0.1	0.0034	0.0063
19.07.17	3.1	13.9	<0.1	0.0031	0.0139

* Including peak and steady values

The data obtained from the six gas monitoring visits can be summarised into the following salient points:

- The data suggests that there is no direct correlation between CO_2 concentration and atmospheric pressure. However, the maximum CO_2 concentration recorded coincided with the lowest recorded pressure event (987mb falling pressure) during the last gas monitoring visit.
- Methane was only detected in CPBH01, CPBH02, WS04 and WS05 but at concentrations of <5% v/v.
- Methane was detected in CPBH01 on the last 4 monitoring occasions and in CPBH02 during the 1st, 3rd, 4th and 6th monitoring occasion during both rising and falling barometric trends. The two CP boreholes had gas monitoring wells installed to 8.5m (approximate base of the fill).
- Methane was detected in WS04 on the last two monitoring visits only which coincided with low and falling barometric pressures.
- Generally, the presence of methane coincided with low and falling atmospheric

pressure suggesting that there may be some direct correlation between the two.

- All data to date is limited and two of the boreholes in which methane was identified at the highest concentrations were encountered when drilled deeper, suggesting that methane detection may be related to the nature of the inert fill at depth.
- Gas flow rates have been recorded to be very low to negligible irrespective of atmospheric pressure. This suggests a negligible gas source which is consistent with the inert nature of the fill.
- Concentrations of carbon monoxide were generally recorded at very low levels (1ppm or less) or below in all boreholes on every monitoring occasion.

5.0 Conclusions & Recommendations

5.1 Soil Infiltration Testing

A total of six soakage trial pits (TPSA01 to TPSA06) were excavated across the southern portion of the site (outside the landfill area) to enable soil infiltration testing under guidance of BRE Digest 365 'Soakaway Design'

Infiltration rates ranging between 1.5 x 10^{-6} m/s and 1.3 x 10^{-5} m/s were recorded for the Lenton Sandstone Formation (LSF) in this area of the site.

The testing indicates that the LSF displays variable rates of infiltration, generally towards the lower end of rates which would be considered feasible for the use of soakaways. This may be attributed to layers and pockets of cohesive strata encountered in the base of selected trial pits or the amount of fines within the sand. The advice of a drainage engineer should therefore be sought with regard to assessing the suitability of the ground for on plot or basin type methods of infiltration. Should these prove insufficient for the proposed development, an alternative means of surface water drainage would be required.

Further targeted on site testing to full BRE365 specification may be required should plot specific soakaways or an infiltration basis be proposed.

5.2 Ground Gas Monitoring

Both the CIRIA Report and the British Standard require the calculation of a Gas Screening Value (GSV). This is calculated as the maximum recorded percentage gas concentrations multiplied by the maximum gas flow rate. Where concentrations or flow rates which are less than the limit of detection on the analyser have been recorded, the limit of detection has been used (0.1% for gas concentration, 0.1 l/hr for gas flow rates).

Gas screening values have been calculated using the following figures, and based on worst case hazardous gas concentrations and flow rates from all boreholes:

C_{hg} Methane (% v/v)	C_{hg} Carbon Dioxide (% v/v)	Steady Gas Flow Rate (l/hr)	Hazardous Gas Flow Rate, Q_{hg} CH_4 (l/hr)	Hazardous Gas Flow Rate, Q_{hg} CO_2 (l/hr)	Implied Characteristic Situation (CS)	NHBC Traffic Light System
3.4	13.9	0.1	0.0034	0.0139	CS-1	Green

BS8485 states that 'Where a development is to be built directly on or very close to the source of gas, then the Q_{hg} adopted as the site or zone GSV should be based on gas measurements of the source'. The source of the highest gas concentrations and flow rates were associated with borehole installations targeted within the Made Ground (inert landfill material).

In accordance with the NHBC Traffic Light System, based on the calculated gas screening value, the area of former landfill would be classified as 'Green'. However, in accordance with guidance presented within CIRIA C665, it is recommended that an Amber 1 classification is adopted at the site corresponding to a low to intermediate gas regime, for the following reasons:

- Made ground has been consistently encountered across the monitoring area and is likely to be consistently present in-between monitoring locations presenting a continued source of soil gas;
- Carbon dioxide has been recorded above 5% on numerous separate monitoring occasions in different boreholes across the former landfill area but has typically been recorded at <10% v/v during the monitoring period;
- Methane has been recorded above 1% in only one of the deeper cable percussion boreholes (CPBH01) on 4 separate monitoring occasions and in CPBH02 on only 1 out of 6 monitoring occasions within the former landfill area;

At this stage, it is considered that Amber 1 gas protection measures would be required, for any development coinciding with the area of the former landfill. Gas protection measures commensurate with Amber 1 conditions would typically comprise a membrane and ventilated sub-floor void to create a permeability contrast to limit the ingress of gas into buildings. Gas protection measures should be as prescribed in BRE Report 414 (Johnson, 2001).

Certification is not a requirement of Amber 1 classified sites; however BS 8485:2015 recommends that all membranes are verified in accordance with CIRIA C735. In addition, the Local Authority may require all membrane installations to be independently verified / certified. This requirement should be confirmed with the Local Authority prior to development.

The data collated would suggest that the domestic landfill located adjacent to the northeast of the site is either not generating significant concentrations of gas or is not migrating significantly onto the site, as methane has not been detected within the boreholes located closest to the off-site landfill. Methane has generally been detected at low concentrations with maximum concentrations recorded within the deeper CP boreholes which generally suggests that the methane is potentially being generated in the deeper fill as opposed to migrating from off site. The concentrations of methane recorded in the CP boreholes might be attributed to organic remnants encountered at these locations. Within CPBH101 pockets of topsoil were encountered between 1.0m and 2.7mbgl and wood fragments were encountered between 0.4mbgl and 6.0mbg in CPBH102, whereby both could be considered as a potential source of methane.

In general, the available data is considered consistent with the recorded and verified inert nature of the waste deposited in the landfill, and is not considered to represent a significant source of ground gas (generally low gas concentrations and flow rates recorded). The risk

could be mitigated by incorporating relevant gas protection measures within buildings overlying the landfill material. However, further gas monitoring is recommended across the site to confirm this preliminary assessment prior to development. The Local Authority may require a longer monitoring period is conducted during the worst case weather events such as sustained periods of low pressure.

5.3 Depth of Made Ground and Influence on Foundation Design

Variable depths of Made Ground deposits have been encountered across the area of the site where the former inert landfill is located in the north east of the site. The available data would suggest that Made Ground deposits of up to 9.4m deep can be expected in the centre of the former landfill (but which could potentially extend deeper). As such, a piled foundation solution would be required for any plot coinciding within this area of the site. Piles would be required to transfer loads to the underlying very dense gravelly sand (Lenton Sandstone Formation) encountered below the Made Ground. At this stage, based on the available data, pile lengths of circa.10m should be expected and the Made Ground encountered would suggest that driven piles should be suitable.

On the outskirts of the inert landfill, shallower Made Ground deposits have been encountered (<2.5m deep) which may suggest that the use of traditional foundations could potentially be feasible within any plots coinciding with areas of shallower Made Ground. This would be dependent on the stability of the Made Ground materials and type of material encountered.

It is recommended that further investigation and delineation works should be carried out across the area of the former inert landfill should this area be considered for redevelopment to determine the number of potential plots requiring piled foundations / traditional foundations to be adopted.

Enclosure 1: RLE Exploratory Hole Location Plan

GENERAL NOTES

NO DIMENSIONS TO BE SCALED OFF THIS DRAWING.

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.

ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

KEY

Denotes approximate location of site boundary

TPSA 01 — Approximate location and reference of Machine Excavated Trial Pit Soakaway Test

CP 01 — Approximate location and reference of Cable Percussive Borehole

WS 01 — Approximate location and reference of Window Sample Borehole

Rev.	Date	Amendments	By	Chk. by
A	10.4.17	Amended to fit site constraints after pre start site meeting.	MC	IPB

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Client

Hallam Land Management

Project

Land Off Low Moor Road
Sutton in Ashfield

Drawing Title

Borehole and Trial Pit / Soakaway Test Pit Location Plan

Status

INFORMATION

Scale	Drawn	Checked	Date
NTS	AT	IPB	12/04/17

Project No.	Drawing No.	Rev.
P16-549	100	A

File Path:

.

Enclosure 2: RLE Exploratory Hole Logs

Borehole Log

Borehole No. **WS01**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451578E - 358574N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	18/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
						MADE GROUND - Brown sandy gravelly, slightly clayey reworked topsoil. Gravel is fine to coarse, sub-angular to sub-rounded quartzite and occasional brick.			
					0.45				
					0.60	MADE GROUND - Red/brown occasionally black sandy gravel. Gravel is fine to coarse, sub-angular burnt shale and occasional brick.			
0.70	D1	ES				MADE GROUND - Black ashy gravelly sand containing occasional fragments of glass. Gravel is fine to coarse, sub-angular coal, sandstone and brick.			
					0.80				
1.00	D2	ES				Medium dense orange/brown fine to medium grained SAND containing occasional fine quartzite gravel. [LENTON SANDSTONE FORMATION]			
1.00		SPT	N=13 (2,2/2,3,4,4)		1				
						Hard drill from 1.5m			
2.00		SPT	50 (8,17/50 for 145mm)		2	*Becoming very dense at 2.0m*			
					2.30	End of Borehole at 2.300m			
					3				
					4				
					5				

Remarks

1. No Water Encountered 2. No visual or olfactory evidence of contamination encountered
3. Borehole refused at 2.3m 4. Gas and Groundwater monitoring well installed.

Borehole Log

Borehole No. **WS02**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451627E - 358524N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	18/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
						MADE GROUND - Brown slightly sandy clayey gravelly reworked topsoil. Gravel is fine to coarse, sub-angular brick, sandstone and quartzite.			
					0.30	MADE GROUND - Orange/brown slightly clayey gravelly sand. Gravel is fine to coarse, sub-rounded to sub-angular sandstone, quartzite and limestone.			
					0.60	MADE GROUND - Soft to firm orange/brown occasionally mottled black very sandy clay.			
1.00		SPT	N=5 (1,1/1,1,2,1)		1.00	MADE GROUND - Soft to firm grey/black sandy gravelly reworked clay. Contains occasional small tree fragments. Gravel is fine to coarse, sub-angular sandstone, brick and quartzite.			
1.20	D1	ES				*Hard drill between 1.5 - 2.0m*			
2.00	D2	ES			2.00	MADE GROUND - Orange/brown/black slightly clayey sandy gravel. Occasional lenses of reworked soft to firm clay. Gravel is fine to coarse, sub-angular coal, brick, sandstone, limestone and slag.			
2.00		SPT	N=25 (9,13/7,6,6,6)			*Rope/twine at 2.3m*			
						Occasional limestone cobbles at 2.6m			
3.00		SPT	N=9 (3,2/3,2,2,2)						
					3.40				
					3.50	Very dense orange/brown gravelly fine to coarse SAND. Gravel is fine to medium, sub-angular to angular of sandstone. [LENTON SANDSTONE FORMATION]			
						End of Borehole at 3.500m			

Remarks

1. No Water Encountered 2. No visual or olfactory evidence of contamination encountered
3. Borehole refused at 3.5m 4. Gas and Groundwater monitoring well installed.

Borehole Log

Borehole No. **WS03**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451540E - 358519N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	18/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
					0.30	MADE GROUND - Brown sandy gravelly, slightly clayey reworked topsoil. Gravel is fine to coarse, sub-angular to sub-rounded quartzite and occasional brick.			
					0.70	MADE GROUND - Black slightly clayey gravelly SAND containing lenses of reworked black clay. Gravel is fine to coarse, sub-angular to sub-rounded brick, sandstone and quartzite. *Hard drill between 0.6 - 1.0m*			
0.75	D1	ES			0.85	MADE GROUND - Red/brown gravel. Gravel is fine to coarse, sub-angular to angular burnt shale, brick and occasional slag.			
0.90	D2	ES							
1.00		SPT	N=21 (11,8/7,6,4,4)		1.20	MADE GROUND - Dense black sandy gravel. Gravel is fine to coarse, sub-angular to rounded quartzite with fine brick and coal.			
1.30	D3	ES				Medium dense orange/brown fine to medium SAND containing occasional quartzite gravel.			
2.00		SPT	N=35 (3,5/5,8,10,12)		2.65	End of Borehole at 2.650m			

Remarks

1. No Water Encountered 2. No visual or olfactory evidence of contamination encountered
3. Borehole refused at 2.65m 4. Gas and Groundwater monitoring well installed.

Borehole Log

Borehole No. **WS04**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451447E - 358429N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	19/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
0.10	D1	ES			0.20	MADE GROUND - Brown sandy gravelly, slightly clayey reworked topsoil. Gravel is fine to coarse, sub-angular to sub-rounded quartzite and occasional brick.			
0.40	D2	ES			0.50	MADE GROUND - Orange/brown silty reworked sand.			
1.00		SPT	50 (3,8/50 for 155mm)		1.06	MADE GROUND - Stiff black/grey ashy gravelly clay. Gravel is sub-angular to sub-rounded, fine to coarse, coal, brick, limestone and quartzite.			
						End of Borehole at 1.060m			

1 2 3 4 5

Remarks

1. No Water Encountered 2. No visual or olfactory evidence of contamination encountered
3. Borehole refused at 1.06m 4. Gas and Groundwater monitoring well installed.

Borehole Log

Borehole No. **WS05**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451637E - 358439N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	18/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
0.10	D1	ES				MADE GROUND - Brown slightly clayey sandy gravelly topsoil. Gravel is fine to coarse, sub-rounded to sub-angular quartzite and occasional brick.			
					0.30	MADE GROUND - Orange/brown clayey silty gravelly reworked sand. Containing lenses of orange/brown reworked sand containing clay/silt. Gravel is fine to coarse quartzite.			
0.60	D2	ES							
1.00		SPT	N=10 (5,8/3,3,2,2)		1.00	MADE GROUND - Stiff to firm brown sandy gravelly mixed clay containing occasional cobbles of limestone and brick. Gravel is fine to coarse, sub-angular to angular brick, limestone and coal.			
2.00		SPT	N=14 (2,1/2,2,5,5)						
					2.50	MADE GROUND - Red/brown gravelly slightly clayey reworked sand. Gravel is fine to coarse, sub-angular brick and red sandstone.			
3.00		SPT	N=7 (3,2/2,2,2,1)			*Concrete cobble at 3.1m*			
						Sandy clay lense between 3.15 and 3.25m			
4.00		SPT	N=15 (4,2/2,2,3,8)						
					4.45	End of Borehole at 4.450m			

Remarks

1. No Water Encountered 2. No visual or olfactory evidence of contamination encountered
3. Borehole terminated at 4.45m 4. Gas and Groundwater monitoring well installed.

