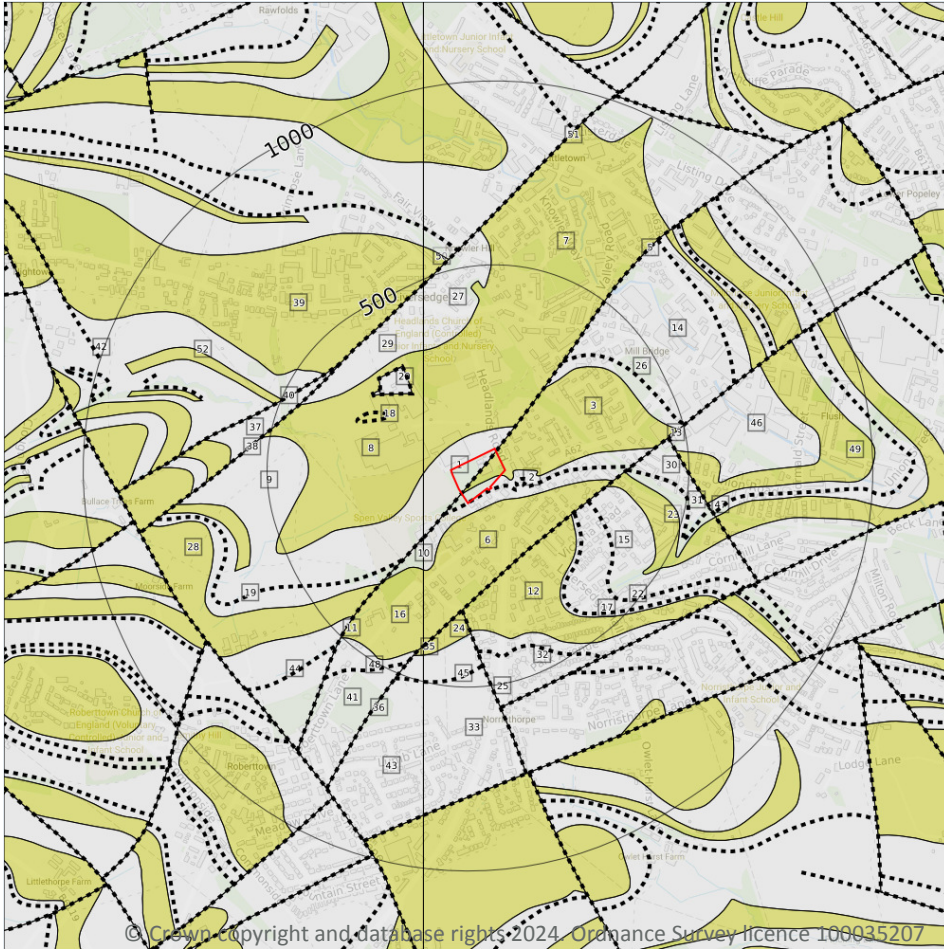


Geology 1:10,000 scale - Bedrock



- 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

32

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 91](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
2	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
3	On site	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
6	30m S	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
7	52m NW	FHR-SDST	Falhouse Rock - Sandstone	Langsettian Sub-age
8	75m W	FHR-SDST	Falhouse Rock - Sandstone	Langsettian Sub-age
9	75m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
10	153m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
12	193m SE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
14	212m NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
15	217m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
16	218m SW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
20	233m NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
23	278m E	FHR-SDST	Falhouse Rock - Sandstone	Langsettian Sub-age
24	291m S	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
27	318m N	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
28	324m SW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
29	325m NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
30	326m E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
32	346m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
33	355m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
35	407m S	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
37	418m NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
39	418m NW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
41	421m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
42	431m NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
43	431m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
44	438m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
46	453m E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
49	467m E	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
50	487m N	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
52	497m W	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	20
----------------------------	-----------

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 91](#) >

ID	Location	Category	Description
4	On site	ROCK	Coal seam, inferred
5	On site	FAULT	Normal fault, inferred; downthrow not specified
11	153m SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
13	193m SE	FAULT	Normal fault, inferred; downthrow not specified
17	220m E	ROCK	Coal seam, inferred
18	226m NW	ROCK	Coal seam, inferred
19	231m SW	ROCK	Coal seam, inferred
21	233m NW	ROCK	Coal seam, observed
22	241m E	ROCK	Coal seam, inferred
25	291m S	FAULT	Normal fault, inferred; downthrow not specified

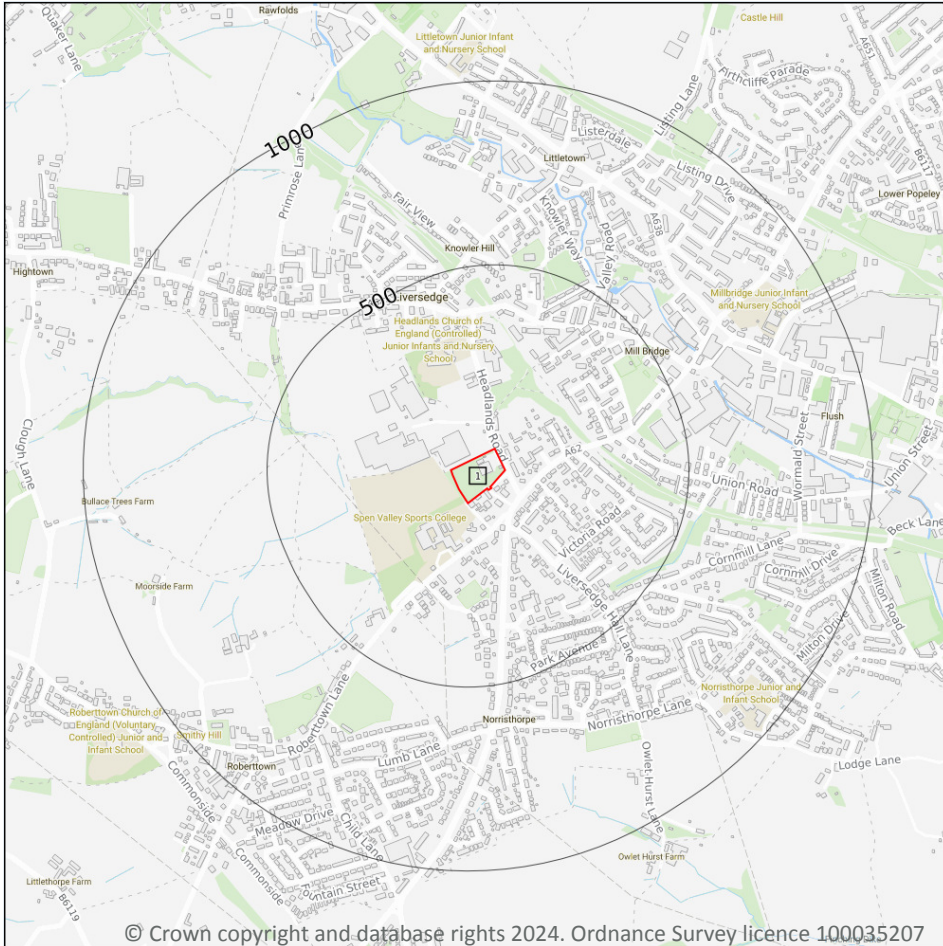


ID	Location	Category	Description
26	301m NE	ROCK	Coal seam, inferred
31	332m E	ROCK	Coal seam, inferred
34	404m S	ROCK	Coal seam, inferred
36	407m S	FAULT	Normal fault, inferred; crossmarks on downthrow side
38	418m NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
40	418m NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
45	443m S	ROCK	Coal seam, inferred
47	453m E	FAULT	Normal fault, inferred; downthrow not specified
48	461m S	ROCK	Coal seam, inferred
51	487m N	FAULT	Normal fault, inferred; downthrow not specified

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.

