



**PRELIMINARY RISK ASSESSMENT
VICARAGE HILL COURT, VICARAGE
HILL, MINERA, WREXHAM**

GSL2683

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EXECUTIVE SUMMARY

Introduction	GroundSolve Ltd was commissioned by John Small to undertake a desk study and Preliminary Risk Assessment of the proposed residential development at Vicarage Hill Court, Vicarage Hill, Minera, Wrexham, LL11 3YJ. The purpose of this investigation was to establish land use history and review the available information to determine the geo-environmental setting of the Site and develop a preliminary conceptual site model with due consideration of potential soil and groundwater contamination, hazardous ground gases and mining.
Proposed land use	It is proposed that the site will be developed as a single-story timber frame structure with tiled roof and brick masonry. Garden areas of proposed soft landscaping are located in the rear parts of the Site.
Site location and surrounding land uses	The site is located at Vicarage Hill Court, Vicarage Hill, Minera, Wrexham, LL11 3YJ. The site is located within a residential neighbourhood with the closest school being approx. 70m south east of the site. There are no significant current land uses in the vicinity of the Site.
Site history	The site history comprised of agricultural land uses and one previous building in the form of Church Hall. Land uses around the site comprised of residential dwellings, commercial properties (i.e post office), school and church.
Geology, Hydrogeology and Hydrology	Superficial deposits (Glacial Till) are classified as a Secondary Undifferentiated Aquifer and the bedrock (Lower & Middle Pennine Coal Measures) is classified as a Secondary A Aquifer. The Site is not within a Source Protection Zone, and there are no active potable abstraction wells within 250m of the Site. The nearest surface water feature is the 50m south west and is an inland river or stream. Groundwater flow has been anticipated to be towards the River Clywedog, located approximately 230m south of the Site, flowing in a north-south direction. On this basis the controlled waters sensitivity is regarded as being low.
Ground Gases	None
Radon Requirements	Basic radon protection measures are not currently required for the proposed development on this Site.
Potential contaminative features	Localised made ground
Mining and quarrying	The Site is located within an area of historic mining activity. The risk associated to this are considered low.
Previous investigations	
Unexploded Ordnance	None
Other issues	None
Waste Soils Classification	Based on the history of the Site and the anticipated potential contaminants of concern it is considered unlikely that hazardous waste soil materials may be present beneath the majority of the Site; however, this will be subject to confirmatory investigation, sampling, laboratory analysis and waste classification in accordance with the Guidance on the Classification and Assessment of Waste (WM3).
Materials re-use	Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials <i>may</i> be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP).
Further works	The Preliminary Risk Assessment has determined a low risk to human health and low risk to controlled waters at the site with respect to potential contamination and hazardous ground gases. It is recommended that a ground investigation is undertaken in order to further assess the potential risks associated with the pollutant linkages identified in the Preliminary Conceptual Site Model. This will comprise of determining shallow soil and groundwater (if encountered) conditions, including whether significant contamination has resulted from past or current land uses. Also, to determine the risks posed by any ground contamination (gasses, hazardous made ground) and provide recommendations on remedial measures to manage such risks.

1. INTRODUCTION

GroundSolve Ltd was commissioned by John Small to undertake a Land Contamination Risk Management (LCRM) Preliminary Risk Assessment for an area of land referred to as Vicarage Hill Court, located at Vicarage Hill Court, Vicarage Hill, Minera, Wrexham, Wales, LL11 3YL, United Kingdom (the "Site").

The full title of this report, a '*Stage 1 - LCRM Tier 1 Preliminary Risk Assessment Report*', is in accordance with that described in the Land Contamination Risk Management guidance (available at <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>) which has superseded CLR 11.

1.1. Proposed Development

Under current proposals the development will comprise of a single-story brick structure with a tiled roof and landscaped areas to the south of the site, see Drawing 1 in Appendix A. As such, in accordance with the '*Updated technical background to the CLEA model*' (Environment Agency, 2009) and '*Suitable 4 Use Levels*' (LQM / CIEH 2015) the proposed generic land use for this development is RESIDENTIAL WITHOUT HOMEGROWN PRODUCE.

1.2. Previous Reports

GroundSolve Ltd – 'Vicarage Hill Court, Minera – Soakaway and Chemical Testing Letter Report' (Report reference: 2398/VHC/ES October 2020)

1.3. Objectives

Taking into account the proposed development of the Site, the objectives of this appraisal were:

- To determine the historical and current land use.
- To establish the environmental setting of the Site.
- To evaluate whether past mining or other extractive industries could have an influence on the Site.
- To determine likely ground and groundwater conditions.
- To determine the potential risks to human health and the wider environment.
- To determine potential risks posed to the Site from hazardous ground gases and / or vapours.
- To derive a Preliminary Conceptual Site Model.

1.4. Assumptions

The following assumptions are made in this report:

- It is assumed that ground levels will not change significantly from those described in this report or as shown on proposed development drawings. If this is not the case, then amendments to the recommendations made in this report may be required.
- Any references to observations of suspected asbestos-containing materials are for information only and should be verified by a suitably qualified asbestos specialist and/or confirmed by laboratory analysis.
- The use of the term 'Topsoil' within this report is based on a visual identification only and that these materials have not been classified in accordance with BS3882:2015.

- The use of the terms 'shallow' and 'deep' within this report assume *typically* between ground level to circa 5.00m below ground level (bgl) for 'shallow' and greater than 5.00m bgl regarded as 'deep';
- The comments and opinions presented in this report are based on the findings of the desk study, performed by GroundSolve Ltd. There may be other conditions prevailing on the Site which have not been revealed by this investigation and which have not been taken into account by this report at this stage.
- Responsibility cannot be accepted for any conditions not revealed by this investigation. Any diagram or opinion on the possible configuration of the findings is conjectural and given for guidance only. Confirmation of ground conditions should be undertaken if deemed necessary.

This report has been prepared for the sole use of John Small. No other third party may rely upon or reproduce the contents of this report without the written approval of GroundSolve Ltd. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk.

2. SITE DETAILS AND DESCRIPTION

Table 2.1 Current Site Overview.

Site name	Vicarage Hill Court, Vicarage Hill, Minera, Wrexham, LL11 3YJ.
Site address	Vicarage Hill Court, Vicarage Hill, Minera, Wrexham. A site location plan is included as Figure 1 within Appendix A.
National Grid Reference (NGR)	SJ 27191 51895
Approximate Site area	0.14 ha
Site shape	Rectangle
Current land use on the Site	The site is currently occupied by an existing building to the east, which comprises of a two-storey brick structure with a tiled roof. There is a flag stone path either side of the existing building to the east of the site as access to the rear of the property. An area of hardstanding assumed as asphalt covers an area of approx. 365m² and is used for six parking spaces and an access road off Vicarage Hill along the northern boundary of the site. The site is bounded to the north, east and south by residential housing and Vicarage Hill to the west. A quantity of trees and hedgerow border the site within the confines of the neighbouring properties to the south and the east. See Figure 2, Appendix A. Underground service drawings have not been provided to GroundSolve Ltd; however, there remains a potential for such features to be present beneath the Site.
Surrounding land uses	The site is located within a residential neighbourhood with a primary school some 70m south east.
General topography and ground levels	The site is roughly rectangle in shape measuring 28.0m x 53.0m at its widest points. No topographical survey has been provided; however, a review of Google Earth indicates a relatively level site 251mAOD to 249mAOD sloping slightly west to east. See Figure 2, Appendix A.

An aerial photograph (from the Groundsure report) of the Site and site boundary is shown below. Relevant Site photographs are presented in Appendix B.

Figure 2.1 Recent Aerial Photograph from Groundsure



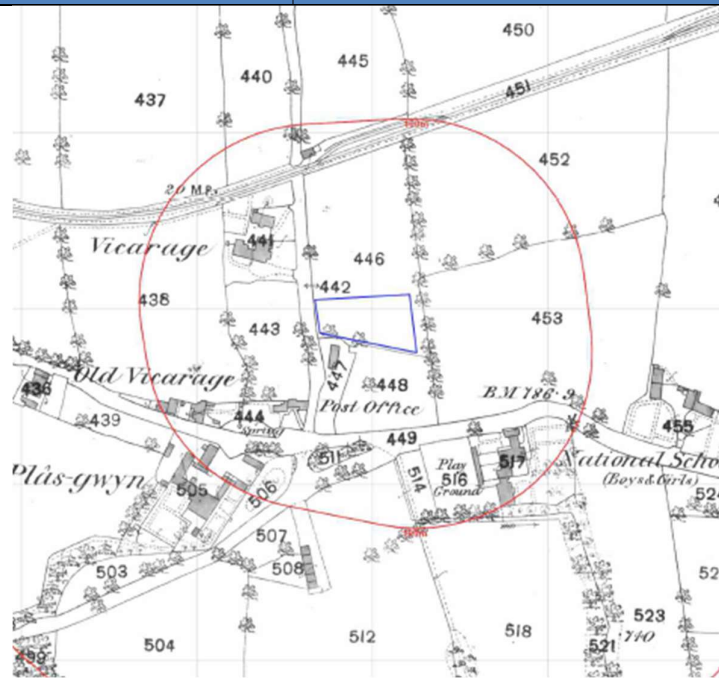
3. SITE HISTORY

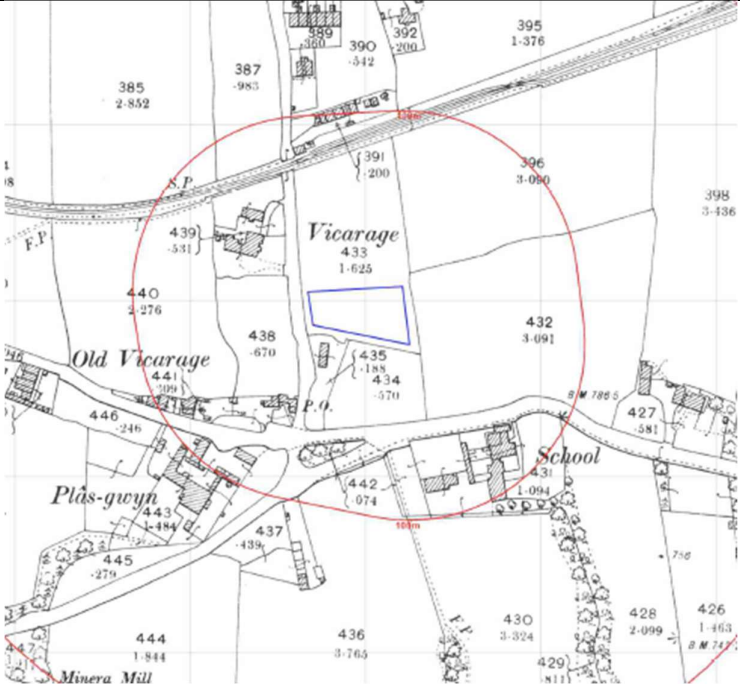
3.1. Site History Review

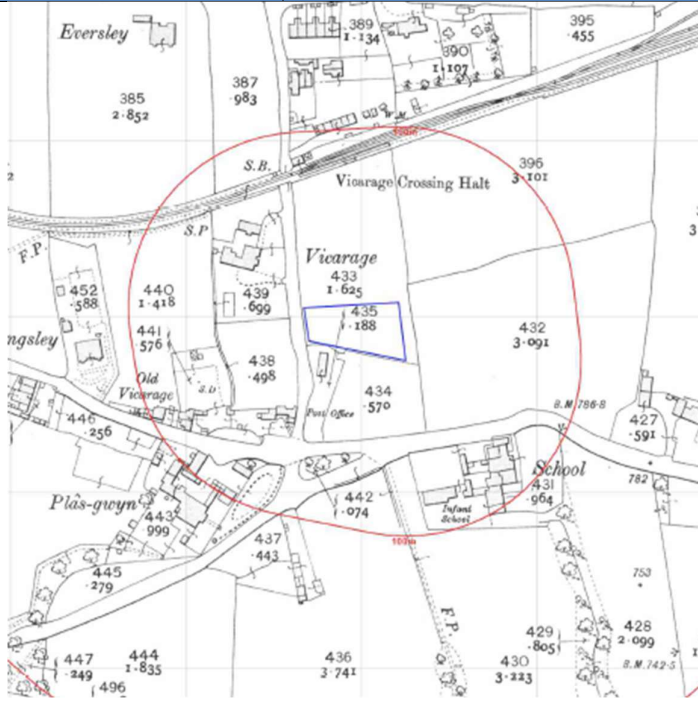
Extracts of Ordnance Survey (OS) plans dated from 1873 to 2003 were reviewed. These were obtained as part of the Groundsure report for the Site, which is presented in Appendix C. IN ADDITION, AVAILABLE MAPS INCLUDED IN THE THIRD-PARTY UNEXPLODED ORDNANCE RISK ASSESSMENT, BRITAIN FROM ABOVE WEBSITE (USEFUL FOR 1920S TO 1950S PERIODS) AND HISTORIC AERIAL PHOTOGRAPHY ON GOOGLE EARTH HAVE BEEN REVIEWED.

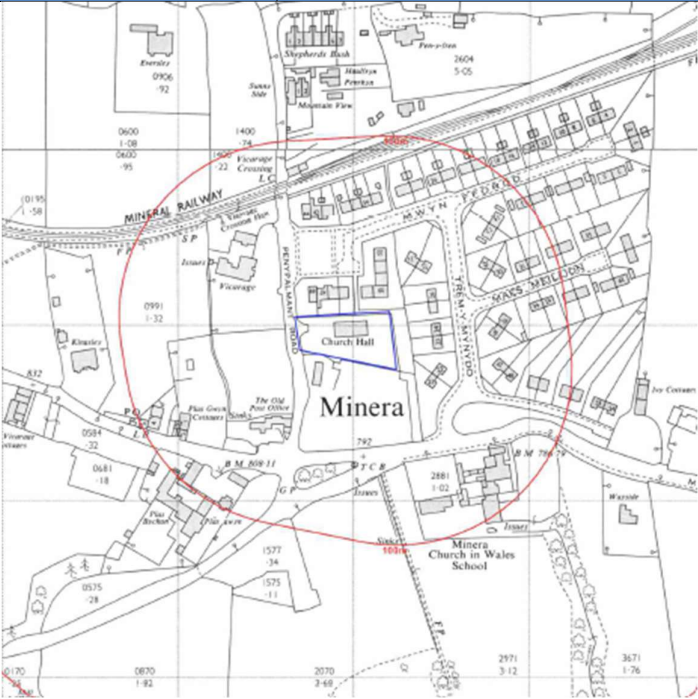
Table 3.1 below presents a summary of the main aspects of the Site relevant to the current and proposed future end uses. It is not the intention of this report to describe in detail all of the changes that have occurred on or adjacent to the Site, where these are not relevant to the land use.

Table 3.1 Site History.

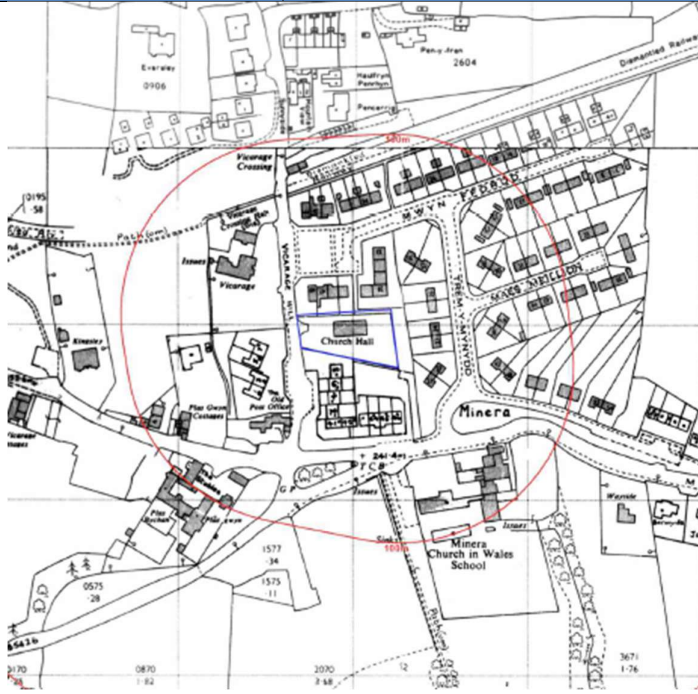
Time Period	On-Site features	Off-Site features
Pre-1873	 1873 OS Plan, 1:2,500	
	Site is occupied by open agricultural land, line with trees to the south and east	60m north west is a vicarage 70m south west is a spring adjacent to the road 100 south west is an old vicarage 100m south east is a national school

Time Period	On-Site features	Off-Site features
1873 to 1899	 1899 OS Plan, 1:2500	
	The trees are no longer shown	70m north of the site is a railway line trending east to west 70m south west the spring is now longer shown

Time Period	On-Site features	Off-Site features
1899 – 1912	 1912 OS PLAN, 1:2500	
	No significant changes	90m north Vicarage Halt Crossing has now been constructed

Time Period	On-Site features	Off-Site features
1912-1964	 1964 OS Plan, 1:2500	
	Church Hall has now been constructed on site	- The road adjacent to the western boundary has been named Penypalmant Road - To the north and east of the site has had significant development withing residential housing. - The railway line 100m north has been named Mineral Railway.

Time Period	On-Site features	Off-Site features
1964 – 1984	 1984 OS Plan, 1:2500	
	No significant changes	The railway north of the site has now been dismantled

Time Period	On-Site features	Off-Site features
1984 to 1993	 1993 OS Plan, 1:2500	
	No significant changes	No significant changes

Time Period	On-Site features	Off-Site features
1993 - 2003	 1873 OS Plan, 1:2,500	
	Church Hall has been deconstructed and another has been developed in place	There has been significant development to the west and north west of the site

3.2. Preliminary Unexploded Ordnance Risk Assessment

From the historical and anecdotal evidence, the site wasn't a target for bombing historically.

4. ENVIRONMENTAL SETTING

4.1. Geology

Table 4.1 Geological Summary.

Maps and publications referenced	Groundsure , BGS onshore index, BGS 1:50,000 scale plans
Made ground / artificial ground	In the previous investigation Made Ground was encountered at depths up to 0.60m bgl comprising both cohesive and granular materials with anthropogenic origins including brick, concrete and limestone. No spatial correlation between the cohesive and granular materials was identified.
Drift geology	The underlying glacial till was described as stiff, light brown mottled grey slightly gravelly clay with low cobble content. Gravel is subangular to subrounded fine to coarse of limestone. Cobbles are subrounded of limestone.
Solid geology	The bedrock was not encountered
Dip of solid strata	
Faults	There is a fault beyond 500m to the west of the site trending in a north south direction with the dip facing west.
Coal seams	

4.2. Mining and Quarrying

Table 4.2 Coal Mining Activities.

	Yes/No	Comments
Is the Site in an area of potential shallow coal workings?	No	
Is the Site in a high risk development area?	No	
Are there any known shafts, adits, tips, lagoons, or opencast workings likely to affect the Site?	No	
Is exploratory work required to investigate the potential risk from shallow mining or quarrying?	No	

A Coal Mining report was obtained as part of the desk study. The findings from the report for mining activity and investigative or remedial activity showed there to be no opencast workings, mine gas or coal authority managed tips within 500m. Also no mine entries past underground mining or shallow workings have been recorded within 100m.

Table 4.3 Other Extractive Industries.

	Yes/No	Comments
Superficial drift deposits		
Evidence of extraction on or within 250 m of the Site?	No	
Action required?	No	
Solid Strata		
Any evidence of mineral extraction on or within 250 m of the Site?	Yes	Onsite – Iron Ore (Bedded)/Vein mineral, Class C. Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present.
Action required?	No	

Other, undocumented mineral workings on or close to the Site cannot be completely dismissed.

4.3. Hydrogeology

Table 4.4 Groundwater Occurrence and Abstraction.

