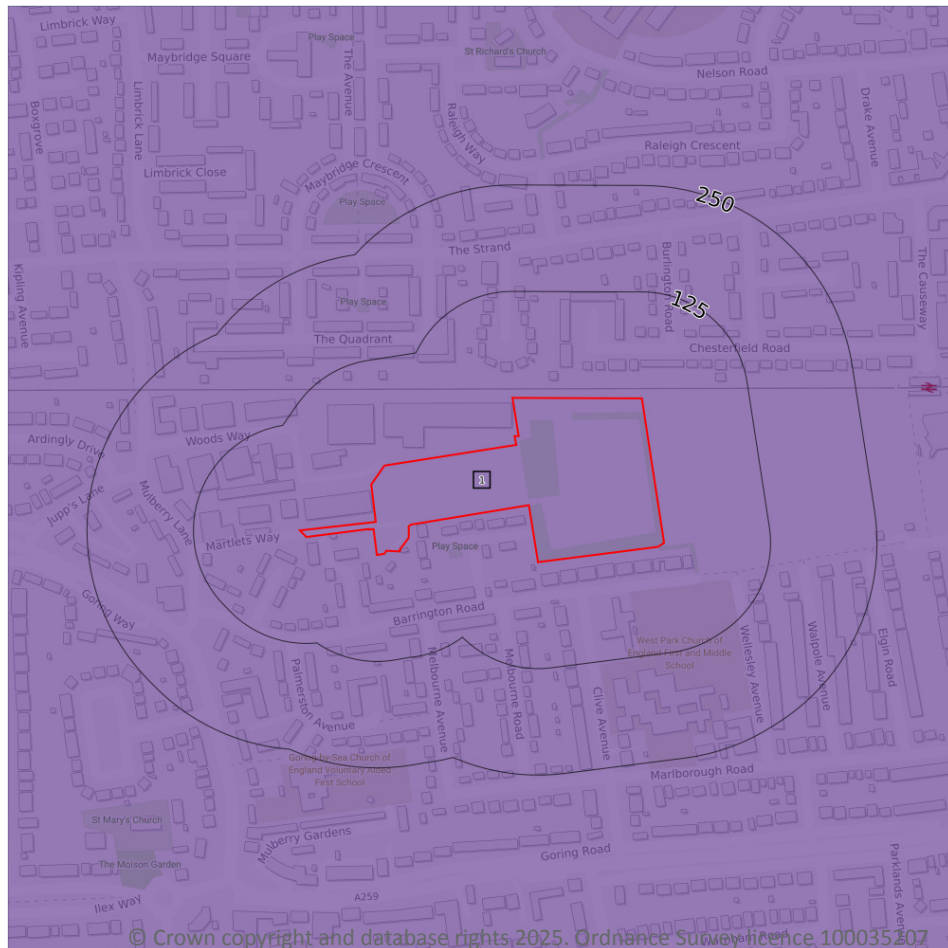


12 Agricultural designations



- 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

1

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 69](#) >

ID	Location	Classification	Description
1	On site	Urban	Non-agricultural/no quality assigned

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

0

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.

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

13.1 Priority Habitat Inventory

Records within 250m

0

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

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

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.

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



- Site Outline**
- Search buffers in metres (m)**
- Full coverage
 - Partial coverage
 - No coverage

14.1 10k Availability

Records within 500m

1

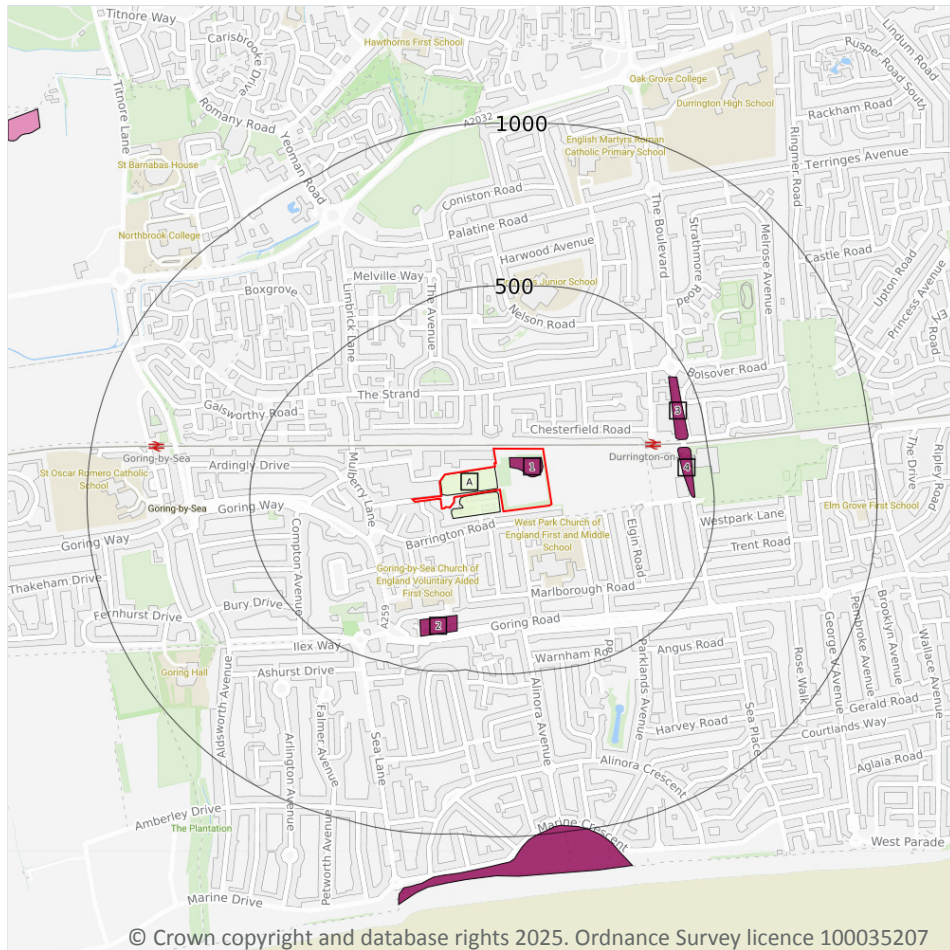
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme. Features are displayed on the Geology 1:10,000 scale - Availability map on [page 72](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	TQ10SW

This data is sourced from the British Geological Survey.



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



— Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

6

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.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 73](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	On site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	3m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	331m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

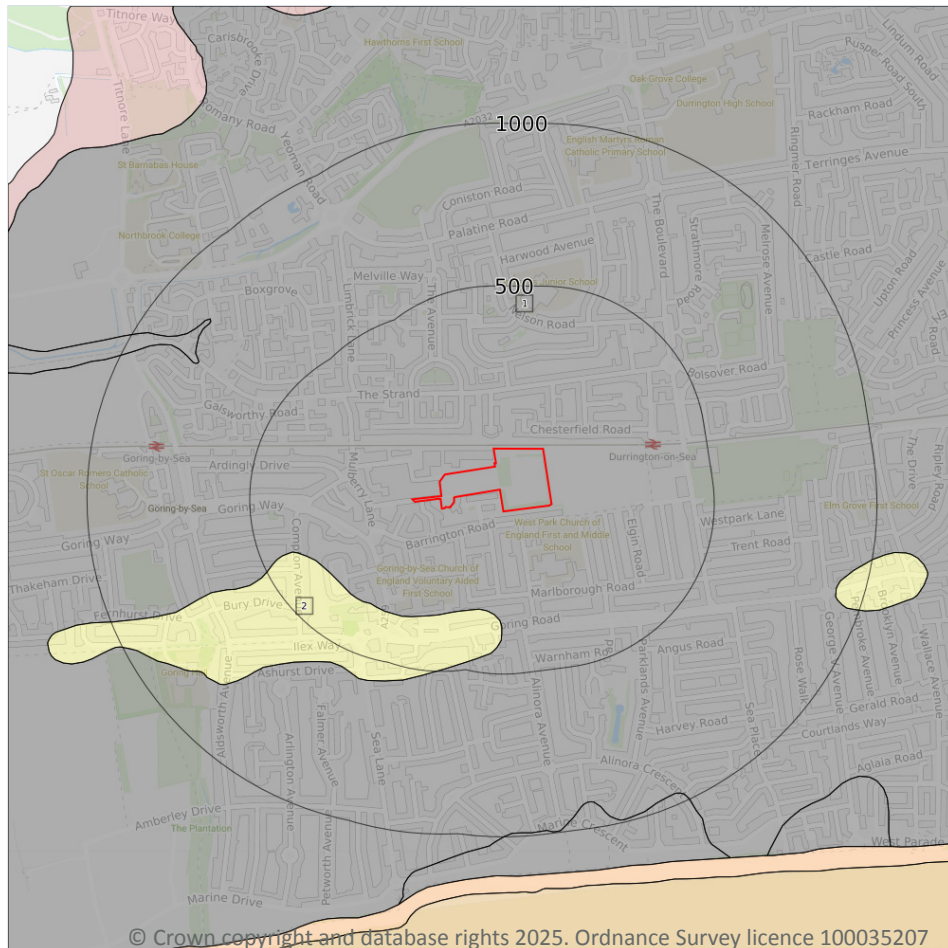


ID	Location	LEX Code	Description	Rock description
3	408m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	408m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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

2

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 75 >](#)

ID	Location	LEX Code	Description	Rock description
1	On site	BRK-XSZC	Brickearth - Sand, Silt And Clay	Sand, Silt And Clay
2	309m S	RBDU-XSV	Raised Beach Deposits - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.



