

APPENDIX B1

GeoInsight Report

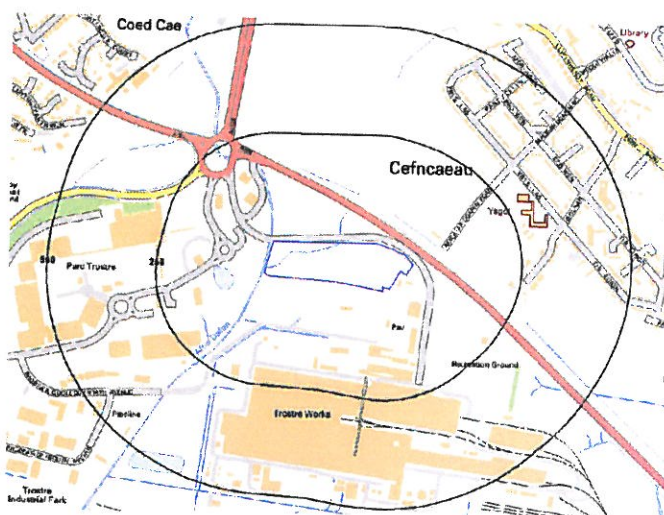
GroundSure GeoInsight

Address: Trostre Closed Landfill

Date: Aug 13, 2009

GroundSure Reference: HMD-142-529706

Your Reference: 44-05-01



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Report Reference: HMD-142-529706

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Aerial Photograph of Study Site



Site Name: Trostre Closed Landfill
Grid Reference: 252744, 199777

Aerial photography supplied by Getmapping PLC.
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Overview of Findings

The GroundSure GeolInsight 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 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 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.

Report Section	Number of records found within (X) m of the study site boundary
1. Geology	Description
1.1 Artificial Ground,	
1.1.1 Is there any Artificial Ground /Made Ground present beneath the study site? *	No
1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology & Landslips	
1.2.1 Is there any Superficial Ground /Drift Geology present beneath the study site? *	Yes
1.2.2 Are there any records relating to permeability of superficial geology within the study site* boundary?	Yes
1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
1.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No
1.3 Bedrock, Solid Geology & Faults	
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 relating to permeability of bedrock within the study site* boundary?	Yes
1.3.3 Are there any records of faults within 500m of the study site boundary?	Yes
1.3.4 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
1.3.5 Is the property in an area where Radon Protection Measures 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

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

Source:Scale 1:50,000 BGS Sheet No:247

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2. Ground Workings	on-site	0-50	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	18	-	-
2.2 Historical Underground Workings Features from Small Scale Mapping	1	1	7	4	9
2.3 Current Ground Workings	0	0	0	0	0

3. Mining, Extraction & Natural Cavities	on-site	0-50	51-250	251-500	501-1000
3.1 Historical Mining	1	1	7	4	9
3.2 Coal Mining	1	0	0	0	0
3.3 Shallow Mining*	1	-	-	-	-
3.4 Non - Coal Mining Cavities	0	0	0	0	0
3.5 Natural Cavities	0	0	0	0	0
3.6 Brine Extraction	0	0	0	0	0
3.7 Gypsum Extraction	0	0	0	0	0
3.8 Tin Mining	0	0	0	0	0
3.9 Clay Mining	0	0	0	0	0