Borehole Log

Borehole No. **WS06**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451529E - 358425N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	19/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
						MADE GROUND - Brown sandy slightly gravelly topsoil. Gravel is quartzite.			
					0.30	MADE GROUND - Orange/brown slightly clayey gravelly sand. Gravel is sub-rounded, fine to coarse quartzite.			
1.00		SPT	N=27 (10,12/4,11,9,3)	1	1.00	MADE GROUND - Medium dense, white/grey sandy gravel. Gravel is fine to coarse, sub-angular to angular of limestone, brick and quartzite. *Hard drill between 1.0 - 1.4m*			
1.10	D1	ES							
					1.40	MADE GROUND - Firm grey mottled black gravelly silty reworked clay. Gravel is limestone, brick and quartzite.			
					1.70	MADE GROUND - Black clayey sandy slightly ashy gravel. Gravel is brick, sandstone, concrete, quartzite and coal. Wood fragments and lenses of reworked clay encountered throughout.			
2.00	D2	ES		2					
2.00		SPT	N=7 (2,2/2,1,2,2)						
3.00		SPT	N=13 (4,3/2,4,3,4)	3					
					3.40	End of Borehole at 3.400m			
				4					
				5					

Remarks

1. No Water Encountered 2. No visual or olfactory evidence of contamination encountered
3. Borehole refused at 3.4m 4. Gas and Groundwater monitoring well installed.

Borehole Log

Borehole No. **WS07**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451589E - 358403N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	18/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
					0.35	MADE GROUND - Brown sandy clayey gravelly reworked topsoil. Gravel is fine to coarse, sub-angular quartz and brick.			
					0.60	MADE GROUND - Red/brown fine to coarse reworked sand with occasional brown clay lenses.			
0.70	D1	ES				MADE GROUND - Firm brown occasionally black mottled ashy very sandy gravelly clay. Gravel is fine to coarse, sub-angular coal, limestone, sandstone and brick with occasional grey slag fragment.			
1.00		SPT	N=12 (2,2/2,1,3,6)		1.00	Medium dense brown gravelly fine to coarse SAND. Gravel is quartzite. [LENTON SANDSTONE FORMATION]			
1.20	D2	ES			1.30	Medium dense orange/brown fine to coarse SAND. [LENTON SANDSTONE FORMATION]			
						Hard drill from 1.5m			
					1.80	End of Borehole at 1.800m			

Remarks

1. No Water Encountered 2. No visual or olfactory evidence of contamination encountered
3. Borehole refused at 1.8m 4. Gas and Groundwater monitoring well installed.

Borehole Log

Borehole No. **WS08**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451504E - 358344N	Hole Type WLS
Location:	Sutton In Ashfield		Level:		Scale 1:25
Client:	Hallam Land Management		Dates:	19/04/2017	Logged By VH

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
0.30	D1	ES				Dark brown very sandy gravelly reworked TOPSOIL. Gravels of quartzite.			
0.70	D2	ES			0.60	Light brown fine to medium SAND containgin occasional quartzite gravel. [LENTON SANDSTONE FORMATION]			
1.00		SPT	N=10 (2,2/3,2,2,3)		0.80	Medium dense light grey with occasional green mottling slightly silty fine to coarse SAND containing occasional lenses of sandy silt. [LENTON SANDSTONE FORMATION]			
					1.30	Medium dense orange/brown silty fine to coarse SAND. [LENTON SANDSTONE FORMATION]			
					1.70	Dense orange/brown fine to coarse SAND with occasional clay lenses. [LENTON SANDSTONE FORMATION]			
2.00		SPT	N=31 (3,3/5,6,10,10)						
3.00		SPT	50 (9,11/50 for 165mm)			*Becoming very dense at 3.0m.*			
					3.30	End of Borehole at 3.300m			

Remarks

1. Groundwater at 2.5m 2. No visual or olfactory evidence of contamination encountered
3. Borehole refused at 3.3m 4. Gas and Groundwater monitoring well installed.

Trial Pit Log

TrialPit No
TPSA01
Sheet 1 of 1

Project Name: Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords: 451554E - 358317N Level:	Date 19/04/2017
Location: Sutton In Ashfield		Dimensions (m): 2.00 x 0.60 Depth 1.30	Scale 1:25
Client: Hallam Land Management			Logged AM

Samples & In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strike
Depth	Ref.	Type	Results					
						Dark brown sandy TOPSOIL.		
					0.25	Orange brown fine to coarse SAND. [LENTON SANDSTONE FORMATION]		
					1.10	Firm to stiff red brown silty CLAY.		
					1.30	End of Pit at 1.300m		

Remarks: 1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Excavation backfilled with arisings on completion.

Stability: Stable

Trial Pit Log

TrialPit No
TPSA02
Sheet 1 of 1

Project Name: Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords: 451729E - 358312N Level:	Date 19/04/2017
Location: Sutton In Ashfield		Dimensions (m): 2.00 x 0.60 Depth 1.45	Scale 1:25
Client: Hallam Land Management			Logged AM

Samples & In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strike
Depth	Ref.	Type	Results					
						Dark brown sandy TOPSOIL.		
					0.20	Orange brown fine to medium SAND. Gravels of occasional fine to medium, sub-rounded quartzite. [LENTON SANDSTONE FORMATION]		
					1.45	End of Pit at 1.450m		

Remarks: 1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Excavation backfilled with arisings on completion.

Stability: Stable

Trial Pit Log

TrialPit No
TPSA03
Sheet 1 of 1

Project Name: Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords: 451647E - 358180N Level:	Date 19/04/2017
Location: Sutton In Ashfield		Dimensions (m): 2.00 x 0.60 Depth 1.60	Scale 1:25
Client: Hallam Land Management			Logged AM

Samples & In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strike
Depth	Ref.	Type	Results					
						Dark brown sandy TOPSOIL.		
					0.20	Firm to stiff red brown sandy CLAY with pockets of red brown SAND. [LENTON SANDSTONE FORMATION]		
					0.50	Red brown fine to medium SAND. [LENTON SANDSTONE FORMATION]		
					1.60	End of Pit at 1.600m		

Remarks: 1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Excavation backfilled with arisings on completion.

Stability: Stable

Trial Pit Log

TrialPit No
TPSA04
Sheet 1 of 1

Project Name: Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords: 451797E - 358213N Level:	Date 19/04/2017
Location: Sutton In Ashfield		Dimensions (m): 2.00 x 0.60 Depth 1.40	Scale 1:25
Client: Hallam Land Management			Logged AM

Samples & In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strike
Depth	Ref.	Type	Results					
						Dark brown sandy TOPSOIL.		
					0.30	Orange brown fine to medium SAND. [LENTON SANDSTONE FORMATION]		
				1	1.00	Stiff reddish brown occasionally greenish grey and yellow silty sandy CLAY.		
					1.40	End of Pit at 1.400m		
				2				
				3				
				4				
				5				

Remarks: 1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Excavation backfilled with arisings on completion.

Stability: Stable

Trial Pit Log

TrialPit No
TPSA05
Sheet 1 of 1

Project Name: Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords: 451717E - 358000N Level:	Date 19/04/2017
Location: Sutton In Ashfield		Dimensions (m): 1.20 × 0.60 Depth 1.40	Scale 1:25
Client: Hallam Land Management			Logged AM

Samples & In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strike
Depth	Ref.	Type	Results					
						Dark brown sandy TOPSOIL.		
					0.25	Orange red brown fine to medium SAND. Occasional gravels of fine to coarse, sub-rounded quartzite to 1.0m. [LENTON SANDSTONE FORMATION]		
					1.40	End of Pit at 1.400m		

Remarks: 1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Excavation backfilled with arisings on completion.

Stability: Stable

Trial Pit Log

TrialPit No
TPSA06
Sheet 1 of 1

Project Name: Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords: 451605E - 358216N Level:	Date 19/04/2017
Location: Sutton In Ashfield		Dimensions (m): 2.00 x 0.60 Depth 1.30	Scale 1:25
Client: Hallam Land Management			Logged AM

Samples & In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strike
Depth	Ref.	Type	Results					
						Dark brown sandy TOPSOIL.		
					0.30	Red orange brown fine to medium SAND. [LENTON SANDSTONE FORMATION]		
					1.10	Orange red brown fine to medium SAND with occasional pockets of stiff red silty clay. [LENTON SANDSTONE FORMATION]		
					1.30	End of Pit at 1.300m		

Remarks: 1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Excavation backfilled with arisings on completion.