14.4 Landslip (10k)

Records within 500m

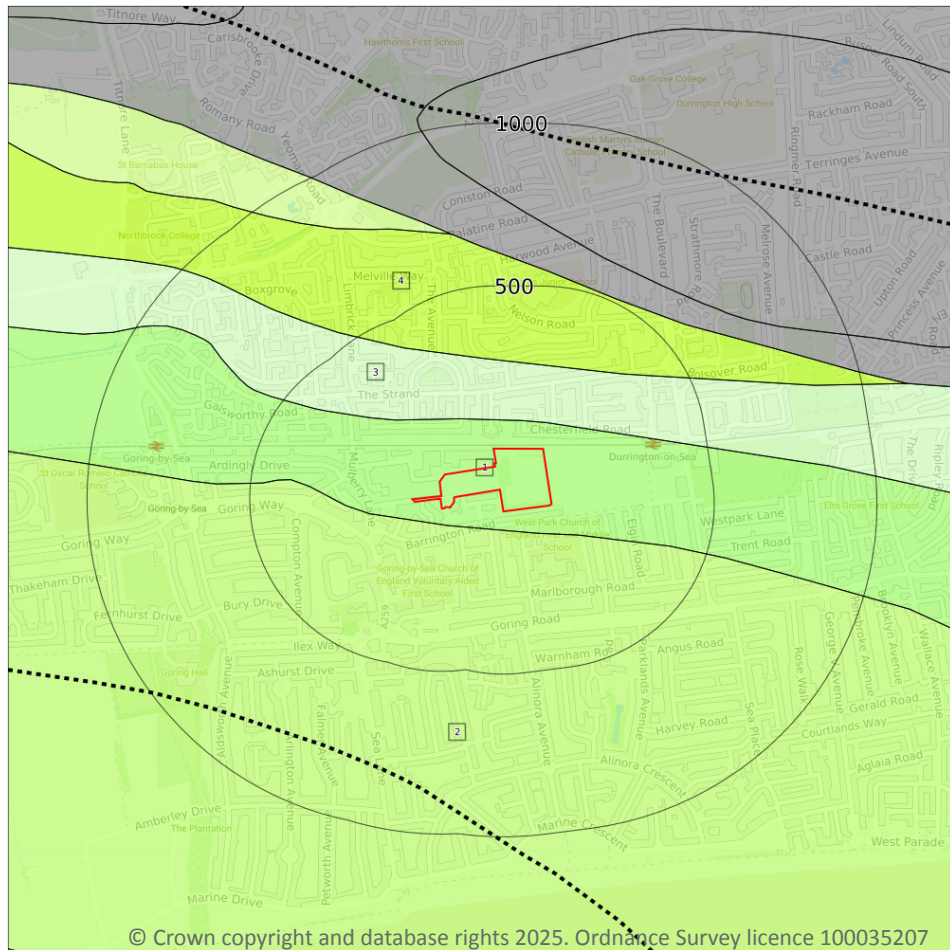
0

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

4

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 77](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	LECH-CHLK	Lewes Nodular Chalk Formation - Chalk	Coniacian Age - Turonian Age
2	49m S	NPCH-CHLK	New Pit Chalk Formation - Chalk	Turonian Age
3	81m N	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age
4	256m N	NCK-CHLK	Newhaven Chalk Formation - Chalk	Campanian Age - Santonian Age



This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

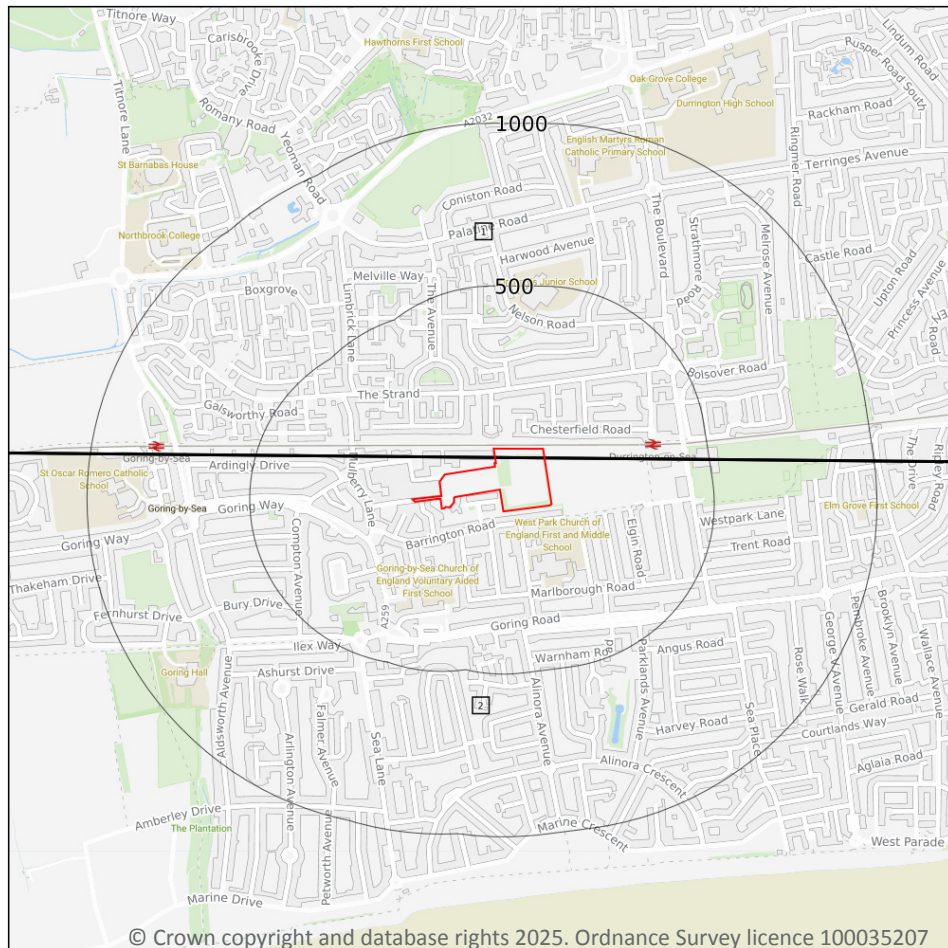
0

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

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline

Search buffers in metres (m)