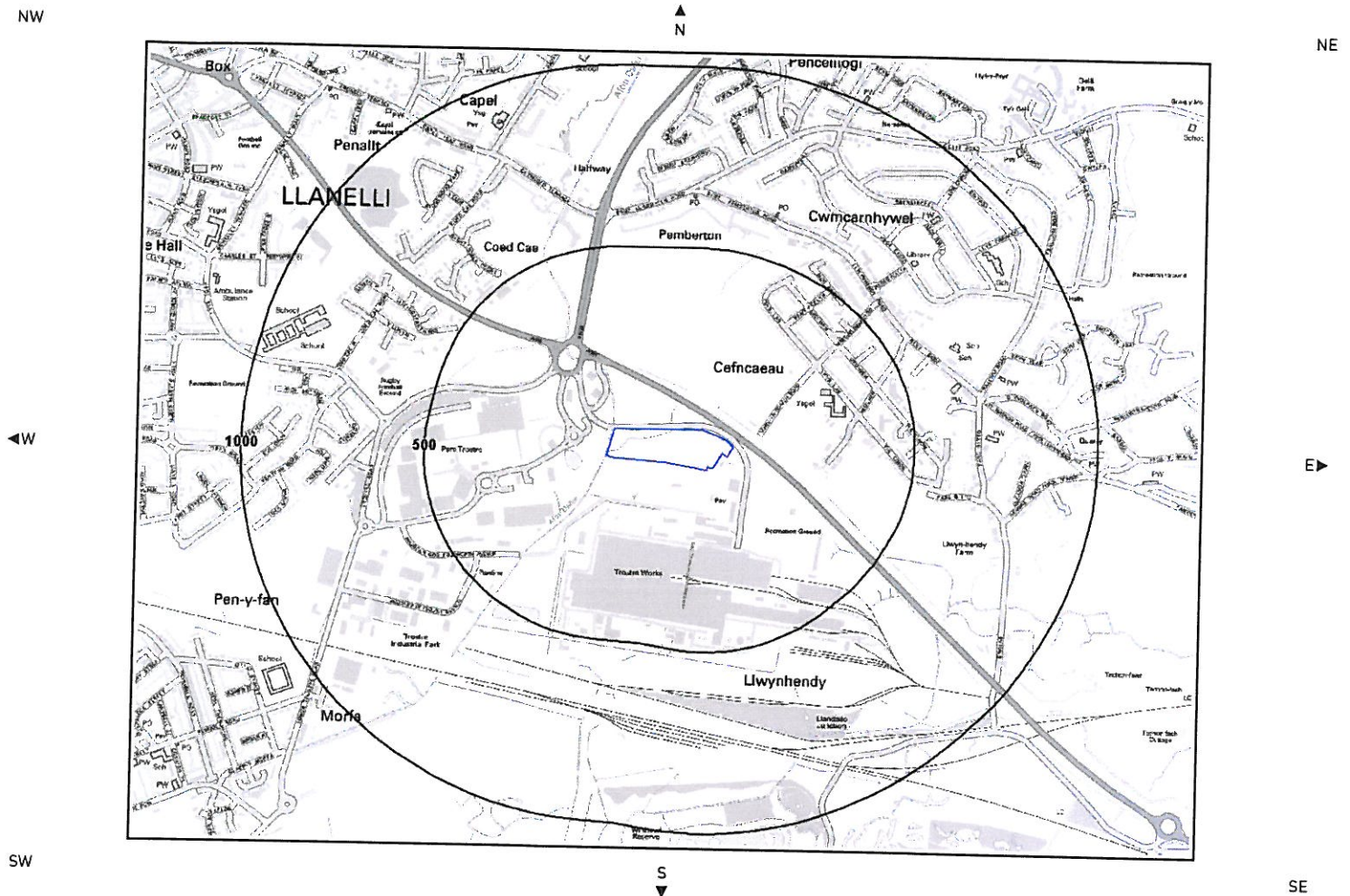
*This includes an automatically generated 150m buffer zone around the site

4. Natural Ground Subsidence	on-site*	0-50	51-250	251-500	501-1000
4.1 Shrink-Swell Clay	Very Low	-	-	-	-
4.2 Landslides	Very Low	-	-	-	-
4.3 Ground Dissolution of Soluble Rocks	Negligible	-	-	-	-
4.4 Compressible Deposits	Moderate	-	-	-	-
4.5 Collapsible Deposits	Negligible	-	-	-	-
4.6 Running Sand	Moderate	-	-	-	-

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

5. Borehole Records	on-site	0-50	51-250	251-500	501-1000
5.1 BGS Recorded Boreholes	0	3	25	-	-

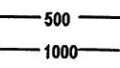
1.1 Artificial Ground Map



Artificial Ground Legend

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	Site Outline		Made Ground (undivided)		Disturbed Ground (undivided)
	Search Buffers (m)		Worked Ground (undivided)		Landscaped Ground (undivided)
			Infilled Ground		Reclaimed Ground

