13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m	2

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

Features are displayed on the Habitat designations map on **page 125**

ID	Location	Main Habitat	Other habitats
A	206m NE	Mudflats	Main habitat: MUDFL (INV > 50%)
A	211m NE	Mudflats	Main habitat: MUDFL (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	1

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

Features are displayed on the Habitat designations map on **page 125**

ID	Location	Type	Habitat
1	29m NE	Network Enhancement Zone 2	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	2

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.

Features are displayed on the Habitat designations map on **page 125**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
2	209m N	NLUD Ref: 65000211	Low	National Land Use Database - Previously Developed Land	UK Perspectives Aerial Photography	-
3	238m N	NLUD Ref: 65000279	Low	National Land Use Database - Previously Developed Land	UK Perspectives Aerial Photography	-

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability

14.1 10k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 128**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**SJ48SE**

This data is sourced from the British Geological Survey.

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

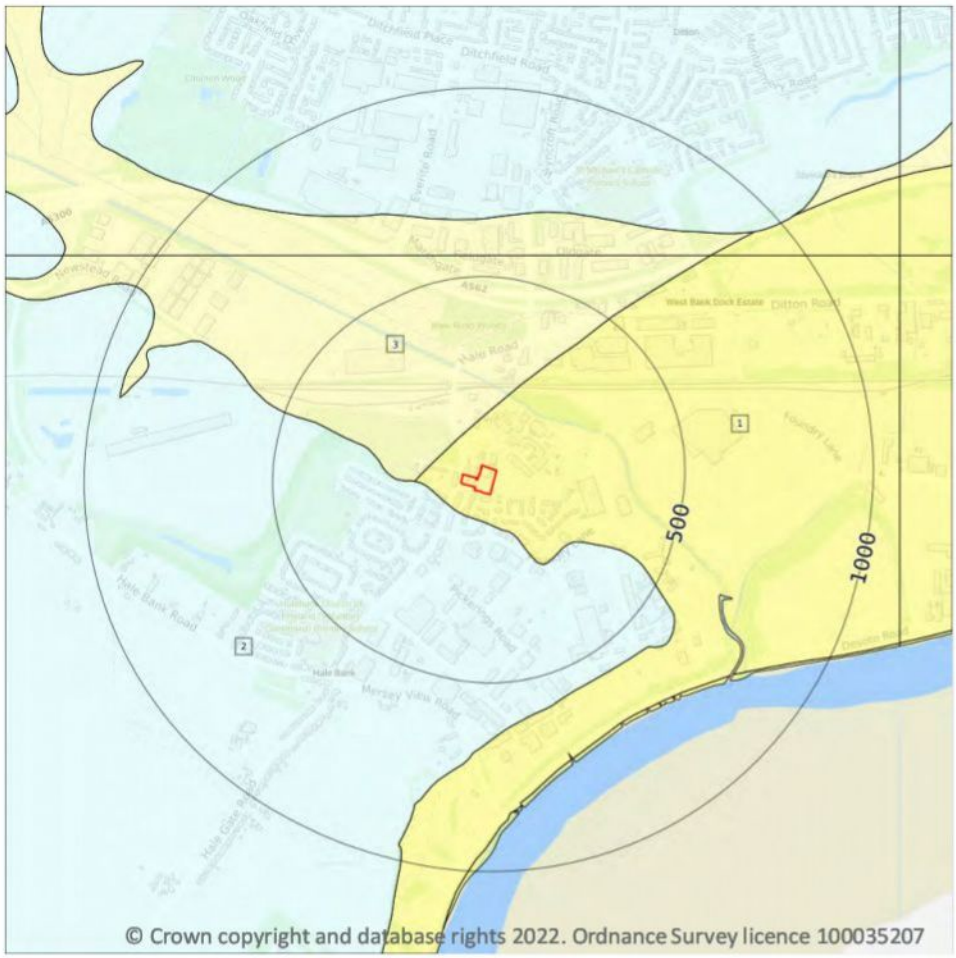
14.2 Artificial and made ground (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m **3**

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 130**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TFD-XCZS**	**Tidal Flat Deposits - Clay, Silt And Sand**	**Clay, Silt And Sand**
2	66m SW	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
3	77m NW	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

This data is sourced from the British Geological Survey.

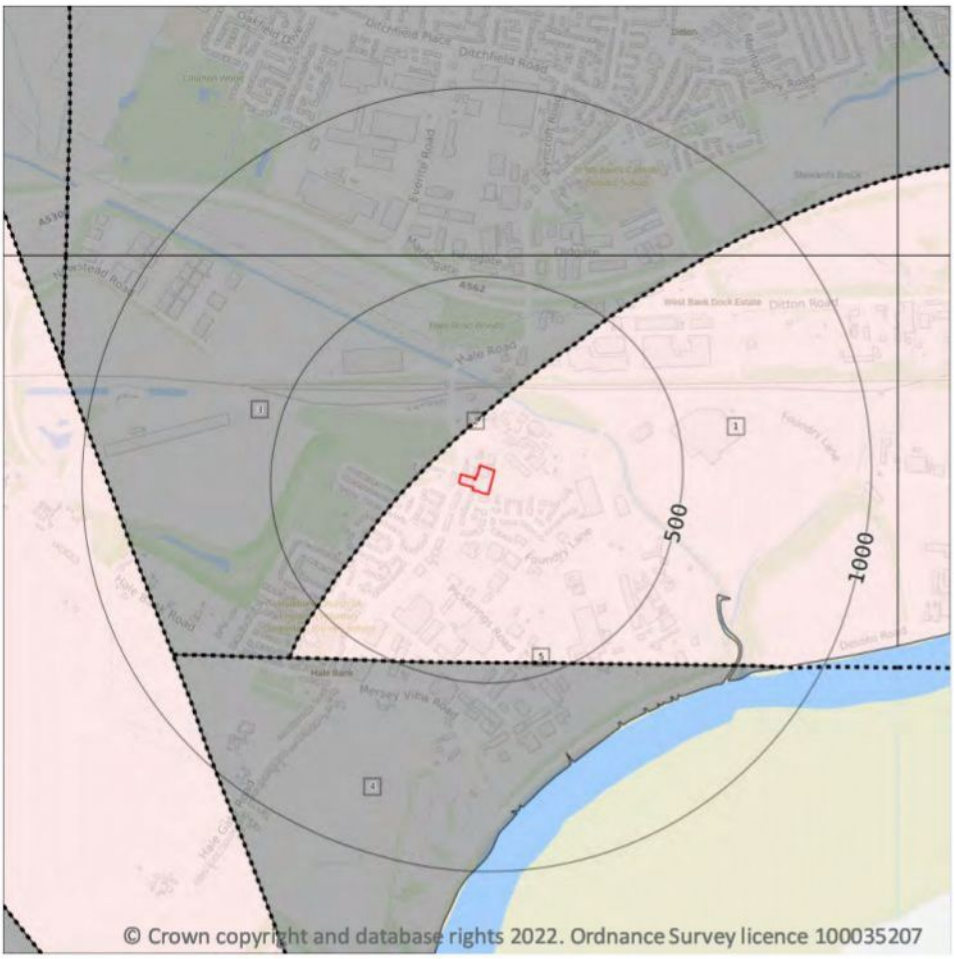
14.4 Landslip (10k)

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 **3**

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 132**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**WLSF-SDST**	**Wilmslow Sandstone Formation - Sandstone**	**Early Triassic Epoch**
3	77m NW	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
4	446m S	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	2

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 132**

ID	Location	Category	Description
2	77m NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
5	446m S	FAULT	Normal fault, inferred; crossmarks on downthrow side

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 134**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**No coverage**	**EW097_runcorn_v4**

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

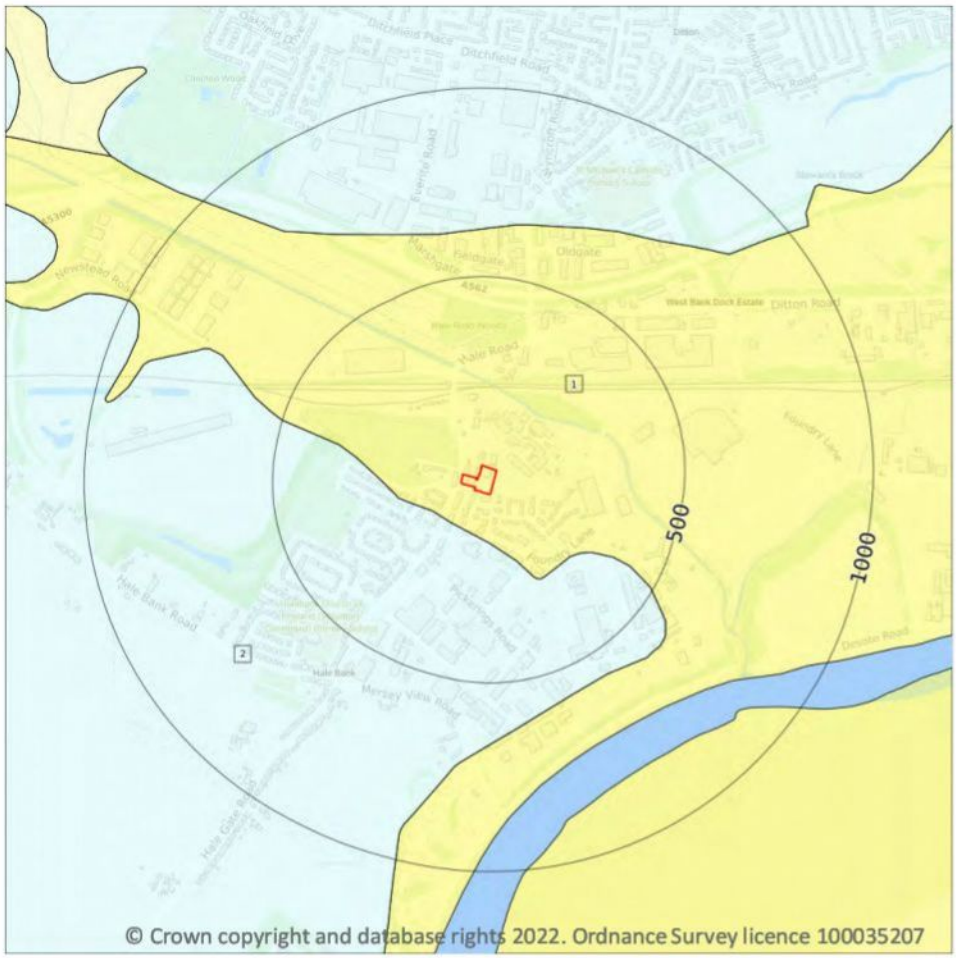
15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m **2**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 136**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TFD-XCZS**	**TIDAL FLAT DEPOSITS**	**CLAY, SILT AND SAND**
2	103m SW	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

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**	**Moderate**	**Very 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.