□ Geological map tile

15.1 50k Availability

Records within 500m

2

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

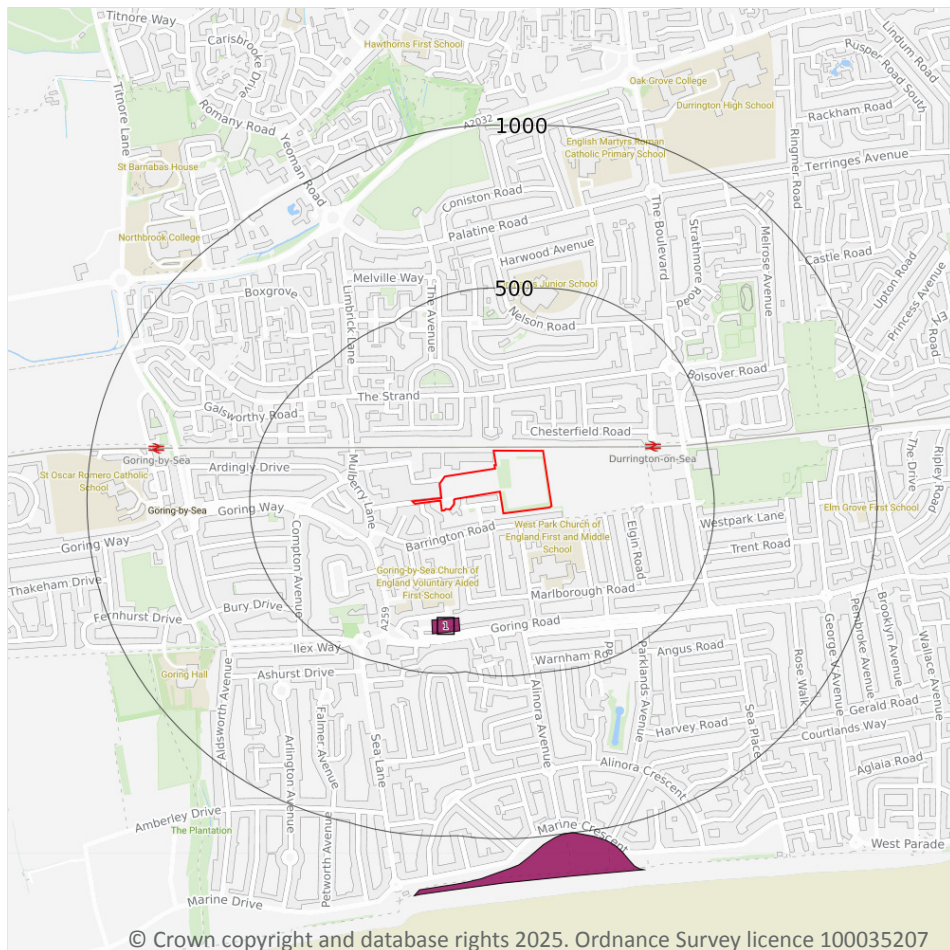
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 79](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW318_333_brighton_and_worthing_v4
2	On site	Full	Full	Full	Full	EW318_333_brighton_and_worthing_v4

This data is sourced from the British Geological Survey.



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



- Site Outline
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

1

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 80](#) >

ID	Location	LEX Code	Description	Rock description
1	332m S	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

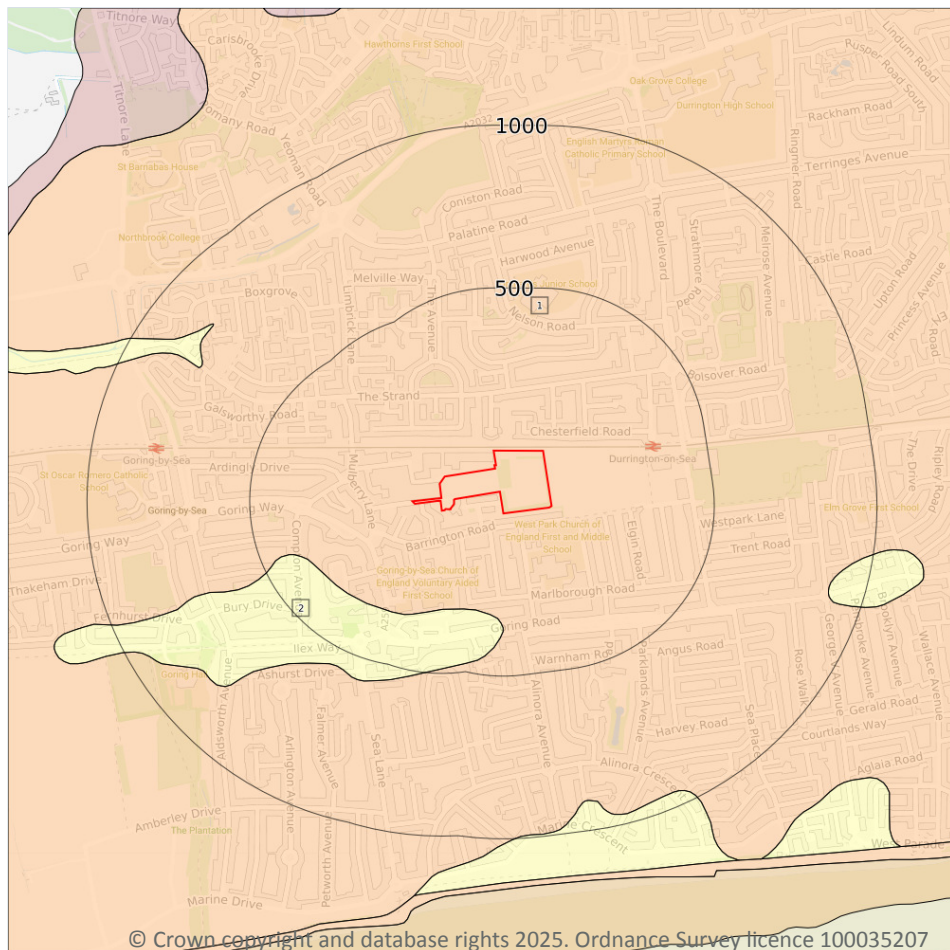
0

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 82](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	RTDU-XSZC	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY
2	303m S	ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m**1**

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	Intergranular	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m**0**

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

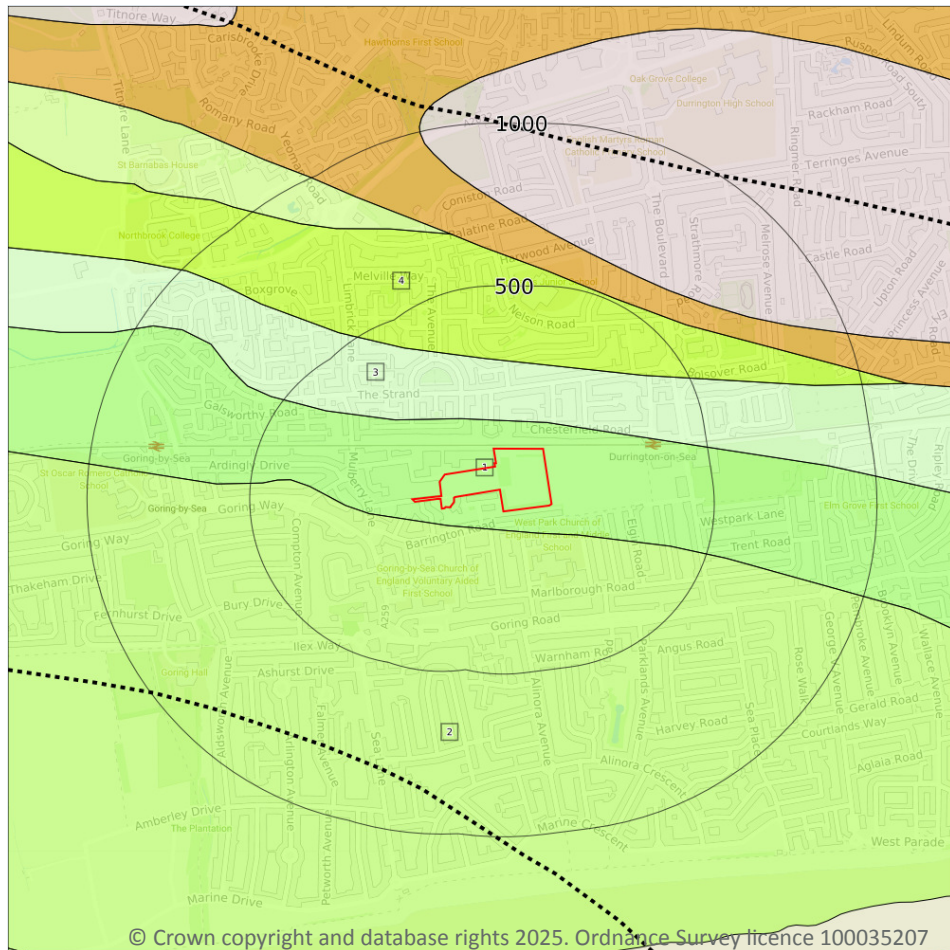
Records within 50m**0**

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m

4

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 84](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	LECH-CHLK	LEWES NODULAR CHALK FORMATION - CHALK	TURONIAN
2	49m S	NPCH-CHLK	NEW PIT CHALK FORMATION - CHALK	TURONIAN
3	81m N	SECK-CHLK	SEAFORD CHALK FORMATION - CHALK	CONIACIAN
4	257m N	NCK-CHLK	NEWHAVEN CHALK FORMATION - CHALK	SANTONIAN