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

Report Reference: [HMD-142-529706](#)

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1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:247

1.1.1 Artificial/Made Ground

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

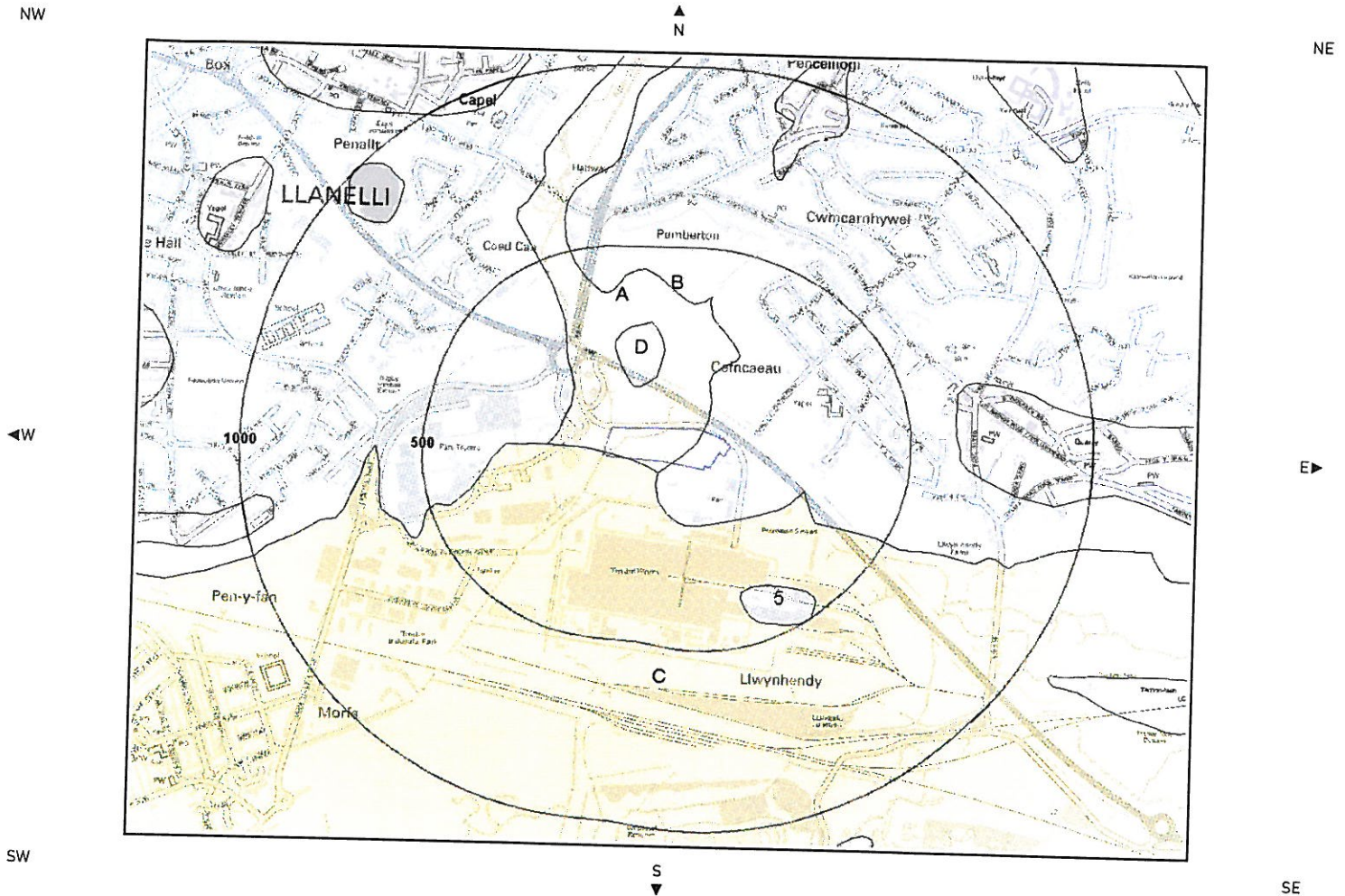
Are there any records relating to permeability of artificial ground within the study site* boundary:

No

Database searched and no data found.