Stability: Stable

Borehole Log

Borehole No. **CP01**

Sheet 1 of 1

Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords:	451488E - 358485N	Hole Type CP
Location:	Sutton In Ashfield		Level:		Scale 1:50
Client:	Hallam Land Management		Dates:	18/04/2017	Logged By RW

Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
					0.20	MADE GROUND - Dark brown sandy topsoil.			
						MADE GROUND - Stiff red brown sandy clay.			
1.20		SPT	50 (2,10/15,27,8,)		1.00	MADE GROUND - Brown grey medium ashy gravelly sand. Gravel is angular to sub-angular, fine to coarse brick with occasional pockets of topsoil.			
2.00		SPT	N=21 (5,6/7,5,4,5)		2.70	Very dense red brown silty gravelly SAND. Gravels of fine to medium sub-rounded quartzite. [LENTON SANDSTONE FORMATION]			
3.00		SPT	N=50 (9,9/13,12,15,10)						
4.00		SPT	N=50 (4,9/11,12,12,15)		4.45	End of Borehole at 4.450m			

1 2 3 4 5 6 7 8 9 10

Remarks

1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Gas and Groundwater monitoring well installed.

Borehole Log

			Borehole No.	**CP02**
			Sheet 1 of 1	
Project Name:	Low Moor Road, Sutton-in-Ashfield	Project No. P16-549	Co-ords: 451593E - 358472N	Hole Type CP
Location:	Sutton In Ashfield		Level:	Scale 1:50
Client:	Hallam Land Management		Dates: 19/04/2017	Logged By RW

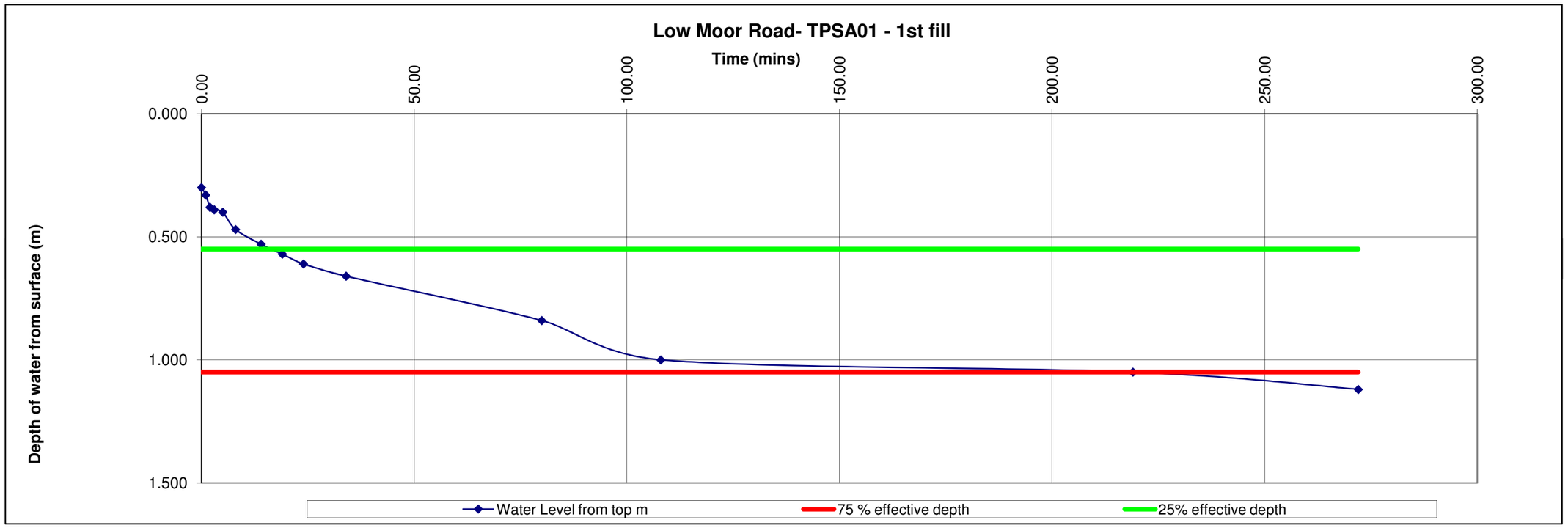
Sample and In Situ Testing				Level (m)	Depth (m)	Stratum Description	Legend	Water Strikes	Well
Depth (m)	Ref.	Type	Results						
					0.30	MADE GROUND - Dark brown sandy topsoil.			
					0.40	MADE GROUND - Red brown clayey sand.			
						MADE GROUND - Brown ashy fine sand containing fragments of brick and wood.			
1.20		SPT	N=8 (2,2/2,1,2,3)						
2.00		SPT	N=23 (3,4/7,8,5,3)						
3.00		SPT	N=16 (2,1/2,4,8,2)						
4.00		SPT	N=18 (4,8/5,5,3,5)						
5.00		SPT	N=6 (2,1/2,2,1,1)						
6.00		SPT	N=13 (5,4/6,3,2,2)		6.00	MADE GROUND - Brown sandy gravel. Gravel is sub-rounded to sub-angular fine to coarse brick and sandstone.			
7.00		SPT	N=13 (2,3/4,1,5,3)						
8.00		SPT	N=22 (5,4/7,4,3,8)						
					8.60	Very dense red brown silty gravelly SAND. Gravel is fine to medium sub-rounded quartzite.			
9.00		SPT	50 (5,5/50 for 150mm)						
					9.45	End of Borehole at 9.450m			

Remarks

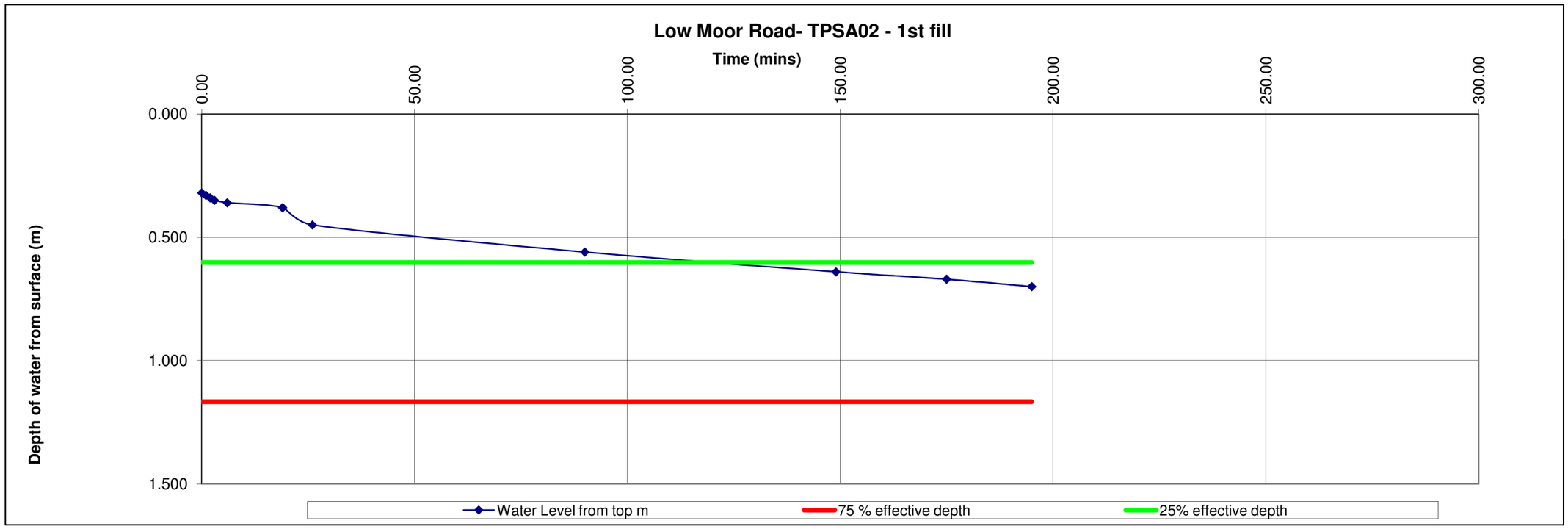
1. No Groundwater Encountered 2. No visual or olfactory evidence of contamination encountered
3. Gas and Groundwater monitoring well installed.