This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

2

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Very High	Very High
49m S	Fracture	Very High	Very High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

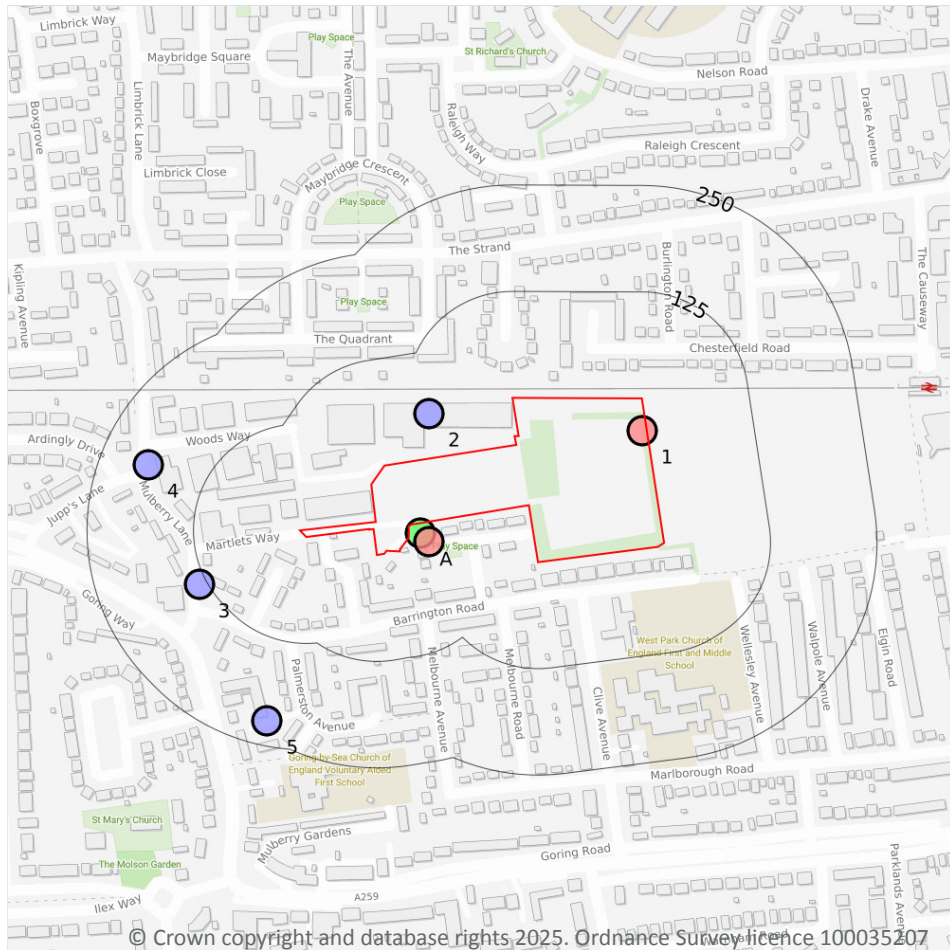
0

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

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

7

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 86](#) >

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	511670 103140	SE GAS BOARD GORING-BY-SEA	31.08	N	577616 ↗
A	12m S	511410 103020	WORTHING STW BH1	15.0	N	577771 ↗

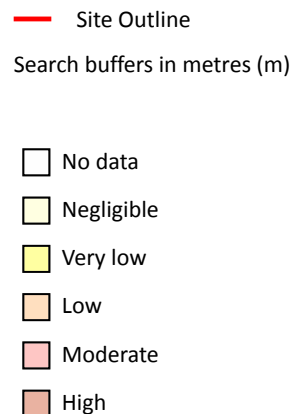
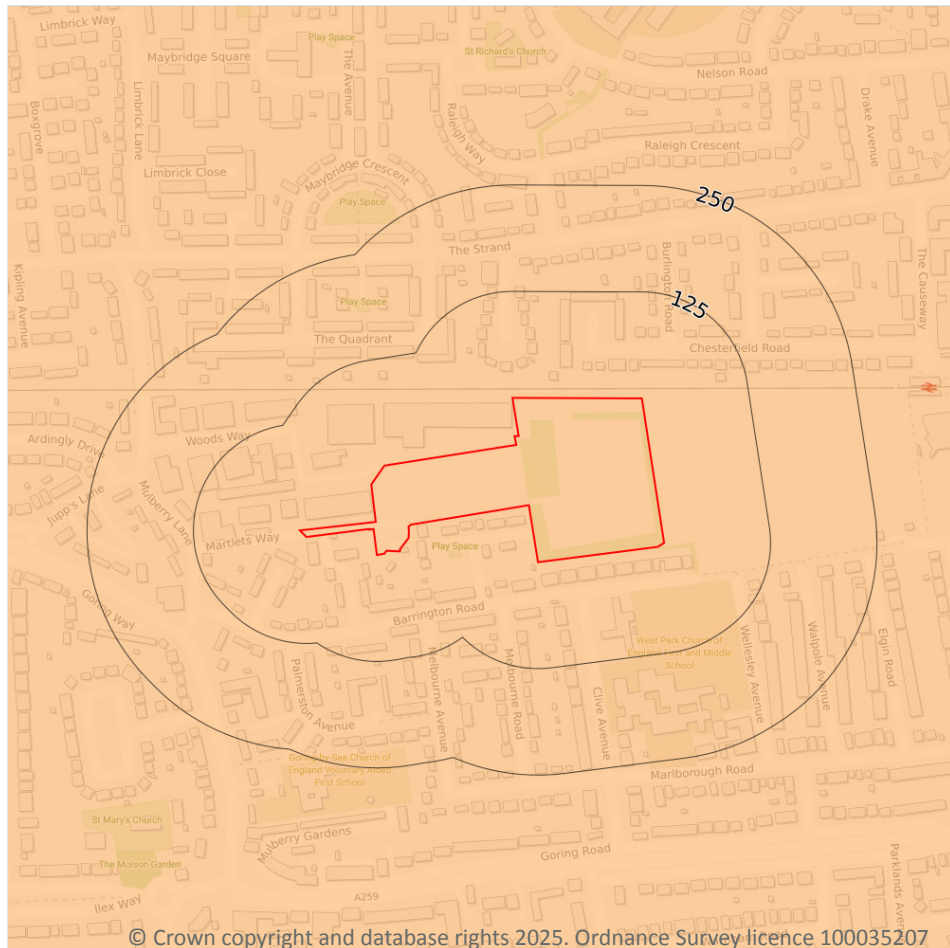


ID	Location	Grid reference	Name	Length	Confidential	Web link
A	23m S	511420 103010	GORING-BY-SEA SEWAGE WORKS	30.48	N	577780 ↗
2	52m N	511420 103160	BOROUGH OF WORTHING SITE 4 WORTHING	7.62	N	577607 ↗
3	134m SW	511150 102960	NEAR MULBERRY HOUSE, GORING-BY-SEA	7.75	N	577791 ↗
4	194m NW	511090 103100	WOODS BARN GORING-BY-SEA	5.82	N	577784 ↗
5	220m S	511230 102800	MULBERRY LANE GORING 3102	3.0	N	577700 ↗

