



RHONDDA
GEOTECHNICAL
SERVICES

PHASE 1
CONTAMINATED LAND ASSESSMENT
N.P.T. FULL PLANNING APP. P/2020/0433
PROPOSED RESIDENTIAL DEVELOPMENT
FORMER WERNDDU BUNGALOW
TY LLWYD, BRYNCOCH
NEATH
SA10 7DZ
15/01/2021

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INTRODUCTION-PURPOSES AND AIMS

Full planning permission P/2020/0433 is for a single detached residential property at Plot 1 of the former Wernddu Bungalow, Neath. As Condition 4, Neath Port Talbot L.P.A. have indicated that they require a Contaminated Land Risk Assessment. Rhondda Geotechnical Services have been engaged to carry out this work.

Any Contamination Assessment takes the form of:-

i) A desk top study to identify all previous uses of the site and potential contaminants associated with those uses. This should include a Conceptual Site Model (C.S.M.). The desk study is known as a Phase 1 Contaminated Land Report.

ii) A site investigation to characterise the extent, scale and nature of any contamination and its implications. The site investigation shall not be commenced until the desk top study has been completed, and then only if the Phase 1 recommends a site investigation is carried out.

iii) An assessment of the potential risks to:-

Human health, controlled waters, adjoining land and properties, ecological systems and archaeological sites.

iv) An appraisal of remedial options, *if these are necessary*, and a proposal of the preferred option. Points ii-iv are known as a Phase 2 Report and are only required if the Phase 1 report recommends they are necessary.

Condition 3 of the planning is a remediation condition and has apparently been inserted in the wrong place as logically it should follow Condition 4. Again, Condition 3 is entirely dependent on the findings of the Phase 1 and Phase 2 (if recommended by the Phase 1).

The report will follow the guidelines set out in the document Development of Land Affected by Contamination: A Guide for Developers (Version 3). This was produced by the Welsh Land Contamination Working Group in 2017. In particular the methodology set out in appendix B with the check list for Phase 1 and 2 will be followed. The contaminated land exposure assessment (henceforth CLEA) produced by The Environment Agency will be used in the conceptual model, particularly in regard to the source-pathway-receptor concept for

pollutant linkages. The entire project will be guided by the 2004 Defra/E.A. document CLR11 (Model Procedures for the Management of Land Contamination).

The current definition of contaminated land is “any land which appears to the local authority in whose area it is situated in to be in such a condition, by reason of substances in or under the ground that:-

- a. “Significant harm is being caused, or there is a significant possibility of such harm being caused OR
- b. Pollution of controlled waters is being, or is likely to be caused”

(Section 78A Part 2A Environmental Protection Act)

This act also requires that a risk based approach should be used for assessing the contamination status of a site. For a site to be designated as contaminated it must be shown that the site is not fit for its current, or intended use. Statutory guidance states that a two stage approach should be adopted for the assessment of contaminated land.

- 1. Identification of potential pollution linkages
- 2. Assessment of the risk to receptors

The first stage (The Phase 1 report) is a qualitative assessment of the plausible pollution linkages that exist or may exist on site. This involves the development of a site conceptual model. This may then be refined in Phase 2 after an intrusive investigation, followed by laboratory testing of samples obtained, but only if the Phase 1 deems it necessary. At this stage it is only intended to produce a Phase 1 to submit to the L.P.A.

1. AUTHOR CREDENTIALS

The author of this report is Richard Davies. He graduated with a Bachelor of Science honours degree in Geology from Liverpool University in 1979. After starting his career as an engineer in the coal industry, he moved into site investigation in the 1980's and has many years experience working on contaminated land. He is a Fellow of The Geological Society and holds a Master's Degree in Applied Environmental Geology from Cardiff University. He is also a

Supporter Member of CL: AIRE (Contaminated Land: Applications in Real Environments)

2. SITE DESCRIPTION

The site is centred on grid reference 273505,200910 and is at an average elevation of approximately 105m. A.O.D. The site is rectangular and is 50m long with an average width of 20m (0.01 Ha). The site is situated in a rural residential area and was formerly a residential property and garden (Wernddu Bungalow). The site fronts onto a minor road (Tyllwyd) to the east with residential properties and their gardens (Wernddu Cottages) as the southern boundary. The western boundary abuts a group of agricultural buildings with rough ground forming the northern boundary. The site location and site boundary can be seen overleaf in Figures 1 and 2 with an aerial photograph of the site in Figure 3.

3. SITE WALKOVER

A walkover survey is part of the Phase 1 Template. This really aimed at far larger sites with former industrial use where differing areas can be delineated. The site was reconnoitred using O.S. mapping, Google Earth Pro and Google Streetview as a temporary measure whilst assessing if a Phase 2 would be necessary. A Phase 2 would of course necessitate a site visit. On Google Streetview a prominent mound can be seen at the northern boundary which initially appears to be man-made.

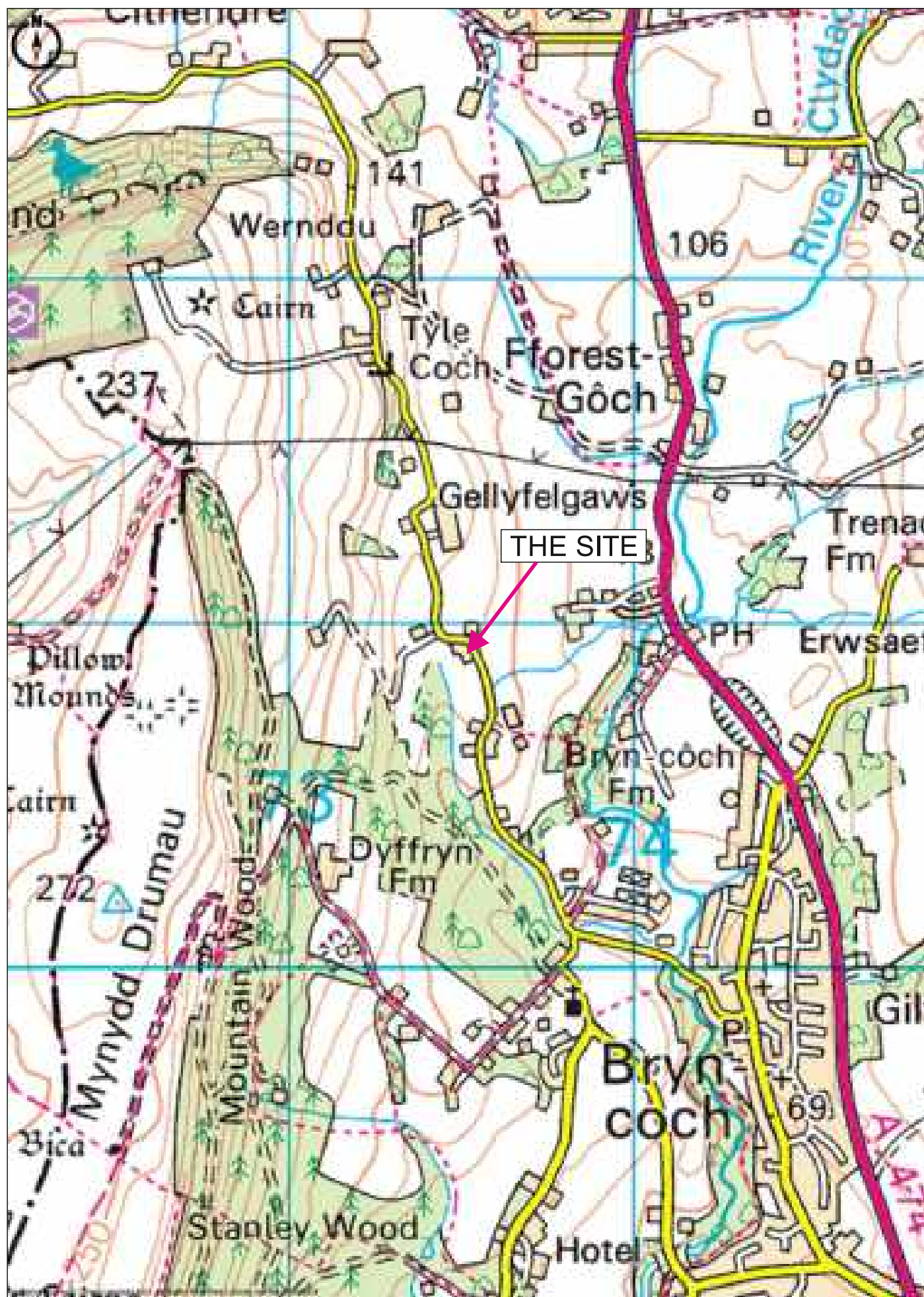


FIGURE 1
SITE LOCATION

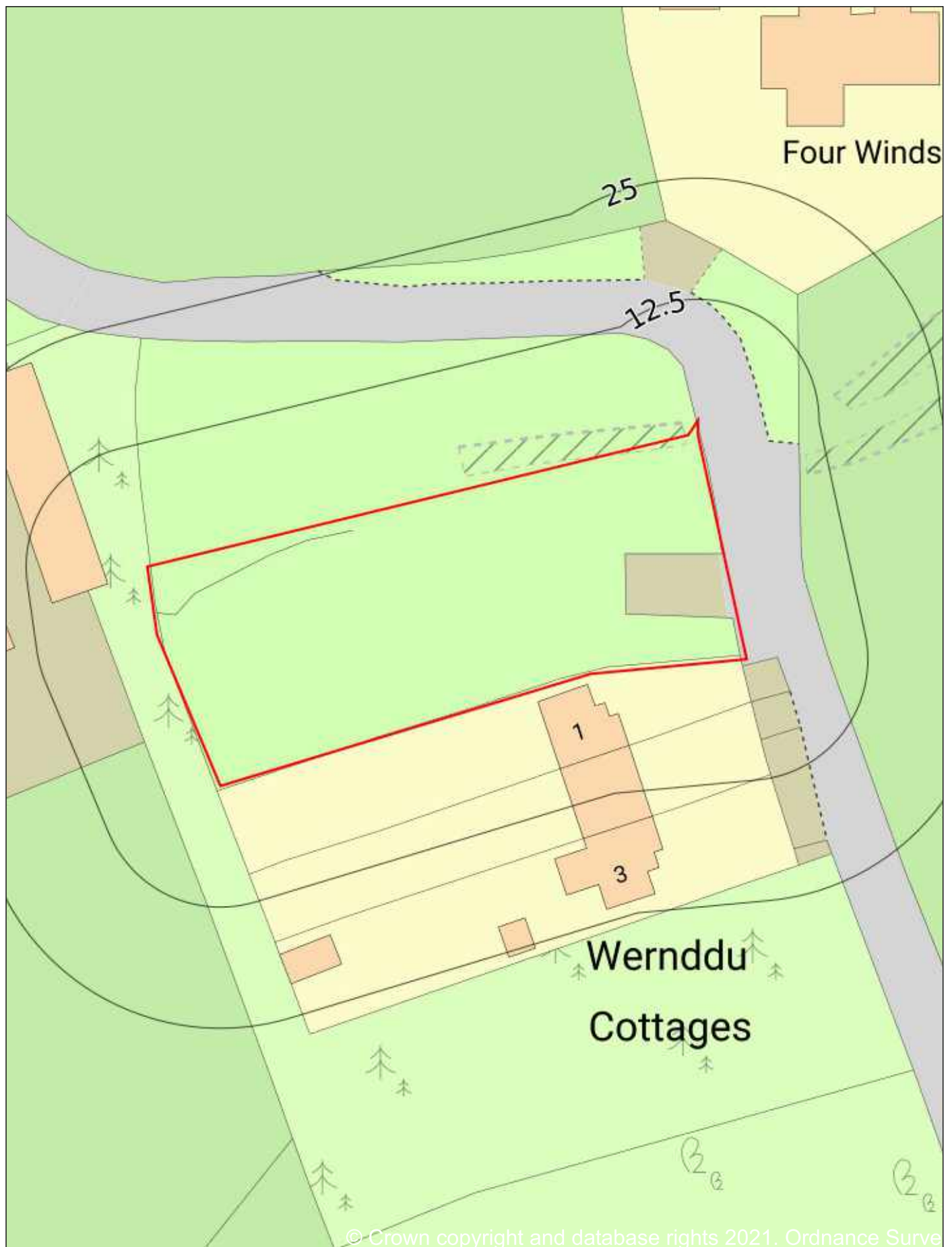


FIGURE 2
SITE BOUNDARY ON O.S. MASTERMAP



FIGURE 3
2017 AERIAL PHOTOGRAPH OF THE SITE

4. SITE HISTORY

In order to gain a thorough understanding of the history of the site a comprehensive collection of historical Ordnance Survey maps was purchased from Groundsure. These were at 1:1250, 1:2500 and 1:10560 scales (later maps are at 1:10,000). Obviously, the larger scale maps are preferable for a desk study, but sometimes a large gap in dates means it is necessary to fall back on the smaller scale maps. Rather unusually in this case there is a large scale map from the 1930s. Another reason for using the smaller scale maps is that they provide a broader contextual setting for the site. In terms of both the site and the immediate surrounding area, there have been several significant changes from the earliest (1877) map to the present day. Extracts from the original maps are presented overleaf as Figures 4-9. These have been slightly truncated from the originals for reasons of page fit and file size. In all cases the eastern margin is truncated as it remains rural throughout. Nothing of significance to the desk study is missing from the extracts.

1877 (Figure 4) SITE- The site is part of an undeveloped rough pasture

SURROUNDING AREA- The area is entirely rural with a farm settlement 200m to the southeast. A lane runs past the site with the same distinctive shape as the present day minor road in the same position. An “old coal pit” is marked 200m southwest of the site.

1899- There is very little change and so the map is not reproduced here. The site is still in an undeveloped field and the surrounding area is completely unchanged.

1918 (Figure 5) SITE- The site is still mainly within an undeveloped field but a single track railway cuts across the northeast corner of the site.

SURROUNDING AREA- New Wernddu Colliery has been developed 250m southwest of the site with a slant, screens, railway sidings and spoil heaps. 100m west of the site is Wernddu Fire Brick Works. This forms part of the colliery complex and is evidently using fireclay from the colliery as the raw material. An “old coal level” is marked 150m west of the site, but this was not shown on the 1899 map.

1935 (Figure 6) SITE- Wernddu Bungalow sits on the site. The railway has been lifted but traces of the embankment can still be seen within the site boundary.

SURROUNDING AREA- Wernddu Cottages have been constructed immediately adjacent to the southern site boundary. There are other scattered residential properties further afield. There is absolutely no trace of the brickworks. The colliery is evidently closed but spoil heaps, railway embankments and a tank still remain. The mine entrance is also marked as a “slant”.

1963 (Figure 7) SITE-The site is unchanged apart from the fact that all traces of the railway embankment have been removed to allow for the expansion of an outbuilding.

SURROUNDING AREA- Wernddu Colliery has been reopened with several new buildings shown and an increase in the size of the spoil heaps.

1977- This revision shows virtually no change to the site and surrounding area and so is not reproduced here.

1989 (Figure 8) SITE- No Change.

SURROUNDING AREA-The colliery is closed and a large agricultural? Building has been constructed 100m northwest of the site.

1993- This revision shows virtually no change to the site and surrounding area and so is not reproduced here.

2003 (Figure 9) SITE- This is the latest revision at large scale (1:1250) and shows the site unchanged.

SURROUNDING AREA- Because of the larger scale much less of the surrounding area is visible. The remains of the railway embankment are still marked immediately adjacent to the northern boundary

More recent small-scale maps (2010 and 2020) have been checked but add little of relevance to the desk study. For this reason, they have not been reproduced here. Google Earth Pro shows the bungalow was demolished between 2010 and 2013 and steel portal buildings were erected close to the western site boundary between 2015 and 2018.

In summary, the history of the site shows a railway running through the site prior to a residential development occupying the site. In the area surrounding the site there is a long history of coal mining and brick making. Neither of these are contaminative uses per se and they are at some distance from the site.

