

Site Details:

Client Ref: EMS\_491528\_661068  
Report Ref: EMS-DE-491528\_661068  
Grid Ref: 408834, 418120

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



2002



Produced by  
Groundsure Insights  
[www.groundsure.com](http://www.groundsure.com)

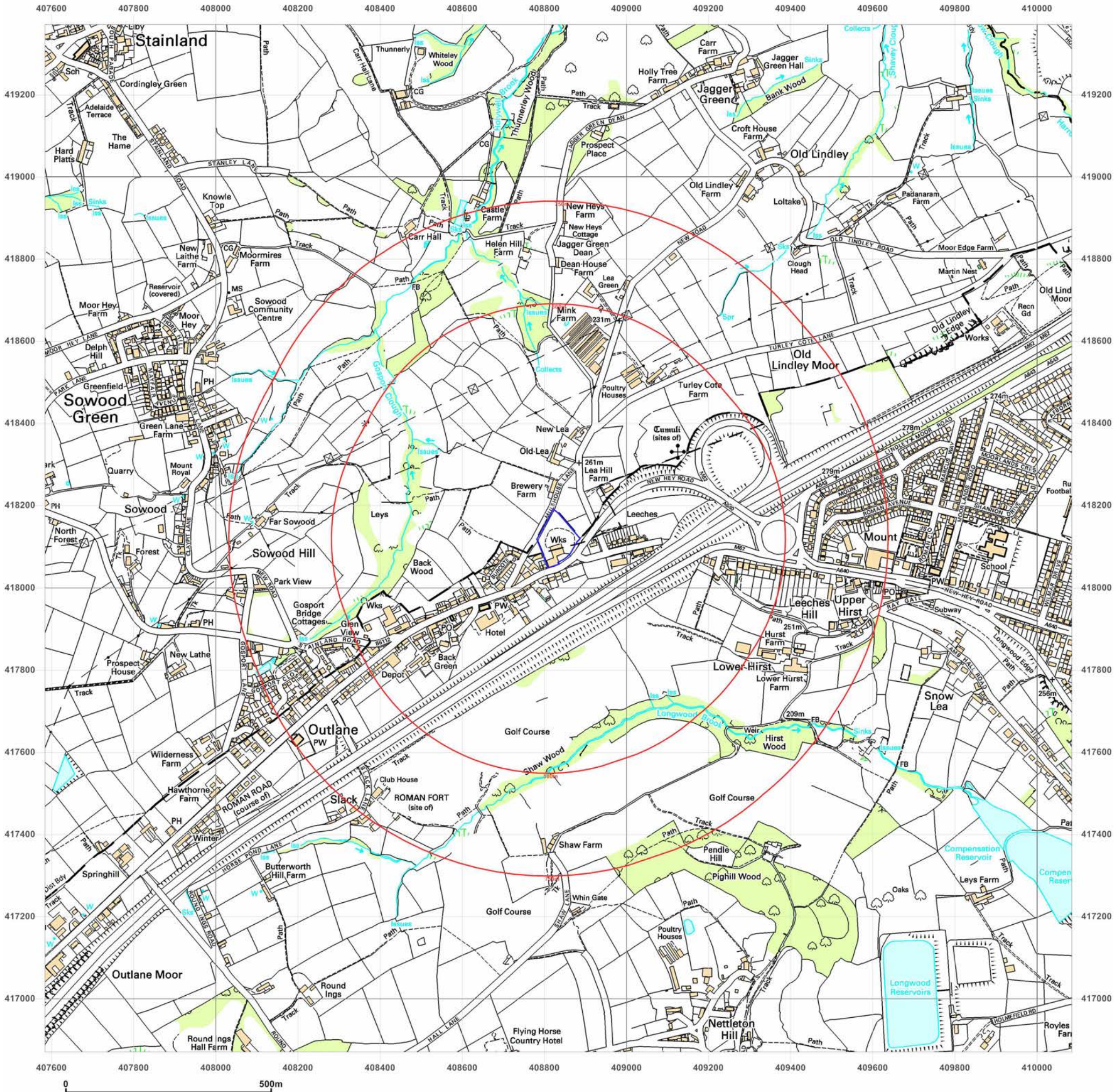


Supplied by:  
[www.emapsite.com](http://www.emapsite.com)  
[sales@emapsite.com](mailto:sales@emapsite.com)

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 July 2018

Map legend available at:  
[www.groundsure.com/sites/default/files/groundsure\\_legend.pdf](http://www.groundsure.com/sites/default/files/groundsure_legend.pdf)





## Site Details:

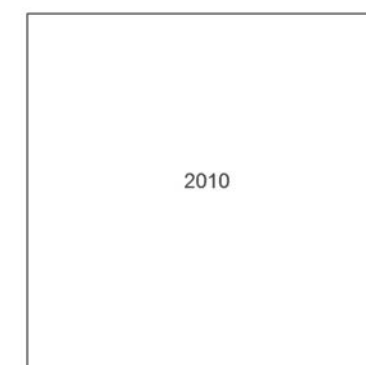
Client Ref: EMS\_491528\_661068  
Report Ref: EMS-DE-491528\_661068  
Grid Ref: 408834, 418120

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



Produced by  
Groundsure Insights  
[www.groundsure.com](http://www.groundsure.com)

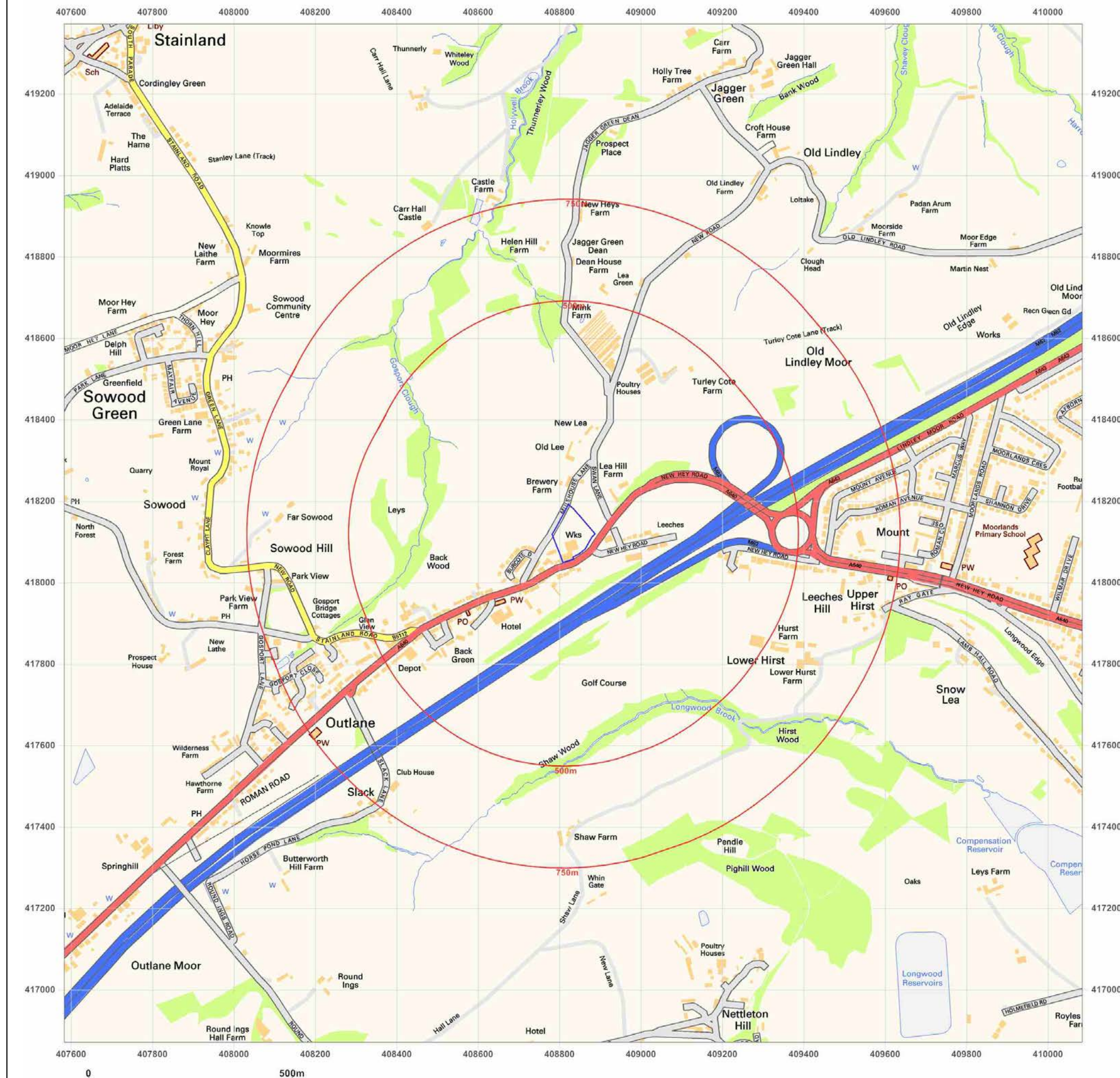


Supplied by:  
[www.emapsite.com](http://www.emapsite.com)  
[sales@emapsite.com](mailto:sales@emapsite.com)

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 July 2018

Map legend available at:  
[www.groundsure.com/sites/default/files/groundsure\\_legend.pdf](http://www.groundsure.com/sites/default/files/groundsure_legend.pdf)









## **APPENDIX J: GROUNDSURE REPORTS**

Demeter Environmental Ltd  
Hanover House, Hanover Street,  
Liverpool, L3 3DZ

Report Reference: EMS-DE-491528\_661069

Your Reference: EMS\_491528\_661069

Report Date 25 Jul 2018

Report Delivery Method: Email - pdf

## Geo Insight

Address: ,

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 159 000 quoting the above Groundsure reference number.