	Presence/location	Comments
Environment Agency aquifer designation – Superficial Deposits	On-Site	Secondary Undifferentiated
Environment Agency aquifer designation – Bedrock	On-Site	Secondary A Aquifer
Groundwater vulnerability	On-Site	Low
Anticipated groundwater depth(s)		
Direction of flow	On-Site/Off-Site	Direction of flow is north to south
Current licensed abstractions – potable	Off-Site	272m SW - Historical – Dee Valley Water PLC
Current licensed abstractions – non-potable	None	
Private wells	None	
Source Protection Zones	None	
Springs	Off-Site	Shown on map 1873 at approx. 60m south west not shown from map 1899 onwards

NR - none recorded.

For definition of Source Protection Zones, see Appendix G.

4.4. Hydrology

Table 4.5 Surface Water Features.

	Presence/location	Comments
Nearest surface water feature	Offsite	50m SW - inland river
Other surface water features		None
Canals, ponds, lakes, etc.	Offsite	5 No surface water features such as rivers streams less than 5m wide, ponds and lakes have been recorded
Water Framework Directive (WFD) Surface Water Bodies	Offsite	River Clywedog above Black brook (2016) OVERALL RATING - Moderate CHEMICAL RATING - Fail ECOLOGICAL RATING - Moderate
Licensed surface water abstractions	None	
Surface run-off and Site drainage		The full nature and extent of underground drainage system is unknown at this stage.

. Environment Agency GQA assessments: A = very good to E = poor

4.5. Flood Risk Summary

Table 4.6 below represents a summary of the flood risk data contained within the Groundsure report obtained for the Site.

Table 4.6 Flood Risk Summary

	Presence/location	Comments
Risk of Flooding from Rivers and Sea (RoFRaS)	Onsite	None within 50m
Historical Flood Events	Onsite	None
Flood Defences	Onsite	None
Areas Benefiting from Flood Defences	Onsite	None
Flood Storage Areas	Onsite	None
Records of Flood Zone 2	Onsite	None within 50m
Records of Flood Zone 3	Onsite	None within 50m
Surface water flooding	Onsite	Negligible within 50m
Groundwater flooding	Onsite	Low within 50m

4.6. Environmental Designations

Table 4.7 Summary of Environmental Designations.

	Presence/location	Comments
Sites of Special Scientific Interest (SSSI)	Off-Site	None within 500m
Conserved wetland sites (Ramsar sites)	None	
Special Areas of Conservation (SAC)	Off-Site	None within 500m
Special Protection Areas (SPA)	None	
National Nature Reserves (NNR)	None	
Local Nature Reserves (LNR)	None	
Designated Ancient Woodland	Offsite	165m south Ancient Semi natural Woodland
Biosphere Reserves	None	
Forest Parks	None	
Marine Conservation Zones	None	
Green Belt	None	
Proposed Ramsar sites	None	
Possible Special Areas of Conservation (pSAC)	None	
Potential Special Protection Areas (pSPA)	None	
Nitrate Sensitive Areas	None	
Nitrate Vulnerable Zones	None	
SSSI Units	None	

4.7. Landfill and Waste Management Activity

Table 4.8 Waste Management Activities.

	Presence/location	Comments
Active or recent landfill	None	
Historical landfill (BGS records)	None	
Historical landfill (LA/mapping records)	None	
Historical landfill (EA/NRW records)	None	
Historical waste sites	None	
Licensed waste sites	None	None within 250m, Closest Licensed waste site is 368m NE
Waste exemptions	None	None within 250m, Closest waste exemption is 391m SW
Evidence of other landfilling or potential infilling on or within 250m of Site	None	
Walkover evidence of fly-tipping on Site?	None	
Is a landfill/ground gas risk assessment required?	NO	

4.8. Local Industrial Land Uses

Other potentially contaminative activities are shown in Table 4.9 below with those features considered pertinent to the conceptual site model highlighted in **bold**. The entries relate to activities within *circa* 250 m of the Site, with the exception of COMAH facilities where the assessment is extended to a distance of *circa* 500m from the Site.

Table 4.9 Other Potentially Contaminative Processes in the Locality

	Location	Comments
Recent industrial land uses	Off-Site	17m south, Electricity Sub Station
Current or recent petrol stations	None	
Electricity cables	None	
Gas pipelines	None	
Sites determined as Contaminated Land	None	
Control of Major Accident Hazards (COMAH)	None	
Regulated explosive sites	None	
Hazardous substance storage/usage	None	
Historical licensed industrial activities (IPC)	None	
Licensed industrial activities (Part A(1))	None	

	Location	Comments
Licensed pollutant release (Part A(2)/B)	Off-Site	498m East, Huws Gray Ltd
Radioactive Substance Authorisations	None	
Licensed Discharges to controlled waters	Off-Site	364m West, Gwynfryn Sewerage System
Pollutant release to surface waters (Red List)	None	
Pollutant release to public sewer	None	
List 1 Dangerous Substances	None	
List 2 Dangerous Substances	None	
Pollution Incidents (EA/NRW)	Off-Site	168m North, Category 2 Significant (water) Category 4 (land, air)
Pollution inventory substances	None	
Pollution inventory waste transfers	None	
Pollution inventory radioactive waste	None	

COMAH – Control of Major Accident Hazards (regulations); NIHHS – Notification of Installations Handling Hazardous Substances (regulations)

4.9. Radon Risk

Table 4.10 Radon Risk Status.

	Comments
Estimated properties affected	Between 1% and 3% of properties are at or above the Action Level
Radon Protection Measures required?	No radon protection measures are required. Confirmation that no basic radon protection measures are required should be confirmed with the Local Building Control Officer as >1% of properties have been reported above the Action level.

4.10. Waste Classification and Materials Re-Use

If the Site is to be redeveloped and materials are disposed off Site, the material exported from the Site to Landfill should be hauled by a register waste character in accordance with Duty of Care Regulations 1991 and the Hazardous Waste Regulations 2005.

Based on the history of the Site and the anticipated potential contaminants of concern, it is considered unlikely that hazardous waste soil materials may be present beneath the majority of the Site; however, this will be subject to confirmatory investigation, sampling, laboratory analysis and waste classification in accordance with the Guidance on the Classification and Assessment of Waste (WM3).

It will be necessary to register the Site in advance of the intended reclamation works with the Environment Agency before disposal to landfill can take place. There will be requirement for the waste producer to provide appropriate Waste Acceptance Criteria (WAC) testing of the Soils for disposal to ensure that the soils are appropriately classified and that the landfill is licensed to receive such soils. A consignment note shall be completed, signed and retained by all parties involved. The consignment note shall state the volume of waste, a physical description of the material and statement of its chemical composition. The waste consignment notes shall be kept by the contractor for a period of at least two years.

Subject to volumetric fill requirements and a future assessment of suitability of re-use (both chemically and geotechnically), some materials *may* be considered for potential re-use in line with an appropriate end-of-waste protocol such as WRAP Quality Protocol for Aggregates from Inert Waste, U1 Exemption or a Materials Management Plan in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP).

5. PRELIMINARY GEOTECHNICAL ASSESSMENT

5.1. Anticipated Ground Conditions

The anticipated ground conditions typically comprise of topsoil/made ground overlying glacial till (clay).

The glacial till is typically described as stiff, light brown mottled grey slightly gravelly clay with low cobble content. Gravel is subangular to subrounded fine to coarse of mixed lithologies.

5.2. Site Levels, Earthworks and Site Preparation

The ground level from Vicarage Hill to where the proposed development is situated

Any changes in Site levels for the proposed development should consider the proposed cut/fill in respect to the Materials Management Plan (as per Section 4.10).

5.3. Preliminary Foundation Solution

The proposed foundations will be for a residential single storey structure, the structure is likely to be a timber frame with a tiled roof and brick build for the walls, this would generally have a light load. For the type of ground conditions anticipated, shallow trench circa <1.20m should be a viable option. This preliminary foundation solution is subject to the Ground Investigation parameters and detailed design. Any proposed piled solution should be confirmed with the specialist piling contractor.

5.4. Preliminary Floor Slab Solution

Given the anticipated ground conditions presented in this report, the preliminary assessment is that a Ground Bearing Slab is suitable. This is based on the previous site history and the geology of the site which is Glacial Till.

5.5. Roads and Hardstanding

Access road recommendations will largely be dependent on final development levels. Any proposed extension of existing roads or hardstanding should be investigated to confirm a suitable CBR value for design to avoid potential differential settlement. For initial costing purposes California Bearing Ratio (CBR) values should be limited to 5%.

5.6. Drainage

The use of SuDS design is unlikely due to the geology of the site which is Glacial Till. Consultation with the Local Authority and Local Water Company is recommended for specific requirements.

5.7. Protection of Buried Concrete

At this stage there is no indication that buried concrete will require protection over and above that normally afforded structural concrete.

A ground investigation should be undertaken to confirm the various soils properties to confirm the classification to BRE SD1.

6. PREVIOUS INVESTIGATION FINDINGS

No previous desk study or site investigation reports pertaining to this Site have been made available.

7. PRELIMINARY CONCEPTUAL SITE MODEL

Based on the information provided in the previous sections of this report a combined preliminary conceptual site model and conceptual exposure model has been developed for the proposed future land use. This summarises the understanding of surface and sub-surface features, the potential contaminant sources, transport pathways and receptors. In assessing the likely contaminants of concern present at the Site, reference has also been made to Defra and Environment Agency supporting documentation. A preliminary qualitative risk assessment has also been made of the likelihood of the linkage operating and its potential significance in accordance with CIRIA C552.

The preliminary conceptual model is presented in schematic form in Appendix A, Figure 3. The potential pollutant linkages identified and the qualitative risk assessment for these are presented in Table 7.1 below. The terms used in the preliminary qualitative risk assessment are defined in Appendix F.

7.1. Uncertainties

The following uncertainties exist in the preliminary conceptual model:

- The presence of any features unrecorded by the historic maps.
- Any unrecorded geological features.
- Any unrecorded pollution events during the Site's history.

Table 7.1 Preliminary Assessment of Potential Pollutant Linkages.

For definition of the terms used in the qualitative risk assessment, please see Appendix F.

Justification / Comments	Source	Potential Contaminants of Concern	Pathway	Receptor	Consequence	Probability	Qualitative Risk Assessment
• An existing dwelling, hardstanding surface for parking and grassed areas/landscaped • Sites former uses include agricultural fields and a church hall • Residential dwellings and railway to the north before being dismantled in 1984 • Geology consists of topsoil on top of made ground overlying Glacial Till. The designated aquifers are Secondary - undifferentiated for the superficial and Secondary A for the bedrock. • The groundwater vulnerability is low, with no potable or non-potable abstractions within 100m of the site. the closest nearest surface water feature is 56m south west • There are no landfill or historic landfills within 500m of the site. • Radon risk is between 1-3% of estimated properties affected. • The Site is not located within an ecologically sensitive area.	Made Ground - Localised, general activity, demolition and construction of buildings	Metals, PAHs, Phenols, pH and asbestos	Dust migration and inhalation	Site End User / Construction Worker	Medium	Likely	Moderate risk
			Lateral and vertical migration of mobile contaminants				
			Leaching and migration via groundwater	Groundwater	Mild	Unlikely	Very low risk

8. RECOMMENDATIONS

8.1. Further works

The Preliminary Risk Assessment has determined a moderate risk to human health and a very low risk to controlled waters at the Site with respect to potential contamination and hazardous ground gases.

It is recommended that a ground investigation is undertaken in order to further assess the potential risks associated with the pollutant linkages identified in the Preliminary Conceptual Site Model (presented in Section 7).

The objectives of the Ground Investigation will be:

- to determine shallow soil and groundwater (if encountered) conditions, including whether significant contamination has resulted from past or current land uses;
- to determine the risks posed by any ground contamination and provide recommendations on remedial measures to manage such risks;
- to determine the risks posed to the Site from hazardous ground gases;
- to determine the existence, and if applicable, the extent of contamination within local groundwater beneath the Site;
- to provide advice relating to geotechnical issues associated with the Site.

8.2. Proposed Scope of Works

The following scope of works are proposed

- 1 No. days trial pitting (approximately 3 trial pits) to determine the nature and extent of Made Ground and natural deposits across the Site, facilitate soil sampling for environmental and geotechnical testing and enable the performance of soak away testing.
- In situ geotechnical testing to assist with foundation design and recommendations;
- Geo-Environmental chemical testing on selected soil samples for metals, pH, speciated PAH, speciated TPH, phenol, SVOC/SVOC, sulphate, TOC and asbestos screens in order to assess potential risks to human health based on historical land uses on and within close proximity to the Site and to assist with basic waste characterisation.
- The Control of Asbestos Regulations 2012 should be adhered to. A summary of complying with CAR: risk assessments, licensing and training is provided in **Error! Reference source not found..**

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10.DEFINITIONS

AOD	Above Ordnance Datum
bgl	Below ground level
BGS	British Geological Survey
BRE	Building Research Establishment
CBR	California Bearing Ratio (test)
COMAH	Control of Major Accident Hazards (regulations)
DQRA	Detailed Quantitative Risk Assessment
DWS	Drinking Water Standard
EQS	Environmental Quality Standard
GAC	Generic Assessment Criterion
GQA	General Quality Assessment (Environment Agency)
GQRA	Generic Quantitative Risk Assessment
GSV	Gas Screening Value
HCV	Health Criteria Value
IPPC	Integrated Pollution Prevention and Control (regulations)
NGR	National Grid Reference
NIHHS	Notification of Installations Handling Hazardous Substances (regulations)
OS	Ordnance Survey
ppm	Parts per million
ppmv	Parts per million by volume
SAC	Special Area of Conservation
SPZ	Source Protection Zone (see Appendix G)
SSAC	Site-Specific Assessment Criterion
SSSI	Site of Special Scientific Interest

APPENDIX A – DRAWINGS & FIGURES



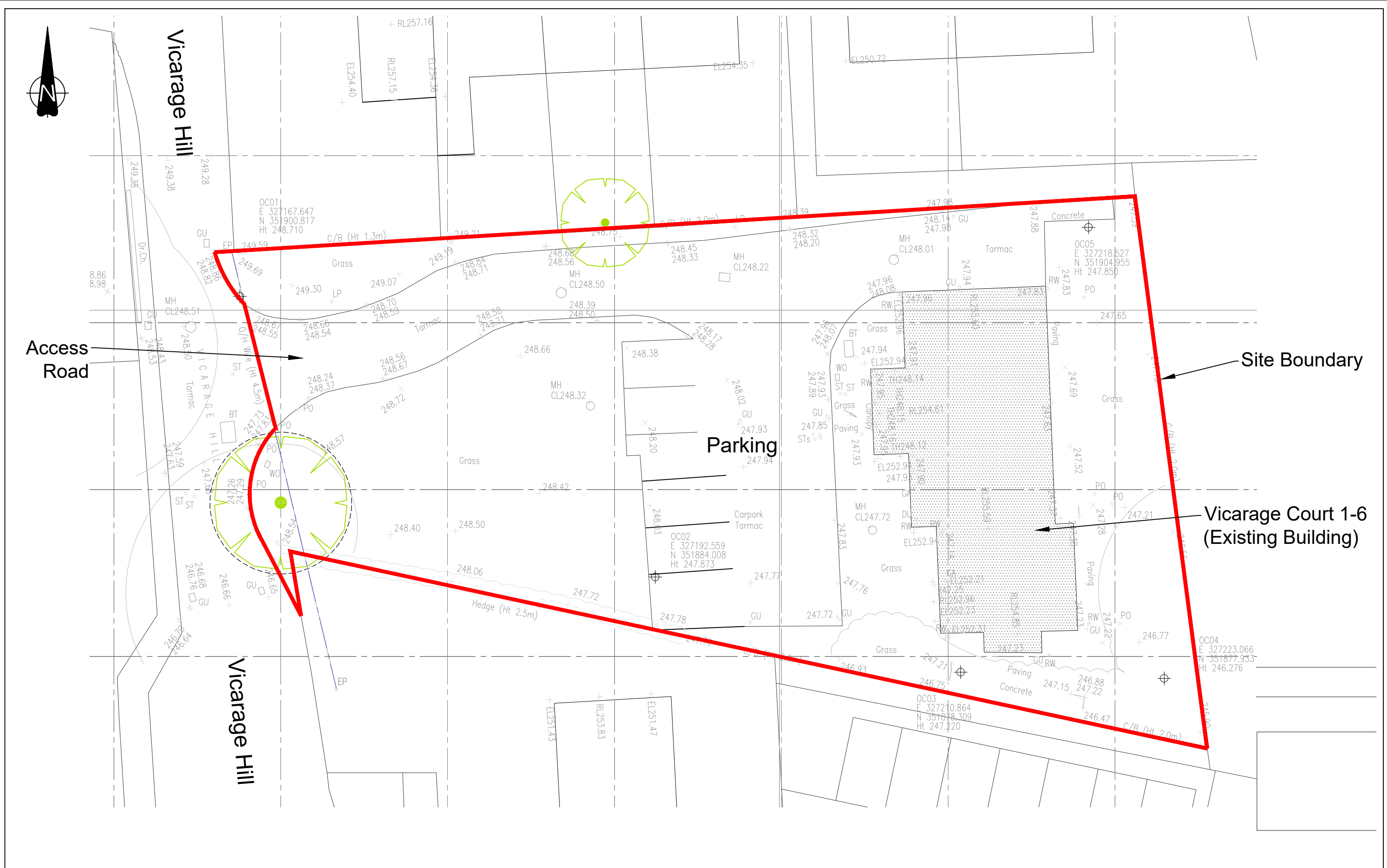
OS LICENSE No. 100030802

SCALE 1:50,000 @ A4

Figure Title

SITE LOCATION

FIGURE 1

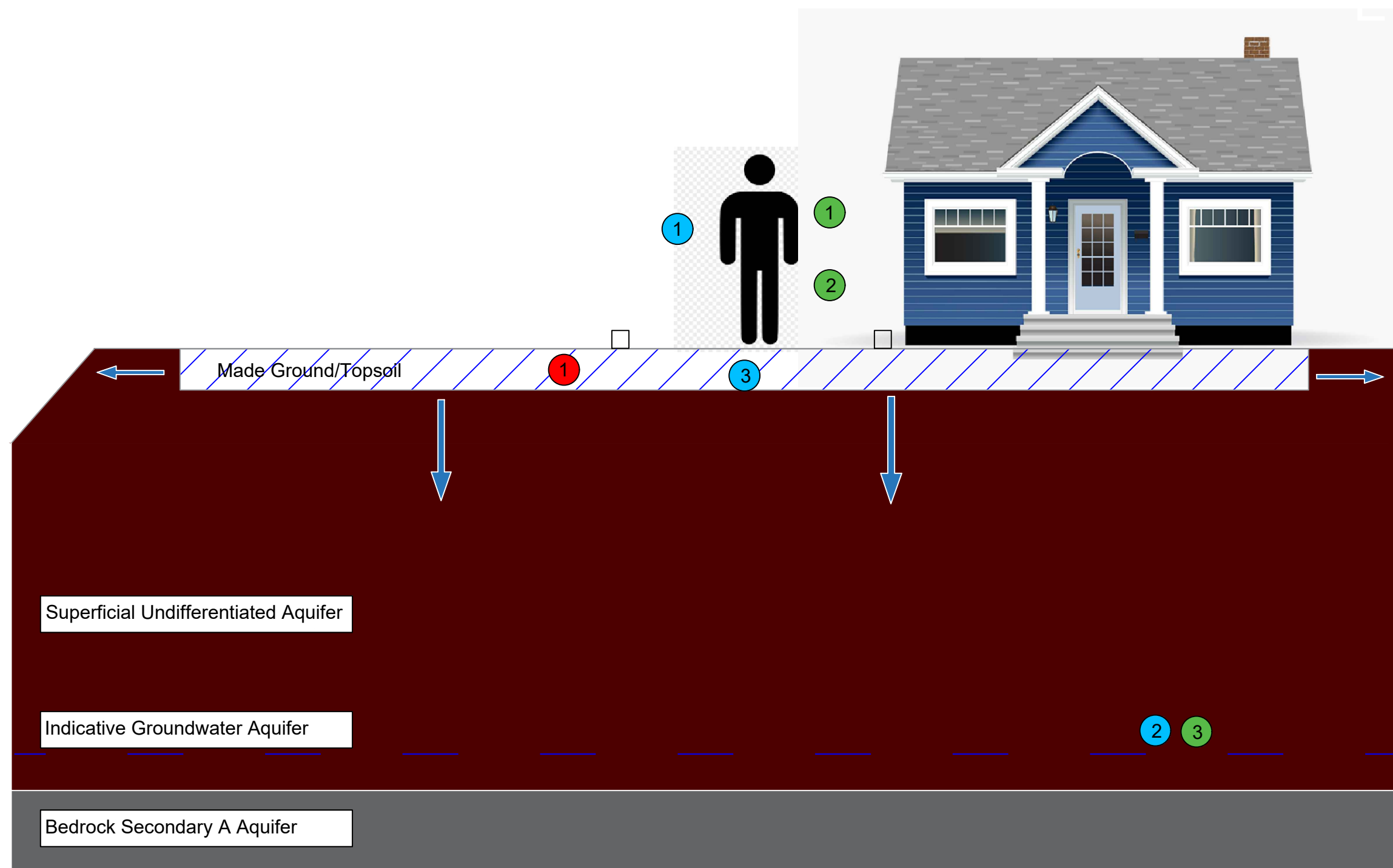


SCALE 1:200 @ A3

Figure Title

Existing Site Layout

FIGURE 2



Source

- 1 Made ground from former buildings and general activity

Pathways

- 1 Dust migration Inhalation
- 2 Leaching and Migration Via Groundwater
- 3 Lateral and/or Vertical Migration of Mobile Contaminants