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m

1

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

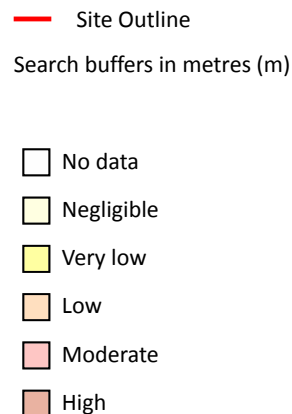
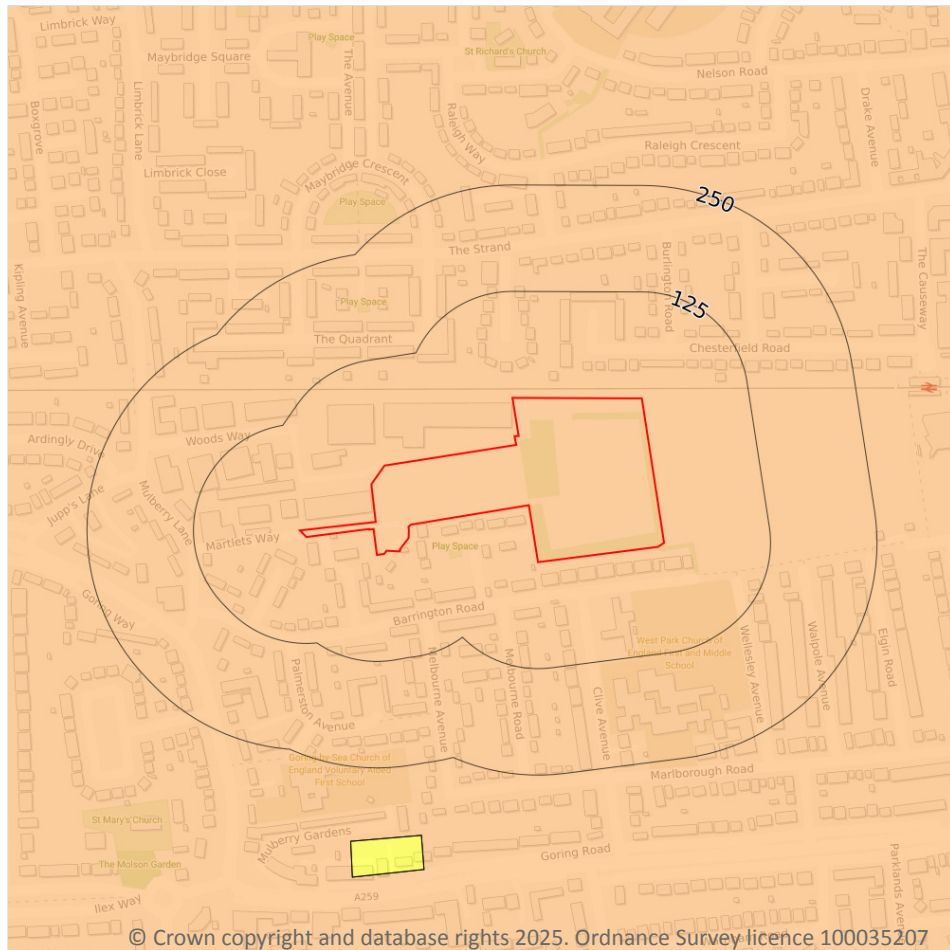
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 88 >](#)

Location	Hazard rating	Details
On site	Low	Ground conditions predominantly medium plasticity.

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.

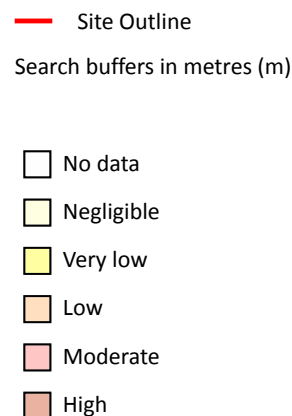
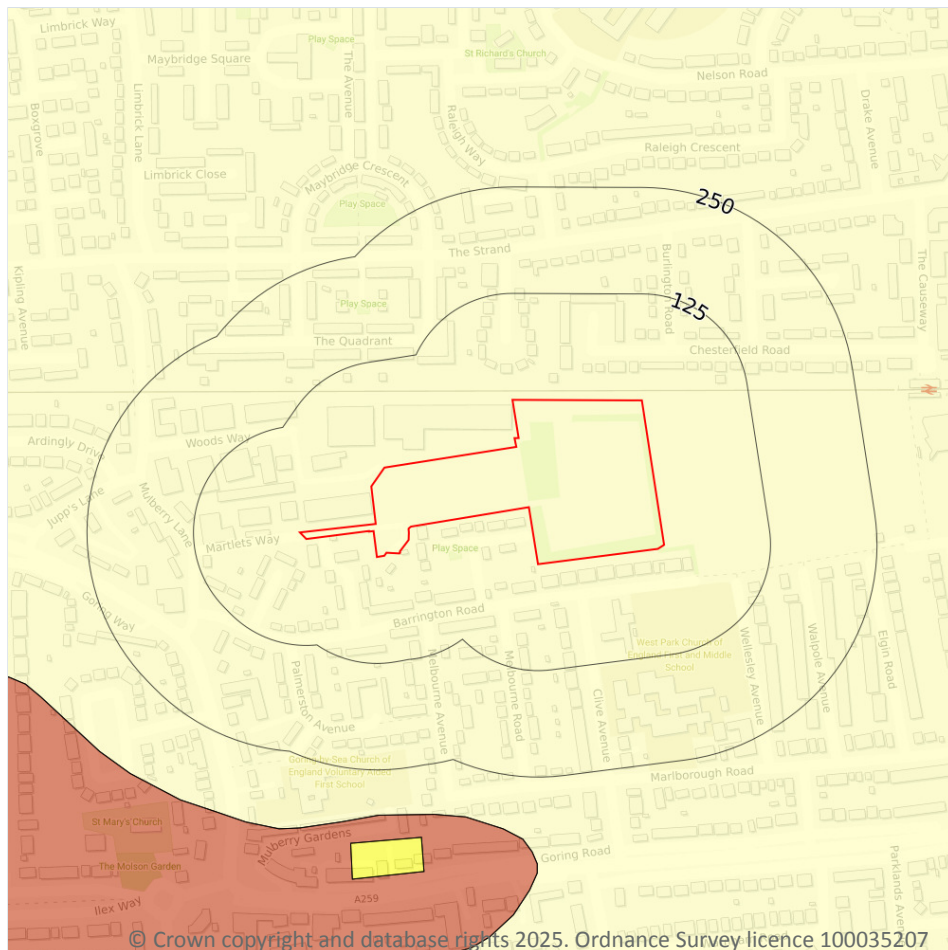
Features are displayed on the Natural ground subsidence - Running sands map on [page 89 >](#)

Location	Hazard rating	Details
On site	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



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.

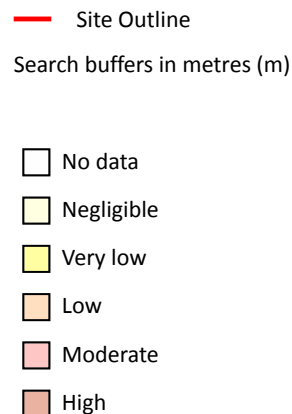
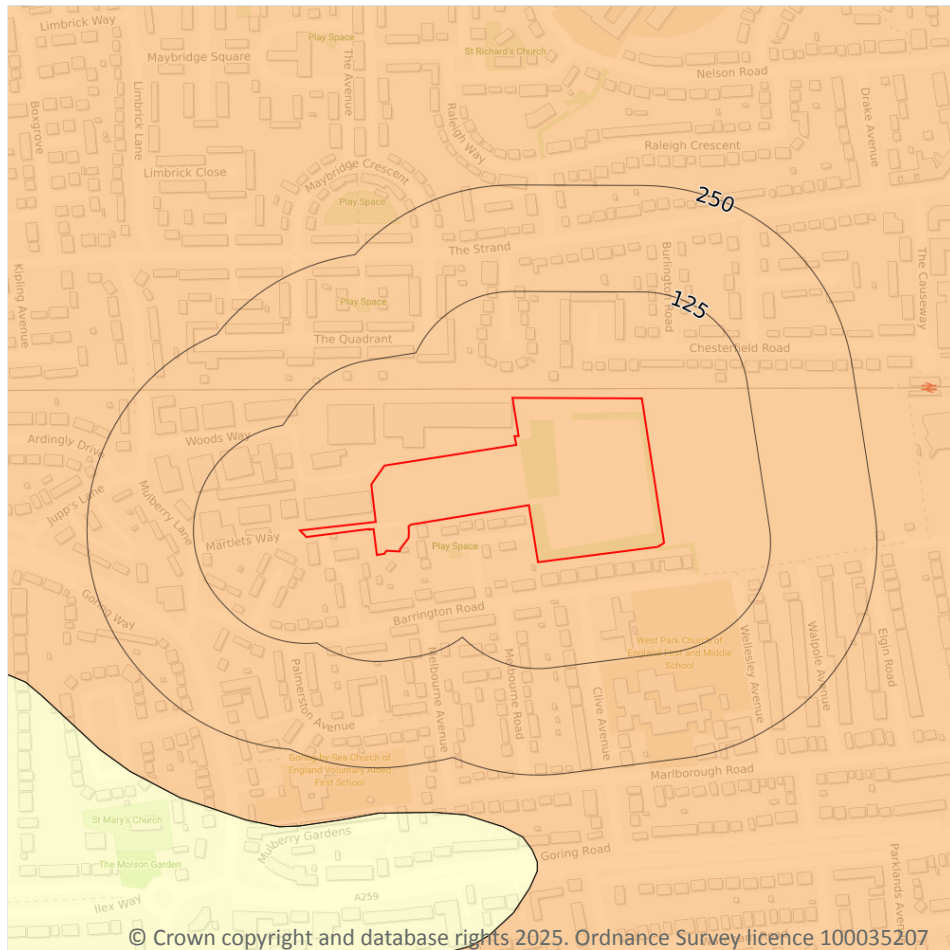
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 90 >](#)

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.