Yours faithfully,

Demeter Environmental ltd

Enc.  
Groundsure Geo Insight



Address: ,  
Date: 25 Jul 2018  
Reference: EMS-DE-491528\_661069  
Client: Demeter Environmental Ltd

NW N NE



SW S SE

Aerial Photograph Capture date: 26-Mar-2012  
Grid Reference: 408830,418117  
Site Size: 0.83ha

# Contents Page

Contents Page.....	3
Overview of Findings.....	5
1:10,000 Scale Availability.....	8
Availability of 1:10,000 Scale Geology Mapping.....	9
1 Geology (1:10,000 scale).....	10
1.1 Artificial Ground map (1:10,000 scale).....	10
1. Geology 1:10,000 scale.....	11
1.1 Artificial Ground.....	11
1.2 Superficial Deposits and Landslips map (1:10,000 scale).....	12
1.2 Superficial Deposits and Landslips.....	13
1.2.1 Superficial Deposits/ Drift Geology.....	13
1.2.2 Landslip.....	13
1.3 Bedrock and linear features map (1:10,000 scale).....	14
1.3 Bedrock and linear features.....	15
1.3.1 Bedrock/ Solid Geology.....	15
1.3.2 Linear features.....	15
2 Geology 1:50,000 Scale.....	17
2.1 Artificial Ground map.....	17
2. Geology 1:50,000 scale.....	18
2.1 Artificial Ground.....	18
2.1.1 Artificial/ Made Ground .....	18
2.1.2 Permeability of Artificial Ground.....	18
2.2 Superficial Deposits and Landslips map (1:50,000 scale).....	19
2.2 Superficial Deposits and Landslips.....	20
2.2.1 Superficial Deposits/ Drift Geology.....	20
2.2.2 Permeability of Superficial Ground .....	20
2.2.3 Landslip.....	20
2.2.4 Landslip Permeability.....	20
2.3 Bedrock and linear features map (1:50,000 scale).....	21
2.3 Bedrock, Solid Geology & linear features.....	22
2.3.1 Bedrock/Solid Geology.....	22
2.3.2 Permeability of Bedrock Ground.....	22
2.3.3 Linear features.....	23
3 Radon Data.....	24
3.1 Radon Affected Areas.....	24
3.2 Radon Protection.....	24
4 Ground Workings map.....	25
4 Ground Workings.....	26
4.1 Historical Surface Ground Working Features derived from Historical Mapping.....	26
4.2 Historical Underground Working Features derived from Historical Mapping.....	26
4.3 Current Ground Workings.....	27
5 Mining, Extraction & Natural Cavities.....	30
5.1 Historical Mining.....	30
5.2 Coal Mining.....	30
5.3 Johnson Poole and Bloomer.....	30
5.4 Non-Coal Mining.....	31
5.5 Non-Coal Mining Cavities.....	31
5.6 Natural Cavities.....	31
5.7 Brine Extraction.....	31
5.8 Gypsum Extraction.....	32
5.9 Tin Mining.....	32
5.10 Clay Mining.....	32
6 Natural Ground Subsidence.....	33
6.1 Shrink-Swell Clay map.....	33
6.2 Landslides map.....	34
6.3 Ground Dissolution of Soluble Rocks map.....	35
6.4 Compressible Deposits map.....	36
6.5 Collapsible Deposits map.....	37
6.6 Running Sand map.....	38

6 Natural Ground Subsidence.....	39
6.1 Shrink-Swell Clays.....	39
6.2 Landslides.....	39
6.3 Ground Dissolution of Soluble Rocks.....	40
6.4 Compressible Deposits.....	40
6.5 Collapsible Deposits.....	40
6.6 Running Sands.....	40
7 Borehole Records.....	42
8 Estimated Background Soil Chemistry.....	43
9 Railways and Tunnels map.....	44
9 Railways and Tunnels.....	45
9.1 Tunnels .....	45
9.2 Historical Railway and Tunnel Features .....	45
9.3 Historical Railways.....	46
9.4 Active Railways.....	46
9.5 Railway Projects.....	46



# 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?	No
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 landslide within 500m of the study site boundary at 1:10,000 scale?	Yes
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?	Yes

## 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?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	No
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	No
	2.2.3 Are there any records of landslide within 500m of the study site boundary?	Yes
	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?

Yes

## Section 3: Radon

### 3. Radon

3.1 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 in a Radon Affected Area, as between 3 and 5% of properties are above the Action Level.

3.2 Radon Protection

Basic 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	0	0	6	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	1	2	14

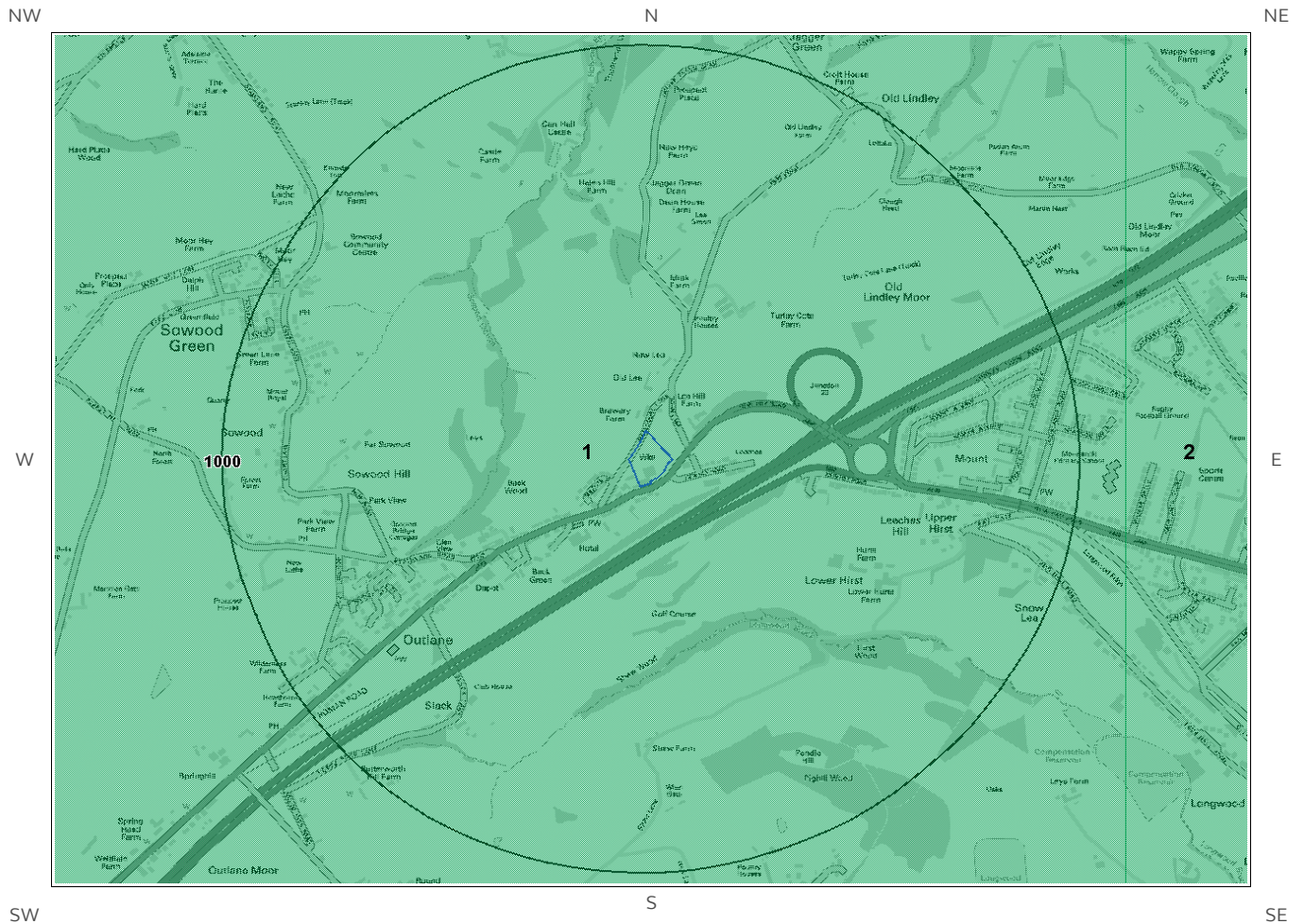
## Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	0	0	0	1
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0



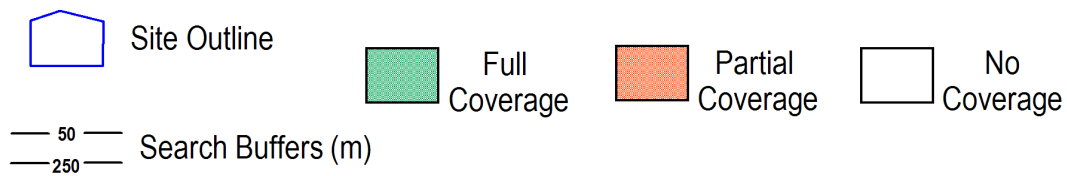
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Negligible				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	1	7		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	1	2	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

# 1:10,000 Scale Availability



1\_10,000 Availability Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





# 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	Some deposits are mapped	Full	Full	Some deposits are mapped
2	1113.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1809.0	Some deposits are mapped	Full	Full	Some deposits are mapped

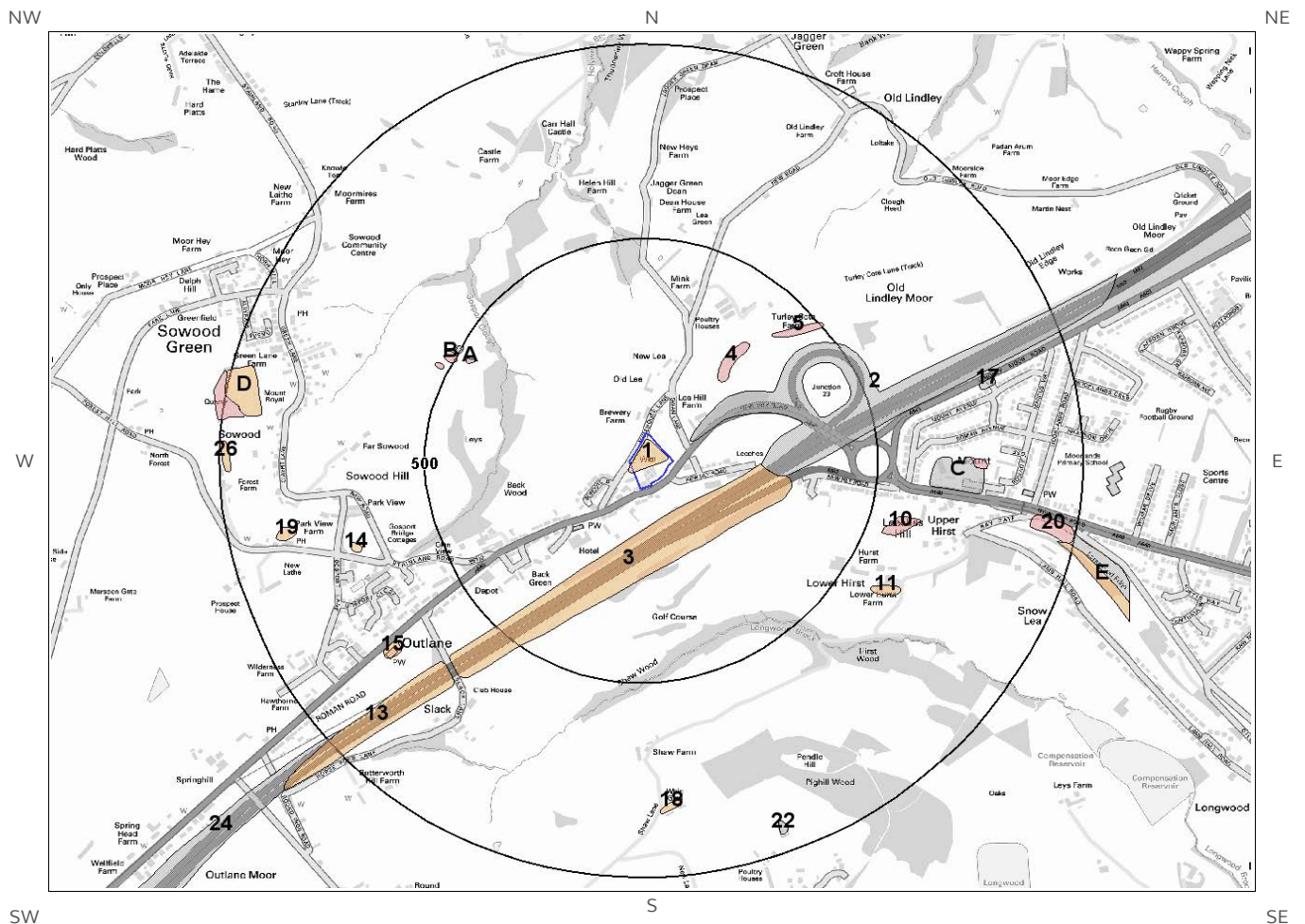
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not 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