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

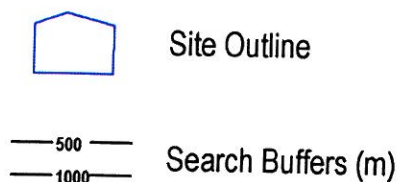
1.2 Superficial Deposits and Landslips Map



Superficial and Landslips Legend



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

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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
1A	0.0	On Site	ALV-CSSG	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2C	0.0	On Site	TFD-SSCL	TIDAL FLAT DEPOSITS	SAND, SILT AND CLAY
3B	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
4D	114.0	N	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
5	347.0	SE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
6A	0.0	On Site	ALV-CSSG	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
7B	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
8C	0.0	On Site	TFD-SSCL	TIDAL FLAT DEPOSITS	SAND, SILT AND CLAY
9D	114.0	N	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

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
0.0	On Site	Intergranular	High	Low
0.0	On Site	Mixed	High	Low

1.2.3 Landslip

Database searched and no data found.

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

No

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 discreet 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

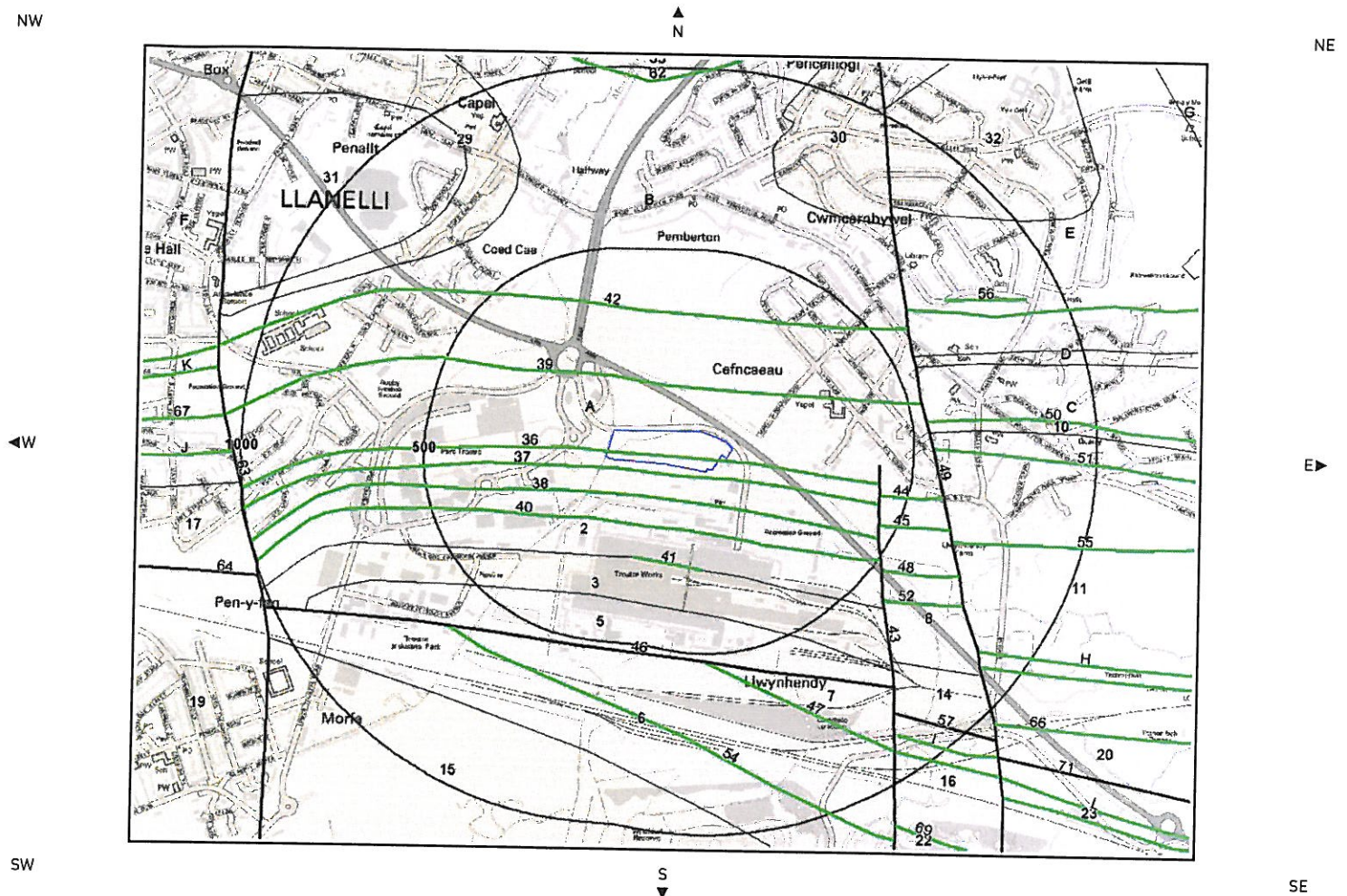
Are there any records relating to permeability of landslips within the study site* boundary:

No

Database searched and no data found.

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

1.3 Bedrock and Faults Map



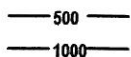
Bedrock & Faults Deposits Legend



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Site Outline



Search Buffers (m)

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

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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:247

1.3.1 Bedrock/Solid Geology

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

ID	Distance [m]	Direction	LEX Code	Rock Description	Rock Age
1A	0.0	On Site	SW-MDSS	Swansea Member - Mudstone, Siltstone And Sandstone	Westphalian D
2	89.0	S	H-MDSS	Hughes Member - Mudstone, Siltstone And Sandstone	Westphalian D
3	262.0	S	H-SDST	Hughes Member - Sandstone	Westphalian D
4B	319.0	N	GDB-MDSS	Grovesend Formation - Mudstone, Siltstone And Sandstone	Westphalian D
5	374.0	S	H-MDSS	Hughes Member - Mudstone, Siltstone And Sandstone	Westphalian D
24A	0.0	On Site	SW-MDSS	Swansea Member - Mudstone, Siltstone And Sandstone	Westphalian D
25B	319.0	N	GDB-MDSS	Grovesend Formation - Mudstone, Siltstone And Sandstone	Westphalian D

1.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site* boundary:

Yes

Distance [m]	Direction	Flow type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Moderate	Low

1.3.3 Faults

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

Yes

ID	Distance [m]	Direction	Category Description	Feature Description
36	0.0	On Site	ROCK	Coal seam, inferred
37	16.0	S	ROCK	Coal seam, inferred
38	89.0	S	ROCK	Coal seam, inferred
39	119.0	N	ROCK	Coal seam, inferred
40	166.0	S	ROCK	Coal seam, inferred
41	262.0	S	ROCK	Coal seam, inferred
42	319.0	N	ROCK	Coal seam, inferred
43	406.0	E	FAULT	Coal seam, inferred
44	424.0	E	ROCK	Normal fault, inferred
45	455.0	SE	ROCK	Coal seam, inferred

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 discreet 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.

1.3.4 Radon Affected Areas

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

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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?