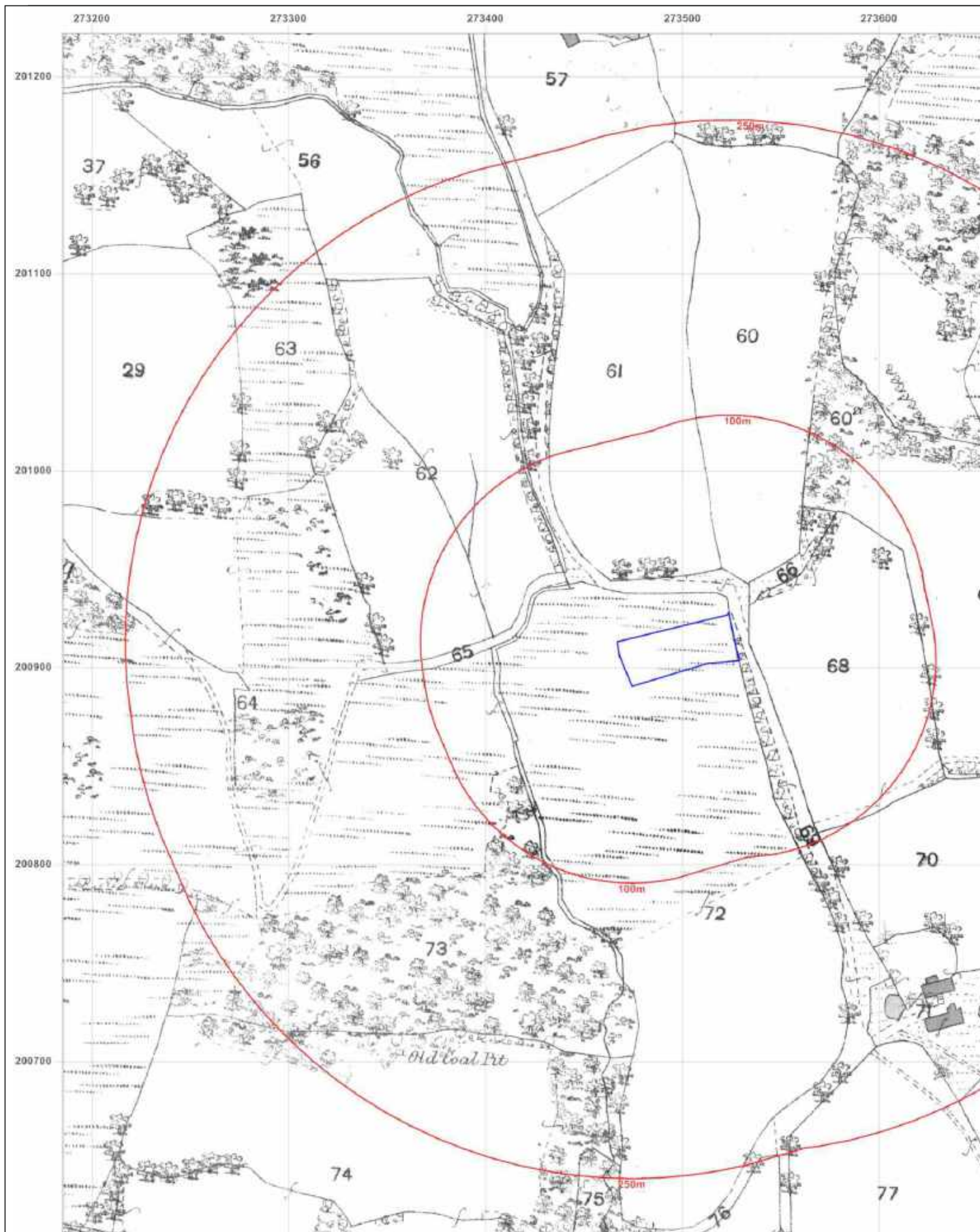


FIGURE 4
THE SITE IN 1877

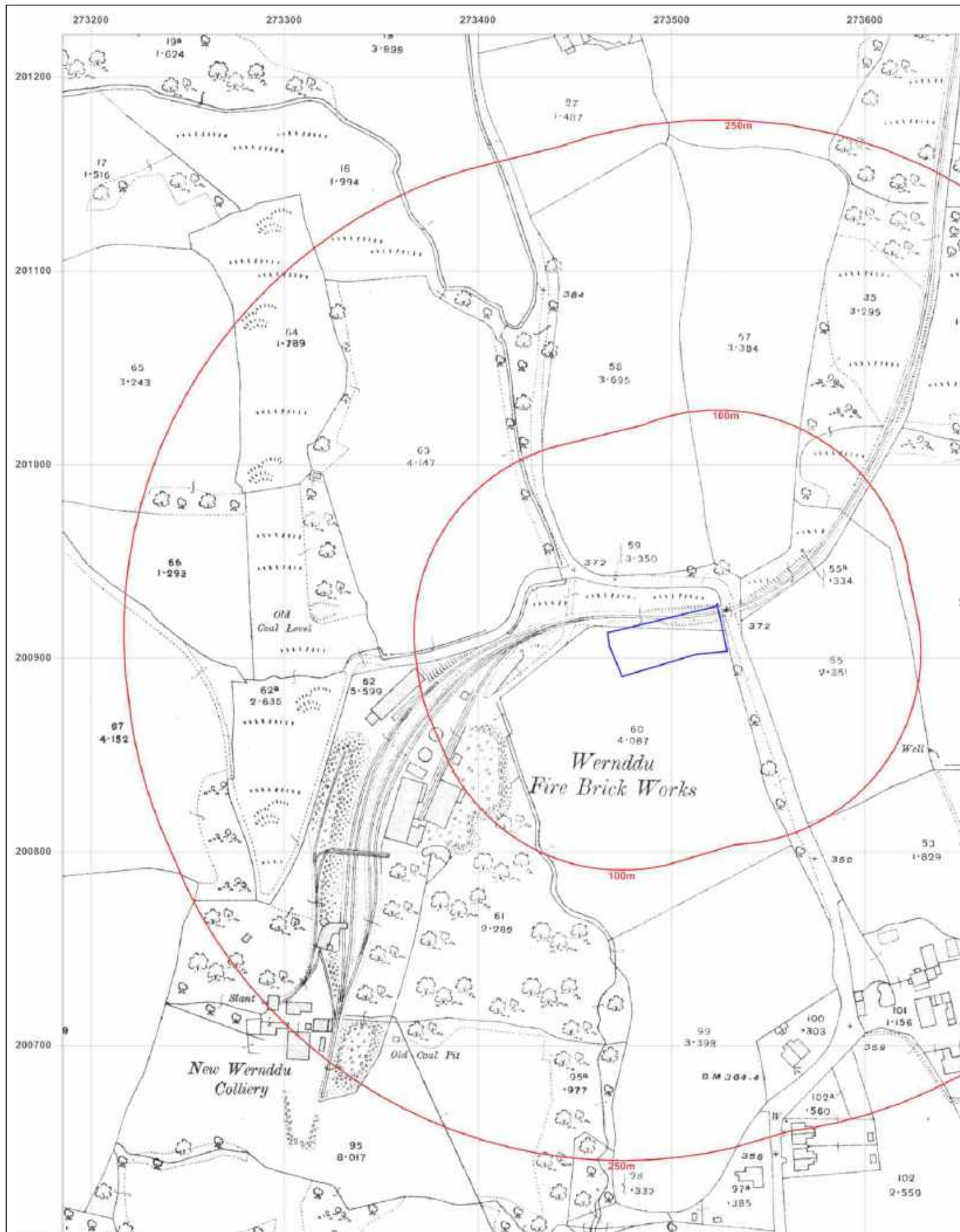


FIGURE 5
THE SITE IN 1918

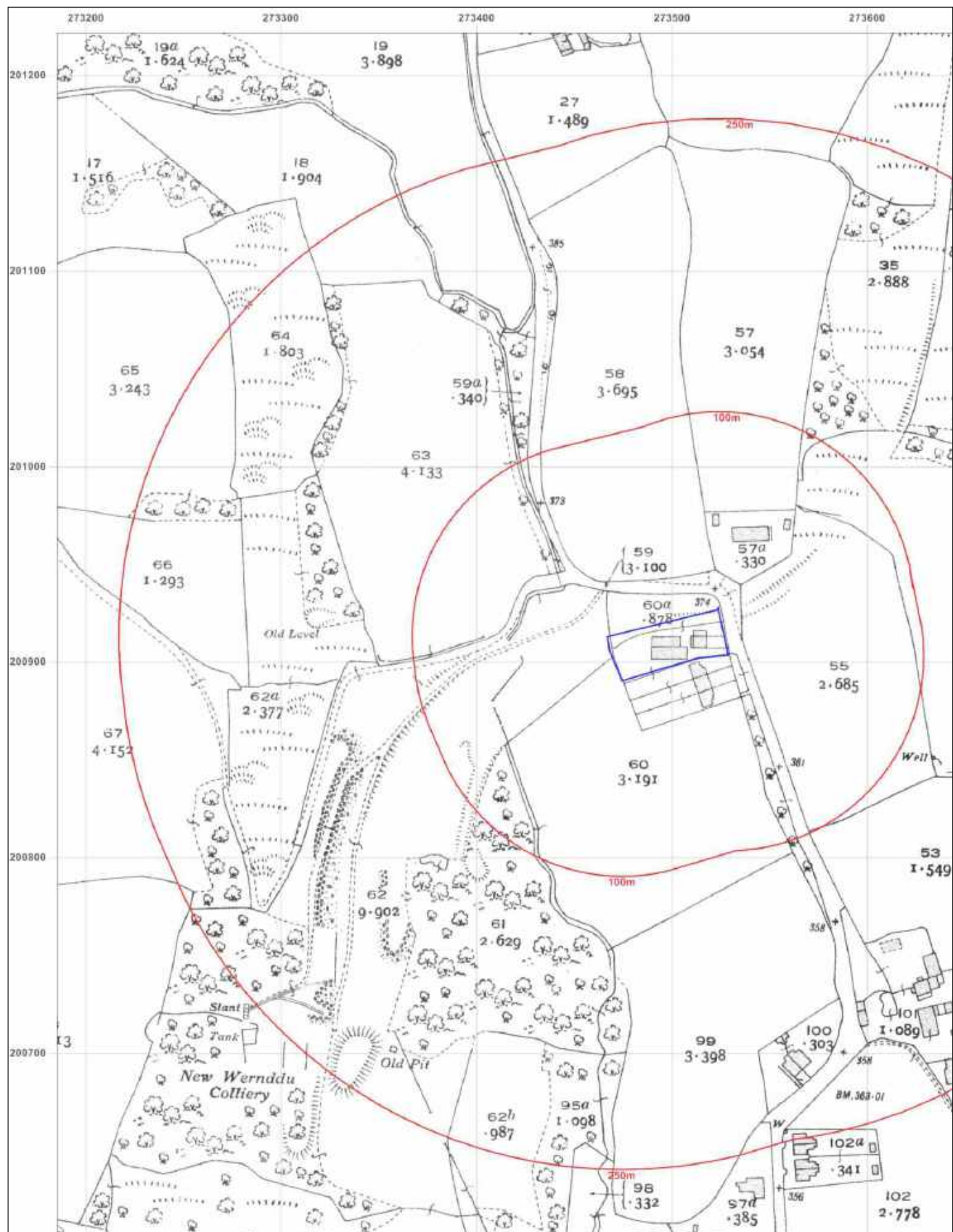


FIGURE 6
THE SITE IN 1935

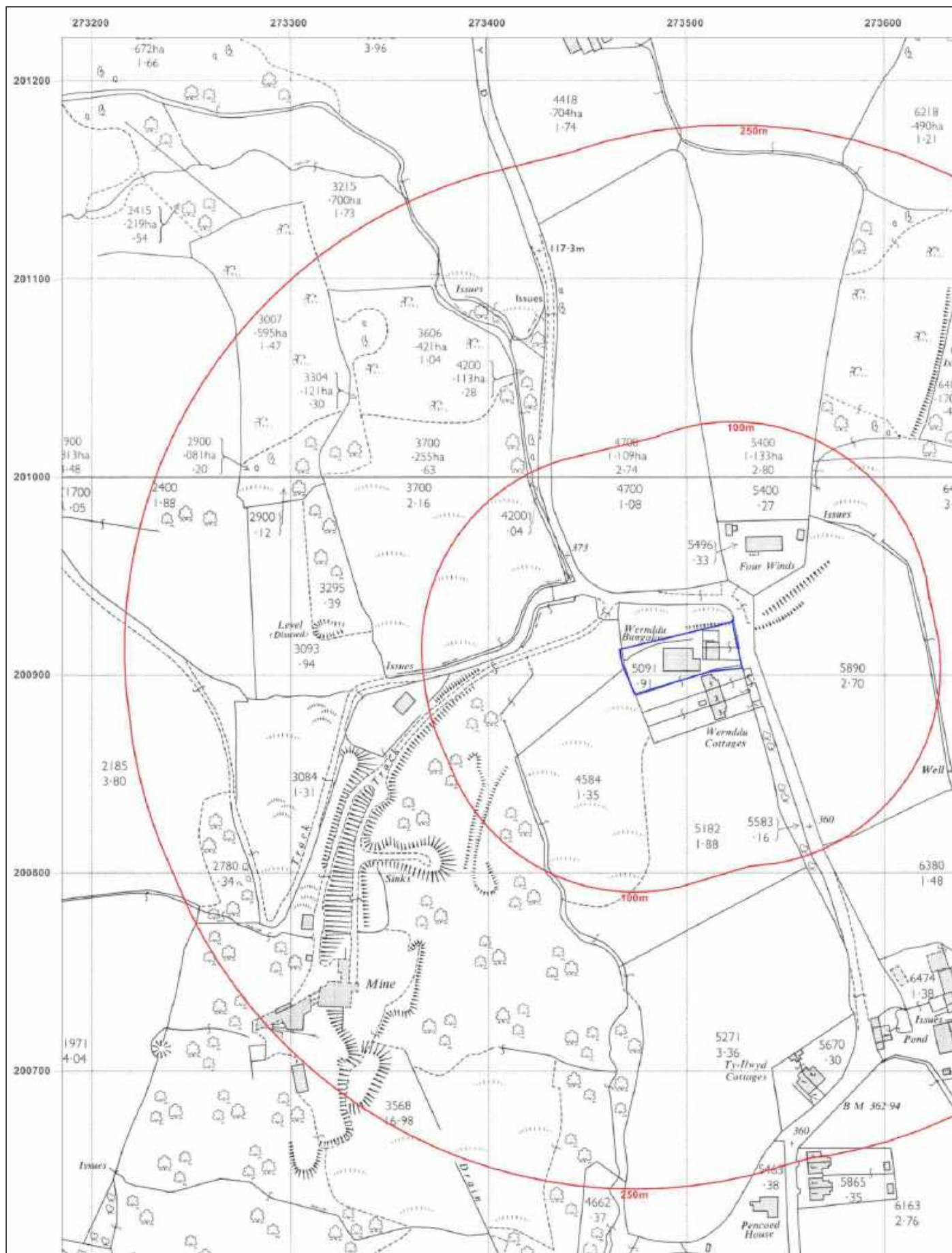


FIGURE 7
THE SITE IN 1963

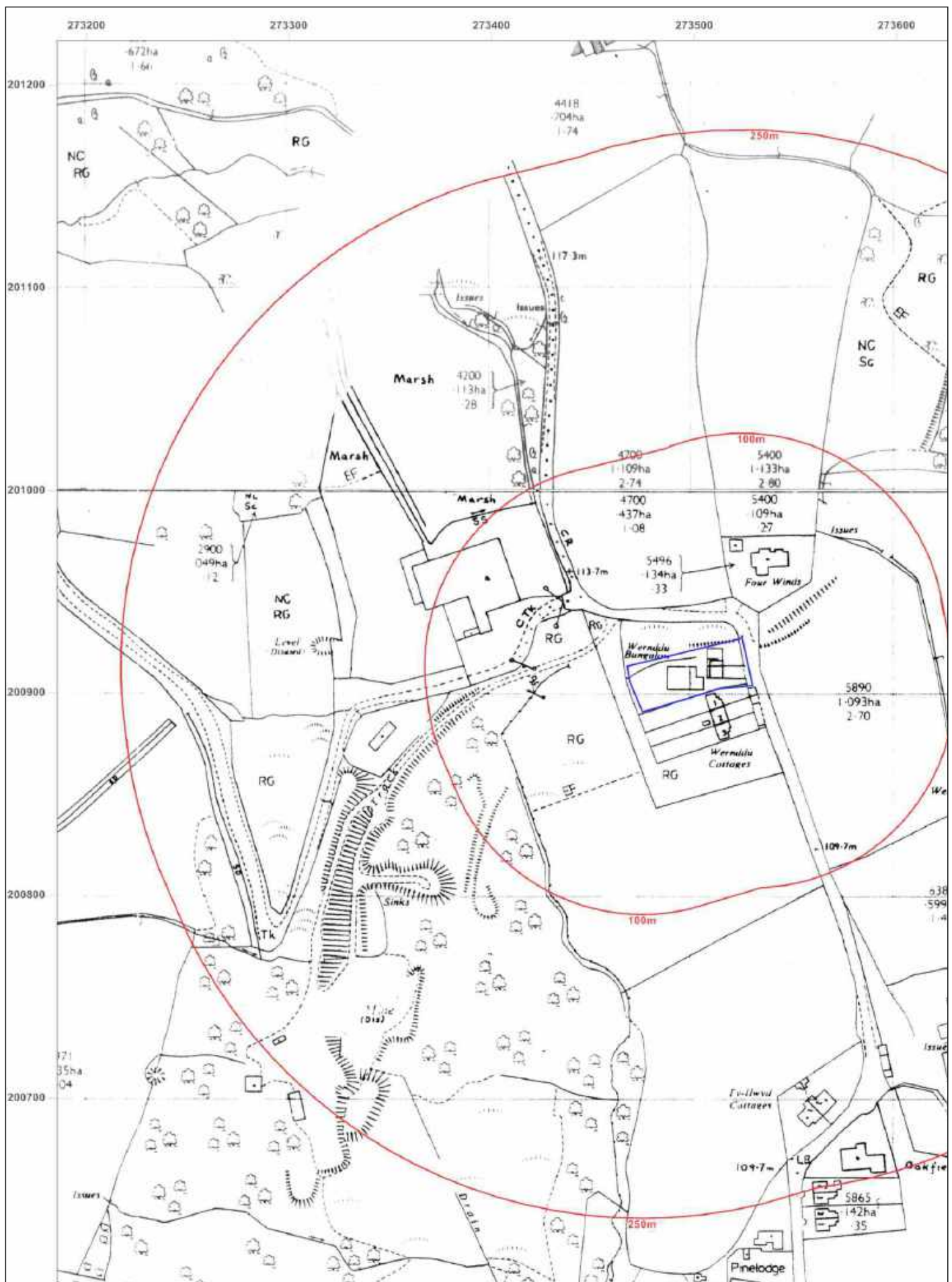


FIGURE 8
THE SITE IN 1989



FIGURE 9
THE SITE IN 2003

5. GEOLOGY

The geology under this (or any other) site can usually be divided into two components. The bedrock and the superficial deposits (including Made Ground) overlying it. For a contaminated land study the superficial deposits are the more important of the two as they are the shallowest. This means they are the most likely to be impacted by contamination, and indeed with Made Ground, can themselves be a source of contamination. The underlying geology will influence the Hydrogeology and controlled waters. A Geosight report was purchased to obtain geological information for the Phase 1. The report is included in full in Appendix A. In addition, archive material from other sources has been used. This includes the Geological Survey map that covers the site, SN 70SW.

Superficial Deposits (Natural Ground)

The 1:50,000 Superficial Deposits map from the B.G.S. Geoindex shows the superficial deposits beneath the site. The Geoindex is the basis of the map on page 76 of the Geosight Report. The site is a large area of Devensian Diamicton. Formerly known as boulder clay, the material is characteristically a poorly sorted mixture of gravel, cobbles and boulders with a sandy silty clay matrix. It is usually fairly impermeable although this may vary along fissures and coarser lenses. The narrow yellow and brown ribbon east of the site is an area of sand, silt and gravel which presumably marks a small river valley. North of the site the brown area is upland peat.

Solid (Bedrock) Geology:-

The bedrock beneath the site is of Upper Carboniferous Age, more specifically the Coal Measures (Westphalian D). Figure 10 is an extract of the six-inch (1:10,000) Geological Survey sheet of the area (SN 70SW). The site sits on an area of the Grovesend Beds. These are the highest division of the Coal Measures in South Wales and are a mixture of mudstones and siltstones with subordinate sandstones. There is a strata dip measured by the Survey seen in the mouth of the slant shown on the historic O.S. in the previous section together with a description of the strata at the mouth of the slant. The strata is dipping at 26° to the southeast. The dashed line west of the site is a large regional fault, the Dyffryn Fault with a large downthrow on the eastern side. Across the fault to the west are older measures of the Swansea Beds. Unusually for South Wales there are no coal seams outcropping at the surface.

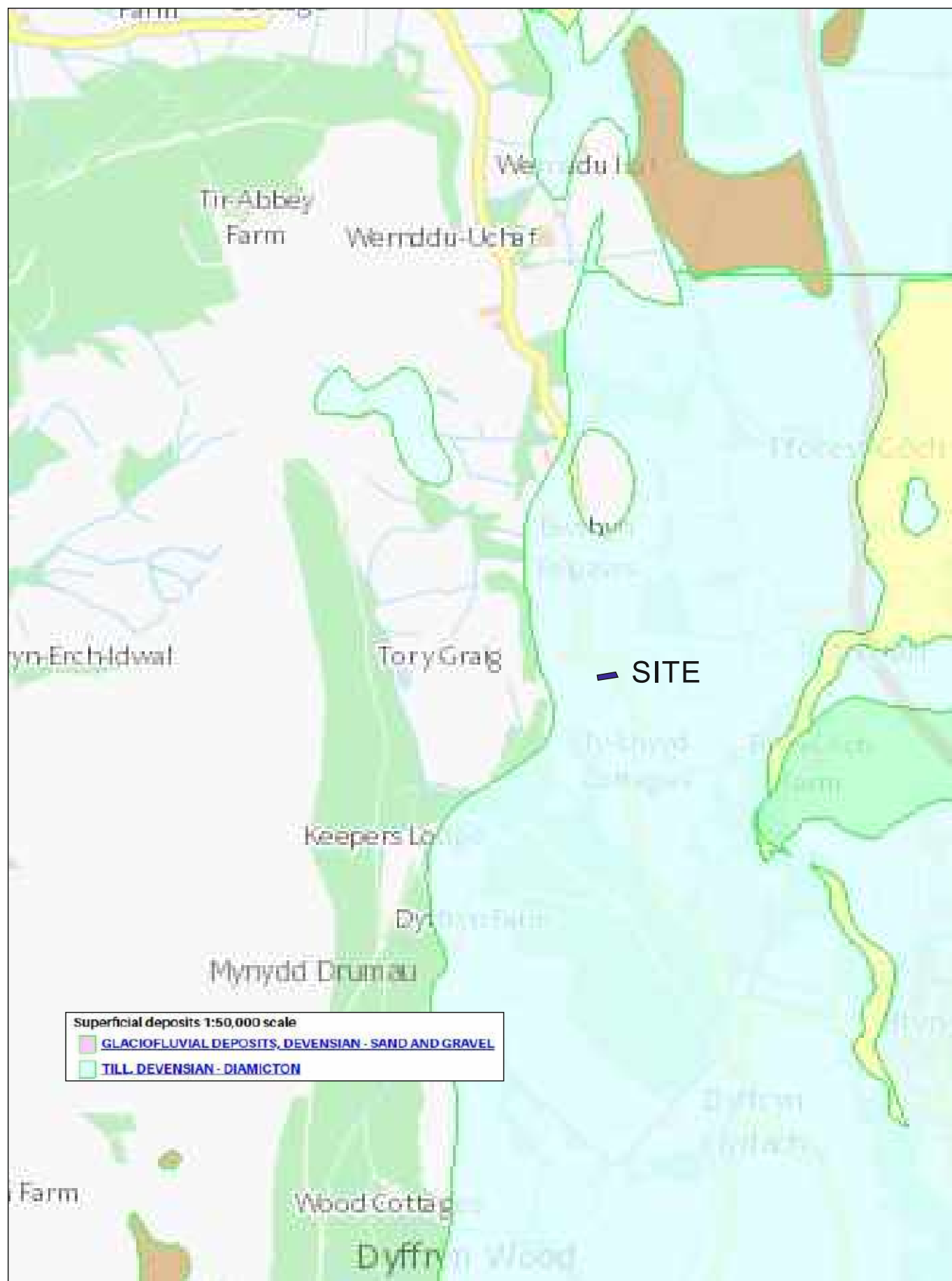


FIGURE 10
EXTRACT OF THE B.G.S. GEOINDEX.
THE SITE IS HIGHLIGHTED IN BLUE.

6. HYDROGEOLOGY

In the past when compiling a Part 1 Desk Study the necessary information about Hydrogeology could be obtained from the Environment Agency. In Wales this is no longer the case due to the N.R.W. (to whom the responsibilities of the E.A. have been devolved) failing to publish this information to date. It is now necessary to purchase the information off a private organisation such as Groundsure. This has been done for this report and the full Enviroinsight report is attached in Appendix A. All the information in the following section has been taken from the report.

The Superficial Aquifer map for the site is on page 38 of the Enviroinsight Report. The site has a Secondary Aquifer-Undifferentiated classification. This classification is used when it is not possible to assign A or B to a site. Formerly these would have been either Minor or Non-Aquifers. The classification is due to the nature of the underlying Devensian Till/ Diamicton. Formerly known as Boulder Clay, the material is a chaotic, poorly sorted jumble of coarse sediments ranging from sand to boulder size. There is a variable, but fairly high proportion of silt and clay grade material. This makes it generally impermeable, although water does travel through fissures and coarser layers.

Page 40 of the Enviroinsight Report shows the bedrock aquifer classification. The entire area of the map is Secondary (A). Formerly known as Minor Aquifers the official definition is:- permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow in rivers. This reflects the nature of the Upper Coal Measures in the area. Although predominantly argillaceous, there are permeable sandstone layers such as the Grovesend Sandstone within it. These sandstones have a low porosity but are highly permeable due to the well-developed jointing which allows high flow rates. However, because of the relative abundance of water in South Wales the only groundwater abstractions tend to be private wells on properties remote from mains supply

7. HYDROLOGY AND WATER QUALITY

The Ordnance Survey Water Network Mastermap is on page 51 of the report. There are multiple small streams and drains in the surrounding area. The nearest WFD water body is the Nant Clydach approximately 440m east of the site. The site is within the Clydach Water Body Catchment Area. The Operational Catchment is Neath and the Management Catchment is Tawe to Cadoxton.

The 2016 classification of the Clydach Catchment is Ecological-Moderate, Chemical rating-Good and overall rating-Moderate. The nearest monitoring point is 439m southeast of the site.

The Swansea Carboniferous Coal Measures 2016 groundwater rating is Overall- Poor, Chemical rating- Poor and Quantitative rating-good.

8. ABSTRACTIONS

The Enviroinsight report states that there is a single groundwater abstraction licence within 2000m of the site. This is 1081m north of the site and is a general farming and domestic License for a spring. This dates from 1966 and it is unclear if it is still valid. There is also a Surface Water Abstraction Licence 1915m southeast of the site. This is in Gilfach Quarry and the water is used for general purposes within the quarry. There are no Potable abstractions within 2000m and no Source Protection Zones, or Source Protection Zones within Confined Aquifer within a 500m radius of the site.

9. POLLUTION INCIDENTS

There have been no Environment Agency/Natural Resources Wales Recorded Pollution Incidents within 500m of the site. There are no sites designated as Part 2a contaminated land within 500m of the site. There are no COMAH sites within 500m. There are no I.P.C. authorisations, Part A (1) or I.P.P.C. Authorised activities, Red List discharge consents or Dangerous/Radioactive Authorisations within 500m. There are no List 1 or List 2 Dangerous Substance Inventory Sites within 500m of the site. There are no records of Part A (2) and Part B Activities within 500m of the site.

10. LANDFILL

There are no active, recent or historic landfills within 750m of the site.

11. FLOOD RISK

Flood risk for the area is considered negligible. For this reason the Flood Map for Planning and the RoFRaS map are not included in the Enviroinsight report. The surface water flooding map is on Page 54 of the Enviroinsight report. It shows a 1 in 30 year risk of a 0.1m-0.3m incident on the western site boundary.

12. ECOLOGICAL AND ARCHAEOLOGICAL CONSIDERATIONS

There are no known archaeological considerations. There is an S.S.S.I (Fforest Goch Bog) 970m north of the site. There are also multiple areas of ancient

woodland surrounding the site in all directions, the closest being less than 100m away.

13. PREVIOUS CONTAMINATION STUDIES

There have been extensive previous intrusive site investigations within the site. These are detailed in Section 16. These have targeted mining legacy issues and have not been concerned with possible contamination issues. They have confirmed the desk study geology of 3m of Diamicton overlying Coal Measure Sandstone. No Made Ground was recorded.

14. LPA AND BUILDING CONTROL RECORDS

It is not anticipated that N.P.T. will hold any planning or building control records beyond the current application.

15. CONTAMINANTS OF CONCERN AND SOURCE AREAS

There has been no past contaminative use of the site. The site is within a semi-rural area, albeit with an extensive mining history in the surrounding area and a brief period of brick manufacture. There is no reason to suspect these activities had the potential to contaminate the site. The historical O.S. shows that the majority of the site was undeveloped pasture until the previous residential use dating from the 1920's. The intrusive investigations mentioned in Section 13 confirmed the geological data from Section 5. Three metres of Diamicton (Glacial Till/Boulder Clay) overlaid Coal Measure Sandstone with no Made Ground. For a short period of time (between 17-35 years) a single track railway was very close to, or actually on a very small area of the site. This served a single small colliery and traffic would have only been sporadic. This traffic would have been steam locomotives hauling coal, and possibly timber. The railway would have been constructed using cut and fill principles using locally derived Boulder Clay or possibly colliery spoil. Both are inert, benign materials containing no potential contaminants. The minor embankment was removed nearly 100 years ago during the original residential development. There are no recorded pollution incidents nearby. Therefore there are no specific contaminants of concern as regards the soil/bedrock of the site. Table 1 overleaf is a qualitative risk assessment of the site. This indicates there is nothing to justify an intrusive Phase 2 investigation.

TABLE 1						
QUALITATIVE HUMAN HEALTH RISK ASSESSMENT AND ENVIRONMENTAL RISK ASSESSMENT AT PLOT 1, WERN DDU, BRYNCOCH, NEATH.						
CONTAMINANT SOURCE	PATHWAYS	RECEPTORS	POTENTIAL SEVERITY	PROBABILITY OF RISK	LEVEL OF RISK	FURTHER ACTION REQUIRED
ON SITE: POTENTIAL CONTAMINATION IN SOILS. POSSIBLY ELEVATED LEVELS OF HYDROCARBONS AND PAH	INGESTION, DERMAL CONTACT, INHALATION	FUTURE END USERS, VISITORS	MEDIUM	LOW	LOW	NO CREDIBLE SOURCE OF CONTAMINATION ON OR OFF SITE. NO FURTHER QUANTIFICATION REQUIRED. NO INTRUSIVE INVESTIGATION NECESSARY
	CONTACT WITH CONTAMINATED GROUNDWATER	FUTURE END USERS, VISITORS AND CONSTRUCTION WORKERS	MEDIUM			
	PERMEATION OF WATER PIPES	FUTURE END USERS AND SITE VISITORS	N/A			
	INGESTION OF HOME GROWN PRODUCE	FUTURE END USERS	N/A			
ON SITE: ASBESTOS AT OR NEAR GROUND SURFACE IN SOILS	INHALATION OF FIBRES IN AIRBORNE DUST	FUTURE END USERS AND SITE VISITORS	HIGH	LOW	LOW	NO CREDIBLE SOURCE OF ASBESTOS ON OR OFF SITE. NO FURTHER QUANTIFICATION REQUIRED. NO INTRUSIVE INVESTIGATION NECESSARY.
		CONSTRUCTION WORKERS	HIGH	LOW	LOW	
ON SITE: POTENTIAL CONTAMINATION IN SOILS. POSSIBLY ELEVATED LEVELS OF HYDROCARBONS AND PAH	RUN OFF	SURFACE DRAINAGE	MEDIUM	LOW	LOW	NO CONTAMINATION ON SITE MEANS NO FURTHER QUANTIFICATION OF THE THREAT TO CONTROLLED WATERS/ ENVIRONMENTAL RECEPTORS IS NECESSARY
	MIGRATION THROUGH SOIL VIA LEACHING	SHALLOW GROUNDWATER				
	ONWARD MIGRATION OF GROUNDWATER	BEDROCK AQUIFER				

16. GROUND GAS POTENTIAL

The updated (2017) WLGA & NRW guidelines on the Development of Land Affected by Contamination state that “Ground gas is a contaminant and should be considered as a potential contaminant source in the preliminary risk assessment on sites where gas generation and /or migration is suspected”.

It is extremely unlikely there is a significant thickness of Made Ground or organic superficial deposits at the site. It is anticipated this will be confirmed by a small scale intrusive investigation at the site. Therefore the on-site generation of Ground Gas from these sources can be safely discounted.

