Appendix D2
Geo Insight Report

emapsite

Building A2 (Office 1052) Cody Technology Park, Old Ively Road,
Farnborough, GU14 0LX

Groundsure Reference:	EMS-546959_736023
Your Reference:	EMS_546959_736023
Report Date	Jun 3, 2019
Report Delivery Method:	Email - pdf

Geo Insight

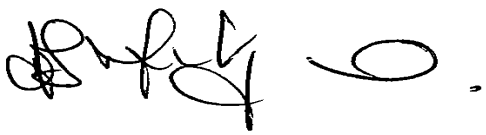
Address: South Tees Development

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**South Tees Development**
Date:	**Jun 3, 2019**
Reference:	**EMS-546959_736023**
Client:	**emapsite**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	07-Jan-2018
Grid Reference:	457427,524488
Site Size:	0.0000ha

Contents Page

Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	Yes
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	No
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	Yes
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	Yes
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	63	16	50	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	2	0	0	0	0
4.3 Current Ground Workings	0	0	0	1	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	2	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

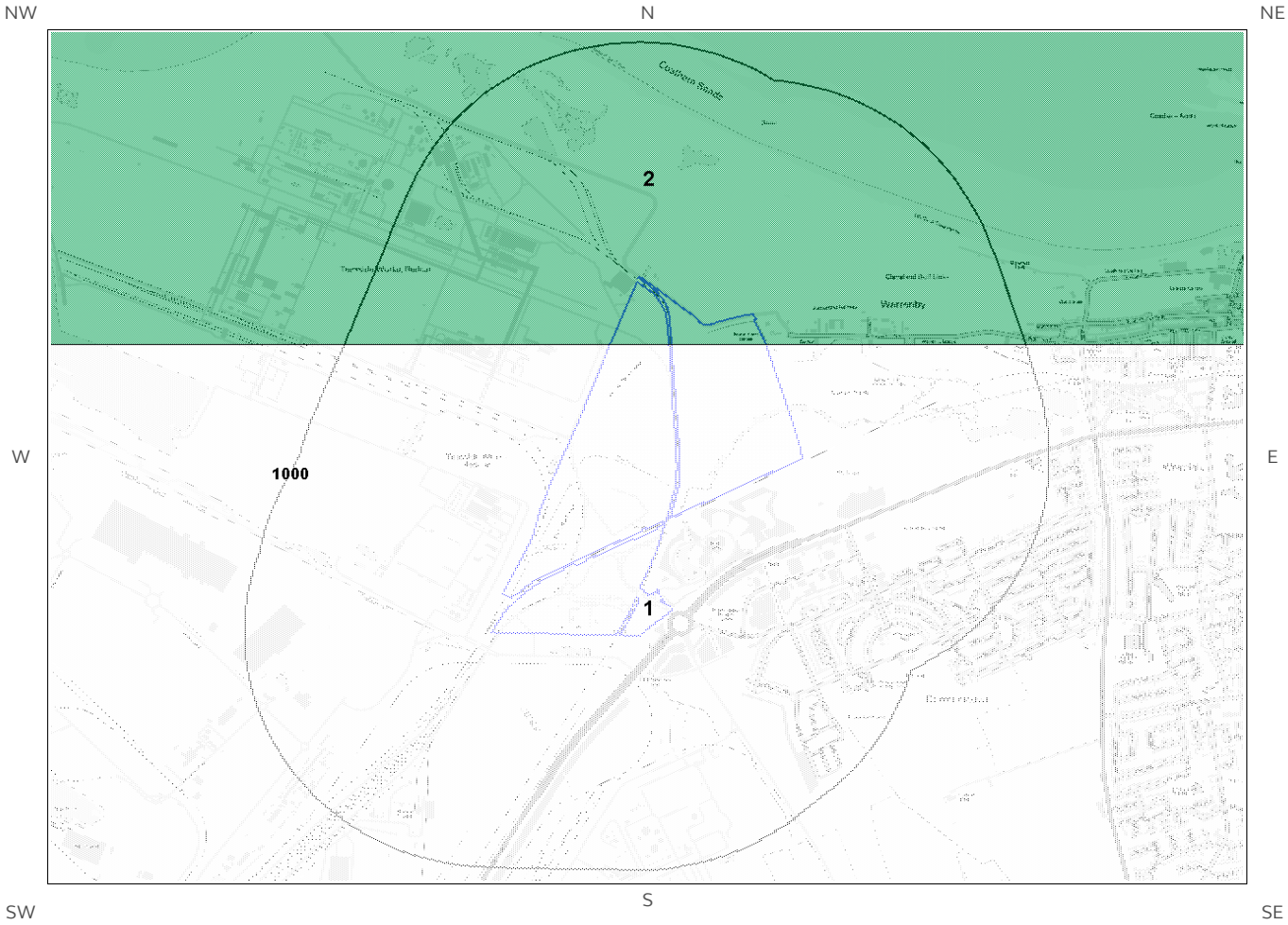
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Low
6.2 Landslides	Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Moderate
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	High

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	13	1	26

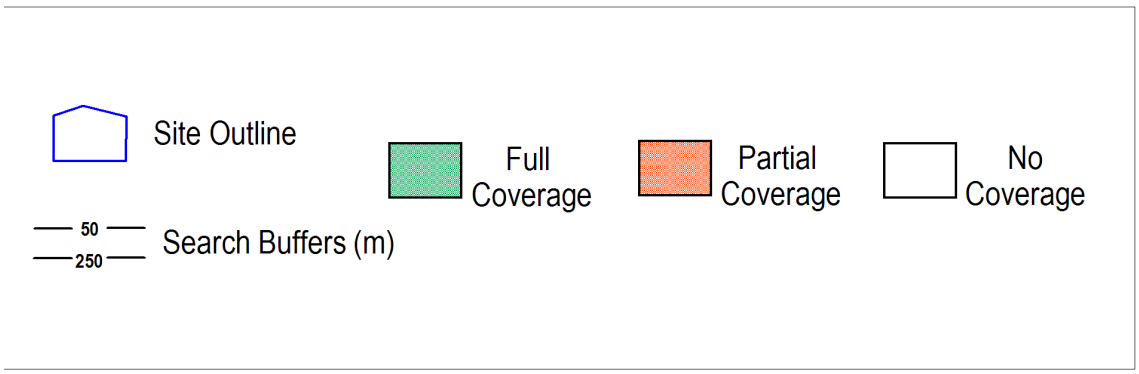
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	27	3	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	1	1	0	Not Searched
9.2 Historical Railway and Tunnel Features	74	2	27	Not Searched
9.3 Historical Railways	14	2	6	Not Searched
9.4 Active Railways	34	34	50	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability



1_10,000 Availability Legend



Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage
2	0.0	Some deposits are mapped	Full	Full	No coverage
N3	1795.0	Some deposits are mapped	Full	Full	No coverage

Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)

Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2 Superficial Deposits and Landslips map (1:10,000 scale)

Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)

Bedrock and linear features Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

Database searched and no data found at this scale.

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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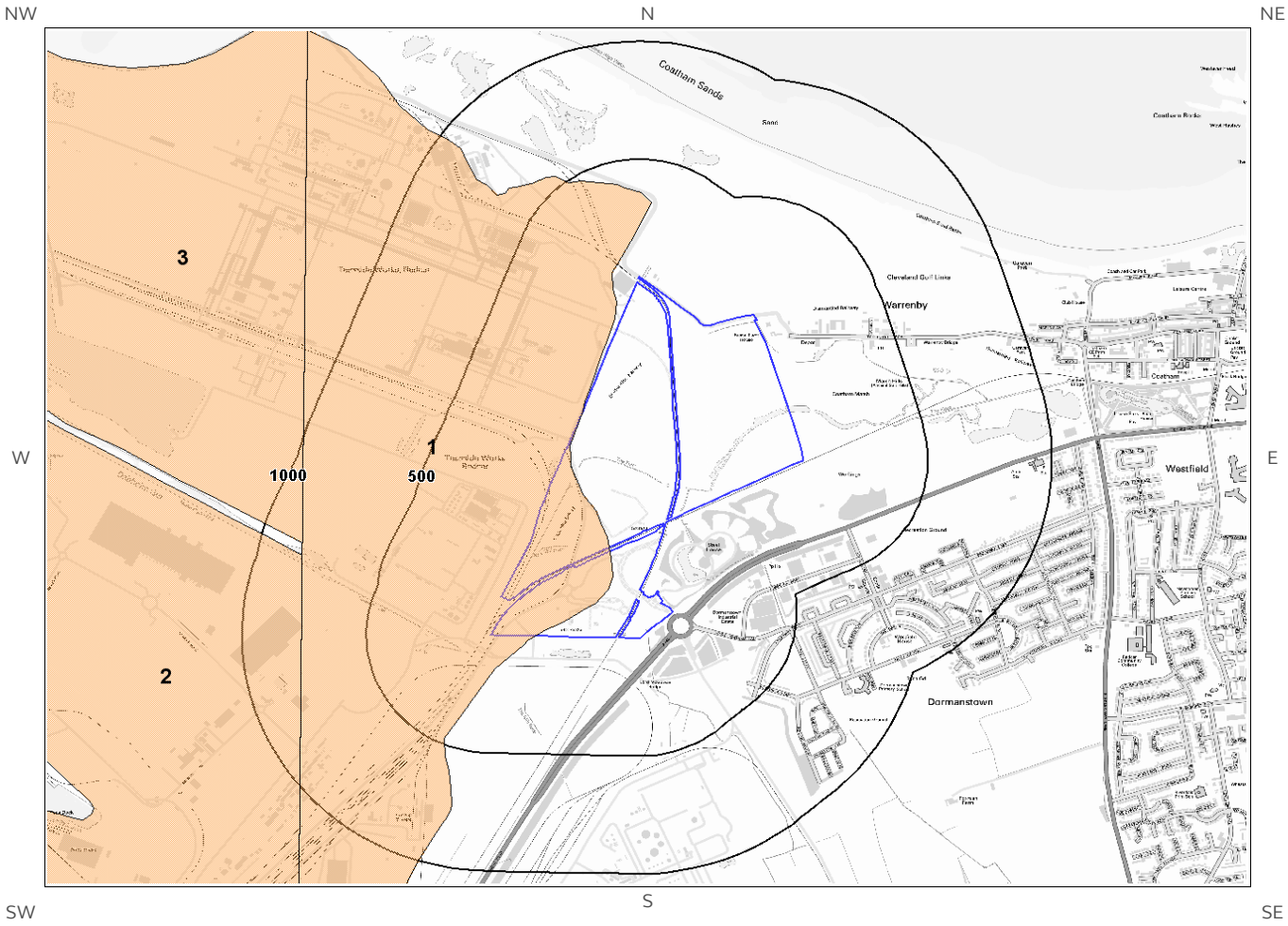
2 Geology 1:50,000 Scale