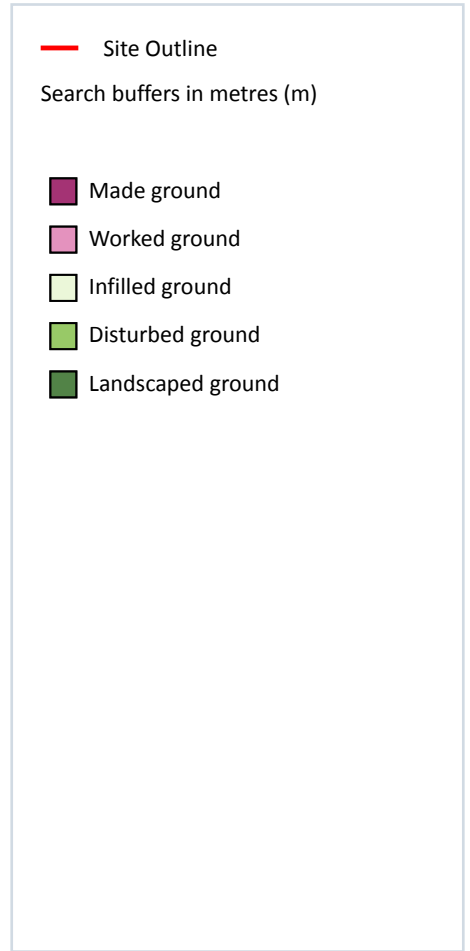
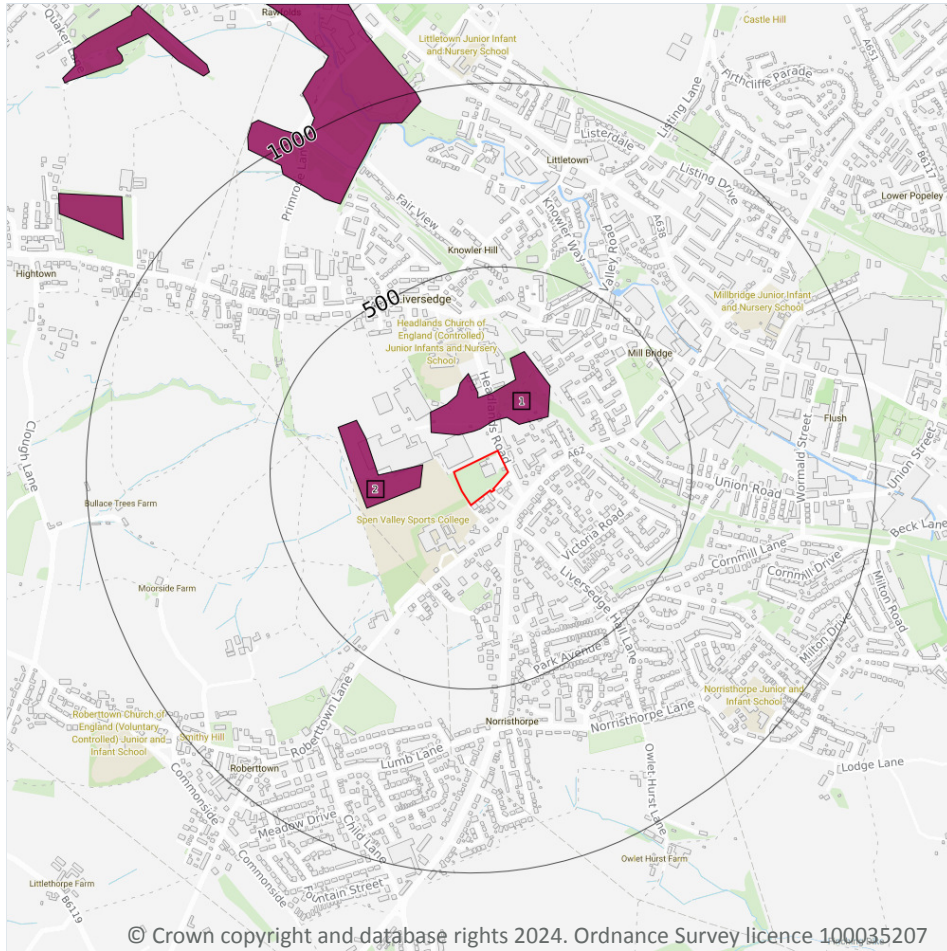
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 95](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW077_huddersfield_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

2

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 96 >](#)

ID	Location	LEX Code	Description	Rock description
1	74m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	87m W	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

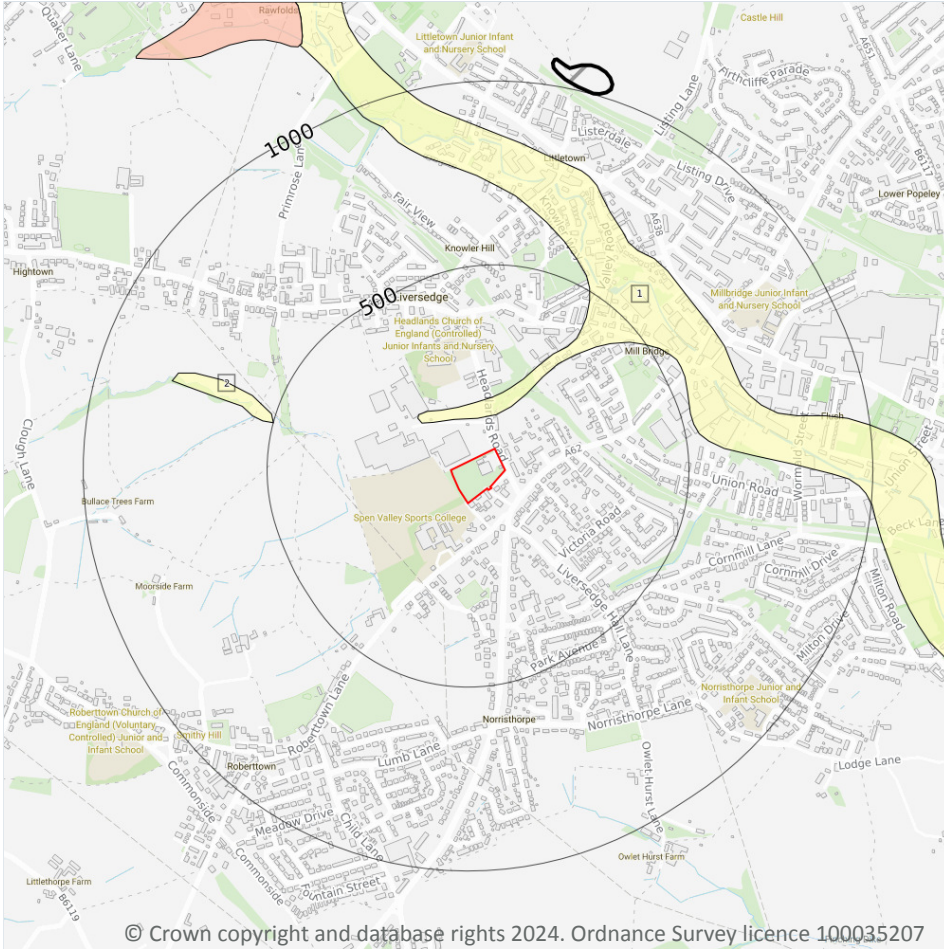
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



- Site Outline
- Search buffers in metres (m)
- Landslip (50k)
- Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

2

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 98](#) >

ID	Location	LEX Code	Description	Rock description
1	90m N	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	500m W	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m

0

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

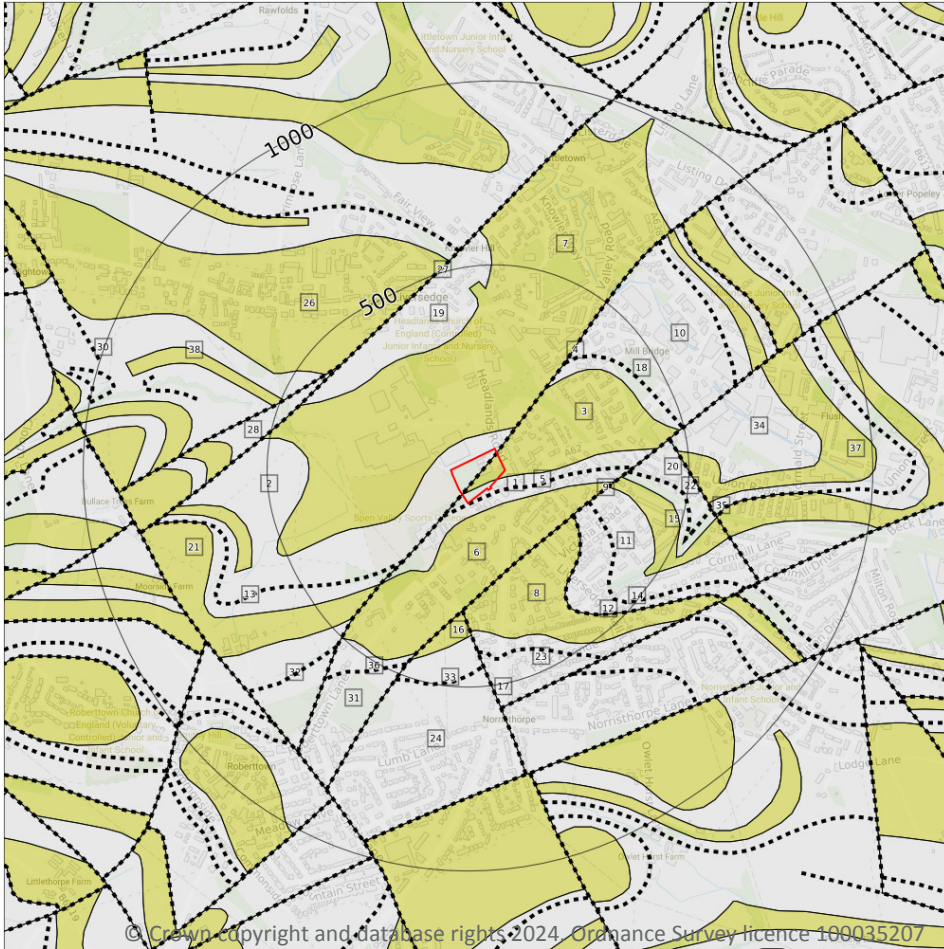
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- Bedrock faults and other linear features (50k)
- Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