Moving on to the risk of migration from elsewhere, the two most common sources for ground gas migrating onto a site from elsewhere are landfill sites and mines, particularly coal mines. As mentioned in the landfill section, there are no landfills within 750m of the site and so the migration of Landfill Gas can be discounted as a potential risk.

This leaves the risk from Coal Mines. It is a matter of record that the proposed development is to be built over a mineshaft. This is believed to be connected to workings in the Little Bryncoch Seam at an approximate depth of 45m. The shaft has been excavated out to a depth of 7m and backfilled with clean stone to rockhead at approximately 3m depth. A reinforced concrete cap was then constructed over the shaft. The shaft was then covered with engineered fill to ground level. Structural calculations were supplied to the Coal Authority. This has been done in order to satisfy the Coal Authority that it is safe to build over the cap. To reduce the pressure on the shaft cap and bridge any possible soft spot of the infill above the cap a mining raft foundation is to be used. The Coal Authority have agreed to this in principle, but have asked for a detailed gas risk assessment to be produced.

Unless situated on high ground with gravity drainage arrangements, all mines in South Wales with vertical shaft or steep slant access relied on continuous pumping to remove groundwater. Within a very short time of a mine closing and pumping ceasing the workings will flood, forcing out any residual mine gases. The water is almost always anoxic and so further mine gas production ceases. The workings beneath the site will almost certainly be flooded and all gas should have been vented long ago. Angled boreholes were drilled on the site to locate the shaft. Continuous gas monitoring was carried out during drilling operations as a condition of the Coal Authority Permit 8089. No mine gases were detected. The boreholes suggested that the shaft was filled with

water beneath the primitive original cap. During the remedial works, supervised by Blandford Consulting this assumption was confirmed. Report BC/MB/06.13.04 is attached as Appendix B. Plate 3 on page 8 of the report clearly shows standing water in the shaft at approximately 5m depth during the excavation process. As previously mentioned the shaft was capped with reinforced concrete. No provision was made for gas venting, presumably because it was assessed as not necessary. The only problem with this is that abandoned mineworkings are in a continuous state of flux. There are deeper workings beneath the site in at least two other coal seams. There is a slight possibility that the water currently flooding the shallow workings could drain into these deeper workings. This would be extremely unlikely, but because the proposed property is to be built directly over the shaft, which can be considered a plausible pathway, the risk cannot be completely discounted. A summary of the Ground Gas Risk Assessment of the site is contained in Table 2 overleaf.

TABLE 2 INITIAL GROUND GAS RISK ASSESSMENT PLOT 1 WERN DDU, TY LLWYD, BRYNCOCH, NEATH					
SOURCE	PATHWAY	RECEPTOR	CONSEQUENCE CLASSIFICATION	RISK	FURTHER ACTION
HAZARDOUS GROUND GAS FROM OFF SITE SOURCE	INHALATION, INJURY FROM EXPLOSION	SITE USERS, VISITORS, CONSTRUCTION WORKERS	SEVERE	LOW. NO RISK FROM MIGRATION OF MINE GAS OR LANDFILL GAS FROM OFF SITE SOURCES.	NONE
HAZARDOUS GROUND GAS FROM OFF SITE SOURCE	DAMAGE FROM EXPLOSION	BUILDINGS	SEVERE		
HAZARDOUS GROUND GAS FROM ON SITE SOURCE	INHALATION, INJURY FROM EXPLOSION	SITE USERS, VISITORS, CONSTRUCTION WORKERS	SEVERE	MEDIUM. NO MADE GROUND OR ORGANIC SOILS. SLIGHT POSSIBILITY OF MINE GAS MIGRATION VIA ON-SITE SHAFT	GAS PROTECTIVE MEASURES ADVISED
HAZARDOUS GROUND GAS FROM ON SITE SOURCE	DAMAGE FROM EXPLOSION	BUILDINGS	SEVERE		
RADON GAS	LONG TERM HAZARD FROM INHALATION	SITE USERS	SEVERE	LOW. LESS THAN 1% OF PROPERTIES AFFECTED BY RADON GAS	NO RADON PROTECTION MEASURES REQUIRED

17. CONCLUSIONS

This Phase 1 desk study has used extensive research to conclude there is no risk of soil or bedrock contamination at the site. For this reason a visual C.S.M. is considered superfluous. The potential risks are adequately assessed in Tables 1 and 2. The only risk of contamination at the site is via the possible migration of mine gas up the shaft beneath the proposed property. The risk is considered extremely low but cannot be completely discounted. Robust gas protective measures are recommended for incorporation into the proposed raft design. These should follow the latest guidelines. The gas proof membrane should be installed and the installation independently verified using the guidelines in BS8485:2015+A1:2019 and CIRIA C735. This report concludes that there is no need for a Phase 2 intrusive site investigation. The risk of unexpected contamination being encountered during the construction phase is adequately covered by planning condition 9. In the event of this happening all work should cease until a Phase 2 report is produced and any remediation methods approved by N.P.T.

Therefore this report should be considered sufficient to ensure the discharge of Conditions 2 and 3 (parts i-iv). Condition 7 can be satisfied by a validation report for the installation of the gas protective measures. As is usual, Condition 9 cannot be discharged until all construction, including any work in the garden area, is complete.

Richard Davies BSc. (Hons), MSc., F.G.S.

15/01/2021

APPENDIX A
GROUNDSURE ENVIROINSIGHT
AND
GEOINSIGHT REPORTS

WERNDDU COTTAGES, TY LLWYD, BRYNCOCH, SA10 7DZ

Order Details

Date: 05/01/2021
Your ref: Wernddu
Our Ref: GS-7402982
Client: Rhondda Geotechnical Services

Site Details

Location: 273503 200909
Area: 0.13 ha
Authority: [Castell-nedd Port Talbot - Neath Port Talbot County Borough](#)



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Summary of findings

p. 2

Aerial image

p. 8

OS MasterMap site plan

p.13

groundsure.com/insightuserguide

Contact us with any questions at:

info@groundsure.com

08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	<u>Historical industrial land uses</u>	5	6	37	58	-
18	1.2	<u>Historical tanks</u>	0	0	1	2	-
19	1.3	Historical energy features	0	0	0	0	-
19	1.4	Historical petrol stations	0	0	0	0	-
19	1.5	Historical garages	0	0	0	0	-
20	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
21	2.1	<u>Historical industrial land uses</u>	5	9	53	79	-
27	2.2	<u>Historical tanks</u>	0	0	1	2	-
27	2.3	Historical energy features	0	0	0	0	-
27	2.4	Historical petrol stations	0	0	0	0	-
28	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
29	3.1	Active or recent landfill	0	0	0	0	-
29	3.2	Historical landfill (BGS records)	0	0	0	0	-
30	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
30	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
30	3.5	Historical waste sites	0	0	0	0	-
30	3.6	Licensed waste sites	0	0	0	0	-
30	3.7	<u>Waste exemptions</u>	0	2	1	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
32	4.1	Recent industrial land uses	0	0	0	-	-
32	4.2	Current or recent petrol stations	0	0	0	0	-
33	4.3	Electricity cables	0	0	0	0	-
33	4.4	<u>Gas pipelines</u>	0	0	0	1	-
33	4.5	Sites determined as Contaminated Land	0	0	0	0	-



33	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
34	4.7	Regulated explosive sites	0	0	0	0	-
34	4.8	Hazardous substance storage/usage	0	0	0	0	-
34	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
34	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
34	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
35	4.12	Radioactive Substance Authorisations	0	0	0	0	-
35	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	0	1	-
35	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
35	4.15	Pollutant release to public sewer	0	0	0	0	-
36	4.16	List 1 Dangerous Substances	0	0	0	0	-
36	4.17	List 2 Dangerous Substances	0	0	0	0	-
36	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
36	4.19	Pollution inventory substances	0	0	0	0	-
36	4.20	Pollution inventory waste transfers	0	0	0	0	-
37	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
38	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
40	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
41	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
42	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
42	5.5	Groundwater vulnerability- local information	None (within 0m)				
43	5.6	<u>Groundwater abstractions</u>	0	0	0	0	1
44	5.7	<u>Surface water abstractions</u>	0	0	0	0	2
45	5.8	Potable abstractions	0	0	0	0	0
45	5.9	Source Protection Zones	0	0	0	0	-
45	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
46	6.1	<u>Water Network (OS MasterMap)</u>	0	2	22	-	-



48	6.2	<u>Surface water features</u>	0	1	19	-	-
49	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
49	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
50	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
51	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
51	7.2	Historical Flood Events	0	0	0	-	-
51	7.3	Flood Defences	0	0	0	-	-
51	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
52	7.5	Flood Storage Areas	0	0	0	-	-
53	7.6	Flood Zone 2	None (within 50m)				
53	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
54	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
56	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
57	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	1
58	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
58	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
58	10.4	Special Protection Areas (SPA)	0	0	0	0	0
58	10.5	National Nature Reserves (NNR)	0	0	0	0	0
59	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
59	10.7	<u>Designated Ancient Woodland</u>	0	0	2	9	105
63	10.8	Biosphere Reserves	0	0	0	0	0
64	10.9	Forest Parks	0	0	0	0	0
64	10.10	Marine Conservation Zones	0	0	0	0	0
64	10.11	Green Belt	0	0	0	0	0
64	10.12	Proposed Ramsar sites	0	0	0	0	0



64	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
65	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
65	10.15	Nitrate Sensitive Areas	0	0	0	0	0
65	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
66	10.17	SSSI Impact Risk Zones	0	-	-	-	-
66	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
67	11.1	World Heritage Sites	0	0	0	-	-
67	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
67	11.3	National Parks	0	0	0	-	-
67	11.4	Listed Buildings	0	0	0	-	-
68	11.5	Conservation Areas	0	0	0	-	-
68	11.6	Scheduled Ancient Monuments	0	0	0	-	-
68	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
69	<u>12.1</u>	<u>Agricultural Land Classification</u>	Grade 3b (within 250m)				
70	12.2	Open Access Land	0	0	0	-	-
70	12.3	Tree Felling Licences	0	0	0	-	-
70	12.4	Environmental Stewardship Schemes	0	0	0	-	-
71	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
72	13.1	Priority Habitat Inventory	0	0	0	-	-
72	13.2	Habitat Networks	0	0	0	-	-
72	13.3	Open Mosaic Habitat	0	0	0	-	-
72	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
73	<u>14.1</u>	<u>10k Availability</u>	Identified (within 500m)				
74	<u>14.2</u>	<u>Artificial and made ground (10k)</u>	0	0	5	6	-
76	<u>14.3</u>	<u>Superficial geology (10k)</u>	1	0	0	3	-



77	14.4	Landslip (10k)	0	0	0	0	-
78	14.5	<u>Bedrock geology (10k)</u>	1	0	0	5	-
79	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	0	2	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
80	15.1	<u>50k Availability</u>	Identified (within 500m)				
81	15.2	<u>Artificial and made ground (50k)</u>	0	0	1	2	-
82	15.3	Artificial ground permeability (50k)	0	0	-	-	-
83	15.4	<u>Superficial geology (50k)</u>	1	0	0	3	-
84	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
84	15.6	Landslip (50k)	0	0	0	0	-
84	15.7	Landslip permeability (50k)	None (within 50m)				
85	15.8	<u>Bedrock geology (50k)</u>	1	0	0	5	-
86	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
86	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	0	0	2	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
87	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
88	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
89	17.2	<u>Running sands</u>	Very low (within 50m)				
90	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
91	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
92	17.5	<u>Landslides</u>	Very low (within 50m)				
93	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
94	18.1	Natural cavities	0	0	0	0	-
95	18.2	<u>BritPits</u>	0	0	2	4	-
96	18.3	<u>Surface ground workings</u>	2	4	48	-	-
98	18.4	<u>Underground workings</u>	1	4	7	23	29
101	18.5	Historical Mineral Planning Areas	0	0	0	0	-



101	18.6	Non-coal mining	0	0	0	0	0
101	18.7	Mining cavities	0	0	0	0	0
102	18.8	JPB mining areas	None (within 0m)				
102	18.9	<u>Coal mining</u>	Identified (within 0m)				
102	18.10	Brine areas	None (within 0m)				
102	18.11	Gypsum areas	None (within 0m)				
102	18.12	Tin mining	None (within 0m)				
103	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
104	19.1	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
105	20.1	<u>BGS Estimated Background Soil Chemistry</u>	2	0	-	-	-
105	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
105	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
106	21.1	Underground railways (London)	0	0	0	-	-
106	21.2	Underground railways (Non-London)	0	0	0	-	-
107	21.3	Railway tunnels	0	0	0	-	-
107	21.4	<u>Historical railway and tunnel features</u>	3	1	6	-	-
107	21.5	Royal Mail tunnels	0	0	0	-	-
108	21.6	Historical railways	0	0	0	-	-
108	21.7	Railways	0	0	0	-	-
108	21.8	Crossrail 1	0	0	0	0	-
108	21.9	Crossrail 2	0	0	0	0	-
108	21.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 17/06/2017

Site Area: 0.13ha



Recent site history - 2014 aerial photograph



Capture Date: 23/07/2014

Site Area: 0.13ha



Recent site history - 2010 aerial photograph



Capture Date: 23/05/2010

Site Area: 0.13ha



Recent site history - 2009 aerial photograph



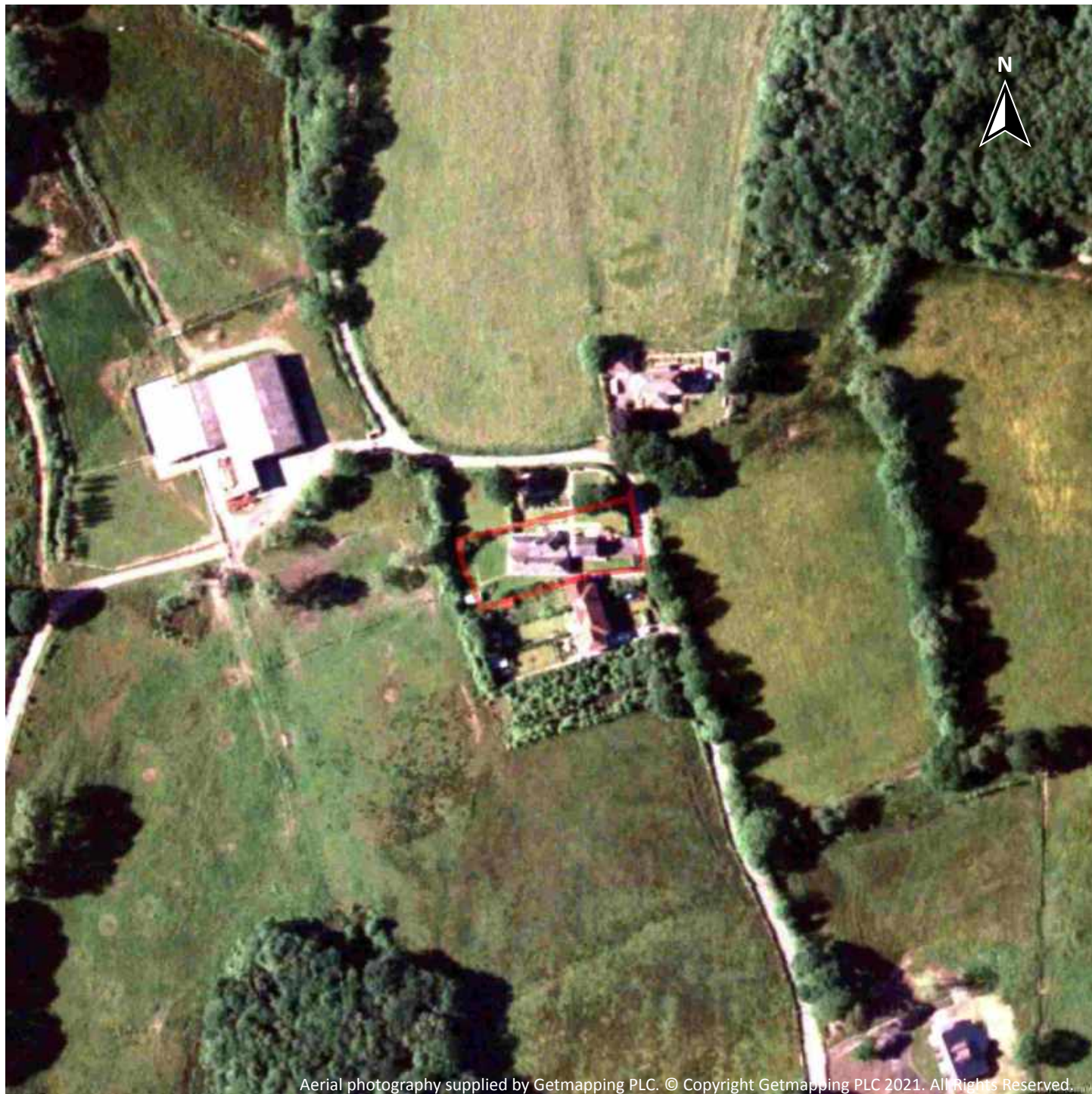
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2021. All Rights Reserved.

Capture Date: 12/10/2009

Site Area: 0.13ha



Recent site history - 2000 aerial photograph

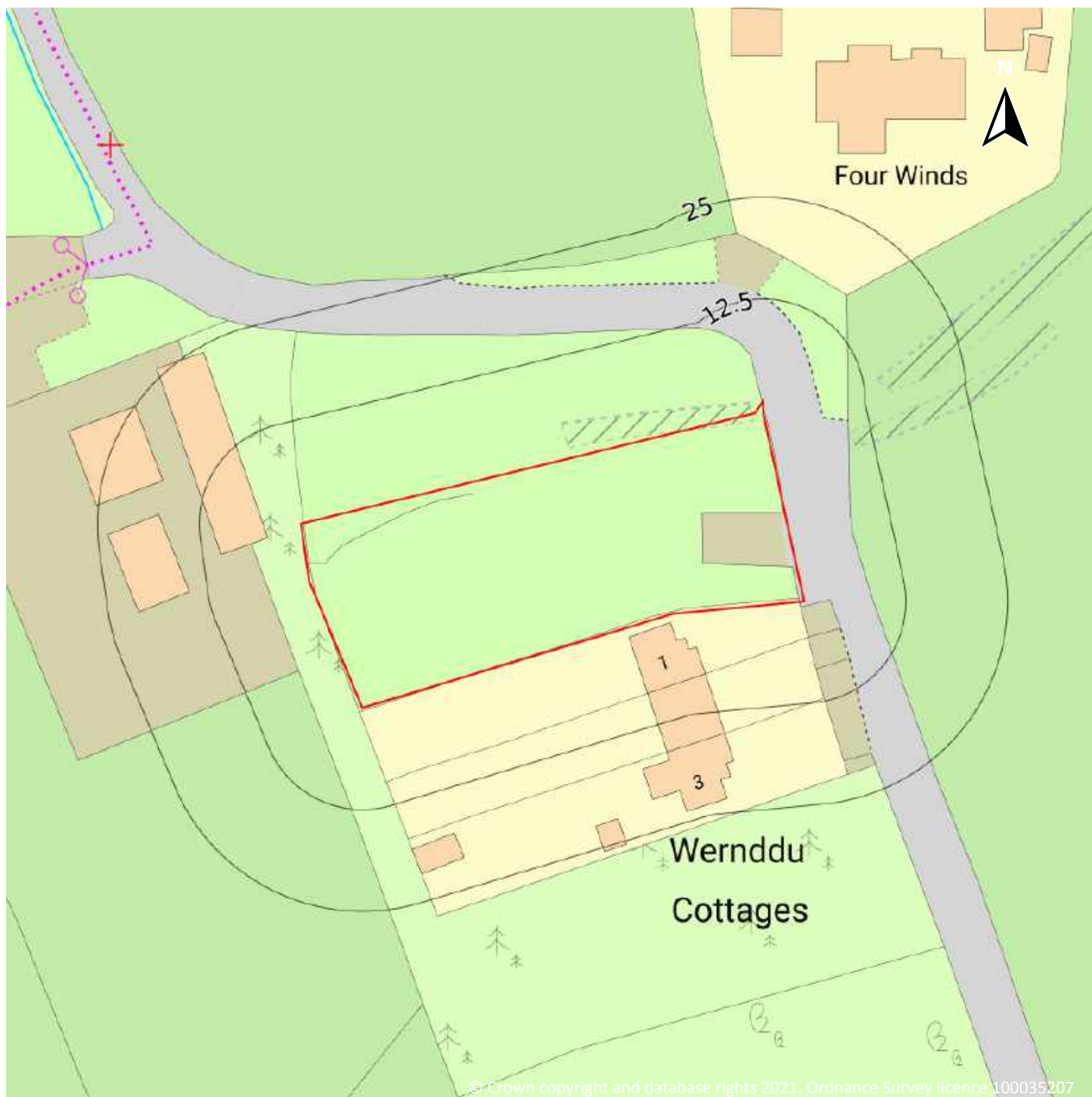


Capture Date: 18/06/2000

Site Area: 0.13ha



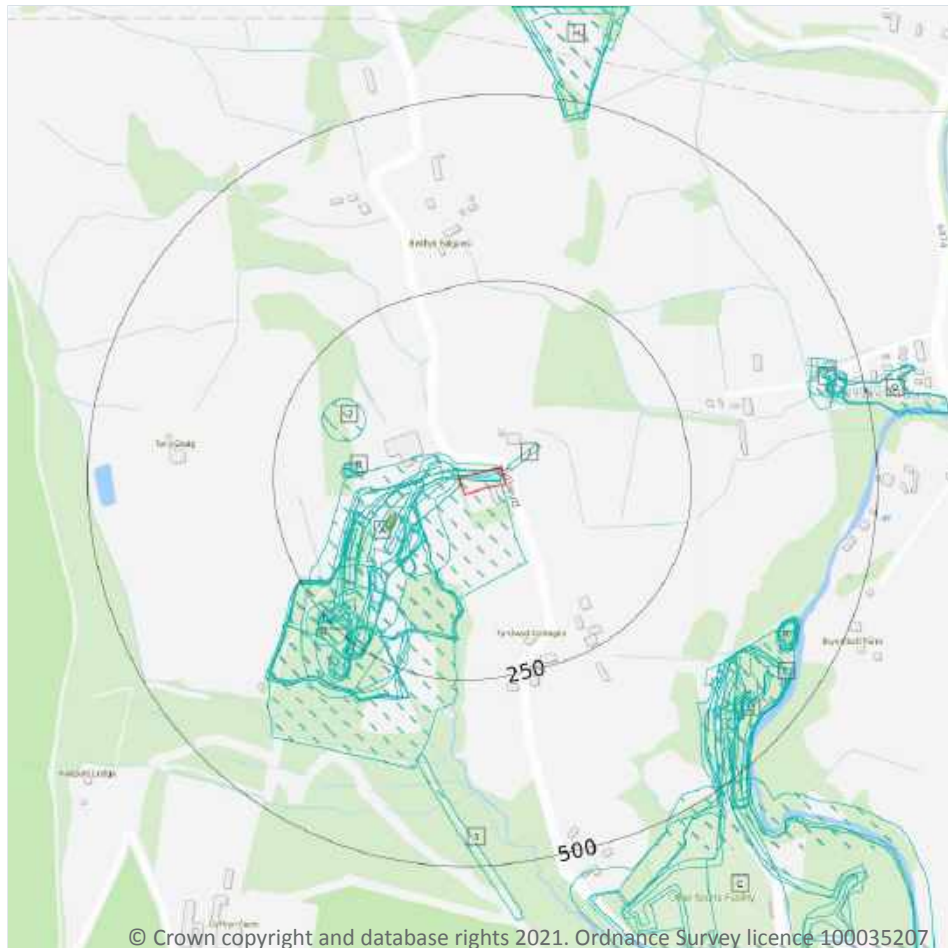
OS MasterMap site plan



Site Area: 0.13ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks

1.1 Historical industrial land uses

Records within 500m

106

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	On site	Railway Sidings	1921	281244