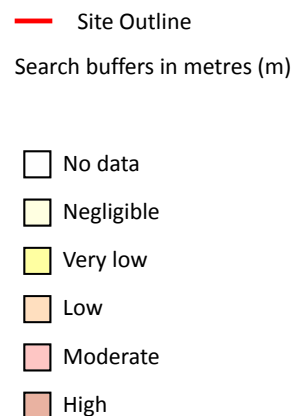
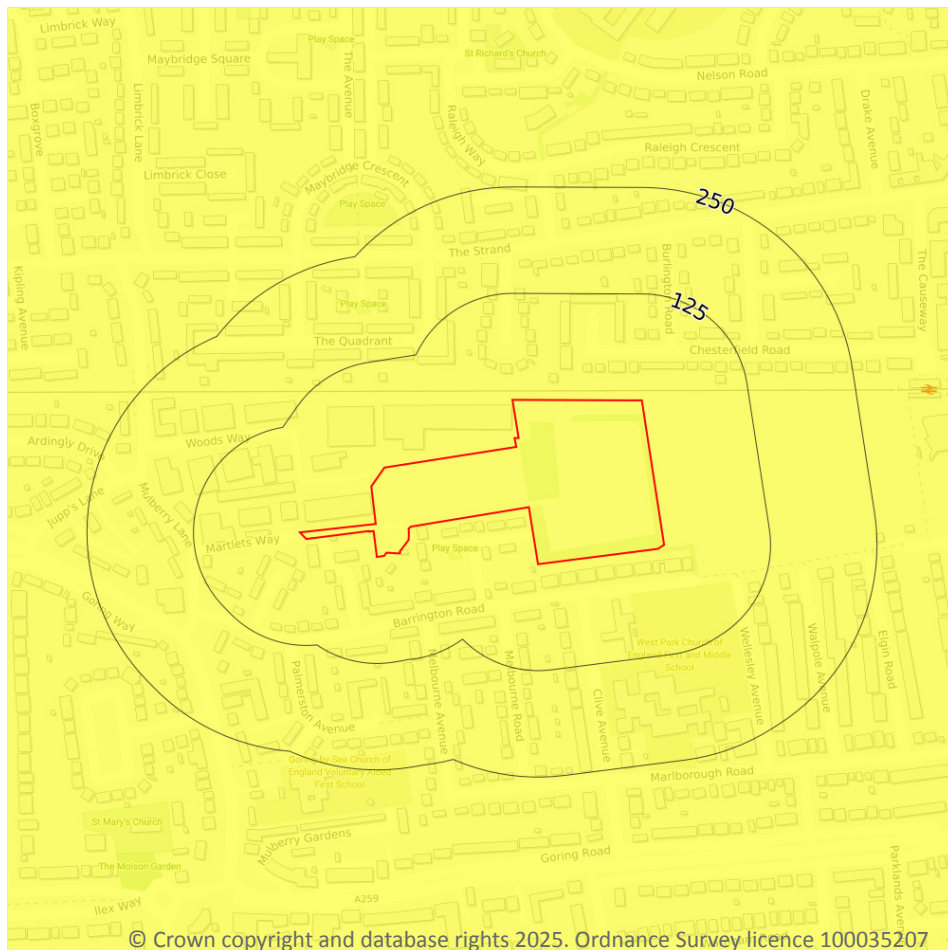
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 91](#) >

Location	Hazard rating	Details
On site	Low	Deposits with potential to collapse when loaded and saturated are possibly present in places.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



17.5 Landslides

Records within 50m

1

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

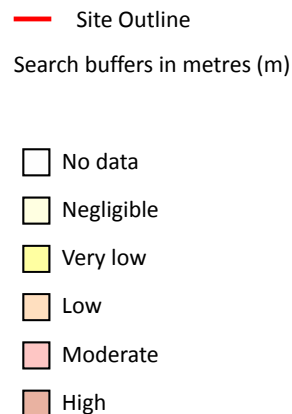
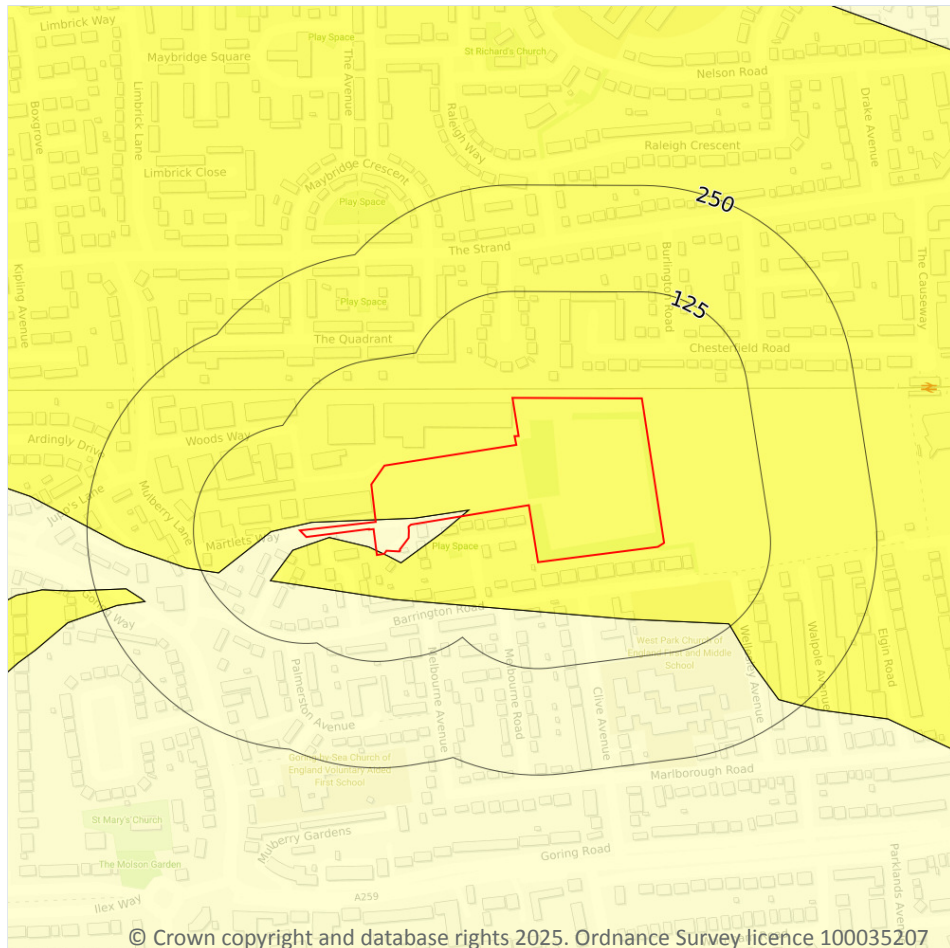
Features are displayed on the Natural ground subsidence - Landslides map on [page 92 >](#)