Enclosure 3: Soil Infiltration Test Result

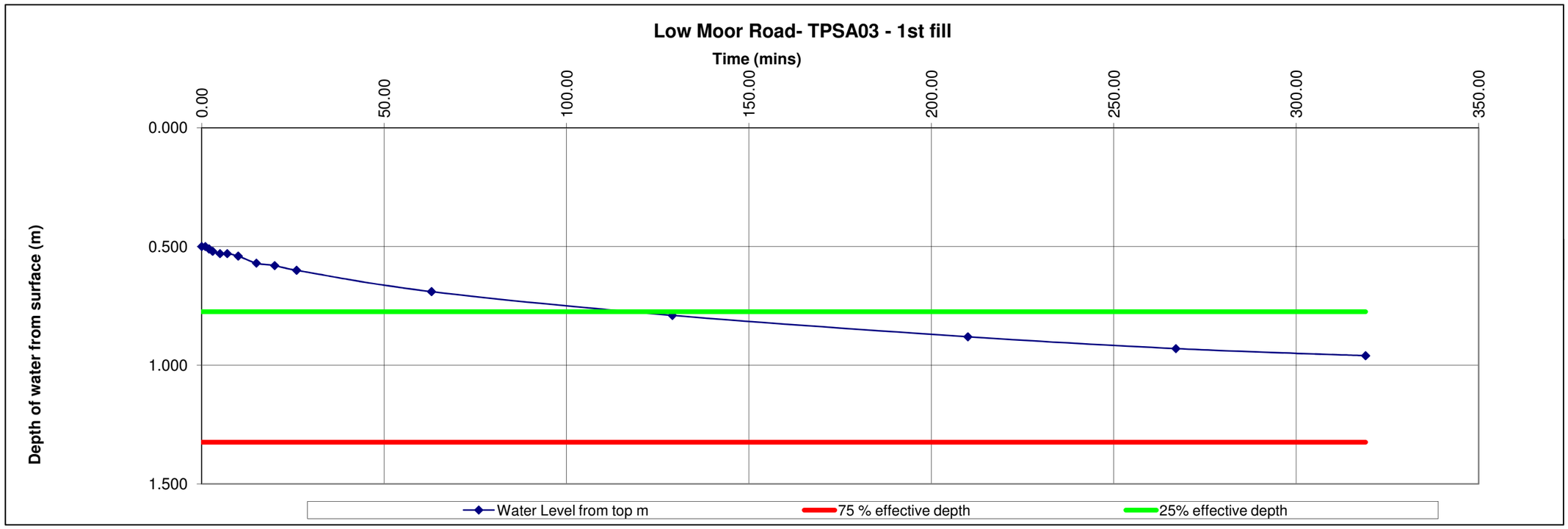
BRE Digest 365 Soakaway Tests - P16-549 - Low Moor Road			
Insert field data into yellow shaded areas			
Trial Pits			
	TPSA01		
Depth	1.30		
Length	2.00		
Width	0.60		
water level from surface at start	0.30		
Time to 25 % empty mins	14.00		
Time to 75 % empty mins	219.00		
Time for outflow between 75% and 25 % effective depth mins	205		
Height of water in TP	1		
Effective depth m	1		
75% effective depth	1.05		
25% effective depth	0.55		
vol between 75% and 25% m3	0.6		
Mean Surface Area m50 m2	3.8		
Soil Infiltration Rate f m/s	1.28E-05		


Low Moor Road- TPSA01 - 1st fill
Time (mins)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
0.000
0.500
1.000
1.500
Depth of water from surface (m)
Water Level from top m
75 % effective depth
25% effective depth

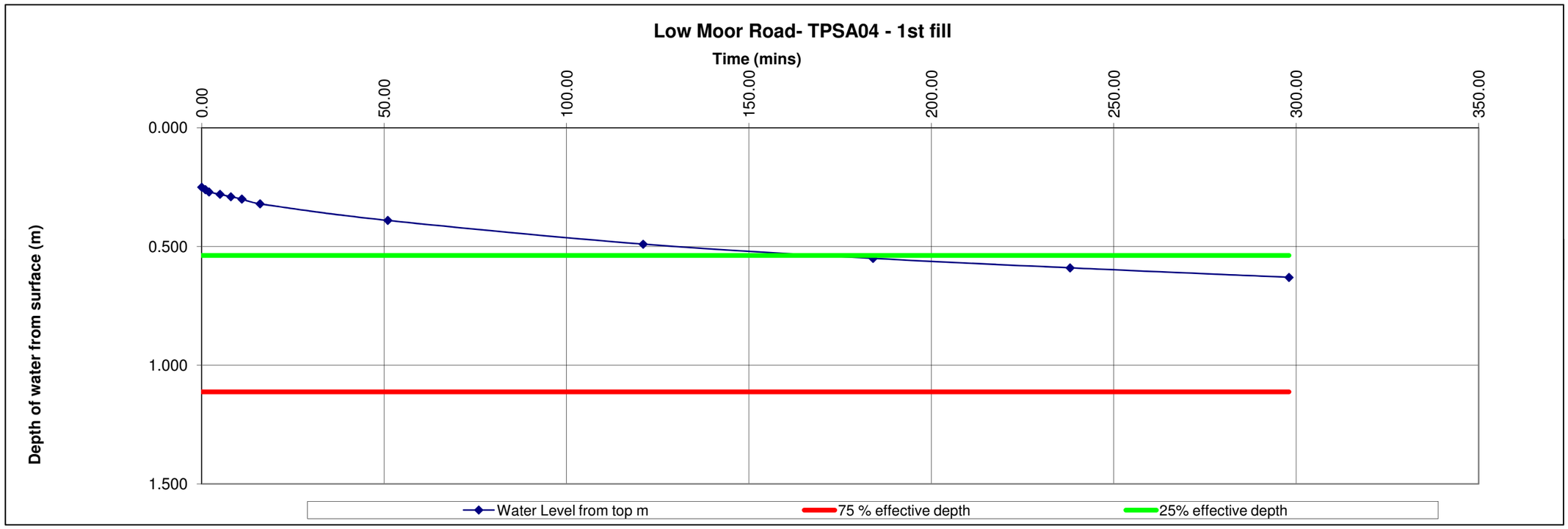
BRE Digest 365 Soakaway Tests - P16-549 - Low Moor Road			
Insert field data into yellow shaded areas			
Trial Pits			
	TPSA02		
Depth	1.45		
Length	2.00		
Width	0.60		
water level from surface at start	0.32		
Time to 25 % empty mins	90.00		
Time to 75 % empty mins	1439.00		
Time for outflow between 75% and 25 % effective depth mins	1349		
Height of water in TP	1.13		
Effective depth m	1.13		
75% effective depth	1.17		
25% effective depth	0.60		
vol between 75% and 25% m3	0.678		
Mean Surface Area m50 m2	4.138		
Soil Infiltration Rate f m/s	2.02E-06		


Low Moor Road- TPSA02 - 1st fill
Time (mins)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
0.000
0.500
1.000
1.500
Depth of water from surface (m)
Water Level from top m
75 % effective depth
25% effective depth