23

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 100 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	On site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN



ID	Location	LEX Code	Description	Rock age
3	On site	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
6	36m S	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
7	46m N	FHR-SDST	FALHOUSE ROCK - SANDSTONE	WESTPHALIAN
8	199m SE	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
10	211m NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
11	222m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	284m E	FHR-SDST	FALHOUSE ROCK - SANDSTONE	WESTPHALIAN
16	293m S	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
19	316m N	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
20	317m E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
21	324m SW	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
23	347m S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
24	359m S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
26	414m NW	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
28	414m NW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
30	428m NW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
31	432m S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
32	444m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
34	455m E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN



ID	Location	LEX Code	Description	Rock age
37	470m E	FHR-SDST	FALHOUSE ROCK - SANDSTONE	WESTPHALIAN
38	493m W	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

4

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Moderate	Low
On site	Fracture	High	Moderate
36m S	Fracture	High	Moderate
45m N	Fracture	High	Moderate

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

15

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 100](#) >

ID	Location	Category	Description
4	On site	FAULT	Fault, inferred
5	3m S	ROCK	Coal seam, inferred
9	199m SE	FAULT	Fault, inferred
12	222m SE	ROCK	Coal seam, inferred
13	237m SW	ROCK	Coal seam, inferred
14	244m E	ROCK	Coal seam, inferred

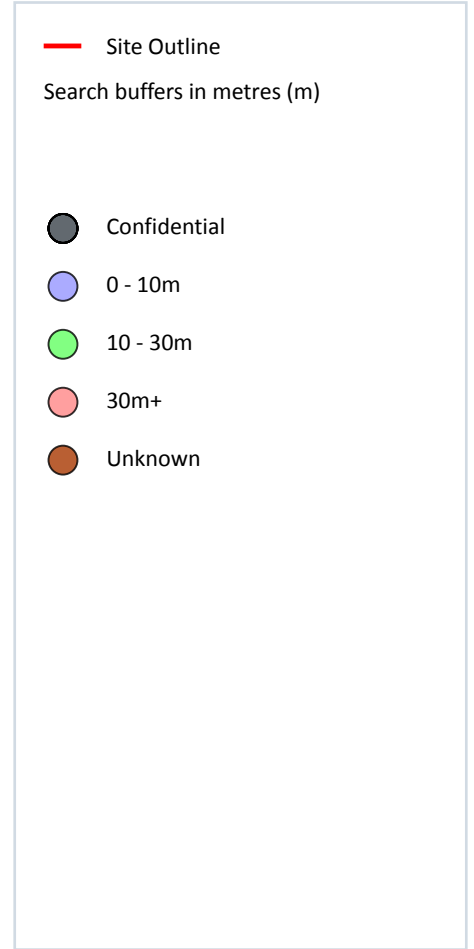
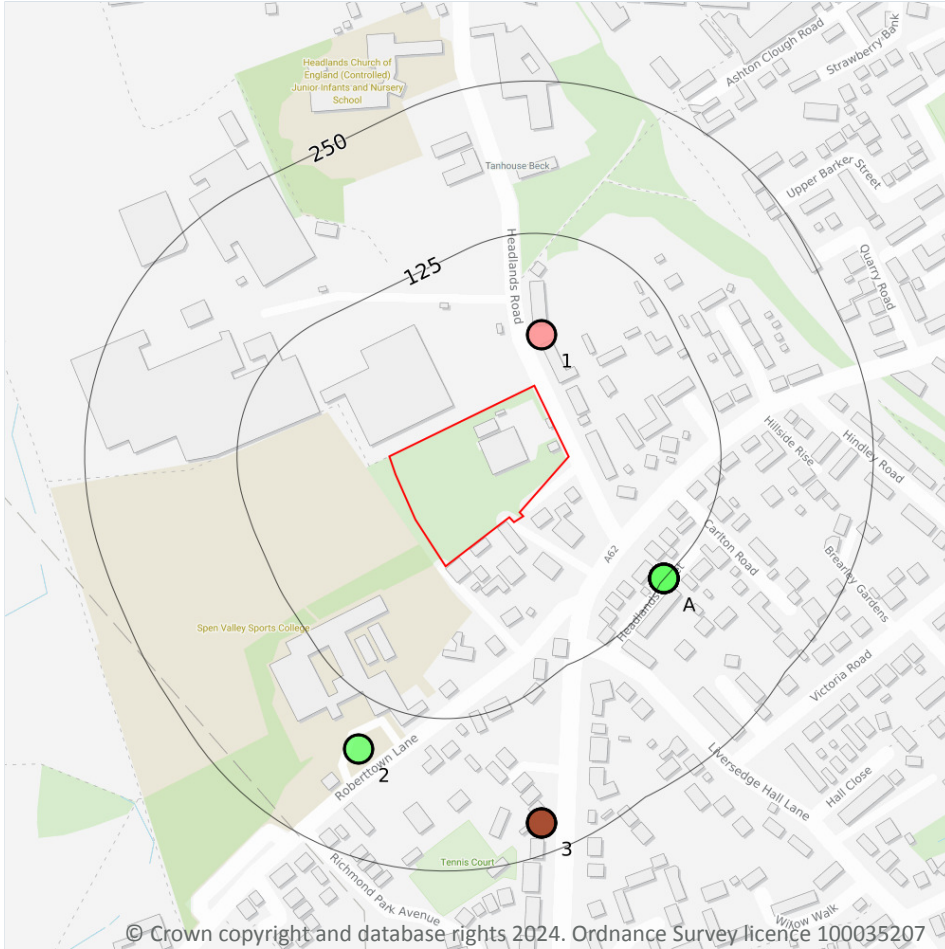


ID	Location	Category	Description
17	293m S	FAULT	Fault, inferred, displacement unknown
18	301m NE	ROCK	Coal seam, inferred
22	334m E	ROCK	Coal seam, inferred
25	406m S	ROCK	Coal seam, inferred
27	414m NW	FAULT	Fault, inferred
29	414m NW	FAULT	Fault, inferred
33	445m S	ROCK	Coal seam, inferred
35	455m E	FAULT	Fault, inferred
36	468m S	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