Receptors

- 1 Future Site Users
- 2 Construction Workers
- 3 Surface Water and/or Groundwater

SCALE NTS

Figure Title CSM

FIGURE 3

APPENDIX B - PHOTOGRAPHS



Photograph 1 – Facing south down Vicarage Hill



Photograph 2 – Facing north up Vicarage Hill at the site entrance

SITE PHOTOGRAPHS



Photograph 3 – Facing north west at the entrance from the proposed development site



Photograph 4 – Facing north east from TP02



Photograph 5 – Facing west from TP03



Photograph 6 – Facing west across the proposed development site from TP01



Photograph 7 – Facing west from TP01 at the site entrance



Photograph 8 – Facing east at the existing building and parking area

APPENDIX C - GROUNDSURE REPORT

TANK 183M FROM PLAS GWYN, CHURCH ROAD 156M FROM B5426, B5426 WERN ROAD, PENTRE, MINERA, LL11 3DW

Order Details

Date: 08/02/2022
Your ref: 2398AB
Our Ref: GS-8502789
Client: GroundSolve Ltd

Site Details

Location: 327199 351894
Area: 0.14 ha
Authority: [Wreccsam - Wrexham County Borough Council](#)



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>	0	0	10	45	-
17	1.2	<u>Historical tanks</u>	0	0	0	2	-
17	1.3	Historical energy features	0	0	0	0	-
17	1.4	Historical petrol stations	0	0	0	0	-
18	1.5	Historical garages	0	0	0	0	-
18	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
19	2.1	<u>Historical industrial land uses</u>	0	0	10	56	-
22	2.2	<u>Historical tanks</u>	0	0	0	3	-
22	2.3	Historical energy features	0	0	0	0	-
23	2.4	Historical petrol stations	0	0	0	0	-
23	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
24	3.1	Active or recent landfill	0	0	0	0	-
24	3.2	Historical landfill (BGS records)	0	0	0	0	-
25	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
25	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
25	3.5	Historical waste sites	0	0	0	0	-
25	3.6	<u>Licensed waste sites</u>	0	0	0	6	-
27	3.7	<u>Waste exemptions</u>	0	0	0	3	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
28	4.1	<u>Recent industrial land uses</u>	0	1	2	-	-
29	4.2	Current or recent petrol stations	0	0	0	0	-
29	4.3	Electricity cables	0	0	0	0	-
29	4.4	Gas pipelines	0	0	0	0	-
29	4.5	Sites determined as Contaminated Land	0	0	0	0	-



29	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
30	4.7	Regulated explosive sites	0	0	0	0	-
30	4.8	Hazardous substance storage/usage	0	0	0	0	-
30	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
30	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
30	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	0	1	-
31	4.12	Radioactive Substance Authorisations	0	0	0	0	-
31	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	0	4	-
32	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
32	4.15	Pollutant release to public sewer	0	0	0	0	-
32	4.16	List 1 Dangerous Substances	0	0	0	0	-
32	4.17	List 2 Dangerous Substances	0	0	0	0	-
33	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	1	6	-
34	4.19	Pollution inventory substances	0	0	0	0	-
34	4.20	Pollution inventory waste transfers	0	0	0	0	-
34	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
35	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
37	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
39	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
40	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
40	5.5	Groundwater vulnerability- local information	None (within 0m)				
41	5.6	<u>Groundwater abstractions</u>	0	0	0	1	1
42	5.7	<u>Surface water abstractions</u>	0	0	0	0	2
43	5.8	<u>Potable abstractions</u>	0	0	0	1	1
44	5.9	Source Protection Zones	0	0	0	0	-
44	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
45	6.1	<u>Water Network (OS MasterMap)</u>	0	1	8	-	-

46	6.2	<u>Surface water features</u>	0	1	4	-	-
47	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
47	6.4	<u>WFD Surface water bodies</u>	0	0	1	-	-
47	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
49	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
49	7.2	Historical Flood Events	0	0	0	-	-
49	7.3	Flood Defences	0	0	0	-	-
50	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
50	7.5	Flood Storage Areas	0	0	0	-	-
51	7.6	Flood Zone 2	None (within 50m)				
51	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
52	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding					
53	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
54	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	5
55	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
55	10.3	<u>Special Areas of Conservation (SAC)</u>	0	0	0	0	3
57	10.4	Special Protection Areas (SPA)	0	0	0	0	0
57	10.5	National Nature Reserves (NNR)	0	0	0	0	0
58	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
58	10.7	<u>Designated Ancient Woodland</u>	0	0	1	1	14
59	10.8	Biosphere Reserves	0	0	0	0	0
59	10.9	Forest Parks	0	0	0	0	0
59	10.10	Marine Conservation Zones	0	0	0	0	0
59	10.11	Green Belt	0	0	0	0	0
59	10.12	Proposed Ramsar sites	0	0	0	0	0

60	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
60	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
60	10.15	Nitrate Sensitive Areas	0	0	0	0	0
60	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
61	10.17	SSSI Impact Risk Zones	0	-	-	-	-
61	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
62	11.1	World Heritage Sites	0	0	0	-	-
63	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
63	11.3	National Parks	0	0	0	-	-
63	11.4	Listed Buildings	0	0	1	-	-
64	11.5	Conservation Areas	0	1	0	-	-
64	11.6	Scheduled Ancient Monuments	0	0	0	-	-
64	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
65	12.1	Agricultural Land Classification	Grade 4 (within 250m)				
66	12.2	Open Access Land	0	0	0	-	-
66	12.3	Tree Felling Licences	0	0	0	-	-
66	12.4	Environmental Stewardship Schemes	0	0	0	-	-
66	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
68	13.1	Priority Habitat Inventory	0	0	0	-	-
68	13.2	Habitat Networks	0	0	0	-	-
68	13.3	Open Mosaic Habitat	0	0	0	-	-
68	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
69	14.1	10k Availability	Identified (within 500m)				
70	14.2	Artificial and made ground (10k)	0	0	0	2	-
71	14.3	Superficial geology (10k)	1	0	2	7	-

72	14.4	Landslip (10k)	0	0	0	1	-
73	14.5	Bedrock geology (10k)	1	0	3	9	-
74	14.6	Bedrock faults and other linear features (10k)	0	0	2	7	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
76	15.1	50k Availability	Identified (within 500m)				
77	15.2	Artificial and made ground (50k)	0	0	0	1	-
78	15.3	Artificial ground permeability (50k)	0	0	-	-	-
79	15.4	Superficial geology (50k)	1	0	2	2	-
80	15.5	Superficial permeability (50k)	Identified (within 50m)				
80	15.6	Landslip (50k)	0	0	0	1	-
80	15.7	Landslip permeability (50k)	None (within 50m)				
81	15.8	Bedrock geology (50k)	1	1	3	8	-
83	15.9	Bedrock permeability (50k)	Identified (within 50m)				
83	15.10	Bedrock faults and other linear features (50k)	0	1	0	4	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
84	16.1	BGS Boreholes	0	0	2	-	-
Page	Section	Natural ground subsidence					
85	17.1	Shrink swell clays	Very low (within 50m)				
86	17.2	Running sands	Very low (within 50m)				
87	17.3	Compressible deposits	Negligible (within 50m)				
88	17.4	Collapsible deposits	Very low (within 50m)				
89	17.5	Landslides	Very low (within 50m)				
90	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
91	18.1	Natural cavities	0	0	0	0	-
92	18.2	BritPits	0	0	0	2	-
92	18.3	Surface ground workings	0	0	3	-	-
93	18.4	Underground workings	0	0	0	3	84
96	18.5	Historical Mineral Planning Areas	0	0	0	0	-



<u>96</u>	<u>18.6</u>	<u>Non-coal mining</u>	1	1	0	5	7
<u>98</u>	<u>18.7</u>	<u>Mining cavities</u>	0	0	0	1	13
<u>99</u>	<u>18.8</u>	<u>JPB mining areas</u>	Identified (within 0m)				
<u>99</u>	<u>18.9</u>	<u>Coal mining</u>	Identified (within 0m)				
100	18.10	Brine areas	None (within 0m)				
100	18.11	Gypsum areas	None (within 0m)				
100	18.12	Tin mining	None (within 0m)				
100	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<u>101</u>	<u>19.1</u>	<u>Radon</u>	Between 1% and 3% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<u>102</u>	<u>20.1</u>	<u>BGS Estimated Background Soil Chemistry</u>	1	1	-	-	-
102	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
102	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
103	21.1	Underground railways (London)	0	0	0	-	-
103	21.2	Underground railways (Non-London)	0	0	0	-	-
104	21.3	Railway tunnels	0	0	0	-	-
<u>104</u>	<u>21.4</u>	<u>Historical railway and tunnel features</u>	0	0	6	-	-
104	21.5	Royal Mail tunnels	0	0	0	-	-
<u>105</u>	<u>21.6</u>	<u>Historical railways</u>	0	0	1	-	-
105	21.7	Railways	0	0	0	-	-
105	21.8	Crossrail 1	0	0	0	0	-
105	21.9	Crossrail 2	0	0	0	0	-
105	21.10	HS2	0	0	0	0	-

Recent aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2022. All Rights Reserved.

Capture Date: 10/04/2020

Site Area: 0.14ha



Recent site history - 2017 aerial photograph



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Capture Date: 07/05/2017

Site Area: 0.14ha



Recent site history - 2013 aerial photograph



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Capture Date: 09/06/2013

Site Area: 0.14ha



Recent site history - 2009 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2022. All Rights Reserved

Capture Date: 11/05/2009

Site Area: 0.14ha

Recent site history - 2001 aerial photograph



Capture Date: 28/07/2001

Site Area: 0.14ha



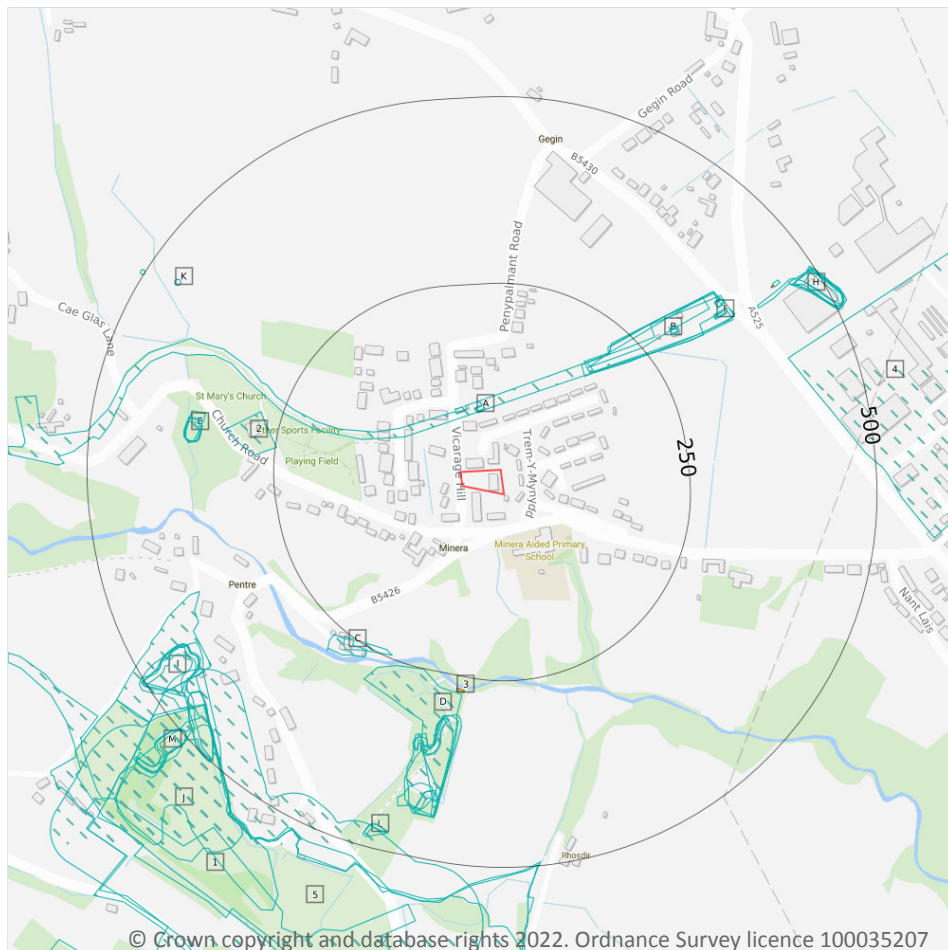
OS MasterMap site plan



Site Area: 0.14ha



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

55

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
1	68m N	Railway Sidings	1900	870762



ID	Location	Land use	Dates present	Group ID
A	78m N	Railway Building	1949	819024
A	78m N	Railway Building	1949	819025
A	80m N	Railway Station	1910	822831
B	168m NE	Railway Sidings	1960	933511
B	176m NE	Mineral Railway Sidings	1938	833978
B	181m NE	Railway Sidings	1910	987025
B	181m NE	Railway Sidings	1949	939421
C	242m SW	Unspecified Mill	1900	810184
2	248m W	Grave Yard	1872	817269
D	251m S	Unspecified Ground Workings	1938	897937
C	253m SW	Corn Mill	1872	823098
B	292m NE	Railway Building	1949 - 1960	876559
B	293m NE	Railway Building	1938	941828
D	302m S	Unspecified Heap	1974	972232
D	305m S	Unspecified Heap	1985	863055
D	307m S	Unspecified Ground Workings	1949	874191
D	310m S	Refuse Heap	1960	828378
D	311m S	Unspecified Ground Workings	1910	927012
E	350m W	Unspecified Heap	1872	882581
E	351m W	Unspecified Heap	1910 - 1938	955885
F	352m NE	Railway Building	1960	916499
E	352m W	Unspecified Heap	1949	935111
F	353m NE	Railway Building	1938	910311
E	354m W	Unspecified Heap	1960	910659
F	363m NE	Railway Building	1938 - 1949	917680
G	380m W	Disused Lead Mines	1949	834623
D	401m S	Unspecified Disused Pit	1985	822400
G	404m SW	Lead Mines	1872	969964

ID	Location	Land use	Dates present	Group ID
D	407m S	Unspecified Heap	1949	909734
H	408m NE	Unspecified Ground Workings	1910	799131
D	409m S	Unspecified Ground Workings	1910	854913
I	413m SW	Unspecified Heap	1900	883177
4	413m E	Unspecified Commercial/Industrial	1989	796382
I	420m SW	Unspecified Ground Workings	1938	940916
I	422m SW	Unspecified Ground Workings	1910	889514
I	423m SW	Unspecified Heap	1949	931119
J	428m SW	Refuse Heap	1900	972437
I	428m SW	Refuse Heap	1960	964258
H	441m NE	Railway Building	1949	819026
I	446m SW	Unspecified Heap	1949 - 1960	864403
K	452m NW	Unspecified Old Shafts	1900	793374
5	453m SW	Lead Mines	1938	873122
G	454m SW	Lead Mines	1910	874725
H	461m NE	Unspecified Heap	1949	937355
H	462m NE	Unspecified Heap	1960 - 1974	876538
H	462m NE	Unspecified Heap	1985 - 1989	990994
H	467m NE	Unspecified Heap	1938	924693
L	467m S	Unspecified Ground Workings	1949	848241
L	467m S	Unspecified Ground Workings	1910	897484
J	468m SW	Unspecified Heap	1872	886558
H	478m NE	Unspecified Heap	1900	981691
M	496m SW	Unspecified Heap	1949 - 1960	849480
M	497m SW	Unspecified Ground Workings	1910	985543
K	499m NW	Unspecified Old Shafts	1900	793373

This data is sourced from Ordnance Survey / Groundsure.



1.2 Historical tanks

Records within 500m

2

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
3	267m S	Unspecified Tank	1989 - 1993	123967
H	437m NE	Unspecified Tank	1962	109440

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

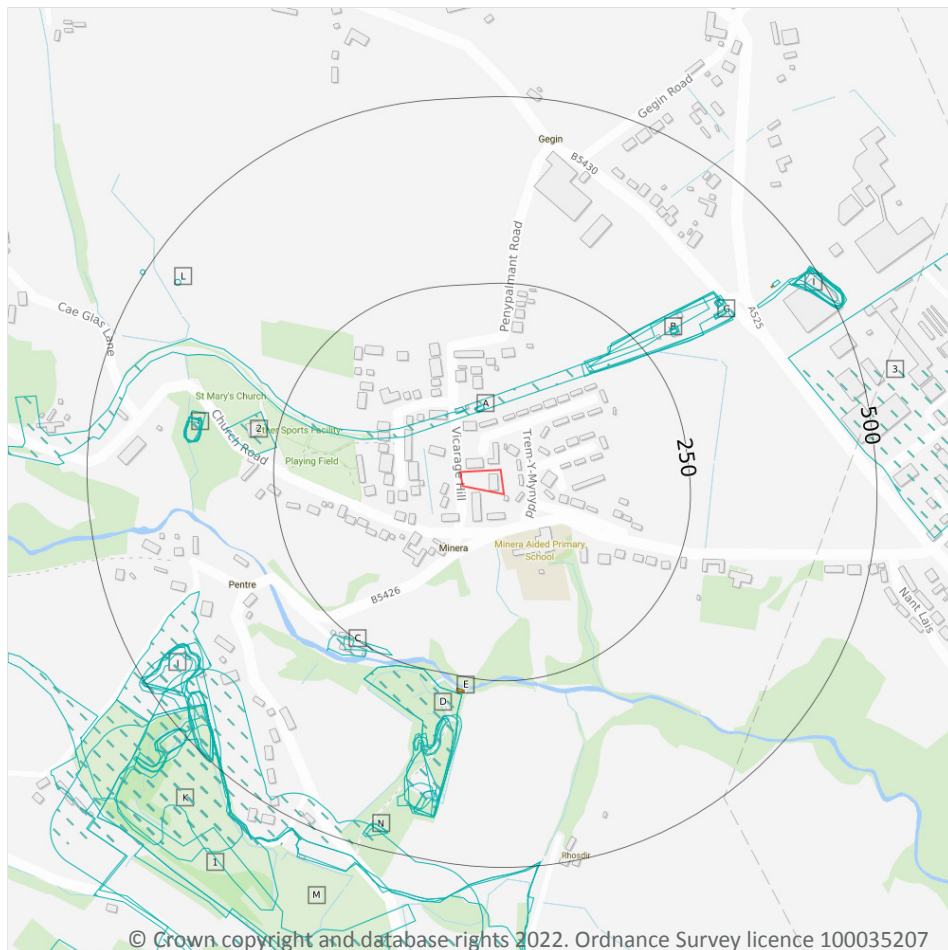
Records within 500m

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

66

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 19**

ID	Location	Land Use	Date	Group ID
1	68m N	Railway Sidings	1900	870762
A	78m N	Railway Building	1949	819024
A	78m N	Railway Building	1949	819025