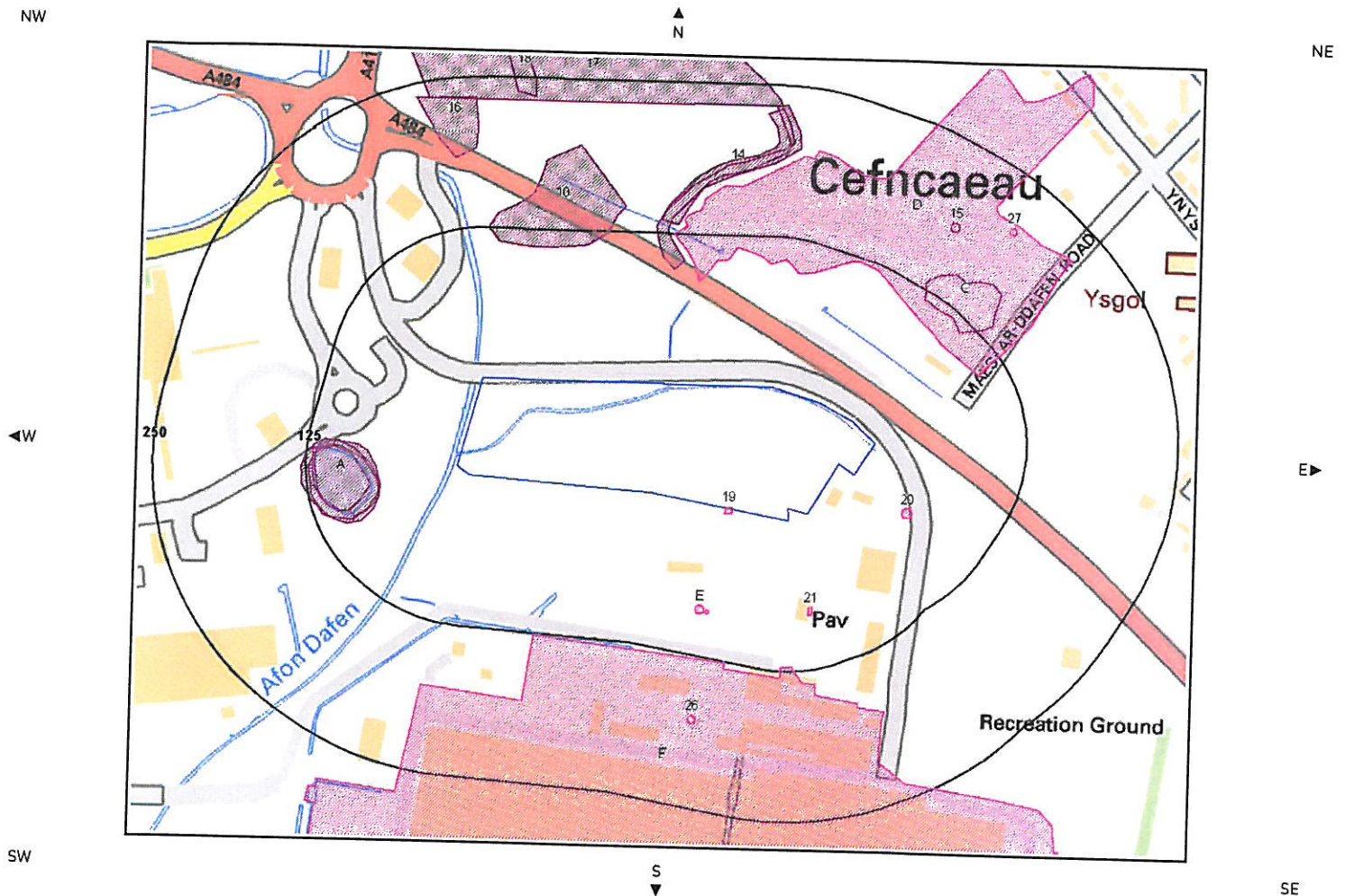
The property is not in a radon Affected Area, as less than 1% of properties are above the Action Level

1.3.5 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

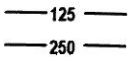
2. Ground Workings Map



Ground Workings Legend



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

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2. Ground Workings

2.1 Historical Surface Ground Working Features derived from the 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	65.0	W	252534,199683	Unspecified Ground Workings	1948
2A	65.0	W	252534,199683	Unspecified Ground Workings	1905
3A	66.0	W	252539,199684	Pond	1990
4A	66.0	W	252539,199684	Pond	1973
5A	67.0	W	252537,199679	Unspecified Ground Workings	1878
6A	73.0	W	252535,199684	Pond	1948
7D	85.0	N	252975,199912	Colliery	1878
8B	95.0	N	252819,199931	Unspecified Ground Workings	1948
9B	95.0	N	252819,199931	Unspecified Ground Workings	1973
10	111.0	N	252718,199932	Refuse Heap	1948
11C	115.0	NE	253043,199842	Unspecified Heap	1905
12C	115.0	NE	253043,199842	Unspecified Heap	1948
13F	121.0	S	252978,199296	Unspecified workings	1973
14	133.0	N	252850,199951	Unspecified Ground Workings	1990
15	178.0	NE	253035,199904	Clay Pit	1878
16	184.0	N	252615,199976	Unspecified Heap	1948
17	231.0	N	252733,200099	Unspecified Ground Workings	1965
18	235.0	N	252676,200027	Refuse Heap	1965