16 Boreholes



16.1 BGS Boreholes

Records within 250m

12

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 104](#) >

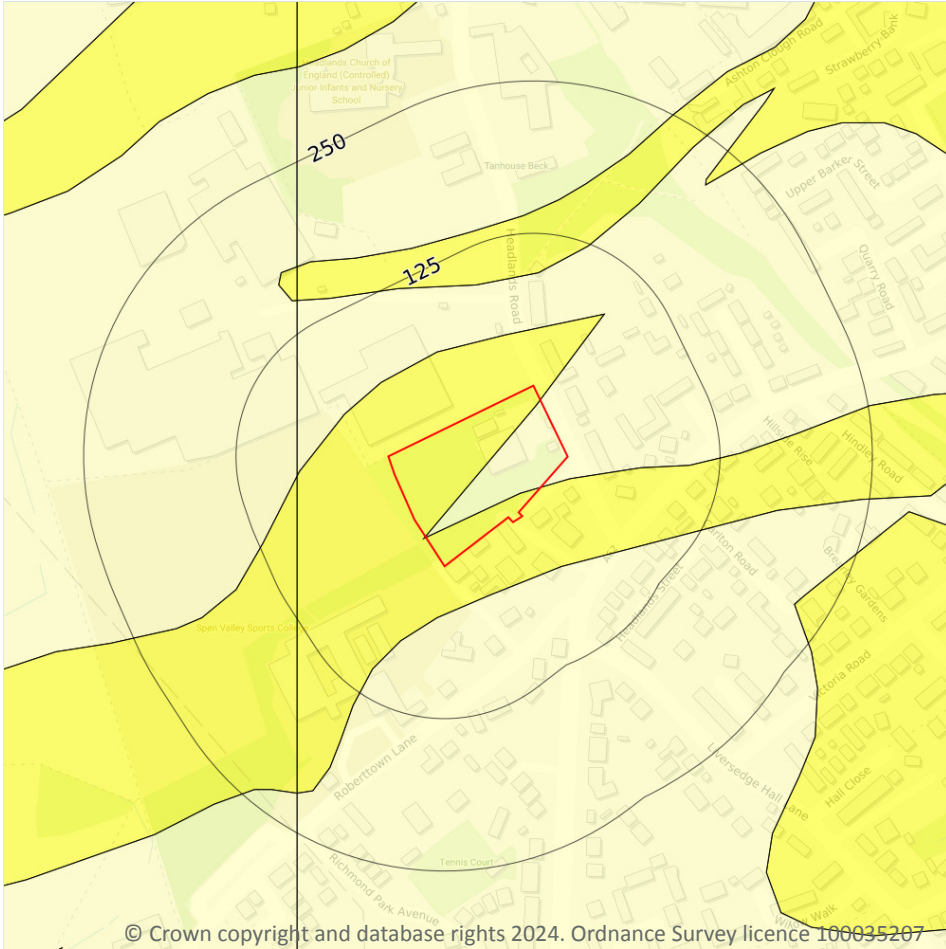
ID	Location	Grid reference	Name	Length	Confidential	Web link
1	42m NE	420200 423500	STRAWBERRY BANK COLLIERY LIVERSEEDGE	190.5	N	77508 ↗
A	125m SE	420300 423300	LIVERSEEDGE HALL LANE BH9	12.0	N	77601 ↗
A	125m SE	420300 423300	LIVERSEEDGE HALL LANE BH5	12.0	N	77597 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	125m SE	420300 423300	LIVERSEDGE HALL LANE BH3	13.0	N	77595 ↗
A	125m SE	420300 423300	LIVERSEDGE HALL LANE BH7	12.0	N	77599 ↗
A	125m SE	420300 423300	LIVERSEDGE HALL LANE BH1	25.0	N	77593 ↗
A	125m SE	420300 423300	LIVERSEDGE HALL LANE BH6	12.0	N	77598 ↗
A	125m SE	420300 423300	LIVERSEDGE HALL LANE BH2	13.0	N	77594 ↗
A	125m SE	420300 423300	LIVERSEDGE HALL LANE BH8	12.0	N	77600 ↗
A	125m SE	420300 423300	LIVERSEDGE HALL LANE BH4	13.0	N	77596 ↗
2	166m SW	420050 423160	LIVERSEDGE TENNIS CLUB 4	20.0	N	77515 ↗
3	225m S	420200 423100	LIVERSEDGE YORKSHIRE (HOUSING) 4BHS	-1.0	N	77509 ↗

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

3

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 106](#) >

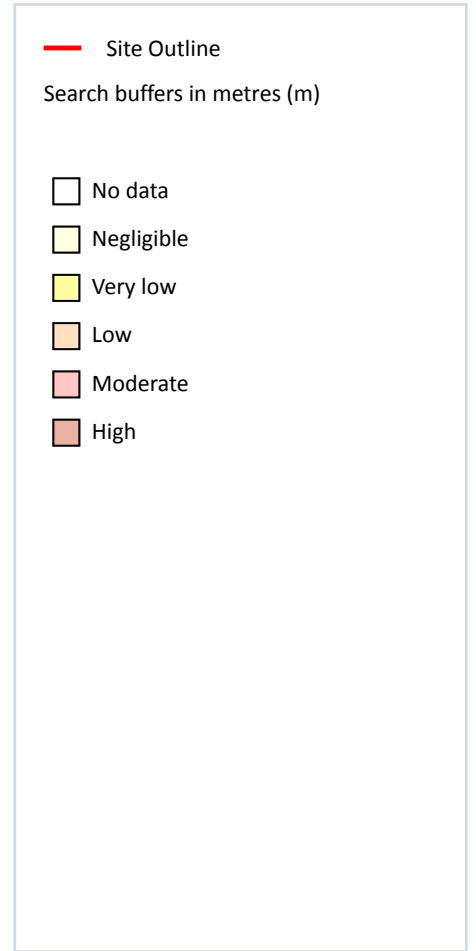
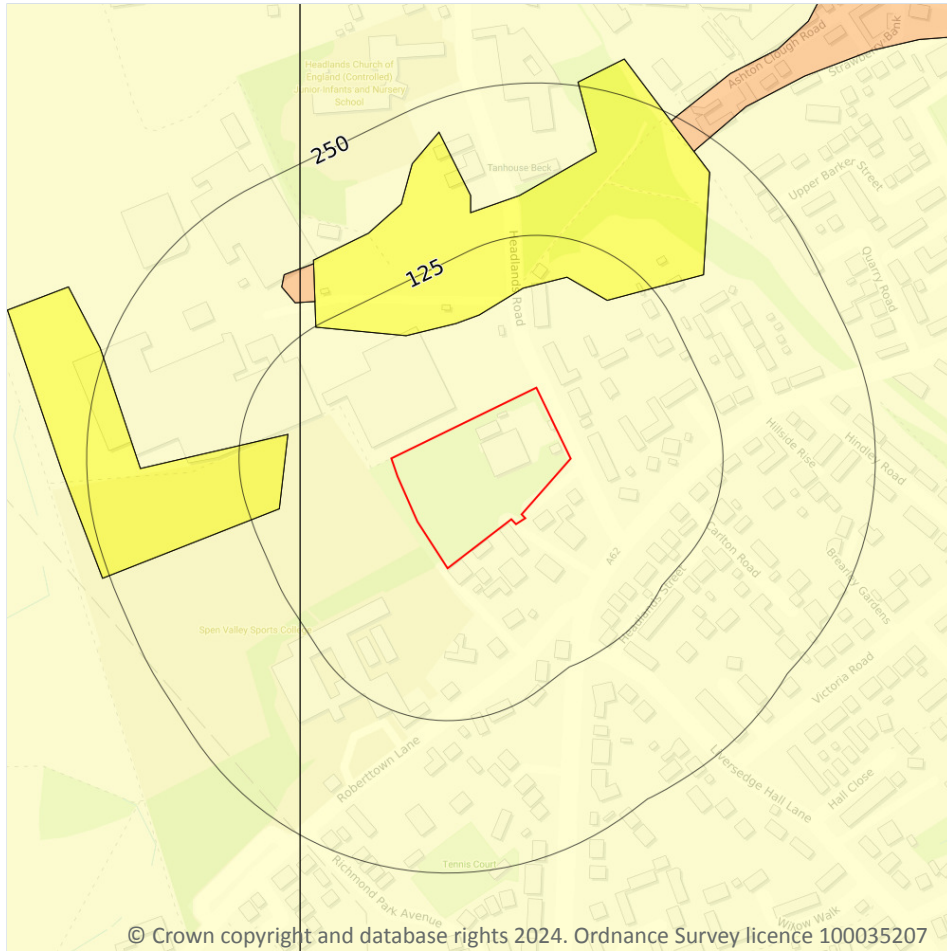
Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
On site	Very low	Ground conditions predominantly low plasticity.
36m S	Negligible	Ground conditions predominantly non-plastic.