ID	Location	Land Use	Date	Group ID
A	80m N	Railway Station	1910	822831
B	168m NE	Railway Sidings	1960	933511
B	176m NE	Mineral Railway Sidings	1938	833978
B	181m NE	Railway Sidings	1910	987025
B	181m NE	Railway Sidings	1949	939421
C	242m SW	Unspecified Mill	1900	810184
2	248m W	Grave Yard	1872	817269
D	251m S	Unspecified Ground Workings	1938	897937
D	251m S	Unspecified Ground Workings	1938	897937
C	253m SW	Corn Mill	1872	823098
B	292m NE	Railway Building	1960	876559
B	293m NE	Railway Building	1949	876559
B	293m NE	Railway Building	1938	941828
D	302m S	Unspecified Heap	1974	972232
D	305m S	Unspecified Heap	1985	863055
D	307m S	Unspecified Ground Workings	1949	874191
D	310m S	Refuse Heap	1960	828378
D	311m S	Unspecified Ground Workings	1910	927012
F	350m W	Unspecified Heap	1872	882581
F	351m W	Unspecified Heap	1938	955885
F	351m W	Unspecified Heap	1938	955885
G	352m NE	Railway Building	1960	916499
F	352m W	Unspecified Heap	1949	935111
G	353m NE	Railway Building	1938	910311
F	354m W	Unspecified Heap	1910	955885
F	354m W	Unspecified Heap	1960	910659
G	363m NE	Railway Building	1949	917680
G	365m NE	Railway Building	1938	917680

ID	Location	Land Use	Date	Group ID
H	380m W	Disused Lead Mines	1949	834623
D	401m S	Unspecified Disused Pit	1985	822400
H	404m SW	Lead Mines	1872	969964
D	407m S	Unspecified Heap	1949	909734
I	408m NE	Unspecified Ground Workings	1910	799131
D	409m S	Unspecified Ground Workings	1910	854913
J	413m SW	Unspecified Heap	1900	883177
3	413m E	Unspecified Commercial/Industrial	1989	796382
J	420m SW	Unspecified Ground Workings	1938	940916
J	420m SW	Unspecified Ground Workings	1938	940916
J	422m SW	Unspecified Ground Workings	1910	889514
J	423m SW	Unspecified Heap	1949	931119
K	428m SW	Refuse Heap	1900	972437
J	428m SW	Refuse Heap	1960	964258
I	441m NE	Railway Building	1949	819026
J	446m SW	Unspecified Heap	1949	864403
L	452m NW	Unspecified Old Shafts	1900	793374
M	453m SW	Lead Mines	1938	873122
M	453m SW	Lead Mines	1938	873122
J	453m SW	Unspecified Heap	1960	864403
H	454m SW	Lead Mines	1910	874725
I	461m NE	Unspecified Heap	1949	937355
I	462m NE	Unspecified Heap	1989	990994
I	462m NE	Unspecified Heap	1985	990994
I	462m NE	Unspecified Heap	1974	876538
I	462m NE	Unspecified Heap	1960	876538
I	467m NE	Unspecified Heap	1938	924693
I	467m NE	Unspecified Heap	1938	924693

ID	Location	Land Use	Date	Group ID
N	467m S	Unspecified Ground Workings	1949	848241
N	467m S	Unspecified Ground Workings	1910	897484
K	468m SW	Unspecified Heap	1872	886558
I	478m NE	Unspecified Heap	1900	981691
J	496m SW	Unspecified Heap	1949	849480
J	497m SW	Unspecified Ground Workings	1910	985543
L	499m NW	Unspecified Old Shafts	1900	793373

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 19**

ID	Location	Land Use	Date	Group ID
E	267m S	Unspecified Tank	1989	123967
E	267m S	Unspecified Tank	1993	123967
I	437m NE	Unspecified Tank	1962	109440

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)
- Licensed waste sites
- 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	6
---------------------	---

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

Features are displayed on the Waste and landfill map on **page 24**

ID	Location	Details		
A	369m NE	Site Name: - Site Address: S And K Matthews Skip Hire, Minera, Wrexham, Wrexham, LL11 3YQ Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: JP3694FP EPR reference: - Operator: S And K Matthews Skip Hire Waste Management licence No: 0 Annual Tonnage: 5000	Issue Date: 29/11/2005 Effective Date: 29/11/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective

ID	Location	Details		
A	369m NE	Site Name: - Site Address: S And K Matthews Skip Hire, Minera, Wrexham, Clwyd, LL11 3YQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: JP3694FP EPR reference: - Operator: - Waste Management licence No: 37287 Annual Tonnage: 5000	Issue Date: 29/11/2005 Effective Date: 29/11/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	369m NE	Site Name: - Site Address: S And K Matthews Skip Hire, Minera, Wrexham, Clwyd, LL11 3YQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: - Environmental Permitting Regulations (Waste) Licence Number: JP3694FP EPR reference: - Operator: S And K Matthews Skip Hire Waste Management licence No: 37287 Annual Tonnage: -	Issue Date: 29/11/2005 Effective Date: 29/11/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	369m NE	Site Name: - Site Address: S And K Matthews Skip Hire, Minera, Clwyd, Wrexham, Wrexham, LL11 3YQ Correspondence Address: -	Type of Site: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: JP3694FP EPR reference: - Operator: S And K Matthews Skip Hire Waste Management licence No: 37287 Annual Tonnage: 5000	Issue Date: 29/11/2005 Effective Date: 29/11/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective
A	369m NE	Site Name: - Site Address: S And K Matthews Skip Hire, Minera, Wrexham, Clwyd, LL11 3YQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: - Environmental Permitting Regulations (Waste) Licence Number: JP3694FP EPR reference: - Operator: S And K Matthews Skip Hire Waste Management licence No: 37287 Annual Tonnage: 5000	Issue Date: 29/11/2005 Effective Date: 29/11/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective



ID	Location	Details		
A	370m NE	Site Name: S And K Matthews Skip Hire Site Address: Station House, Old Road, Minera, Wrexham, Clwyd, LL11 3YQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SKM001 EPR reference: JP3694FP/A001 Operator: S And K Matthews Skip Hire Waste Management licence No: 37287 Annual Tonnage: 4500	Issue Date: 29/11/2005 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued

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.

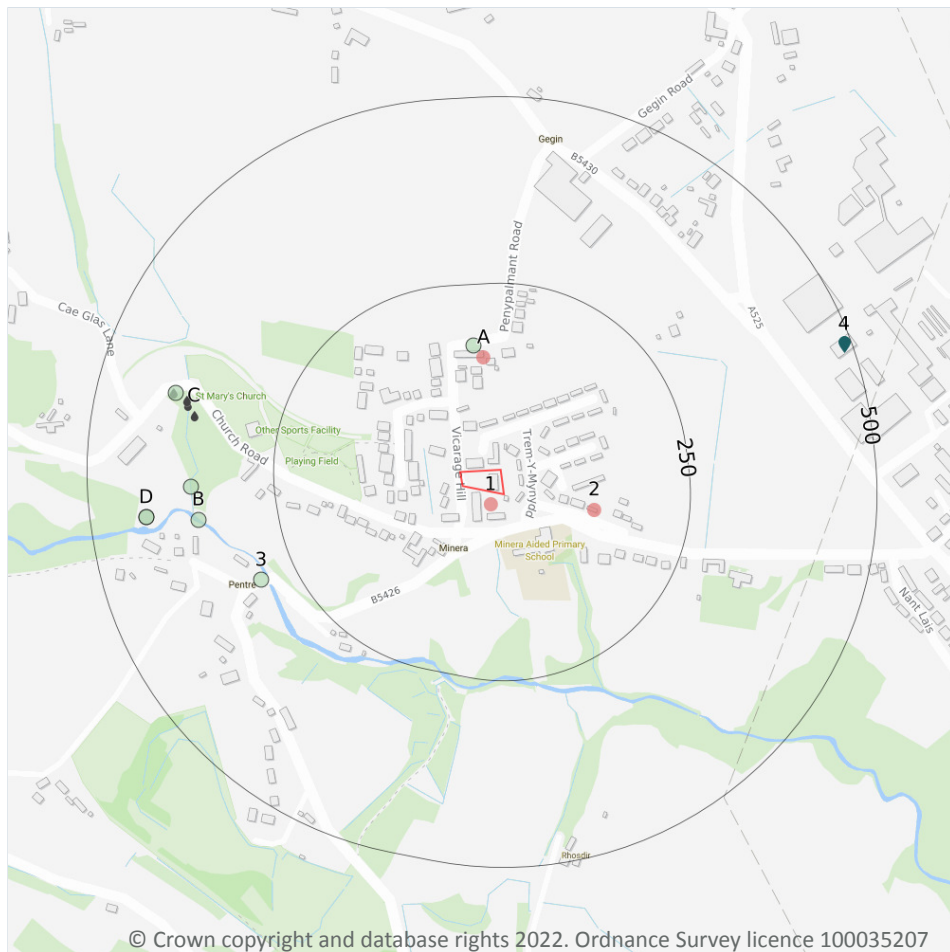
Features are displayed on the Waste and landfill map on **page 24**

ID	Location	Site	Reference	Category	Sub-Category	Description
B	391m SW	PENTRE COTTAGES, PENTRE, MINERA, WREXHAM, LL11 3DP	WEX098885	Using waste exemption	Not on a farm	Use of waste in construction
B	419m SW	Pentre Cottage, Pentre, Minera, Wrexham, Wrecsam, LL113DP	NRW-WME033335	Using waste exemption	Not on a farm	Use of waste in construction
1	419m NE	Penypalmant Farm House, Old Road, Minera, Wrexham, Wrecsam, LL113YR	NRW-WME026828	Using waste exemption	Not on a farm	Use of waste for a specified purpose

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



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 28**

ID	Location	Company	Address	Activity	Category
1	17m S	Electricity Sub Station	Clwyd, LL11	Electrical Features	Infrastructure and Facilities
2	123m E	Ivor Owen & Sons	54, Minera Hall Road, Minera, Wrexham, Clwyd, LL11 3YD	Distribution and Haulage	Transport, Storage and Delivery
A	152m N	Workshop	Clwyd, LL11	Unspecified Works Or Factories	Industrial Features



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

0

High pressure underground gas transmission pipelines.

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**1**

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.

Features are displayed on the Current industrial land use map on **page 28**

ID	Location	Address	Details	
4	489m E	Huws Gray LTD, Five Crosses Industrial Estate, Ruthin Road, Minera, Wrexham, LL11 3RD	Process: Other Mineral Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified. Date of enforcement: No Enforcement Notified. Comment: No Enforcement Notified.

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	4
----------------------------	----------

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 28**

ID	Location	Address	Details	
C	364m W	GWYNFRYN SEWERAGE SYSTEM SSO	Effluent Type: UNSPECIFIED Permit Number: CM0072201 Permit Version: 1 Receiving Water: UN-NAMED TRIB. OF CLYWEDOG	Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 26/10/1972 Effective Date: 26/10/1972 Revocation Date: 30/03/2005
C	375m W	GWYNFRYN CSO, CHURCH ROAD, MINERA, WREXHAM, WALES, LL11 3DA	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CM0072201 Permit Version: 2 Receiving Water: UN-NAMED TRIB. OF CLYWEDOG	Status: Effective Issue date: 19/03/2004 Effective Date: 31/03/2005 Revocation Date: -
C	379m W	MINERA OLD FOLKS HOME - SSO	Effluent Type: UNSPECIFIED Permit Number: CM0198001 Permit Version: 1 Receiving Water: CLYWEDOG	Status: CONSENT EXPIRED - TIME LIMIT Issue date: 20/10/1989 Effective Date: 20/10/1989 Revocation Date: 04/03/1994

ID	Location	Address	Details	
C	398m W	Gwynfryn CSO, CHURCH ROAD, Nr Pen Y Nant Flats, Minera, LL11 3DA	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CM0072201 Permit Version: 3 Receiving Water: RIVER CLYWEDOG	Status: Effective Issue date: 11/10/2019 Effective Date: 11/10/2019 Revocation Date: -

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

7

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

Features are displayed on the Current industrial land use map on **page 28**

ID	Location	Details	
A	168m N	Incident Date: 13/09/2001 Incident Identification: 31619 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	298m SW	Incident Date: 02/10/2001 Incident Identification: 34149 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	356m W	Incident Date: 27/11/2002 Incident Identification: 123437 Pollutant: Organic Chemicals/Products Pollutant Description: Hydrocarbons	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	361m W	Incident Date: 23/07/2001 Incident Identification: 18220 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	395m W	Incident Date: 17/06/2014 Incident Identification: 1246379 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: - Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
D	425m W	Incident Date: 24/08/2016 Incident Identification: 1604877 Pollutant: - Pollutant Description: -	Water Impact: Category 3 (Minor) Land Impact: No Details Air Impact: No Details
D	425m W	Incident Date: 24/08/2016 Incident Identification: 1604877 Pollutant: Sewage Material Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: No Details Air Impact: No Details

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.

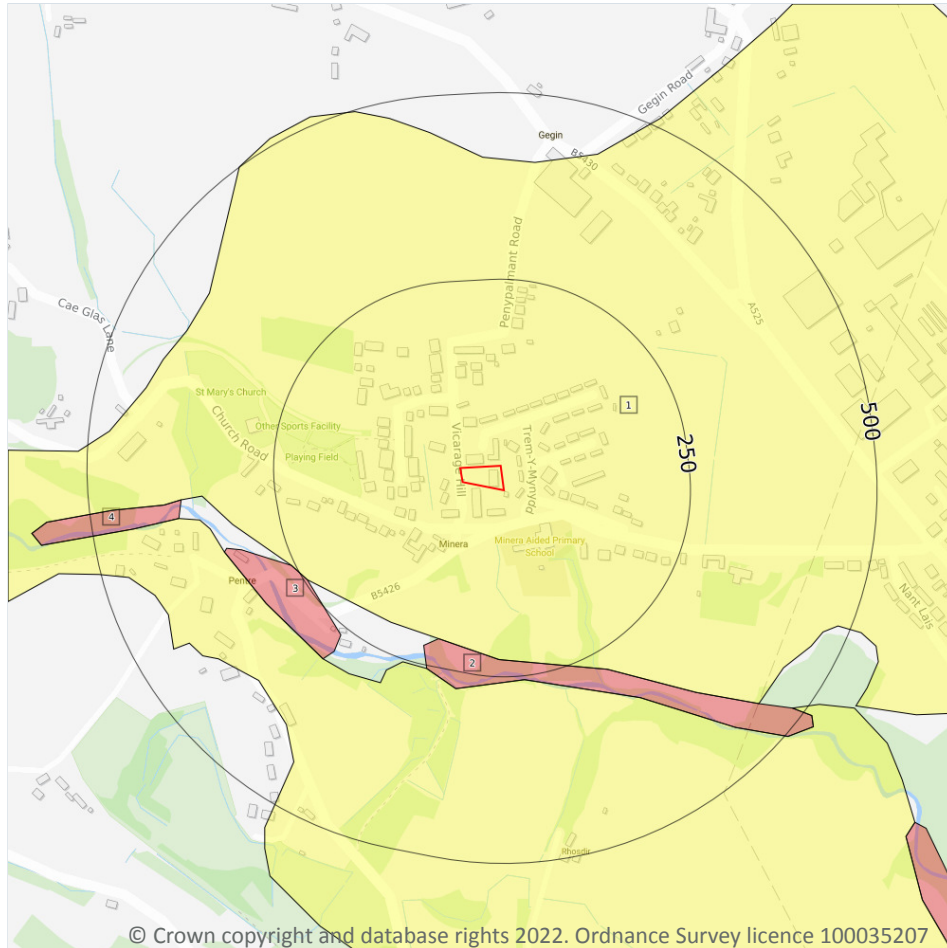
4.21 Pollution inventory radioactive waste

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

4

Aquifer status of groundwater held within superficial geology.

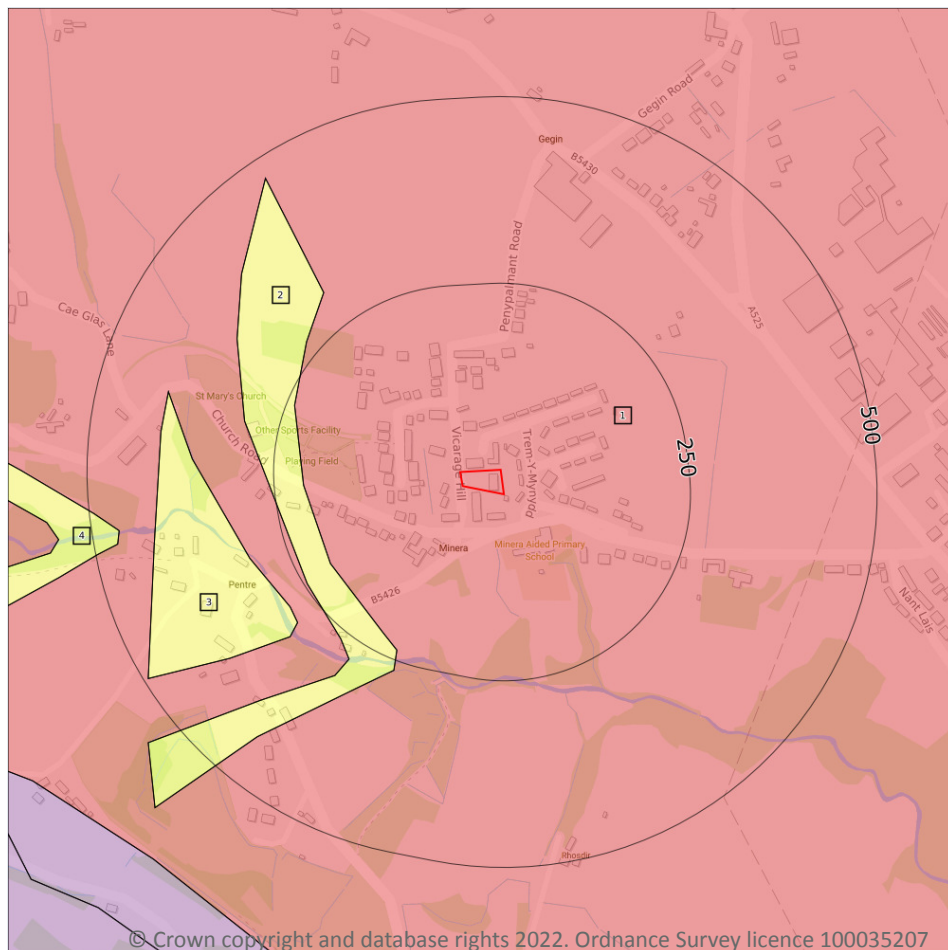
Features are displayed on the Hydrogeology map on **page 35**

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	212m S	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	246m SW	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
4	376m W	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