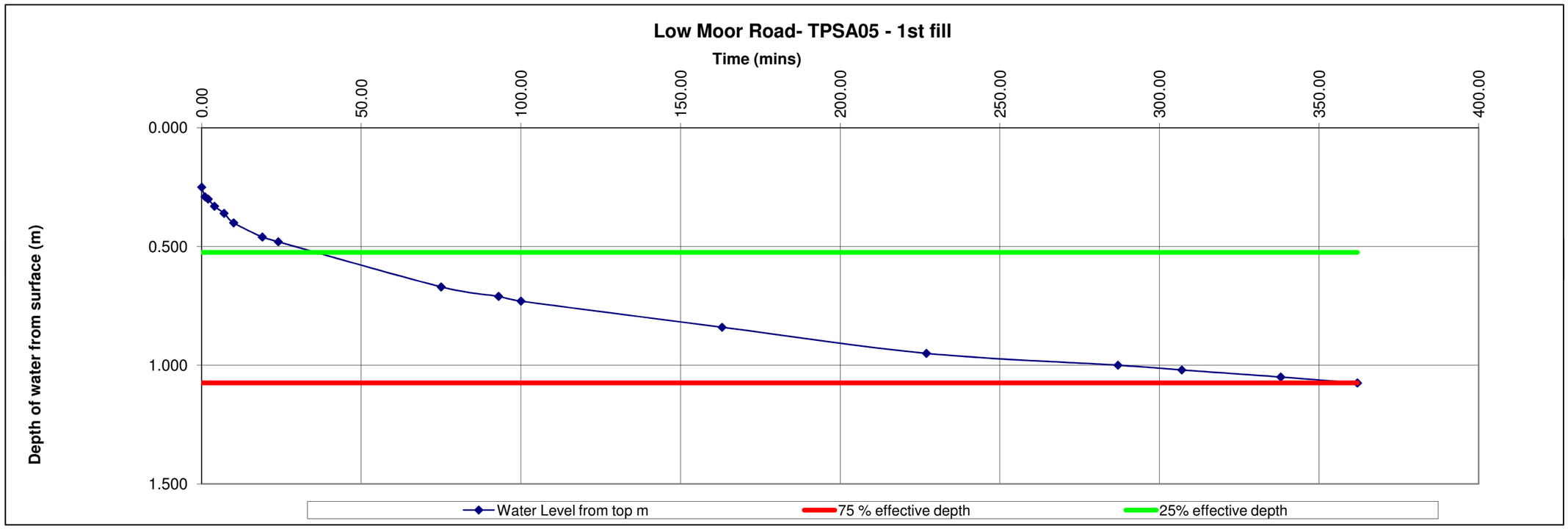
BRE Digest 365 Soakaway Tests - P16-549 - Low Moor Road			
Insert field data into yellow shaded areas			
Trial Pits			
	TPSA03		
Depth	1.60		
Length	2.00		
Width	0.60		
water level from surface at start	0.50		
Time to 25 % empty mins	63.00		
Time to 75 % empty mins	960.00		
Time for outflow between 75% and 25 % effective depth mins	897		
Height of water in TP	1.1		
Effective depth m	1.1		
75% effective depth	1.33		
25% effective depth	0.78		
vol between 75% and 25% m3	0.66		
Mean Surface Area m50 m2	4.06		
Soil Infiltration Rate f m/s	3.02E-06		


Low Moor Road- TPSA03 - 1st fill
Time (mins)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Depth of water from surface (m)
0.000
0.500
1.000
1.500
Water Level from top m
75 % effective depth
25% effective depth

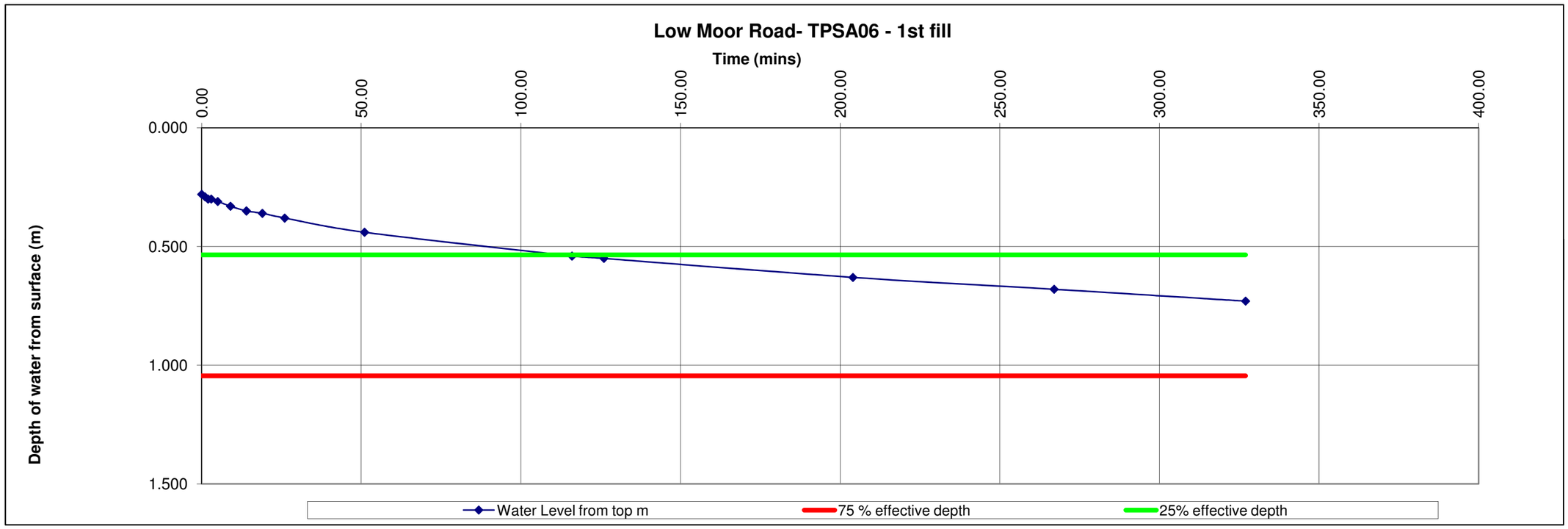
BRE Digest 365 Soakaway Tests - P16-549 - Low Moor Road			
Insert field data into yellow shaded areas			
Trial Pits			
	TPSA04		
Depth	1.40		
Length	2.00		
Width	0.60		
water level from surface at start	0.25		
Time to 25 % empty mins	184.00		
Time to 75 % empty mins	2000.00		
Time for outflow between 75% and 25 % effective depth mins	1816		
Height of water in TP	1.15		
Effective depth m	1.15		
75% effective depth	1.11		
25% effective depth	0.54		
vol between 75% and 25% m3	0.69		
Mean Surface Area m50 m2	4.19		
Soil Infiltration Rate f m/s	1.51E-06		


Low Moor Road- TPSA04 - 1st fill
Time (mins)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
Depth of water from surface (m)
0.000
0.500
1.000
1.500
Water Level from top m
75 % effective depth
25% effective depth

BRE Digest 365 Soakaway Tests - P16-549 - Low Moor Road			
Insert field data into yellow shaded areas			
Trial Pits			
	TPSA05		
Depth	1.35		
Length	1.80		
Width	0.60		
water level from surface at start	0.25		
Time to 25 % empty mins	24.00		
Time to 75 % empty mins	362.00		
Time for outflow between 75% and 25 % effective depth mins	338		
Height of water in TP	1.1		
Effective depth m	1.1		
75% effective depth	1.08		
25% effective depth	0.53		
vol between 75% and 25% m3	0.594		
Mean Surface Area m50 m2	3.72		
Soil Infiltration Rate f m/s	7.87E-06		