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

2

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

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 93](#) >

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

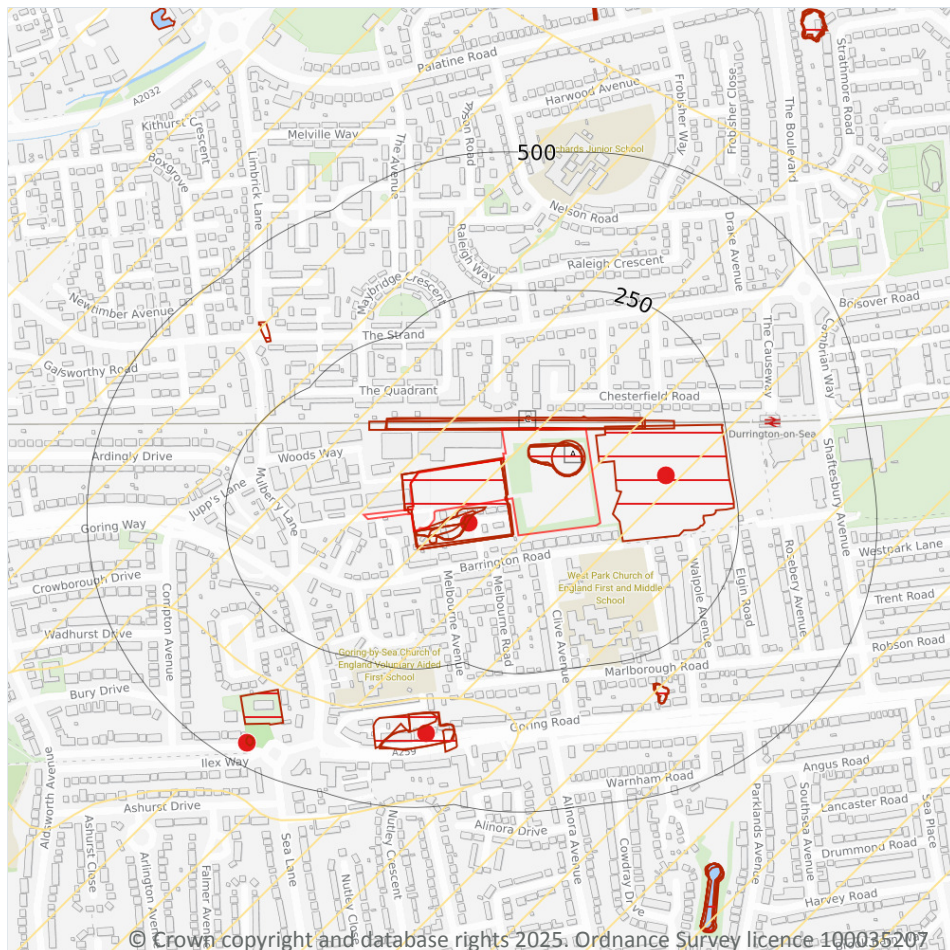


Location	Hazard rating	Details
On site	Very low	Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.

This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
 - Sporadic underground mining of restricted extent possible
 - Localised small scale underground mining possible
 - Small scale mining possible
 - Underground mining known or likely within or in close proximity
 - Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m

4

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 95 >](#)



ID	Location	Details	Description
B	31m S	Name: Goring Brick Pit Address: Goring-by-Sea, WORTHING, West Sussex Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
D	131m E	Name: Worthing West End Brick Works Address: West Worthing, WORTHING, West Sussex Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
F	366m S	Name: Elm House Gravel Pit Address: West Worthing, WORTHING, West Sussex Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
G	460m SW	Name: Goring Gravel Pit Address: Ilex Way, Goring-by-Sea, WORTHING, West Sussex Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.

This data is sourced from the British Geological Survey.



18.2 Surface ground workings

Records within 250m

19

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 95 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Unspecified Heap	1962	1:10560
A	On site	Unspecified Heap	1938	1:10560
A	On site	Unspecified Heap	1991	1:10000
A	On site	Unspecified Heap	1971	1:10000
A	On site	Unspecified Heap	1969	1:10560
A	On site	Unspecified Heap	1978	1:10000
B	On site	Unspecified Pit	1962	1:10560
B	On site	Sewage Works	1991	1:10000
B	On site	Sewage Works	1971	1:10000
B	On site	Sewage Works	1969	1:10560
B	On site	Sewage Works	1978	1:10000
C	On site	Cuttings	1875	1:10560
C	On site	Cuttings	1933	1:10560
C	1m N	Cuttings	1938	1:10560
B	1m S	Unspecified Pit	1971	1:10000
B	1m S	Unspecified Pit	1969	1:10560
B	1m S	Unspecified Pit	1978	1:10000
B	4m S	Unspecified Ground Workings	1991	1:10000
D	15m E	Brick Works	1909	1:10560

This data is sourced from Ordnance Survey/Groundsure.



18.3 Underground workings

Records within 1000m

0

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

This 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

1

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 95 >](#)

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. 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

2

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.

Location	Mineral type
On site	Stone
4m S	Stone

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	0
-----------------	---

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

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



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- Mining cavities
- Reported recent incidents
- Historical incidents

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

2

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.

Features are displayed on the Ground cavities and sinkholes map on [page 102 >](#)

ID	Location	Name	Date	Cause	Estimated diameter	Description	Accuracy
1	130m SW	Barrington Road, Worthing ↗	16/04 /2024	Unknown	1m	Barrington Road in Worthing has been closed for repairs by West Sussex County Council after damage to the tarmac led to a large hole forming in the middle of the street	1m
2	153m SW	Barrington Road, Worthing ↗	13/04 /2024	Damage to the tarmac led to a large hole forming in the middle of the street	1m	The sinkhole appeared in the road between Mulberry Lane and Barrington Close	1m

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.

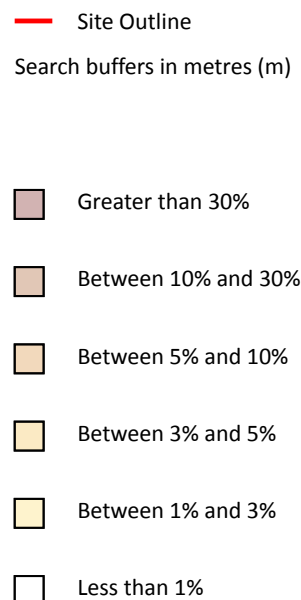


Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.



20 Radon



20.1 Radon

Records on site

1

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 105](#) >

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 3% and 5%	Basic



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

5

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	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
49m S	15 - 25 mg/kg	No data	100 mg/kg	60 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

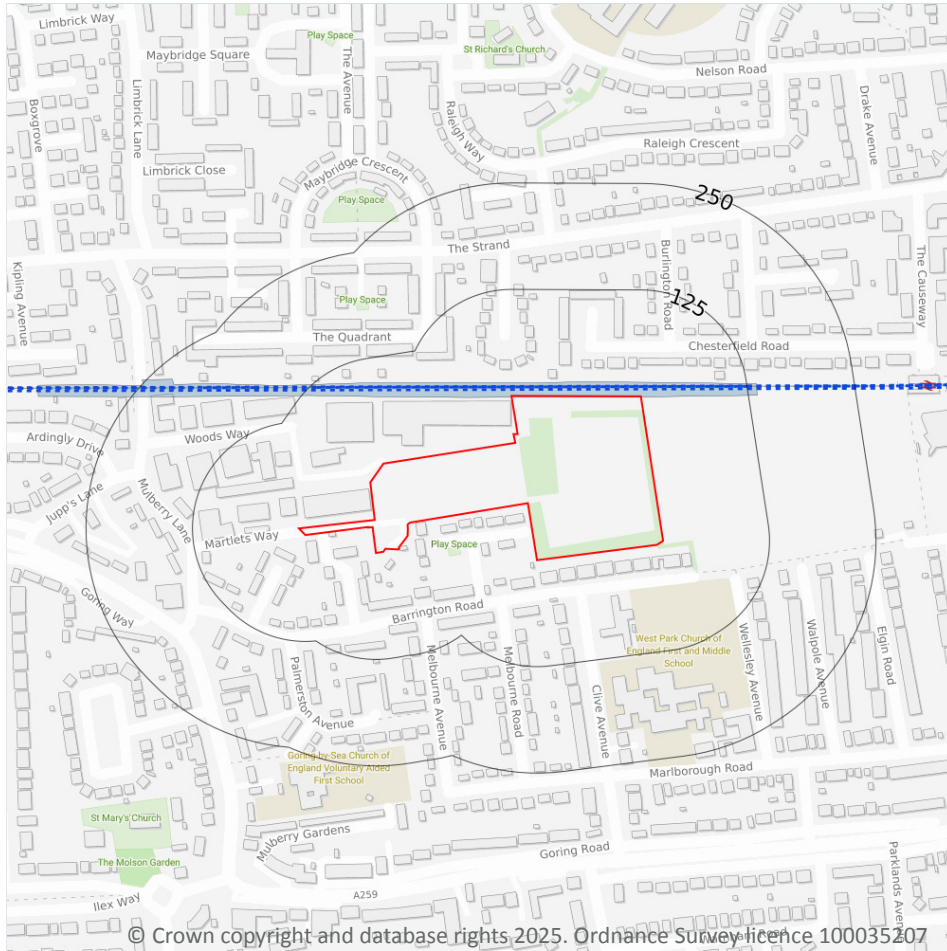
0

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



- Site Outline
- Search buffers in metres (m)
- C2 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

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

1

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 109 >](#)

Location	Land Use	Year of mapping	Mapping scale
On site	Railway	1909	-

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m

0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.