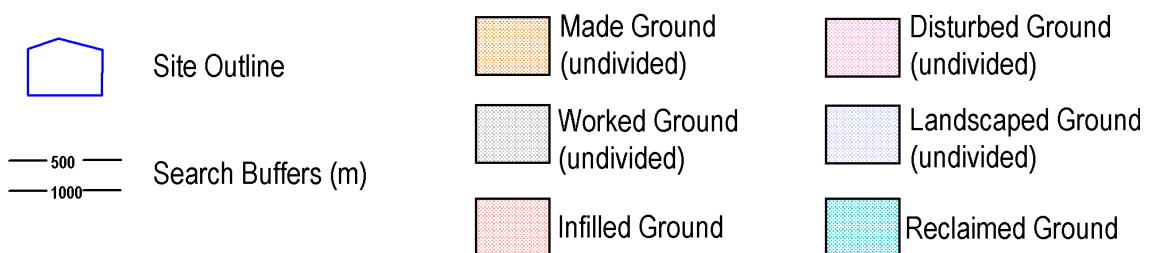
# 1 Geology (1:10,000 scale).

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



**Artificial Ground Legend**

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





# 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? Yes

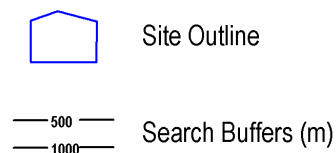
ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	66.0	NE	WGR-VOID	Worked Ground (Undivided)	Void
3	83.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	221.0	NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
5	393.0	NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
6A	456.0	NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
7A	495.0	NW	WGR-VOID	Worked Ground (Undivided)	Void
8B	496.0	NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit

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



**Artificial Ground Legend**

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





## 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? Yes

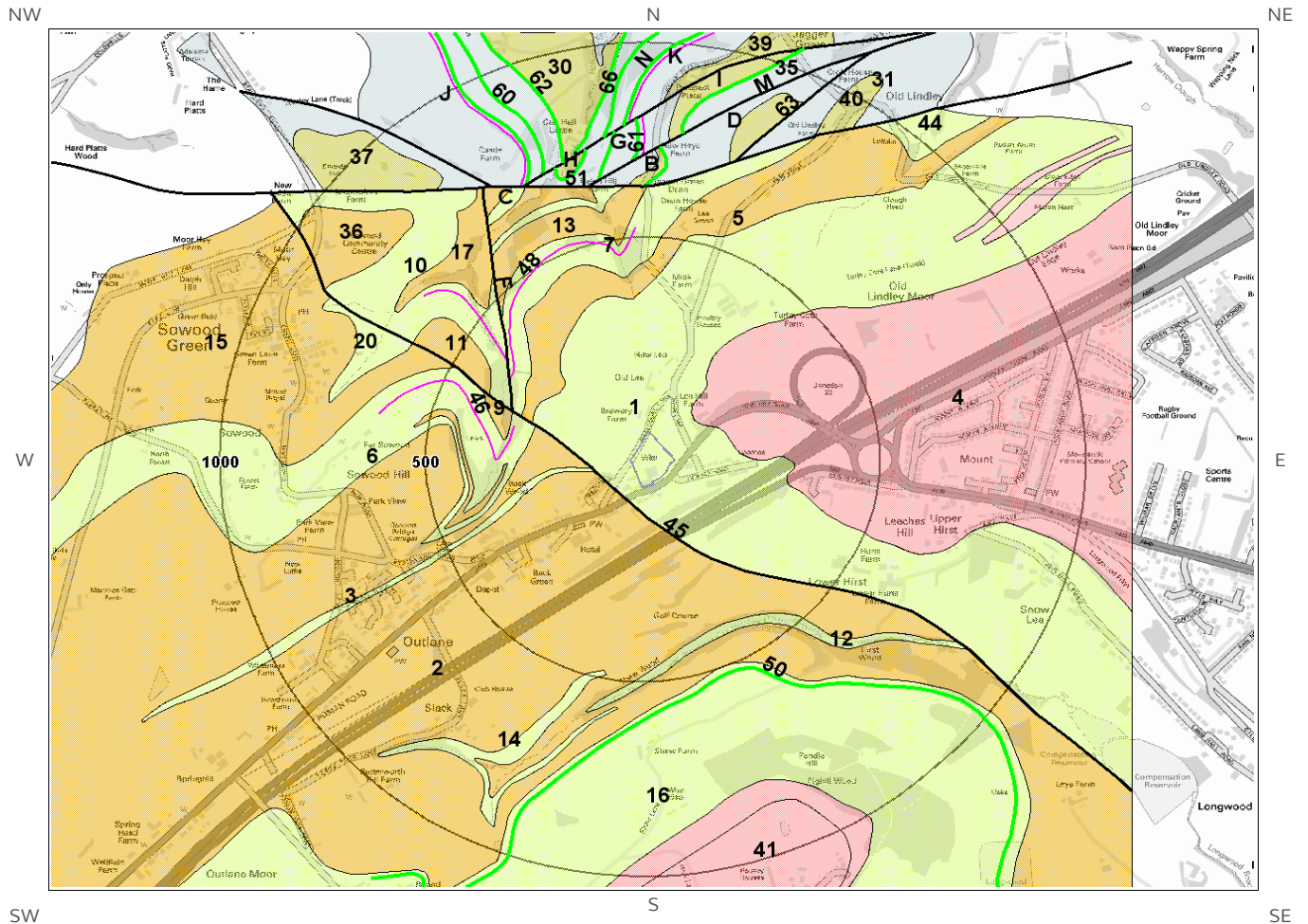
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	289.0	W	SLIP-UKNOWN	Landslide Deposits	Unknown/unclassified Entry
2	323.0	W	SLIP-UKNOWN	Landslide Deposits	Unknown/unclassified Entry

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.

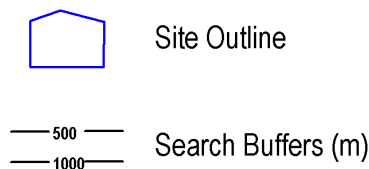
---

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



**Bedrock and linear features Legend**

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





## 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.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age
2	49.0	SW	HDW-SDST	Huddersfield White Rock - Sandstone	Marsdenian Sub-age
3	92.0	W	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age
4	103.0	NE	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
5	233.0	NW	HDW-SDST	Huddersfield White Rock - Sandstone	Marsdenian Sub-age
6	248.0	W	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age
7	292.0	NW	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age
8	301.0	W	MGCZ-SDST	Unnamed Sandstone Of Marsdenian Age (in Millstone Grit Group) - Sandstone	Marsdenian Sub-age
9	307.0	W	GSYG-SDST	Guiseley Grit - Sandstone	Marsdenian Sub-age
10	316.0	NW	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age
11	382.0	NW	HDW-SDST	Huddersfield White Rock - Sandstone	Marsdenian Sub-age
12	398.0	SE	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age
13	453.0	NW	GSYG-SDST	Guiseley Grit - Sandstone	Marsdenian Sub-age
14	479.0	S	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age
15	488.0	NW	GSYG-SDST	Guiseley Grit - Sandstone	Marsdenian Sub-age
16	499.0	S	MG-MDSS	Millstone Grit Group [see Also Migr] - Mudstone, Siltstone And Sandstone	Namurian Age

### 1.3.2 Linear features

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

ID	Distance (m)	Direction	Category Description	Feature Description
45	49.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
46	298.0	W	FOSSIL_HORIZON	Fossil horizon, marine band
47F	316.0	NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
48	358.0	NW	FOSSIL_HORIZON	Fossil horizon, marine band

ID	Distance (m)	Direction	Category Description	Feature Description
49F	385.0	NW	FOSSIL_HORIZON	Fossil horizon, marine band

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.

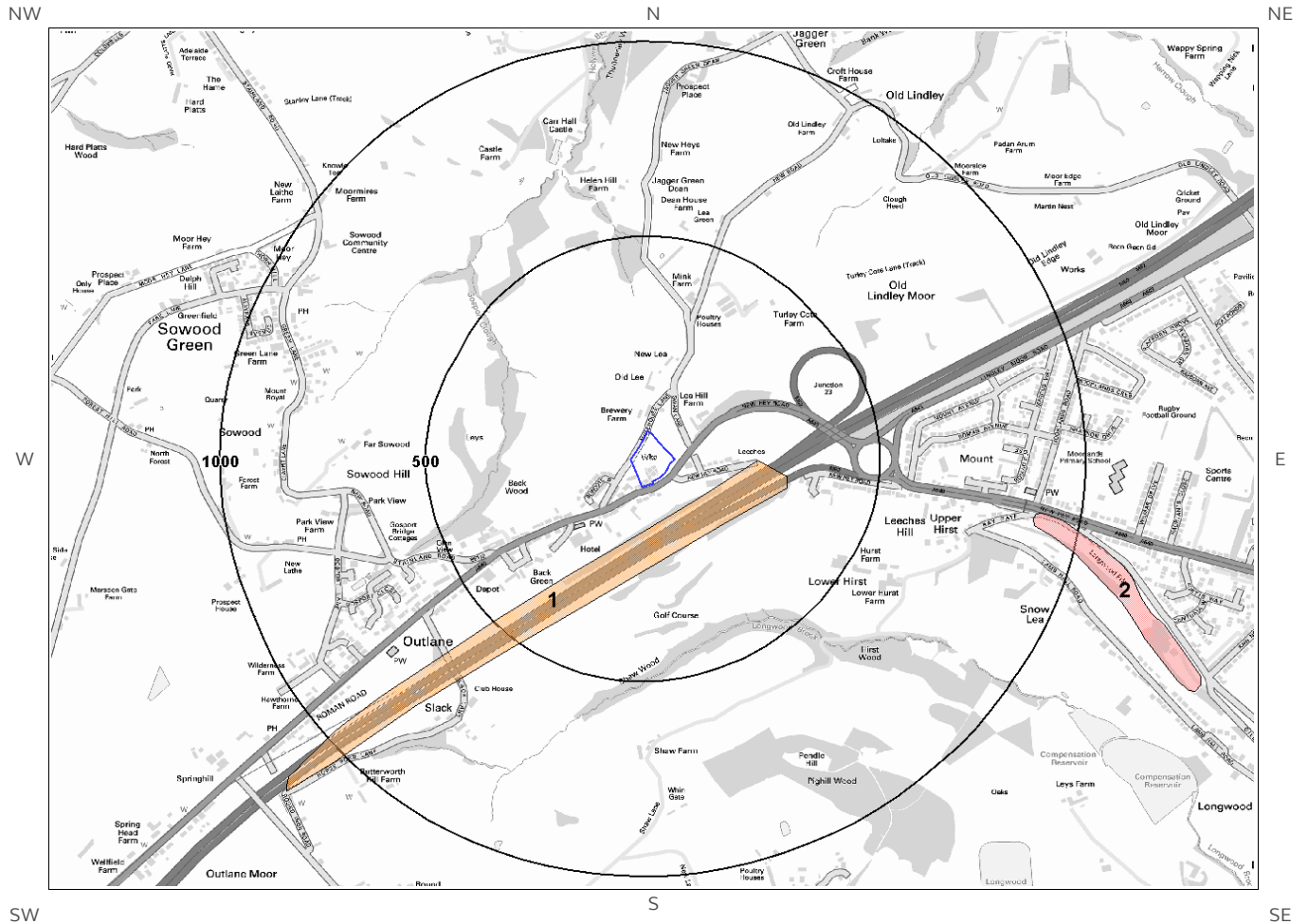
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