Low Moor Road- TPSA05 - 1st fill
Time (mins)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
0.000
0.500
1.000
1.500
Depth of water from surface (m)
Water Level from top m
75 % effective depth
25% effective depth

BRE Digest 365 Soakaway Tests - P16-549 - Low Moor Road			
Insert field data into yellow shaded areas			
Trial Pits			
	TPSA06		
Depth	1.30		
Length	2.00		
Width	0.60		
water level from surface at start	0.28		
Time to 25 % empty mins	116.00		
Time to 75 % empty mins	740.00		
Time for outflow between 75% and 25 % effective depth mins	624		
Height of water in TP	1.02		
Effective depth m	1.02		
75% effective depth	1.05		
25% effective depth	0.54		
vol between 75% and 25% m3	0.612		
Mean Surface Area m50 m2	3.852		
Soil Infiltration Rate f m/s	4.24E-06		


Low Moor Road- TPSA06 - 1st fill
Time (mins)
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
0.000
0.500
1.000
1.500
Depth of water from surface (m)
Water Level from top m
75 % effective depth
25% effective depth

Enclosure 4: Gas Monitoring Data Sheets

RODGERS LEASK ENVIRONMENTAL
Consulting Geotechnical & Environmental Engineers

Ground Gas Monitoring Form

Site Name:	Low Moor Road, Sutton in Ashfield	**RLE Engineer:**	AM
Job No.	P16-549	**Date:**	27-04-201

Atmospheric Pressure:	1005 -1004 mb	**Weather Conditions:**	Fine
State:	Falling	**Temperature:**	9°C

Time	BH Ref.	Gas Flow Rate (l/hr)		B/H Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole installation (m bgl)	Depth to Water (m bgl)	Barom mb
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
9:35	**WS01**	<0.1	<0.1	0	<0.1	<0.1	6.5	6.5	17.2	17.2	0	0	0	0	2.00	Dry	1005
9:40	**WS02**	<0.1	<0.1	0	<0.1	<0.1	0.1	0.1	21.5	21.5	0	0	0	0	3.20	Dry	1005
9:55	**WS03**	<0.1	<0.1	0	<0.1	<0.1	1.7	1.7	17.5	17.5	0	0	0	0	2.50	Dry	1005
9:59	**WS04**	<0.1	<0.1	0	<0.1	<0.1	1.6	1.6	20.5	20.5	0	0	0	0	1.00	Dry	1005
10:10	**WS05**	0.1	<0.1	0	<0.1	<0.1	7.7	7.7	5.8	5.8	0	0	0	0	4.00	Dry	1005
10:15	**WS06**	-0.1	<0.1	0	<0.1	<0.1	1.4	1.2	20.3	20.3	0	0	0	0	2.60	Dry	1004
10:30	**WS07**	<0.1	<0.1	0	<0.1	<0.1	2.0	2.0	19.7	19.7	0	0	0	0	1.80	Dry	1004
10:40	**WS08**	<0.1	<0.1	0	<0.1	<0.1	0.7	0.7	21.4	21.4	0	0	0	0	2.50	1.85	1004
10:50	**CPBH01**	<0.1	<0.1	0	<0.1	<0.1	0.3	0.3	21.0	21.0	0	0	0	0	8.5	Dry	1004
10:55	**CPBH02**	0.1	0.1	0	0.2	0.2	2.0	1.6	18.8	18.8	0	0	1	1	3.45	Dry	1004

NOTES
Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).
Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	Geotechnical Instruments GA2000 Gas Analyser	**Last calibrated:**	05/04/2017
	MiniRAE PID	-	**Last calibrated:**	-
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:				

RODGERS LEASK ENVIRONMENTAL
Consulting Geotechnical & Environmental Engineers

Ground Gas Monitoring Form

Site Name:	Low Moor Road, Sutton in Ashfield	**RLE Engineer:**	RW
Job No.	P16-549	**Date:**	02-05-2017

Atmospheric Pressure:	1006-1004 mb	**Weather Conditions:**	Fine
State:	Falling	**Temperature:**	11 °C

Time	BH Ref.	Gas Flow Rate (l/hr)		B/H Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole installation (m bgl)	Depth to Water (m bgl)	Barom mb
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
9:33	**WS01**	<0.1	<0.1	0	<0.1	<0.1	5.8	5.8	18.1	17.9	0	0	0	0	2.00	Dry	1006
10:11	**WS02**	<0.1	<0.1	-3	<0.1	<0.1	<0.1	<0.1	20.7	20.7	0	0	0	0	3.20	Dry	1006
9:58	**WS03**	<0.1	<0.1	0	<0.1	<0.1	0.2	0.2	20.7	20.7	0	0	0	0	2.50	Dry	1006
9:40	**WS04**	<0.1	<0.1	-2	<0.1	<0.1	2.0	2.0	19.6	19.7	0	0	0	0	1.00	Dry	1006
11:00	**WS05**	<0.1	<0.1	0	<0.1	<0.1	0.2	0.2	19.9	19.9	0	0	0	0	4.00	Dry	1003
10:36	**WS06**	-0.1	<0.1	-3	<0.1	<0.1	3.1	3.1	15.4	15.4	0	0	0	0	2.60	Dry	1004
10:54	**WS07**	<0.1	<0.1	0	<0.1	<0.1	1.8	1.8	18.5	18.5	0	0	0	0	1.80	Dry	1004
10:48	**WS08**	<0.1	<0.1	+1	<0.1	<0.1	0.9	0.9	19.9	19.9	0	0	0	0	2.50	Dry	1004
10:25	**CPBH01**	<0.1	<0.1	-1	<0.1	<0.1	0.1	0.1	20.5	20.5	0	0	0	0	8.5	Dry	1006
9:48	**CPBH02**	<0.1	<0.1	+1	<0.1	<0.1	0.2	0.2	20.8	20.8	0	0	0	0	3.45	Dry	1006

NOTES
Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).
Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	Geotechnical Instruments GA2000 Gas Analyser	**Last calibrated:**	05/04/2017
	MiniRAE PID	-	**Last calibrated:**	-
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:				

RODGERS LEASK ENVIRONMENTAL
Consulting Geotechnical & Environmental Engineers

Ground Gas Monitoring Form

Site Name:	Low Moor Road, Sutton in Ashfield	**RLE Engineer:**	RW
Job No.	P16-549	**Date:**	17-05-2017

Atmospheric Pressure:	1001 - 999 mb	**Weather Conditions:**	Rain
State:	Falling	**Temperature:**	9°C

Time	BH Ref.	Gas Flow Rate (l/hr)		B/H Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole installation (m bgl)	Depth to Water (m bgl)	Barom mb
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
11:11	**WS01**	<0.1	<0.1	+13	<0.1	<0.1	4.9	4.9	17.5	17.5	0	0	0	0	2.00	Dry	1000
10:00	**WS02**	+0.1	<0.1	0	<0.1	<0.1	3.0	3.0	11.0	11.0	0	0	0	0	3.20	Dry	1001
10:07	**WS03**	<0.1	<0.1	0	<0.1	<0.1	1.1	1.1	17.0	17.0	0	0	0	0	2.50	Dry	1001
10:15	**WS04**	<0.1	<0.1	+2	<0.1	<0.1	7.6	7.6	9.7	9.1	0	0	0	0	1.00	Dry	1001
11:07	**WS05**	<0.1	<0.1	0	0.1	0.1	4.1	4.1	8.9	8.9	0	0	0	0	4.00	Dry	999
10:51	**WS06**	<0.1	<0.1	+2	<0.1	<0.1	2.1	2.1	14.4	14.4	0	0	0	0	2.60	Dry	1000
10:40	**WS07**	<0.1	<0.1	0	0.1	0.1	1.1	1.1	17.1	17.3	0	0	0	0	1.80	Dry	1000
10:35	**WS08**	<0.1	<0.1	0	<0.1	<0.1	0.8	0.8	20.1	20.1	0	0	0	0	2.50		1001
10:25	**CPBH01**	<0.1	<0.1	+1	2.1	2.1	2.2	2.2	0.5	0.5	1	1	0	0	8.5	Dry	1001
11:00	**CPBH02**	<0.1	<0.1	+1	0.1	0.1	1.1	1.1	4.6	4.6	0	0	0	0	3.45	Dry	1000