2.1 Artificial Ground map



Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 034

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

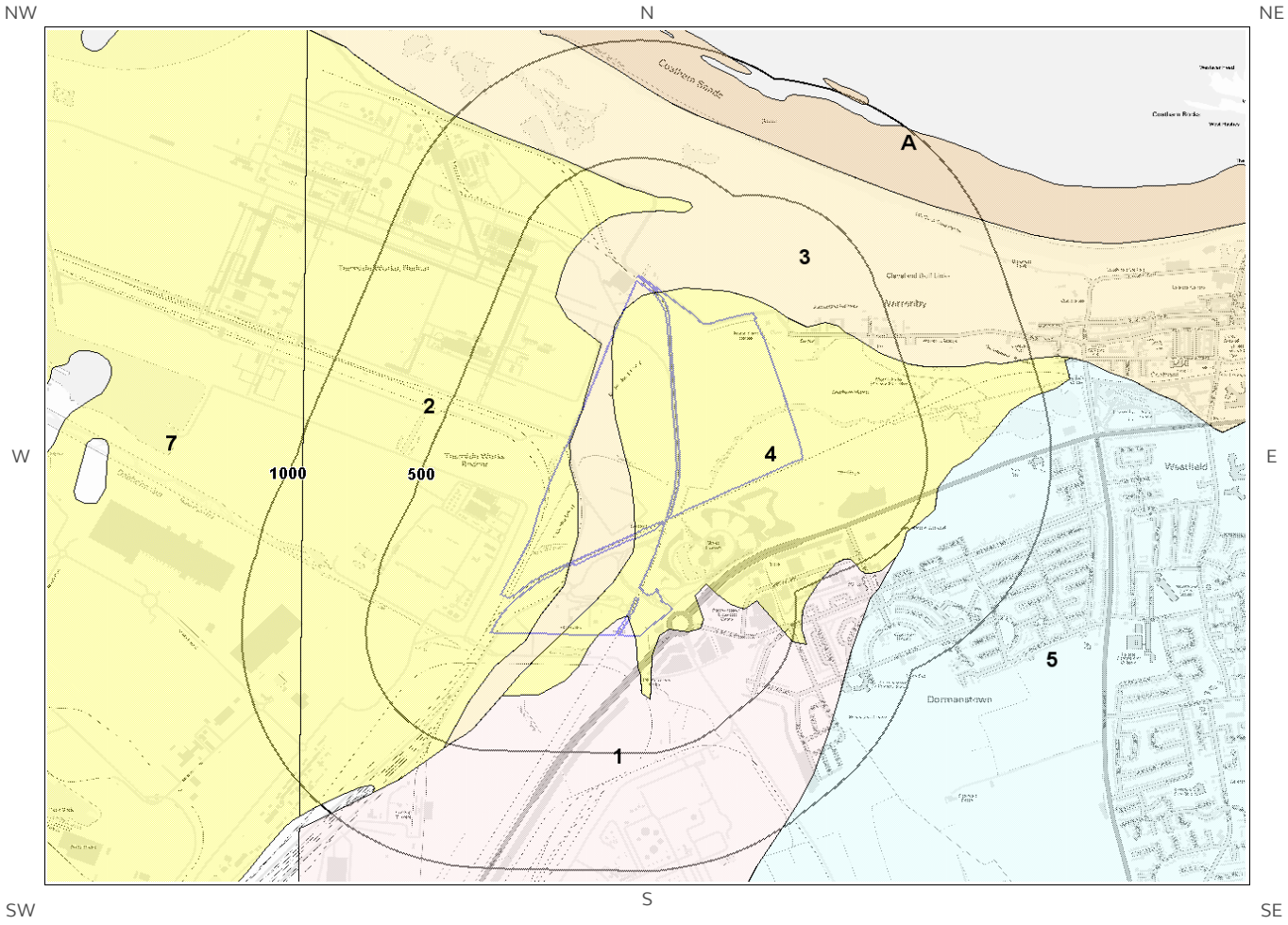
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Very High	Low
19.0	W	Mixed	Very High	Low

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	GLLDD-XCZ	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN	CLAY AND SILT
2	0.0	On Site	TFD-XSZ	TIDAL FLAT DEPOSITS	SAND AND SILT
3	0.0	On Site	BSA-S	BLOWN SAND	SAND
4	0.0	On Site	TFD-XSZ	TIDAL FLAT DEPOSITS	SAND AND SILT

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	High	High
0.0	On Site	Mixed	Low	Very Low
0.0	On Site	Intergranular	High	Moderate
0.0	On Site	Intergranular	High	Moderate
0.0	On Site	Intergranular	High	Moderate
0.0	On Site	Intergranular	High	High
35.0	W	Intergranular	High	Moderate

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

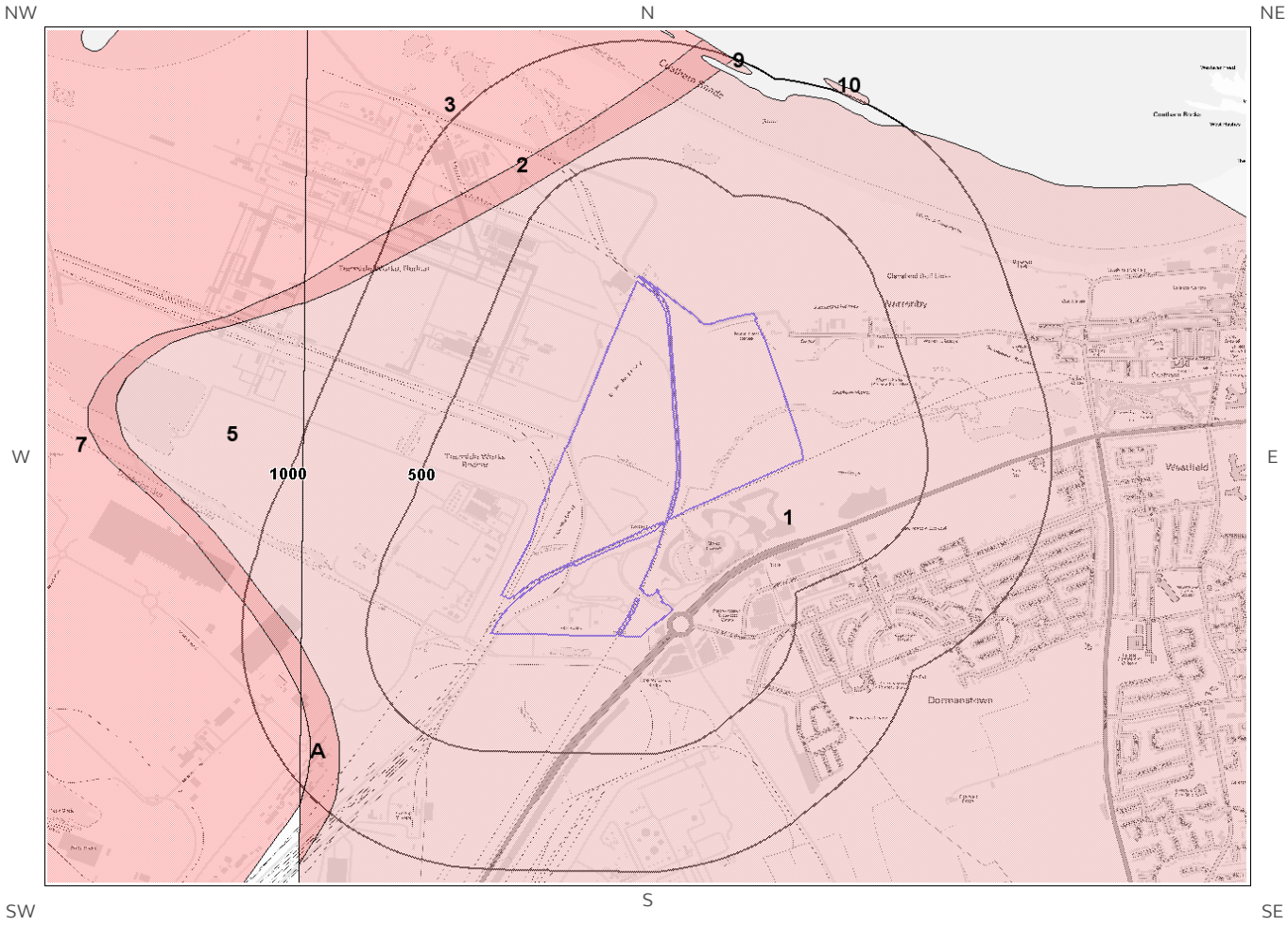
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary?	No

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)



Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 034

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	RMU-MDST	REDCAR MUDSTONE FORMATION - MUDSTONE	HETTANGIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Low	Low
0.0	On Site	Fracture	Low	Low