This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

1

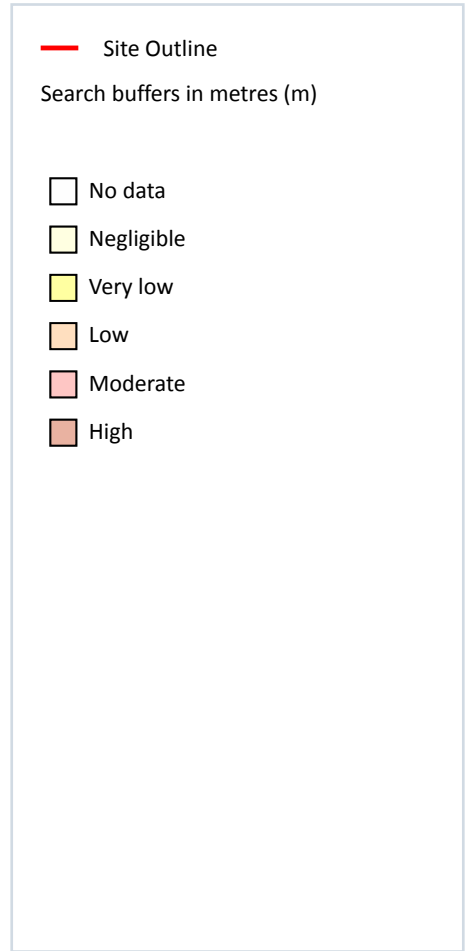
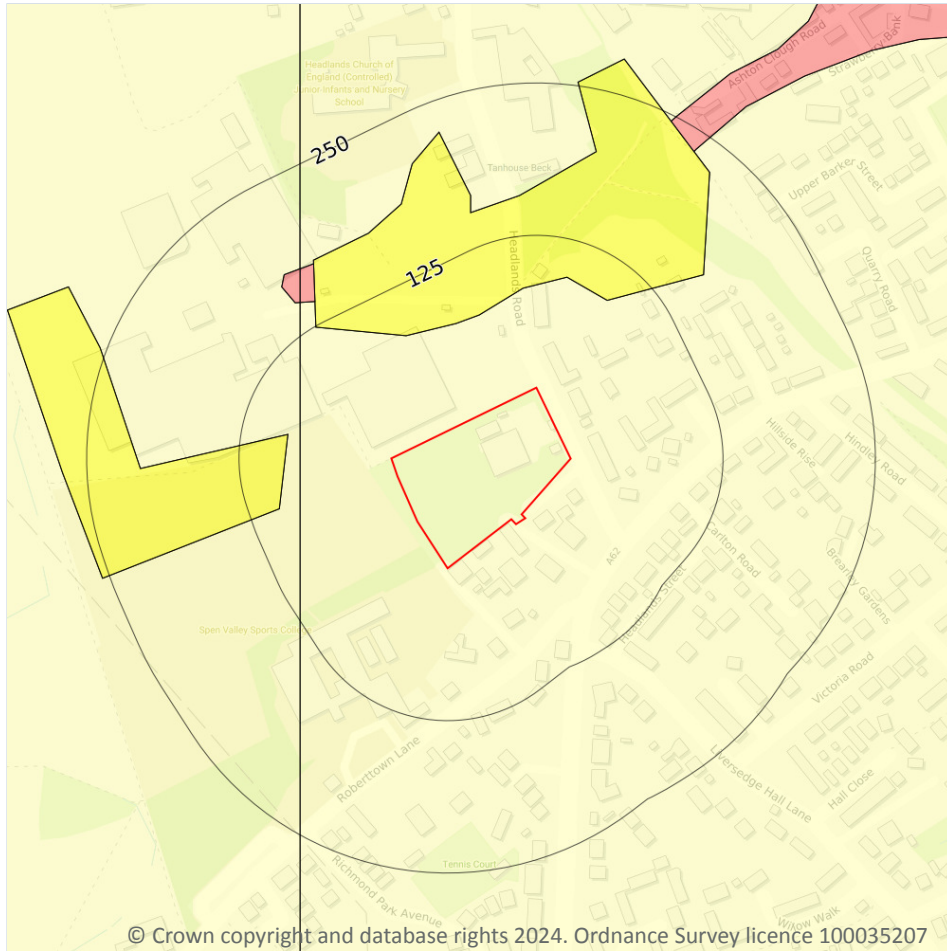
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on [page 108](#) >

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



17.3 Compressible deposits

Records within 50m

1

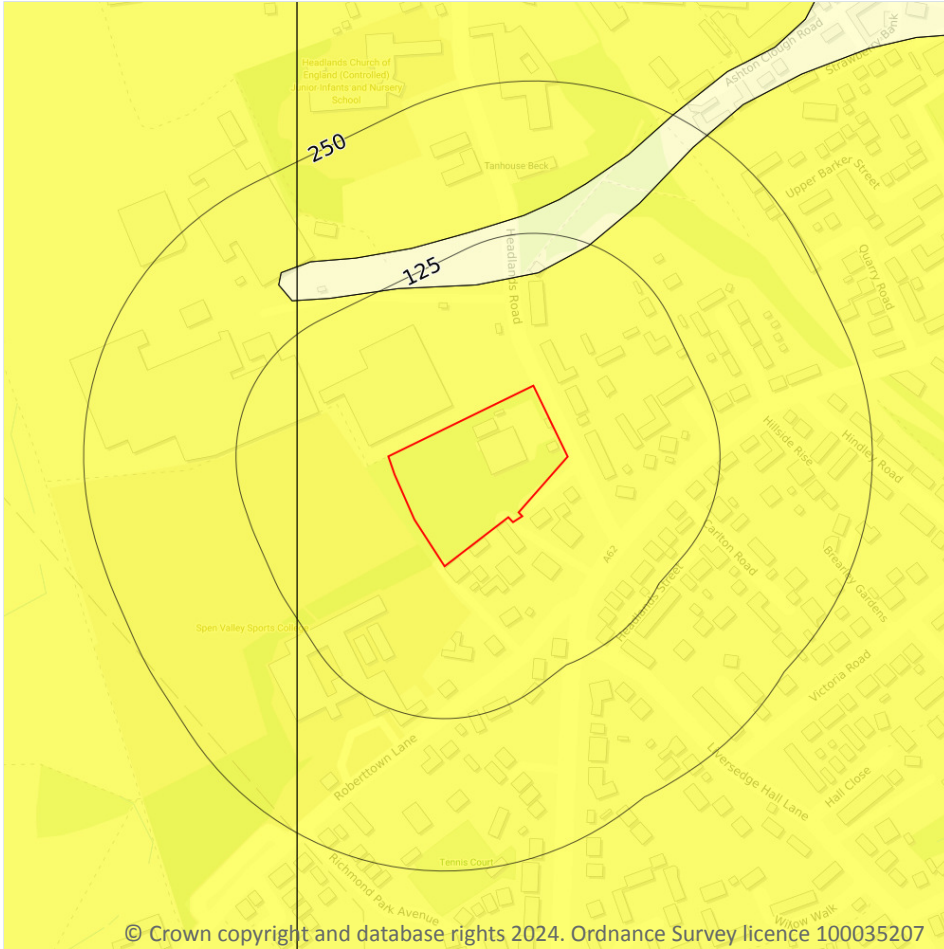
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 109](#) >

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m

1

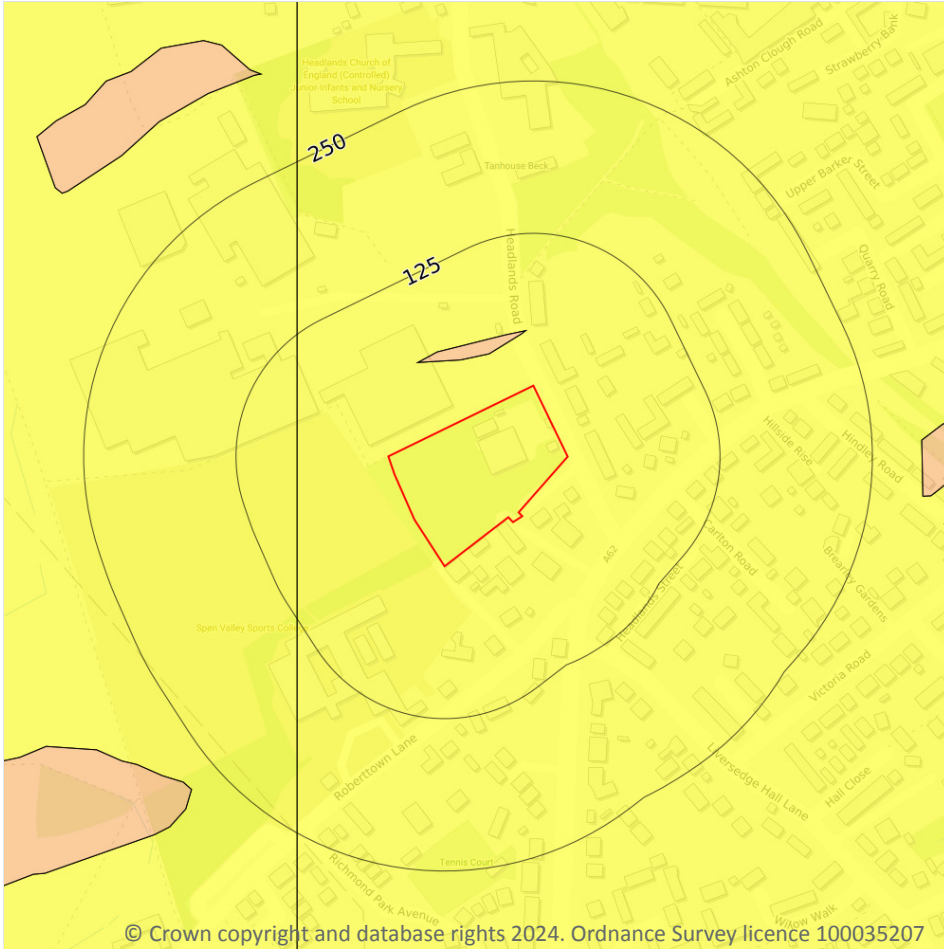
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 110 >](#)