NOTES
Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).
Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	Geotechnical Instruments GA2000 Gas Analyser	**Last calibrated:**	05/04/2017
	MiniRAE PID	-	**Last calibrated:**	-
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:				

RODGERS LEASK ENVIRONMENTAL
Consulting Geotechnical & Environmental Engineers

Ground Gas Monitoring Form

Site Name:	Low Moor Road, Sutton in Ashfield	**RLE Engineer:**	AM
Job No.	P16-549	**Date:**	26-05-2017

Atmospheric Pressure:	1003 mb	**Weather Conditions:**	Sunny
State:	Rising	**Temperature:**	25°C

Time	BH Ref.	Gas Flow Rate (l/hr)		B/H Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole installation (m bgl)	Depth to Water (m bgl)	Barom mb
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
10:00	**WS01**	-0.2	-0.2	+2.56	<0.1	<0.1	4.9	4.9	16.3	16.3	0	0	0	0	2.00	Dry	1003
10:40	**WS02**	-0.1	-0.1	+4.30	<0.1	<0.1	7.2	7.2	10.6	10.6	0	0	0	0	3.20	Dry	1003
10:30	**WS03**	-0.1	-0.1	+4.89	<0.1	<0.1	9.1	9.1	0.8	0.8	0	0	0	0	2.50	Dry	1003
10:15	**WS04**	-0.1	-0.1	+0.54	<0.1	<0.1	4.2	4.2	2.5	2.4	0	0	0	0	1.00	Dry	1003
11:10	**WS05**	-0.1	-0.1	+3.04	<0.1	<0.1	6.9	6.9	12.1	12.1	0	0	0	0	4.00	Dry	1003
10:54	**WS06**	<0.1	<0.1	+0.92	<0.1	<0.1	6.9	6.9	0.9	0.9	2	2	0	0	2.60	Dry	1003
-	**WS07**	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1003
11:00	**WS08**	<0.1	<0.1	NR	<0.1	<0.1	1.6	1.6	18.2	18.2	0	0	0	0	2.50	Dry	1003
10:25	**CPBH01**	-0.1	-0.1	+0.61	2.2	2.2	2.3	2.3	1.4	1.1	1	1	0	0	8.5	Dry	1003
10:48	**CPBH02**	-0.1	-0.1	+0.88	1.7	1.7	6.9	6.9	0.7	0.7	1	1	0	0	3.45	Dry	1003

NOTES
Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).
Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	Geotechnical Instruments GA2000 Gas Analyser	**Last calibrated:**	05/04/2017
	MiniRAE PID	-	**Last calibrated:**	-
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:				

RODGERS LEASK ENVIRONMENTAL
Consulting Geotechnical & Environmental Engineers

Ground Gas Monitoring Form

Site Name:	Low Moor Road, Sutton in Ashfield	**RLE Engineer:**	RW
Job No.	P16-549	**Date:**	29-06-2017

Atmospheric Pressure:	992mb	**Weather Conditions:**	Drizzle
State:	Falling	**Temperature:**	11℃

Time	BH Ref.	Gas Flow Rate (l/hr)		B/H Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole installation (m bgl)	Depth to Water (m bgl)	Barom mb
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
09:30	**WS01**	<0.1	<0.1	+1.05	<0.1	<0.1	4.1	4.1	18.9	18.9	0	0	0	0	2.00	Dry	992
-	**WS02**	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF
-	**WS03**	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF
10:00	**WS04**	<0.1	<0.1	-1.68	3.4	3.4	6.3	6.3	0.4	0.4	0	0	0	0	1.00	Dry	992
10:52	**WS05**	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF
10:20	**WS06**	<0.1	<0.1	+1.3	<0.1	<0.1	6.2	6.2	1.4	1.4	0	0	0	0	2.60	Dry	992
10:33	**WS07**	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF
10:26	**WS08**	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF
09:55	**CPBH01**	<0.1	<0.1	-0.39	2.6	2.6	3.4	3.4	1.6	1.6	0	0	0	0	8.5	Dry	992
10:15	**CPBH02**	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF	DNF

NOTES
Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).
Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.
DNF – Did Not Find

Equipment used:	Infra Red Gas Analyser	Geotechnical Instruments GA2000 Gas Analyser	**Last calibrated:**	05/04/2017
	MiniRAE PID	-	**Last calibrated:**	-
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:				

RODGERS LEASK ENVIRONMENTAL
Consulting Geotechnical & Environmental Engineers

Ground Gas Monitoring Form

Site Name:	Low Moor Road, Sutton in Ashfield	**RLE Engineer:**	RW
Job No.	P16-549	**Date:**	19-07-2017

Atmospheric Pressure:	990 - 987mb	**Weather Conditions:**	Drizzle
State:	Falling	**Temperature:**	18℃

Time	BH Ref.	Gas Flow Rate (l/hr)		B/H Pressure (Pa)	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		CO (% ppm)		H2S (% ppm)		Depth of Borehole installation (m bgl)	Depth to Water (m bgl)	Barom mb
		Initial	Steady		Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
09:30	**WS01**	<0.1	<0.1	+7	<0.1	<0.1	3.9	3.9	17.3	17.3	0	0	0	0	2.00	Dry	990
09:38	**WS02**	<0.1	<0.1	0	<0.1	<0.1	13.3	13.9	3.3	2.3	0	0	0	0	3.20	Dry	990
09:45	**WS03**	<0.1	<0.1	-10	<0.1	<0.1	9.7	9.7	1.3	1.3	0	0	0	0	2.50	Dry	990
10:05	**WS04**	<0.1	<0.1	-15	3.0	3.1	6.3	6.3	1.1	0.4	0	0	0	0	1.00	Dry	989
10:52	**WS05**	<0.1	<0.1	0	<0.1	<0.1	7.5	7.5	11.5	11.3	0	0	0	0	4.00	Dry	987
10:40	**WS06**	<0.1	<0.1	+3	0.2	0.2	8.8	8.8	1.0	0.8	0	0	0	0	2.60	Dry	988
10:33	**WS07**	<0.1	<0.1	+1	<0.1	<0.1	4.5	4.5	15.1	14.9	0	0	0	0	1.80	Dry	988
10:26	**WS08**	<0.1	<0.1	0	<0.1	<0.1	1.5	1.5	19.2	19.2	0	0	0	0	2.50	2.35	988
09:55	**CPBH01**	<0.1	<0.1	0	2.6	2.6	3.3	3.3	<0.1	<0.1	0	0	0	0	8.5	Dry	990
10:15	**CPBH02**	<0.1	<0.1	0	0.8	0.9	6.6	7.6	4.4	3.1	0	0	0	0	3.45	Dry	989

NOTES
Monitoring order is from **Left to Right** across this table (expect when using a PID, which should be used first).
Monitoring should be for **NO less than 3 minutes**, unless there have been fluctuations between initial and steady state recorded during the 3 minutes, or high concentrations of gases are initially recorded. Monitoring should then be up to 10 minutes or steady state.

Equipment used:	Infra Red Gas Analyser	Geotechnical Instruments GA2000 Gas Analyser	**Last calibrated:**	05/04/2017
	MiniRAE PID	-	**Last calibrated:**	-
Visible signs of vegetation Stress:		-		
Other Comments/ Observations/Tests:				

Appendix E: RLE Technical Note 'Ground gas risk assessment'