---

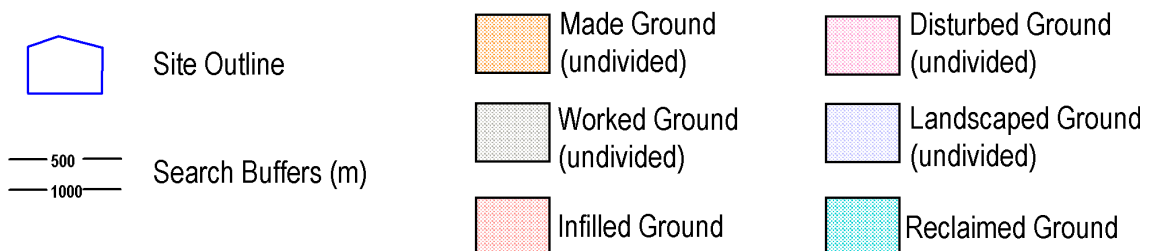


# 2 Geology 1:50,000 Scale

## 2.1 Artificial Ground map



© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.



## 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: 077

#### 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	91.0	SE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

#### 2.1.2 Permeability of Artificial Ground

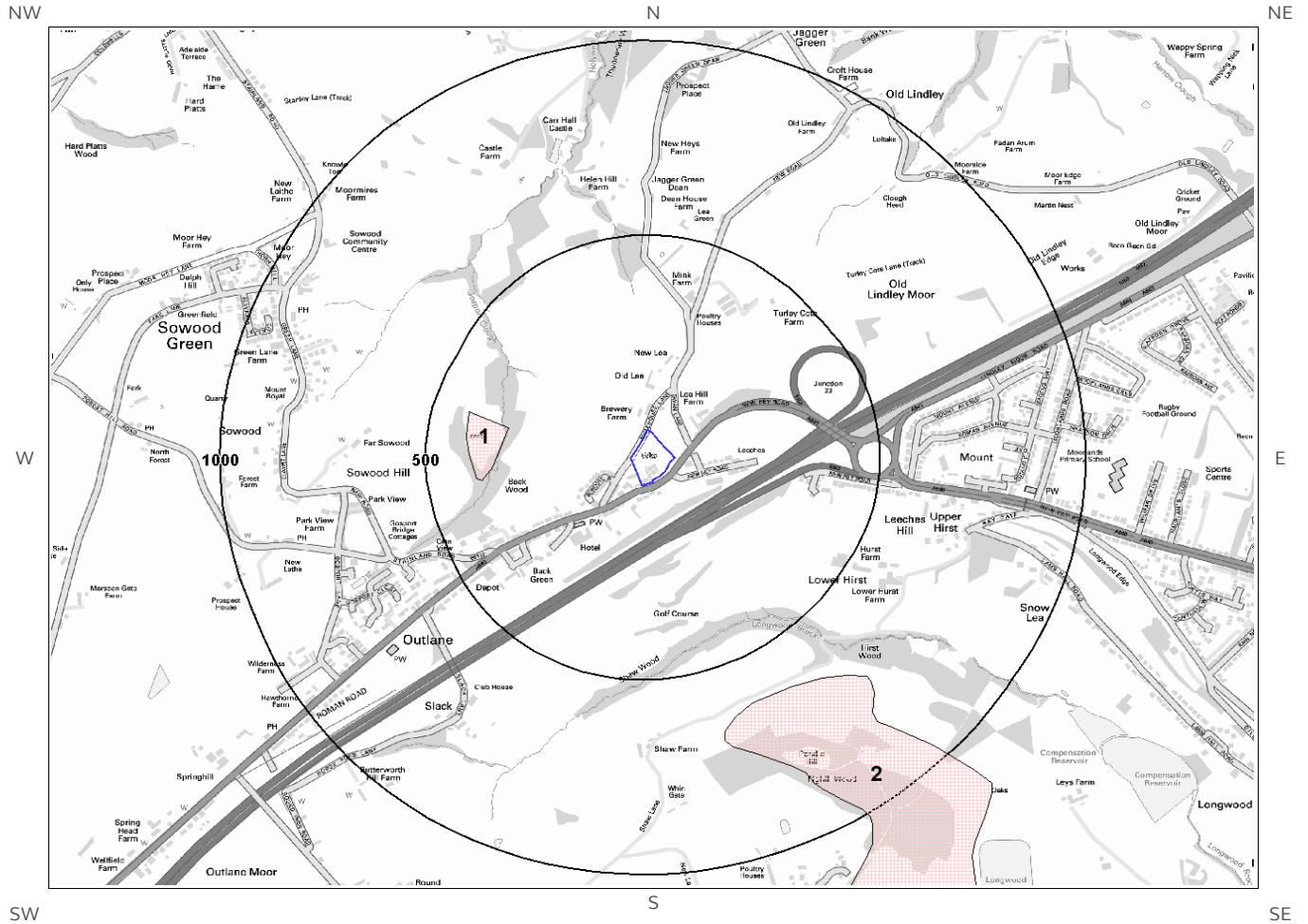
Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.





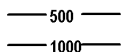
# 2.2 Superficial Deposits and Landslips map (1:50,000 scale)



© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.



Site Outline



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? No

Database searched and no data found.

### 2.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

### 2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	309.0	W	SLIP-UNKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

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.

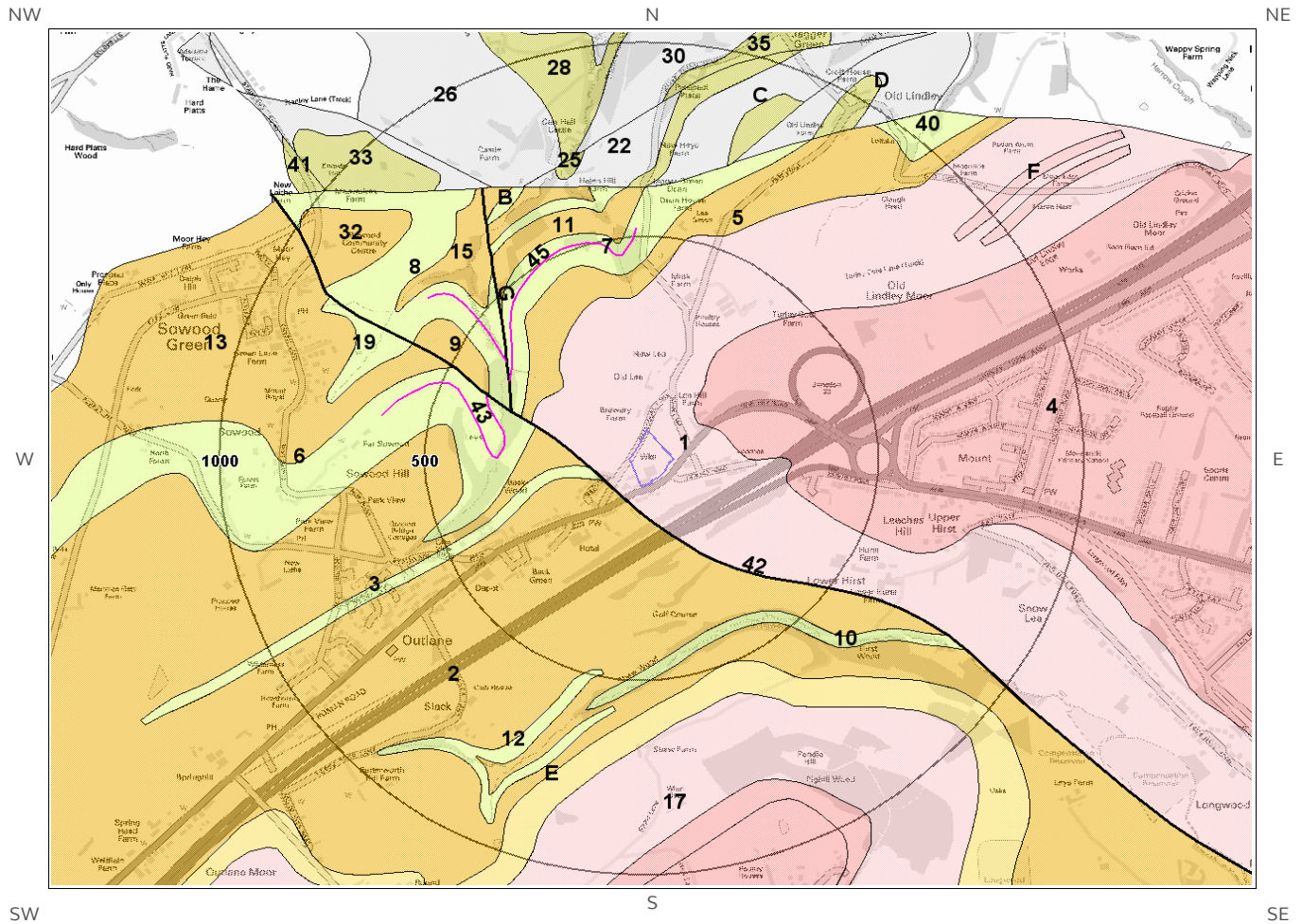
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

### 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.

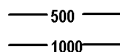
## 2.3 Bedrock and linear features map (1:50,000 scale)



© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.



Site Outline



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: 077

### 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	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
2	50.0	SW	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE	NAMURIAN
3	78.0	W	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
4	105.0	NE	RR-SDST	ROUGH ROCK - SANDSTONE	NAMURIAN
5	233.0	NW	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE	NAMURIAN
6	245.0	W	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
7	289.0	W	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
8	313.0	NW	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
9	380.0	NW	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE	NAMURIAN
10	399.0	SE	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
11	454.0	NW	GSYG-SDST	GUISELEY GRIT - SANDSTONE	NAMURIAN
12	482.0	S	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
13	488.0	NW	GSYG-SDST	GUISELEY GRIT - SANDSTONE	NAMURIAN
14E	500.0	S	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN

### 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	Moderate	Low

Are there any records of linear features within 500m of the study site boundary?