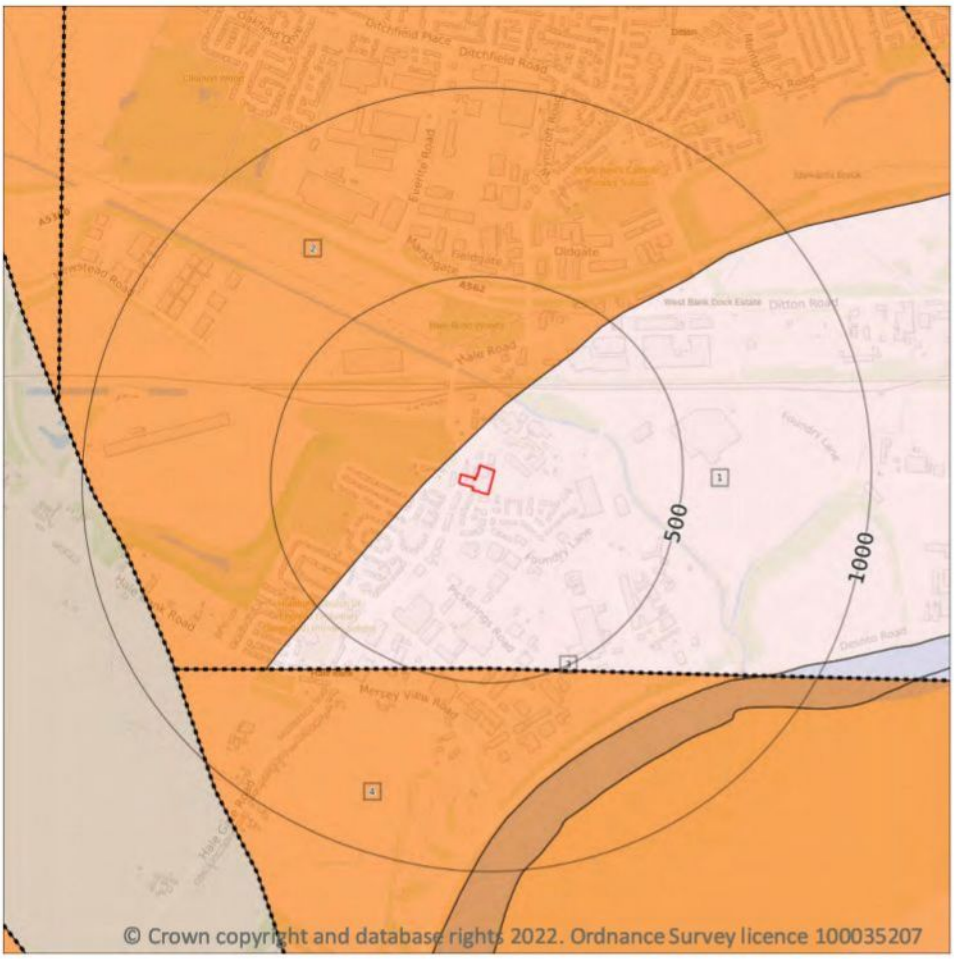
15.7 Landslip permeability (50k)

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 **3**

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 138**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**WLSF-SDST**	**WILMSLOW SANDSTONE FORMATION - SANDSTONE**	-
2	51m NW	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN
4	462m S	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock 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 bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**High**	**High**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	1

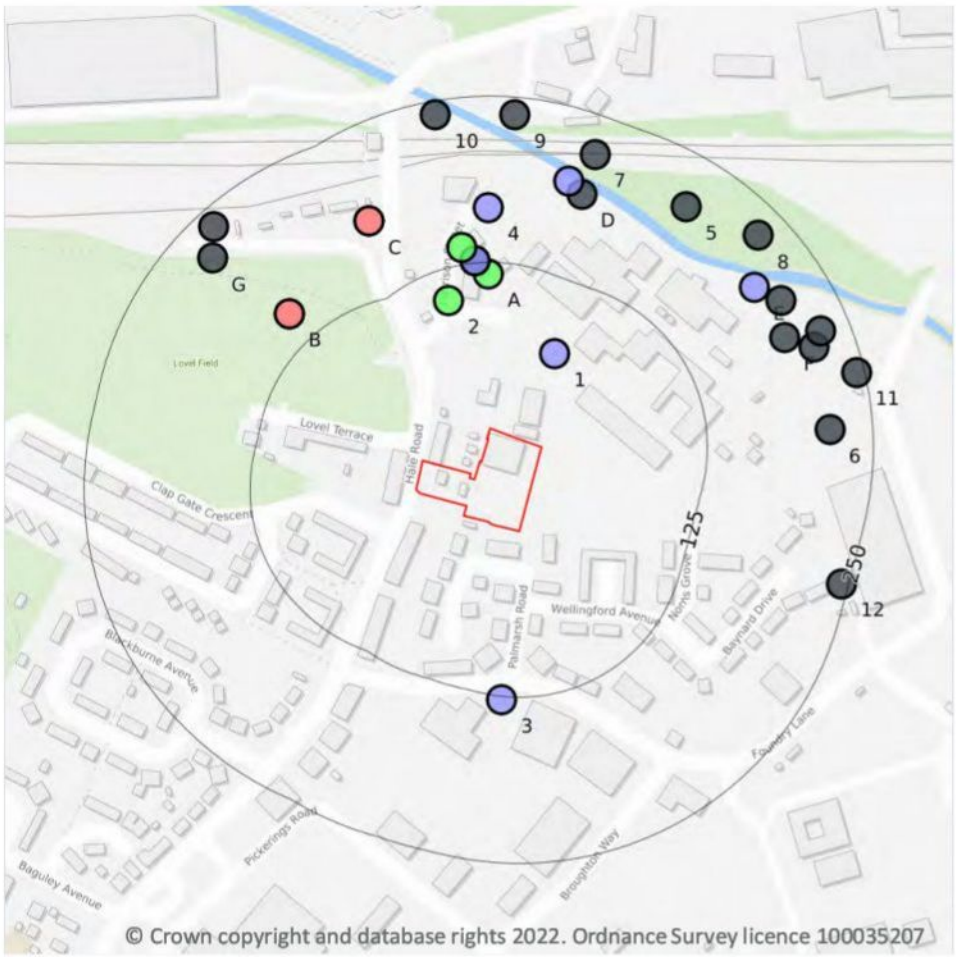
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 138**

ID	Location	Category	Description
3	462m S	FAULT	Fault, inferred, displacement unknown

This data is sourced from the British Geological Survey.

16 Boreholes



16.1 BGS Boreholes

Records within 250m	30

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.

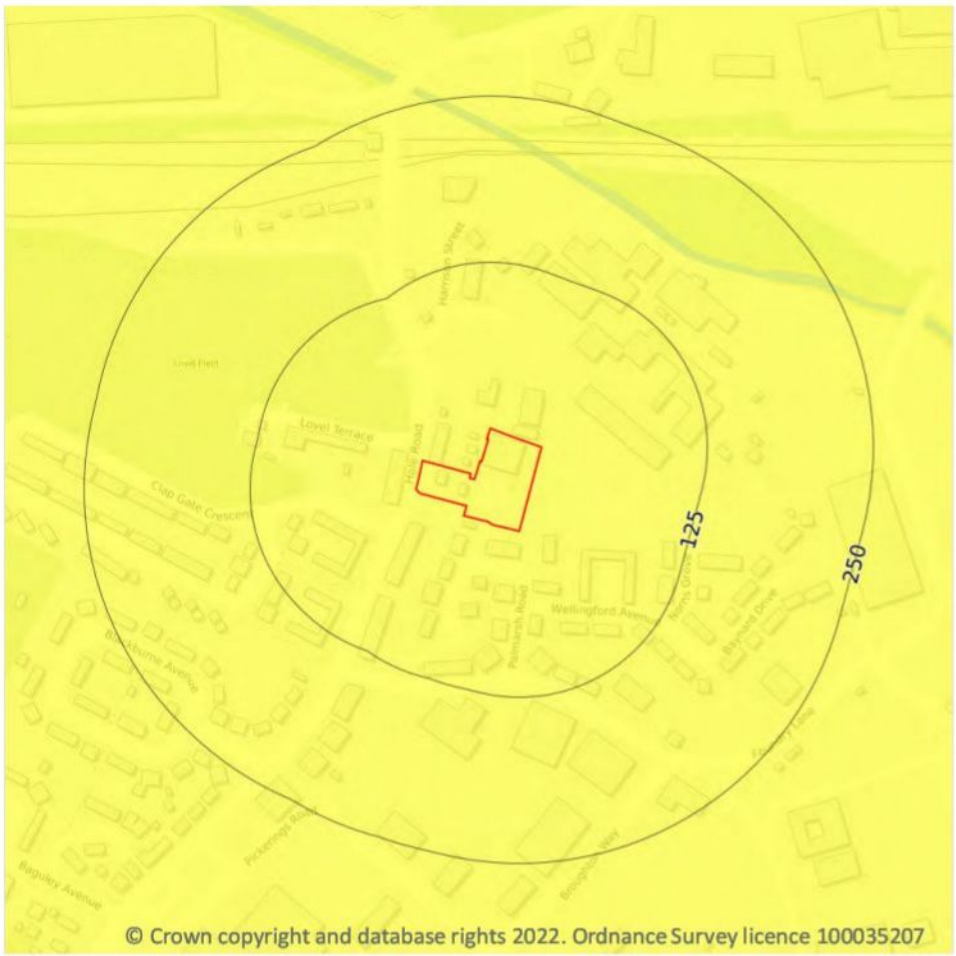
Features are displayed on the Boreholes map on **page 140**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	70m N	348940 384500	WIDNESS MAIN DRAINAGE 108	6.4	N	164523
2	101m N	348860 384540	WIDNESS MAIN DRAINAGE 115	18.29	N	164529
A	116m N	348890 384560	WIDNESS MAIN DRAINAGE 116	15.24	N	164530