22.7 Railways

Records within 250m

8

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

Features are displayed on the Railway infrastructure and projects map on [page 109](#) >

Location	Name	Type
8m N	West Coastway Line	rail
11m N	Not given	Multi Track
11m N	West Coastway Line	rail
119m NW	Not given	Multi Track
128m E	Not given	Multi Track
173m N	Not given	Multi Track
186m E	Not given	Multi Track
203m NW	Not given	Multi Track

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 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.

22.9 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 E – PRELIMINARY RISK ASSESSMENT AND GEOTECHNICAL RISK REGISTER TABLES

Preliminary Geotechnical Risk Register

Geotechnical risk is the risk to building and construction work created by the site ground conditions. The Preliminary Geotechnical Risk Register has been compiled to provide an assessment of the likely risks that may impact on the proposed development based on the results of the desk study, and should be used to specify the type and extent of the intrusive investigation and testing undertaken, and to identify potential mitigation measures to control the risk to an acceptable level.

The inclusion of a risk in the register does not indicate that the risk is present, rather the likelihood of mitigation measures being required due to that risk, based on the available data. Equally, a risk classified as low indicates that mitigation measures are unlikely to be required for the hazard identified based on the available data.

The risk register should be developed and refined throughout the design process such that it will enable the management of geotechnical risk.

The Geotechnical Risk Register has been developed in accordance with the guidance presented in ICE/DETR Document "Managing Geotechnical Risk" (2002). The degree of risk (R) is determined by assessing the likelihood of a hazard (L) occurring and the effect of the hazard (E) on the project ($R=L \times E$). The effect may be measured in one or more aspect e.g. increased cost, delays in the program, health and safety etc. The scale of the likelihood, effect and risk are determined as follows:-

Likelihood of Occurrence			x	Effect of Hazard			=	Degree of Risk		
Scale	Likelihood	Chance		Scale	Effect	Increase in cost or time		Degree of Risk	Risk Level	Action required
4	Probable	>1 in 2		4	Very High	>10%		1-4	Trivial	None
3	Likely	1 in 10 to 1 in 2		3	High	4-10%		5-8	Significant	Consider cost effective solutions or improvements at no extra cost
2	Unlikely	1 in 100 to 1 in 10		2	Low	1-4%		9-12	Substantial	Work must not start until risk has been reduced. Additional resource required
1	Negligible	<1 in 100		1	Very Low	<1%		13-16	Intolerable	Work must not start until risk has been reduced. If risk can not be reduced, project should not proceed.

Geotechnical Risk Register

Hazard	Effect	Likelihood of Occurrence	Effect of Hazard	Risk Classification	Notes
Made Ground	Deepened foundations	Likely	Low	Significant	Findings from the site walkover, historical mapping, BGS boreholes and previous investigations indicate that it is likely to encounter made ground underneath the entirety of the site to depths of up to 3.0mbgl.
	Unstable excavations	Likely	Low	Significant	
Compressible Ground	Bearing capacity failure	Unlikely	High	Significant	River Terrace Deposits (Brickearth) may lead to potential for compressible soils to be present.
	Excessive settlement	Unlikely	High	Significant	
High Groundwater Table	Unstable excavations/ running sands	Negligible	High	Trivial	Groundwater is level is not believed to be high
	Dewatering	Negligible	High	Trivial	
	Contamination	Negligible	Low	Trivial	
Deep Excavations	Deepened foundations	Probable	High	Substantial	Deep excavation are present on site which will indicate the use of deep foundations on site
Working in highway	Traffic Management	Likely	Low	Significant	Limited access to site from highways and public roads
Shrinkable soils	Deepened foundations	Likely	Low	Significant	Presence of Brickearth onsite could lead to risk of shrink swell of soils.
	Heave	Negligible	High	Trivial	
Frost Susceptible soils	Road Design	Likely	Low	Significant	Brickearth is potentially frost susceptible if present in areas of proposed roads.
Aggressive ground conditions for Concrete	Concrete design	Unlikely	Low	Trivial	Soils anticipated onsite are unlikely to present aggressive conditions for concrete
Slope Stability/Retaining Structure	Local stability	Negligible	High	Trivial	Site is generally flat and level and any variation in elevation is anticipated to be flattened out
	Global stability	Negligible	High	Trivial	
Mining	Suitability for development	Unlikely	High	Significant	Site is situated within an area affected by non-coal mining relating to the chalk material
Ground dissolution/ Natural cavities	Remedial measures	Negligible	High	Trivial	Site situated within an area classed as very low risk from ground dissolution of soluble rocks
Landfill	Land gas	Unlikely	High	Significant	No landfill activities have been present on site, but historic brickworks present in surrounding area.

Geotechnical Risk Register

Contaminated land	Remedial measures	Likely	Low	Significant	Given the nature of the proposed development (residential, soft landscaping), it is believed that remedial measures might be required if any contamination is encountered
Archaeological remains	Remedial measures	Negligible	Low	Trivial	No designated archaeological assets lie within or adjacent the site boundary
UXO	UXO supervision	Unlikely	Very high	Significant	UXO risk has been deemed MODERATE based on proximity of previously-found ordnance.

Contaminant	Receptor	Pathway ¹	Likelihood of Exposure	Severity of Exposure	Risk Classification	Notes
All contaminants in soils	Future Residents	Dermal contact, ingestion and inhalation of soil particles	Likely	Medium	Moderate risk	Based on the sites historical uses, there is a significant likelihood that soils on site may be impacted by contaminants of concern, though based on the testing carried out to date the concentrations and distribution of these are likely to be relatively limited.
		Consumption of contaminated home grown produce	Likely	Medium	Moderate risk	
	Construction workers	Dermal contact, ingestion and inhalation of soil particles	Likely	Mild	Moderate/low risk	Groundworkers are more likely to come in contact with soil, but this should be controlled by appropriate working methods.
	Groundwater (Lewes Nodular Chalk)	Vertical infiltration and leaching from impacted on-site soils	Low likelihood	Medium	Moderate/low risk	The aquifer is classified as highly vulnerable. However, shallow cohesive layers are believed to be present as part of the Brickearth Formation that will limit vertical migration of contaminants.
All contaminants in groundwater	Surface water	Subsequent lateral migration of impacted groundwater with contaminants derived from on-site sources.	Unlikely	Minor	Very low risk	No surface water features present on or near to site.
	Construction workers	Dermal contact and ingestion	Low likelihood	Mild	Low risk	
Asbestos fibres in soils	Future Residents	Inhalation of asbestos fibres	Likely	Severe	High risk	Asbestos Containing Materials or fibres may be present on site following the demolition of the existing structures on site.
	Future commercial workers	Inhalation of asbestos fibres	Likely	Severe	High risk	
	Construction workers	Inhalation of asbestos fibres	Likely	Severe	High risk	
Volatile contaminants in soils and groundwater	Future residents	Inhalation of vapours migrating from on-site contamination (outdoors)	Low likelihood	Medium	Moderate/low risk	If hydrocarbon contamination is encountered it will likely be localised and unlikely to be at a high concentration.
		Inhalation of vapours migrating from on-site contamination (indoors)	Low likelihood	Medium	Moderate/low risk	
	Construction workers	Inhalation of vapours migrating from on-site contamination (outdoors)	Low likelihood	Mild	Low risk	

Contaminant	Receptor	Pathway ¹	Likelihood of Exposure	Severity of Exposure	Risk Classification	Notes
Soil gases generated from fill materials	Future site users Structures on or adjacent to the site	Vertical and lateral migration through unsaturated pore space. Ingress into buildings via service penetrations, floor construction and cracks, wall cavities, etc. resulting in accumulation in enclosed spaces within buildings. Migration via preferential pathways such as below ground service trenches.	Low likelihood	Medium	Moderate/low risk	No nearby landfill records on or off site. Historical brickworks were situated in near proximity to site. Gas monitoring across wider area has not identified any significant ground gas elevations.
Aggressive contaminants	Below ground construction materials such as concrete and plastic water pipes	Contact with contaminated soils / groundwater	Likely	Mild	Moderate/low risk	Natural chalk soils are unlikely to be aggressive to concrete. Severe contamination not anticipated onsite. Pyrite might be present in the shallow cohesive materials of the Brickearth Deposits

The classification is based upon the consideration of both the magnitude of consequence and the likelihood of exposure as follows:

Likelihood		Consequence			
		Severe	Medium	Mild	Minor
	High likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low likelihood	Moderate risk	Moderate/low risk	Low risk	Very Low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Derived from Annex 4 of NHBC, Environment Agency & CIEH 'Guidance for the Safe Development of Housing on Land Affected by Contamination' R&D66. 2008.