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

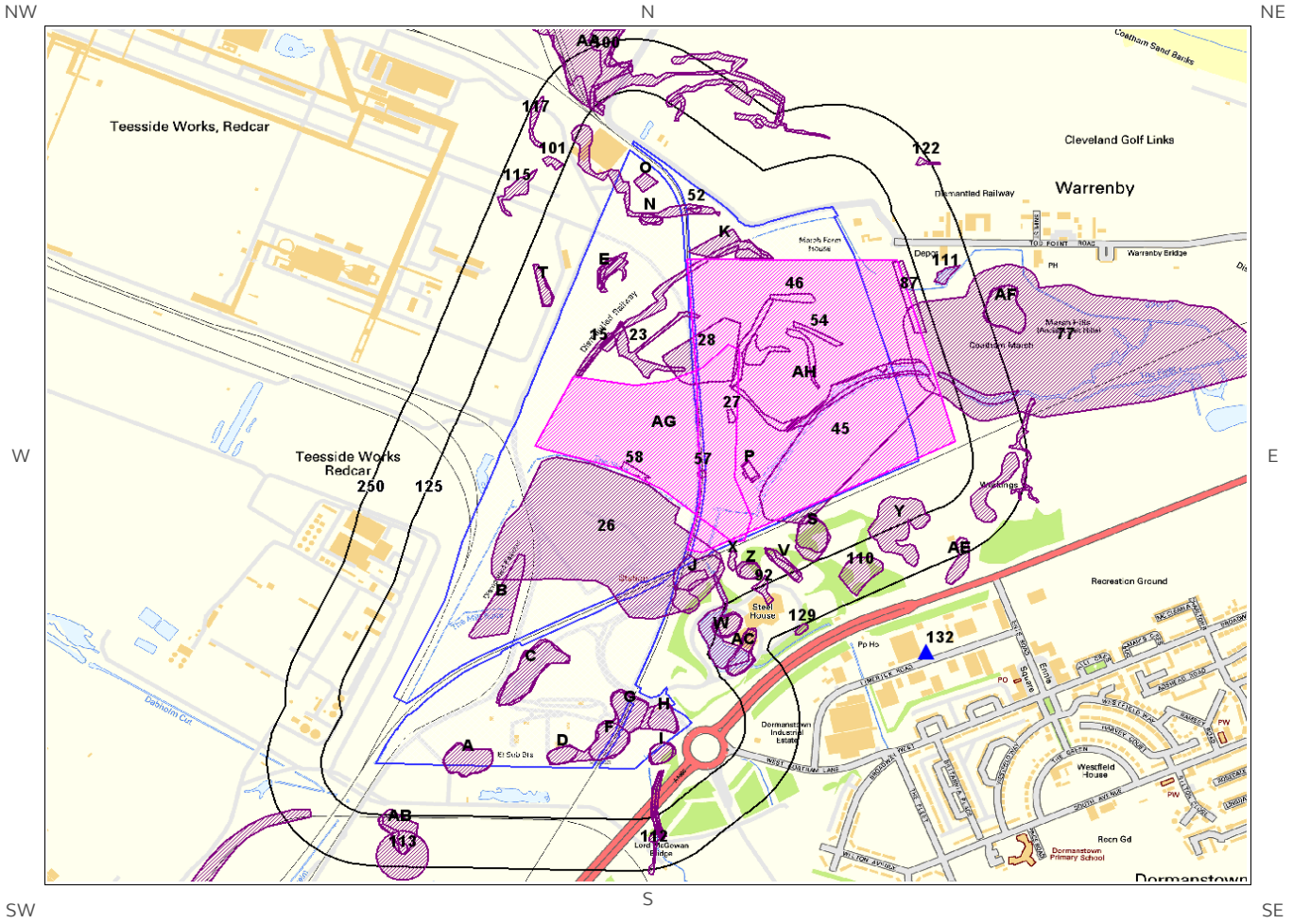
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	457010 523779	Unspecified Heap	1927
2A	0.0	On Site	457010 523779	Unspecified Heap	1893
3A	0.0	On Site	457010 523779	Unspecified Heap	1913
4A	0.0	On Site	457010 523778	Unspecified Heap	1952
5B	0.0	On Site	457075 524177	Unspecified Pit	1983
6B	0.0	On Site	457075 524177	Unspecified Pit	1991
7C	0.0	On Site	457161 523992	Unspecified Ground Workings	1952
8C	0.0	On Site	457162 523989	Unspecified Heap	1893
9C	0.0	On Site	457162 523989	Unspecified Heap	1927
10C	0.0	On Site	457162 523989	Unspecified Heap	1913
11D	0.0	On Site	457229 523788	Unspecified Heap	1927
12D	0.0	On Site	457229 523788	Unspecified Heap	1893
13D	0.0	On Site	457229 523788	Unspecified Heap	1913
14E	0.0	On Site	457317 524962	Unspecified Ground Workings	1952
15	0.0	On Site	457314 524782	Ponds	1913
16E	0.0	On Site	457345 524980	Unspecified Ground Workings	1927
17E	0.0	On Site	457330 524968	Sand Pit	1913
18F	0.0	On Site	457334 523824	Unspecified Heap	1927
19F	0.0	On Site	457334 523824	Unspecified Heap	1913
20F	0.0	On Site	457334 523824	Unspecified Heap	1893
21G	0.0	On Site	457384 523894	Unspecified Heap	1893

ID	Distance (m)	Direction	NGR	Use	Date
22F	0.0	On Site	457355 523858	Unspecified Heaps	1952
23	0.0	On Site	457321 524791	Ponds	1893
24	0.0	On Site	457440 524889	Refuse Heap	1952
25M	0.0	On Site	457288 525216	Unspecified Ground Workings	1927
26	0.0	On Site	457334 524320	Refuse Heap	1952
27	0.0	On Site	457619 524617	Refuse Heap	1952
28	0.0	On Site	457549 524776	Slag Brick Works	1913
29AG	0.0	On Site	457415 524549	Iron Workings	1893
30G	0.0	On Site	457384 523894	Unspecified Heap	1927
31G	0.0	On Site	457384 523894	Unspecified Heap	1913
32H	0.0	On Site	457461 523881	Unspecified Heap	1913
33H	0.0	On Site	457461 523881	Unspecified Heap	1927
34H	0.0	On Site	457461 523881	Unspecified Heap	1893
35I	0.0	On Site	457456 523793	Unspecified Heap	1913
36I	0.0	On Site	457460 523795	Unspecified Heap	1893
37J	0.0	On Site	457505 524206	Unspecified Heap	1927
38J	0.0	On Site	457505 524206	Unspecified Heap	1913
39J	0.0	On Site	457505 524206	Unspecified Heap	1893
40AH	0.0	On Site	457825 524643	Unspecified Workings	1983
41K	0.0	On Site	457611 525036	Unspecified Ground Workings	1980
42K	0.0	On Site	457633 525022	Refuse Heap	1940
43Q	0.0	On Site	457647 524795	Refuse Heap	1952
44P	0.0	On Site	457661 524486	Reservoir	1952
45	0.0	On Site	457886 524541	Refuse Heap	1952
46	0.0	On Site	457759 524906	Unspecified Heap	1952
47L	0.0	On Site	457862 524668	Pond	1983
48L	0.0	On Site	457862 524668	Pond	1991
49L	0.0	On Site	457862 524668	Pond	1974
50M	0.0	On Site	457420 525189	Reservoir	1893

ID	Distance (m)	Direction	NGR	Use	Date
51N	0.0	On Site	457432 525099	Pond	1893
52	0.0	On Site	457532 525122	Pond	1893
53R	0.0	On Site	457804 524758	Ponds	1893
54	0.0	On Site	457819 524818	Ponds	1893
55N	0.0	On Site	457434 525098	Pond	1913
56O	0.0	On Site	457420 525189	Reservoir	1913
57	0.0	On Site	457551 524477	Reservoir	1913
58	0.0	On Site	457397 524483	Pond	1913
59O	0.0	On Site	457420 525189	Reservoir	1927
60P	0.0	On Site	457664 524481	Reservoir	1927
61Q	0.0	On Site	457700 524780	Pond	1927
62R	0.0	On Site	457804 524758	Ponds	1927
63	0.0	On Site	457677 524637	Pond	1927
64J	3.0	E	457527 524216	Cuttings	1983
65J	3.0	E	457527 524216	Cuttings	1991
66S	11.0	SE	457804 524331	Unspecified Heap	1913
67S	11.0	SE	457804 524331	Unspecified Heap	1927
68S	14.0	SE	457808 524319	Unspecified Heap	1893
69X	18.0	SE	457620 524264	Pond	1974
70T	28.0	W	457182 524937	Refuse Heap	1952
71T	28.0	W	457185 524935	Refuse Heap	1927
72U	43.0	SE	457438 523669	Unspecified Ground Workings	1913
73V	45.0	SE	457738 524255	Unspecified Heap	1893
74U	45.0	SE	457442 523670	Unspecified Ground Workings	1893
75U	45.0	SE	457437 523668	Unspecified Ground Workings	1927
76V	47.0	SE	457737 524256	Unspecified Heap	1913
77	48.0	E	458426 524797	Salt Workings	1974
78W	50.0	SE	457565 524115	Ponds	1983
79W	50.0	SE	457565 524115	Pond	1991

ID	Distance (m)	Direction	NGR	Use	Date
80X	52.0	SE	457658 524241	Unspecified Heap	1952
81Y	54.0	SE	458006 524336	Unspecified Heap	1913
82Y	54.0	SE	458006 524336	Unspecified Heap	1927
83Y	54.0	SE	458006 524336	Unspecified Heap	1893
84Z	61.0	SE	457662 524239	Unspecified Heap	1927
85Z	61.0	SE	457662 524239	Unspecified Heap	1913
86Z	61.0	SE	457662 524239	Unspecified Heap	1893
87	76.0	E	458029 524908	Cuttings	1952
88AA	96.0	NW	457342 525609	Refuse Heap	1969
89AA	96.0	NW	457332 525651	Unspecified Ground Workings	1940
90	96.0	NE	457480 525381	Unspecified Ground Workings	1969
91	97.0	E	458156 524686	Pond	1991
92	105.0	SE	457690 524192	Pond	1974
93W	109.0	E	457607 524105	Unspecified Heap	1893
94W	109.0	E	457607 524105	Unspecified Heap	1927
95W	109.0	E	457607 524105	Unspecified Heap	1913
96W	111.0	E	457608 524110	Unspecified Heap	1952
97AB	112.0	S	456848 523602	Unspecified Heap	1927
98AB	112.0	S	456848 523602	Unspecified Heap	1893
99AB	112.0	S	456848 523602	Unspecified Heap	1913
100	120.0	NW	457338 525463	Unspecified Ground Workings	1927
101	128.0	W	457206 525236	Reservoirs	1969
102AB	128.0	S	456836 523595	Unspecified Ground Workings	1952
103AC	143.0	NE	457641 524042	Unspecified Heap	1952
104AC	146.0	NE	457644 524041	Unspecified Heap	1893
105AC	146.0	NE	457644 524041	Unspecified Heap	1927
106AC	146.0	NE	457644 524041	Unspecified Heap	1913
107AD	149.0	SE	458210 524443	Unspecified Heap	1913
108AD	149.0	SE	458210 524443	Unspecified Heap	1893

ID	Distance (m)	Direction	NGR	Use	Date
109AD	149.0	SE	458210 524443	Unspecified Heap	1927
110	154.0	SE	457919 524226	Unspecified Heap	1893
111	158.0	E	458117 524962	Pond	1991
112	163.0	S	457440 523549	Ponds	1893
113	164.0	S	456858 523544	Unspecified Workings	1974
114	166.0	N	457728 525401	Refuse Heap	1940
115	177.0	W	457125 525163	Sand Pit	1913
116	189.0	SW	456343 523411	Cuttings	1952
117	190.0	W	457159 525336	Refuse Heap	1940
118AE	210.0	SE	458141 524264	Unspecified Heap	1893
119AE	210.0	SE	458141 524264	Unspecified Heap	1913
120AE	210.0	SE	458141 524264	Unspecified Heap	1927
121	212.0	E	458295 524533	Pond	1952
122	219.0	NE	458060 525240	Refuse Heap	1940
123AF	239.0	E	458250 524878	Unspecified Heap	1952
124AF	239.0	E	458250 524878	Unspecified Heap	1983
125AF	239.0	E	458250 524878	Unspecified Heap	1974
126AF	241.0	E	458250 524879	Unspecified Heap	1927
127AF	241.0	E	458250 524879	Unspecified Heap	1913
128AF	241.0	E	458250 524879	Unspecified Heap	1893
129	249.0	SE	457781 524097	Ponds	1952

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
130AG	0.0	On Site	457415 524549	Iron Workings	1893
131AH	0.0	On Site	457825 524643	Unspecified Workings	1983