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 111](#) >

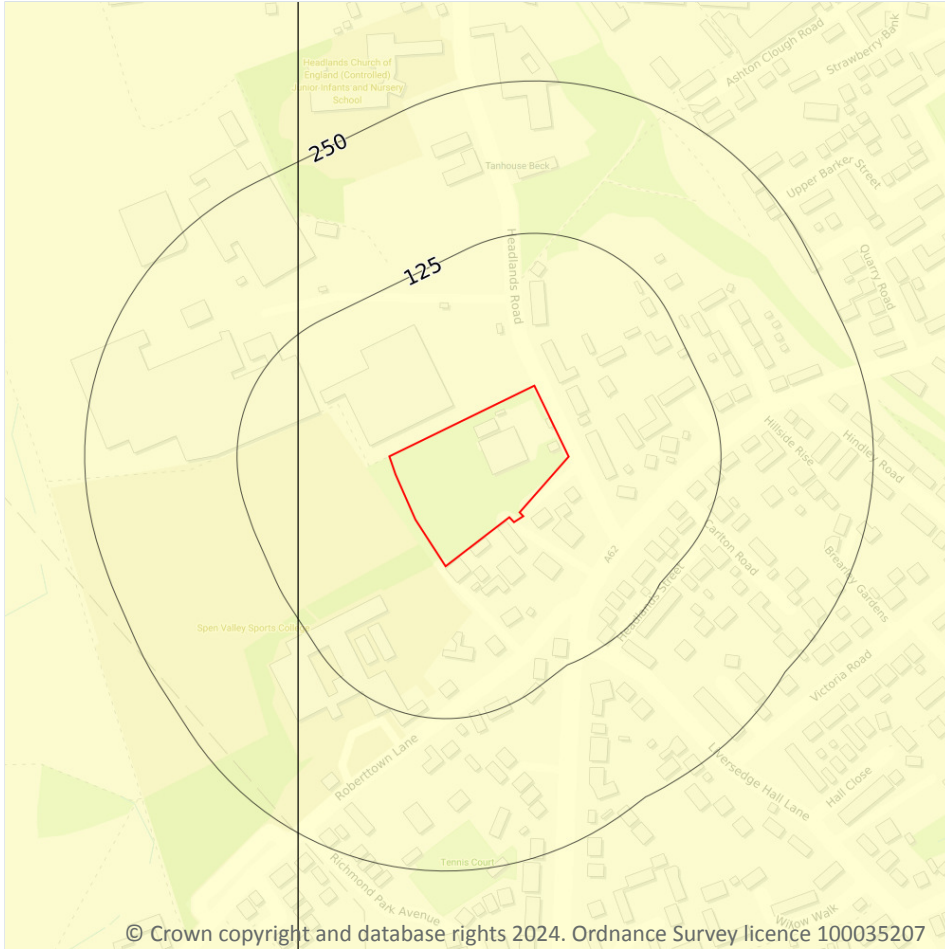
Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

Location	Hazard rating	Details
39m N	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



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.

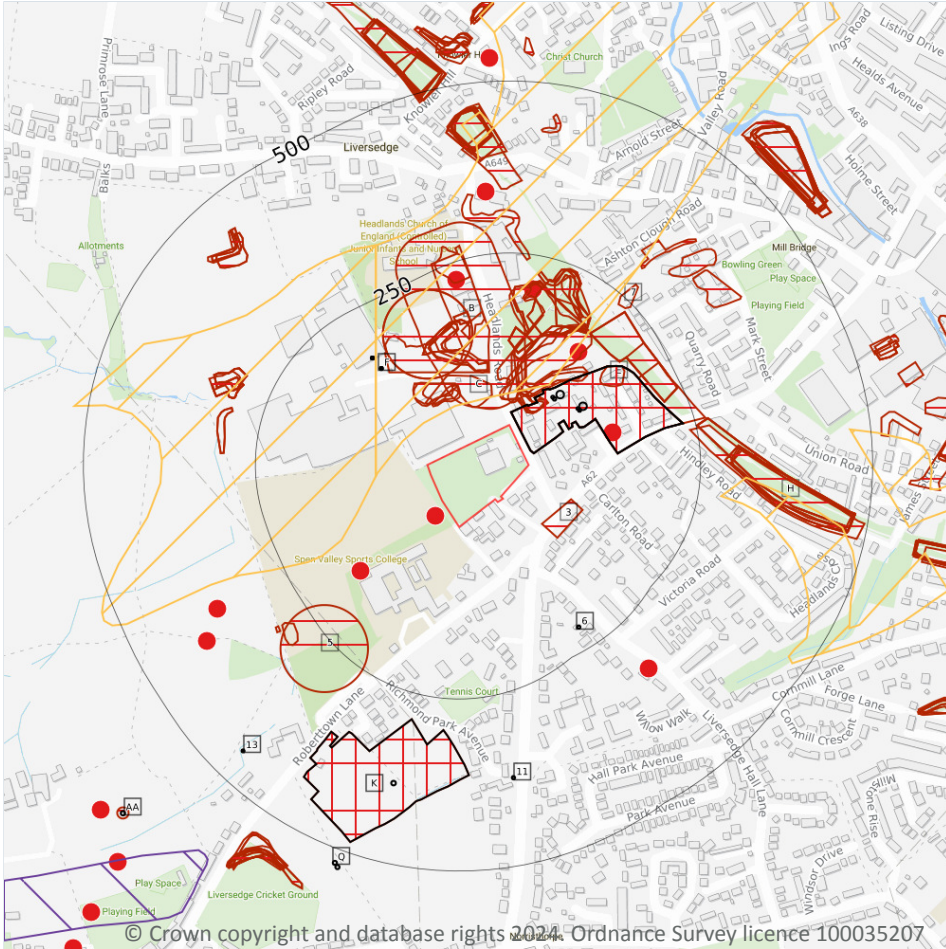
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 113](#) >

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 and ground workings



18.1 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 and ground workings map on [page 115](#) >

ID	Location	Details	Description
1	19m SW	Name: The Yew Tree Inn Address: LIVERSEEDGE, West Yorkshire Commodity: Coal, Deep 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
A	131m E	Name: The Yew Tree Inn Address: LIVERSEEDGE, West Yorkshire Commodity: Coal, Deep 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
A	147m NE	Name: Strawberry Bank Address: Liversedge, LIVERSEEDGE, West Yorkshire 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
4	154m SW	Name: The Yew Tree Inn Address: LIVERSEEDGE, West Yorkshire Commodity: Coal, Deep 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
A	200m N	Name: Tanhouse Mill Address: Liversedge, LIVERSEEDGE, West Yorkshire Commodity: Coal, Deep 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	225m N	Name: Tanhouse Mill Address: Liversedge, LIVERSEEDGE, West Yorkshire 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



ID	Location	Details	Description
10	325m SE	Name: Liversedge Hall Address: LIVERSEGE, West Yorkshire 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	341m N	Name: Mill Bridge Colliery Address: Liversedge, LIVERSEGE, West Yorkshire 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
N	363m SW	Name: Smithy Hill Address: LIVERSEGE, West Yorkshire Commodity: Coal, Deep 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
N	397m SW	Name: Smithy Hill Address: LIVERSEGE, West Yorkshire Commodity: Coal, Deep Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m