ID	Location	Land use	Dates present	Group ID
A	On site	Railway Sidings	1914	286248
A	On site	Railway Sidings	1914	309561
A	On site	Fire Brick Works	1914 - 1921	309722
A	On site	Colliery	1921	316801
A	0m W	Unspecified Disused Mine	1992	297782
A	0m W	Unspecified Mine	1966 - 1980	308681
1	10m E	Unspecified Ground Workings	1964	266434
A	22m W	Railway Sidings	1914	289258
A	31m NW	Unspecified Disused Mine	1964	293999
A	48m W	Fire Brick Works	1914	313007
A	65m W	Colliery	1938	281139
A	71m SW	Refuse Heap	1914	277909
A	71m SW	Colliery	1948	301959
A	72m SW	Refuse Heap	1914	284570
A	79m SW	Refuse Heap	1921	307270
A	82m SW	Unspecified Ground Workings	1938	287325
A	85m SW	Unspecified Ground Workings	1948	304385
A	95m SW	Unspecified Tanks	1914	297093
A	100m SW	Unspecified Tanks	1921	274259
A	114m SW	Unspecified Heap	1948	260170
B	128m W	Unspecified Disused Level	1966 - 1992	286318
B	128m W	Unspecified Pit	1921	268507
A	132m SW	Refuse Heap	1938 - 1948	281155
B	136m W	Old Coal Level	1914	276753
B	139m W	Old Coal Level	1914	282384
A	140m W	Refuse Heap	1914	315557
A	143m SW	Refuse Heap	1921	291201
2	145m NW	Old Coal Level	1921	264397



ID	Location	Land use	Dates present	Group ID
A	147m SW	Colliery	1914	278823
A	155m SW	Refuse Heap	1938	277245
A	158m SW	Refuse Heap	1948	301076
A	170m SW	Colliery	1914	288887
A	172m SW	Old Coal Pit	1921	291319
A	203m SW	Railway Sidings	1948	286151
A	210m SW	Railway Sidings	1938	317677
A	212m SW	Old Coal Pit	1897	313707
A	216m SW	Old Coal Pit	1914	313663
A	217m SW	Unspecified Slant	1964	277751
A	219m SW	Unspecified Old Pit	1938	295687
A	221m SW	Unspecified Old Pit	1948	290999
A	222m SW	Refuse Heap	1914	289283
A	224m SW	Unspecified Old Pit	1964	316979
A	224m SW	Unspecified Slant	1921	296834
A	238m SW	Unspecified Slant	1938	310605
A	243m SW	Old Coal Pit	1914	285689
A	243m SW	Old Coal Pit	1914	287669
A	244m SW	Unspecified Slant	1914	281882
A	257m SW	Unspecified Ground Workings	1948	266432
A	258m SW	Unspecified Tank	1938 - 1948	289622
A	263m SW	Unspecified Tank	1964	293408
A	272m SW	Refuse Heap	1914	309665
A	275m SW	Refuse Heap	1914	289374
A	281m SW	Refuse Heap	1921	309191
3	353m S	Cuttings	1938 - 1948	275808
C	368m SE	Unspecified Disused Mine	1964	261068
C	375m SE	Mineral Railway Sidings	1921	286297



ID	Location	Land use	Dates present	Group ID
C	375m SE	Colliery	1921	298396
C	380m SE	Railway Sidings	1914	310580
D	380m SE	Coal Pit	1877	310456
D	381m SE	Old Coal Pits	1914	265642
C	383m SE	Disused Colliery	1938	279780
D	383m SE	Old Coal Pits	1914	285047
D	384m SE	Unspecified Old Pit	1964	304647
D	385m SE	Unspecified Old Pit	1938	273925
D	386m SE	Coal Pit	1897	311677
C	391m SE	Mineral Railway Sidings	1914	275674
E	396m SE	Unspecified Ground Workings	1897	300248
C	407m SE	Railway Sidings	1877 - 1897	304608
D	413m SE	Unspecified Ground Workings	1897	273702
E	414m SE	Unspecified Old Pit	1964	310128
E	415m SE	Unspecified Old Pit	1938	295444
D	416m SE	Railway Sidings	1877	312204
E	416m SE	Unspecified Heap	1980 - 1992	281775
E	416m SE	Unspecified Heap	1966	282716
E	416m SE	Refuse Heap	1914	309305
E	416m SE	Refuse Heap	1914	317518
E	417m SE	Old Coal Pits	1921	265646
E	417m SE	Unspecified Old Pit	1948	299774
E	421m SE	Unspecified Heap	1877 - 1897	314986
D	422m SE	Refuse Heap	1914	273265
E	424m SE	Disused Air Shaft	1966 - 1992	279555
D	425m SE	Refuse Heap	1914	292543
F	425m E	Railway Sidings	1877	269725
D	425m SE	Unspecified Ground Workings	1966 - 1992	285757



ID	Location	Land use	Dates present	Group ID
F	425m E	Old Coal Pit	1921	312877
D	428m SE	Unspecified Ground Workings	1914	314977
E	429m SE	Old Coal Pits	1914	265643
E	430m SE	Old Coal Pits	1914	293168
D	431m SE	Unspecified Old Pit	1948	294123
D	431m SE	Old Coal Pit	1921	254248
F	444m E	Old Coal Pit	1914	285241
F	447m E	Old Coal Pit	1897	280929
F	447m E	Coal Pit	1877	253029
G	447m E	Refuse Heap	1964	286938
F	449m E	Refuse Heap	1914	290195
G	450m E	Refuse Heaps	1938	291253
F	452m E	Old Coal Pit	1914	285280
G	452m E	Refuse Heaps	1948	284741
F	454m E	Unspecified Heap	1966	260169
F	455m E	Unspecified Heap	1897	260168
H	471m N	Unspecified Disused Mine	1964	300897
H	476m N	Unspecified Disused Mine	1966 - 1980	273313
H	478m N	Disused Colliery	1948	271716
H	479m N	Disused Colliery	1914	288684
C	481m SE	Colliery	1914	281532

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

3

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.



Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	97m SW	Tanks	1918	34910
A	258m SW	Unspecified Tank	1935	34416
E	424m SE	Unspecified Tank	1989	34413

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

0

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



1.6 Historical military land

Records within 500m

0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks

2.1 Historical industrial land uses

Records within 500m

146

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
A	On site	Fire Brick Works	1921	309722
A	On site	Railway Sidings	1921	281244
A	On site	Colliery	1921	316801

ID	Location	Land Use	Date	Group ID
A	On site	Railway Sidings	1914	309561
A	On site	Railway Sidings	1914	286248
A	0m W	Unspecified Mine	1980	308681
A	0m W	Unspecified Disused Mine	1992	297782
A	0m W	Unspecified Mine	1966	308681
A	4m W	Fire Brick Works	1914	309722
1	10m E	Unspecified Ground Workings	1964	266434
A	22m W	Railway Sidings	1914	289258
A	31m NW	Unspecified Disused Mine	1964	293999
A	48m W	Fire Brick Works	1914	313007
A	48m W	Fire Brick Works	1914	313007
A	65m W	Colliery	1938	281139
A	65m W	Colliery	1938	281139
A	71m SW	Refuse Heap	1914	277909
A	71m SW	Refuse Heap	1914	277909
A	71m SW	Colliery	1948	301959
A	72m SW	Refuse Heap	1914	284570
A	79m SW	Refuse Heap	1921	307270
A	82m SW	Unspecified Ground Workings	1938	287325
A	82m SW	Unspecified Ground Workings	1938	287325
A	85m SW	Unspecified Ground Workings	1948	304385
A	95m SW	Unspecified Tanks	1914	297093
A	98m SW	Unspecified Tanks	1914	297093
A	98m SW	Unspecified Tanks	1914	297093
A	100m SW	Unspecified Tanks	1921	274259
A	114m SW	Unspecified Heap	1948	260170
B	128m W	Unspecified Disused Level	1980	286318
B	128m W	Unspecified Disused Level	1992	286318



ID	Location	Land Use	Date	Group ID
B	128m W	Unspecified Disused Level	1966	286318
B	128m W	Unspecified Pit	1921	268507
A	132m SW	Refuse Heap	1938	281155
A	132m SW	Refuse Heap	1938	281155
A	134m SW	Refuse Heap	1948	281155
B	136m W	Old Coal Level	1914	276753
B	136m W	Old Coal Level	1914	276753
B	139m W	Old Coal Level	1914	282384
A	140m W	Refuse Heap	1914	315557
A	143m SW	Refuse Heap	1921	291201
2	145m NW	Old Coal Level	1921	264397
A	147m SW	Colliery	1914	278823
A	147m SW	Colliery	1914	278823
A	155m SW	Refuse Heap	1938	277245
A	155m SW	Refuse Heap	1938	277245
A	158m SW	Refuse Heap	1948	301076
A	170m SW	Colliery	1914	288887
A	172m SW	Old Coal Pit	1921	291319
A	203m SW	Railway Sidings	1948	286151
A	210m SW	Railway Sidings	1938	317677
A	212m SW	Old Coal Pit	1897	313707
A	216m SW	Old Coal Pit	1914	313663
A	217m SW	Unspecified Slant	1964	277751
A	219m SW	Unspecified Old Pit	1938	295687
A	219m SW	Unspecified Old Pit	1938	295687
A	221m SW	Unspecified Old Pit	1948	290999
A	222m SW	Refuse Heap	1914	289283
A	222m SW	Refuse Heap	1914	289283



ID	Location	Land Use	Date	Group ID
A	224m SW	Unspecified Old Pit	1964	316979
A	224m SW	Unspecified Slant	1921	296834
A	238m SW	Unspecified Slant	1938	310605
A	238m SW	Unspecified Slant	1938	310605
A	243m SW	Old Coal Pit	1914	287669
A	243m SW	Old Coal Pit	1914	285689
A	244m SW	Unspecified Slant	1914	281882
A	244m SW	Unspecified Slant	1914	281882
A	257m SW	Unspecified Ground Workings	1948	266432
A	258m SW	Unspecified Tank	1938	289622
A	261m SW	Unspecified Tank	1948	289622
A	263m SW	Unspecified Tank	1964	293408
A	272m SW	Refuse Heap	1914	309665
A	275m SW	Refuse Heap	1914	289374
A	275m SW	Refuse Heap	1914	289374
A	281m SW	Refuse Heap	1921	309191
C	353m S	Cuttings	1938	275808
C	358m S	Cuttings	1948	275808
D	368m SE	Unspecified Disused Mine	1964	261068
D	375m SE	Mineral Railway Sidings	1921	286297
D	375m SE	Colliery	1921	298396
D	380m SE	Railway Sidings	1914	310580
E	380m SE	Coal Pit	1877	310456
E	381m SE	Old Coal Pits	1914	265642
D	383m SE	Disused Colliery	1938	279780
D	383m SE	Disused Colliery	1938	279780
E	383m SE	Old Coal Pits	1914	285047
E	383m SE	Old Coal Pits	1914	285047



ID	Location	Land Use	Date	Group ID
E	384m SE	Unspecified Old Pit	1964	304647
E	385m SE	Unspecified Old Pit	1938	273925
E	385m SE	Unspecified Old Pit	1938	273925
E	386m SE	Coal Pit	1897	311677
D	391m SE	Mineral Railway Sidings	1914	275674
D	391m SE	Mineral Railway Sidings	1914	275674
F	396m SE	Unspecified Ground Workings	1897	300248
D	407m SE	Railway Sidings	1897	304608
E	413m SE	Unspecified Ground Workings	1897	273702
F	414m SE	Unspecified Old Pit	1964	310128
F	415m SE	Unspecified Old Pit	1938	295444
F	415m SE	Unspecified Old Pit	1938	295444
E	416m SE	Railway Sidings	1877	312204
F	416m SE	Refuse Heap	1914	317518
F	416m SE	Refuse Heap	1914	309305
F	416m SE	Refuse Heap	1914	309305
F	416m SE	Unspecified Heap	1980	281775
F	416m SE	Unspecified Heap	1992	281775
F	416m SE	Unspecified Heap	1966	282716
F	417m SE	Old Coal Pits	1921	265646
F	417m SE	Unspecified Old Pit	1948	299774
F	421m SE	Unspecified Heap	1877	314986
E	422m SE	Refuse Heap	1914	273265
F	422m SE	Unspecified Heap	1897	314986
F	424m SE	Disused Air Shaft	1980	279555
F	424m SE	Disused Air Shaft	1992	279555
F	424m SE	Disused Air Shaft	1966	279555
E	425m SE	Refuse Heap	1914	292543



ID	Location	Land Use	Date	Group ID
E	425m SE	Refuse Heap	1914	292543
G	425m E	Railway Sidings	1877	269725
E	425m SE	Unspecified Ground Workings	1980	285757
E	425m SE	Unspecified Ground Workings	1992	285757
E	425m SE	Unspecified Ground Workings	1966	285757
G	425m E	Old Coal Pit	1921	312877
E	428m SE	Unspecified Ground Workings	1914	314977
F	429m SE	Old Coal Pits	1914	265643
F	430m SE	Old Coal Pits	1914	293168
F	430m SE	Old Coal Pits	1914	293168
E	431m SE	Unspecified Old Pit	1948	294123
E	431m SE	Old Coal Pit	1921	254248
G	444m E	Old Coal Pit	1914	285241
G	444m E	Old Coal Pit	1914	285241
G	447m E	Old Coal Pit	1897	280929
G	447m E	Coal Pit	1877	253029
H	447m E	Refuse Heap	1964	286938
G	449m E	Refuse Heap	1914	290195
G	449m E	Refuse Heap	1914	290195
H	450m E	Refuse Heaps	1938	291253
H	450m E	Refuse Heaps	1938	291253
G	452m E	Old Coal Pit	1914	285280
H	452m E	Refuse Heaps	1948	284741
G	454m E	Unspecified Heap	1966	260169
G	455m E	Unspecified Heap	1897	260168
I	471m N	Unspecified Disused Mine	1964	300897
I	476m N	Unspecified Disused Mine	1980	273313
I	476m N	Unspecified Disused Mine	1966	273313



ID	Location	Land Use	Date	Group ID
I	478m N	Disused Colliery	1948	271716
I	479m N	Disused Colliery	1914	288684
D	481m SE	Colliery	1914	281532

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

3

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
A	97m SW	Tanks	1918	34910
A	258m SW	Unspecified Tank	1935	34416
F	424m SE	Unspecified Tank	1989	34413

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

0

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



2.5 Historical garages

Records within 500m

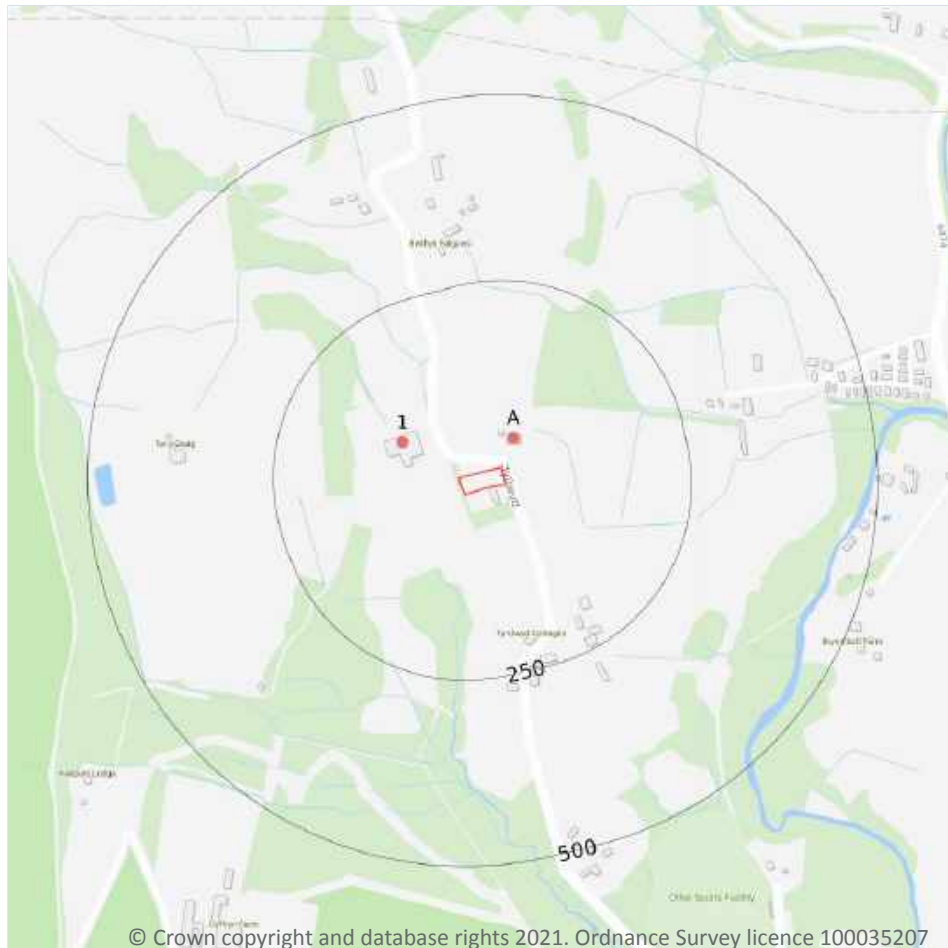
0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m

0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m

0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m

0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m

0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m

3

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	41m N	Tor Y Graig farm Tyllwyd Road Castell-Nedd SA107DX	NRW- WME017270	Using waste exemption	On a farm	Use of waste in construction



ID	Location	Site	Reference	Category	Sub-Category	Description
A	41m N	Tor Y Graig Farm Tyllwyd Road Neath Castell-nedd Port Talbot SA107DX	NRW- WME030511	Using waste exemption	On a farm	Use of waste in construction
1	90m NW	TYLLWYD ROAD, NEATH, SA10 7DX	WEX135121	Using waste exemption	Not on a farm	Use of waste in construction

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Gas pipelines
- Licensed Discharges to controlled waters

4.1 Recent industrial land uses

Records within 250m

0

Current potentially contaminative industrial sites.

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m

1

High pressure underground gas transmission pipelines.

Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Pipe Name	Details	
2	354m S	DOWLAIS TO DYFFRYN CLYDACH	Pipe Number: - Pipeline Safety Regulations Number: - Ownership: National Grid Maximum Operating Pressure (Bar): -	Pipeline Diameter (mm): 600 Wall Thickness (mm): - Year of commission: Not specified Abandonment Status: Not abandoned

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m

0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m

0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.



4.12 Radioactive Substance Authorisations

Records within 500m

0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m

1

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991. Features are displayed on the Current industrial land use map on **page 32**

ID	Location	Address	Details	
1	285m E	CREST ACRES BRYNCOCH NEATH WEST. GL, CREST ACRES BRYNCOCH NEATH WEST., BRYNCOCH NEATH WEST. GLAM., NEATH WEST. GLAM., WEST. GLAM., WEST. GLAM	Effluent Type: UNSPECIFIED Permit Number: BP0121901 Permit Version: 1 Receiving Water: TO LAND	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 12/04/1989 Effective Date: 12/04/1989 Revocation Date: 08/08/1994

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m

0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m**0**

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m**0**

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m**0**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m**0**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m

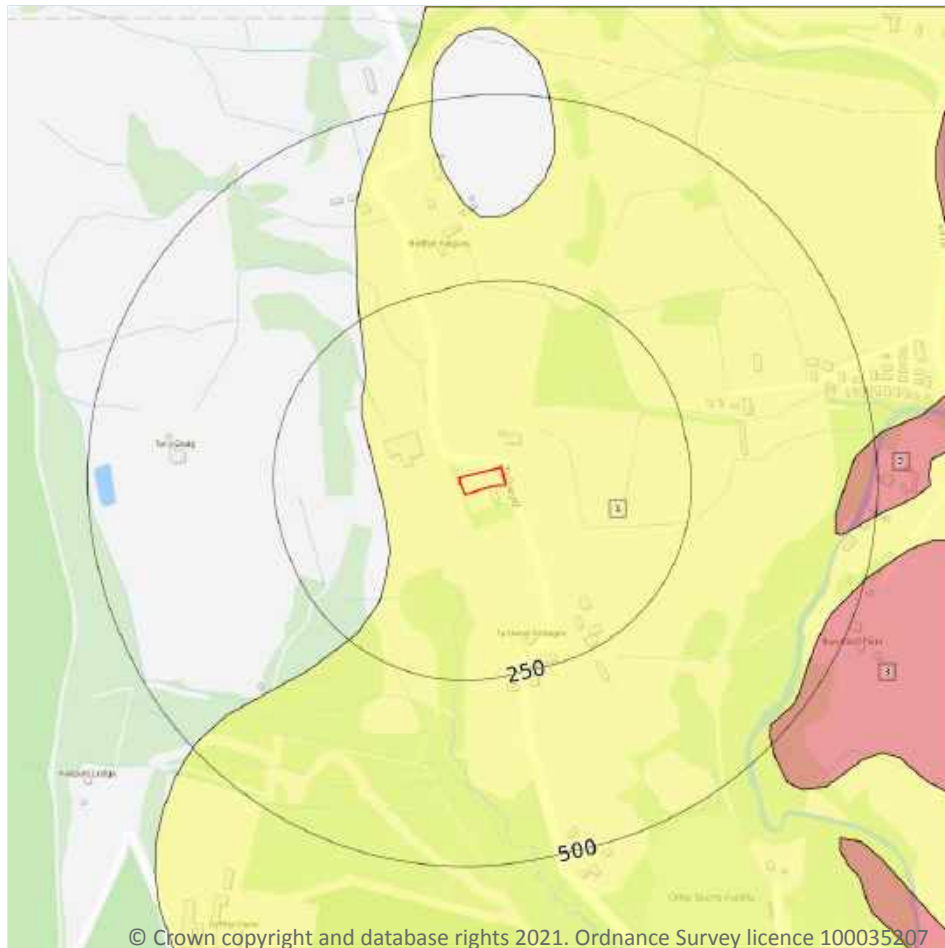
0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



5 Hydrogeology - Superficial aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

3

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 38**

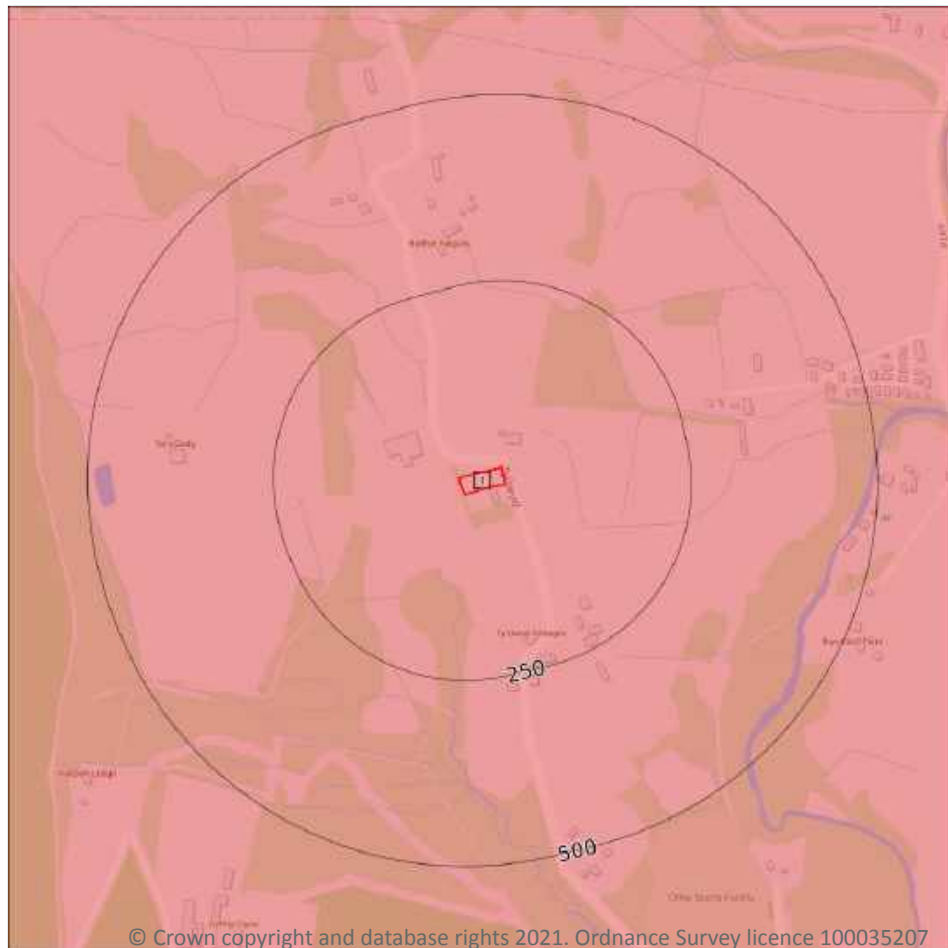
ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	445m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	469m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

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5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