4.3 Current Ground Workings

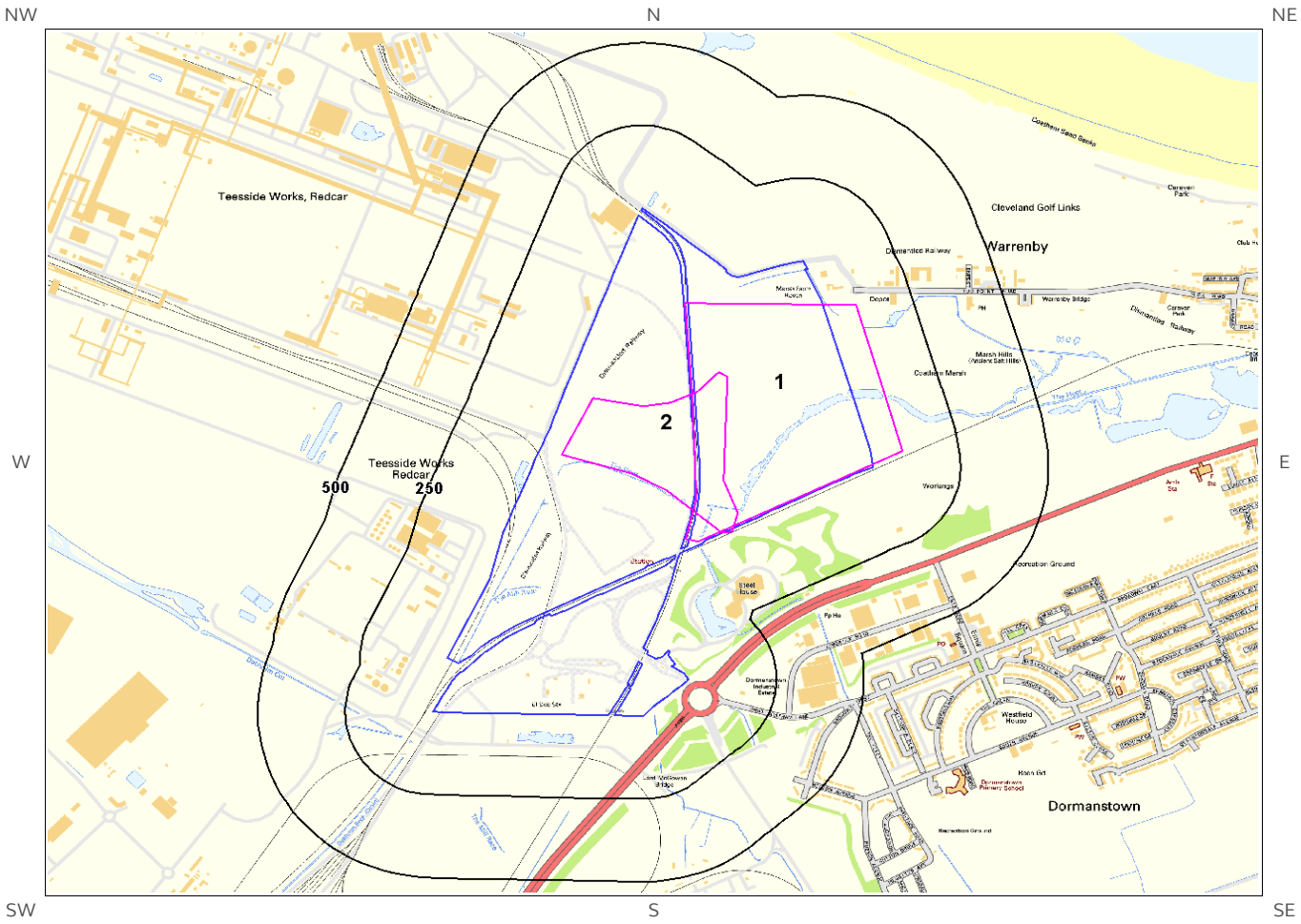
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
132	433.0	SE	458068 524042	Clay & Shale	Wiley Bridge Plantation Clay Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

Site Outline

Search Buffers (m)

250

500

Historical Mining

Non-Coal Mining Cavities

Natural Cavities (point data)

Natural Cavities (polygon data)

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
1	0.0	On Site	457825 524643	Unspecified Workings	1983
2	0.0	On Site	457415 524549	Iron Workings	1893

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

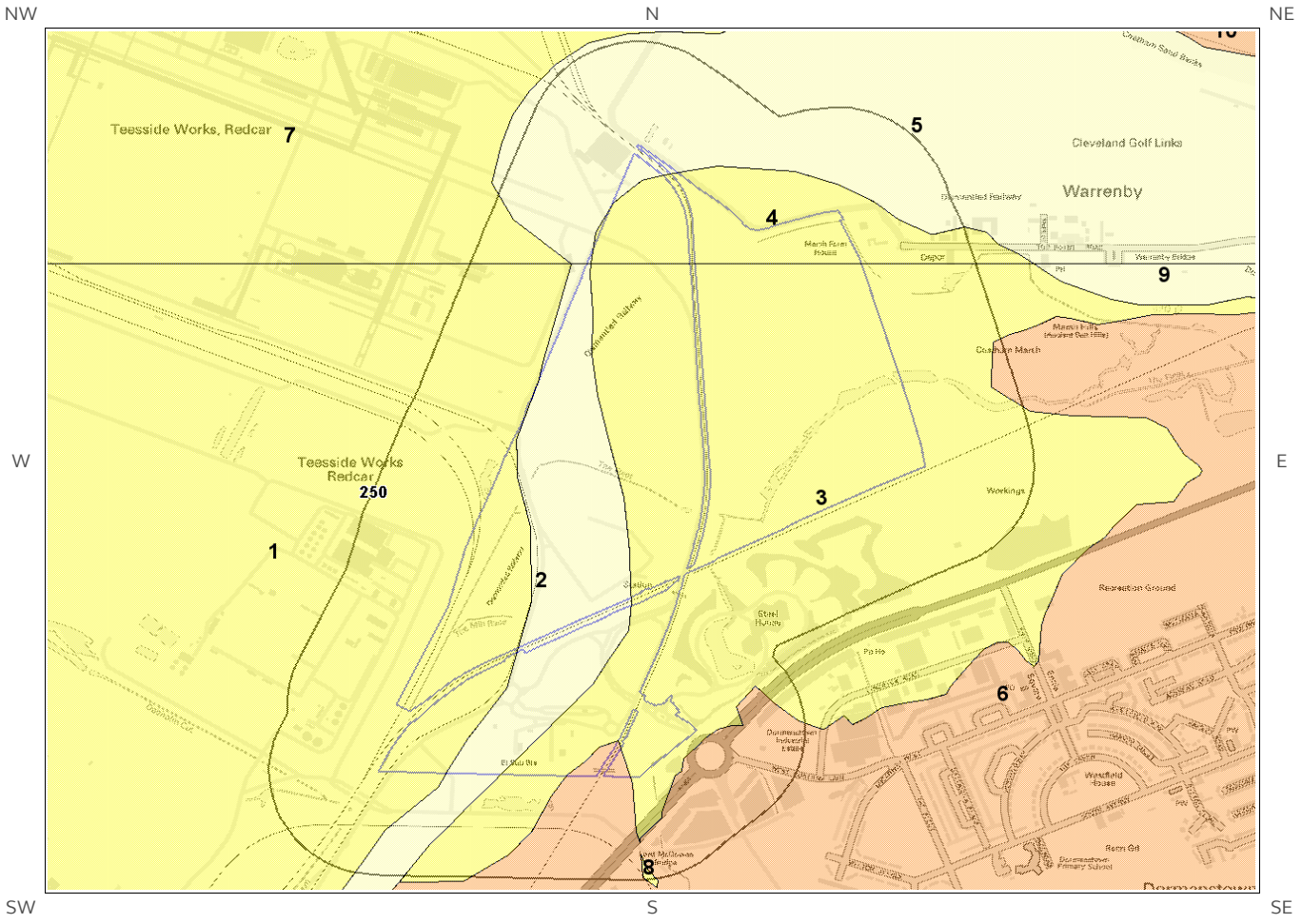
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

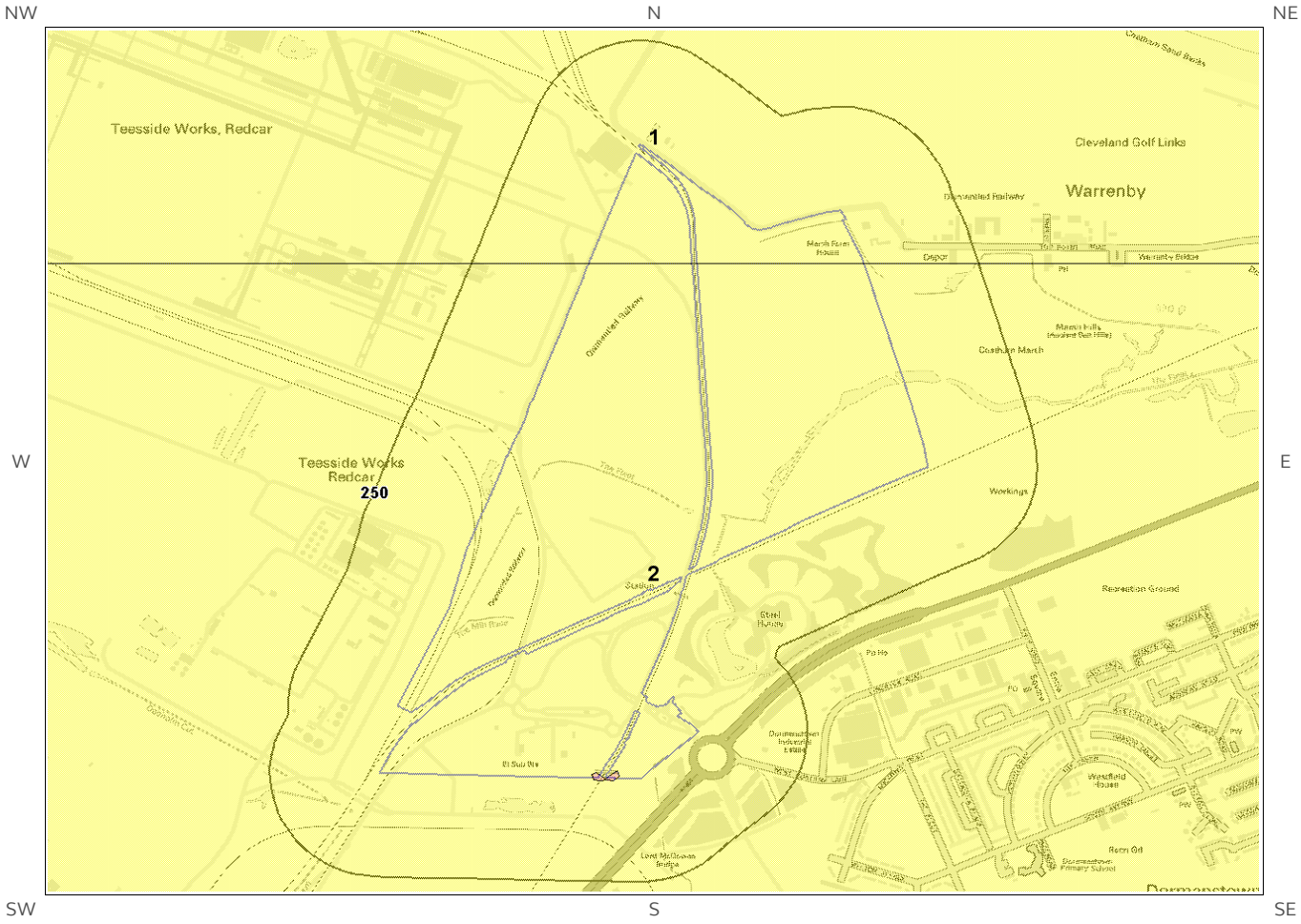
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