Yes

ID	Distance	Direction	Category Description	Feature Description
42	50.0	SW	FAULT	Fault, inferred
43	307.0	W	FOSSIL_HORIZON	Marine band
44G	313.0	NW	FAULT	Fault, inferred
45	354.0	NW	FOSSIL_HORIZON	Marine band
46G	384.0	NW	FOSSIL_HORIZON	Marine band

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 in a Radon Affected Area, as between 3 and 5% 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.

---

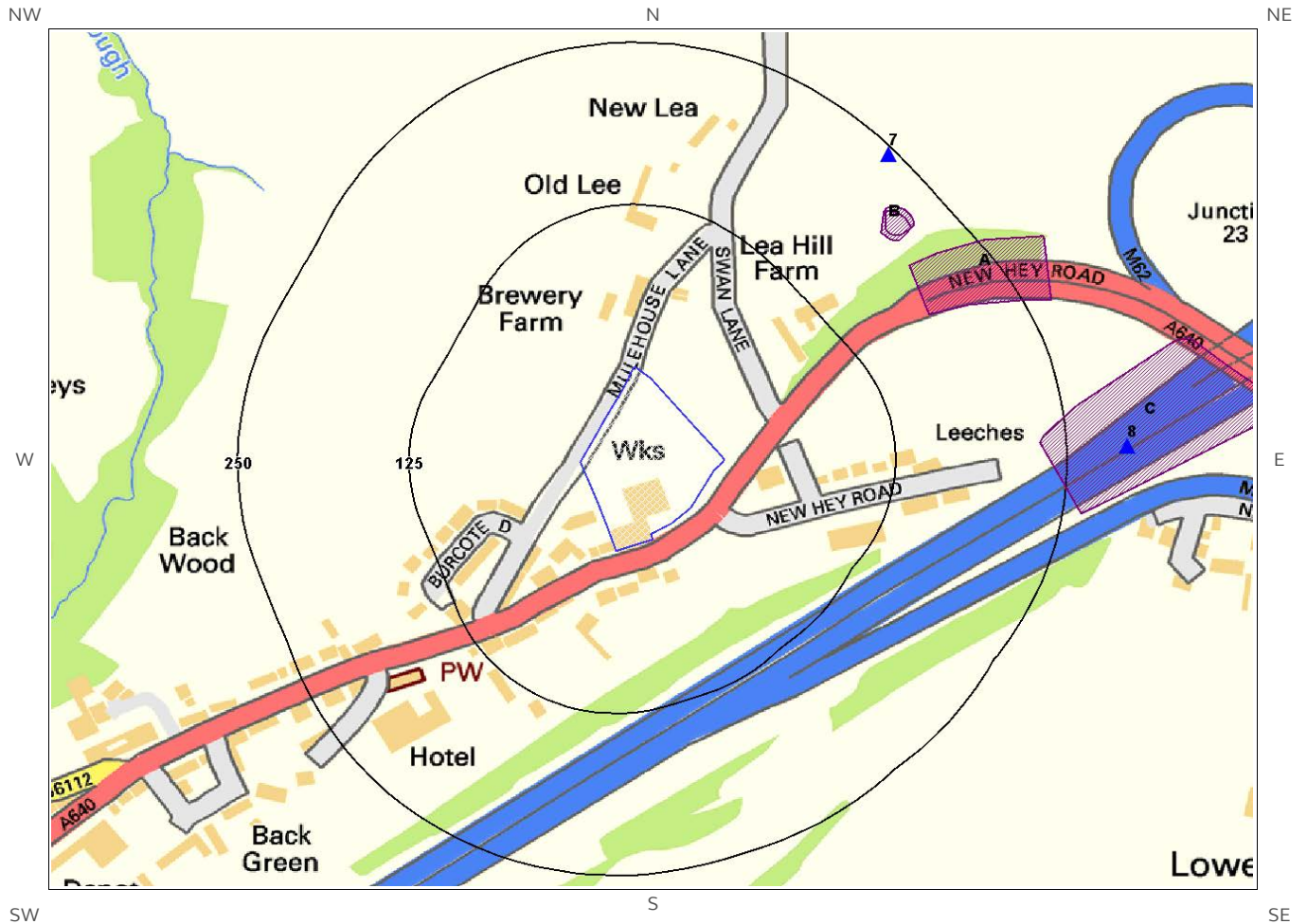
### 3.2 Radon Protection

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? Basic radon protective measures are necessary.

---





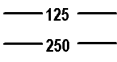


# 4 Ground Workings map



Ground Workings Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.

-  Site Outline
-  Historic Surface Ground Workings
-  Historic Underground Workings
-  Current Ground Workings
-  Search Buffers (m)

## 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	186.0	NE	409072 418268	Cuttings	1993
2A	186.0	NE	409072 418268	Cuttings	1978
3B	200.0	NE	409012 418300	Unspecified Quarry	1948
4B	204.0	NE	409015 418304	Unspecified Pit	1951
5C	230.0	E	409205 418146	Cuttings	1978
6C	230.0	E	409205 418146	Cuttings	1993

### 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? No

Database searched and no data found.

### 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
7	245.0	NE	409006 418355	Sandstone	Lee Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
8	294.0	E	409180 418130	Sandstone	Leeches	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	484.0	NW	408370 418374	Sandstone	Gosport Clough Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	543.0	NW	408309 418386	Sandstone	Gosport Clough Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	589.0	E	409447 417937	Sandstone	Leeches Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	663.0	E	409540 418005	Sandstone	New Hey Road	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	674.0	E	409558 418062	Sandstone	Mount Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	703.0	E	409590 418115	Sandstone	Mount Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	729.0	N	408789 418920	Sand & Gravel	Dean Gravel Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	760.0	W	408036 418267	Sandstone	Sowood	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	779.0	E	409642 418310	Sandstone	Old Lindley Moor	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	827.0	NE	409375 418807	Sandstone	Clough Head	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	898.0	NE	409396 418882	Sandstone	Clough Head	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	907.0	NW	408015 418608	Sandstone	Sowood Green	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	928.0	E	409799 417950	Sandstone	Longwood Edge Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	950.0	S	409145 417160	Sandstone	Nettleton Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased



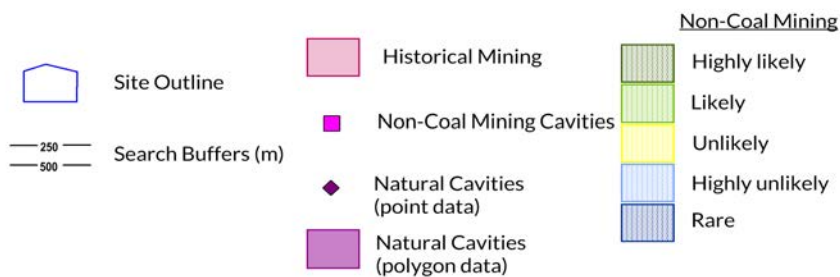
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	987.0	W	407813 418308	Sandstone	Wham Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

# 5 Mining, Extraction & Natural Cavities map



**Mining, Extraction and Natural Cavities Legend**

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.



# 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? No

Database searched and no data found.

## 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? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

## 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.



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? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	629.0	N	Elland Flag Mines	Sandstone - Elland Flags	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered

## 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 Coal Authority issued on behalf of 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.

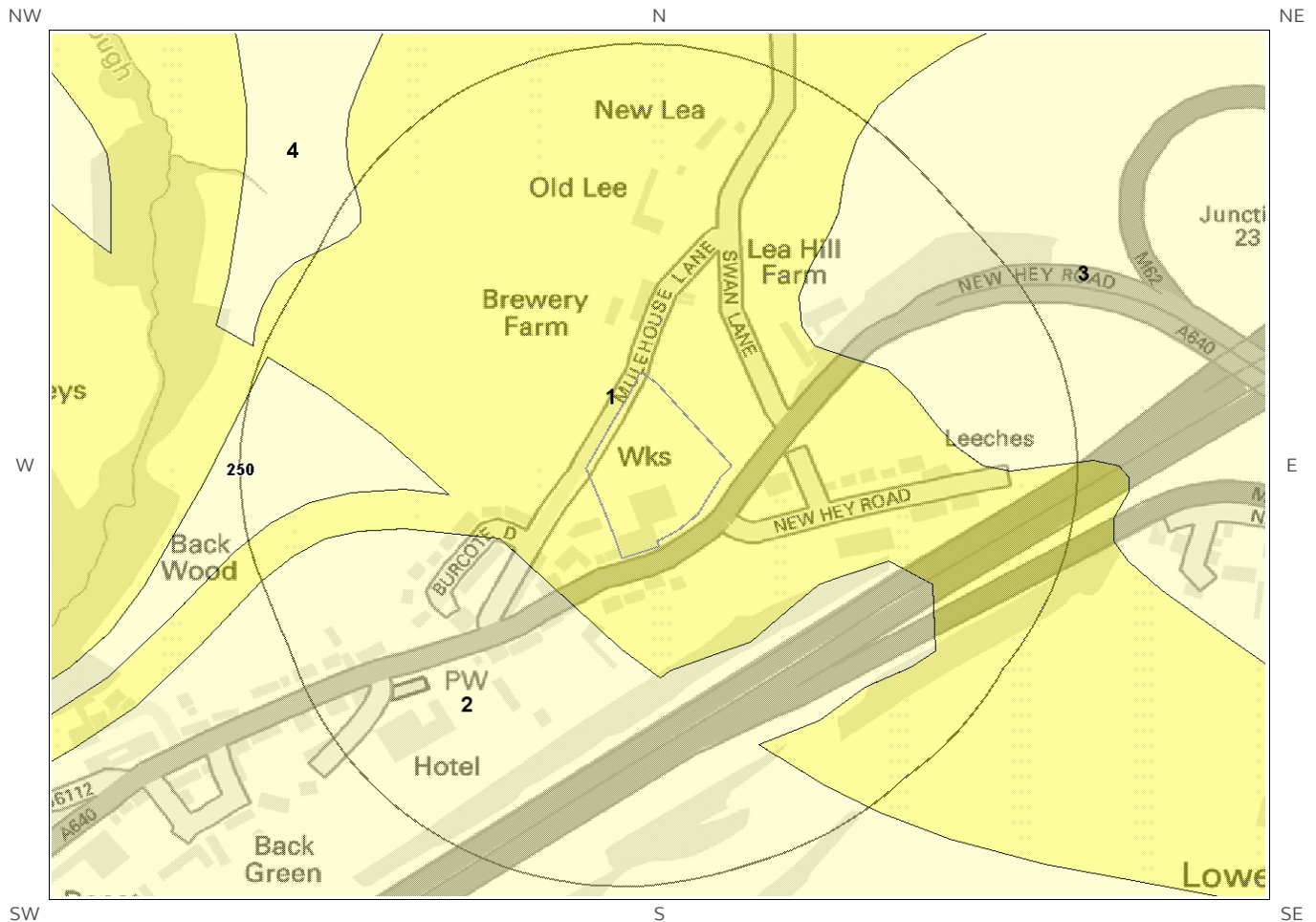
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