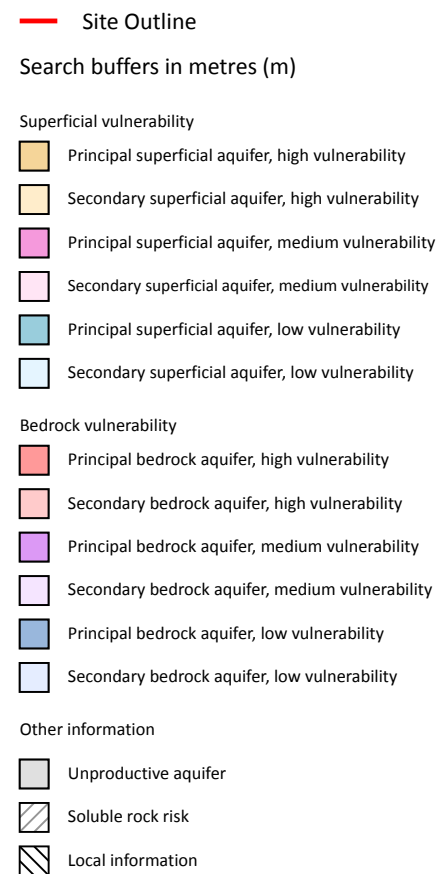
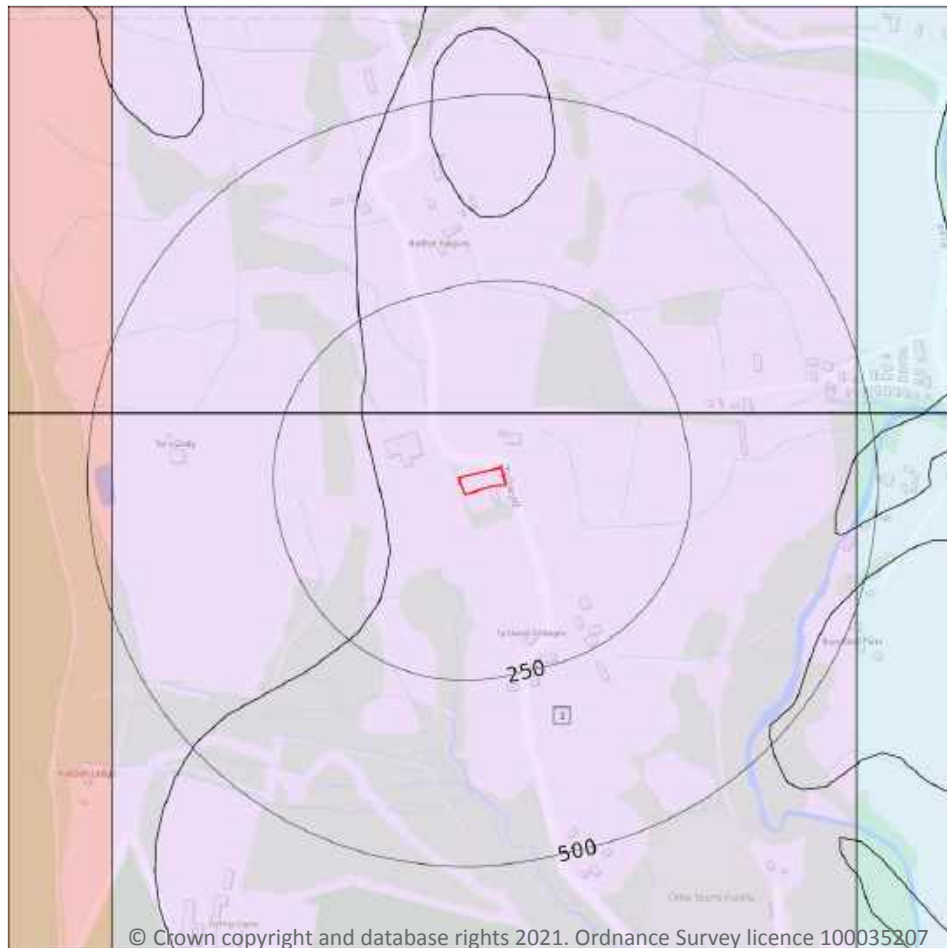
Features are displayed on the Bedrock aquifer map on **page 40**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 41**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Medium	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0
------------------------	----------

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0
------------------------	----------

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

1

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 43**

ID	Location	Details	
-	1081m N	Status: Historical Licence No: 22/59/1/0049 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: SPRING IN FIELD NO. 229 AT WERNDDU ISAF Data Type: Point Name: Jones Easting: 273270 Northing: 201980	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 30/03/1966 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

2

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 43**

ID	Location	Details	
-	1915m SE	Status: Historical Licence No: 21/58/74/0017 Details: Mineral Washing Direct Source: EAW Surface Water Point: STREAM WEST OF GILFACH QUARRY, NEATH Data Type: Point Name: CEMEX UK Materials Ltd Easting: 274950 Northing: 199620	Annual Volume (m ³): 36368 Max Daily Volume (m ³): 204.6 Original Application No: - Original Start Date: 01/02/1975 Expiry Date: - Issue No: 101 Version Start Date: 13/06/2008 Version End Date: -
-	1915m SE	Status: Active Licence No: 21/58/74/0017 Details: Mineral Washing - Low Direct Source: - Point: - Data Type: Point Name: - Easting: 274950 Northing: 199620	Annual Volume (m ³): 36,368 Max Daily Volume (m ³): - Original Application No: - Original Start Date: Jun 13 2008 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.



5.8 Potable abstractions

Records within 2000m

0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m

0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ⋯ WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

24

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	25m W	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
B	43m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	68m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	90m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	90m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	91m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
D	105m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
3	116m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	117m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	124m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	155m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	161m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	162m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	162m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
I	163m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	199m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	204m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	207m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	210m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	215m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
L	224m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
K	225m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
M	243m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
N	245m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

20

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 46**



This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1
------------------------	----------

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	River WB catchment	Clydach - headwaters to conf with River Neath	GB110058026390	Neath	Tawe to Cadoxton

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1
---------------------------	----------

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
15	439m SE	River	Clydach - headwaters to conf with River Neath	GB110058026390	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site

1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Swansea Carboniferous Coal Measures	GB41002G201000	Poor	Poor	Good	2016

This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m

0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m

0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m

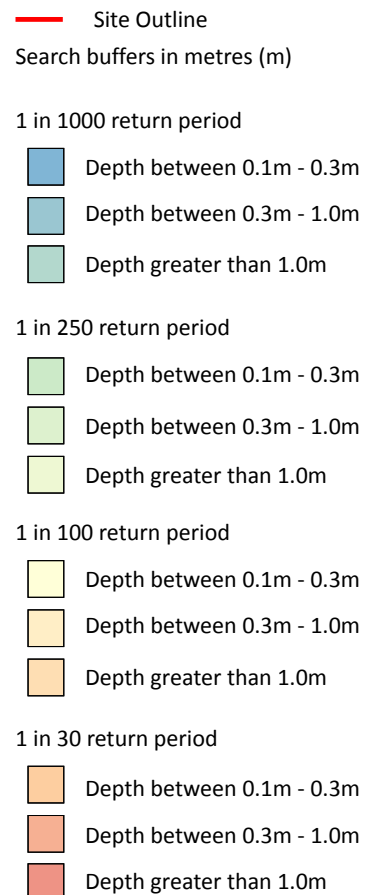
0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

1 in 30 year, 0.1m - 0.3m

Highest risk within 50m

1 in 30 year, 0.3m - 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 54**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

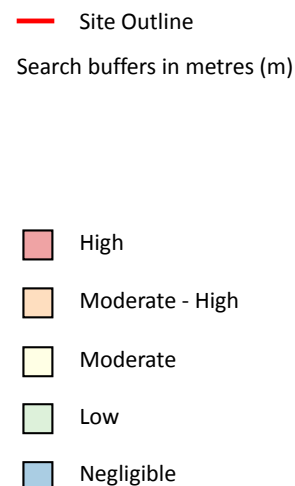
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

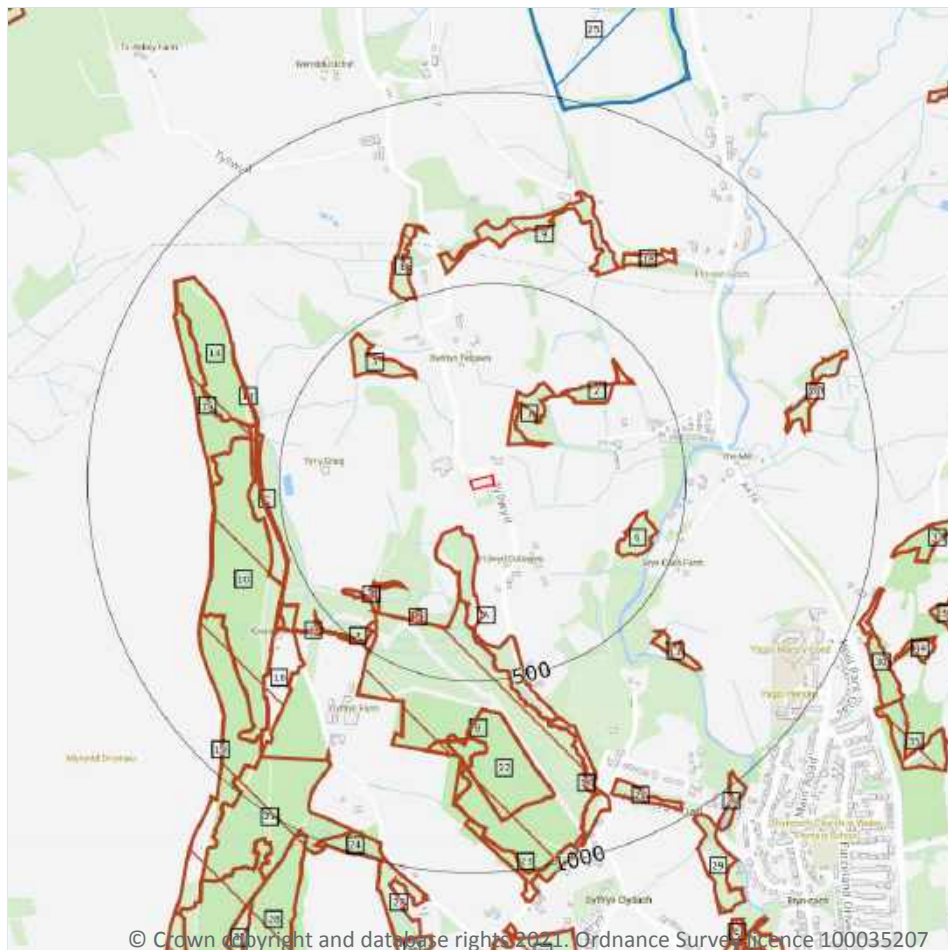
Low

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 56**

This data is sourced from Ambient Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

1

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 57**

ID	Location	Name	Data source
25	972m N	Fforest Goch Bog	Natural Resources Wales



This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m

0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m

0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m

0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m

0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.6 Local Nature Reserves (LNR)

Records within 2000m

0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

116

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 57**

ID	Location	Name	Woodland Type
1	89m NE	Unknown	Ancient Semi Natural Woodland
A	104m S	Unknown	Ancient Semi Natural Woodland
2	272m NE	Unknown	Ancient Semi Natural Woodland
B	290m S	Unknown	Plantation on Ancient Woodland Site
A	291m S	Unknown	Restored Ancient Woodland Site
3	306m NW	Unknown	Ancient Semi Natural Woodland
4	311m SW	Unknown	Restored Ancient Woodland Site
5	343m SW	Unknown	Restored Ancient Woodland Site
6	357m SE	Unknown	Ancient Semi Natural Woodland
7	428m SW	Unknown	Plantation on Ancient Woodland Site
8	497m N	Unknown	Ancient Semi Natural Woodland
C	516m W	Unknown	Restored Ancient Woodland Site
C	519m W	Unknown	Restored Ancient Woodland Site
D	528m SW	Unknown	Ancient Semi Natural Woodland
9	541m N	Unknown	Ancient Semi Natural Woodland
10	545m W	Unknown	Plantation on Ancient Woodland Site



ID	Location	Name	Woodland Type
D	548m SW	Unknown	Plantation on Ancient Woodland Site
D	556m SW	Unknown	Plantation on Ancient Woodland Site
11	569m SE	Unknown	Ancient Semi Natural Woodland
12	574m S	Unknown	Plantation on Ancient Woodland Site
13	574m W	Unknown	Plantation on Ancient Woodland Site
14	577m W	Unknown	Plantation on Ancient Woodland Site
15	582m W	Unknown	Ancient Woodland Site of Unknown Category
16	597m SW	Unknown	Ancient Woodland Site of Unknown Category
17	631m S	Unknown	Restored Ancient Woodland Site
18	640m NE	Unknown	Ancient Semi Natural Woodland
B	642m S	Unknown	Plantation on Ancient Woodland Site
B	650m S	Unknown	Restored Ancient Woodland Site
B	651m S	Unknown	Restored Ancient Woodland Site
B	660m S	Unknown	Restored Ancient Woodland Site
B	703m S	Unknown	Restored Ancient Woodland Site
19	704m W	Unknown	Ancient Woodland Site of Unknown Category
20	775m E	Unknown	Ancient Semi Natural Woodland
21	784m SW	Unknown	Plantation on Ancient Woodland Site
B	819m S	Unknown	Restored Ancient Woodland Site
22	833m SE	Unknown	Ancient Semi Natural Woodland
23	860m S	Unknown	Restored Ancient Woodland Site
24	942m S	Unknown	Plantation on Ancient Woodland Site
26	973m SE	Unknown	Ancient Semi Natural Woodland
27	991m S	Unknown	Restored Ancient Woodland Site
28	1005m SW	Unknown	Plantation on Ancient Woodland Site
29	1010m SE	Unknown	Restored Ancient Woodland Site
30	1017m E	Unknown	Ancient Semi Natural Woodland
31	1054m E	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
32	1062m SW	Unknown	Restored Ancient Woodland Site
33	1138m S	Unknown	Restored Ancient Woodland Site
34	1141m SE	Unknown	Ancient Semi Natural Woodland
35	1155m SE	Unknown	Ancient Semi Natural Woodland
36	1170m S	Unknown	Plantation on Ancient Woodland Site
37	1184m E	Unknown	Ancient Semi Natural Woodland
38	1215m SW	Unknown	Plantation on Ancient Woodland Site
-	1270m E	Unknown	Ancient Semi Natural Woodland
E	1294m SE	Unknown	Restored Ancient Woodland Site
-	1306m S	Unknown	Restored Ancient Woodland Site
-	1330m S	Unknown	Plantation on Ancient Woodland Site
E	1332m SE	Unknown	Restored Ancient Woodland Site
41	1343m SE	Unknown	Restored Ancient Woodland Site
42	1347m SW	Unknown	Plantation on Ancient Woodland Site
-	1355m W	Unknown	Ancient Semi Natural Woodland
E	1370m SE	Unknown	Restored Ancient Woodland Site
-	1370m S	Unknown	Restored Ancient Woodland Site
-	1404m W	Unknown	Ancient Semi Natural Woodland
-	1418m W	Unknown	Ancient Semi Natural Woodland
-	1420m N	Unknown	Ancient Semi Natural Woodland
-	1428m N	Unknown	Ancient Semi Natural Woodland
-	1439m N	Unknown	Ancient Semi Natural Woodland
-	1462m N	Unknown	Restored Ancient Woodland Site
-	1478m N	Unknown	Ancient Semi Natural Woodland
-	1499m S	Unknown	Plantation on Ancient Woodland Site
51	1500m NE	Unknown	Ancient Semi Natural Woodland
-	1548m S	Unknown	Restored Ancient Woodland Site
-	1548m S	Unknown	Restored Ancient Woodland Site

ID	Location	Name	Woodland Type
-	1549m SE	Unknown	Restored Ancient Woodland Site
-	1576m S	Unknown	Restored Ancient Woodland Site
-	1604m SE	Unknown	Restored Ancient Woodland Site
-	1635m NE	Unknown	Ancient Semi Natural Woodland
G	1686m NW	Unknown	Ancient Woodland Site of Unknown Category
-	1696m S	Unknown	Restored Ancient Woodland Site
-	1696m E	Unknown	Plantation on Ancient Woodland Site
-	1698m W	Unknown	Ancient Semi Natural Woodland
-	1701m S	Unknown	Plantation on Ancient Woodland Site
-	1703m S	Unknown	Restored Ancient Woodland Site
-	1703m E	Unknown	Plantation on Ancient Woodland Site
-	1707m S	Unknown	Restored Ancient Woodland Site
-	1710m NW	Unknown	Ancient Woodland Site of Unknown Category
-	1710m S	Unknown	Plantation on Ancient Woodland Site
-	1713m S	Unknown	Restored Ancient Woodland Site
-	1752m SE	Unknown	Restored Ancient Woodland Site
-	1752m N	Unknown	Ancient Semi Natural Woodland
-	1759m S	Unknown	Restored Ancient Woodland Site
-	1764m S	Unknown	Restored Ancient Woodland Site
-	1764m S	Unknown	Ancient Semi Natural Woodland
-	1770m W	Unknown	Ancient Semi Natural Woodland
-	1773m NW	Unknown	Restored Ancient Woodland Site
-	1786m S	Unknown	Restored Ancient Woodland Site
-	1789m S	Unknown	Restored Ancient Woodland Site
-	1799m NE	Unknown	Ancient Semi Natural Woodland
-	1801m NW	Unknown	Ancient Semi Natural Woodland
-	1838m SW	Unknown	Ancient Semi Natural Woodland
-	1853m W	Unknown	Ancient Semi Natural Woodland

ID	Location	Name	Woodland Type
-	1854m S	Unknown	Ancient Semi Natural Woodland
-	1857m NE	Unknown	Ancient Semi Natural Woodland
-	1858m S	Unknown	Ancient Semi Natural Woodland
-	1883m W	Unknown	Restored Ancient Woodland Site
-	1889m S	Unknown	Restored Ancient Woodland Site
-	1917m SW	Unknown	Plantation on Ancient Woodland Site
-	1930m S	Unknown	Plantation on Ancient Woodland Site
-	1935m S	Unknown	Ancient Semi Natural Woodland
-	1944m W	Unknown	Restored Ancient Woodland Site
-	1947m W	Unknown	Ancient Woodland Site of Unknown Category
-	1956m S	Unknown	Plantation on Ancient Woodland Site
-	1972m W	Unknown	Ancient Semi Natural Woodland
-	1973m NE	Unknown	Ancient Semi Natural Woodland
-	1973m W	Unknown	Restored Ancient Woodland Site
-	1981m S	Unknown	Plantation on Ancient Woodland Site
-	1997m NW	Unknown	Restored Ancient Woodland Site

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.



SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site	0
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Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0
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Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.



This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m

0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from English Heritage, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Timber felling licences
- Open Access land

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12.1 Agricultural Land Classification

Records within 250m

8

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 69**

ID	Location	Classification	Description
1	On site	Grade 3b	Moderate quality agricultural land
2	47m SW	Grade 5	Very poor quality agricultural land
5	117m W	Grade 3b	Moderate quality agricultural land



ID	Location	Classification	Description
6	146m NW	Grade 4	Poor quality agricultural land
7	167m W	Grade 4	Poor quality agricultural land
10	191m E	Grade 5	Very poor quality agricultural land
11	220m W	Grade 4	Poor quality agricultural land
13	234m W	Grade 3b	Moderate quality agricultural land

This data is sourced from Natural Resources Wales.

12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m

0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

This data is sourced from Natural England.



12.5 Countryside Stewardship Schemes

Records within 250m

0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.



13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m

0

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

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

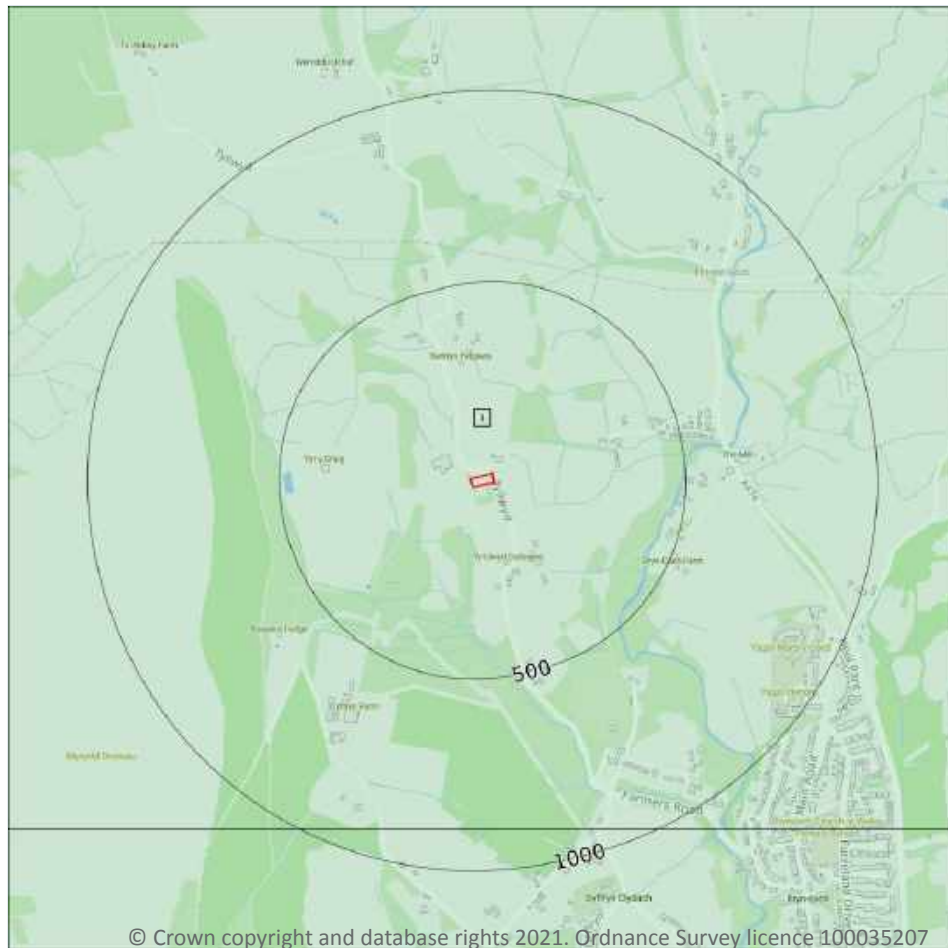
0

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

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Full coverage
 - Partial coverage
 - No coverage

14.1 10k Availability

Records within 500m

1

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

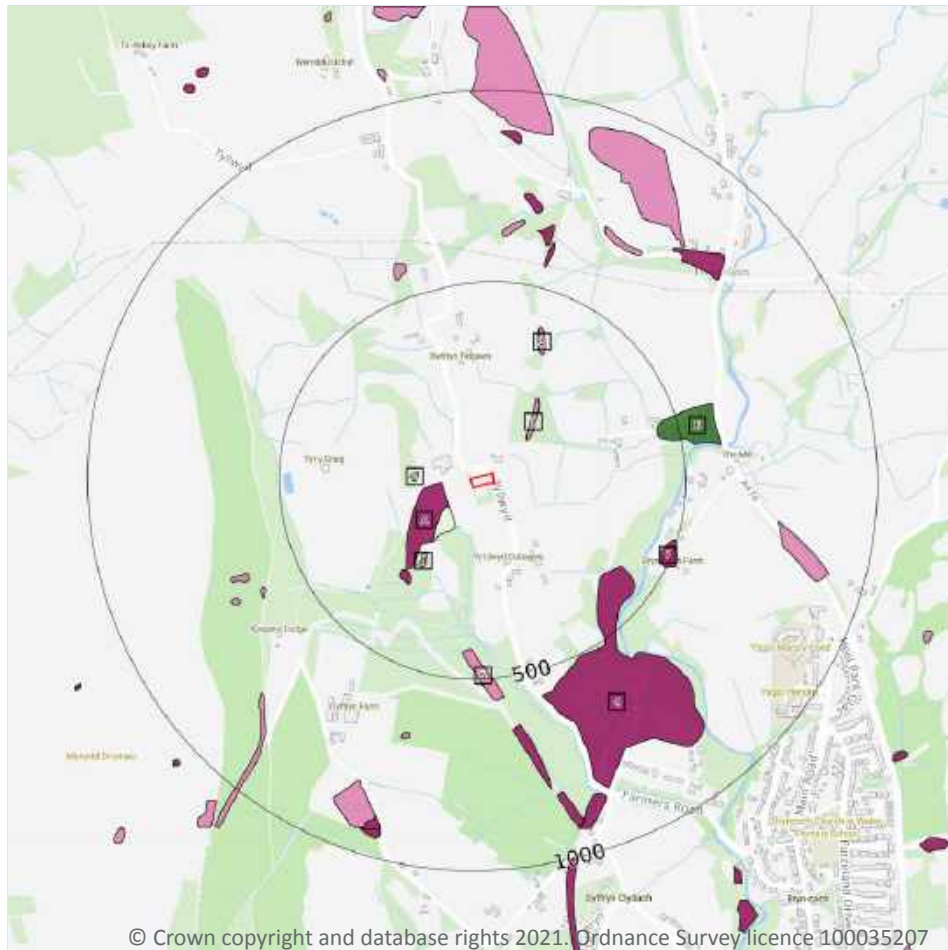
Features are displayed on the Geology 1:10,000 scale - Availability map on **page 73**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SN70SW

This data is sourced from the British Geological Survey.