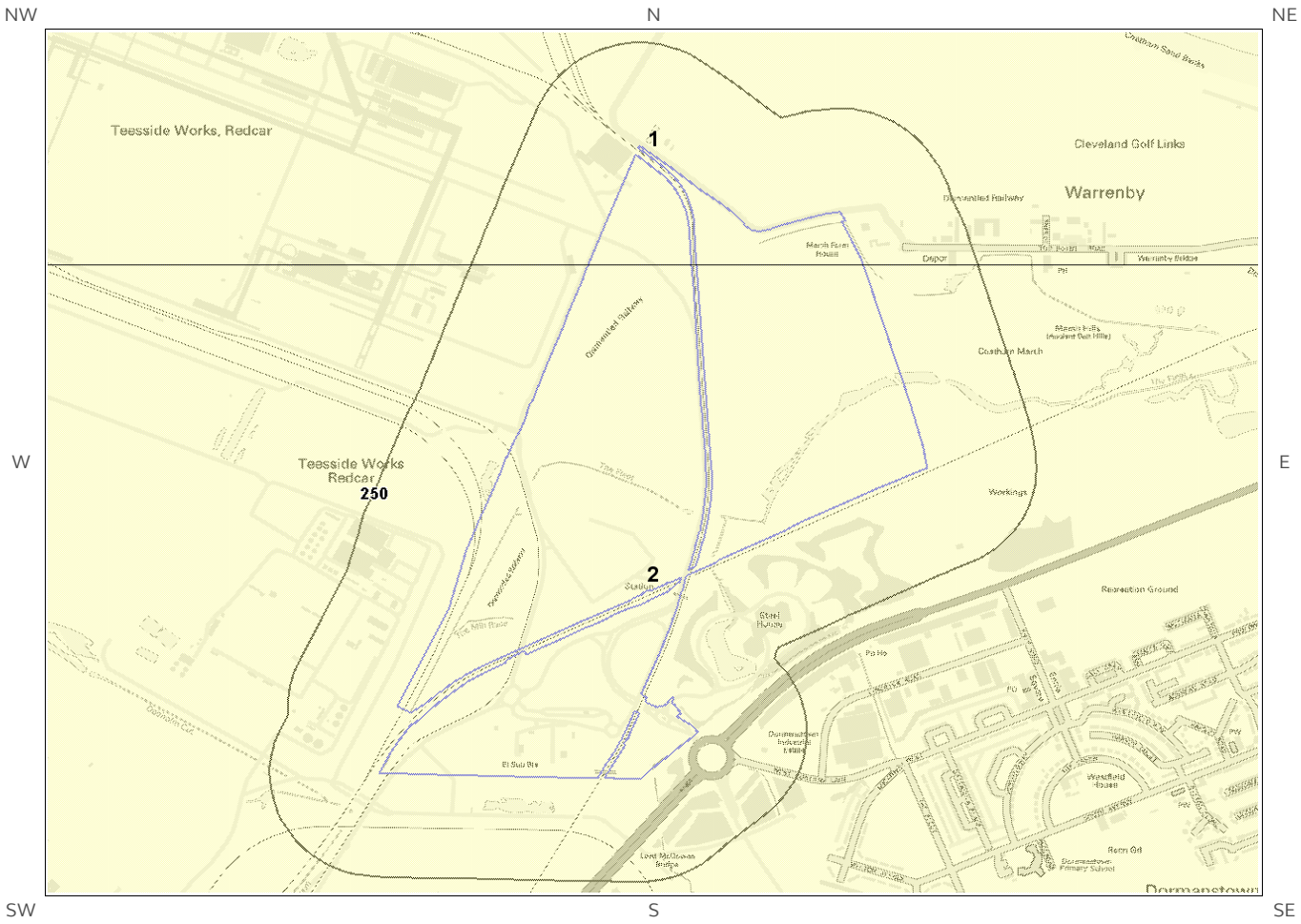
Shrink Swell Clay Legend

6.2 Landslides map



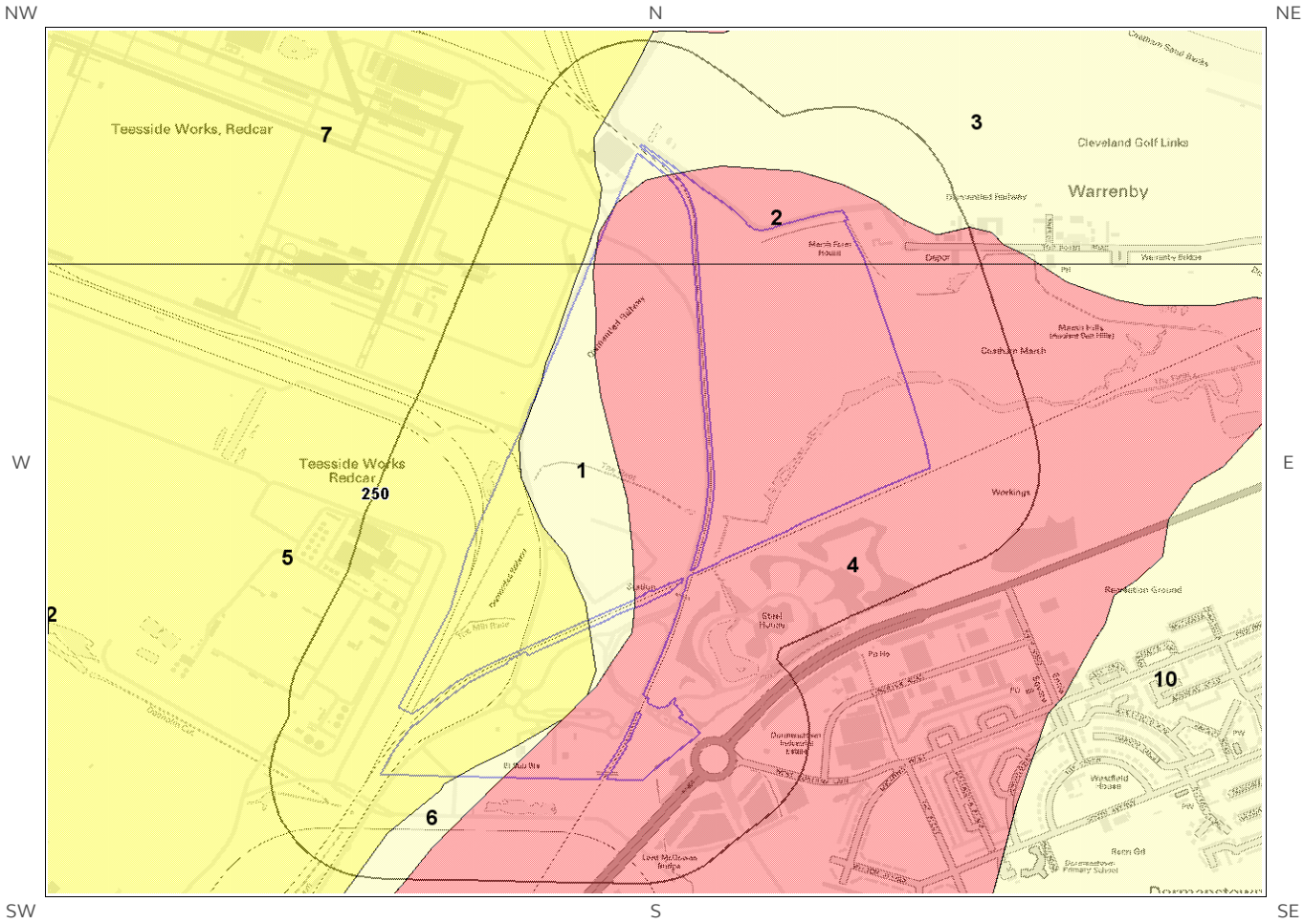
Landslides Legend

6.3 Ground Dissolution of Soluble Rocks map

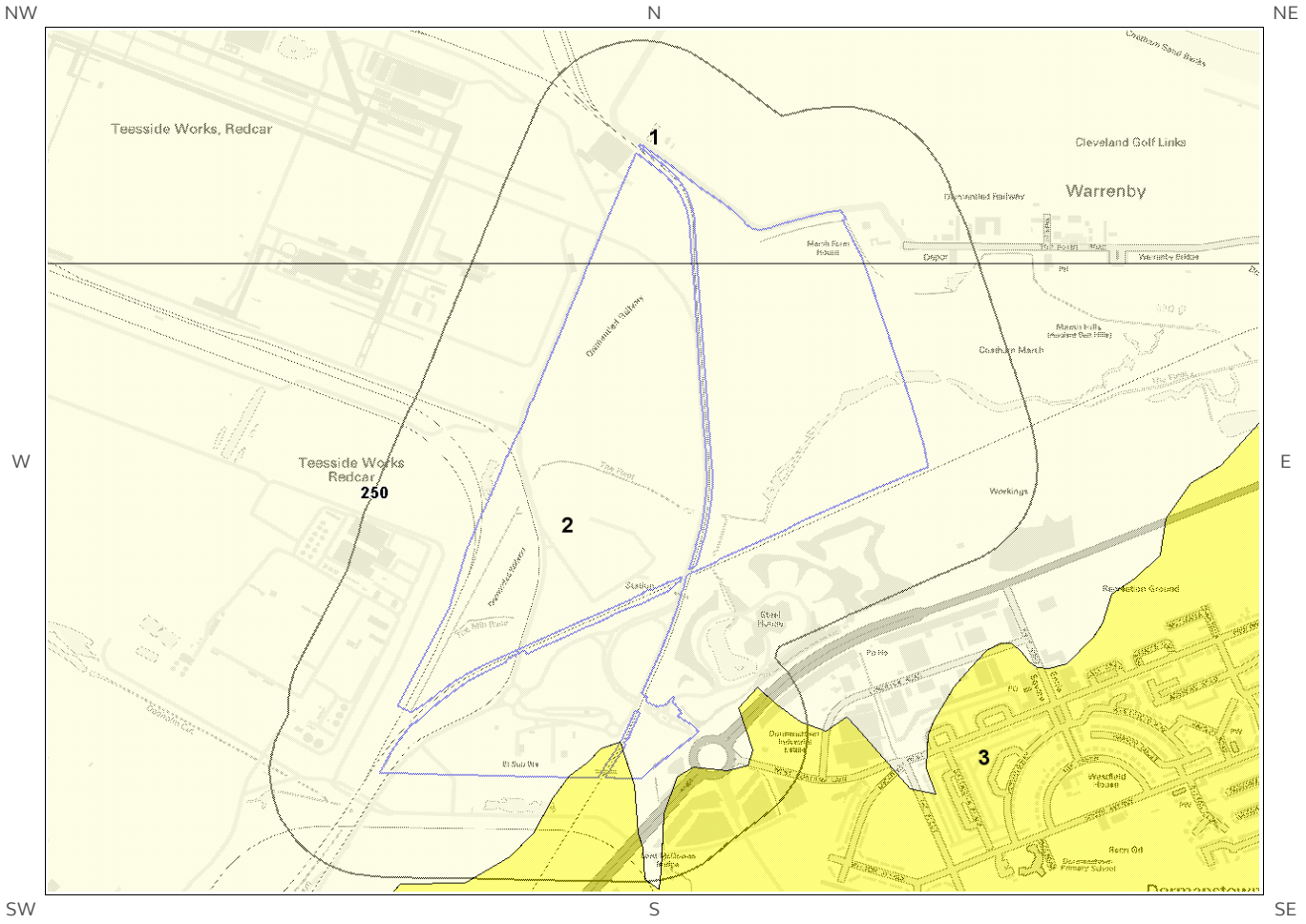


Ground Dissolution Soluble Rocks Legend

6.4 Compressible Deposits map

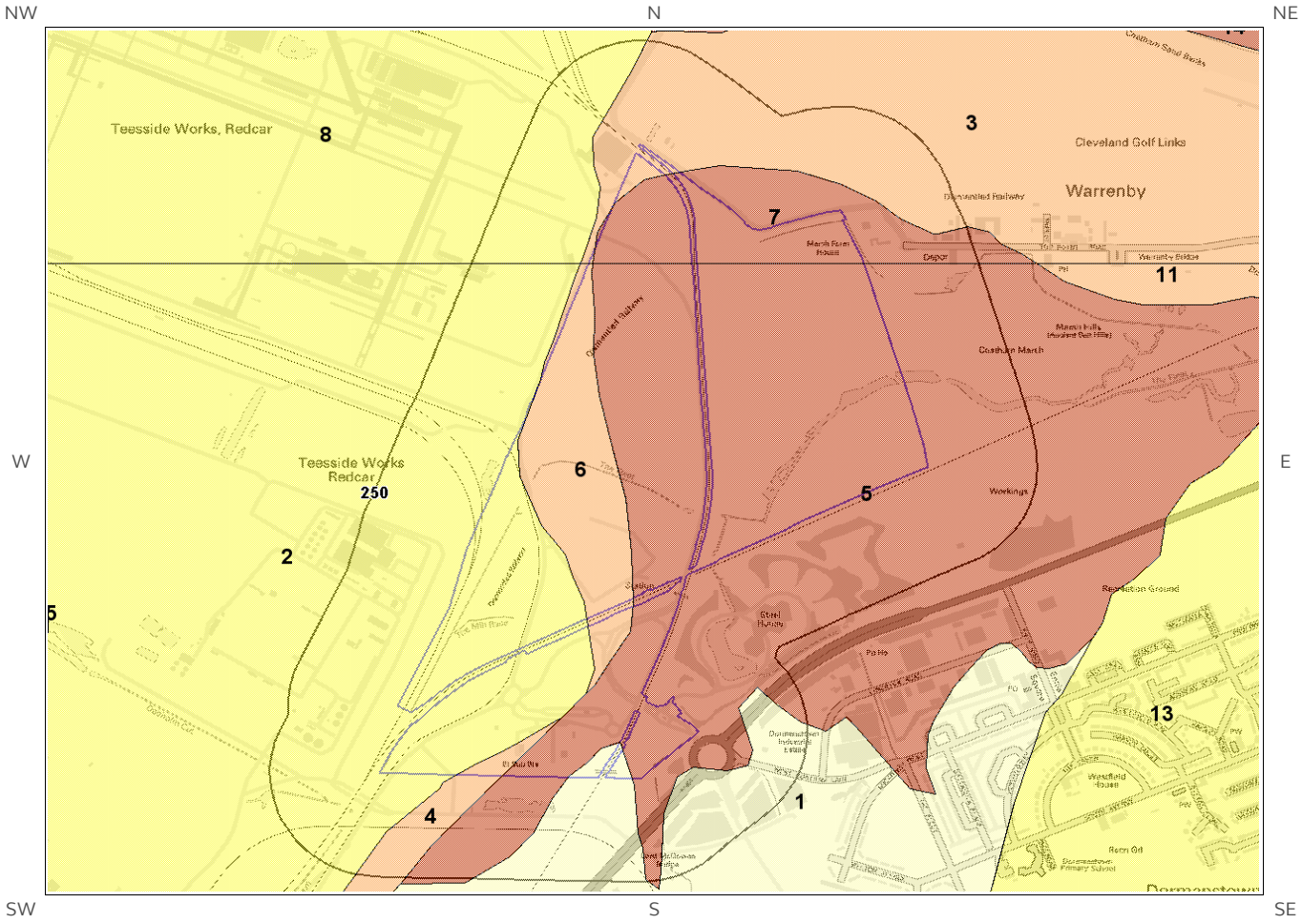


6.5 Collapsible Deposits map



Collapsible Deposits Legend

6.6 Running Sand map



Running Sand Legend

6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? High

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
2	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
3	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
4	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
5	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

* This includes an automatically generated 50m buffer zone around the site

ID	Distance (m)	Direction	Hazard Rating	Details
6	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.
7	35.0	W	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
3	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.
2	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	0.0	On Site	Moderate	Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.