# 6 Natural Ground Subsidence

## 6.1 Shrink-Swell Clay map



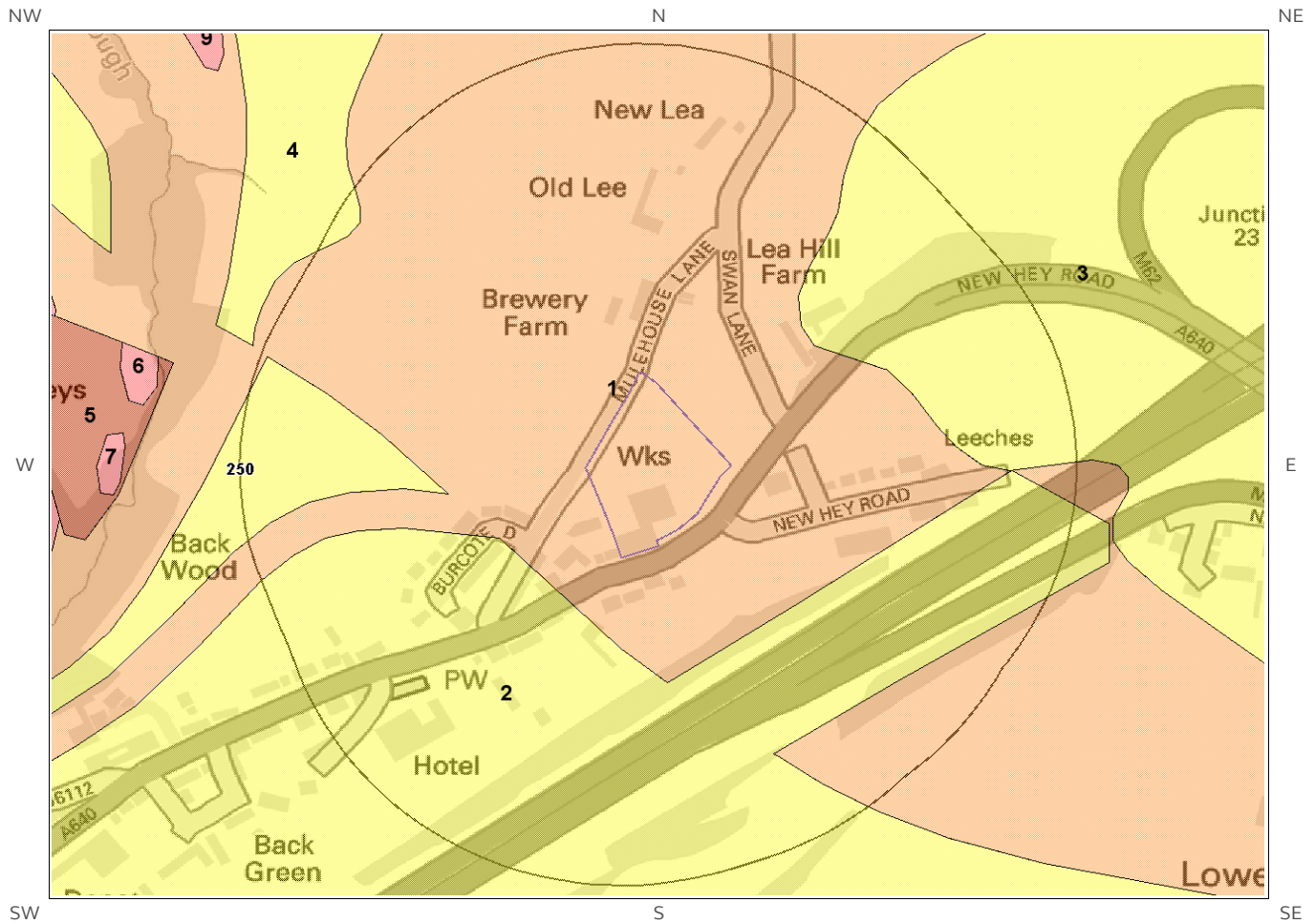
Shrink Swell Clay Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





## 6.2 Landslides map

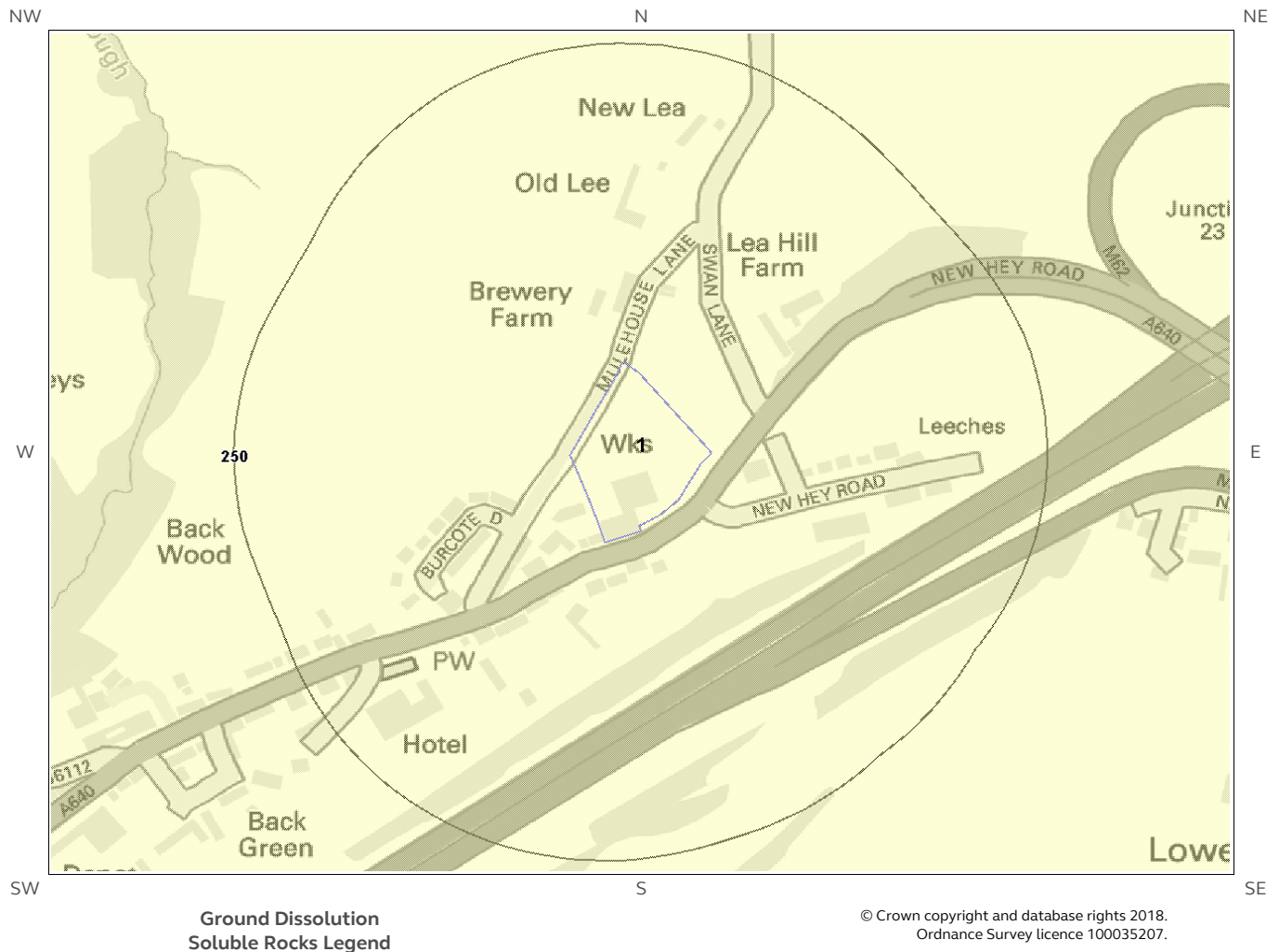


Landslides Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.



## 6.3 Ground Dissolution of Soluble Rocks map



## 6.4 Compressible Deposits map



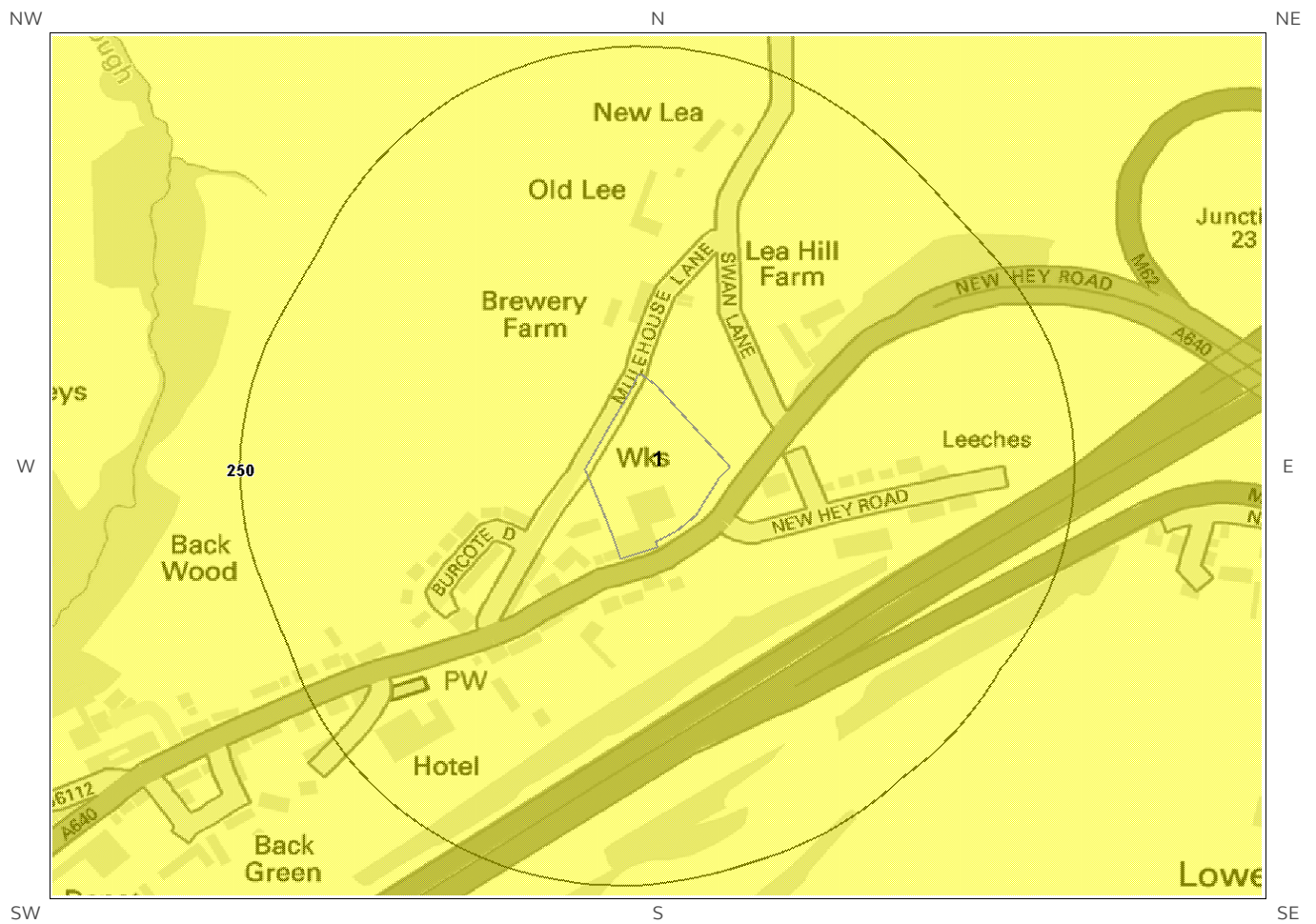
Compressible Deposits Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