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	127m N	348880 384570	DITTON JUNCTION PUMP STATION PS 1	-	Y	N/A
A	127m N	348880 384570	DITTON JUNCTION PUMPING STATION PS1	-	Y	N/A
A	127m N	348880 384570	PUMPING STATION DITTON BRIDGE 2	9.14	N	164413
3	127m S	348900 384240	WIDNESS MAIN DRAINAGE 109	6.1	N	164524
A	138m N	348870 384580	WIDNESS MAIN DRAINAGE 117	14.02	N	164531
B	149m NW	348740 384530	DITTON JUNCTION 1	74.37	N	164403
B	149m NW	348740 384530	DITTON JUNCTION 2	121.19	N	164404
4	166m N	348890 384610	PUMPING STATION DITTON BRIDGE 3	9.14	N	164414
C	181m NW	348800 384600	DITTON JUNCTION STATION NO. 1	74.37	N	164625
C	181m NW	348800 384600	DITTON JUNCTION STATION NO. 2	121.19	N	164633
D	189m N	348960 384620	DITTON BROOK FLOOD 4	-	Y	N/A
D	195m N	348950 384630	PUMPING STATION DITTON BRIDGE 4	7.62	N	164415
E	200m NE	349090 384550	WIDNESS MAIN DRAINAGE 100	7.62	N	164518
F	201m NE	349113 384512	FOUNDRY LANE WIDNES 2	-	Y	N/A
E	211m NE	349110 384540	DITTON BROOK FLOOD 3	-	Y	N/A
5	212m NE	349039 384611	FOUNDRY LANE WIDNES 31	-	Y	N/A
6	218m E	349147 384443	FOUNDRY LANE WIDNES 42	-	Y	N/A
F	219m E	349135 384505	FOUNDRY LANE WIDNES 1	-	Y	N/A
G	220m NW	348682 384572	M V S P DITTON JUNCTION 1	-	Y	N/A
7	221m N	348970 384650	WESTERN INDUSTRIAL SEWER 1	-	Y	N/A
F	228m NE	349140 384517	FOUNDRY LANE WIDNES 35	-	Y	N/A
8	228m NE	349093 384589	FOUNDRY LANE WIDNES 30	-	Y	N/A
G	236m NW	348683 384596	M V S P DITTON JUNCTION 2	-	Y	N/A
9	237m N	348910 384680	DITTON BROOK FLOOD 5	-	Y	N/A
10	240m N	348850 384680	DITTON BROOK FLOOD 6	-	Y	N/A
11	244m E	349167 384486	FOUNDRY LANE WIDNES 37	-	Y	N/A
12	245m E	349156 384327	FOUNDRY LANE WIDNES 41	-	Y	N/A

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	1

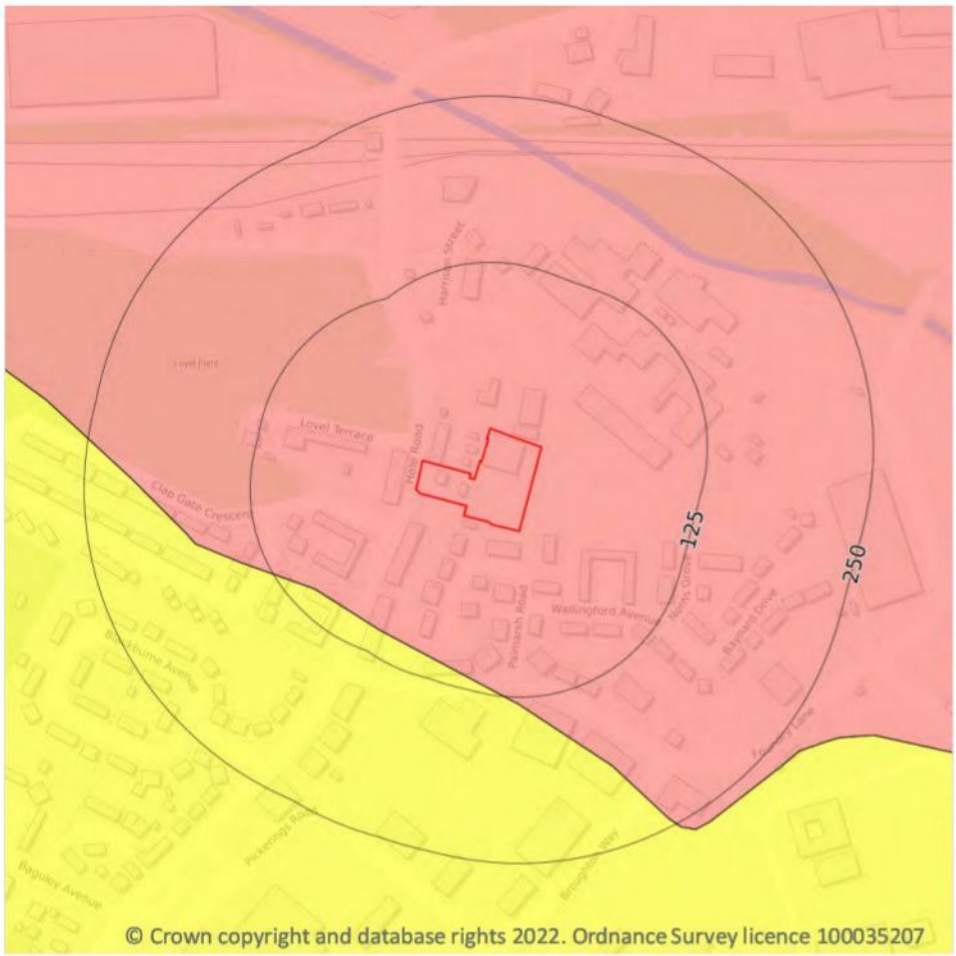
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 142**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

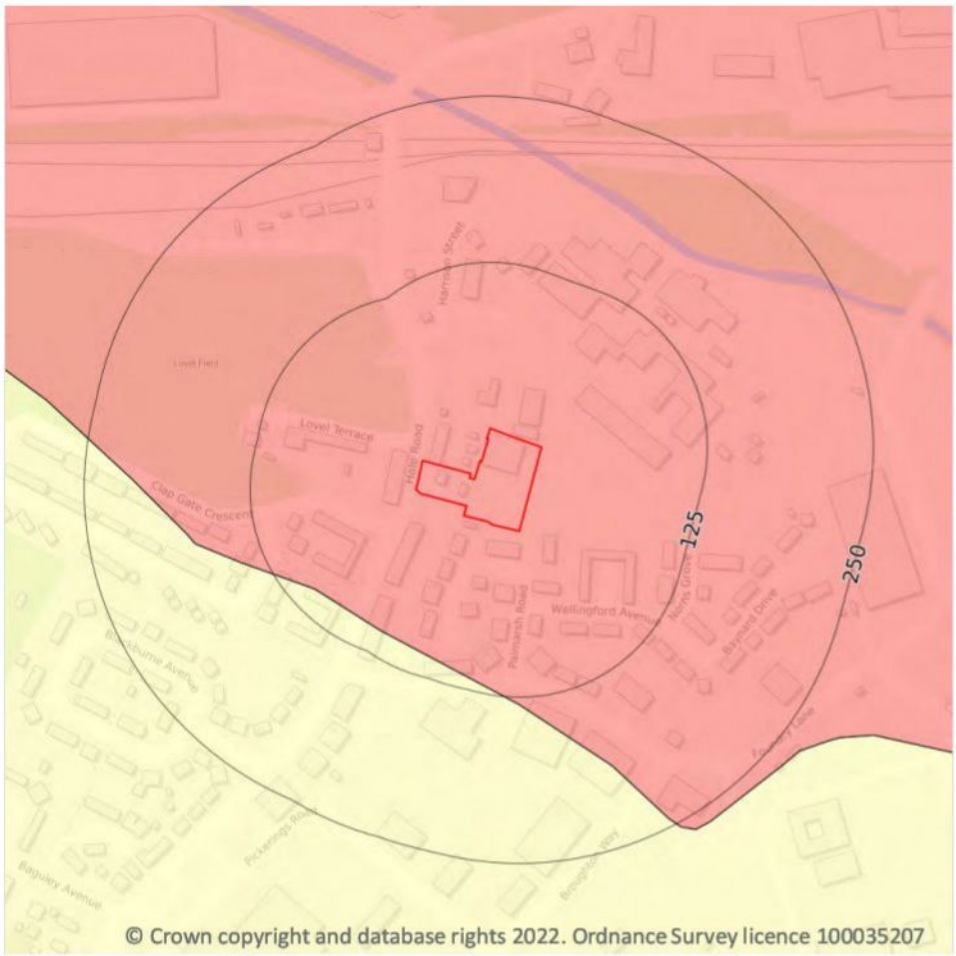
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 143**

Location	Hazard rating	Details
On site	**Moderate**	**Running sand conditions are probably present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

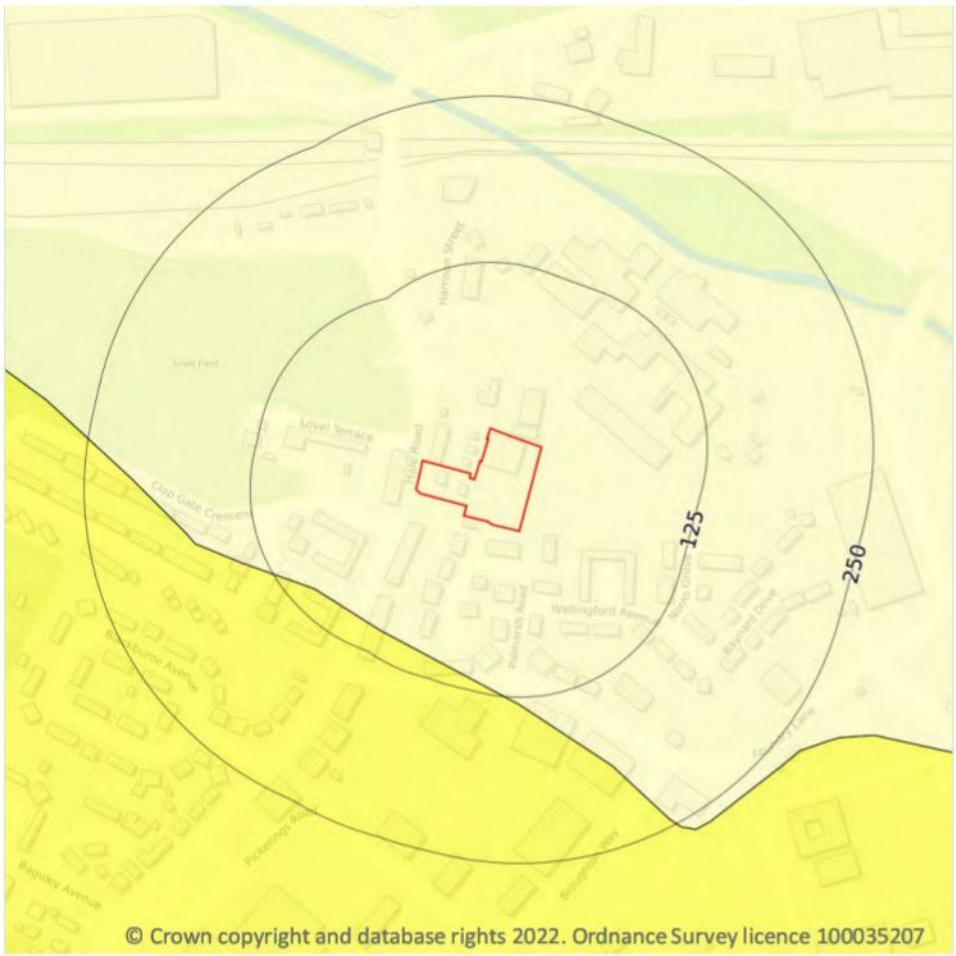
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 144**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