5.2 Bedrock aquifer

Records within 500m

4

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 37**

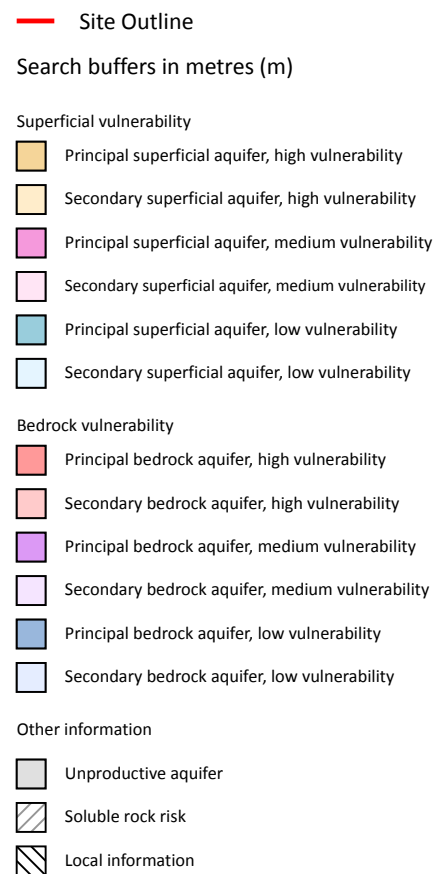
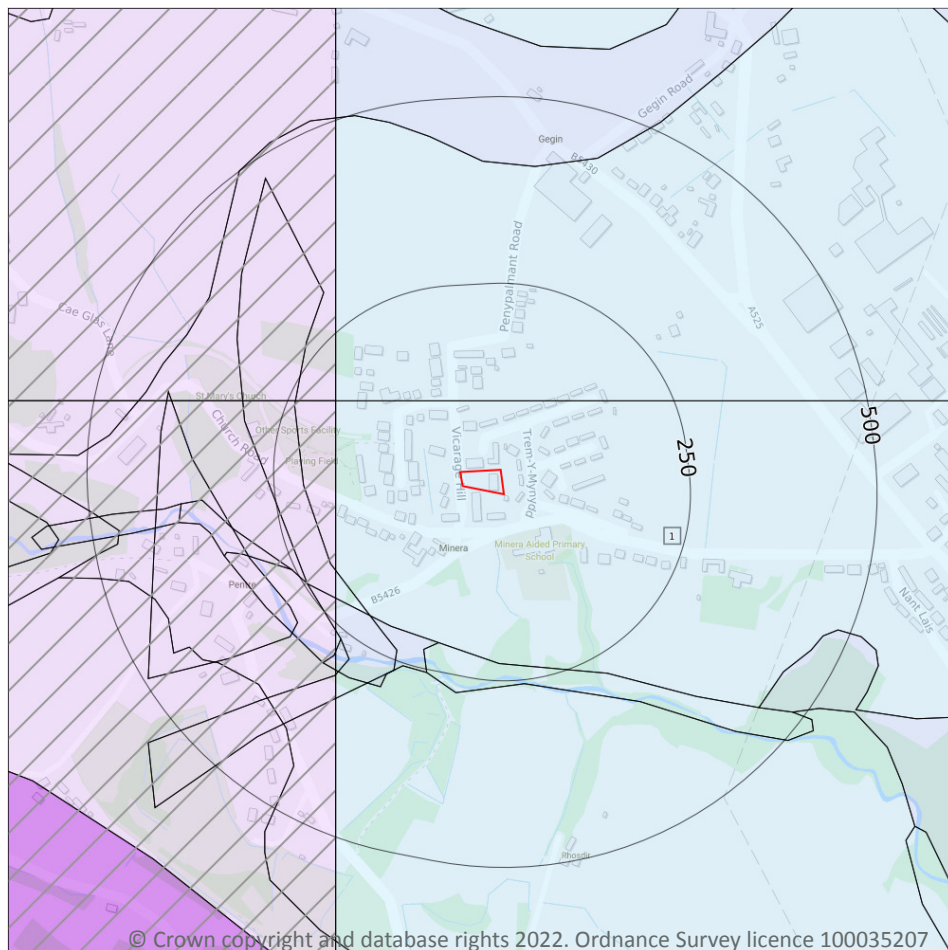
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	201m W	Secondary (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



ID	Location	Designation	Description
3	282m SW	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
4	464m W	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

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 39**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Low 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: 3-10m Patchiness value: <90% Recharge potential: Low	Vulnerability: Low 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
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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

2

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 41**

ID	Location	Details	
A	272m SW	Status: Historical Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: EAW Groundwater Point: PARK DAY LEVEL Data Type: Point Name: Dee Valley Water Plc Easting: 327050 Northing: 351641	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 05/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 05/07/1966 Version End Date: -
B	622m SW	Status: Historical Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: EAW Groundwater Point: SPEEDWELL SHAFT Data Type: Point Name: Dee Valley Water Plc Easting: 326890 Northing: 351330	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 05/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 05/07/1966 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	2
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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 41**

ID	Location	Details	
-	1768m W	Status: Historical Licence No: 24/67/7/0143 Details: Mineral Washing Direct Source: EAW Surface Water Point: STREAM Data Type: Point Name: Tarmac Aggregates Limited Easting: 325430 Northing: 352240	Annual Volume (m ³): 1363.8 Max Daily Volume (m ³): 22.73 Original Application No: - Original Start Date: 24/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 16/11/2015 Version End Date: -

ID	Location	Details	
-	1768m W	Status: Active Licence No: 24/67/7/0143 Details: Mineral Washing - Low Direct Source: - Point: - Data Type: Point Name: - Easting: 325430 Northing: 352240	Annual Volume (m ³): 1,363.80 Max Daily Volume (m ³): - Original Application No: - Original Start Date: Nov 16 2015 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	2
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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.

Features are displayed on the Abstractions and Source Protection Zones map on **page 41**

ID	Location	Details	
A	272m SW	Status: Historical Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: EAW Groundwater Point: PARK DAY LEVEL Data Type: Point Name: Dee Valley Water Plc Easting: 327050 Northing: 351641	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 05/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 05/07/1966 Version End Date: -
B	622m SW	Status: Historical Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: EAW Groundwater Point: SPEEDWELL SHAFT Data Type: Point Name: Dee Valley Water Plc Easting: 326890 Northing: 351330	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 05/07/1966 Expiry Date: - Issue No: 100 Version Start Date: 05/07/1966 Version End Date: -

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)

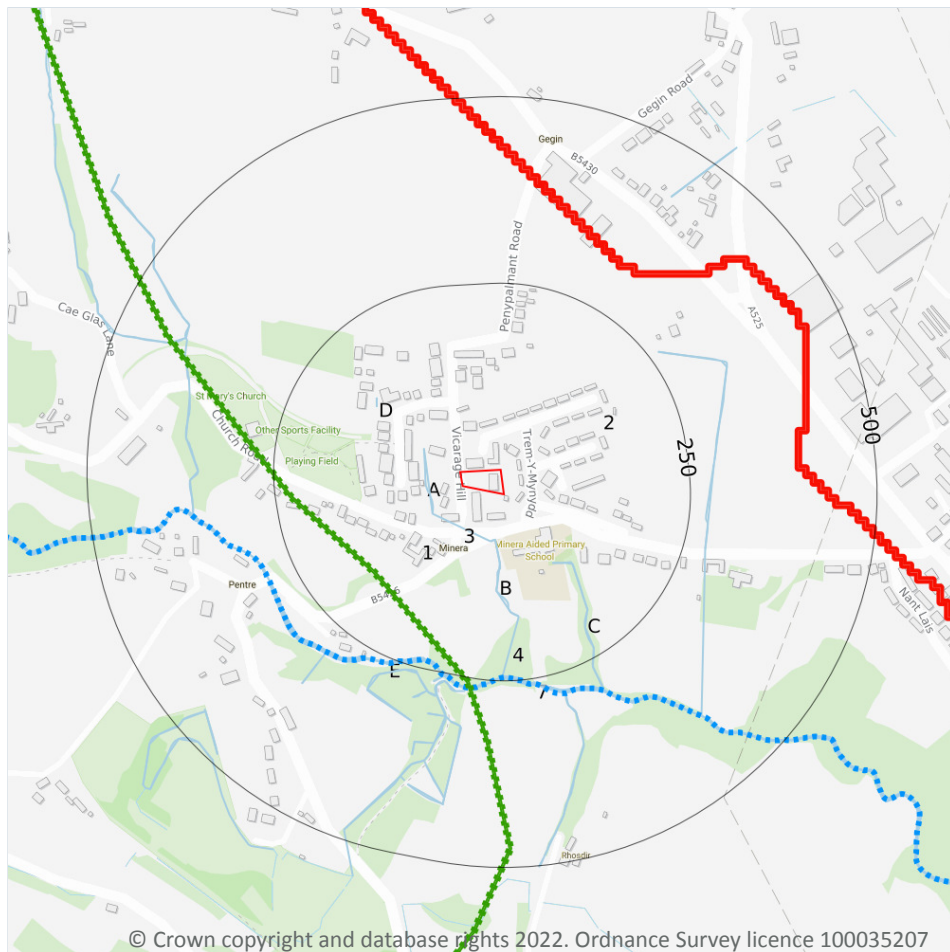
Records within 500m

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

9

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 45**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	45m SW	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
3	50m SW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
B	62m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	112m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	141m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
4	164m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
E	238m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Clywedog
7	245m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Clywedog
E	245m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Clywedog

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

5

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 45**

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 45**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River WB catchment	Clywedog - above Black Brook	GB111067051720	Clywedog - Dee	Dee

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 45**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
6	238m S	River	Clywedog - above Black Brook	GB111067051720	Moderate	Fail	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 45**



ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	On site	Dee Carboniferous Coal Measures	GB41102G204800	Poor	Poor	Good	2017

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 the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; 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). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 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

Negligible

Highest risk within 50m

Negligible

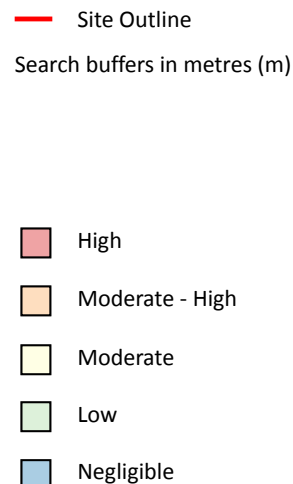
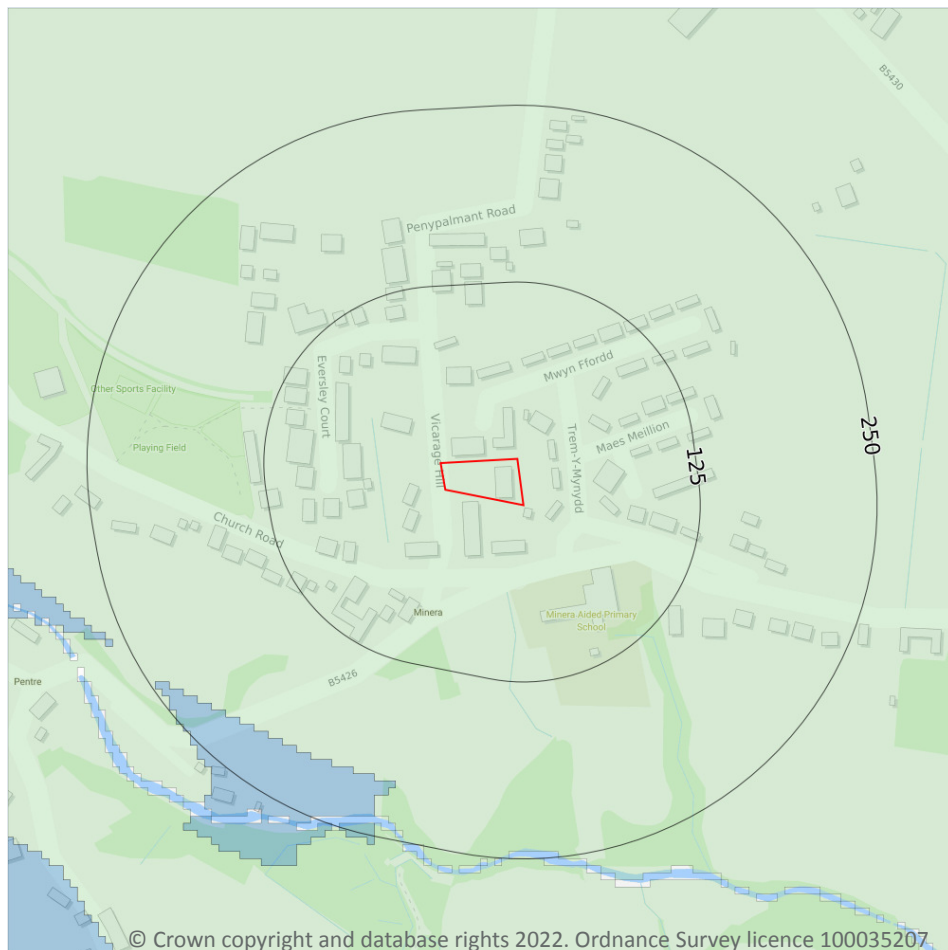
Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year 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.

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	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

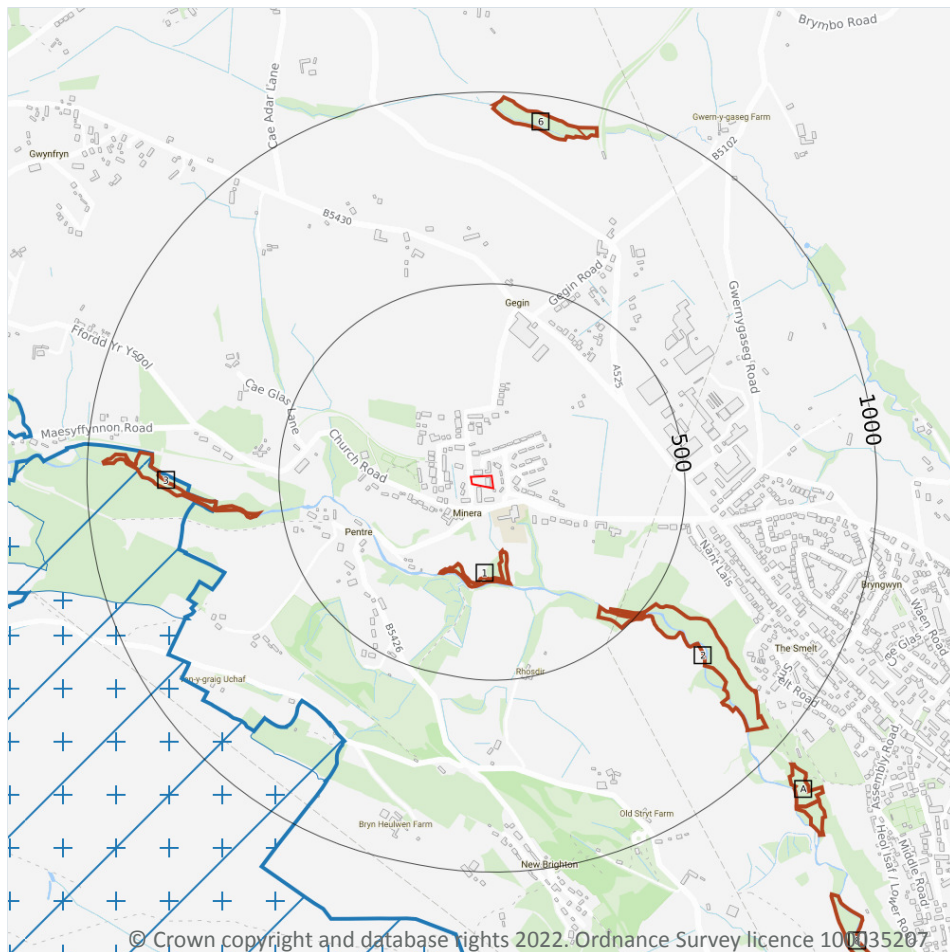
Low

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 53**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- + Sites of Special Scientific Interest (SSSI)
- + Special Areas of Conservation (SAC)
- / Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

5

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 54**

ID	Location	Name	Data source
4	667m W	RUABON/LLANTYSILIO MOUNTAINS AND MINERA	Natural Resources Wales



ID	Location	Name	Data source
B	1151m W	RUABON/LLANTYSILIO MOUNTAINS AND MINERA	Natural Resources Wales
-	1596m W	RUABON/LLANTYSILIO MOUNTAINS AND MINERA	Natural Resources Wales
-	1805m W	RUABON/LLANTYSILIO MOUNTAINS AND MINERA	Natural Resources Wales
-	1859m W	RUABON/LLANTYSILIO MOUNTAINS AND MINERA	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
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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	3
-----------------------------	----------

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.

Features are displayed on the Environmental designations map on **page 54**

ID	Location	Name	Features of interest	Habitat description	Data source
5	826m SW	Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains	Wet heathland with cross-leaved heath; Dry heaths; Alpine and subalpine heaths; Grasslands on soils rich in heavy metals; Dry grasslands and scrublands on chalk or limestone; Blanket bog; Very wet mires often identified by an unstable `quaking` surface; Calcium-rich springwater-fed fens; Acidic scree; Base-rich scree; Plants in crevices in base-rich rocks; Limestone pavements; Caves not open to the public; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Great crested newt; Lesser horseshoe bat.	Bogs, Marshes, Water fringed vegetation, Fens; Improved grassland; Inland rocks, Scree, Sands, Permanent Snow and ice; Heath, Scrub, Maquis and Garrigue, Phygrana; Coniferous woodland; Humid grassland, Mesophile grassland; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Dry grassland, Steppes; Inland water bodies (Standing water, Running water); Broad-leaved deciduous woodland	Natural Resources Wales
7	1118m W	Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains	Wet heathland with cross-leaved heath; Dry heaths; Alpine and subalpine heaths; Grasslands on soils rich in heavy metals; Dry grasslands and scrublands on chalk or limestone; Blanket bog; Very wet mires often identified by an unstable `quaking` surface; Calcium-rich springwater-fed fens; Acidic scree; Base-rich scree; Plants in crevices in base-rich rocks; Limestone pavements; Caves not open to the public; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Great crested newt; Lesser horseshoe bat.	Bogs, Marshes, Water fringed vegetation, Fens; Improved grassland; Inland rocks, Scree, Sands, Permanent Snow and ice; Heath, Scrub, Maquis and Garrigue, Phygrana; Coniferous woodland; Humid grassland, Mesophile grassland; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Dry grassland, Steppes; Inland water bodies (Standing water, Running water); Broad-leaved deciduous woodland	Natural Resources Wales

ID	Location	Name	Features of interest	Habitat description	Data source
B	1151m W	Berwyn a Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains	Wet heathland with cross-leaved heath; Dry heaths; Alpine and subalpine heaths; Grasslands on soils rich in heavy metals; Dry grasslands and scrublands on chalk or limestone; Blanket bog; Very wet mires often identified by an unstable 'quaking' surface; Calcium-rich springwater-fed fens; Acidic scree; Base-rich scree; Plants in crevices in base-rich rocks; Limestone pavements; Caves not open to the public; Mixed woodland on base-rich soils associated with rocky slopes; Western acidic oak woodland; Great crested newt; Lesser horseshoe bat.	Bogs, Marshes, Water fringed vegetation, Fens; Improved grassland; Inland rocks, Scree, Sands, Permanent Snow and ice; Heath, Scrub, Maquis and Garrigue, Phygrana; Coniferous woodland; Humid grassland, Mesophile grassland; Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites); Dry grassland, Steppes; Inland water bodies (Standing water, Running water); Broad-leaved deciduous woodland	Natural Resources Wales

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

16

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 54**

ID	Location	Name	Woodland Type
1	165m S	Unknown	Ancient Semi Natural Woodland
2	416m SE	Unknown	Ancient Semi Natural Woodland
3	561m W	Unknown	Ancient Semi Natural Woodland
6	894m N	Unknown	Restored Ancient Woodland Site
A	1058m SE	Unknown	Ancient Semi Natural Woodland
A	1145m SE	Unknown	Restored Ancient Woodland Site
8	1377m SE	Unknown	Ancient Semi Natural Woodland
-	1453m NE	Unknown	Restored Ancient Woodland Site
-	1468m NE	Unknown	Restored Ancient Woodland Site
-	1513m SE	Unknown	Restored Ancient Woodland Site
-	1662m E	Unknown	Ancient Semi Natural Woodland
-	1754m E	Unknown	Ancient Semi Natural Woodland
-	1789m W	Unknown	Ancient Semi Natural Woodland
-	1884m SE	Unknown	Restored Ancient Woodland Site
-	1961m NE	Unknown	Ancient Semi Natural Woodland
-	1972m E	Unknown	Ancient Semi Natural Woodland



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

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

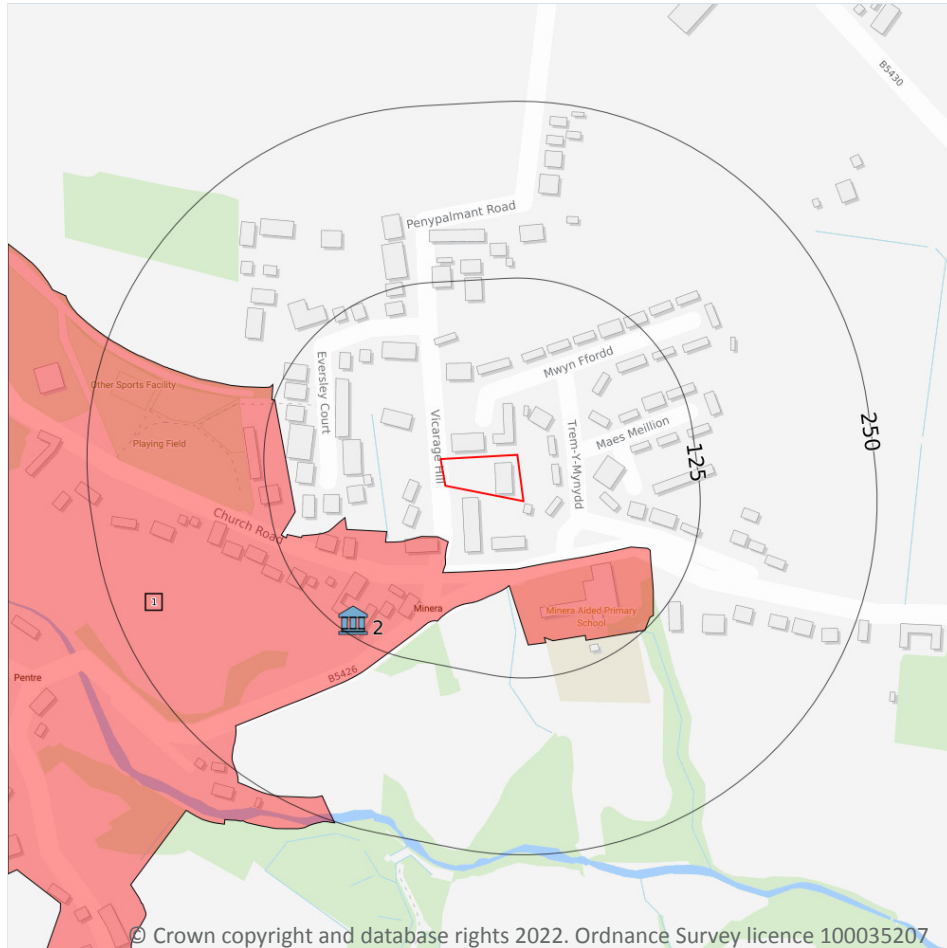
Records within 2000m

0

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



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

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**1**

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.