# 6.5 Collapsible Deposits map



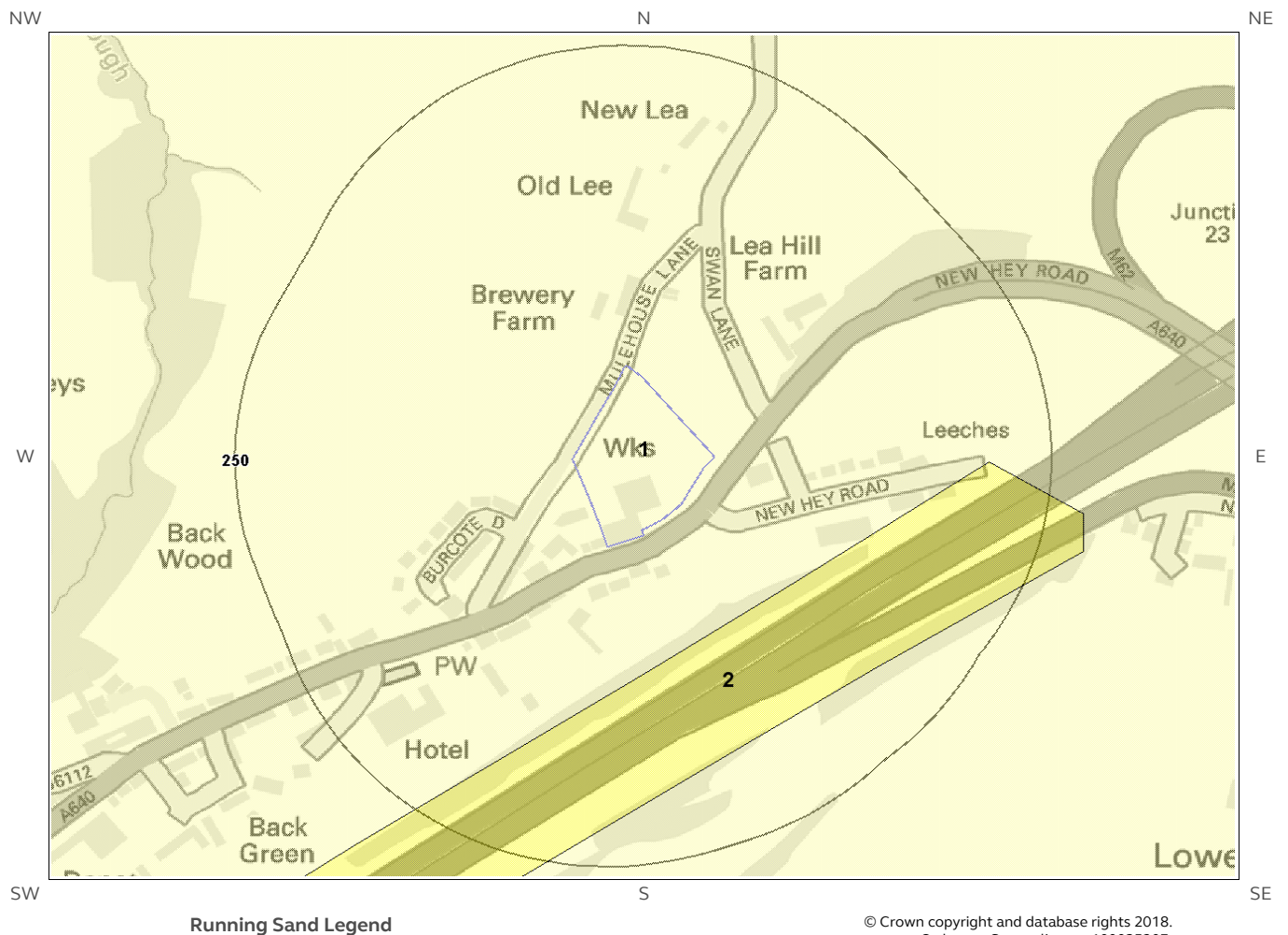
Collapsible Deposits Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





## 6.6 Running Sand map



## 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? Low

### 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	50.0	SW	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.

### 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	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.
2	50.0	SW	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.

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

## 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.

## 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.

## 6.5 Collapsible Deposits

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

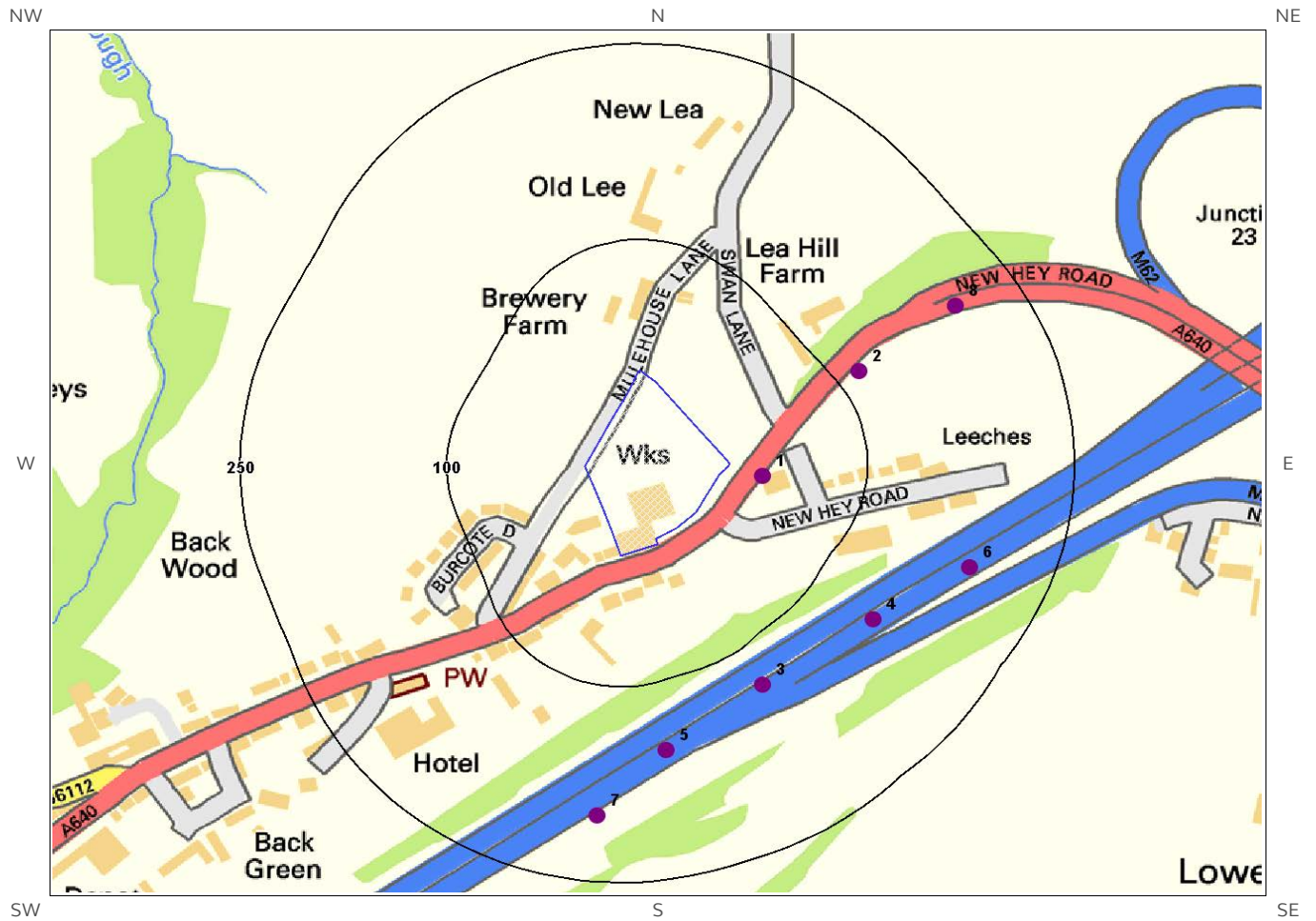
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

## 6.6 Running Sands

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

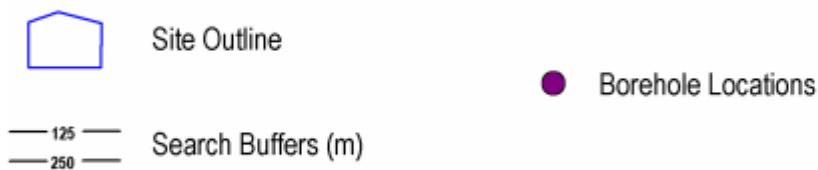
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

# 7 Borehole Records map



Borehole Records Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.





## 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:

8

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	25.0	SE	408910 418110	SE01NE249	5.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 235
2	117.0	NE	408980 418190	SE01NE250	8.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 236
3	132.0	SE	408910 417950	SE01NE216	14.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 25
4	152.0	SE	408990 418000	SE01NE217	14.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 26
5	152.0	S	408840 417900	SE01NE215	15.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 24
6	191.0	SE	409060 418040	SE01NE218	12.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 27
7	200.0	S	408790 417850	SE01NE214	14.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 23
8	203.0	NE	409050 418240	SE01NE251	9.0	LANCASHIRE YORKSHIRE MWAY CONTRACT E 237

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.

