

# GroundSure GeoInsight

Ν

Address:	Three Millstones Inn, West Bradford, Lancashire, BB7 4SX
Date:	6 Jan 2015
Reference:	CMAPS-CM-389440-4199-060115GEO
Client:	CENTREMAPS

NW

W

NE



SW

Aerial Photograph Capture date: Grid Reference: Site Size: S

07-May-2001

0.12ha

374163,444402

SE

# **Contents Page**

Overview of Findings	5
1 Geology	8
1.1 Artificial Ground Map	8
1 Geology	
1.1 Artificial Ground	9
1.1.1Artificial/ Made Ground	
1.1.2 Permeability of Artificial Ground	9
1.2 Superficial Deposits and Landslips Map	
1.2 Superficial Deposits and Landslips	
1.2.1 Superficial Deposits/ Drift Geology	
1.2.3 Landslip	
1.2.4 Landslip Permeability	
1.3 Bedrock and Faults Map	
1.3 Bedrock, Solid Geology & Faults	
1.3.1 Bedrock/ Solid Geology	
1.3.2 Permeability of Bedrock Ground	
1.4 Radon Data	
1.4.1 Radon Affected Areas	
1.4.2 Radon Protection	
2 Ground Workings Map	
2 Ground Workings	
2.1 Historical Surface Ground Working Features derived from Historical Mapping	
2.2 Historical Underground Working Features derived from Historical Mapping	16
2.3 Current Ground Workings	
3 Mining, Extraction & Natural Cavities Map	
3 Mining, Extraction & Natural Cavities	
3.1 Historical Mining	
3.2 Coal Mining	
3.3 Johnson Poole and Bloomer	
3.4 Non-Coal Mining	
3.5 Non-Coal Mining Cavities	
3.6 Natural Cavities	
3.7 Brine Extraction	
3.8 Gypsum Extraction	
3.9 Tin Mining	
3.10 Clay Mining	
4 Natural Ground Subsidence	
4.1 Shrink-Swell Clay Map	
4.2 Landslides Map	
4.3 Ground Dissolution Soluble Rocks Map	23
4.4 Compressible Deposits Map	24
4.5 Collapsible Deposits Map	
4.6 Running Sand Map	
4 Natural Ground Subsidence	
4.1 Shrink-Swell Clays	27
4.2 Landslides	
4.3 Ground Dissolution of Soluble Rocks	
4.4 Compressible Deposits	
4.5 Collapsible Deposits	
4.6 Running Sands	
5 Borehole Records Map	
5 Borehole Records	

#### centremapslive.com the mapping portal from Laser Surveys



6 Estimated Background Soil Chemistry	32
7 Railways and Tunnels Map	33
7 Railways and Tunnels	34
7.1 Tunnels	
7.2 Historical Railway and Tunnel Features	34
7.3 Historical Railways	34
7.4 Active Railways	35
7.5 Railway Projects	35



# **Overview of Findings**

The GroundSure GeoInsight provides high quality geo-environmental information that allows geoenvironmental 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 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow 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						
1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made the study site?	Ground preser	nt beneath	No		
	1.1.2 Are there any records relating to per ground within the study site* boundary?	meability of ar	tificial	No		
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift beneath the study site?	Geology prese	ent	Yes		
	1.2.2 Are there any records relating to per geology within the study site boundary?	meability of su	perficial	Yes		
	1.2.3 Are there any records of landslip with site boundary?	nin 500m of the	e study	No		
	1.2.4 Are there any records relating to per within the study site boundary?	meability of lar	ndslips	No		
1.3 Bedrock, Solid Geology & Faults	1.3.1 For records of Bedrock and Solid Geo site* see the detailed findings section.	ology beneath t	he study			
	1.3.2 Are there any records relating to per within the study site boundary?	meability of be	drock	Yes		
	1.3.3 Are there any records of faults withir boundary?	n 500m of the s	tudy site	Yes		
1.4 Radon data	1.4.1 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		
	1.4.2 Is the property in an area where Rade are required for new properties or extensi described in publication BR211 by the Buil Establishment?	on Protection N ons to existing Iding Research	Aeasures ones as	Basic radon pi necessary	otective meas	ures are
Section 2:Ground V	Vorkings	On-site	0-50m	51-250	251-500	501-1000
2.1 Historical Surface G Mapping	round Working Features from Small Scale	0	0	2	Not Searched	Not Searched
2.2 Historical Undergro	und Workings from Small Scale Mapping	0	0	0	0	0
2.3 Current Ground Wo	rkings	0	0	0	1	1
Section 3:Mining, E	xtraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining		0	0	0	0	0