54

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 and ground workings map on [page 115 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
A	11m NE	Colliery	1905	1:10560
A	11m NE	Colliery	1892	1:10560
B	28m N	Refuse Destructor	1905	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	31m NE	Refuse Heap	1938	1:10560
A	33m NE	Refuse Heap	1892	1:10560
A	33m NE	Refuse Heaps	1931	1:10560
A	35m NE	Refuse Heap	1931	1:10560
A	35m NE	Refuse Heap	1931	1:10560
C	44m N	Unspecified Ground Workings	1905	1:10560
A	48m NE	Refuse Heap	1948	1:10560
A	50m NE	Refuse Heap	1955	1:10560
A	61m N	Refuse Heap	1905	1:10560
C	67m N	Unspecified Ground Workings	1948	1:10560
3	67m SE	Cuttings	1892	1:10560
C	70m N	Refuse Heap	1955	1:10560
C	72m NW	Refuse Heap	1892	1:10560
C	77m NW	Refuse Heap	1948	1:10560
B	82m N	Refuse Destructor	1955	1:10560
B	85m N	Refuse Heap	1948	1:10560
B	85m N	Refuse Heap	1931	1:10560
B	87m N	Refuse Heap	1938	1:10560
A	96m N	Refuse Heap	1931	1:10560
A	97m N	Refuse Heaps	1948	1:10560
A	106m N	Cuttings	1988	1:10000
A	106m N	Cuttings	1981	1:10000
A	106m N	Cuttings	1974	1:10000
A	106m N	Cuttings	1967	1:10560
B	106m N	Refuse Destructor	1948	1:10560
B	106m N	Refuse Destructor	1931	1:10560
B	115m N	Unspecified Heap	1967	1:10560
B	130m N	Refuse Heap	1988	1:10000



ID	Location	Land Use	Year of mapping	Mapping scale
B	130m N	Refuse Heap	1981	1:10000
B	130m N	Refuse Heap	1974	1:10000
B	137m N	Refuse Heaps	1905	1:10560
A	139m NE	Cuttings	1988	1:10000
A	139m NE	Cuttings	1981	1:10000
E	147m NE	Unspecified Heap	1892	1:10560
A	160m NE	Cuttings	1974	1:10000
A	160m NE	Cuttings	1967	1:10560
B	161m N	Refuse Destructor	1931	1:10560
B	161m N	Refuse Destructor	1931	1:10560
E	177m NE	Cuttings	1988	1:10000
E	177m NE	Cuttings	1981	1:10000
E	177m NE	Cuttings	1974	1:10000
A	186m NE	Unspecified Ground Workings	1931	1:10560
A	186m NE	Unspecified Ground Workings	1931	1:10560
A	191m NE	Unspecified Pit	1892	1:10560
E	197m NE	Cuttings	1967	1:10560
E	199m NE	Cuttings	1892	1:10560
5	201m SW	Old Coal Pit	1931	1:10560
G	220m N	Unspecified Quarry	1892	1:10560
7	237m NE	Unspecified Heap	1892	1:10560
H	240m E	Cuttings	1892	1:10560
I	242m N	Unspecified Ground Workings	1892	1:10560

This data is sourced from Ordnance Survey/Groundsure.



18.3 Underground workings

Records within 1000m

33

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 and ground workings map on [page 115 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
A	11m NE	Colliery	1905	1:10560
A	11m NE	Colliery	1892	1:10560
A	73m NE	Unspecified Old Shafts	1951	1:10560
A	73m NE	Unspecified Old Shafts	1948	1:10560
A	81m NE	Unspecified Disused Shafts	1967	1:10560
A	98m NE	Unspecified Old Shafts	1951	1:10560
A	99m NE	Unspecified Old Shafts	1948	1:10560
A	103m NE	Unspecified Disused Shafts	1967	1:10560
F	153m NW	Unspecified Shaft	1905	1:10560
F	153m NW	Unspecified Shaft	1892	1:10560
F	173m NW	Unspecified Shaft	1931	1:10560
F	173m NW	Unspecified Shaft	1905	1:10560
F	173m NW	Unspecified Shaft	1892	1:10560
6	214m SE	Air Shaft	1892	1:10560
K	288m S	Colliery	1892	1:10560
11	370m S	Unspecified Old Shaft	1892	1:10560
K	381m S	Unspecified Shaft	1892	1:10560
13	450m SW	Unspecified Shaft	1892	1:10560
Q	517m S	Unspecified Old Shafts	1892	1:10560
Q	522m S	Unspecified Old Shafts	1892	1:10560
-	628m S	Old Coal Pit	1892	1:10560
AA	639m SW	Air Shaft	1892	1:10560
-	760m NW	Colliery	1892	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
-	769m NW	Disused Colliery	1948	1:10560
-	769m NW	Disused Colliery	1931	1:10560
-	769m NW	Colliery	1905	1:10560
-	774m NW	Disused Colliery	1951	1:10560
-	774m S	Colliery	1905	1:10560
-	774m S	Colliery	1892	1:10560
-	900m NW	Air Shaft	1931	1:10560
-	919m NW	Disused Colliery	1905	1:10560
-	919m NW	Colliery	1892	1:10560
-	925m E	Disused Colliery	1905	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m

0

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

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

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.

This data is sourced from the British Geological Survey.



18.6 Non-coal mining

Records within 1000m

5

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).

Features are displayed on the Mining and ground workings map on [page 115](#) >

ID	Location	Name	Commodity	Class	Likelihood
2	46m N	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
D	75m W	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
8	284m E	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
14	470m E	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	996m W	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.



18.7 JPB mining areas

Records on site

0

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

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m

0

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

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m

0

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

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m

0

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

This data is sourced from Groundsure.



18.11 BGS mine plans

Records within 500m

0

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

This data is sourced from Groundsure.

18.12 Coal mining

Records on site

1

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

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site

0

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

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

18.14 Gypsum areas

Records on site

0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site

0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.



18.16 Clay mining

Records on site

0

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

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



19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m

0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m

0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

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

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m

0

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

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



This data is sourced from Groundsure.

19.5 National karst database

Records within 500m

0

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

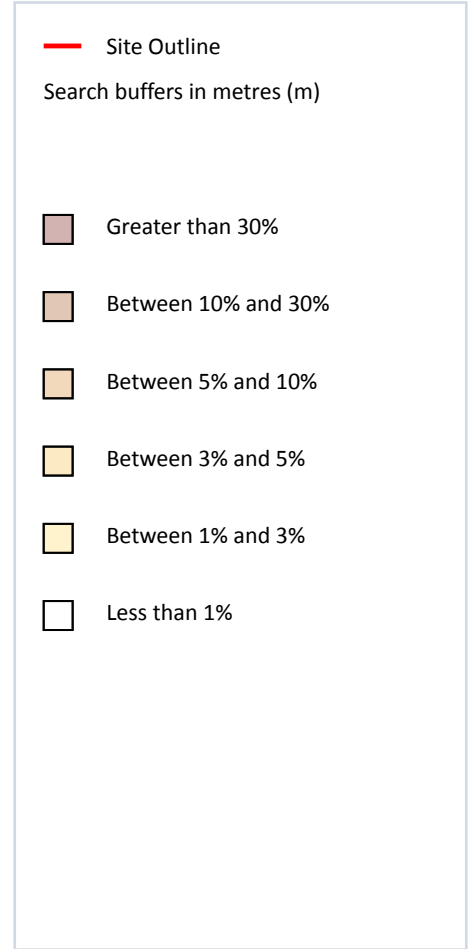
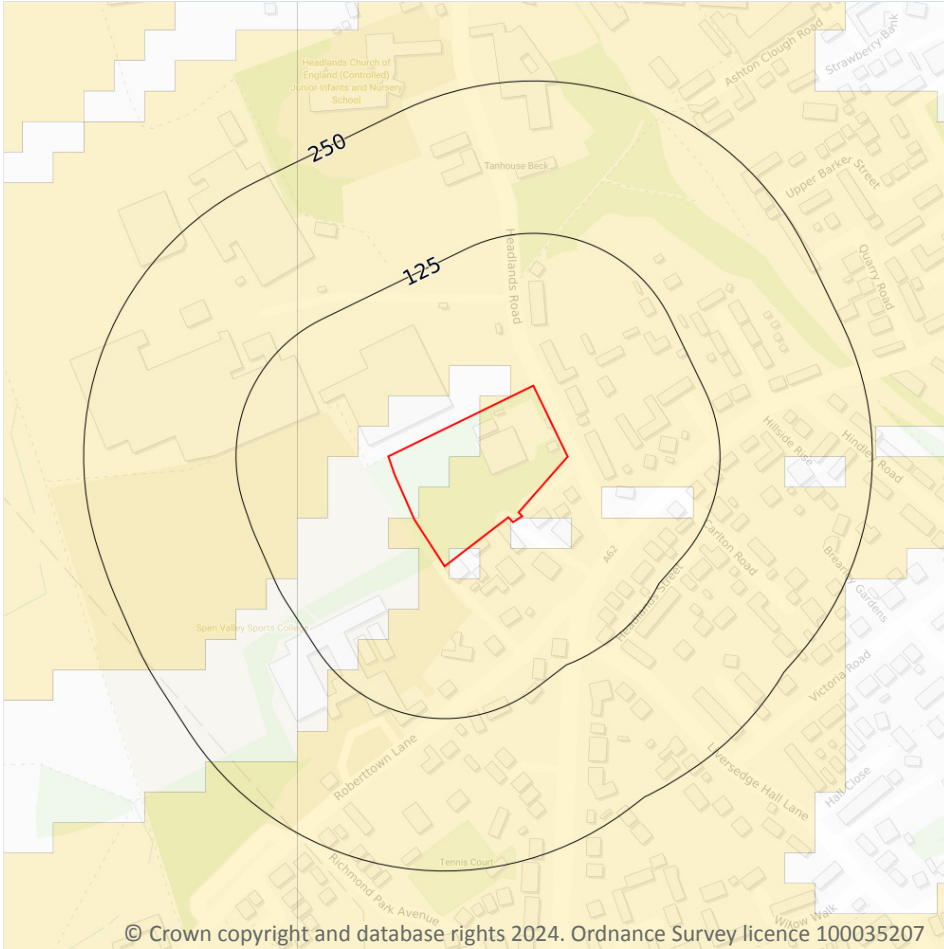
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over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