#1: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572767](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572767)  
 #2: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572769](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572769)  
 #3: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572682](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572682)  
 #4: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572683](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572683)  
 #5: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572681](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572681)  
 #6: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572684](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572684)  
 #7: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572680](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572680)  
 #8: [scans.bgs.ac.uk/sobi\\_scans/boreholes/18572773](https://scans.bgs.ac.uk/sobi_scans/boreholes/18572773)

# 8 Estimated Background Soil Chemistry

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

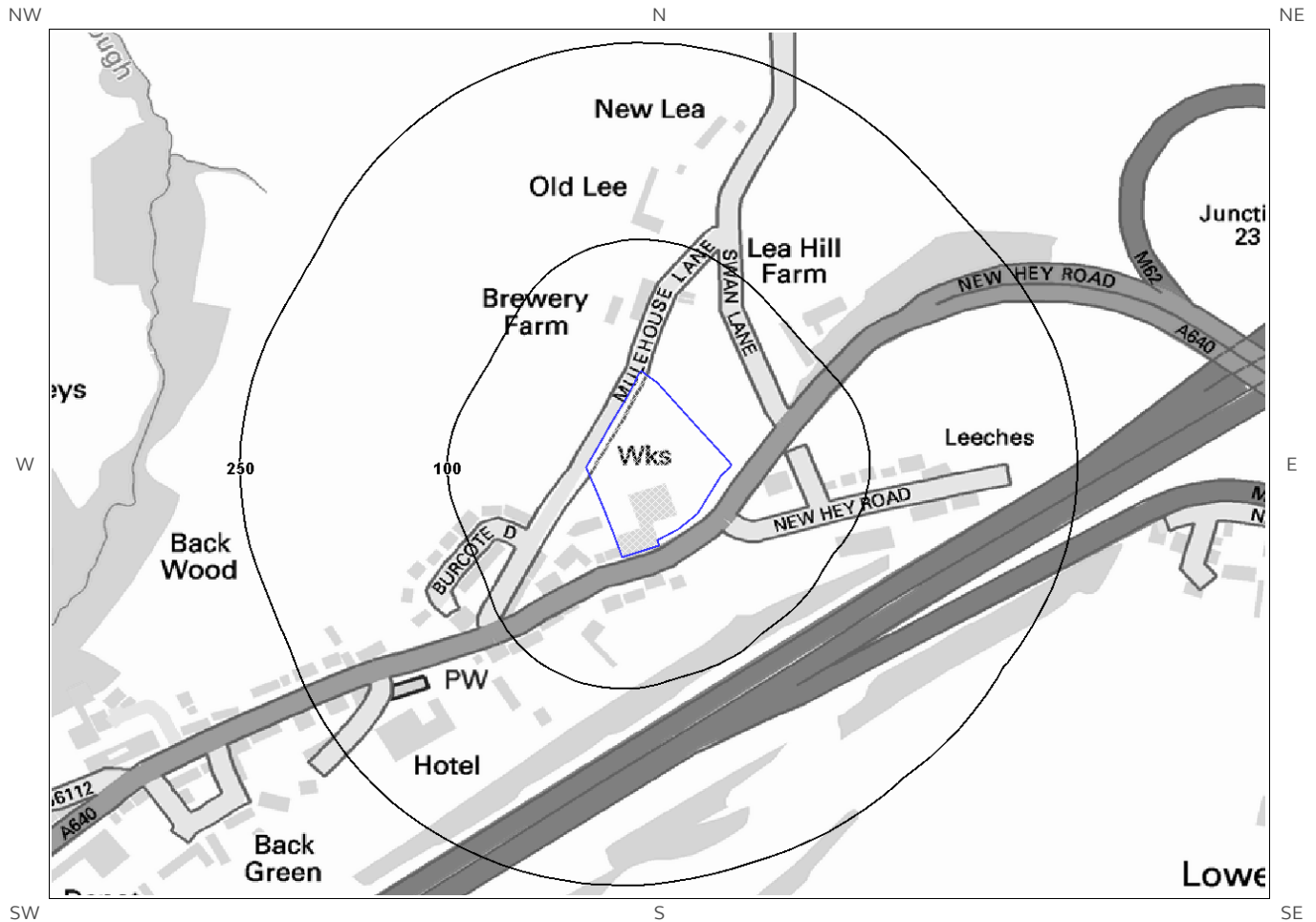
3

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	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
49.0	S	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
49.0	S	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg

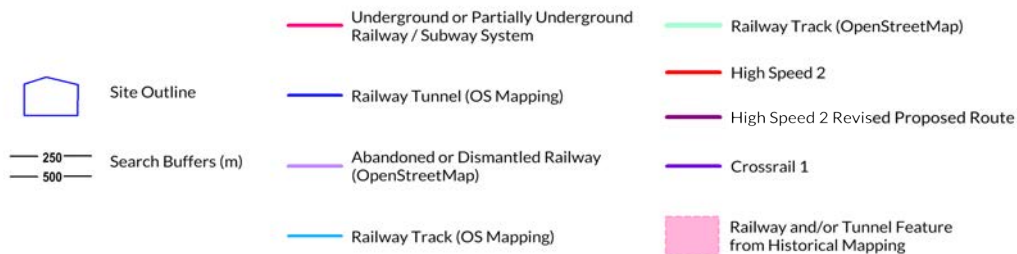
\*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

# 9 Railways and Tunnels map



Railways and Tunnels Legend

© Crown copyright and database rights 2018.  
Ordnance Survey licence 100035207.  
© OpenStreetMapContributors



# 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? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

*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? No

Have any historical railway or tunnel features 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.*

---



### 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? No

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

Database searched and no data found.

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? No

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

Database searched and no data found.

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.

# Contact Details

Demeter Environmental Ltd  
Telephone: 0151 521 2539  
[enquiries@demeter-environmental.co.uk](mailto:enquiries@demeter-environmental.co.uk)



## British Geological Survey Enquiries

Kingsley Dunham Centre  
Keyworth, Nottingham NG12 5GG  
Tel: 0115 936 3143.  
Fax: 0115 936 3276.  
Email: [enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk)  
Web: [www.bgs.ac.uk](http://www.bgs.ac.uk)



BGS Geological Hazards Reports and general geological enquiries

## British Gypsum

British Gypsum Ltd  
East Leake  
Loughborough  
Leicestershire  
LE12 6HX



## The Coal Authority

200 Lichfield Lane  
Mansfield  
Notts NG18 4RG  
Tel: 0345 7626 848  
DX 716176 Mansfield 5  
[www.coal.gov.uk](http://www.coal.gov.uk)



## Public Health England

Public information access office  
Public Health England, Wellington House  
133-155 Waterloo Road, London, SE1 8UG  
<https://www.gov.uk/government/organisations/public-health-england>  
Email: [enquiries@phe.gov.uk](mailto:enquiries@phe.gov.uk)  
Main switchboard: 020 7654 8000



## Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettell Lane  
Brierley Hill, West Midlands  
DY5 3LH  
Tel: +44 (0) 1384 262 000  
Email: [enquiries.gs@jpb.co.uk](mailto:enquiries.gs@jpb.co.uk)  
Website: [www.jpb.co.uk](http://www.jpb.co.uk)



## Ordnance Survey

Adanac Drive, Southampton  
SO16 0AS  
Tel: 08456 050505  
Website: <http://www.ordnancesurvey.co.uk/>



## Getmapping PLC

Virginia Villas, High Street, Hartley Witney,  
Hampshire RG27 8NW  
Tel: 01252 845444  
Website: <http://www1.getmapping.com/>



---

**Peter Brett Associates**

Caversham Bridge House  
Waterman Place  
Reading  
Berkshire RG1 8DN

Tel: +44 (0)118 950 0761 E-mail: [reading@pba.co.uk](mailto:reading@pba.co.uk)  
Website: <http://www.peterbrett.com/home>



---

Acknowledgements: Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].  
This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

# Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:  
<https://www.groundsure.com/terms-and-conditions-may25-2018>





Demeter Environmental Ltd  
Hanover House, Hanover Street,  
Liverpool, L3 3DZ

Groundsure      EMS-DE-491528\_661070  
Reference:

Your Reference:    EMS\_491528\_661070

Report Date      25 Jul 2018

Report Delivery    Email - pdf  
Method:

## Enviro Insight

Address: ,

Dear Sir/ Madam,

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

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159 000 quoting the above Groundsure reference number.

Yours faithfully,

Demeter Environmental ltd

Enc.  
Groundsure Enviroinsight

Address: ,  
Date: 25 Jul 2018  
Reference: EMS-DE-491528\_661070  
Client: Demeter Environmental Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 26-Mar-2012  
Grid Reference: 408830,418117  
Site Size: 0.83ha

Report Reference: EMS-DE-491528\_661070  
Client Reference: EMS\_491528\_661070

# Contents Page

Contents Page	3
Overview of Findings	6
Using this report	10
1. Historical Land Use	11
1. Historical Industrial Sites	12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping	12
1.2 Additional Information – Historical Tank Database	12
1.3 Additional Information – Historical Energy Features Database	13
1.4 Additional Information – Historical Petrol and Fuel Site Database	13
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	13
1.6 Historical military sites	14
1.7 Potentially Infilled Land	14
2. Environmental Permits, Incidents and Registers Map	15
2. Environmental Permits, Incidents and Registers	16
2.1 Industrial Sites Holding Licences and/or Authorisations	16
2.1.1 Records of historic IPC Authorisations within 500m of the study site	16
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site	16
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site	16
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site	16
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site	16
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site	17
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	17
2.1.8 Records of Licensed Discharge Consents within 500m of the study site	17
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site	18
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	18
2.2 Dangerous or Hazardous Sites	18
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents	19
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site	19
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site	19
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	19
3. Landfill and Other Waste Sites Map	20
3. Landfill and Other Waste Sites	21
3.1 Landfill Sites	21
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site	21
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site	21
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site	22
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site	22
3.2 Other Waste Sites	22
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site	22
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site	22
4. Current Land Use Map	24
4. Current Land Uses	25
4.1 Current Industrial Data	25
4.2 Petrol and Fuel Sites	25
4.3 National Grid High Voltage Underground Electricity Transmission Cables	26
4.4 National Grid High Pressure Gas Transmission Pipelines	26

5. Geology	27
5.1 Artificial Ground and Made Ground.....	27
5.2 Superficial Ground and Drift Geology .....	27
5.3 Bedrock and Solid Geology .....	27
6 Hydrogeology and Hydrology	28
6a. Aquifer Within Superficial Geology	28
6b. Aquifer Within Bedrock Geology and Abstraction Licences	29
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences	30
6d. Hydrogeology – Source Protection Zones within confined aquifer	31
6e. Hydrology – Watercourse Network and River Quality	32
6.Hydrogeology and Hydrology	33
6.1 Aquifer within Superficial Deposits.....	33
6.2 Aquifer within Bedrock Deposits.....	33
6.3 Groundwater Abstraction Licences.....	33
6.4 Surface Water Abstraction Licences.....	35
6.5 Potable Water Abstraction Licences.....	36
6.6 Source Protection Zones.....	37
6.7 Source Protection Zones within Confined Aquifer.....	37
6.8 Groundwater Vulnerability and Soil Leaching Potential.....	37
6.9 River Quality.....	37
6.9.1 Biological Quality:.....	38
6.9.2 Chemical Quality:.....	38
6.10 Ordnance Survey MasterMap Water Network.....	38
6.11 Surface Water Features.....	40
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)	41
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS)	42
Map	42
7 Flooding	43
7.1 River and Coastal Zone 2 Flooding.....	43
7.2 River and Coastal Zone 3 Flooding.....	43
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating.....	43
7.4 Flood Defences.....	43
7.5 Areas benefiting from Flood Defences.....	43
7.6 Areas benefiting from Flood Storage.....	44
7.7 Groundwater Flooding Susceptibility Areas.....	44
7.8 Groundwater Flooding Confidence Areas.....	44
8. Designated Environmentally Sensitive Sites Map	45
8. Designated Environmentally Sensitive Sites	46
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:.....	46
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:.....	46
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:.....	46
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:.....	46
8.5 Records of Ramsar sites within 2000m of the study site:.....	46
8.6 Records of Ancient Woodland within 2000m of the study site: .....	47
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:.....	47
8.8 Records of World Heritage Sites within 2000m of the study site:.....	47
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site: .....	47
8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: .....	47
8.11 Records of National Parks (NP) within 2000m of the study site: .....	47
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:.....	48
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:.....	48