### centremapslive.com the mapping portal from Laser Surveys



Section 3:Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.2 Coal Mining	0	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	1	0	0	0	3
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0
Section 4:Natural Ground Subsidence	On-si	ite			
4.1 Shrink Swell Clay	Very L	ow			
4.2 Landslides	Low	1			
4.3 Ground Dissolution of Soluble Rocks	Very L	ow			
4.4 Compressible Deposits	Moder	ate			
4.5 Collapsible Deposits	Very L	ow			
4.6 Running Sand	Low	1			
Section 5:Borehole Records	On-site	0-50m	51-250		
5 BGS Recorded Boreholes	0	0	0		
Section 6:Estimated Background Soil Chemistry	On-site	0-50m	51-250		
6 Records of Background Soil Chemistry	1	2	9		
Section 7:Railways and Tunnels	On-site	0-50m	51-250	251-500	
7.1 Tunnels	0	0	0	Not Searched	
7.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	
7.3 Historical Railways	0	0	0	Not Searched	
7.4 Active Railways	0	0	0	Not Searched	

Report Reference: CMAPS-CM-389440-4199-060115GEO Client Reference: 4199





Section 7:Railways and Tunnels	On-site	0-50m	51-250	251-500	
7.5 Railway Projects	0	0	0	0	



# 1 Geology 1.1 Artificial Ground Map









#### 1.1.1Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:068

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

No

Database searched and no data found.

#### 1.1.2 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.

centremapslive.com the mapping portal from Laser Surveys



# **1.2 Superficial Deposits and Landslips** Map





Search Buffers (m)



# **1.2 Superficial Deposits and Landslips**

#### 1.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	ALV-CSSG	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	9.0	S	RTD2-SAGR	<b>RIVER TERRACE DEPOSITS, 2</b>	SAND AND GRAVEL
3	42.0	Ν	T2T3-SAGR	RIVER TERRACE DEPOSITS, 2 TO 3	SAND AND GRAVEL
4	64.0	Ν	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
5	248.0	SW	HMGDD-DMTN	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN	DIAMICTON
6	295.0	SE	GLLDD-CLSI	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN	CLAY AND SILT
7	350.0	SW	GLLDD-CLSI	GLACIOLACUSTRINE DEPOSITS, DEVENSIAN	CLAY AND SILT
8	444.0	SE	RTD1-SAGR	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL

#### 1.2.2 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	Very Low
9.0	S	Intergranular	Very High	High
42.0	Ν	Intergranular	Very High	High

#### 1.2.3 Landslip

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

No

#### Database searched and no data found.

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.

#### 1.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site<sup>\*\*</sup> boundary?

No

Database searched and no data found.

<sup>\*</sup> This includes an automatically generated 50m buffer zone around the site





# 1.3 Bedrock and Faults Map





# 1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:068

#### 1.3.1 Bedrock/ Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	CLHOM- MDST	Clitheroe Limestone Formation And Hodder Mudstone Formation (undifferentiated) - Mudstone	Holkerian / Chadian

#### 1.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site<sup>\*</sup> boundary? Yes

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

#### 1.3.3 Faults

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

ID	Distance (m)	Direction	Category Description	Feature Description
3	358.0	Ν	FAULT	Fault, inferred, displacement unknown

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 nationwide coverage.

Yes

<sup>\*</sup> This includes an automatically generated 50m buffer zone around the site



# 1.4 Radon Data

#### 1.4.1 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

#### 1.4.2 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

centremapslive.com the mapping portal from Laser Surveys



# 2 Ground Workings Map









#### 2.1 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

The following Historical Surface Ground Working Features are provided by GroundSure:

ID	Distance (m)	Direction	NGR	Use	Date
1A	132.0	E	374350 444420	Pond	1950
2A	133.0	E	374347 444417	Pond	1971

2.2 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.

#### 2.3 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?

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
Not shown	317.0	NW	373975 444689	Clay & Shale	Eaves Hall	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	547.0	SW	373864 443921	Clay & Shale	Waddington Brick &Tile Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

Yes



# 3 Mining, Extraction & Natural Cavities Map







# 3 Mining, Extraction & Natural Cavities

#### 3.1 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.

#### 3.2 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.

#### 3.3 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.

#### 3.4 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?

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	Rare and localised small scale mining may have occurred.
Not shown	577.0	Ν	Not available	Vein Mineral	Rare and localised small scale mining may have occurred.
Not shown	811.0	E	Not available	Vein Mineral	Rare and localised small scale mining may have occurred.
Not shown	996.0	NE	Not available	Vein Mineral	Rare and localised small scale mining may have occurred.