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

This data is sourced from the British Geological Survey.



20 Radon



20.1 Radon

Records on site

2

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

Features are displayed on the Radon map on [page 128 >](#)

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



Location	Estimated properties affected	Radon Protection Measures required
On site	Between 1% and 3%	None

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



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m
7

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 km². 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 km²; 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	25 - 35 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
On site	25 - 35 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
On site	35 - 45 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
36m S	35 - 45 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
42m N	25 - 35 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg
45m N	35 - 45 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
47m N	35 - 45 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m
0

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 km²).

This data is sourced from the British Geological Survey.



21.3 BGS Measured Urban Soil Chemistry

Records within 50m

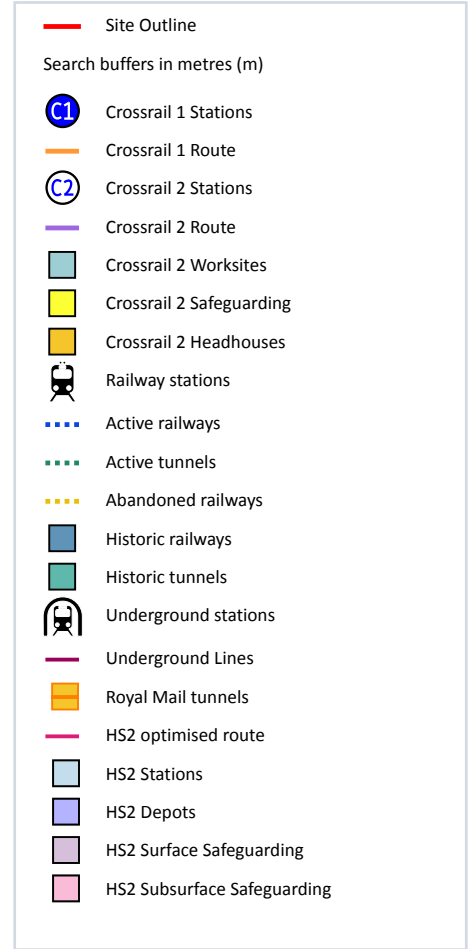
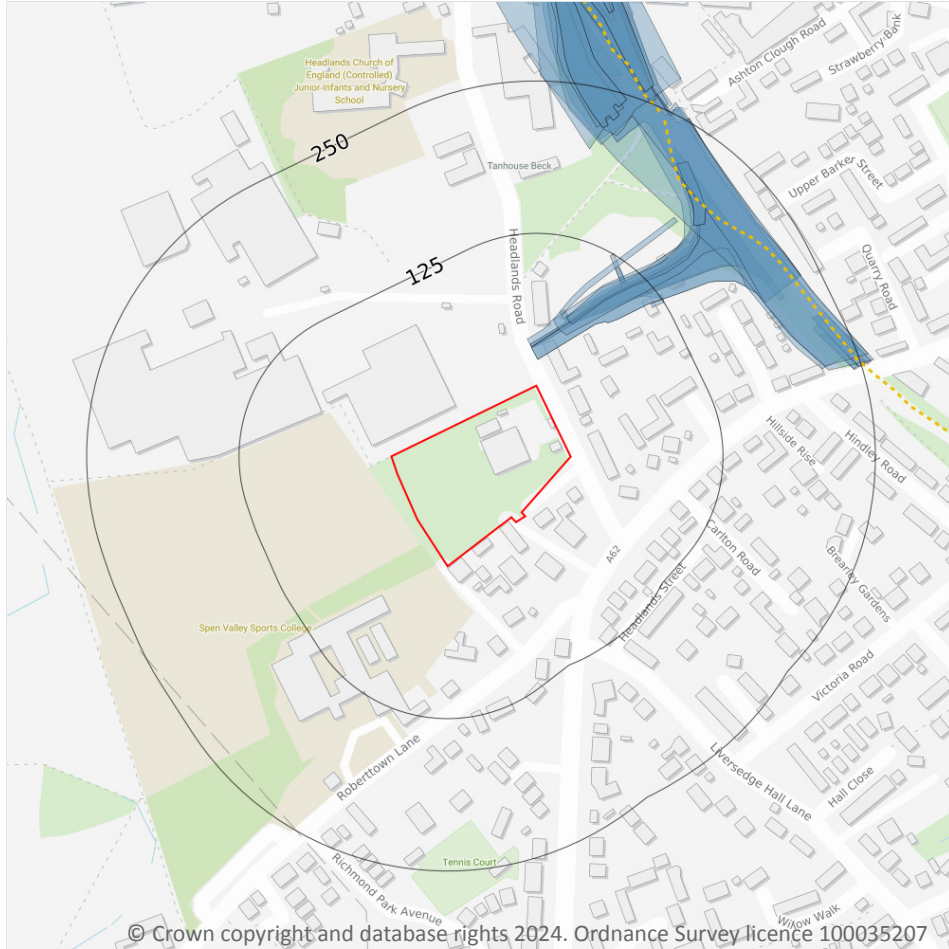
0

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 km².

This data is sourced from the British Geological Survey.



22 Railway infrastructure and projects



22.1 Underground railways (London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m

35

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 132 >](#)

Location	Land Use	Year of mapping	Mapping scale
22m NE	Railway Sidings	1905	10560
22m NE	Railway Sidings	1892	10560
32m N	Railway Sidings	1907	2500
32m N	Railway Sidings	1894	2500
32m N	Railway Sidings	1922	2500
48m NE	Railway Sidings	1931	10560
58m NE	Railway Sidings	1933	2500
59m NE	Railway Sidings	1938	10560
181m NE	Railway Sidings	1955	10560
184m NE	Railway Sidings	1931	10560
196m NE	Railway Sidings	1948	10560
199m N	Railway Sidings	1967	10560
218m N	Railway Sidings	1938	10560
218m N	Railway Sidings	1907	2500
218m N	Railway Sidings	1922	2500
218m N	Railway Sidings	1933	2500
218m N	Railway Sidings	1938	2500



Location	Land Use	Year of mapping	Mapping scale
219m N	Railway Sidings	1931	10560
221m N	Railway Sidings	1956	1250
225m NE	Railway Sidings	1956	2500
227m E	Railway Sidings	1956	1250
228m N	Railway Sidings	1907	2500
228m N	Railway Sidings	1894	2500
228m N	Railway Sidings	1922	2500
228m N	Railway Sidings	1933	2500
228m N	Railway Sidings	1938	2500
228m NE	Railway Sidings	1933	2500
228m NE	Railway Sidings	1938	2500
236m NE	Railway Sidings	1956	2500
238m N	Railway Sidings	1907	2500
238m N	Railway Sidings	1894	2500
238m N	Railway Sidings	1922	2500
238m N	Railway Sidings	1933	2500
238m N	Railway Sidings	1938	2500
241m E	Railway Sidings	1956	1250

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m

0

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

This data is sourced from Groundsure/the Postal Museum.



22.6 Historical railways

Records within 250m

2

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

Features are displayed on the Railway infrastructure and projects map on [page 132 >](#)

Location	Description
202m NE	Abandoned
245m NE	Abandoned

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m

0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.



22.10 HS2

Records within 500m

0

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

This data is sourced from HS2 Ltd.



Data providers

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

Terms and conditions

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



Appendix 2

Historical Maps