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



— Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

11

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

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 74**

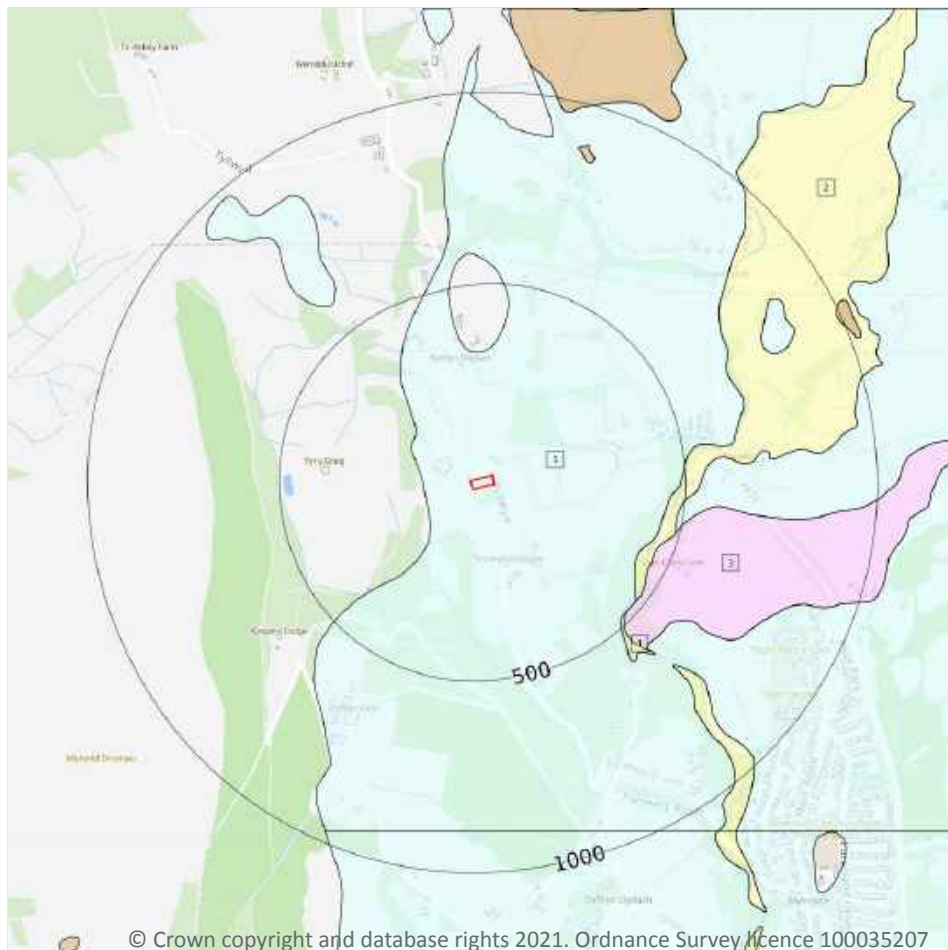
ID	Location	LEX Code	Description	Rock description
A	74m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	81m SW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
1	124m NE	WGR-VOID	Worked Ground (Undivided)	Void
2	137m W	WGR-VOID	Worked Ground (Undivided)	Void

ID	Location	LEX Code	Description	Rock description
B	210m SW	WGR-VOID	Worked Ground (Undivided)	Void
B	277m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	334m N	WGR-VOID	Worked Ground (Undivided)	Void
4	371m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	421m S	WGR-VOID	Worked Ground (Undivided)	Void
6	443m E	LSGR-UNKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
7	471m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m

4

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 76**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	417m SE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
3	454m SE	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel



ID	Location	LEX Code	Description	Rock description
4	478m SE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

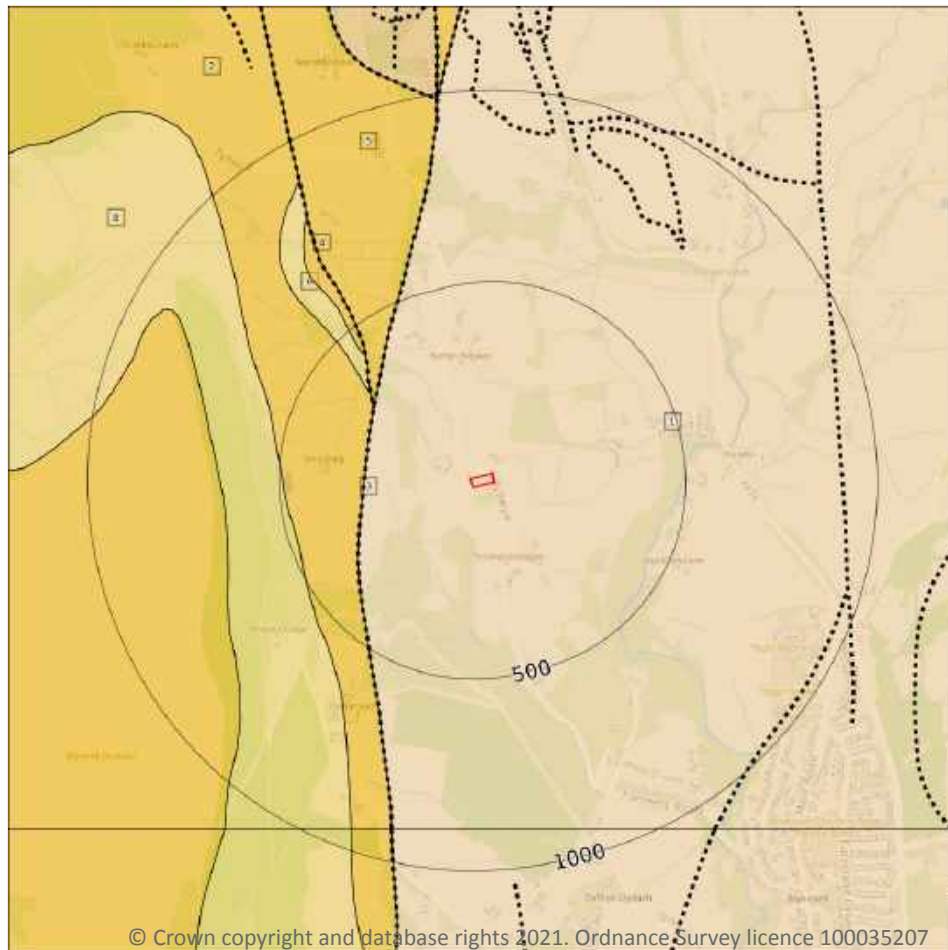
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m

6

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 78**

ID	Location	LEX Code	Description	Rock age
1	On site	GDB-MDSS	Grovesend Formation - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
2	276m W	SW-SDST	Swansea Member - Sandstone	Westphalian D Sub-age
5	314m NW	SW-SDST	Swansea Member - Sandstone	Westphalian D Sub-age

ID	Location	LEX Code	Description	Rock age
6	346m NW	SW-MDSS	Swansea Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age
7	422m NW	SW-SDST	Swansea Member - Sandstone	Westphalian D Sub-age
8	478m W	SW-MDSS	Swansea Member - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

2

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

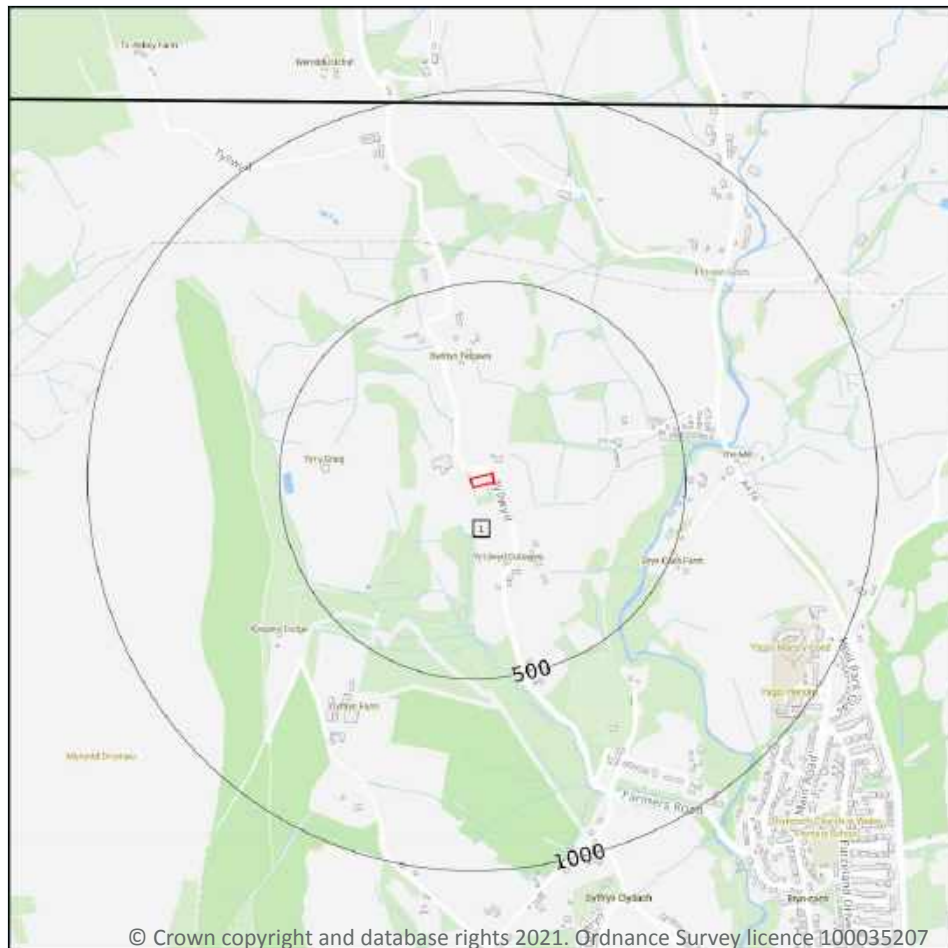
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 78**

ID	Location	Category	Description
3	276m W	FAULT	Normal fault, inferred
4	314m NW	FAULT	Normal fault, inferred

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

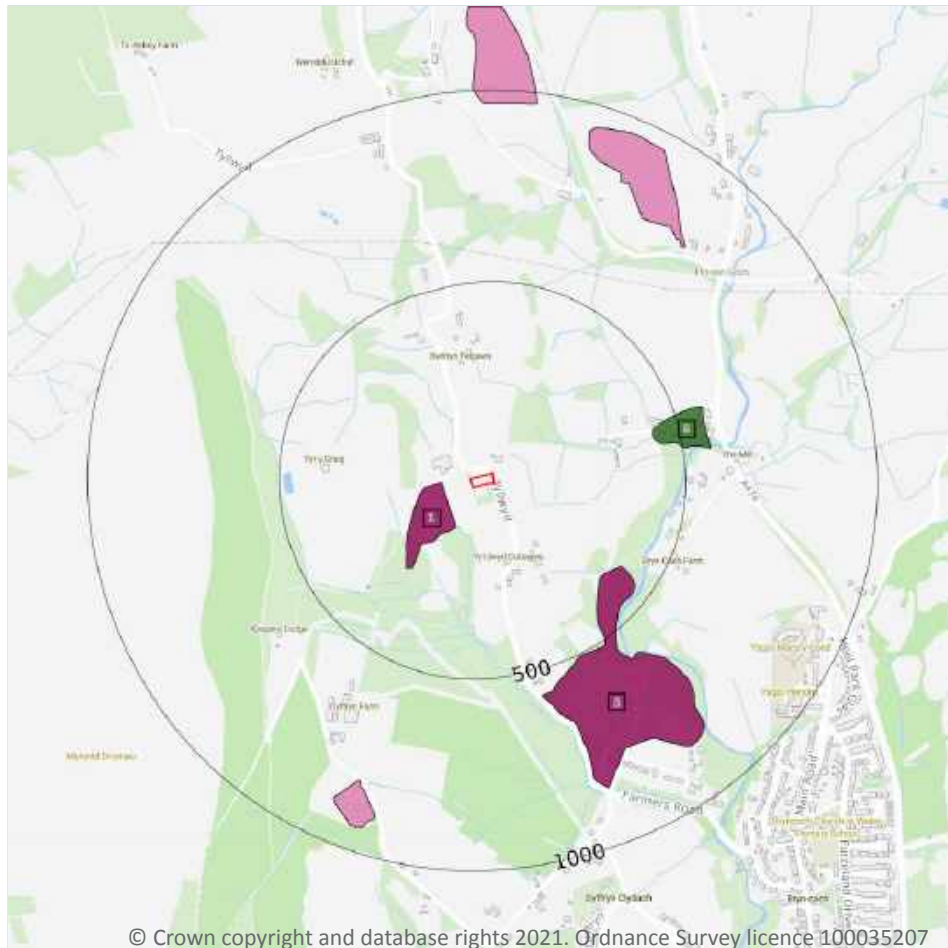
Features are displayed on the Geology 1:50,000 scale - Availability map on **page 80**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW247_swansea_v4

This data is sourced from the British Geological Survey.



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



- Site Outline
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

3

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 81**

ID	Location	LEX Code	Description	Rock description
1	74m W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	371m SE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	430m E	LSGR-ARTGR	LANDSCAPED GROUND (UNDIVIDED)	ARTIFICIALLY MODIFIED GROUND

This data is sourced from the British Geological Survey.



15.3 Artificial ground permeability (50k)

Records within 50m

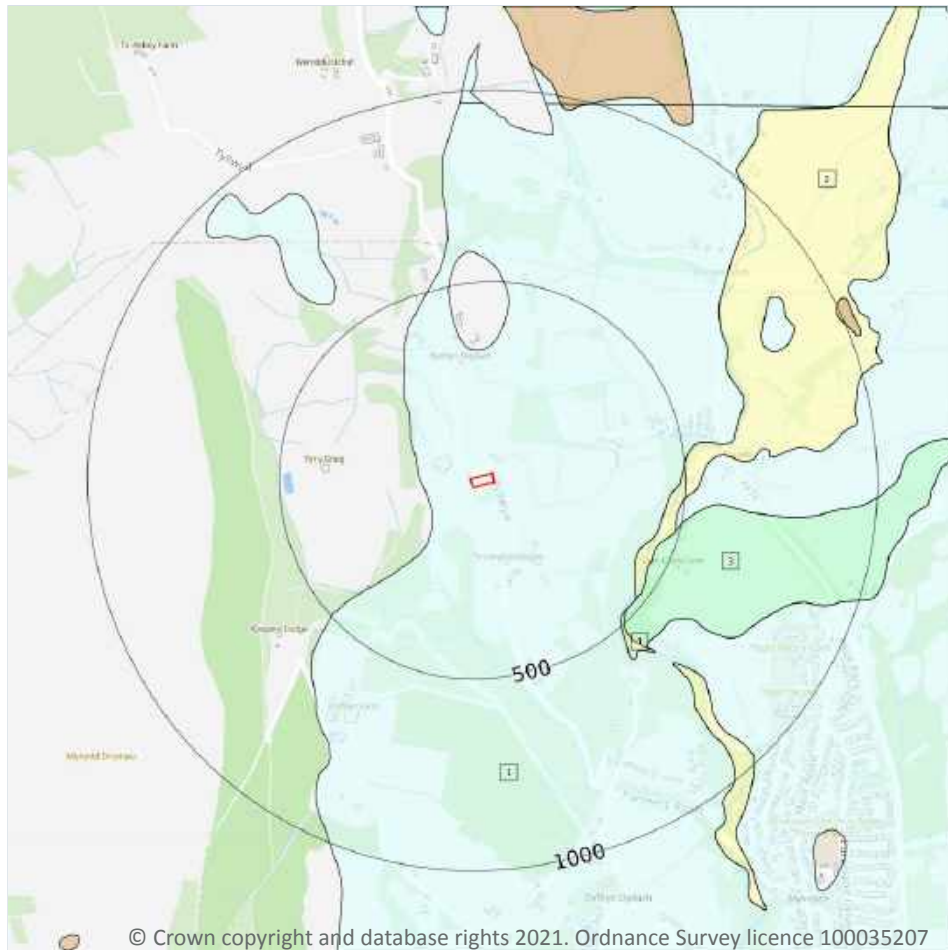
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m

4

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 83**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
2	417m SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	454m SE	HMGDD-XSV	HUMMOCKY (MOUNDY) GLACIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	478m SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1
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A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0
----------------------------	----------

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

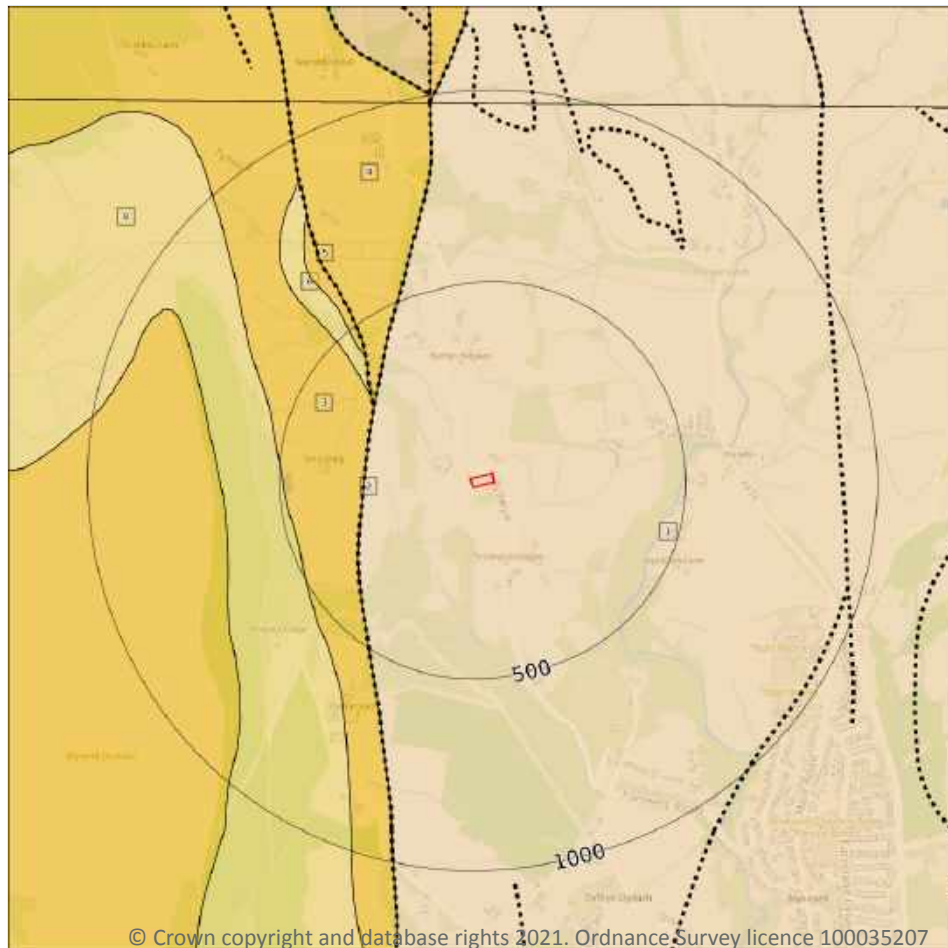
15.7 Landslip permeability (50k)

Records within 50m	0
---------------------------	----------

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m

6

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 85**

ID	Location	LEX Code	Description	Rock age
1	On site	GDB-MDSS	GROVESEND FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3	276m W	SW-SDST	SWANSEA MEMBER - SANDSTONE	WESTPHALIAN
4	314m NW	SW-SDST	SWANSEA MEMBER - SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
6	346m NW	SW-MDSS	SWANSEA MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
7	422m NW	SW-SDST	SWANSEA MEMBER - SANDSTONE	WESTPHALIAN
8	478m W	SW-MDSS	SWANSEA MEMBER - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

2

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 85**

ID	Location	Category	Description
2	276m W	FAULT	Fault, inferred, displacement unknown
5	314m NW	FAULT	Fault, inferred, displacement unknown

This data is sourced from the British Geological Survey.



16 Boreholes

16.1 BGS Boreholes

Records within 250m

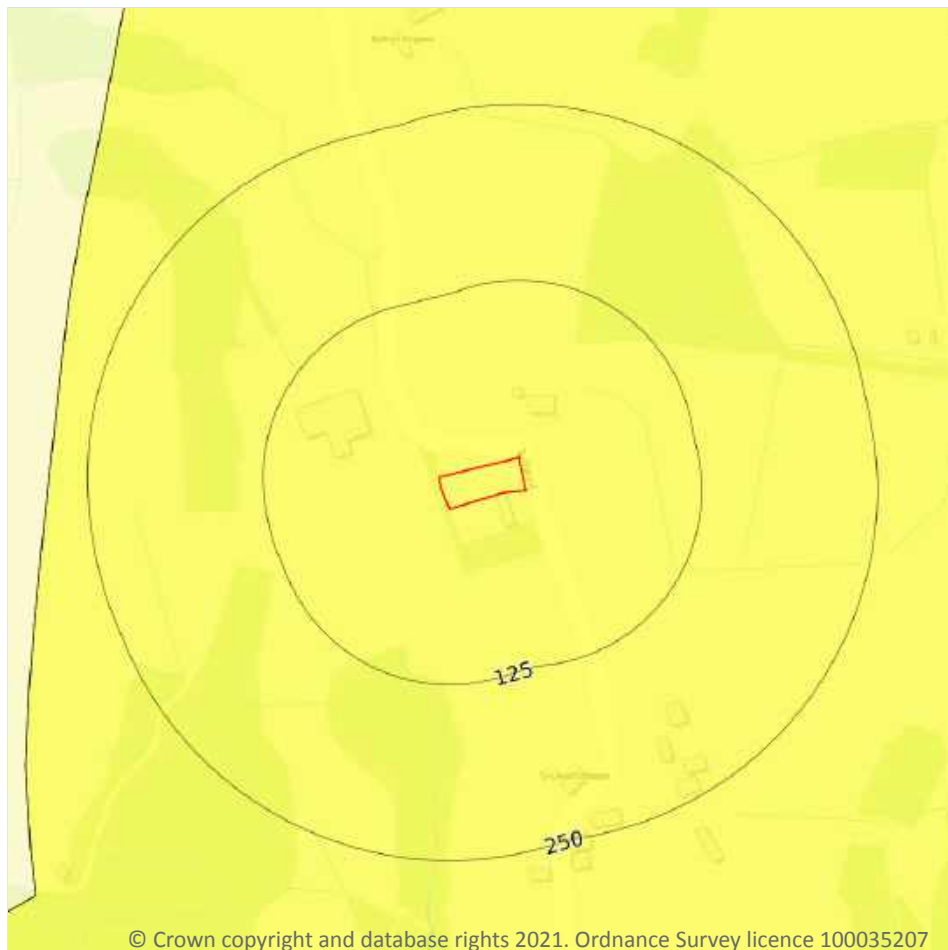
0

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

1

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

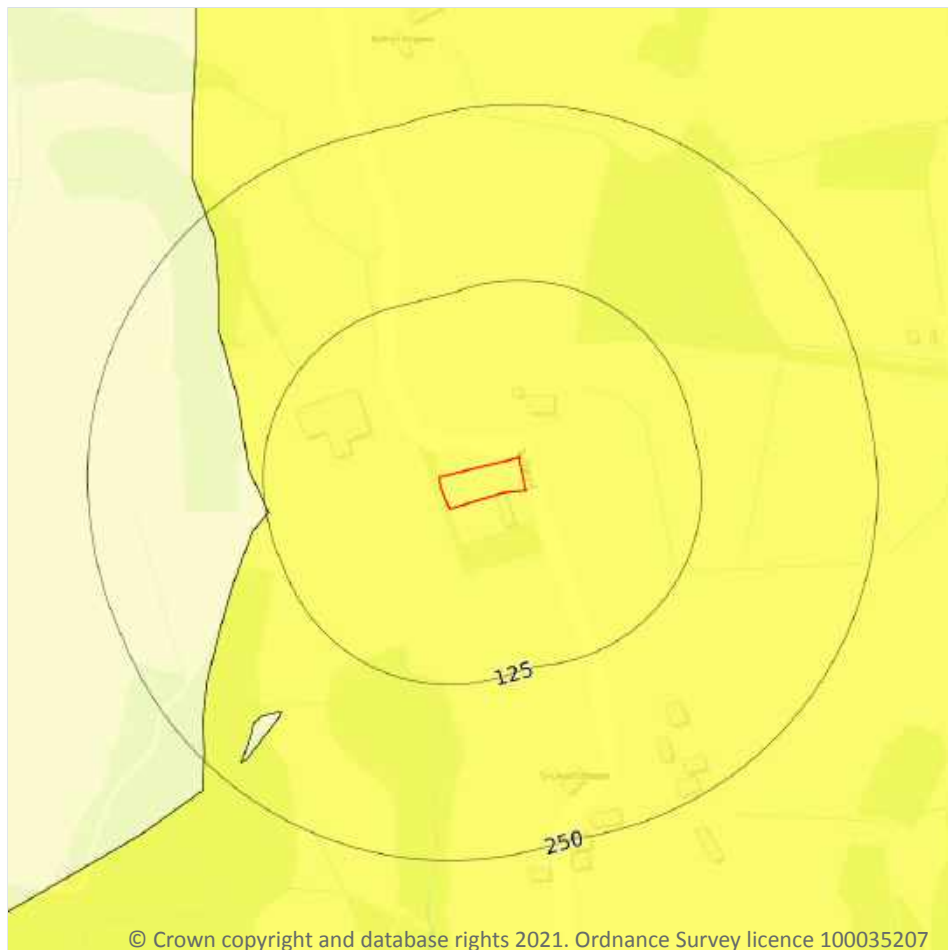
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 88**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.2 Running sands