2.2 Historical Underground Workings Features derived from the 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
19	0.0	On Site	252854,199665	Old Coal Shaft	1948
20	50.0	SE	253001,199666	Air Shaft	1905
21	74.0	S	252923,199583	Air Shafts	1948
22E	83.0	S	252832,199583	Air Shaft	1905
23D	85.0	N	252975,199912	Colliery	1878
24E	86.0	S	252838,199581	Air Shafts	1948
25F	121.0	S	252978,199296	Unspecified workings	1973
26	174.0	SE	252828,199492	Air Shaft	1905
27	203.0	NE	253083,199902	Air Shaft	1878
Not shown	396.0	NW	252200,199953	Colliery	1948
Not shown	396.0	NW	252200,199953	Colliery	1905
Not shown	431.0	NW	252251,199962	Coal Pit	1878
Not shown	471.0	NW	252361,200146	Unspecified Old Shaft	1905
Not shown	569.0	N	252916,200360	Old Coal Pit	1878

Not shown	619.0	W	252006,199617	Coal Pit	1948
Not shown	652.0	E	253628,199740	Air Shaft	1878
Not shown	857.0	N	252637,200630	Old Coal Pit	1878
Not shown	893.0	NE	253788,200103	Old Coal Pit	1878
Not shown	894.0	N	253053,200650	Trial Shaft	1905
Not shown	929.0	N	252892,200725	Old Coal Pit	1878
Not shown	971.0	N	252915,200744	Old Coal Shaft	1948
Not shown	971.0	N	252915,200744	Unspecified Old Shaft	1905

2.3 Current Ground Workings

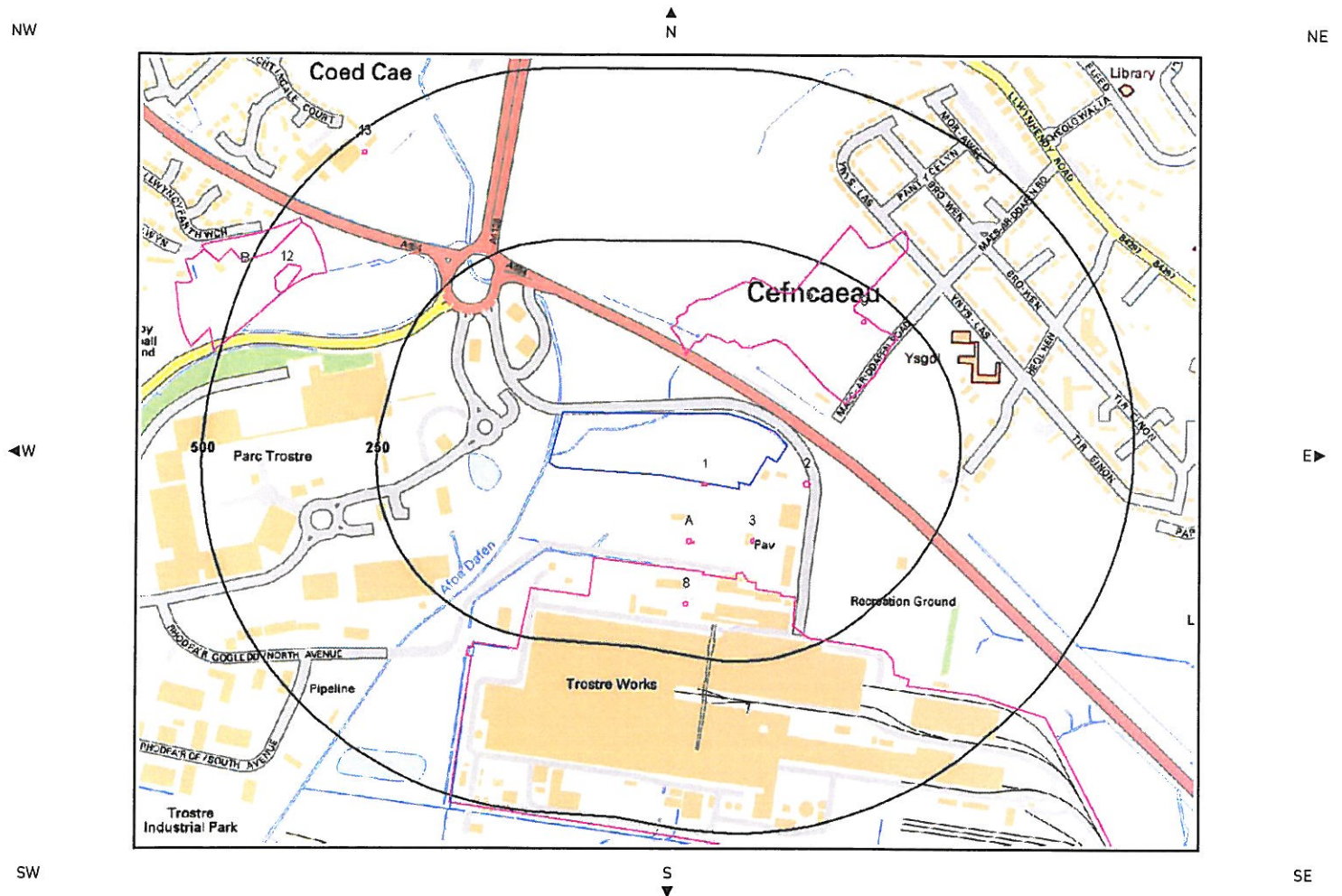
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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