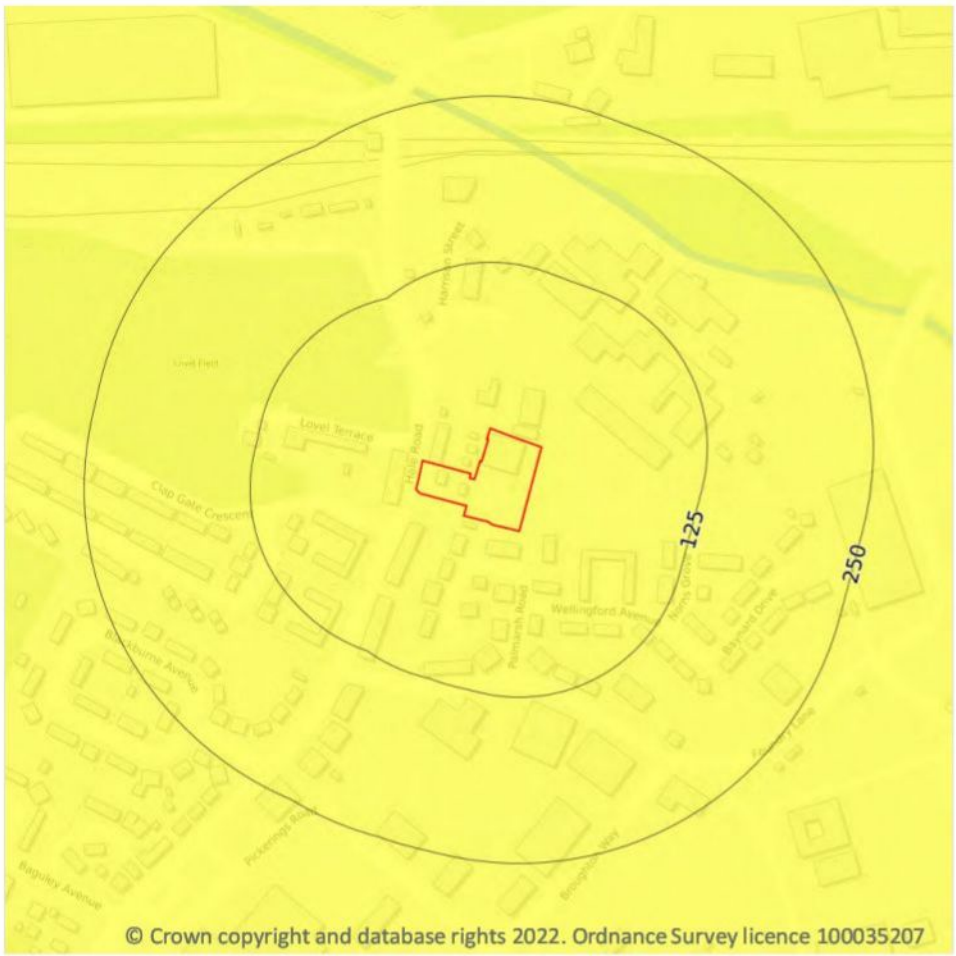
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 145**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not 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	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 146**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks

Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	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 147**

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

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities

Site Outline

Search buffers in metres (m)

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

Non Coal Mining

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

18.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	45

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 149**

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Pond**	**1905**	**1:10560**
A	6m E	Pond	1925	1:10560
A	7m E	Pond	1925	1:10560
A	14m S	Pond	1953	1:10560
A	18m SE	Pond	1938	1:10560
A	30m S	Pond	1905	1:10560
A	32m S	Pond	1894	1:10560
A	39m S	Pond	1891	1:10560
2	49m E	Unspecified Heap	1953	1:10560
B	49m S	Pond	1905	1:10560
B	51m S	Pond	1894	1:10560
C	59m E	Pond	1891	1:10560
B	60m S	Pond	1891	1:10560
C	61m E	Pond	1894	1:10560
C	62m E	Pond	1925	1:10560
C	63m E	Pond	1925	1:10560
C	63m E	Pond	1905	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
C	63m E	Pond	1938	1:10560
C	87m E	Pond	1953	1:10560
D	150m NE	Unspecified Heap	1891	1:10560
E	171m E	Unspecified Heap	1891	1:10560
E	171m E	Unspecified Heap	1953	1:10560
3	172m NW	Sludge Beds	1968	1:10000
E	172m E	Unspecified Heap	1894	1:10560
E	173m E	Unspecified Heap	1925	1:10560
E	173m E	Unspecified Heap	1905	1:10560
E	173m E	Unspecified Ground Workings	1925	1:10560
E	174m E	Refuse Heap	1938	1:10560
E	174m E	Refuse Heap	1938	1:10560
F	174m SE	Unspecified Ground Workings	1938	1:10560
F	174m SE	Unspecified Ground Workings	1938	1:10560
D	175m E	Cuttings	1891	1:10560
D	204m NE	Unspecified Ground Workings	1925	1:10560
D	204m NE	Unspecified Heap	1925	1:10560
D	204m NE	Unspecified Heap	1905	1:10560
D	206m NE	Unspecified Ground Workings	1938	1:10560
D	206m NE	Unspecified Ground Workings	1938	1:10560
D	209m E	Unspecified Heap	1953	1:10560
F	215m SE	Unspecified Pit	1953	1:10560
F	217m SE	Unspecified Heap	1925	1:10560
F	217m SE	Unspecified Heap	1905	1:10560
F	221m SE	Unspecified Ground Workings	1891	1:10560
D	238m E	Unspecified Pit	1925	1:10560
D	238m E	Unspecified Pit	1905	1:10560
4	242m N	Unspecified Ground Workings	1905	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.5 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	0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	0

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

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	0

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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

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

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

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

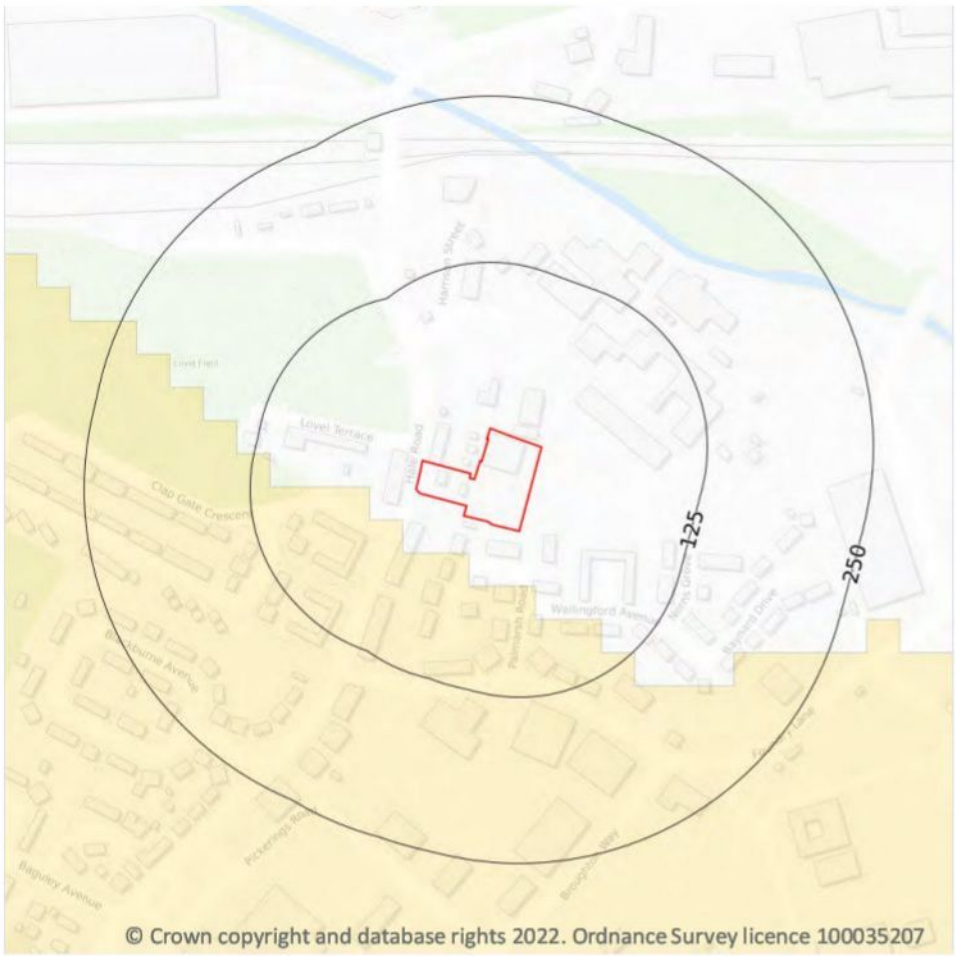
18.13 Clay mining

Records on site	0

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

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

19 Radon



Site Outline

Search buffers in metres (m)

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

19.1 Radon

Records on site	1

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

Features are displayed on the Radon map on **page 154**

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

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

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	1

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

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

This data is sourced from the British Geological Survey.

20.2 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 km^2).

This data is sourced from the British Geological Survey.

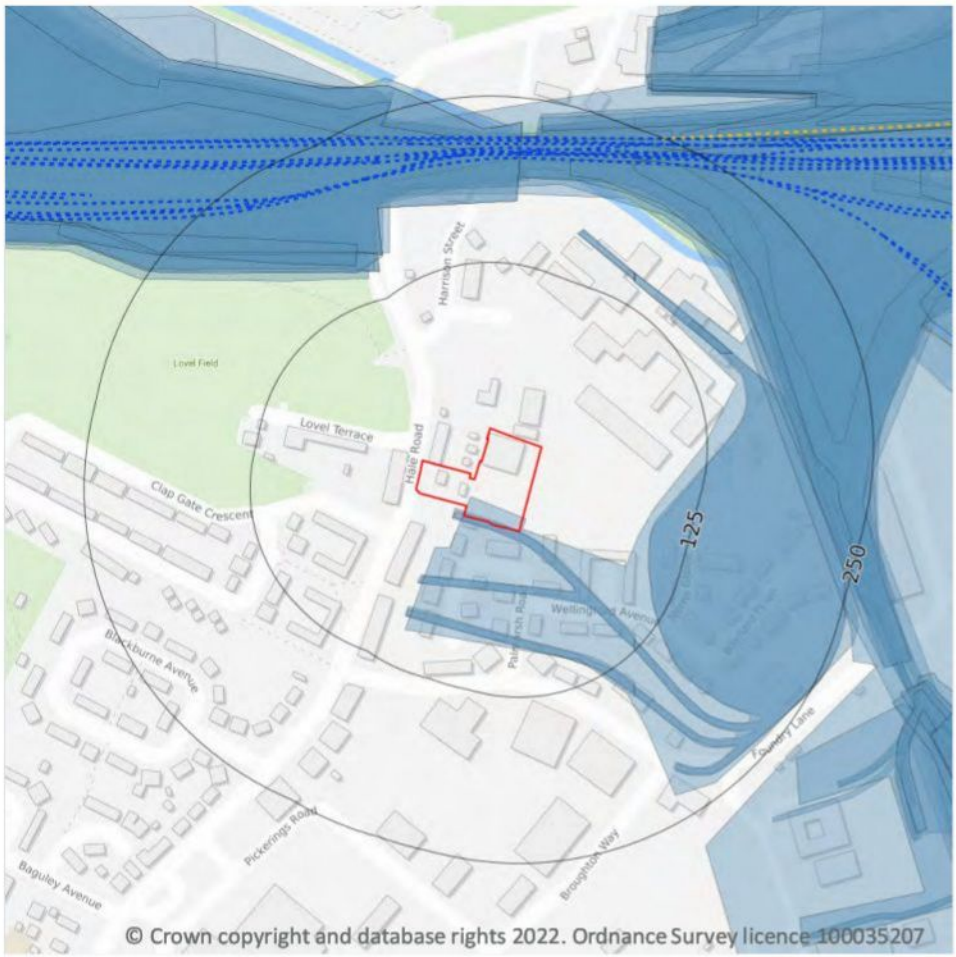
20.3 BGS Measured Urban Soil Chemistry

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 km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