Records within 50m

1

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

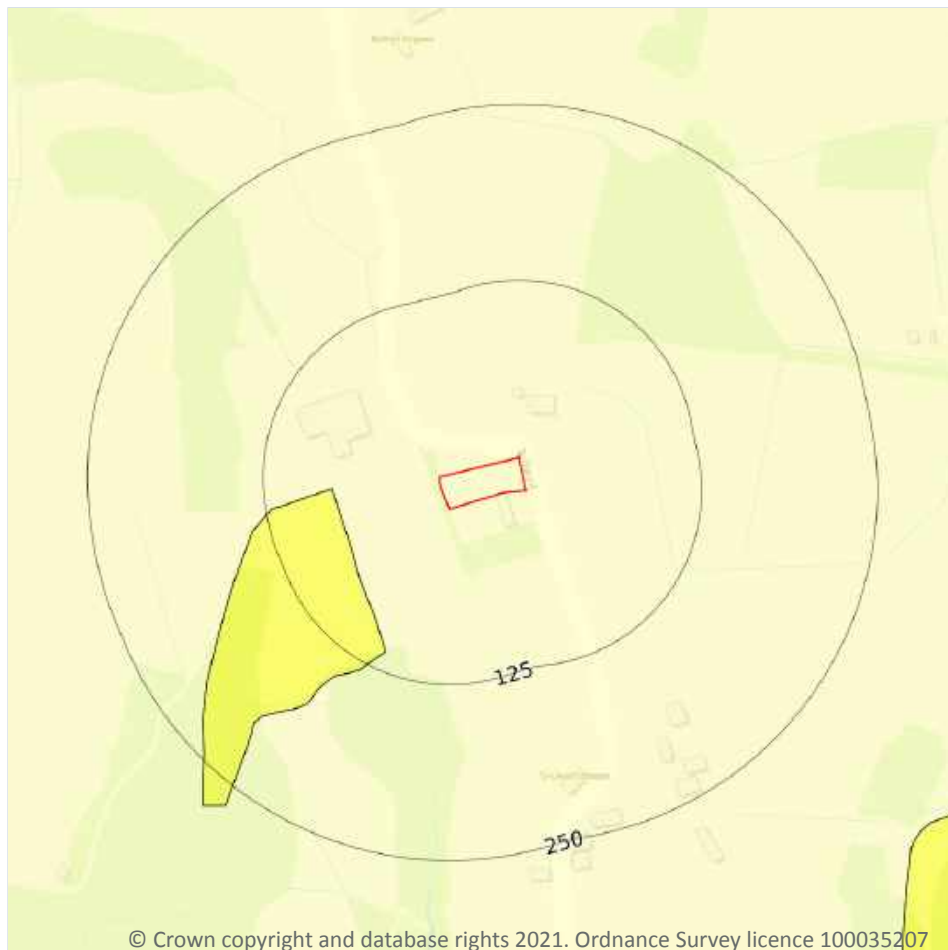
Features are displayed on the Natural ground subsidence - Running sands map on **page 89**

Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.3 Compressible deposits

Records within 50m

1

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

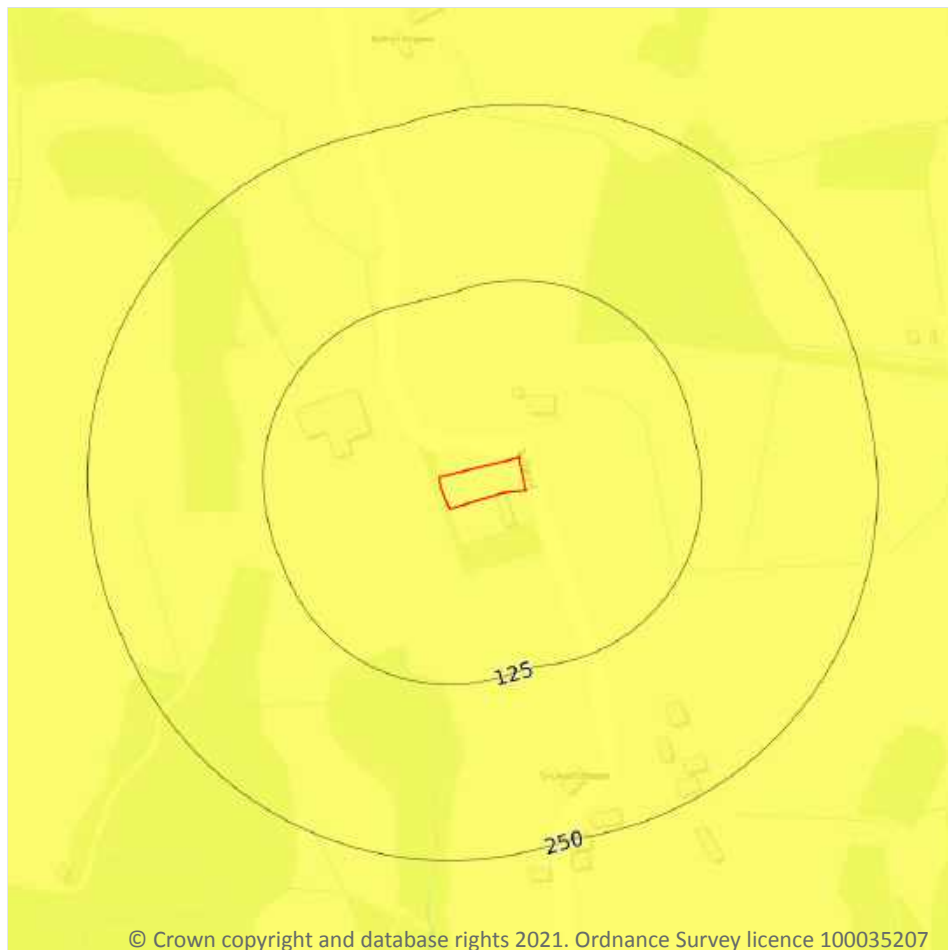
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 90**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.4 Collapsible deposits

Records within 50m

1

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

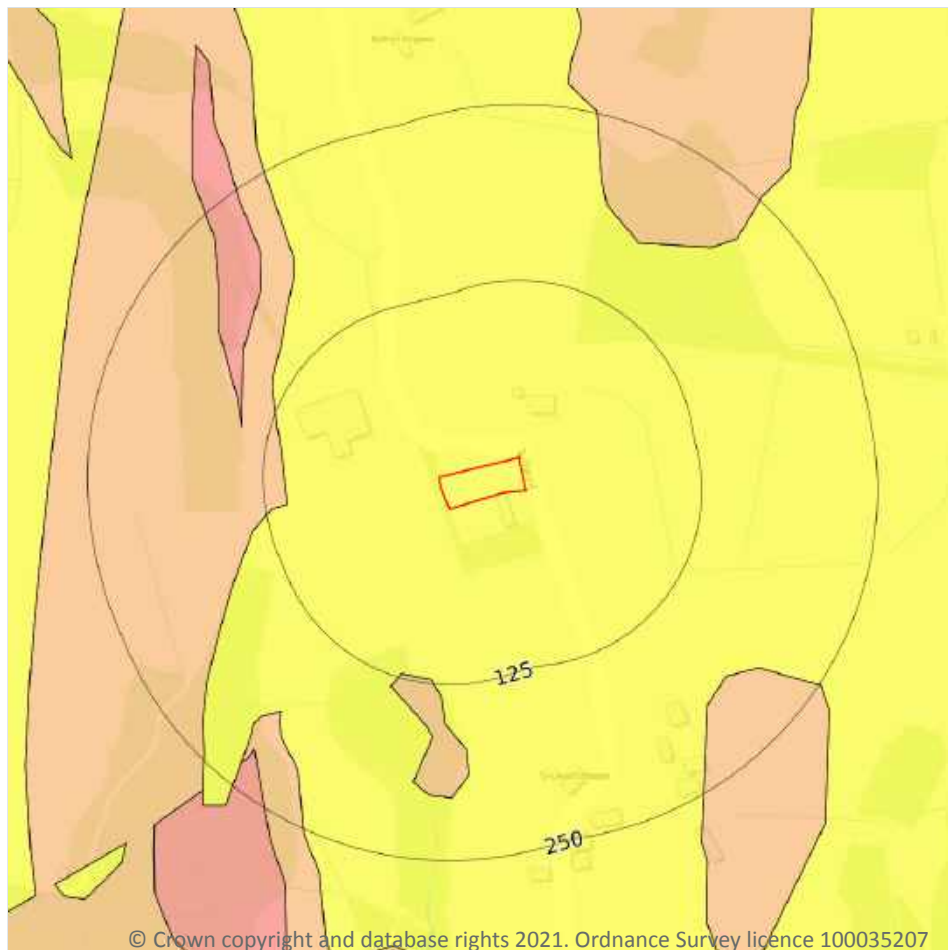
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 91**

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.5 Landslides

Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

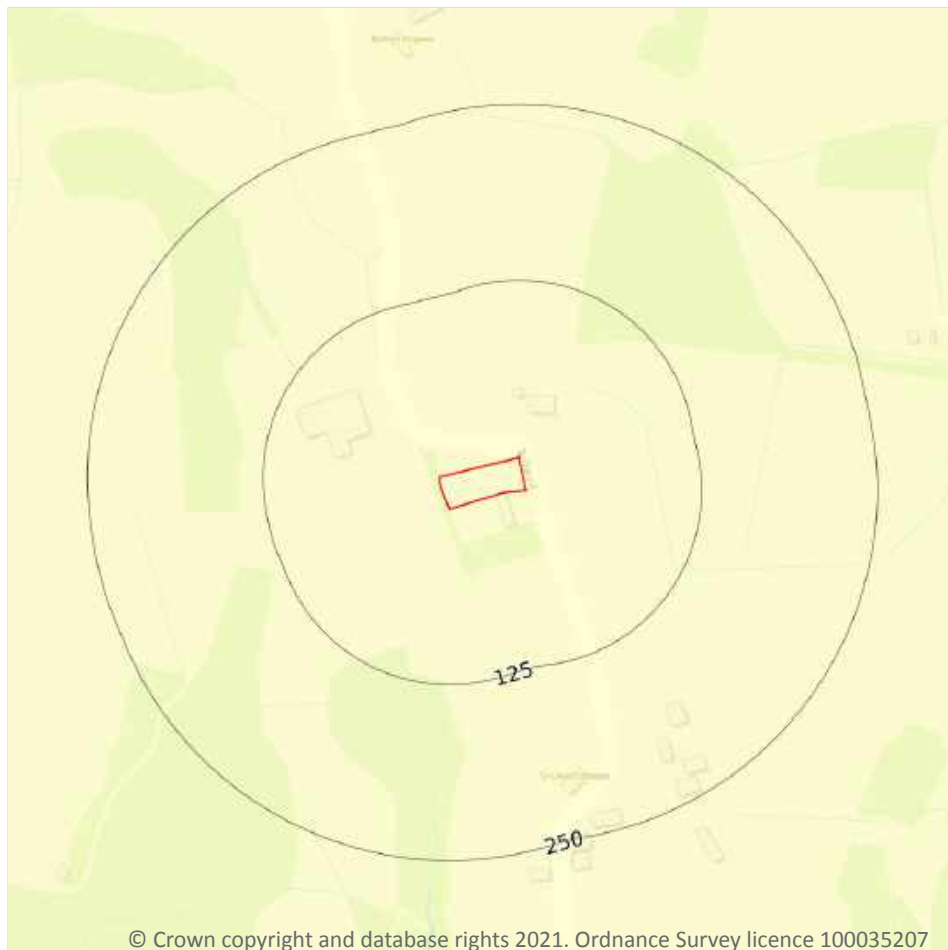
Features are displayed on the Natural ground subsidence - Landslides map on **page 92**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

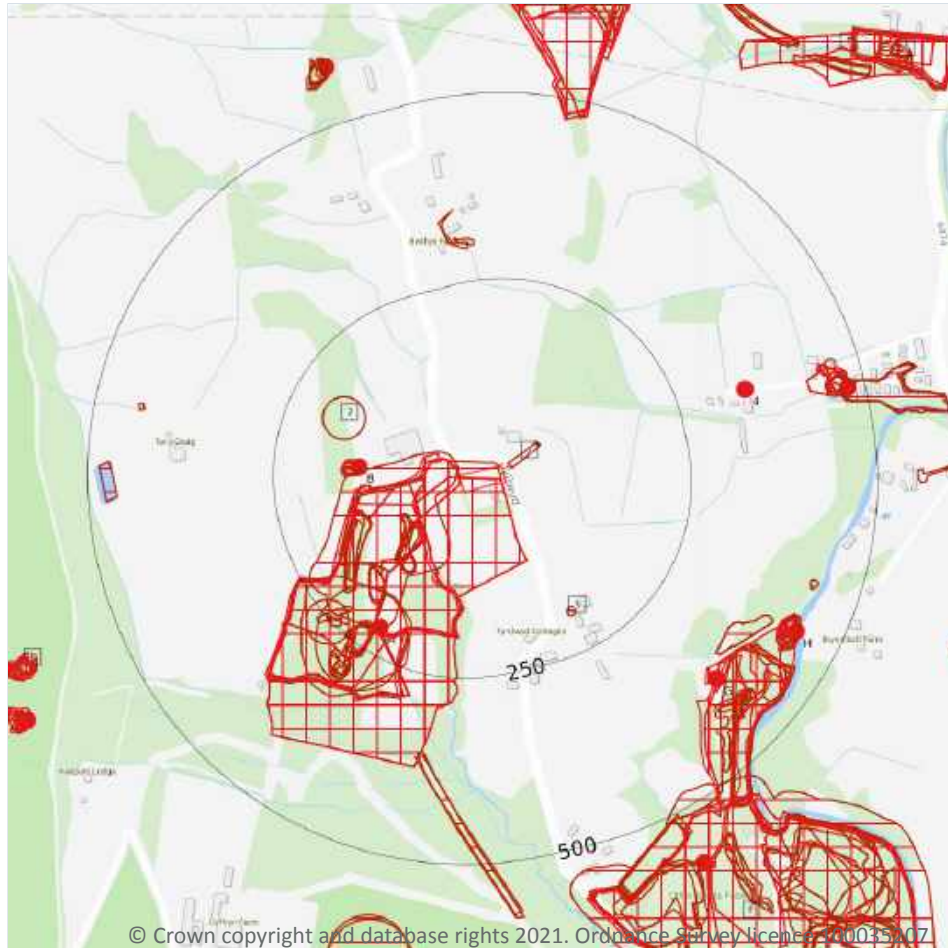
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 93**

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

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- ▢ Natural cavities (Area)
 - Natural cavities (Point)
 - BritPits
 - ▢ Surface ground workings
 - ▢ Underground workings
 - ▢ Historical Mineral Planning Areas
 - Mining Cavities
- Non Coal Mining
 - ▢ Sporadic underground mining of restricted extent possible
 - ▢ Localised small scale underground mining possible
 - ▢ Small scale mining possible
 - ▢ Underground mining known or likely within or in close proximity
 - ▢ Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m

0

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

This data is sourced from Peter Brett Associates (PBA).

18.2 BritPits

Records within 500m

6

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 94**

ID	Location	Details	Description
B	135m W	Name: Tor-y-graig Address: Clydach, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
A	214m SW	Name: Ty-llwyd Address: Clydach, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
4	341m E	Name: Dyffryn Arms Address: Clydach, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
G	387m SE	Name: Ty-llwyd Address: Clydach, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority



ID	Location	Details	Description
H	438m SE	Name: Bryn-coch Farm Address: Clydach, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
I	475m E	Name: Dyffryn Arms Address: Clydach, NEATH, West Glamorgan Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	54
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Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 94**

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Fire Brick Works	1921	1:10560
A	On site	Colliery	1921	1:10560
A	4m W	Fire Brick Works	1914	1:10560
1	10m E	Unspecified Ground Workings	1964	1:10560
A	48m W	Fire Brick Works	1914	1:10560
A	48m W	Fire Brick Works	1914	1:10560
A	65m W	Colliery	1938	1:10560
A	65m W	Colliery	1938	1:10560
A	71m SW	Refuse Heap	1914	1:10560
A	71m SW	Refuse Heap	1914	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	71m SW	Colliery	1948	1:10560
A	72m SW	Refuse Heap	1914	1:10560
A	79m SW	Refuse Heap	1921	1:10560
A	82m SW	Unspecified Ground Workings	1938	1:10560
A	82m SW	Unspecified Ground Workings	1938	1:10560
A	85m SW	Unspecified Ground Workings	1948	1:10560
A	114m SW	Unspecified Heap	1948	1:10560
B	128m W	Unspecified Disused Level	1980	1:10000
B	128m W	Unspecified Disused Level	1992	1:10000
B	128m W	Unspecified Disused Level	1966	1:10560
B	128m W	Unspecified Pit	1921	1:10560
A	132m SW	Refuse Heap	1938	1:10560
A	132m SW	Refuse Heap	1938	1:10560
A	134m SW	Refuse Heap	1948	1:10560
B	136m W	Old Coal Level	1914	1:10560
B	136m W	Old Coal Level	1914	1:10560
B	139m W	Old Coal Level	1914	1:10560
A	140m W	Refuse Heap	1914	1:10560
A	143m SW	Refuse Heap	1921	1:10560
2	145m NW	Old Coal Level	1921	1:10560
A	147m SW	Colliery	1914	1:10560
A	147m SW	Colliery	1914	1:10560
A	155m SW	Refuse Heap	1938	1:10560
A	155m SW	Refuse Heap	1938	1:10560
A	158m SW	Refuse Heap	1948	1:10560
A	170m SW	Colliery	1914	1:10560
A	172m SW	Old Coal Pit	1921	1:10560
3	188m SE	Pond	1897	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	212m SW	Old Coal Pit	1897	1:10560
A	216m SW	Old Coal Pit	1914	1:10560
A	217m SW	Unspecified Slant	1964	1:10560
A	219m SW	Unspecified Old Pit	1938	1:10560
A	219m SW	Unspecified Old Pit	1938	1:10560
A	221m SW	Unspecified Old Pit	1948	1:10560
A	222m SW	Refuse Heap	1914	1:10560
A	222m SW	Refuse Heap	1914	1:10560
A	224m SW	Unspecified Old Pit	1964	1:10560
A	224m SW	Unspecified Slant	1921	1:10560
A	238m SW	Unspecified Slant	1938	1:10560
A	238m SW	Unspecified Slant	1938	1:10560
A	243m SW	Old Coal Pit	1914	1:10560
A	243m SW	Old Coal Pit	1914	1:10560
A	244m SW	Unspecified Slant	1914	1:10560
A	244m SW	Unspecified Slant	1914	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

64

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 94**

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Colliery	1921	1:10560
A	0m W	Unspecified Mine	1980	1:10000
A	0m W	Unspecified Disused Mine	1992	1:10000
A	0m W	Unspecified Mine	1966	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	31m NW	Unspecified Disused Mine	1964	1:10560
A	71m SW	Colliery	1948	1:10560
B	128m W	Unspecified Disused Level	1980	1:10000
B	128m W	Unspecified Disused Level	1992	1:10000
B	128m W	Unspecified Disused Level	1966	1:10560
B	139m W	Old Coal Level	1914	1:10560
A	212m SW	Old Coal Pit	1897	1:10560
A	216m SW	Old Coal Pit	1914	1:10560
F	368m SE	Unspecified Disused Mine	1964	1:10560
F	375m SE	Colliery	1921	1:10560
G	380m SE	Coal Pit	1877	1:10560
G	381m SE	Old Coal Pits	1914	1:10560
G	386m SE	Coal Pit	1897	1:10560
H	417m SE	Old Coal Pits	1921	1:10560
H	421m SE	Air Shaft	1877	1:10560
H	423m SE	Air Shaft	1914	1:10560
H	424m SE	Disused Air Shaft	1980	1:10000
H	424m SE	Disused Air Shaft	1992	1:10000
H	424m SE	Disused Air Shaft	1966	1:10560
H	424m SE	Air Shaft	1921	1:10560
I	425m E	Old Coal Pit	1921	1:10560
H	429m SE	Old Coal Pits	1914	1:10560
G	431m SE	Old Coal Pit	1921	1:10560
I	447m E	Old Coal Pit	1897	1:10560
I	447m E	Coal Pit	1877	1:10560
I	452m E	Old Coal Pit	1914	1:10560
K	471m N	Unspecified Disused Mine	1964	1:10560
K	476m N	Unspecified Disused Mine	1980	1:10000



ID	Location	Land Use	Year of mapping	Mapping scale
K	476m N	Unspecified Disused Mine	1966	1:10560
K	478m N	Disused Colliery	1948	1:10560
K	479m N	Disused Colliery	1914	1:10560
F	515m SE	Disused Colliery	1948	1:10560
F	519m SE	Colliery	1877	1:10560
F	525m SE	Colliery	1897	1:10560
K	563m N	Disused Colliery	1921	1:10560
F	575m SE	Unspecified Disused Shaft	1964	1:10560
F	577m SE	Unspecified Old Shaft	1948	1:10560
K	599m N	Colliery	1897	1:10560
P	617m SW	Trial Levels	1914	1:10560
R	622m NE	Colliery	1897	1:10560
P	623m SW	Trial Levels	1921	1:10560
P	625m SW	Unspecified Disused Levels	1980	1:10000
P	625m SW	Unspecified Disused Levels	1992	1:10000
P	625m SW	Unspecified Disused Levels	1966	1:10560
P	630m SW	Unspecified Old Level	1948	1:10560
P	634m SW	Unspecified Disused Levels	1964	1:10560
T	655m SW	Trial Levels	1914	1:10560
T	663m SW	Trial Levels	1921	1:10560
T	665m SW	Unspecified Disused Levels	1980	1:10000
T	665m SW	Unspecified Disused Levels	1992	1:10000
T	665m SW	Unspecified Disused Levels	1966	1:10560
V	666m NE	Disused Colliery	1948	1:10560
T	668m SW	Unspecified Old Level	1948	1:10560
T	670m SW	Unspecified Disused Levels	1964	1:10560
-	672m S	Coal Pit	1877	1:10560
V	724m NE	Disused Colliery	1914	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
V	725m NE	Disused Colliery	1921	1:10560
V	742m NE	Unspecified Disused Mine	1964	1:10560
-	885m S	Old Coal Shaft	1914	1:10560
-	891m S	Old Coal Shaft	1921	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

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

This data is sourced from Peter Brett Associates (PBA).



18.8 JPB mining areas

Records on site	0
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Areas which could be affected by former coal mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	1
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Areas which could be affected by past, current or future coal mining.

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0
-----------------	---

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

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

18.11 Gypsum areas

Records on site	0
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Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.