3	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
4	0.0	On Site	Moderate	Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.
5	0.0	On Site	Very Low	Very low potential for compressible deposits to be present. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
6	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
7	19.0	W	Very Low	Very low potential for compressible deposits to be present. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
3	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

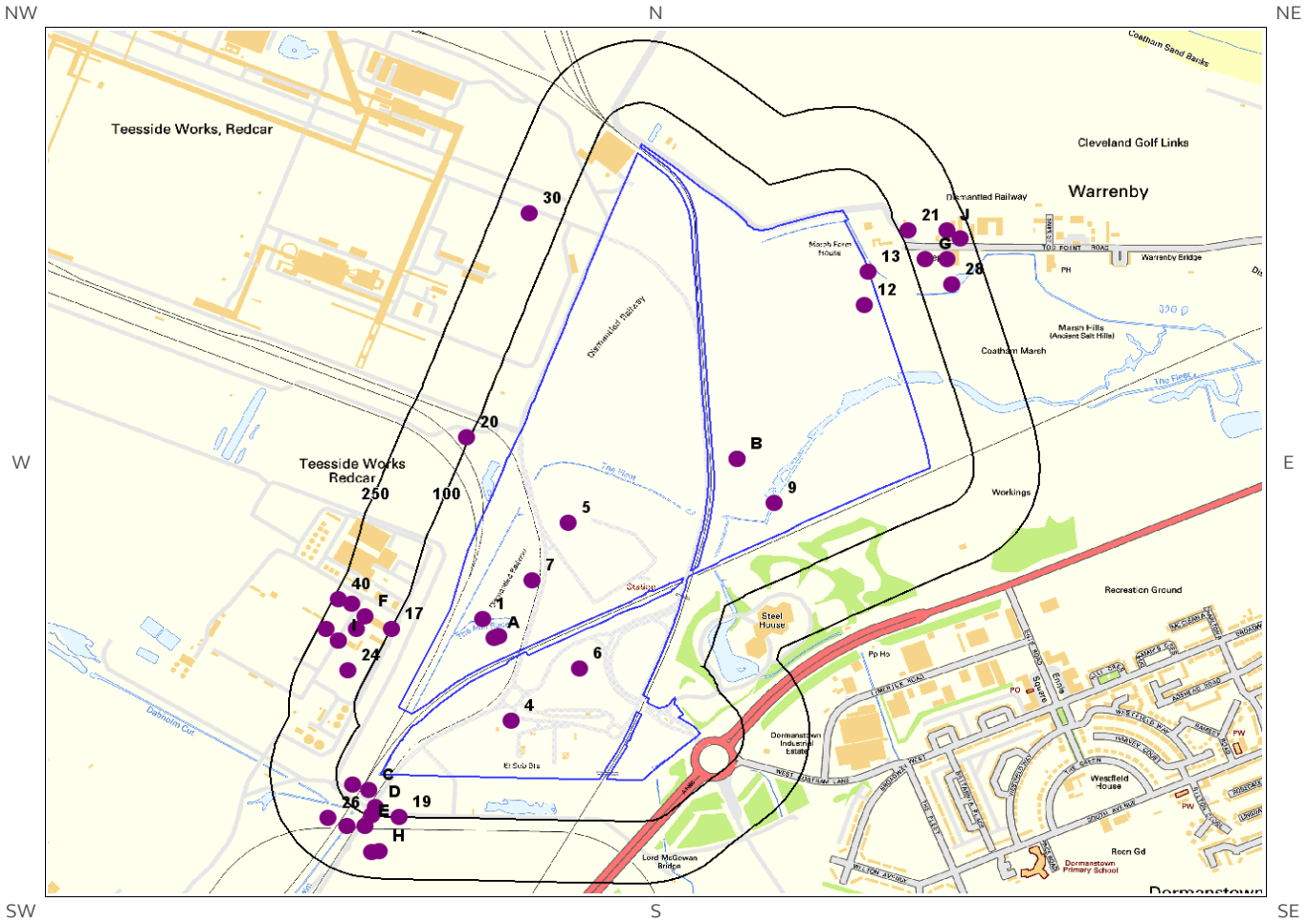
6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
3	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.
4	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.
5	0.0	On Site	High	Very significant potential for running sand problems. Avoid large amounts of water entering the ground, for example through pipe leakage or soak-always. Do not dig (deep) holes into saturated ground without technical advice. For new build - consider the consequences of soil and groundwater conditions during and after construction. Possible extra cost during construction. For existing property - possible increase in insurance risk from running sand, for instance ions due to water leakage, high rainfall events or flooding.