Site Outline
Search buffers in metres (m)
Crossrail 1 Stations
Crossrail 1 Route
Crossrail 1 Worksites
Crossrail 2 Stations
Crossrail 2 Route
Crossrail 2 Worksites
Crossrail 2 Safeguarding
Crossrail 2 Headhouses
Railway stations
Active railways
Active tunnels
Abandoned railways
Historic railways
Historic tunnels
Underground stations
Underground Lines
Royal Mail tunnels
HS2 optimised route
HS2 Stations
HS2 Depots
HS2 Surface Safeguarding
HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	43

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 156**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1956**	**1250**
On site	**Railway Sidings**	**1956**	**2500**
On site	**Railway Sidings**	**1968**	**10000**
77m S	Railway Sidings	1956	1250
78m S	Railway Sidings	1956	2500
96m E	Railway Sidings	1957	1250
96m E	Railway Sidings	1957	2500
141m NE	Railway Sidings	1956	1250
143m N	Railway Sidings	1891	10560
143m NE	Railway Sidings	1956	1250
144m NE	Railway Sidings	1967	1250
145m NE	Railway Sidings	1956	2500
145m NW	Railway Sidings	1925	10560
145m NW	Railway Sidings	1905	10560
147m N	Railway Sidings	1938	10560
150m N	Railway Sidings	1894	10560
153m NW	Railway Sidings	1953	10560

Location	Land Use	Year of mapping	Mapping scale
154m N	Railway Sidings	1891	2500
154m NW	Railway Sidings	1968	10000
154m NW	Railway Sidings	1982	10000
155m N	Railway Sidings	1925	10560
155m N	Railway Sidings	1927	2500
156m N	Railway Sidings	1937	2500
157m N	Railway Sidings	1907	2500
169m N	Railway Sidings	1956	1250
169m N	Railway Sidings	1967	1250
170m N	Railway Sidings	1956	2500
183m E	Railway Sidings	1905	10560
189m E	Railway Sidings	1967	1250
189m E	Railway Sidings	1956	1250
194m E	Railway Sidings	1953	10560
199m N	Railway Sidings	1985	1250
207m N	Railway Sidings	1905	10560
211m N	Railway Sidings	1891	2500
211m N	Railway Sidings	1925	10560
220m N	Railway Sidings	1968	10000
226m N	Railway Sidings	1956	1250
226m N	Railway Sidings	1967	1250
227m N	Railway Sidings	1953	10560
227m N	Railway Sidings	1851	10560
231m E	Railway Sidings	1891	2500
247m N	Railway Sidings	1967	1250
248m NE	Railway Sidings	1905	10560

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	1

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 156**

Location	Description
249m N	Abandoned

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	44

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 156**

Location	Name	Type
202m N		rail
206m N		rail
206m N	Not given	Single Track
207m N	Down Slow	rail
207m N	Not given	Single Track
207m N	Not given	Single Track
208m NW	Not given	Single Track
208m N	West Coast Main Line	rail

Location	Name	Type
208m N	Down Slow	rail
209m N	Not given	Multi Track
209m N	Not given	Multi Track
209m N	Not given	Multi Track
210m NW	Not given	Single Track
211m N	Up Slow	rail
213m N	Not given	Multi Track
214m N	Down Fast	rail
217m N		rail
217m N		rail
217m N	Not given	Multi Track
218m NW	Down Slow	rail
218m N	Not given	Multi Track
219m N	Up Fast	rail
219m NW	Not given	Multi Track
220m N	Up Fast	rail
220m N	West Coast Main Line	rail
220m N		rail
222m NW	Up Slow	rail
222m N	Down Fast	rail
223m NW	Not given	Multi Track
223m NW	Not given	Multi Track
224m N	Not given	Multi Track
226m N	Up Fast	rail
228m NW		rail
229m N	Down Fast	rail
229m N		rail
229m N	West Coast Main Line	rail

Location	Name	Type
229m N		rail
231m N	Not given	Multi Track
231m NW	Not given	Single Track
233m N	Up Fast	rail
237m NW	Not given	Multi Track
242m NE		rail
248m NE	Not given	Multi Track
250m NE		rail

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.

Table of Contents

EXECUTIVE SUMMARY

A Phase I Desk Study Report (which includes a preliminary risk assessment) was required by Halton Borough Council under the National Planning Policy Framework (introduced March 2012), and the Guidance on 'Land contamination risk management (LCRM)' This report is required to support the planning application for the site. Halton Borough Council requires the report to satisfy the National Planning Policy Framework in which it is stated that:

1. "a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);

2. "after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990"; and

3. "adequate site investigation information, prepared by a competent person, is available to inform these assessments."

In order to support the planning application for the site, ***CBJ Properties Ltd*** commissioned ***Demeter Environmental Ltd*** to undertake a Phase I Desk Study Report (which includes a preliminarily risk assessment) at Land to Rear Of 353-363 Hale Road, Widnes, Cheshire, WA8 8TR, to support the planning application for the erection of a residential care home.

The report has been completed to fulfil the requirements of a preliminary risk assessment in accordance with and the Guidance on 'Land contamination risk management (LCRM)'. and the documents referred to in Appendix A.

These procedures relate to 'past'contamination, and assume that legislative controls such as Pollution Prevention and Control authorisations control current potentially polluting activities. Emphasis is therefore upon historic site use and how this may affect potential future users of the site should the proposed development plans be realised.

The project has been carried out within the existing legislative framework, which is outlined in Appendix B.

It should be noted that the table below only offers a brief summary of the information presented in this report and is for briefing purposes only. Reference should be made to the main report for detailed analysis undertaken.

Table 1: Executive Summary

	SUBJECT		DATA
SITE INFORMATION AND SETTING	Client		CBJ Properties Ltd
	Site		Land to Rear Of 353-363 Hale Road, Widnes
	Site location		Land to Rear Of 353-363 Hale Road, Widnes, Cheshire, WA8 8TR
	Proposed development		The erection of a residential care home
	Planning Reference		
	Grid Reference		
	Current Land Use		
	Access		.
CONCEPTUAL SITE MODEL	History		The site formed part of a children's home before the depot was built. The maps also indicate that garages were present on the western boundary.
	Geology	Drift	
		Solid	
	Radon		Less than 1% of properties are above the action level. No radon protective measures are required.
	Hydrology		The XXXX is approximately xxxm NE of the site, which is a high/moderate/low sensitivity water body. There are a further X water bodies within 250m all of which are high/moderate/low sensitivity water bodies
	Hydrogeology	Drift	The drift is regarded as a high/moderate/low sensitivity aquifer
		Solid	The solid is regarded as a high/moderate/low sensitivity aquifer
	Previous Site Investigation		
	Potential Sources of Contamination		Diesel tank on site Storage of herbicides on site Hydrocarbon staining on site
	Potential Contaminants of Concern		Hydrocarbons from tanks Wide range of contaminants in the made ground (if present)
	Potential Receptors		Humans beings (construction workers), Human beings (worker occupants), Property in the form of buildings (on site), Potable water mains (on site), Perched soil water (underlying site), Groundwater (underlying aquifer)
Proposed Phase II Works			No further works are proposed
This sheet is intended as a summary of the report; it does not provide a definitive analysis and should not be treated as an independent document.			

Table 1(continued): Executive Summary

Proposed Phase II Works	Diesel tank – on removal of the tank, if there is evidence of hydrocarbon staining, a hand dug trial pit will be excavated within the footprint of the diesel tank to a nominal depth of 600mm and two samples from this trial pit will be analysed for hydrocarbons.
Potential Liabilities	Property Value - Based on the information and assessment within this report it is unlikely that the value of the property could be impaired. Contaminated land - Whilst Part 2A (contaminated land) is a legal definition and can only be made by a legal professional it is unlikely that the site could be determined as 'contaminated land' based on the information in this report.
Watching Brief	This report has identified a number of potential sources of contamination (Table 11) where the overall risk was low, and further works were not justified. This assessment is based on the information within this report; hence, it is proposed that a watching brief be undertaken during the development. Made Ground – if made ground is encountered during the development works it should be removed from the alignment of the water mains and from the garden and landscaped areas. Made Ground: Given that the site is occupied by a building it is unlikely that there will be any garden or landscaped areas. If this is incorrect then all made ground should be removed from the garden and landscaped areas as well as the alignment of the water mains. Site Building: As the development commences if there is any visual or olfactory evidence of contamination further works should be undertaken; Tanks – If any evidence of hydrocarbon releases is identified then further works will need to be undertaken to determine if there is a potential risk to human health. Cement Sheeting – Provided that the cement sheeting is removed in an appropriate manner and the sheeting is not damaged additional assessment will not be required.
This sheet is intended as a summary of the report; it does not provide a definitive analysis and should not be treated as an independent document.	

1.0 INTRODUCTION

1.1 Desk Study Terms of Reference

1.1.1 This report presents the results of a Phase I Desk Study carried out on Land To Rear Of 353-363 Hale Road, Widnes, Cheshire, WA8 8TR, performed for ***CBJ Properties Ltd***. This report was written in April 2022 and should be read in the light of any subsequent changes in legislation, statutory requirements or industry practices.

1.1.2 The works were carried out in accordance with the standard terms of contract of ***Demeter Environmental Ltd***.

1.1.3 The aim of the report is to support the planning application for the site.

1.1.4 This report has been prepared in accordance to the Demeter Environmental Limited Quality Management System.

1.2 Aims and Objectives of Desk Study

1.2.1 The objectives of the desk study are as follows:

- To provide information on past and current uses of the site and surrounding area and the nature of any hazards and physical constraints;
- To determine the risks associated with hazardous ground gas, including radon;
- To identify current and likely future receptors, potential sources of contamination and likely pathways and any features of immediate concern, including those that could be introduced in the future;
- To identify any aspect of the site requiring immediate attention (e.g., insecure fences, hazardous substances accessible to trespassers or likely to be dispersed by water or wind);
- To provide information on the geology, geochemistry, soil, hydrogeology and hydrology of the site;
- To identify potentially different sub-areas (zones) of a site, based on differing ground conditions; potential contamination; and past, present and future uses;
- To provide information for the preliminary risk assessment;
- To provide data to assist in the design of potential subsequent exploratory and main investigations and to give an early indication of possible remedial requirements;

- To provide information relevant to worker health and safety and to the protection of the environment during field investigations;
- To provide data to assist in the design of potential subsequent investigations and to give early indication of possible remedial requirements;
- To identify the need to involve regulatory bodies prior to intrusive investigation.