18.13 Clay mining

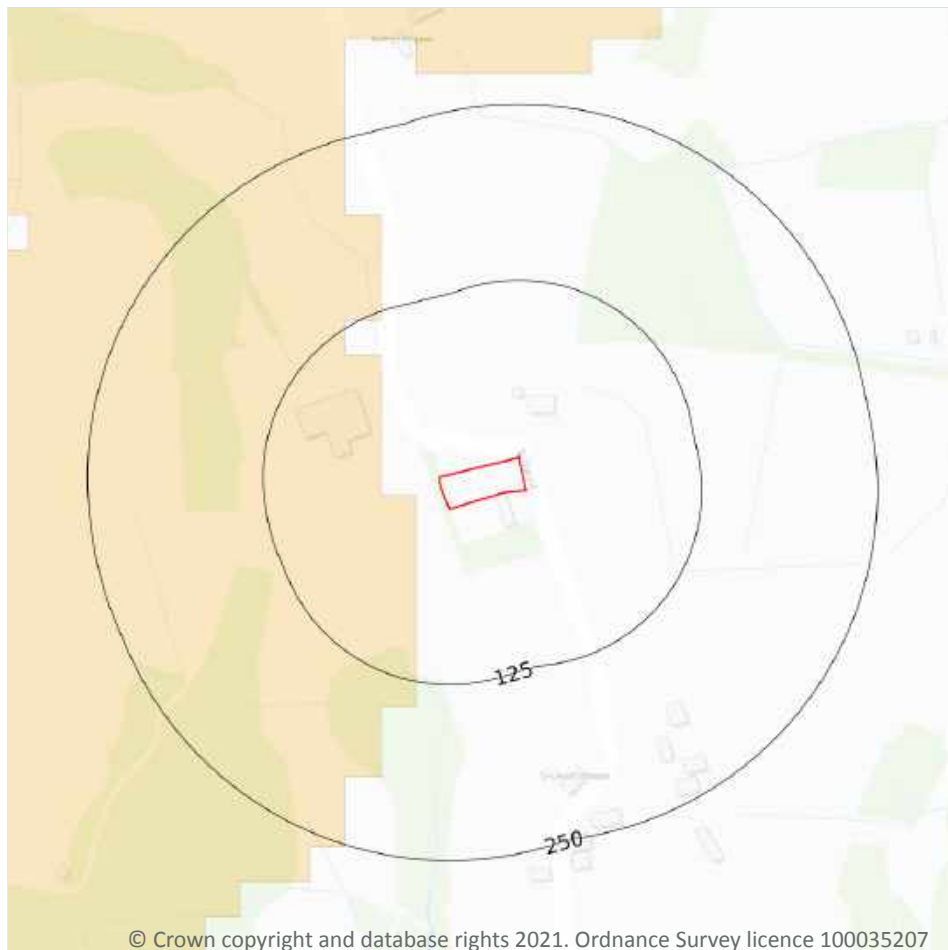
Records on site	0
-----------------	---

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

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



19 Radon



- Site Outline
- Search buffers in metres (m)
- Greater than 30%
 - Between 10% and 30%
 - Between 5% and 10%
 - Between 3% and 5%
 - Between 1% and 3%
 - Less than 1%

19.1 Radon

Records on site

1

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

Features are displayed on the Radon map on **page 104**

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

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



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	35 - 45 mg/kg	No data	100 mg/kg	60 mg/kg	2.2 - 3.0 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
On site	35 - 45 mg/kg	No data	100 mg/kg	60 mg/kg	2.2 - 3.0 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- ... Active railways
- ... Active tunnels
- ... Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m

0

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



This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

10

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 106**

Location	Land Use	Year of mapping	Mapping scale
On site	Railway Sidings	1918	2500
On site	Railway Sidings	1921	10560
On site	Railway Sidings	1914	10560
22m W	Railway Sidings	1914	10560
203m SW	Railway Sidings	1948	10560
210m SW	Railway Sidings	1938	10560
215m SW	Railway Sidings	1935	2500
217m SW	Railway Sidings	1964	2500
217m SW	Railway Sidings	1963	2500
234m SW	Railway Sidings	1964	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m

0

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



This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m

0

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

This data is sourced from HS2 Ltd.



Data providers

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

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APPENDIX B

BLANDFORD CONSULTING

REMEDIATION REPORT

Report No. BC/MB/06.13.04.

**Stabilisation Report, Suspected Shaft
Wernddu Bungalows, Tyllwyd Road,
Dyffryn, Neath**

Prepared on behalf of:

Mrs Susan Stone.

By:

BLANDFORD CONSULTING

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BLANDFORD CONSULTING

THE ENTERPRISE CENTRE, MERTHYR INDUSTRIAL PARK,
PENTREBACH, MERTHYR TYDFIL, SOUTH WALES, CF48 4DR.
TEL: 01443 693353, FAX: 01443 693351
EMAIL: SALES@BLANDFORDCONSULTING.COM
WWW.BLANDFORDCONSULTING.COM

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**Stabilisation Report, Suspected Shaft,
Wernddu Bungalows, Tyllwyd Road, Dyffryn,
Neath, SA10 7DX.**

Contents

	Page:
1. Introduction	1
2. Brief Description of the Site	2
3. Geology of the Site and Immediately Surrounding Area	2
4. Mining History	4
5. Description of Suspected Shaft	4
6. Risk Assessment and Recommendation	8

List of Drawings

Drawing No:		Scale
<i>BC/MB/06.13.04.01.</i>	<i>General Location Plan.</i>	<i>1:50,000</i>
<i>BC/MB/06.13.04.02.</i>	<i>Geology Plan.</i>	<i>1:10,560</i>
<i>BC/MB/06.13.04.03.</i>	<i>Detailed Location Plan.</i>	<i>See Drawing</i>

Appendix

Copy of The Coal Authority's Report, reference no 94678-02.

Stabilisation Report, Suspected Shaft, Wernddu Bungalows, Tyllwyd Road, Dyffryn, Neath, SA10 7DX.

1 Introduction

This report has been prepared on behalf of our client:

*Mrs Susan Stone,
31 Broadfields,
Calverton,
Nottinghamshire,
NG14 6JP.*

The report discusses the geology and mining history of the land at Wernddu Bungalows and work carried out there to stabilise what is thought to be a disused mine shaft. The report discusses a programme of exploration boreholes and other works to examine the feature and works subsequently carried out to stabilise it.

The following sources of data have been used in the compilation of this report,

- i) Research of published geological data;*
- ii) Research of mining records held at The Coal Authority's archive in Mansfield;*
- iii) The findings of The Coal Authority's mining report, reference no. 94678-02; and*
- iv) Search of Blandford Consulting's archives.*

The findings of the report are necessarily based upon the information used in its compilation and may be amended in the future in the light of additional material information. The report should only be used in its entirety for its stated purpose.

/Cont....

2 Brief Description of the Site

The parcel of land that is the subject of this report is situated on the northern fringes of the small settlement of Wernddu on Mynydd Drumau, north of Bryncoch; it is approximately 4km north-west of the centre of Neath and 3km south-east of the centre of Pontardawe (see *General Location Plan, drawing no. BC/MB/06.13.04.01*). It is roughly rectangular in outline with maximum dimensions of 56m by 21m and is at an approximate elevation of 113m aod. The Site is a detached residential property with gardens that is currently the subject of a redevelopment to replace the former dwelling that once occupied the land with a detached bungalow. There are scattered, mainly detached dwellings in the surrounding, rural-area. The Site is presently partially redeveloped with the foundations of the new bungalow partly constructed. The works were suspended on the discovery of the suspected shaft.

Re-developed
mainly

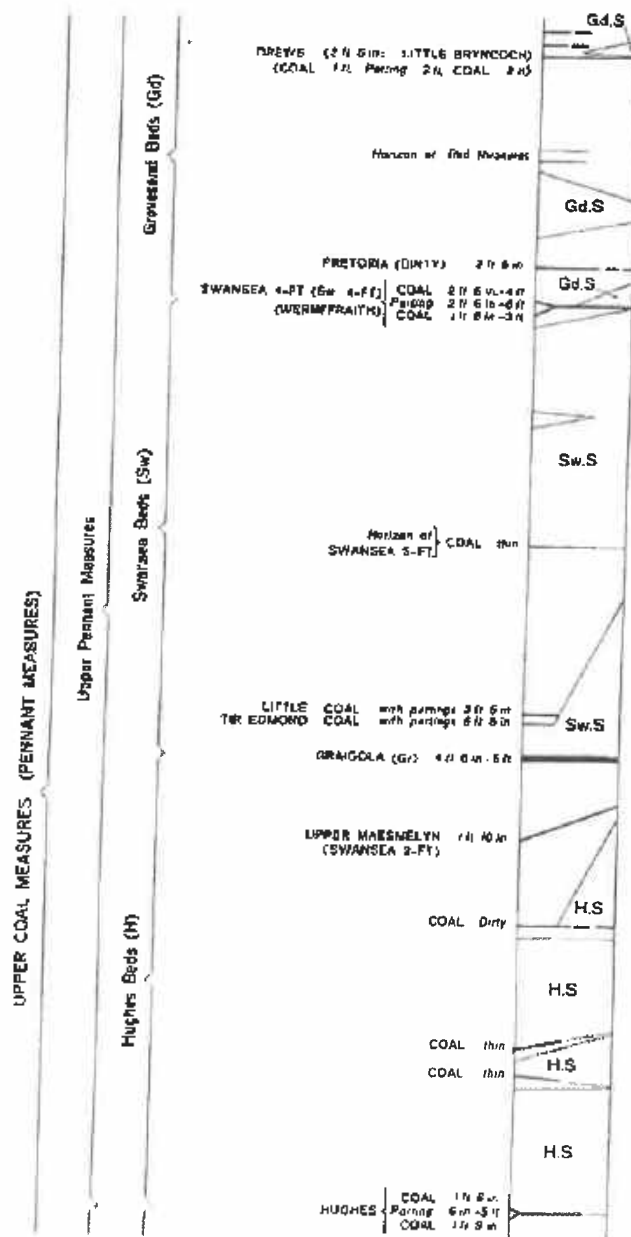
3 Geology of the Site and Immediately Surrounding Area

The Site is situated west of the centre of the South Wales Coalfield such that it is underlain at shallow depths by strata assigned to the Grovesend Beds, the topmost sub-division of the Upper Coal Measures (see *Geology Plan, drawing no. BC/MB/06.13.04.02*). The most recently published geological sheet (SN 70 SW at 1:10,560 scale) shows the inferred position of the outcrop of the Little Bryncoch Seam to pass approximately 1km north-east and south-east of the Site where it curves around the upper slopes of the mountain. The regional dip of the coal measures is of the order of 1 in 9 towards the south-west so that the Little Bryncoch Seam underlies the Site at a depth estimated to be of the order of 40m (see Figure 1, Part of the Stratigraphic Column). The Little Bryncoch Seam is approximately 60m above the Swansea Four Feet Seam.

The measures of the South Wales Coalfield are affected by large faults, often referred to as 'cross faults'. In this area such faults have a slightly sinuous trace at the surface and have an average trend towards the north. The nearest such fault to the Site is the Dyffryn Fault, which is shown on the published geological sheet for the area to be present approximately 300m west of the Site and beyond influencing distance of the development.

/Cont....

Figure 1
Part of the Stratigraphic Column
(Not to Scale)



Taken from the BGS Geological Sheet

The published geological sheet for this area shows the measures beneath the Site to be covered with deposits of glacial Boulder Clay. This was confirmed during the exploration, where the Boulder Clay was found to be comprised of a very stiff, brown, clayey GRAVEL that was found to be approximately 3.0m thick.

/Cont....

Published information also indicates that the Site is not affected by landslip.

4 Mining History

The district has had a long history of coal mining activities dating back to at least the latter part of the nineteenth century and that continued until the early 1920s. The mining operations were carried out from a number of adits driven into the valley sides near the outcrops of coal seams or else from shafts excavated into the valley floor. The Site is underlain with old mine workings in a number of seams; The Coal Authority's report describes five seams at depths of between 40m to 420m deep.

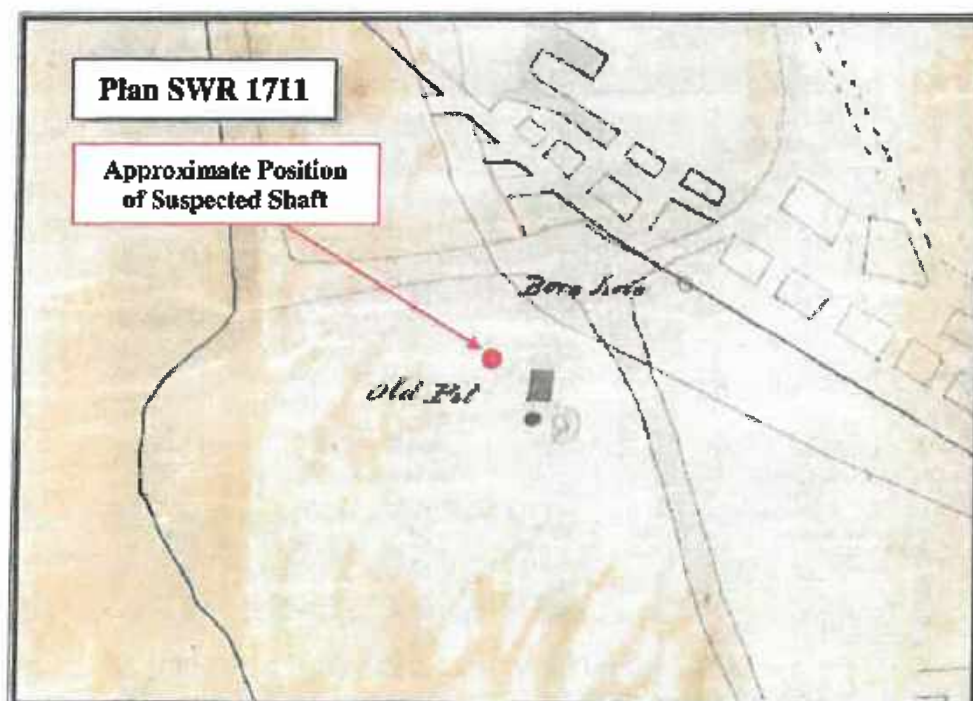
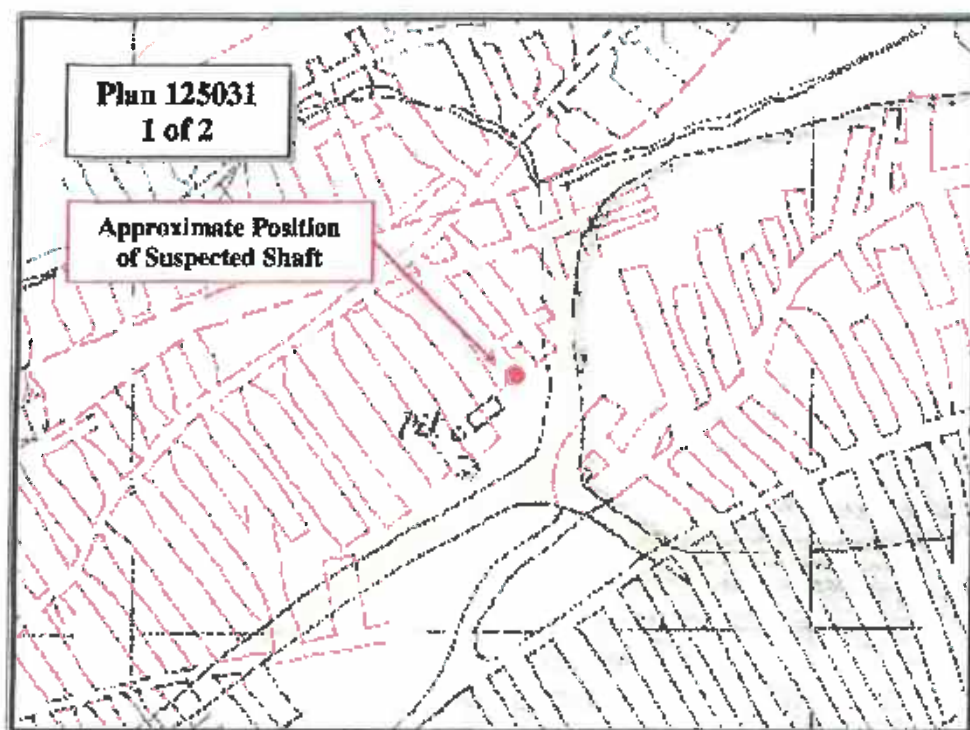
There is one recorded, disused shaft within 20m of the Site, its approximate position is shown on the *Detailed Location Plan, drawing no. BC/MB/06.13.04.03*. Otherwise, there are no other recorded disused shafts or adits within the confines of the Site or 20m of its boundary. There are no active collieries or opencast mines in the locality and the Site has not been part of an opencast coal site.

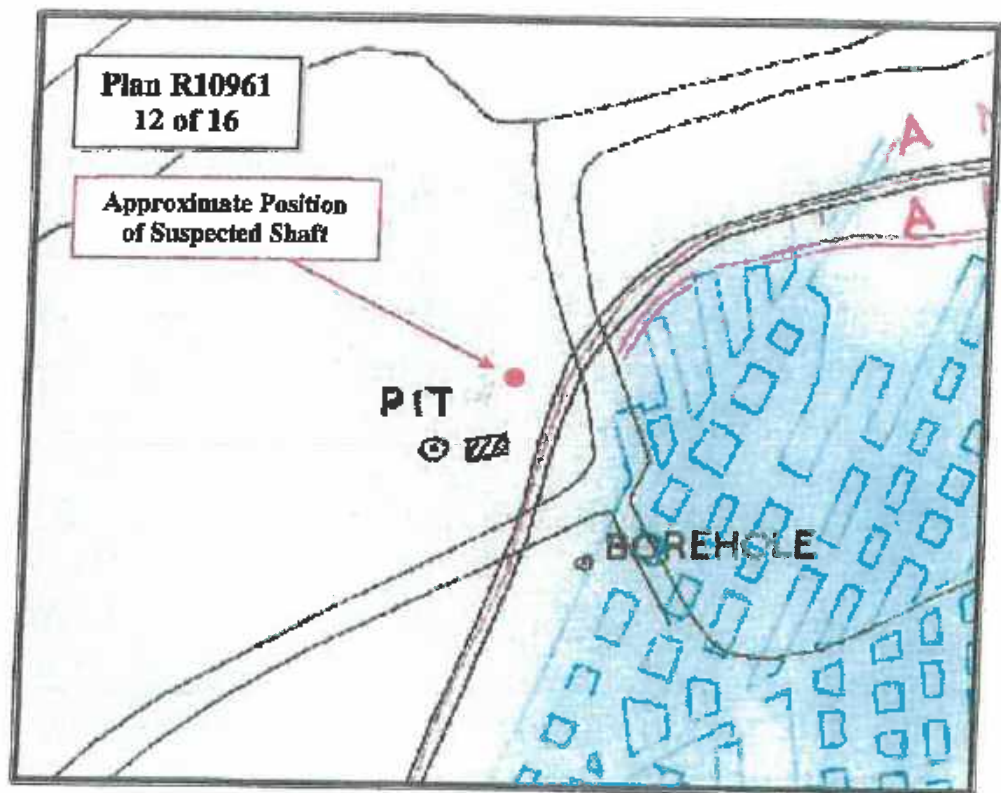
5 Description of Suspected Shaft

Prior to undertaking the redevelopment of the Site a mining report was obtained from The Coal Authority (ref no. 94678-02). The suspected shaft is not identified in the mining report and there has been identified no record of it in the mining records held by The Coal Authority. The Coal Authority kindly provided copies of three mine plans that would have been referred to during the preparation of the above mining report. It is sometimes difficult to relate historic mine plans to present surface features, often because features at the surface have changed significantly since the date that the mine plan was produced and often because mine plans may have on them few surface features. However, in this case the bends in the highway adjacent to the property make a correlation of the mine plans with the development on the Site relatively straightforward. It is apparent from the three mine plans that, in terms of the undergoing layout, there is no obvious reason why a shaft should be present at this location.

This is incorrect as no mining report says there is a shaft on a different plot

Figure 2
Copies of Extracts from Mine Plans
(Supplied by The Coal Authority)





When constructing the foundations for the new bungalow the groundwork contractor encountered buried sleepers lying horizontally and supported on vertical wooden flats. Careful excavation of the feature found that the flats supported the sides of an approximately oval feature that is of the order of 3.5m by 4.5m. The flats extended through the stiff, Boulder Clay that remained vertical when the flats were excavated. The topmost 2.5m or so was infilled with a wet and very soft clay containing some stone gravel. Works were suspended and contact was made with The Coal Authority in the person of Mr Paul Heap.

The most likely interpretation is that the feature is a disused shaft, although it could be an abandoned well, either way the feature represents a risk to the proposed bungalow. A scheme of works to explore the feature using rotary percussive boreholes was agreed with The Coal Authority. The exploration and treatment were carried out on the assumption that the feature is a disused shaft and was carried out under the terms of permit 8089, issued by The Coal Authority. Apex Drilling Services were engaged to undertake the drilling. Initially, it had been planned to explore the feature by means of a pattern of vertical boreholes. The narrow lanes serving the

/Cont....

**Photographic Plate 1
Early Excavation of Suspected Shaft**



**Photographic Plate 2
Early Excavation of Suspected Shaft**



Photographic Plate 3
Deeper Excavation of Suspected Shaft



Site and the presence of overhead cables meant that a rigid steel platform could not be placed on the Site, with the result that the drilling rig and crew would not be able to work safely in the vicinity of the feature. Instead, a series of angled boreholes were drilled from a safe position adjacent to the feature.

A total of eighteen boreholes were drilled, of which six encountered what the driller described as a cavity. The boreholes suggested that the feature was filled with water with a clay plug at the top that was no more than 3m thick. The boreholes did not prove the depth of the feature and suggested that it was approximately 1.5m diameter. The inferred diameter of the feature proved to be incorrect and the result of the boreholes crossing the edge of the feature. It was not possible to determine the depth of the feature by drilling boreholes and it was decided to

**Photographic Plate 4
Filling of Suspected Shaft**



Feature filled almost to the level of rockhead.

**Photographic Plate 1
Reinforced Concrete Cap on Suspected Shaft**



excavate what was thought to be the clay plug using a heavy, tracked excavator with a long reach and then to determine the depth of the feature by dipping it. A 13-tonne tracked excavator stood alongside the feature and formed a safe working standing close to rockhead. The feature was excavated to the maximum reach of the arm, a depth measured to be 7m (see Photographic Plate 3). The feature was in approximately the shape of a keyhole and had been formed with precision; it was approximately 2.5m diameter across the circular part of the keyhole shape and approximately 3.5m across the long axis. The material excavated from within the feature was wet, very soft clay with stone fragments and some wood. The material was found to be very soft, and would have offered virtually no resistance to the drilling rods, leading to the driller's description of 'cavity'. The excavator could reach no further and the operation was terminated.

The feature was filled with clean stone (see Photographic Plate 4) up to the level of rockhead. Bedrock was seen to be a well bedded and slightly blocky sandstone that was standing vertical in the shaft and displaying no evidence of collapse or spalling. Robbins Consulting, consulting structural engineers, designed a reinforced concrete cap to span the feature. I specified that the reinforced concrete cap must be formed at rockhead and Robbins Consulting specified that the cap should extend 1.5m beyond the limits of the feature in all directions. Calculations undertaken by Robbins Consulting determined that the cap should be formed using RC40 grade concrete and should have dimensions of 6m by 7m and a thickness of 400mm. The cap has been reinforced with three layers of A393 steel mesh.

Robbins Consulting will be responsible for completing the foundation design for the bungalow, which, in general terms, will involve backfilling to the base of the reinforced raft foundation of the bungalow with engineering fill in rolled layers.

6 Risk Assessment and Recommendation

The feature was found to have been filled with a mixture of very soft clay and stone and there was no evidence of any internal collapse or spalling of the feature. The feature has been excavated into a well bedded to slightly blocky sandstone. The sandstone beds that comprise large sections of the Upper Coal Measures are quartzitic and tend to have a compressive strength

/Cont....

in excess of 240 MPa. The sandstones frequently form crag features in the landscape, a result of their resistance to the forces of weathering. The risk of the feature suffering a collapse inwards is extremely low. The infilling of the shaft reduces yet further the already low risk of an inward collapse.

The reinforced concrete shaft that has been formed across the feature at rockhead extends in all directions onto the sandstone bedrock a distance of 1.5m beyond the feature. In the extremely unlikely event that the feature was to collapse inwards the reinforced concrete cap has been designed to span the collapse and protect the ground above.

The risk of the feature collapsing inwards is of a very low order. The risk of a collapse breaching the reinforced concrete cap and affecting the surface is also of a very low order. However, the proposed construction of a bungalow that will partly span the feature results in a situation whereby the potential consequence of the very low order risk is significant. Consequently, it is recommended that the appropriate foundation option for the bungalow is a reinforced concrete raft.



**Dr Malcolm Blandford,
Chartered Geologist.**

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**Blandford Consulting,
Consultant Geologists and Geotechnical Engineers,
The Enterprise Centre, Merthyr Industrial Park, Pentrebach, Merthyr Tydfil, CF48 4DR.
Tel. No. (01443) 693353. Fax. No. (01443) 693351.**