ID	Distance (m)	Direction	Hazard Rating	Details
6	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.
7	0.0	On Site	High	Very significant potential for running sand problems. Avoid large amounts of water entering the ground, for example through pipe leakage or soak-always. Do not dig (deep) holes into saturated ground without technical advice. For new build - consider the consequences of soil and groundwater conditions during and after construction. Possible extra cost during construction. For existing property - possible increase in insurance risk from running sand, for instance ions due to water leakage, high rainfall events or flooding.
8	19.0	W	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map



Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 40

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	457029 524142	NZ52SE4/A	Not available	LACKENBY BHS
2A	0.0	On Site	457055 524098	NZ52SE13551/12A	2	LACKENBY POWER LINE 12A
3A	0.0	On Site	457060 524099	NZ52SE13551/12	3	LACKENBY POWER LINE 12
4	0.0	On Site	457094 523898	NZ52SE100	Not available	TOO POINT 275/66KV SUBSTATION BH1
5	0.0	On Site	457224 524376	NZ52SE13551/14	12	LACKENBY POWER LINE 14
6	0.0	On Site	457249 524024	NZ52SE4/B	Not available	LACKENBY BHS
7	0.0	On Site	457141 524237	NZ52SE13551/13	12	LACKENBY POWER LINE 13
8A	0.0	On Site	457065 524101	NZ52SE13551/12B	12	LACKENBY POWER LINE 12B
9	0.0	On Site	457695 524422	NZ52SE14	Not available	REDCAR IRONWORKS BORE
10B	0.0	On Site	457610 524530	NZ52SE126	11	REDCAR IRONWORKS
11B	0.0	On Site	457610 524530	NZ52SE127	11	REDCAR IRONWORKS
12	0.0	On Site	457900 524900	NZ52SE129	Not available	REDCAR IRON FURNACES
13	0.0	On Site	457910 524980	NZ52SE156	6	LANDSCAPE MOUND CLE 31 REDCAR BH3
14C	47.0	SW	456768 523731	NZ52SE24/D	6	WEST COATHAM GRANGE BH
15C	68.0	W	456732 523745	NZ52SE24/B	8	WEST COATHAM GRANGE BH
16D	82.0	S	456784 523689	NZ52SE25/B	5	ICI CORRIDOR BRIDGES
17	100.0	NW	456820 524120	NZ52SE15872/733	Not available	BRAN SANDS TREATMENT WORKS 733
18D	101.0	S	456775 523671	NZ52SE25/C	5	ICI CORRIDOR BRIDGES
19	101.0	S	456837 523667	NZ52SE21/F	6	LACKENBY SHALLOW BH6
20	107.0	NW	456991 524582	NZ52SE51	28	REDCAR STAGE 2 3001
21	118.0	NE	458000 525080	NZ52NE136	6	TOD POINT RD, WARRENBY BH1
22E	131.0	S	456761 523644	NZ52SE25/A	5	ICI CORRIDOR BRIDGES

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23G	131.0	E	458040 525010	NZ52NE147	6	TOD POINT RD, WARRENBY BH12
24	144.0	NW	456720 524020	NZ52SE15872/P743	Not available	BRAN SANDS TREATMENT WORKS TP743
25E	148.0	SW	456718 523644	NZ52SE24/C	7	WEST COATHAM GRANGE BH
26	160.0	SW	456676 523663	NZ52SE24/A	11	WEST COATHAM GRANGE BH
27F	167.0	NW	456760 524150	NZ52SE15872/732	Not available	BRAN SANDS TREATMENT WORKS 732
28	170.0	E	458100 524950	NZ52SE155	3	LANDSCAPE MOUND CLE 31 REDCAR BH2
29F	171.0	NW	456740 524120	NZ52SE15872/P742	Not available	BRAN SANDS TREATMENT WORKS TP742
30	175.0	W	457135 525121	NZ52NE2	Not available	LIGHTING TOWER REDCAR WARLES
31G	179.0	E	458090 525010	NZ52NE146	6	TOD POINT RD, WARRENBY BH11
32H	187.0	S	456792 523583	NZ52SE21/E	7	LACKENBY SHALLOW BH5
33H	190.0	S	456776 523581	NZ52SE13551/10	12	LACKENBY POWER LINE 10
34I	194.0	NW	456700 524090	NZ52SE15872/735A	Not available	BRAN SANDS TREATMENT WORKS 735A
35I	194.0	NW	456700 524090	NZ52SE15872/735	Not available	BRAN SANDS TREATMENT WORKS 735
36J	200.0	E	458090 525080	NZ52NE138	6	TOD POINT RD, WARRENBY BH3
37F	207.0	NW	456730 524180	NZ52SE15872/730	Not available	BRAN SANDS TREATMENT WORKS 730
38J	222.0	E	458120 525060	NZ52NE139	6	TOD POINT RD, WARRENBY BH4
39I	234.0	NW	456670 524120	NZ52SE15872/P741	Not available	BRAN SANDS TREATMENT WORKS TP741
40	239.0	NW	456700 524190	NZ52SE15872/P740	Not available	BRAN SANDS TREATMENT WORKS TP740

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#2A: scans.bgs.ac.uk/sobi_scans/boreholes/796924
#3A: scans.bgs.ac.uk/sobi_scans/boreholes/796920
#5: scans.bgs.ac.uk/sobi_scans/boreholes/796922
#7: scans.bgs.ac.uk/sobi_scans/boreholes/796921
#8A: scans.bgs.ac.uk/sobi_scans/boreholes/796925
#10B: scans.bgs.ac.uk/sobi_scans/boreholes/796852
#11B: scans.bgs.ac.uk/sobi_scans/boreholes/796853
#12: scans.bgs.ac.uk/sobi_scans/boreholes/796855
#13: scans.bgs.ac.uk/sobi_scans/boreholes/12725412
#14C: scans.bgs.ac.uk/sobi_scans/boreholes/796716
#15C: scans.bgs.ac.uk/sobi_scans/boreholes/796714
#16D: scans.bgs.ac.uk/sobi_scans/boreholes/796719
#18D: scans.bgs.ac.uk/sobi_scans/boreholes/796720
#19: scans.bgs.ac.uk/sobi_scans/boreholes/796704
#20: scans.bgs.ac.uk/sobi_scans/boreholes/796776
#21: scans.bgs.ac.uk/sobi_scans/boreholes/12701995
#22E: scans.bgs.ac.uk/sobi_scans/boreholes/796718
#23G: scans.bgs.ac.uk/sobi_scans/boreholes/12702006
#25E: scans.bgs.ac.uk/sobi_scans/boreholes/796715
#26: scans.bgs.ac.uk/sobi_scans/boreholes/796713
#28: scans.bgs.ac.uk/sobi_scans/boreholes/12725411
#31G: scans.bgs.ac.uk/sobi_scans/boreholes/12702005
#32H: scans.bgs.ac.uk/sobi_scans/boreholes/796703
#33H: scans.bgs.ac.uk/sobi_scans/boreholes/796919
#36J: scans.bgs.ac.uk/sobi_scans/boreholes/12701997
#38J: scans.bgs.ac.uk/sobi_scans/boreholes/12701998

8 Estimated Background Soil Chemistry

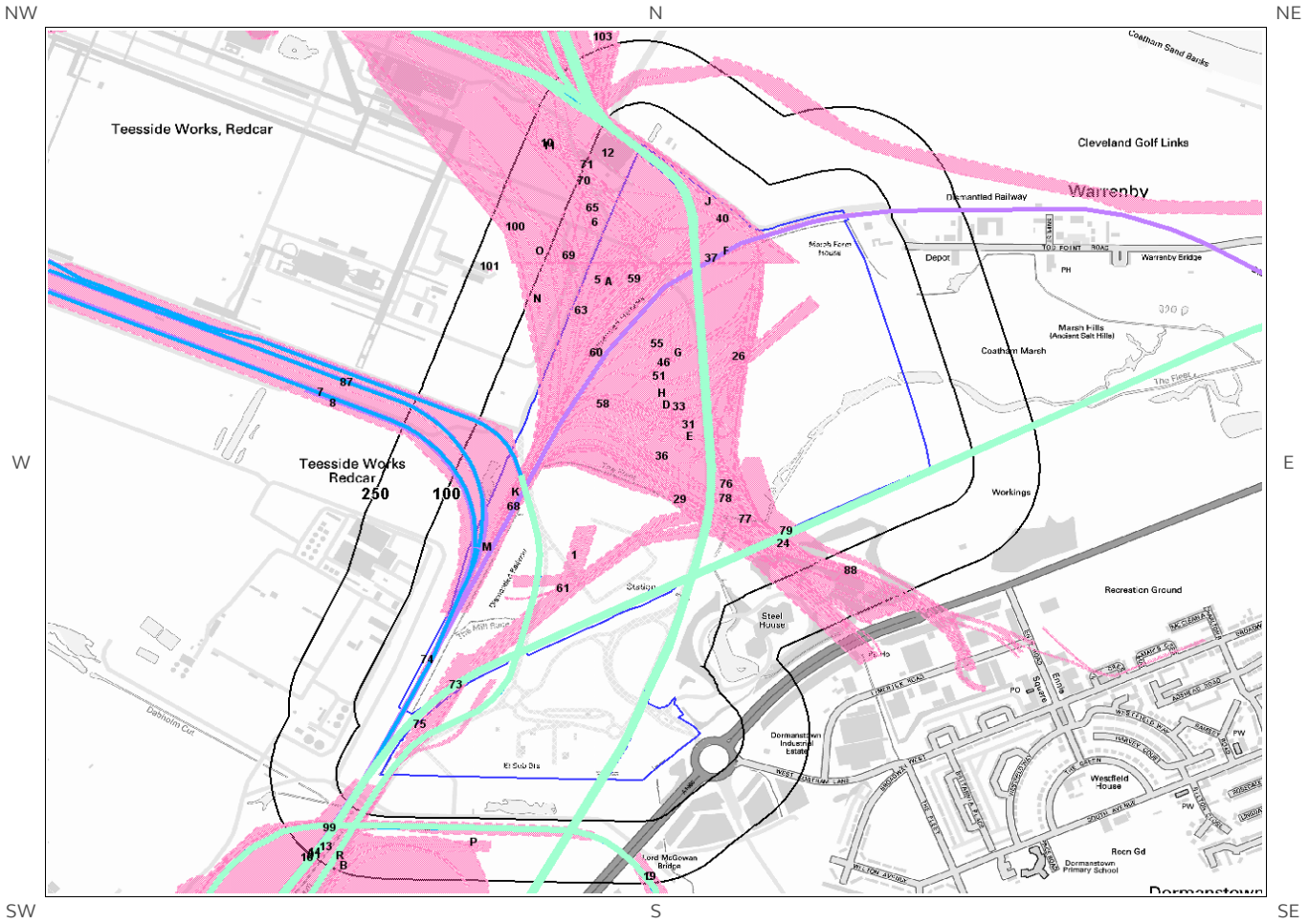
Records of background estimated soil chemistry within 250m of the study site boundary: 30

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
12.0	NE	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
35.0	W	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
35.0	W	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

- Site Outline
- Search Buffers (m) — 250 — 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? Yes

Have any other railway tunnels been identified within 250m of the site boundary? Yes