1.2.2 The primary objective of the desk study is to identify potential environmental issues that may represent a constraint to the proposed redevelopment of the site. The findings of this assessment can be used to determine, if required, the scope of a follow on Phase II intrusive site investigation.

1.2.3 The desk top study provides an initial view in respect of the status of the site with regard to:

- The potential impact on the site of interest from surrounding land uses and other environmental factors;
- Potential contamination of the site strata by historical and or current use;
- The potential impact on the wider environment by historical and or current use of the site of interest;
- Potential problems associated with geological features such as faulting, mineral extraction, mining and land instability;
- The location of above-surface features that may affect the proposed redevelopment.

1.2.4 This study includes a review of the available geological, historical and environmental information in order to establish the likely ground conditions at the site. The review is based on the following information:

- Align any report to the requirements of relevant guidance;
- To assess historical activities, referring to past Ordnance Survey maps, at the site with respect to their potential impact on the site environment;
- To characterise the environmental setting of the site, identify migration pathways and vulnerable receptors for contamination originating at the site, focusing on potential soil and groundwater liabilities;

- To assess historical and current surrounding land use, referring to past Ordnance Survey maps, in relation to known or potential off-site contamination issues that may impact the subject property;
- To identify likely ground conditions at the site and the potential geotechnical and environmental constraints to development;
- To establish development abnormals prior to site development;
- Assessment of the potential risks to both on and off site receptors;
- To develop a preliminary conceptual model.

1.2.5 The data collated in this study has been undertaken to allow the construction of a preliminary conceptual model, which represents the potential contaminant linkages that have been identified on the site. This is used as a basis to develop a strategy for an intrusive investigation where required.

1.3 Scope of Desk Study

1.3.1 The scope of work for this report comprises of the following:

- Procurement of Groundsure Enviro+Geo Insight Report;
- Procurement of Ordnance Survey maps;
- Review of published geology;
- Review of data available in the public domain (borehole section sheets etc.);
- Review of planning history and any associated documents using information in the public domain;
- Site walkover survey;
- Preparation of a preliminarily risk assessment.

1.4 Proposed Development

1.4.1 It is proposed that a residential care home is erected on the site. The proposed site development plan is shown on the G&S Design drawing in Appendix D.

1.5 Basis of Risk Assessment

1.5.1 This assessment has been undertaken with due regard to the Environmental Protection Act 1990, associated statutory guidance (NPPF, PAN 33 etc.), 'Guidance for the Safe Development of Housing on Land Affected by Contamination', the Guidance on 'Land contamination risk management (LCRM)', the Contaminated Land Guidance Documents issued by the Environment Agency and the documents referred to in Appendix A. The methods used follow a risk based approach with the potential risk assessed using the 'Source – pathway – receptor contaminant linkage concept introduced by the Environmental Protection Act.

1.6 Limitations and Exceptions of this Report

1.6.1 This report was undertaken for ***CBJ Properties Ltd*** at the request of ***G&S Design Ltd***and as such should not be entrusted to any third party without written permission of ***Demeter Environmental Ltd***.

1.6.2 No other third parties may rely upon, use or reproduce the contents of this report without the written permission of ***Demeter Environmental Ltd***. If any unauthorised third party comes into possession of this report they rely on it at their own risk and the authors do not owe them any duty of care or skill.

1.6.3 Except as otherwise requested by ***CBJ Properties Ltd***, ***Demeter Environmental Ltd*** is not obliged and disclaims any obligation to update the report for events taking place after:

a) The date on which this assessment was undertaken;
b) The date on which the final report is delivered.

1.6.4 This report has been compiled from a number of sources, within the time constraints of the programme, which ***Demeter Environmental Ltd*** believes to be trustworthy. However ***Demeter Environmental Ltd*** is unable to guarantee the accuracy of information provided by third parties.

1.6.5 The findings and opinions provided in this document are made in good faith and are based on data provided by third parties (Groundsure, Environment Agency, The Coal Authority, and Regulatory Bodies) and the report should be read in conjunction with the limitations on the document control form. The accuracy of map extracts cannot be guaranteed and it should be recognised that different conditions on /adjacent to the site may have existed between and subsequent to the various map surveys.

1.6.6 This report is prepared and written in the context of the purposes stated above and should not be used in a different context. Furthermore, new information, improved practices and

legislation may necessitate an alteration to this report in whole or in part after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of this Report, the report should be referred to ***Demeter Environmental Ltd*** for reappraisal.

1.6.7 The conclusions and recommendations of this report are based on the development described in Clause 1.4, for any other development the report may require revision.

1.6.8 ***Demeter Environmental Ltd*** makes no representation whatsoever concerning the legal significance of its findings or to other legal matters referred to in the following report.

1.6.9 All of the comments and opinions contained in this report, including any conclusions, are based on the information obtained by ***Demeter Environmental Ltd***. The conclusions drawn by ***Demeter Environmental Ltd*** could therefore differ if the information obtained is found to be misrepresentative, inaccurate, or misleading. ***Demeter Environmental Ltd*** reserves the right to amend their conclusions and recommendations in the light of further information that may become available.

1.6.10 The report should be read in its entirety, including all associated drawings and appendices. ***Demeter Environmental Ltd*** cannot be held responsible for any misinterpretations arising from the use of extracts that are taken out of context.

1.6.11 This report does not comprise a geotechnical assessment of the strata underlying the site.

1.6.12 Any borehole data from the British Geological Survey sources is included on the following basis: 'The British Geological Survey accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation'.

1.6.13 The copyright in this report and other plans and documents prepared by ***Demeter Environmental Ltd*** is owned by them and no such report; plan or document may be reproduced, published or adapted without prior written consent.

1.6.14 Complete copies of this report may be made and distributed by the Client as an expedient way in dealing with matters related to its commission.

1.6.15 Any risks identified in a Phase I Desk Study Report are perceived risks. Actual risks can only be assessed following a physical investigation of the site. ***CBJ Properties Ltd*** should be aware that this report is based on information available at the time. Where a site investigation has been undertaken, the ground conditions can only be defined precisely at the exploratory positions, whilst an intermediate positions they can only be inferred. It is possible that factors may vary due to seasonal effects or other climatic effects, and may at times

differ from those measured during the investigation. While every attempt is made to assess the likelihood and extent of such variations, conditions may nevertheless exist which are undisclosed by this investigation.

1.6.16 The findings of this report are based on finite information obtained from research and consultations. Demeter Environmental Ltd cannot guarantee the reliability of all such information and the searches should not be considered exhaustive. The findings of the report may need to be reviewed as any future exploratory investigations progress and in the event that additional archive information becomes available.

1.6.17 Notwithstanding the findings of this study (and any subsequent investigations), if any indication of contaminated soil (visual or olfactory) is encountered at any stage of the development further investigation may be required.

1.6.18 Arboricultural Survey and advice on arboricultural issues are considered to be outside the scope of this report except for their effect on the foundations to the proposed buildings. Where identification of any species is made, especially invasive plants such as Japanese Knotweed, Himalayan Balsam or Giant Hogweed, this should only be considered as a preliminary assessment and subject to confirmation by a professional Arboriculturist. Demeter Environmental Ltd takes no responsibility for failing to identify, or the incorrect identification of, any tree or plant species on site.

1.6.19 Our investigations exclude surveys to identify the presence injurious and invasive weeds. Under the Weeds Act 1959, the Secretary of State may serve an enforcement notice on the occupier of land on which injurious weeds are growing, requiring the occupier to take action to prevent the spread of injurious weeds. The Weeds Act specifies five Injurious weeds: Common Ragwort, Spear Thistle, Creeping of Field Thistle, Broad-leaved Dock and Curled Dock. The Wildlife and Countryside act 1981 provides the primary controls on the release of non-native species into the wild in Great Britain. It is an offence under section 14(2) of the act to 'plant or otherwise cause to grow in the wild' any plants listed in schedule 9, part II. The only flowering plants currently listed are Japanese Knotweed and Giant Knotweed. The presence of such weeds on site may have considerable effects on the cost / timescale in developing the site.

1.6.20 Good guidance on injurious and invasive weeds is provided on DEFRA and Environment Agency web sites.

1.6.21 Our investigations exclude surveys to identify the presence or indeed absence of asbestos in buildings/infrastructure on site. If asbestos is suspected to be present, we recommend specialists in the identification and control / disposal of asbestos are appointed prior to

commencement of any works on site or, if appropriate, purchase of the site. The presence of asbestos on site may have considerable effects on the cost / timescale in developing the site. There is good guidance in relation to Asbestos available on the Health and Safety Executive (HSE) web site.

1.6.22 The scope of this investigation does not include an assessment for the presence of asbestos containing materials within or below the buildings or in associated infrastructure in the ground at the site. Should there be a requirement under Regulation 4 of the Control of Asbestos at Work Regulations 2002 for any part of the site to be deemed 'non-domestic premises' the duty holders should prepare an asbestos risk management plan and this may require technical survey works as described in the HSE Guidance HSG264 (2nd edition).

1.6.23 The Health and Safety at Work Act requires that Employers provide safe places of work for their employees. The Control of Asbestos at Work Regulations (CAWR) place very heavy specific duties on those who commission and carry out work on asbestos containing materials. Construction work that is likely to involve exposure of workers to hazards associated with asbestos in existing buildings will be subject to the Construction (Design and Management) Regulations which impose duties upon Clients, Designers and the Contractors carrying out the work. Other health and safety and welfare regulations place duties on Employers to undertake risk assessments and prepare hazard management plans which, in the case of a building likely to contain asbestos, could involve the commissioning of surveys, hazardous materials location registers and proposals for remedial work.

1.6.24 Whilst a site walkover has been undertaken as part of this report, the survey does not constitute either an asbestos or structural survey and all areas of the site may not have been visited / inspected.

1.6.25 Consideration of occupational health and safety issues are beyond the scope of this report.

1.6.26 All assessments and recommendations should be forwarded to the relevant planning authorities for comment and approval prior to implementation.

1.7 Principal Sources of Information

1.7.1 Documents that were available or have been obtained for reference or obtaining data are given in Appendix A. Further information on data used in this report and dates the data was obtained/accessed is given below:

Table 2: Summary of Information Obtained

Source	Data Provided	Date Obtained
Groundsure	Ordnance Survey Maps Groundsure Enviro+Geo Report	21st April 2022

Halton Borough Council	Planning history	22nd April 2022
British Geological Survey	1:50,000 Geological Maps 1:10,000 Geological maps Borehole Section sheets	22nd April 2022
Environment Agency	Historic Landfill Data (last updated 5th April 2016) Authorised Landfills (5th April 2016)	22nd April 2022
MAGIC Database	Nitrate Vulnerable Zones Aquifer Details Groundwater vulnerability Water Safeguard Zones Groundwater Source Protection Zone	22nd April 2022
Coal Authority	Interactive Map Viewer Coalfield Plans	22nd April 2022
Google Earth©	Aerial plates	22nd April 2022
Google Streetview©	Street level imagery	22nd April 2022

2 SITE CONTEXT

2.1 Site Location

2.1.1 The site is located off Hale Road, the approximate grid reference is 348881E 384407N, as shown on Drawing 1 and Plate 2 in Appendix D.