Features are displayed on the Visual and cultural designations map on **page 62**

ID	Location	Name	Grade	Reference Number	Listed date
2	115m SW	Plas Gwyn Including Plas Bychan, Situated Just W Of The Centre Of Minera Between The B5426 And The Minor Road To Gwynfryn	II	1617	07/06/1963

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



11.5 Conservation Areas

Records within 250m

1

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.

Features are displayed on the Visual and cultural designations map on **page 62**

ID	Location	Name	District	Date of designation
1	36m S	Minera	WREXHAM	1975-07-29

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

11.7 Registered Parks and Gardens

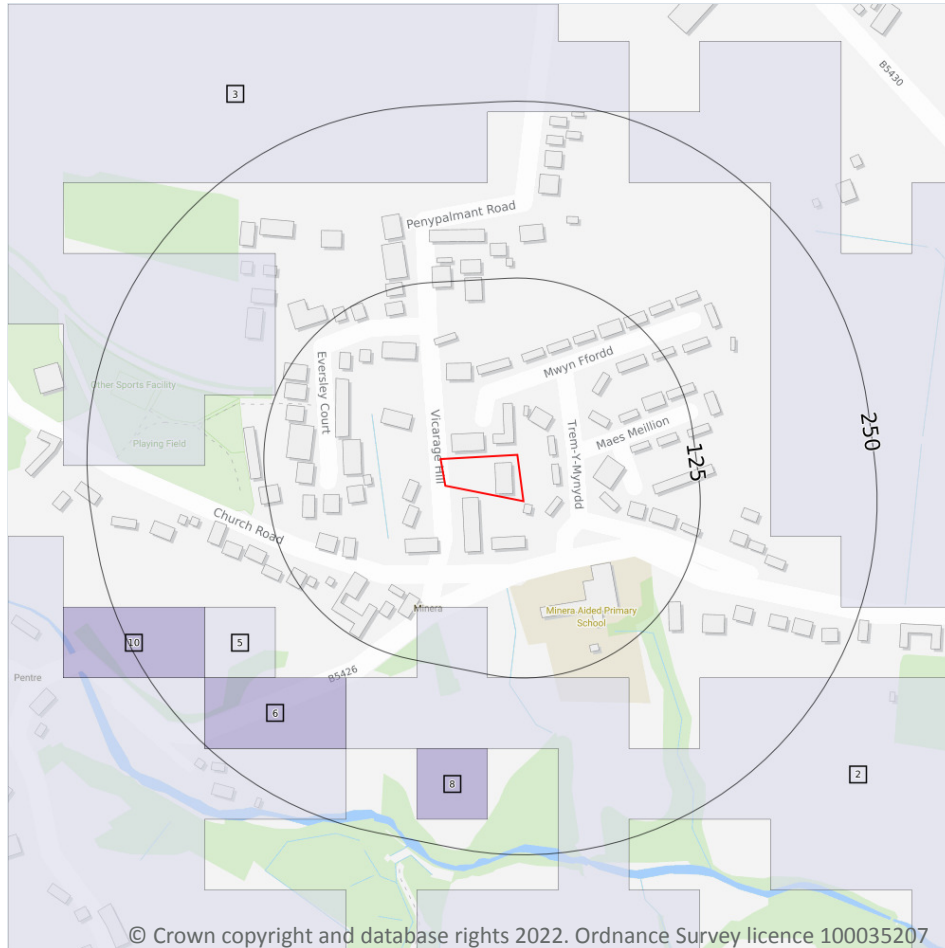
Records within 250m

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 Historic England, 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

12.1 Agricultural Land Classification

Records within 250m

6

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 65**

ID	Location	Classification	Description
2	78m S	Grade 3b	Moderate quality agricultural land
3	125m W	Grade 3b	Moderate quality agricultural land
5	148m SW	Grade 3b	Moderate quality agricultural land

ID	Location	Classification	Description
6	153m SW	Grade 4	Poor quality agricultural land
8	177m S	Grade 4	Poor quality agricultural land
10	191m SW	Grade 4	Poor 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. The schemes identified may be historical schemes that have now expired, or may still be active.

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.

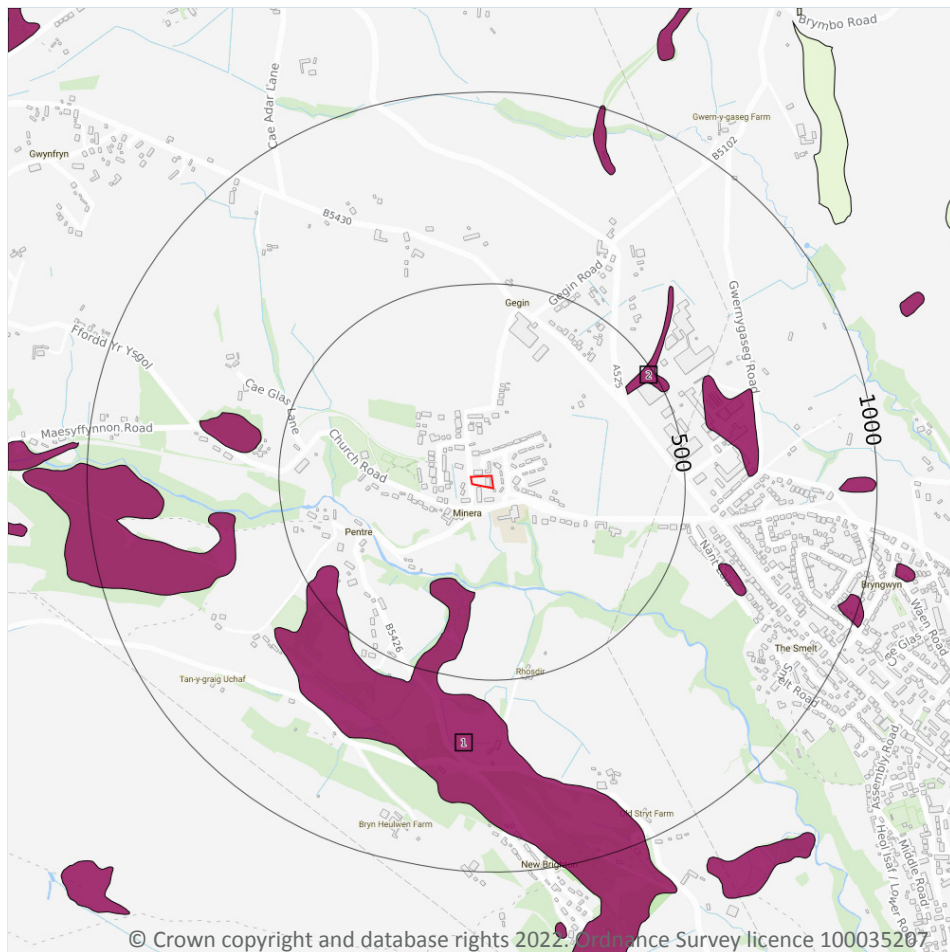
Features are displayed on the Geology 1:10,000 scale - Availability map on **page 69**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SJ25SE

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

2

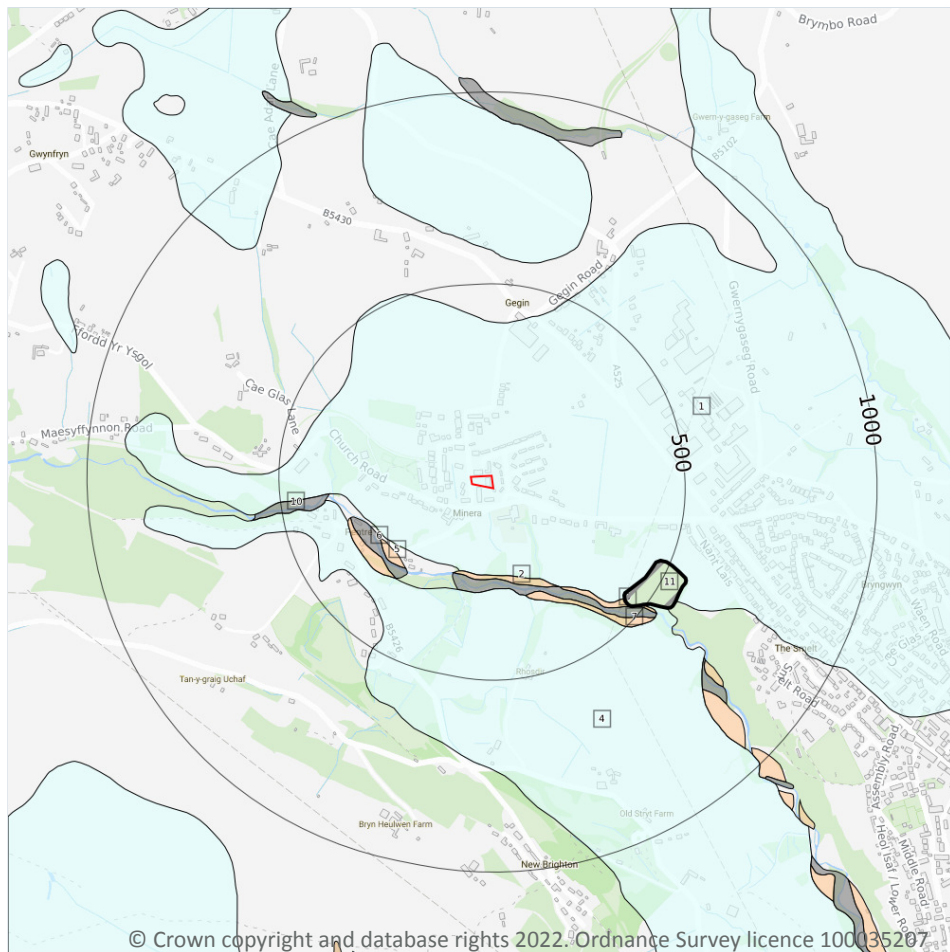
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 70**

ID	Location	LEX Code	Description	Rock description
1	251m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	413m NE	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

10

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 71**

ID	Location	LEX Code	Description	Rock description
1	On site	TILL-DMTN	Till - Diamicton	Diamicton
2	226m S	RTDU-XSV	River Terrace Deposits (undifferentiated) - Sand And Gravel	Sand And Gravel
3	236m S	ALV-C	Alluvium - Clay (unlithified Deposits Coding Scheme)	Clay
4	262m S	TILL-DMTN	Till - Diamicton	Diamicton



ID	Location	LEX Code	Description	Rock description
5	266m SW	RTDU-XSV	River Terrace Deposits (undifferentiated) - Sand And Gravel	Sand And Gravel
6	278m SW	ALV-C	Alluvium - Clay (unlithified Deposits Coding Scheme)	Clay
7	290m S	RTDU-XSV	River Terrace Deposits (undifferentiated) - Sand And Gravel	Sand And Gravel
8	303m SW	RTDU-XSV	River Terrace Deposits (undifferentiated) - Sand And Gravel	Sand And Gravel
9	310m SE	RTDU-XSV	River Terrace Deposits (undifferentiated) - Sand And Gravel	Sand And Gravel
10	371m W	ALV-C	Alluvium - Clay (unlithified Deposits Coding Scheme)	Clay

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

1

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.

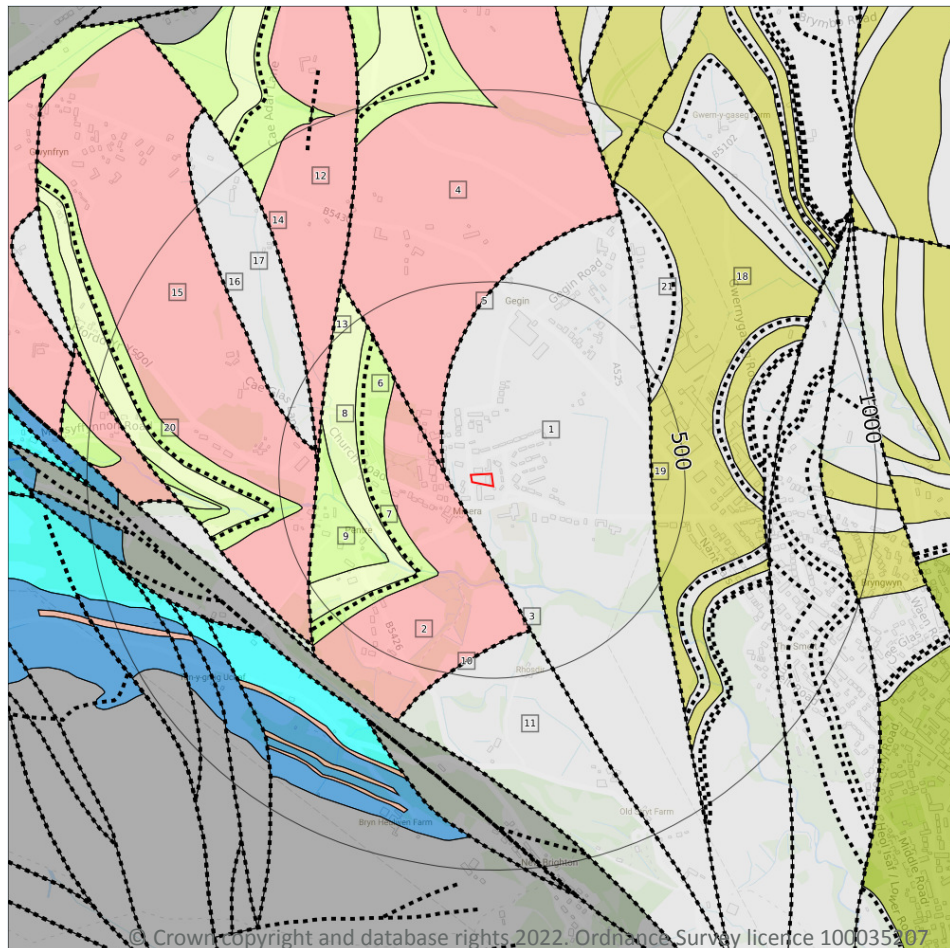
Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 71**

ID	Location	LEX Code	Description	Rock description
11	439m SE	SLIP-UNKNOWN	Landslide Deposits	Unknown/unclassified Entry

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

13

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 73**

ID	Location	LEX Code	Description	Rock age
1	On site	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Langsettian Sub-age
2	52m SW	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian Sub-age - Yeadonian Sub-age

ID	Location	LEX Code	Description	Rock age
4	70m W	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian Sub-age - Yeadonian Sub-age
6	211m SW	BSG-MDST	Bowland Shale Formation - Mudstone	Yeadonian Sub-age - Asbian Age
8	259m SW	BSG-SDST	Bowland Shale Formation - Sandstone	Yeadonian Sub-age - Asbian Age
9	293m SW	BSG-MDST	Bowland Shale Formation - Mudstone	Yeadonian Sub-age - Asbian Age
11	389m S	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
12	400m W	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian Sub-age - Yeadonian Sub-age
15	400m W	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian Sub-age - Yeadonian Sub-age
17	409m W	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
18	413m E	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
20	448m W	BSG-MDST	Bowland Shale Formation - Mudstone	Yeadonian Sub-age - Asbian Age
21	449m NE	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

9

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 73**

ID	Location	Category	Description
3	52m SW	FAULT	Normal fault, inferred
5	70m W	FOSSIL_HORIZON	Fossil horizon, marine band
7	252m SW	FOSSIL_HORIZON	Fossil horizon, marine band

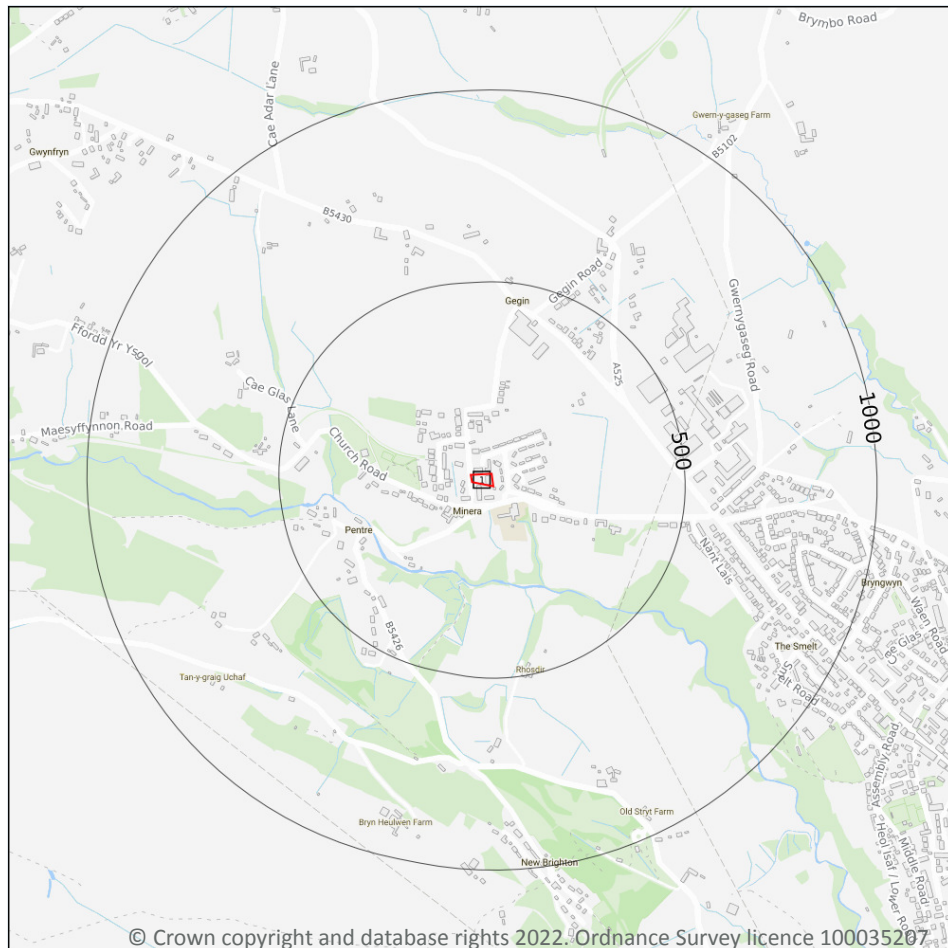


ID	Location	Category	Description
10	388m S	FOSSIL_HORIZON	Fossil horizon, marine band
13	400m W	FAULT	Normal fault, inferred
14	400m W	FAULT	Normal fault, inferred
16	409m W	FOSSIL_HORIZON	Fossil horizon, marine band
19	413m E	FAULT	Normal fault, inferred
22	464m NE	ROCK	Coal seam, inferred