No

Database searched and no data found.

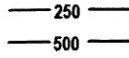
3. Mining, Extraction & Natural Cavities Map



Mining, Extraction & Natural Cavities Legend

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-  Site Outline
-  Search Buffers (m)
-  Historical Mining
-  Non-Coal Mining Cavities
-  Natural Cavities

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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?

Yes

The following Historical Mining information is provided by Groundsure :

ID	Distance (m)	Direction	NGR	Details	Date
1	0.0	On Site	252854,199665	Old Coal Shaft	1948
2	50.0	SE	253001,199666	Air Shaft	1905
3	74.0	S	252923,199583	Air Shafts	1948
4A	83.0	S	252832,199583	Air Shaft	1905
5	85.0	N	252975,199912	Colliery	1878
6A	86.0	S	252838,199581	Air Shafts	1948
7	121.0	S	252978,199296	Unspecified workings	1973
8	174.0	S	252828,199492	Air Shaft	1905
9	203.0	NE	253083,199902	Air Shaft	1878
10B	396.0	NW	252200,199953	Colliery	1948
11B	396.0	NW	252200,199953	Colliery	1905
12	431.0	NW	252251,199962	Coal Pit	1878
13	471.0	NW	252361,200146	Unspecified Old Shaft	1905
Not shown	569.0	N	252916,200360	Old Coal Pit	1878
Not shown	619.0	W	252006,199617	Coal Pit	1948
Not shown	652.0	E	253628,199740	Air Shaft	1878
Not shown	857.0	N	252637,200630	Old Coal Pit	1878
Not shown	893.0	NE	253788,200103	Old Coal Pit	1878
Not shown	894.0	N	253053,200650	Trial Shaft	1905
Not shown	929.0	N	252892,200725	Old Coal Pit	1878
Not shown	971.0	N	252915,200744	Old Coal Shaft	1948
Not shown	971.0	N	252915,200744	Unspecified Old Shaft	1905

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?

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.

3.3 Shallow Mining

This dataset refers to the (largely very old) extraction of mineral deposits by means of near surface underground workings.

What is the maximum hazard rating of subsidence relating to shallow mining within the study site* boundary?

Low - Moderate

*This includes an automatically generated 150m buffer zone around the study site boundary

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