2.1.2 The site is located within the administrative jurisdiction of Halton Borough Council.

2.2 Site Description & Site Reconnaissance Visit

2.2.1 The aims of the walkover were to determine whether there were any obvious potential sources of contamination, pathways and receptors on or near the site and whether there were any obvious geotechnical difficulties with the site. In addition, access routes into the site were investigated in order to establish the feasibility of further site investigation.

2.2.2 A site walkover survey was undertaken in April 2022 by a consultant from Demeter Environmental Ltd, in general accordance with CLEA CLR 2, on completion of a review of relevant historical and environmental data. The observations of the walkover are presented hereunder:

Table 3: Summary of Walkover Survey

Topic	Discussion
Site Description / Use	The site extended to an area of approximately 0.38Ha and the site topography was approximately level. The site comprised of two sections, the western area which comprised of a car wash facility and the eastern area, which was occupied by a coach depot. A path which led to a locked gate was present in-between the coach depot and car wash. <u>Car Wash</u> The western area was approximately a third of the size of the eastern area comprised of a hand car wash facility. Several storage containers were present along the northern section of this area. They were used for storage, as offices and welfare facilities. Cleaning chemicals were stored on the site. A compressor was present within a container in the middle of the site.

		Coach Depot The eastern area of the site was used as a coach depot. The coach depot comprised of a large yard area, several containers which were used as offices, and welfare facilities. A large commercial building which was used as a workshop was also present on the site. The yard area was surfaced with poor quality concrete. Several coaches were stored in the yard area. Some of the coaches were in a state of disrepair. The majority of the coaches observed were in good condition and in use. It is understood that a soakaway is present on the southern area of the site. The workshop is constructed of metal columns with cement sheeting walls and a cement sheeting roof. Damage was noted to the walls and roof. The interior of the workshop contained equipment and tools for servicing coaches, spare parts such as spare coach seats and tyres. Cleaning chemicals, heating oil and engine oils were stored within the building. The engine oils were mostly stored within a bunded area within the eastern area of the building. On the external eastern area of the building, a bund was noted which was used to store waste oils. Frequent areas of hydrocarbon staining were noted within the building and yard area.
Description of surrounding area		Commercial/residential/industrial surroundings
Surrounding Land Uses	North	Commercial
	East	Vacant commercial/industrial open plot of land surfaced with concrete.
	South	Road then houses.
	West	Road then commercial/residential.
Access		Via Hale Road
Structures		Car Wash The canopy was in place. Several storage containers were present along the northern section of this area. They were used for storage, as offices and welfare facilities. Coach Depot The workshop is constructed of metal columns with cement sheeting walls and a cement sheeting roof. Several containers used as offices, and welfare facilities.
Surfacing		The majority of the site was surfaced with concrete. The concrete in the coach depot was generally of cracked, especially near the preimeters of the facility.
Made Ground		The majority of the site was surfaced with concrete which will be underlain with poor quality concrete.
Vegetation / Trees		Occasional weeds were noted across the perimeters of the site. Arboricultural Survey and advice on arboricultural issues are considered to be outside the scope of this report except for their effect on the foundations to the proposed buildings. Where identification of any species is made this should only be considered as a preliminary assessment and subject to confirmation by a professional Arboriculturist. Demeter Environmental Ltd takes no responsibility for failing to identify, or the incorrect identification of, any tree or plant species on site.
Invasive Species		During the site walkover, we did not notice the presence of any Japanese Knotweed, however this plant can be difficult to identify in the early stages of growth and therefore it is not always possible to identify its presence at certain times of the year. It should be noted that we are not qualified ecologists and as such cannot guarantee the absence of Knotweed or other invasive vegetation. It is recommended that if it is suspected that this species or other similarly invasive plants are present at the site, a specialist contractor should be commissioned to make a detailed assessment.
Infrastructure and Utilities		The tenant from the coach depot stated that they do not have drains on the site. Sewage from the welfare facilities is stored on site and removed by a tanker. The review of statutory utility supplier records lies outside the scope of this report.

Storage Tanks	Car wash Cleaning supplies were stored on site. It is unknown is the fuel tanks from the petrol forecourt has been decommissioned. Coach Depot Several storage tanks were noted across the site including: engine oils, waste oils, heating oil, cleaning chemicals, welfare facility waste.
Raw Material and Chemical Use and Storage	Engine oils, waste oils, heating oil and cleaning chemicals are stored on site.
Solid Wastes	No significant observations were made of solid waste storage at the site.
Hazardous and Industrial Wastes	engine oils, waste oils, heating oil and cleaning chemicals are stored on site.
Air Emissions	No significant sources of air emissions, were observed at the site.
Asbestos Containing Materials	It is likely that due to the age of the building structures that some possible asbestos containing materials are located within the building fabric across the site. Corrugated roofing sheets were observed on the workshop, which may contain asbestos. A full asbestos survey should be undertaken before any demolition is undertaken at the site. The made ground identified on the site may be impacted by asbestos as the source of the material is unknown. It should be noted that we are not qualified asbestos surveyors and as such cannot guarantee the presence or absence of ACM's.
Spills and Releases	Frequent areas of hydrocarbon staining were noted across the coach depot.
Fly Tipping	No evidence of fly tipping was noted on the site.

2.2.3 A plan of the site in its current configuration is presented on Drawing 3 in Appendix D. Potentially contaminative features identified during the walkover survey are presented on Drawing 4.

2.2.4 Photographs of the site and a photograph key plan are presented in Appendix E.

3 SITE HISTORY

3.1 Historical O.S. Maps, Aerial Plates and Street View Images

3.1.1 The historical usage of both the site and the surrounds has been researched by reference to historical maps and aerial plates presented in Appendix F (O.S. maps, Old Maps Online, and National Library of Scotland), street plans, street directories, historical aerial photographs (Google Earth, Britain From Above, historical street level imagery and plates in the public domain.) are summarised hereunder in Table 4.

Table 4: Summary of Review of Historical Maps and Aerial Plates

Area	Summary of Historical Review
Site	Initially (1849) the site formed part of a larger parcel of open land, the 1905 map identifies terraced houses on the western area with a pond on the south eastern corner of the site. By 1925 the terraced houses had been extended south and the remainder of the site was occupied by a number of small buildings (possibly gardens and outbuildings associated with the neighbouring dwellings). The site was redeveloped between 1957 and 1967 when the eastern area had been cleared and a garage was noted on the western area, the pond had been in-filled. The 1978 map identifies a warehouse on the eastern area as well as the demolition of one of the terraced houses and what appears to be fuel dispensers, by 1985 the second dwelling had been demolished.

	The western area had been cleared by the 1993 map. The warehouse was partly demolished between 2003 and 2010.
Area adjacent to the site	Initially the site boundaries were formed by Hale Road to the west and open land on all other sides, by 1891 part of the northern boundary was formed by dwellings. By 1967 the northern boundary was formed by a civil engineering works, electricity substation on the southern boundary and a joinery works on the eastern boundary. Later maps identify the joinery works as a dept and the Golden Triangle complex. The 1994 map iudentifies a supermarket on the southern boundary.
Area within 50m (including ponds)	A number of potentially contaminative land uses have been identified on the historical O.S. maps, which are discussed below by order of date. **1891:** Pond 25m south east – in-filled prior to the 1925 map Pond 40m south – in-filled prior to the 1956 map
Potentially In-Filled Land Within 250m (excluding ponds)	A number of areas of potentially in-filled land have been identified on the historical O.S. maps, which are discussed below by order of date. **1891:** Pond 55m east – by 1937 the north eastern area was identified as a landfill and in-filled prior to the 1956 map

3.2 Anecdotal Evidence

3.2.1 No additional information on the site history could be sourced.

3.3 Archaeological Considerations

3.3.1 No known archaeological considerations have currently been identified.

3.3.2 Archaeological information has not been sought as part of this desk study and has not been identified as an issue by the Client. Some Local Authorities require at least an initial archaeological appraisal for development sites.

3.3.3 Archaeological investigations occasionally reveal ground-related problems from ancient times (prior to the 1st Edition O.S. maps) and can occasionally cause foundation and contamination development hazards.

3.3.4 The Local Authority archaeological officer has not been contacted at this stage.

3.4 Planning Information

3.4.1 A search of on-line planning information held by Halton Borough Council was undertaken, a number of previous applications for the erection of a residential care home were noted, no salient information was sourced.

3.5 Previous Reports

3.5.1 Demeter Environmental Limited has no knowledge nor has received any reports relating to the site or the surrounding area.

4 ENVIRONMENTAL SETTING

4.1 Published Geology – 1:10,000 Geological Maps

4.1.1 The documented geology has been ascertained by the examination of British Geological Survey 1:10,000 Sheet SJ48SE and the appropriate geological memoir is summarised hereunder:

4.1.2 The drift geology is given as Tidal Flat Deposits (clay, silt and sand).

4.1.3 The solid geology is given as the Wilmslow Sandstone Formation of the Early Triassic Epoch.

4.2 Published Geology – 1:50,000 Geological Maps

4.2.1 The documented geology has been ascertained by the examination of British Geological Survey 1:50,000 Sheet 97 (Runcorn) and the appropriate geological memoir is summarised hereunder:

4.2.2 The drift geology is given as Tidal Flat Deposits (clay, silt and sand).

4.2.3 The solid geology is given as the Wilmslow Sandstone Formation.

4.3 Data From The Coal Authority

4.3.1 The Coal Authority interactive map viewer was accessed, the map indicates the site is not within a "Development High Risk Area".

4.3.2 The Development High Risk Area is defined as 'The Development High Risk Area is the part of the coal mining reporting area which contains one or more recorded coal mining related features which have the potential for instability or a degree of risk to the surface from the legacy of coal mining operations. The combination of features includes mine entries; shallow coal workings (recorded and probable); recorded coal mining related hazards; recorded mine gas sites; fissures and breaklines and previous surface mining sites. New development in this defined area needs to demonstrate that the development will be safe and stable taking full account of former coal mining activities. This area was formally known as the Development Referral Area'.