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

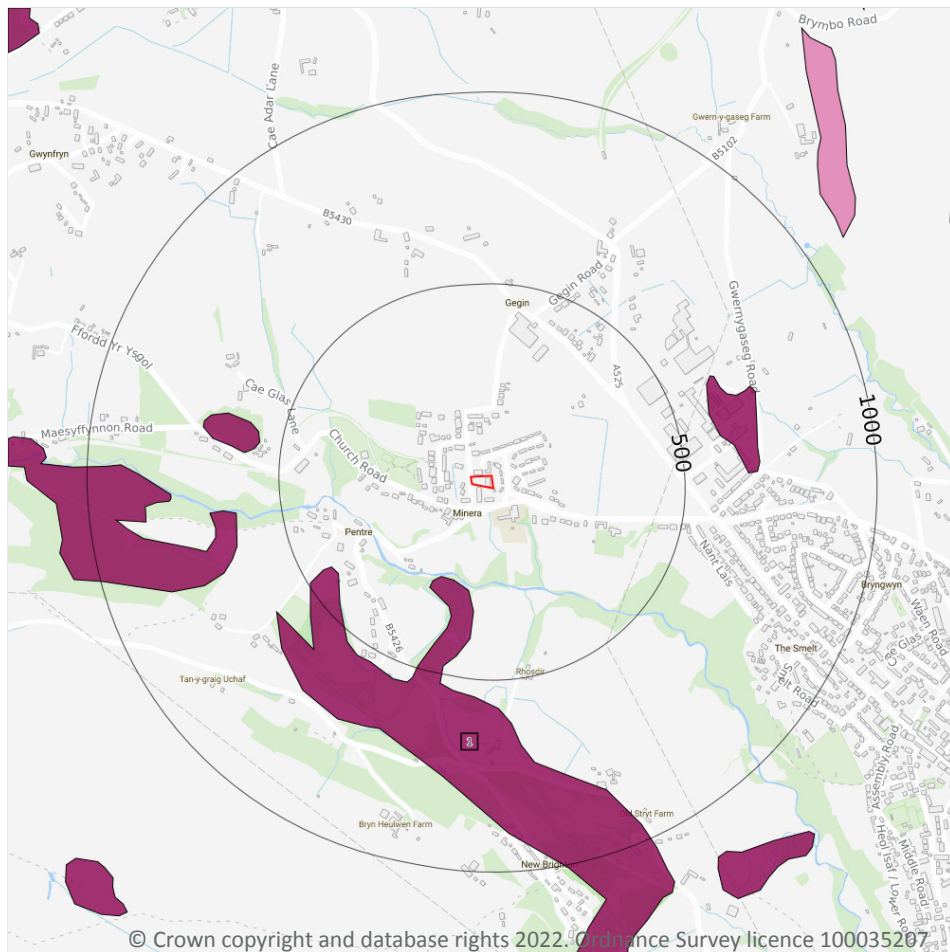
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 76**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW121_wrexham_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

1

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 77**

ID	Location	LEX Code	Description	Rock description
1	254m S	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

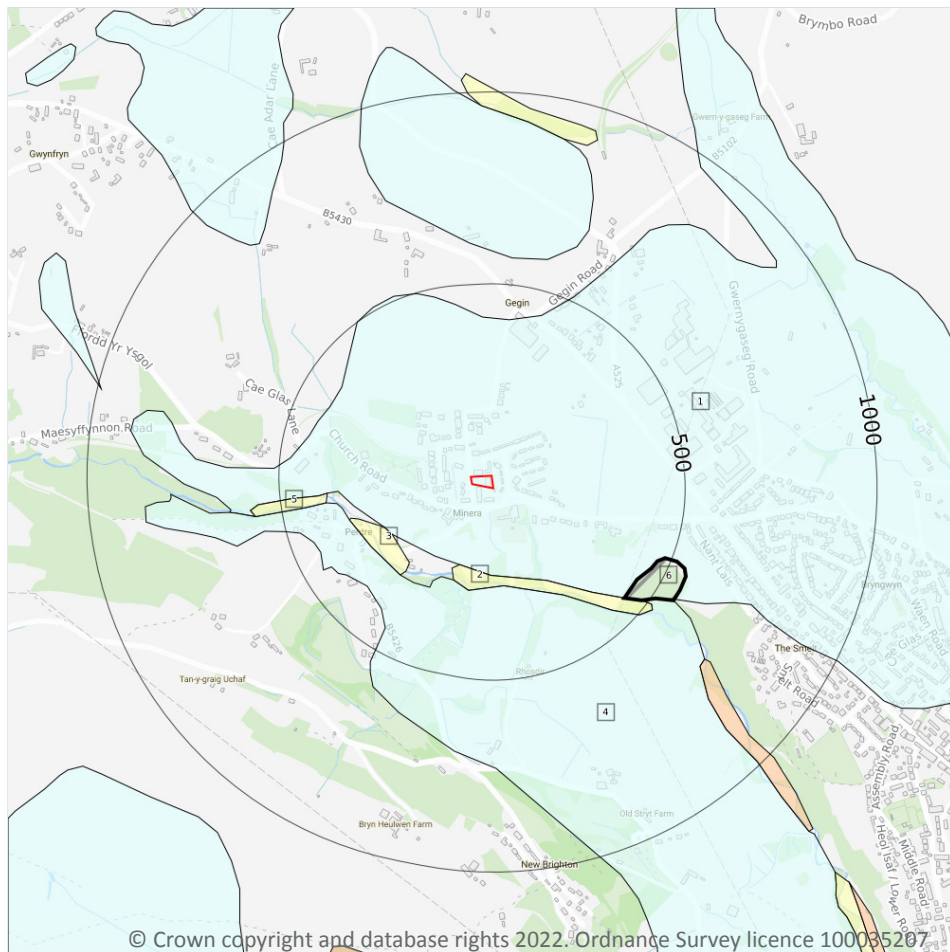
0

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

5

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 79**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON
2	212m S	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	246m SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	254m S	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
5	376m W	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

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

1

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.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 79**

ID	Location	LEX Code	Description	Rock description
6	443m SE	SLIP-UNKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

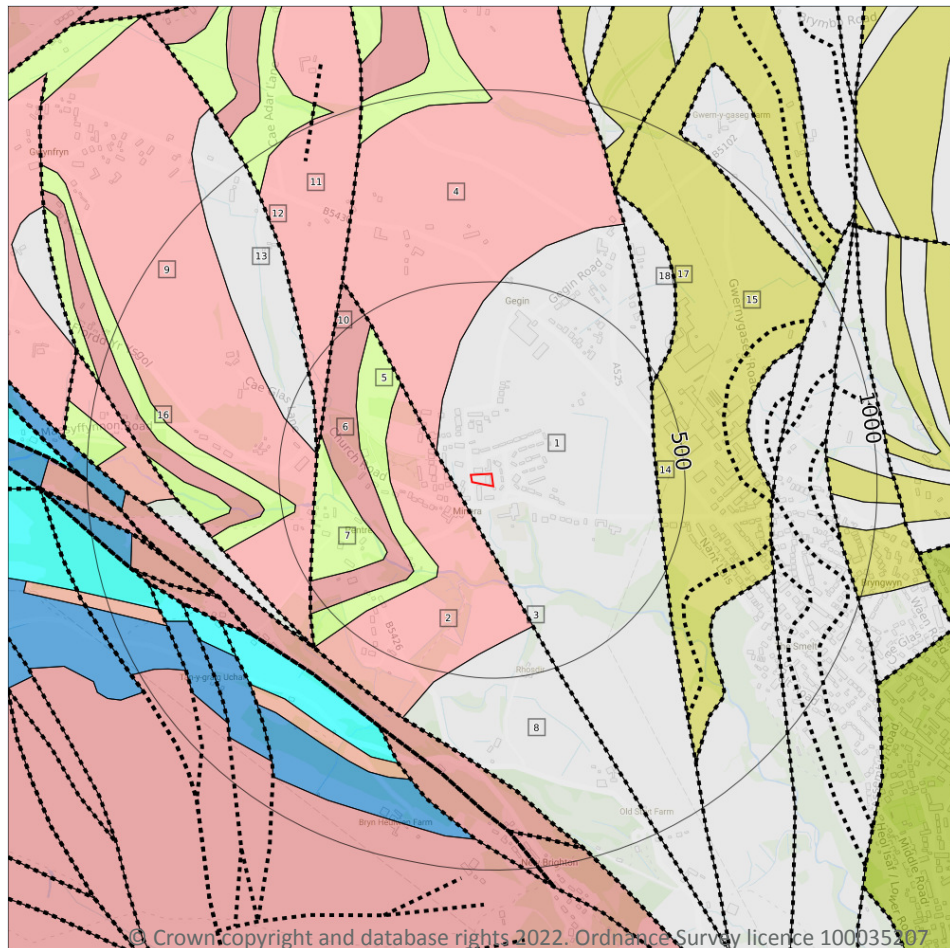
Records within 50m

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

13

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 81**

ID	Location	LEX Code	Description	Rock age
1	On site	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
2	43m SW	GS-SDAR	GWESPYR SANDSTONE - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	NAMURIAN
4	107m NW	GS-SDAR	GWESPYR SANDSTONE - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	NAMURIAN
5	201m W	BSG-MDST	BOWLAND SHALE FORMATION - MUDSTONE	WISEAN
6	241m W	CFS-SDAR	CEFN-Y-FEDW SANDSTONE FORMATION - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	WISEAN
7	282m SW	BSG-MDST	BOWLAND SHALE FORMATION - MUDSTONE	WISEAN
8	379m S	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9	403m W	GS-SDAR	GWESPYR SANDSTONE - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	NAMURIAN
11	404m W	GS-SDAR	GWESPYR SANDSTONE - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	NAMURIAN
13	405m W	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	426m E	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
16	464m W	BSG-MDST	BOWLAND SHALE FORMATION - MUDSTONE	WISEAN
18	476m NE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.



15.9 Bedrock permeability (50k)

Records within 50m

2

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
43m N	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

5

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 81**

ID	Location	Category	Description
3	43m SW	FAULT	Fault, inferred, displacement unknown
10	403m W	FAULT	Fault, inferred, displacement unknown
12	405m W	FAULT	Fault, inferred, displacement unknown
14	426m E	FAULT	Fault, inferred, displacement unknown
17	476m NE	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

2

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.

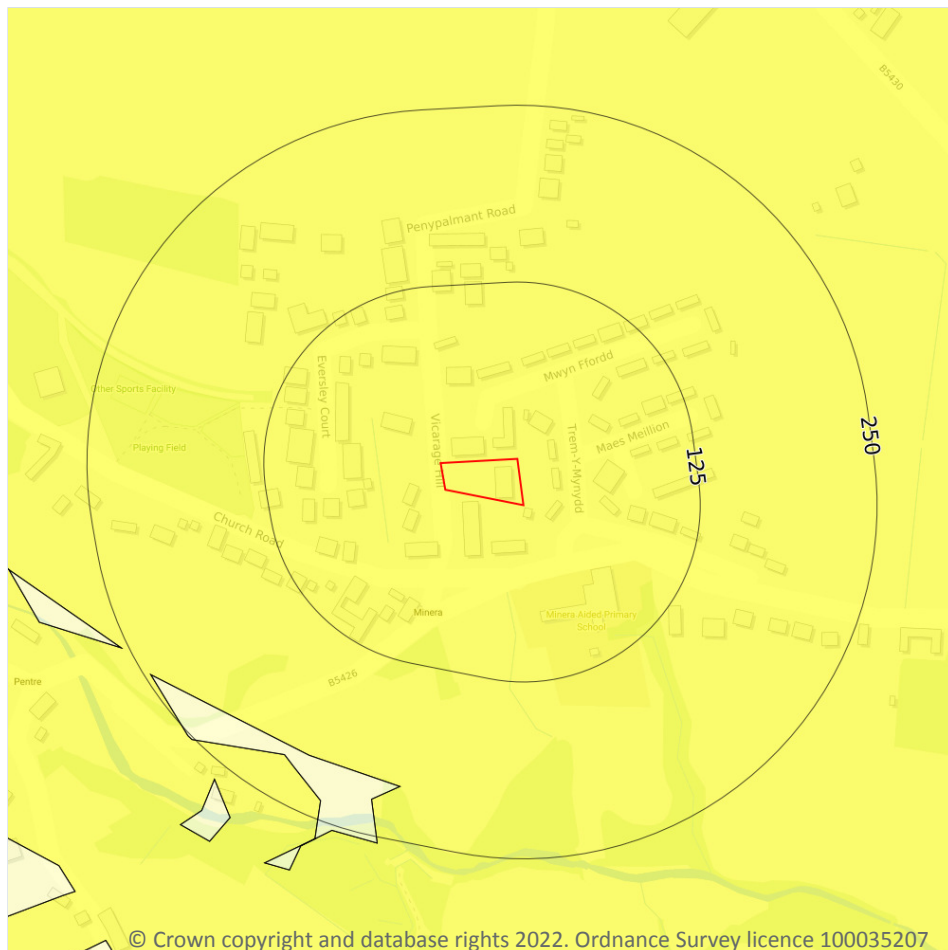
Features are displayed on the Boreholes map on **page 84**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	114m NE	327270 352010	EGIN O/C SITE 4	42.67	N	145388
2	199m NE	327370 352040	EGIN O/C SITE 3	30.48	N	145387

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

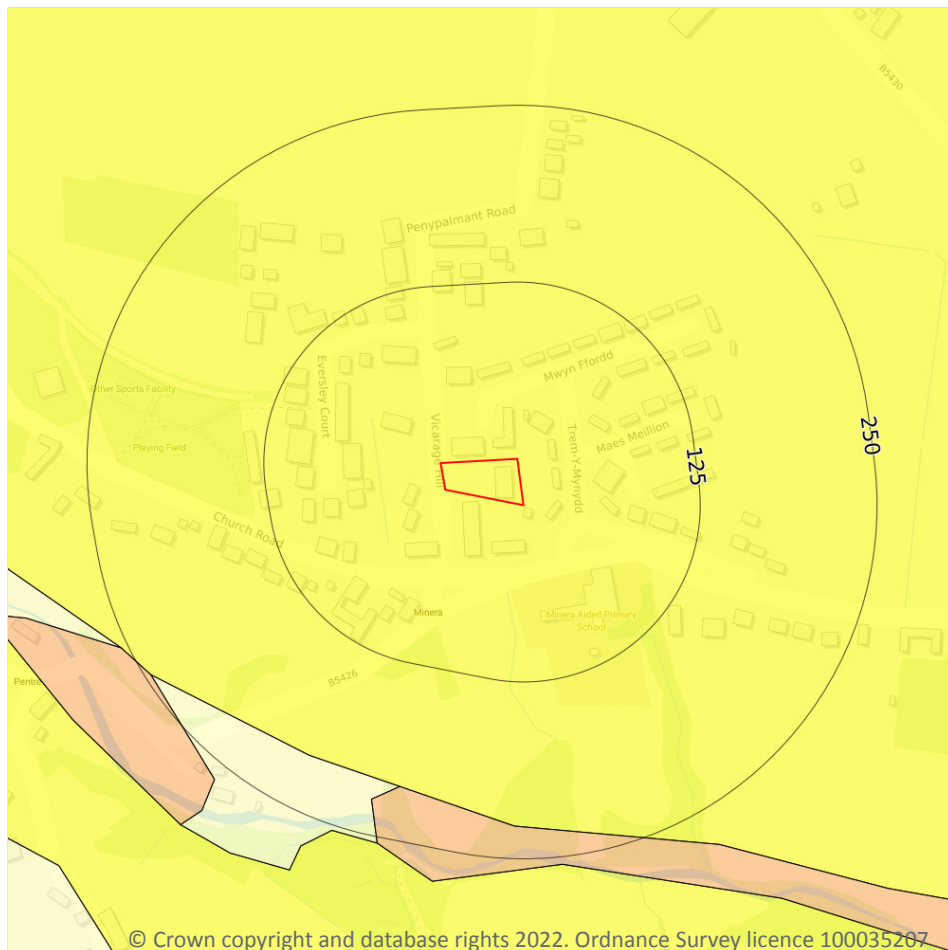
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 85**

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.

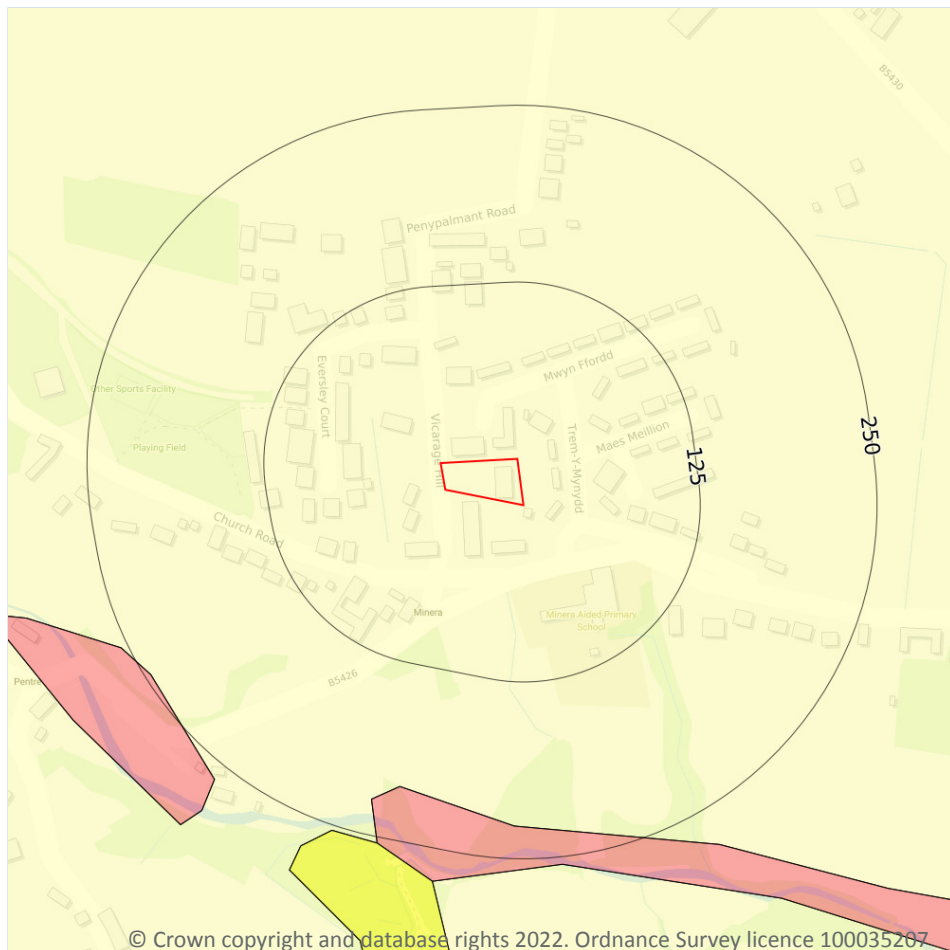
Features are displayed on the Natural ground subsidence - Running sands map on **page 86**