Distance (m)	Direction	Detail
0	On Site	Railway Tunnel
3	SE	Railway Tunnel

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? Yes

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1	0	On Site	457520 524404	Railway Sidings	1974
2D	0	On Site	457604 524573	Railway Sidings	1952
3A	0	On Site	457293 524892	Tramway Sidings	1893

ID	Distance (m)	Direction	NGR	Details	Date
4A	0	On Site	457300 524900	Railway Sidings	1927
5	0	On Site	457318 524931	Railway Sidings	1974
6	0	On Site	457314 524977	Tramway Sidings	1913
7	0	On Site	456636 524737	Railway Sidings	1991
8	0	On Site	456636 524737	Railway Sidings	1983
9E	0	On Site	457509 524480	Tramway Sidings	1913
10	0	On Site	455177 525710	Railway Sidings	1969
11	0	On Site	457075 525498	Railway Sidings	1940
12	0	On Site	457255 525394	Railway Sidings	1980
22	0	On Site	457472 524502	Railway Sidings	1929
23	0	On Site	457466 524486	Railway Sidings	1914
24	0	On Site	457704 524316	Railway Sidings	1952
25	0	On Site	457564 524750	Railway Sidings	1953
26	0	On Site	457615 524768	Railway Sidings	1973
27	0	On Site	457598 525035	Railway Sidings	1914
28D	0	On Site	457524 524566	Railway Sidings	1954
29	0	On Site	457478 524425	Railway Sidings	1973
30E	0	On Site	457495 524583	Railway Sidings	1952
31	0	On Site	457498 524606	Railway Sidings	1952
32	0	On Site	457431 524376	Railway Sidings	1952
33	0	On Site	457479 524648	Railway Sidings	1952
34F	0	On Site	457586 525023	Railway Sidings	1952
35F	0	On Site	457585 525023	Railway Sidings	1952
36	0	On Site	457440 524529	Railway Sidings	1952
37	0	On Site	457598 525035	Railway Sidings	1929
38D	0	On Site	457430 524655	Railway Sidings	1952
39G	0	On Site	457477 524779	Railway Sidings	1952
40	0	On Site	457578 525101	Railway Sidings	1983
41G	0	On Site	457473 524802	Railway Sidings	1952

ID	Distance (m)	Direction	NGR	Details	Date
42H	0	On Site	457438 524681	Railway Sidings	1915
43H	0	On Site	457433 524659	Railway Sidings	1929
44H	0	On Site	457432 524662	Railway Sidings	1894
45D	0	On Site	457421 524654	Railway Sidings	1915
46	0	On Site	457442 524755	Railway Sidings	1915
47I	0	On Site	457470 525040	Railway Sidings	1929
48I	0	On Site	457503 525051	Railway Sidings	1894
49I	0	On Site	457521 525051	Railway Sidings	1952
50J	0	On Site	457555 525138	Railway Sidings	1973
51	0	On Site	457415 524720	Railway Sidings	1952
52I	0	On Site	457484 525052	Railway Sidings	1914
53J	0	On Site	457555 525138	Railway Sidings	1952
54I	0	On Site	457501 525037	Railway Sidings	1952
55	0	On Site	457424 524801	Railway Sidings	1894
56I	0	On Site	457512 525081	Railway Sidings	1983
57	0	On Site	457306 524276	Railway Sidings	1952
58	0	On Site	457304 524655	Railway Sidings	1952
59	0	On Site	457380 524959	Railway Sidings	1973
60	0	On Site	457312 524750	Railway Sidings	1952
61	0	On Site	457203 524193	Railway Sidings	1973
62	0	On Site	457132 524490	Tramway Sidings	1915
63	0	On Site	457220 524750	Railway Sidings	1973
64	0	On Site	457260 524866	Tramway Sidings	1894
65	0	On Site	457312 525121	Tramway Sidings	1915
66K	0	On Site	457101 524432	Railway Sidings	1973
67K	0	On Site	457104 524444	Railway Sidings	1952
68	0	On Site	457099 524403	Railway Sidings	1952
69	0	On Site	457233 524933	Railway Sidings	1929
70	0	On Site	457250 525250	Railway Sidings	1952

ID	Distance (m)	Direction	NGR	Details	Date
71	0	On Site	457169 525420	Railway Sidings	1952
72M	0	On Site	457040 524308	Railway Sidings	1973
73	0	On Site	456969 523976	Railway Sidings	1963
74	0	On Site	456902 524039	Railway Sidings	1975
75	0	On Site	456887 523884	Railway Sidings	1952
76	0	On Site	457564 524417	Tramway Sidings	1894
77	0	On Site	n/a	Railway	1893
78	0	On Site	n/a	Railway	1913
79	0	On Site	n/a	Railway	1921
80L	0	On Site	456666 523500	Railway Sidings	1952
81L	0	On Site	456666 523500	Railway Sidings	1964
82M	0	On Site	457017 524310	Railway Sidings	1993
83	0	SW	457234 525251	Railway Sidings	1983
84	13	NW	457054 524597	Railway Sidings	1973
13	31	S	455777 522867	Railway Sidings	1952
85N	62	W	457154 524907	Tramway Sidings	1894
86N	65	W	457153 524908	Tramway Sidings	1915
87	69	W	456855 524658	Railway Sidings	1979
88	98	SE	457884 524250	Railway Sidings	1973
89O	99	W	457161 525027	Railway Sidings	1952
90O	99	W	457161 525028	Railway Sidings	1952
14	110	SW	456464 523355	Railway Sidings	1913
91	116	SW	456261 523159	Railway Sidings	1915
15	117	NW	457883 525308	Railway Sidings	1927
92	130	NW	457347 525423	Railway Sidings	1929
16	143	S	456024 522385	Railway Sidings	1974
93R	145	S	456704 523567	Railway Sidings	1952
17B	147	S	456024 522385	Railway Sidings	1991
18B	147	S	456024 522385	Railway Sidings	1983
94P	164	S	457010 523598	Railway Sidings	1954

ID	Distance (m)	Direction	NGR	Details	Date
95Q	165	S	456724 523552	Railway Sidings	1989
96P	165	S	457010 523597	Railway Sidings	1953
97P	166	S	457013 523598	Railway Sidings	1963
98Q	167	S	456958 523551	Railway Sidings	1993
99	171	SW	456680 523634	Railway Sidings	1993
19	176	S	456637 522237	Railway Sidings	1991
20C	176	S	456637 522237	Railway Sidings	1974
21C	176	S	456637 522237	Railway Sidings	1983
100	176	W	457103 525081	Tramway Sidings	1915
101	204	W	457046 524986	Railway Sidings	1980
102R	206	S	456714 523571	Railway Sidings	1952
103	231	NW	457319 525671	Railway Sidings	1952

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? Yes

Have any historical railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Status
0	On Site	Disused
0	On Site	Razed
0	On Site	Razed
0	On Site	Disused
0	On Site	Razed
0	On Site	Disused
0	On Site	Abandoned
0	On Site	Razed
0	On Site	Disused
0	On Site	Razed
0	On Site	Disused
0	On Site	Razed
0	On Site	Razed
0	On Site	Abandoned
45	W	Disused
45	W	Razed

Distance (m)	Direction	Status
97	SW	Disused
97	SW	Razed
151	SW	Disused
151	SW	Razed
187	SW	Disused
187	SW	Razed

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? Yes

Have any active railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Name	Type
0	On Site	Not given	rail
0	On Site	Not given	rail
0	On Site	Not given	rail
0	On Site	Not given	rail
0	On Site	Tees Valley Line	rail
0	On Site	Tees Valley Line	rail
0	On Site	Not given	rail
0	On Site	Not given	rail
0	On Site	Not given	rail
0	SE	Not given	rail
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	rail
0	On Site	Not given	rail
0	On Site	Not given	rail
0	On Site	Not given	rail
0	On Site	Tees Valley Line	rail
0	On Site	Tees Valley Line	rail
0	On Site	Not given	rail
0	On Site	Not given	rail

Distance (m)	Direction	Name	Type
0	On Site	Not given	rail
0	SE	Not given	rail
2	SE	Tees Valley Line	rail
2	SE	Not given	rail
2	SW	Not given	rail
2	E	Not given	rail
2	W	Not given	Multi Track
2	W	Not given	Multi Track
2	SE	Tees Valley Line	rail
2	SE	Not given	rail
2	SW	Not given	rail
2	E	Not given	rail
3	SW	Not given	rail
3	E	Not given	rail
3	NW	Not given	rail
3	NW	Tees Valley Line	rail
3	SE	Not given	Multi Track
3	SE	Not given	Multi Track
3	SE	Not given	Multi Track
3	SE	Not given	Multi Track
3	SW	Not given	rail
3	E	Not given	rail
3	NW	Not given	rail
3	NW	Tees Valley Line	rail
6	NW	Not given	rail
6	NW	Not given	rail
9	E	Not given	rail
9	E	Not given	rail
36	S	Not given	rail
36	S	Not given	rail
41	SW	Not given	Multi Track
41	SW	Not given	Multi Track
42	SW	Tees Valley Line	rail
42	SW	Tees Valley Line	rail
45	SW	Tees Valley Line	rail
45	SW	Tees Valley Line	rail
56	NW	Not given	Multi Track
56	NW	Not given	Multi Track
56	NW	Not given	Multi Track
56	NW	Not given	Multi Track
71	NW	Not given	rail
71	NW	Not given	rail
96	SW	Tees Valley Line	rail
96	SW	Tees Valley Line	rail
96	SW	Tees Valley Line	rail
96	SW	Tees Valley Line	rail
98	NW	Not given	Multi Track
98	NW	Not given	Multi Track
98	NW	Not given	Multi Track
98	NW	Not given	Multi Track
104	NW	Not given	rail
104	NW	Not given	Multi Track
104	NW	Not given	Multi Track

Distance (m)	Direction	Name	Type
104	NW	Not given	Multi Track
104	NW	Not given	Multi Track
104	NW	Not given	rail
122	S	Not given	rail
122	S	Not given	rail
126	S	Not given	Multi Track
126	S	Not given	Multi Track
129	S	Not given	Multi Track
129	S	Not given	Multi Track
140	SW	Not given	Multi Track
140	SW	Not given	Multi Track
142	SW	Not given	rail
142	SW	Not given	rail
145	SW	Tees Valley Line	rail
145	SW	Tees Valley Line	rail
147	SW	Tees Valley Line	rail
147	SW	Tees Valley Line	rail
152	NW	Not given	rail
152	NW	Not given	rail
154	S	Not given	rail
154	S	Not given	rail
154	S	Not given	rail
154	S	Not given	rail
169	SW	Not given	Multi Track
169	SW	Not given	Multi Track
186	SW	Tees Valley Line	rail
186	SW	Tees Valley Line	rail
186	SW	Tees Valley Line	rail
186	SW	Tees Valley Line	rail
196	S	Not given	Multi Track
196	S	Not given	Multi Track
229	SW	Not given	rail
229	SW	Not given	rail

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

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