4.4 Borehole Records

4.4.1 The BGS Borehole map indicates that there are no borehole records available within 50m of the site.

4.5 Geological Hazards

4.5.1 Potential natural geological hazards which may represent a risk to the proposed development on the site could include the following:

Table 5: Summary of Potential Natural Geological Hazards Identified in the Groundsure© Reports

Potential Hazard	Assessed Risk on the Site			
Radon	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No radon protective measures are necessary.			
Background Soil Chemistry	Element	Estimated Geometric Mean (mg/kg)	Residential Threshold(mg/kg)	Industrial / Commercial Threshold (mg/kg)
	Arsenic	15-25	37 (S4UL)	640 (S4UL)
	Bioaccessible Arsenic	No data		
	Lead	100	200 (C4SL)	750 (C4SL)
	Bioaccessible Lead	60		
	Cadmium	1.8	10 (S4UL)	230 (S4UL)
	Chromium	60-90	620 (S4UL)	30,400 (S4UL)
	Nickel	15-30	130 (S4UL)	1,700 (S4UL)
BGS Estimated Urban Soil Chemistry	No data			
BGS Measured Urban Soil Chemistry	No data			

4.6 Review of Data Obtained from Geology and Ground Stability Groundsure Report

4.6.1 A geology and ground stability report has been procured from Groundsure©, which is presented in Appendix G, and is summarised hereunder.

Table 6: Summary of Data within Groundsure© Geology and Ground Stability Report

Data	Distance (m)	Comments	Significance
Faults	D72m	Zo pntm	/
Zntturmxomvutuqs	D472m	Zo pntm	
Frutbuts	D472m	Zo pntm	
durrmoq srounp worwunss	D472m	an sutq – ponps 9m L to 5Bm d – ponp 6Bm L – tqmp 6Bm to 92m d – ponp 93m to @9m L – ponp 372m ZL / tqmp 3: 3m to 3: 6m L – rqrusq tqmp 3: 4m Zi – sxupsq nqps 3: 6m dL – srounp worwunss 3: 7m L – outtunss 426m to 45@m L – worwunss1t qmp 437m to 443m dL – tqmp 1 worwunss 464m Z – srounp worwunss	botqntumxsouroqs
gnpqrsrounp worwunss	D472m	Zo pntm	

5 HYDROLOGY AND HYDROGEOLOGY

5.1.1 The geological succession underlying the site may be regarded as a series of discrete units in terms of their hydrogeological significance, as illustrated hereunder:

Table 7: Hydrogeological Interpretation

UNIT	PROPERTIES	AQUIFER TYPE	FLOW TYPE	PERMEABILITY
Wmpq Orounp	Tuwqxy to nq sqnqrmxy srmmuxmr mnp pqrmqmmxq mmp wuxpqrmut vqrtuomxmmp xntqrmxtrmmsmussuon or srounpwmtqr0i t qrq unpqrxmun ny mn mquuoxupq pqrot qp srounpwmtqr mmy nq prqsqnt un pqprqssuons mt tt q untqrmmoq0	Z1E	Z1E	Z1E
eupmx Nomtt Hqposuts	et us oxmssuruomtuon t ms nqqn mssusnqp un omsqs wt qrq ut t ms not nqqn possunxq to mttrunutq qutt qr omtqs ory E or F to mroowtypq0 Sh most omsqs. tt us mqmms tt mt tt q xmyqr un quqstuon t ms prqvuousxy nqqn pqsusnmtqp ms nott munor mmp non/mquurqr un purrqrqnt xoomtuons puq to tt q vmrummxq ot mrmotqrustuos or tt q roowtypq0	dqoonpmry gnpurrqrqntumtqp	Shtqrsrmmuxmr	hqry xow to mopqrmtq

dmdpopkdq	et qoq mmq xmuqno kr nkow kn pnurp pql koupo pt mp t mrq t ust udpqns mmdkxmm mdp1kn mmopk nq l qni qmmuxpu / i qmduds pt qu kokmxu l nkr upq m t ust xqr qx kr s mpqn opk mms q0 et qu i mu okl l kmp s mpqn okl l xu mdp1kn nur qn nmoq nks kd mopmmpqs uo oomxq0 Sd i kop omoqo**B**l nudoul mx mmkurqno mmq mmkurqno l nqr ukkoxu pqous dmpqp mo i mvkn mmkurqno0	bnudoul mx	Sdpqns mmdkxmm	r ust

5.2 Assessment of Vulnerability of Surface Water Receptors

5.2.1 The sensitivity of both the surface water receptors and the underlying groundwater in both the drift deposits and bedrock has been assessed in line with the methodology in Appendix C based on the information presented below. Where the risk is regarded as low or very low the receptor will not be regarded as a credible receptor and will not be assessed further.

Table 8: Assessment of Vulnerability of Surface Water Receptors

INFORMATION	Surface Water	Superficial Soils	Bedrock
Aquifer Status of Geology:	N/A	Secondary Undifferentiated	Principal
Groundwater Vulnerability	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Mixed
Groundwater Vulnerability Summary:	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquife		
Groundwater Vulnerability (soluble rock risk):	N/A	No data	No data
Groundwater Vulnerability-Local Information:	N/A	No data	No data
Groundwater Abstractions (<1,000m) (Only Current Abstractions Are Listed):	N/A	325m SE – process water, general cooling 331m SE – process water, general cooling 391m SE – process water, general cooling	
Surface Water Abstractions (<500m) (Only Current Abstractions Are Listed):	None	N/A	
Potable Abstractions (<2,000m) (Only Current Abstractions Are Listed):	N/A	None	
Source Protection Zones:	N/A	No – none within 450m	
Source Protection Zones (Confined Aquifer):	No data		
Surface Water Bodies (<100m):	None	N/A	
Surface Water Features (<250m):	Ditton Brook – 182m NE	N/A	
Depth of drift cover	Likely to be a minimum of 18m based on closest boreholes		
Sensitivity of Surface Water / Groundwater:	L2 – very low	L2 – very low	L1 - low

6 DATA OBTAINED FROM REGULATORY BODIES AND OTHERS

6.1 Data From Groundsure

6.1.1 An Environmental Data Report was procured from Groundsure©. Groundsure© reports contain a broad spectrum of environmental data collated from many sources, including the Environment Agency and the relevant local authority. The report is contained in Appendix G.

6.1.2 Relevant data on potentially contaminative land uses within the report, covering an area within a radius of 50m (250m for landfill and other waste sites) from the site is summarised hereunder:

Table 9: Summary of Groundsure© Environmental Data Report

Data	Distance	B5mm/cfe	,3Lc3DL-cL/
Historical Land Uses (Industrial, tanks, energy features, petrol stations, garages)	On Site	Commercial/industrial Scrap metal yard Railway sidings Electricity substation DUnUca	Kkpajpéuhokqnwao
	94.i	0i C wskngo /5i C wsUnadkqoa 22i I wlqi lejcopUpekj 28i C)daUl	Kkpajpéuhokqnwao
EeopknaWUhi ehepUnuhUjd	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
9Wper akn LaWajpGUjdbdlh	Lj Oepa	Ikdlupu	)
	904.i	Ikdlupu	)
GUjdbdlho "deopknaWUhbnki :DO-C9-G9(ILR(L,O,iUlo(	Lj Oepa	Tao	Kkpajpéuhokqnwa
	904.i	5.i C 68i IC /61i C /66i IC 0.2i C 10.i OC	Kkpajpéuhokqnwao
EeopknaWUhUjd GaWajoad RUopa Oepao	Lj Oepa	OWuUluUnd	Kkpajpéuhokqnwa
	94.i	Ikdlupu	)
RUopa Ctai lpekjo	Lj Oepa	Ikdlupu	)
	94.i	/1i I RCS/.6656wQoakb sUopaejWkjopmqWpekj	Kkpajpéuhokqnwa
LaWajpFjdqopnéUhGUjd Qoao	Lj Oepa	PadeWa dena Ujd majpUh	Kkpajpéuhokqnwa
	94.i	4i Owalaawpnewpu oqWwpUpekj 22i I)skngo	Kkpajpéuhokqnwao
;qmmajpkn LaWajpKapnkhOpUpekjo	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
Oepao dapani ejad Uo ;kjpUl ejUpad GUjd	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
;kjpnkhkbHUfkn9WWdlajpEUvUndo ";ILH9E(	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
LacqhUpad CtlHkoera Oepao	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
EUvUndkqo OqWwpUjWa OpknUca-QoUca	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
EeopknaWUhheWajoad ejdqopnéUhUWperepeao "FK;(	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
GaWajoad Fjdqopnéuh9Wperepeao "KUnp9"/((	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
GaWajoad KkHqpUjpLahaUoa "KUnp9"0(-:(	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
LUdekUWpera OqWwpUjWa 9qpdknaeUpekjo	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
KkHqpUjpLahaUoa Nk OqnbUWa RUpamo "Lad Geop(	Lj Oepa	Ikdlupu	)
	94.i	Ikdlupu	)
KkHqpUjpLahaUoa Nk KqWWaWOeasan	Lj Oepa	Ikdlupu	)

	<50m	No data	-
List 1 Dangerous Substances	a d dupq	vk pmpm	/
	g7Li	vk pmpm	/
tuop OHmdsqnkko dknopmdoqo	a d dupq	vk pmpm	/
	g7Li	vk pmpm	/
bkxkpukd Sdoupqdpo ,nh1vci :	a d dupq	vk pmpm	/
	g7Li	vk pmpm	/
bkxkpukd udr qdpknu oknopmdoqo	a d dupq	vk pmpm	/
	g7Li	vk pmpm	/
bkxkpukd udr qdpknu s mopq pmdorqno	a d dupq	vk pmpm	/
	g7Li	vk pmpm	/
bkxkpukd udr qdpknu mmpukmopurq s mopq	a d dupq	vk pmpm	/
	g7Li	vk pmpm	/

7 PRELIMINARY CONCEPTUAL MODEL AND PRELIMINARILY RISK ASSESSMENT

7.1 Introduction

7.1.1 The findings of the desk study have been used to develop a preliminary conceptual model of the site, which identifies potential contaminant linkages. The scope of the model is intended primarily to identify potential impacts to human health and environmental receptors from potential on site and off-site contamination sources. More generalised comments may be included with respect to potential impacts to the wider ecosystem if relevant.

7.1.2 Contaminated land is defined under Section 78A(2) of the Environmental Protection Act 1990 IIA, as "Any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land that:

- Significant harm is being caused, or there is significant possibility of such harm being caused, or
- Pollution of controlled waters is being or is likely to be caused"

7.1.3 Thus land can be defined as contaminated if it is causing significant harm; or where substances in, on or under the land are polluting a controlled water, or there is a significant risk of this happening.

7.1.4 Current approaches (Guidance on 'Land contamination risk management (LCRM), Part IIA of the Environmental Protection Act 1990 and the National Planning Policy Framework) to risk assessment of contaminated land suggest the construction of a Preliminary Conceptual Model. The purpose of this model is to define all possible complete contaminant linkages, where the requisite source – pathway – target elements are present, and these elements being defined as:

- a contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor

- a pathway is the means by or through which a contaminant comes into contact with, or otherwise affects, the receptor
- a receptor (target) is an entity (human being, aquatic environment, flora and fauna etc.) that is vulnerable to the adverse effects of the contaminant

7.1.5 This relationship is termed a "contaminant linkage". It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, i.e.

- if there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- if there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

7.1.6 The information collated in the desk study was assessed hereunder to determine the potential contaminant linkage(s) existing on this site, and the likelihood of the linkage being present, allowing the construction of a preliminary conceptual model, as discussed hereunder.