#### 3.5 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?

Database searched and no data found.

#### 3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary?

Database searched and no data found.

#### 3.7 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?

Database searched and no data found.

#### 3.8 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

No

No

No

Database searched and no data found.

#### 3.9 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.





No

#### 3.10 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?

Database searched and no data found.





# 4 Natural Ground Subsidence 4.1 Shrink-Swell Clay Map







# 4.2 Landslides Map







# 4.3 Ground Dissolution Soluble Rocks Map







# 4.4 Compressible Deposits Map







# 4.5 Collapsible Deposits Map







# 4.6 Running Sand Map









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<sup>\*\*</sup> boundary? Moderate

#### 4.1 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.

#### 4.2 Landslides

The following Landslides information provided by the British Geological Survey:

Distance (m)	Direction	Hazard Rating	Details
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.
36.0	NE	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.
37.0	SE	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.
47.0	Ν	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.
	Distance (m)   0.0   36.0   37.0   47.0	Distance (m)Direction0.0On Site36.0NE37.0SE47.0N	Distance (m)DirectionHazard Rating0.0On SiteVery Low36.0NELow37.0SELow47.0NLow

<sup>\*</sup> This includes an automatically generated 50m buffer zone around the site



#### 4.3 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	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

#### 4.4 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	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.
2	9.0	S	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.

#### 4.5 Collapsible Deposits

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

ID	Distance (m)	<sup>e</sup> 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	9.0	S	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.



#### 4.6 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	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.
2	9.0	S	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.





### **5 Borehole Records Map**









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:

0

Database searched and no data found.





# 6 Estimated Background Soil Chemistry

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

12

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	<15 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
9.0	S	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
42.0	Ν	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
64.0	Ν	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
77.0	Ν	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
77.0	Ν	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
81.0	W	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
93.0	NW	Sediment	<15 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
137.0	W	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
160.0	SW	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
161.0	NW	Sediment	15 - 25 mg/kg	3.0 - 6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
248.0	SW	Sediment	15 - 25 mg/kg	3.0 - 6.0 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.





# 7 Railways and Tunnels Map









#### 7.1 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.

#### 7.2 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	v historical railwa	v or tunnel features	been identified w	vithin the study	site boundary	/? No
i luve ull	y motoricari anva	y or cumericatures	been lacitunea w	vicinii ciic scaay	Site Soundary	

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.

#### 7.3 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.	
Note: multiple sections of the same treat may be listed in the detail shows	

Note: 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.



#### 7.4 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?	e boundary? No Id. d in the detail above ailways and Tunnels Map.
Database searched and no data found.	
Note: 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.	
7.5 Railway Projects	
These datasets provide information on the location of large scale railway projects High Speed 2 and Cr	ossrail.
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 rail project?	No
Further information on provinity to these routes, the project construction status and associated works can be	obtained

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 Report.

### **Contact Details**



#### centremaps*live*.com

the mapping portal from Laser Surveys

CENTREMAPS Telephone: 01886 832972 groundsure@centremaps.co.uk CENTREMAPS, Brockamin House, Leigh, Worcester, London, WR6 5JU

Directors: M C Walker, MInst C.E.S., C M Walker, S J Hawkins BSc (Hons), S E Stewart BSc (Hons) Registered No. 1890261 Registered in England and Wales Registered Company: Laser Surveys Limited

British Geological Survey Enquiries

Kingsley Dunham Centre Keyworth, Nottingham NG12 5GG Tel: 0115 936 3143. Fax: 0115 936 3276. Email:**enquiries@bgs.ac.uk** 

Web: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

British Geological Survey Natural environment research council



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 Main switchboard: 020 7654 8000

> Johnson Poole & Bloomer Limited Harris and Pearson Building, Brettel Lane Brierley Hill, West Midlands DY5 3LH Tel: +44 (0) 1384 262 000 Email:enquiries.gs@jpb.co.uk Website: 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** Website:**http://www.peterbrett.com/home**  Public Health England

The Coal

Authority









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.

Report Reference: CMAPS-CM-389440-4199-060115GEO Client Reference: 4199