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

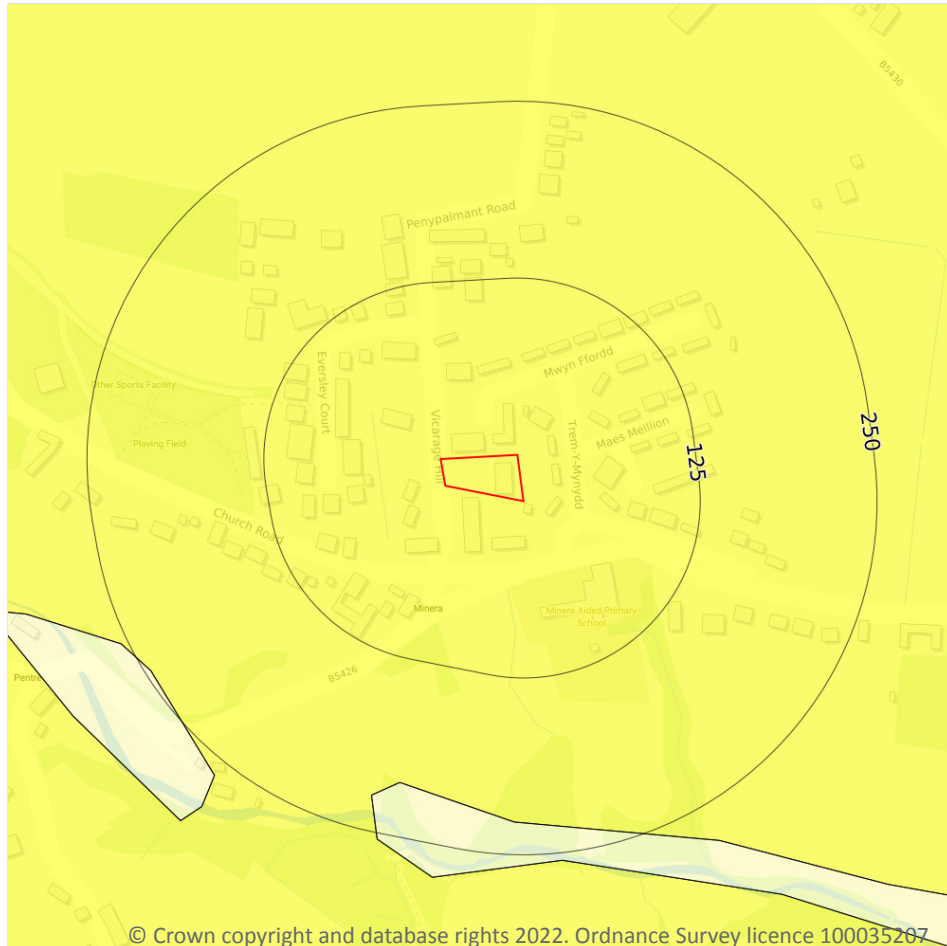
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 87**

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

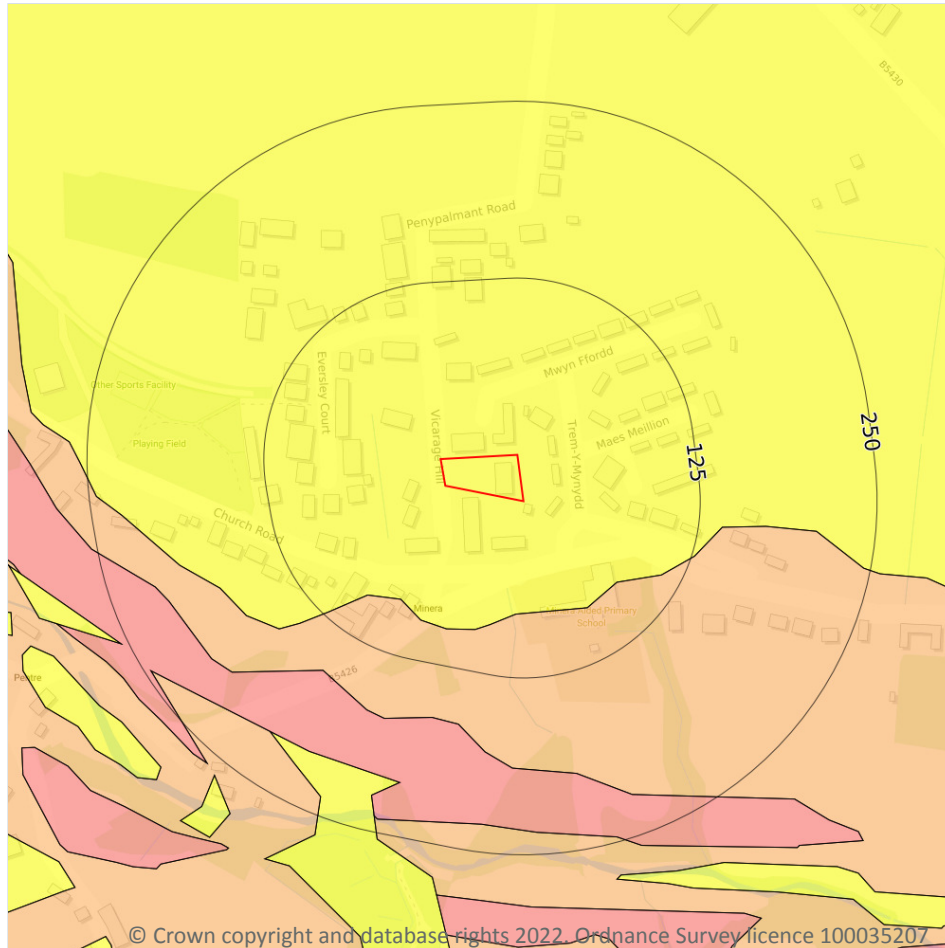
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 88**

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.

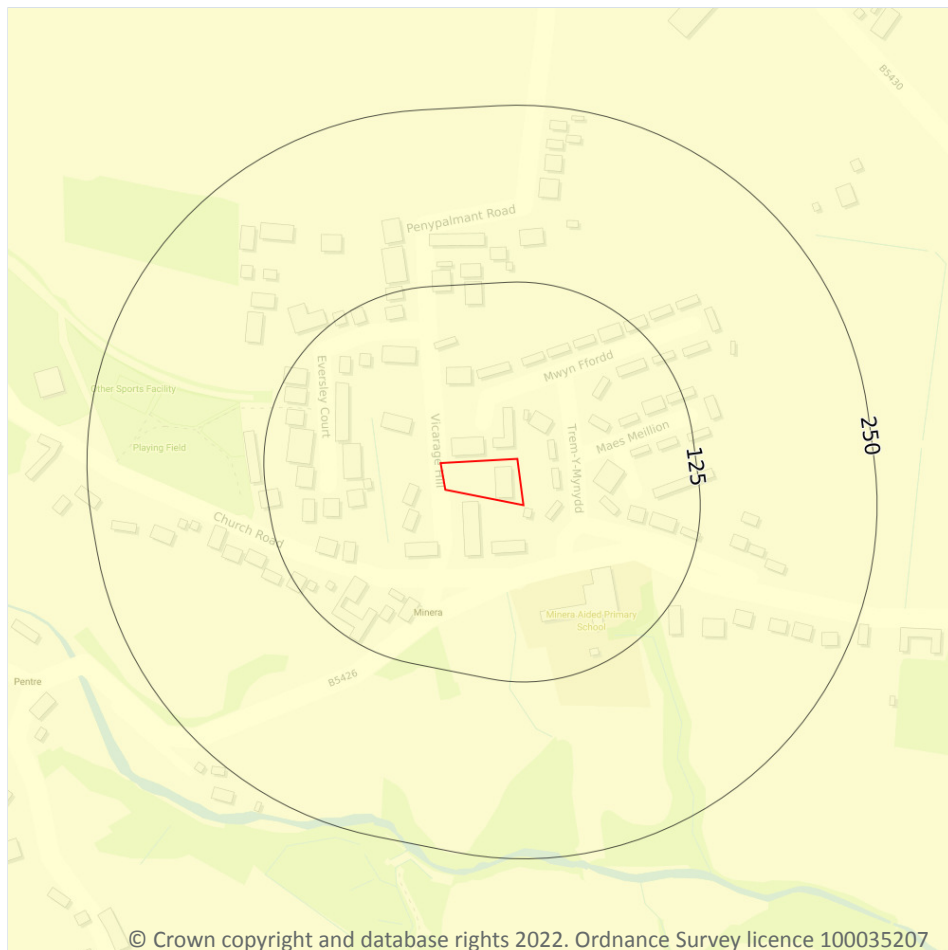
Features are displayed on the Natural ground subsidence - Landslides map on **page 89**

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.

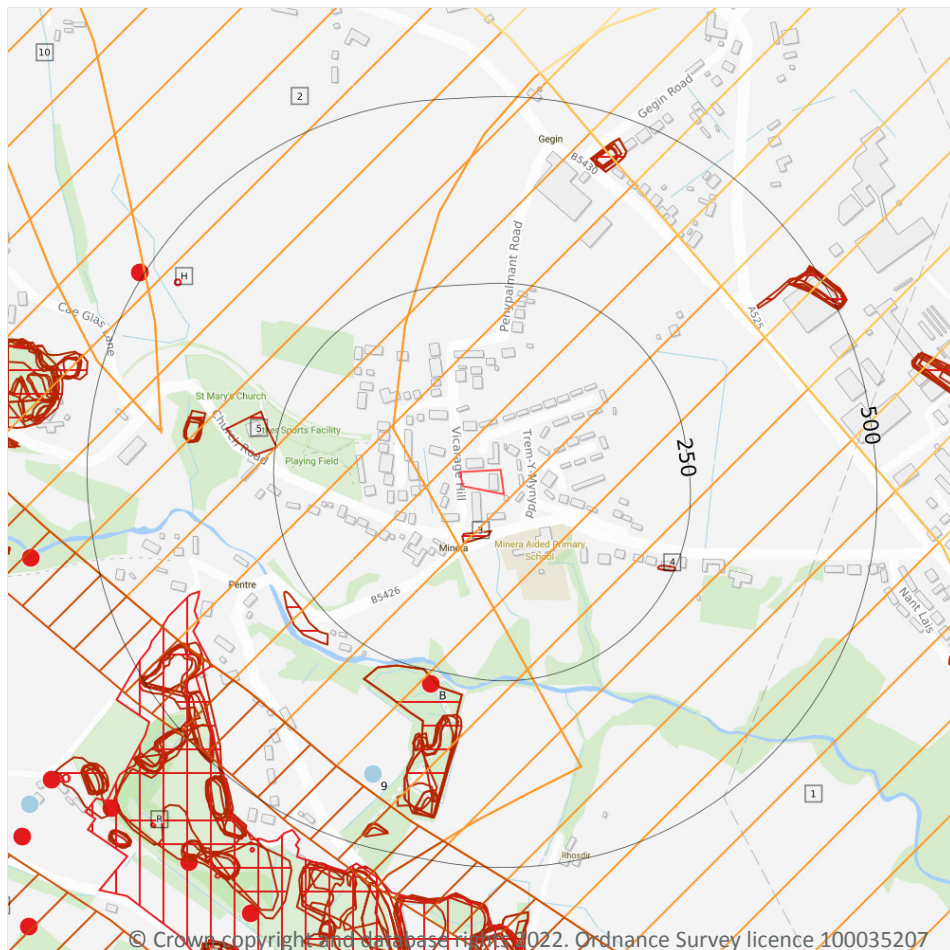
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 90**

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 Stantec UK Ltd.

18.2 BritPits

Records within 500m

2

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 91**

ID	Location	Details	Description
B	267m S	Name: Park Day Level Address: Minera, WREXHAM, Clwyd Commodity: Lead 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
B	276m S	Name: Park Day Level Workings Address: Minera, WREXHAM, Clwyd Commodity: Lead 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

3

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 91**

ID	Location	Land Use	Year of mapping	Mapping scale
3	52m S	Pond	1900	1:10560
4	229m SE	Pond	1872	1:10560
5	248m W	Grave Yard	1872	1:10560

This is data is sourced from Ordnance Survey/Groundsure.



18.4 Underground workings

Records within 1000m

87

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 91**

ID	Location	Land Use	Year of mapping	Mapping scale
D	380m W	Disused Lead Mines	1949	1:10560
H	452m NW	Unspecified Old Shafts	1900	1:10560
H	499m NW	Unspecified Old Shafts	1900	1:10560
H	501m NW	Unspecified Old Shaft	1949	1:10560
H	503m NW	Unspecified Old Shaft	1960	1:10560
D	561m SW	Unspecified Shaft	1872	1:10560
O	582m W	Lead Level	1900	1:10560
R	613m SW	Unspecified Shaft	1872	1:10560
D	614m SW	Unspecified Shaft	1900	1:10560
-	617m W	Unspecified Old Level	1960	1:10560
-	632m W	Unspecified Old Level	1949	1:10560
R	655m SW	Unspecified Shaft	1900	1:10560
-	659m E	Unspecified Old Shaft	1949	1:10560
-	659m E	Unspecified Shaft	1949	1:10560
-	660m W	Unspecified Disused Shaft	1989	1:10560
-	660m W	Unspecified Disused Shaft	1985	1:10000
-	660m W	Unspecified Disused Shaft	1974	1:10000
-	660m E	Unspecified Disused Shaft	1985	1:10000
-	660m E	Unspecified Disused Shaft	1974	1:10000
-	660m E	Unspecified Old Shaft	1960	1:10560
-	662m W	Lead Shaft	1900	1:10560
-	663m E	Unspecified Shaft	1900	1:10560
R	663m SW	Unspecified Shaft	1872	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
-	665m E	Coal Shaft	1872	1:10560
-	668m E	Unspecified Old Shaft	1900	1:10560
-	669m W	Unspecified Shaft	1949	1:10560
-	672m W	Unspecified Shaft	1960	1:10560
-	683m W	Lead Shaft	1872	1:10560
-	700m SE	Unspecified Old Shaft	1949	1:10560
-	701m SE	Unspecified Old Shaft	1960	1:10560
-	703m S	Engine Shaft	1872	1:10560
-	703m SE	Unspecified Old Shafts	1900	1:10560
U	715m SW	Unspecified Disused Shaft	1989	1:10560
U	715m SW	Unspecified Disused Shaft	1985	1:10000
U	715m SW	Unspecified Disused Shaft	1974	1:10000
-	716m SW	Unspecified Old Shaft	1949	1:10560
R	717m SW	Unspecified Old Shaft	1949	1:10560
-	721m SW	Unspecified Disused Shaft	1989	1:10560
-	721m SW	Unspecified Disused Shaft	1985	1:10000
-	721m SW	Unspecified Disused Shaft	1974	1:10000
-	721m SW	Unspecified Old Shaft	1960	1:10560
R	721m SW	Unspecified Old Shaft	1960	1:10560
-	733m S	Unspecified Disused Mine	1989	1:10560
-	733m S	Unspecified Disused Mine	1985	1:10000
-	733m S	Unspecified Disused Mine	1974	1:10000
-	787m W	Unspecified Shafts	1900	1:10560
-	788m S	Unspecified Shaft	1949	1:10560
-	789m SE	Unspecified Old Shafts	1900	1:10560
-	790m S	Unspecified Shaft	1900	1:10560
-	791m E	Unspecified Old Shaft	1949	1:10560
-	793m E	Unspecified Old Shaft	1960	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
-	794m W	Lead Shafts	1872	1:10560
-	797m E	Unspecified Disused Shafts	1985	1:10000
-	797m E	Unspecified Disused Shafts	1974	1:10000
-	801m E	Unspecified Old Shaft	1900	1:10560
-	804m W	Unspecified Old Shaft	1949	1:10560
-	808m W	Unspecified Old Shaft	1960	1:10560
-	818m S	Unspecified Shaft	1872	1:10560
-	828m S	Unspecified Shaft	1960	1:10560
-	839m E	Unspecified Disused Shafts	1985	1:10000
-	839m E	Unspecified Disused Shafts	1974	1:10000
-	843m W	Unspecified Old Shaft	1900	1:10560
-	880m W	Unspecified Shaft	1900	1:10560
-	884m E	Old Colliery	1949	1:10560
-	886m W	Lead Shaft	1872	1:10560
-	887m W	Unspecified Shaft	1949	1:10560
-	890m W	Unspecified Disused Shaft	1989	1:10560
-	890m W	Unspecified Disused Shaft	1985	1:10000
-	890m W	Unspecified Disused Shaft	1974	1:10000
-	890m W	Unspecified Shaft	1960	1:10560
-	907m E	Unspecified Old Shaft	1900	1:10560
-	921m E	Unspecified Old Shaft	1900	1:10560
-	934m W	Unspecified Shaft	1900	1:10560
-	938m W	Unspecified Disused Shafts	1989	1:10560
-	941m W	Unspecified Old Shafts	1949	1:10560
-	943m W	Unspecified Disused Shaft	1985	1:10000
-	943m W	Unspecified Disused Shaft	1974	1:10000
-	943m W	Unspecified Old Shafts	1960	1:10560
-	956m W	Unspecified Shaft	1900	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
-	967m S	Unspecified Shaft	1900	1:10560
-	978m E	Unspecified Old Shafts	1949	1:10560
-	979m E	Unspecified Old Shafts	1960	1:10560
-	984m S	Unspecified Shaft	1872	1:10560
-	987m E	Unspecified Old Shafts	1900	1:10560
-	997m W	Unspecified Shaft	1900	1:10560
-	999m W	Unspecified Disused Shafts	1985	1:10000
-	999m W	Unspecified Disused Shafts	1974	1:10000

This is 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

14

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).

Features are displayed on the Mining, ground workings and natural cavities map on **page 91**

ID	Location	Name	Commodity	Class	Likelihood
1	On site	North Wales (Minera)	Iron Ore (Bedded)\Vein Mineral	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
2	43m SW	North Wales (Minera)	Vein Mineral	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered



ID	Location	Name	Commodity	Class	Likelihood
7	384m NE	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
8	395m SW	Not available	Vein Mineral	D	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
10	405m W	North Wales (Minera)	Iron Ore (Bedded)\Vein Mineral	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
11	472m S	Not available	Vein Mineral\Iron Ore (Bedded)	D	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
12	495m SW	Not available	Vein Mineral	E	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered
13	534m N	Not available	Vein Mineral	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
14	550m S	Not available	Vein Mineral\Iron Ore (Bedded)	E	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered
Q	596m SW	Not available	Vein Mineral\Iron Ore (Bedded)	E	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered
18	749m SW	Not available	Vein Mineral	D	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
-	849m SW	North Wales (Minera)	Vein Mineral	C	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered

ID	Location	Name	Commodity	Class	Likelihood
-	915m N	Not available	Vein Mineral	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
-	931m N	Not available	Vein Mineral	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

14

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.

Features are displayed on the Mining, ground workings and natural cavities map on **page 91**

ID	Location	Mine Address	Mineral	Data source	Publisher
9	404m S	Minera Halvans Plant, Minera, Wrexham	Man made i.e. secret tunnels, air raid shelters	Clwyd and Powys Metal Mines Survey	-
D	615m SW	Minera Lloyds, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-
D	618m SW	Minera Speedwells Shaft, Minera, Wrexham	Lead	Clwyd and Powys Metal Mines Survey	-
-	672m W	Reid's Shaft, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-
-	687m S	Minera Taylor's Shaft, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-
-	695m W	Minera Reids, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-
-	719m SW	Royle's Shaft, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-
R	720m SW	Minera Lloyds, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-



ID	Location	Mine Address	Mineral	Data source	Publisher
-	721m SW	Minera Taylor's Shaft, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-
-	729m SW	Reid's Shaft, Clwyd	-	THE NON FERROUS MINES OF FLINTSHIRE	NORTHERN CAVERN AND MINE RESEARCH SOC.
-	737m S	Taylor's Shaft, Clwyd	-	THE NON FERROUS MINES OF FLINTSHIRE	NORTHERN CAVERN AND MINE RESEARCH SOC.
-	825m S	Minera Roy's Shaft, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-
-	875m S	Roy's Shaft, Clwyd	-	THE NON FERROUS MINES OF FLINTSHIRE	NORTHERN CAVERN AND MINE RESEARCH SOC.
-	972m S	Minera Meadows Shaft, Minera, Wrexham	-	Clwyd and Powys Metal Mines Survey	-

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	1
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Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

Location	Details
On site	In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk .

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
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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 Groundsure.

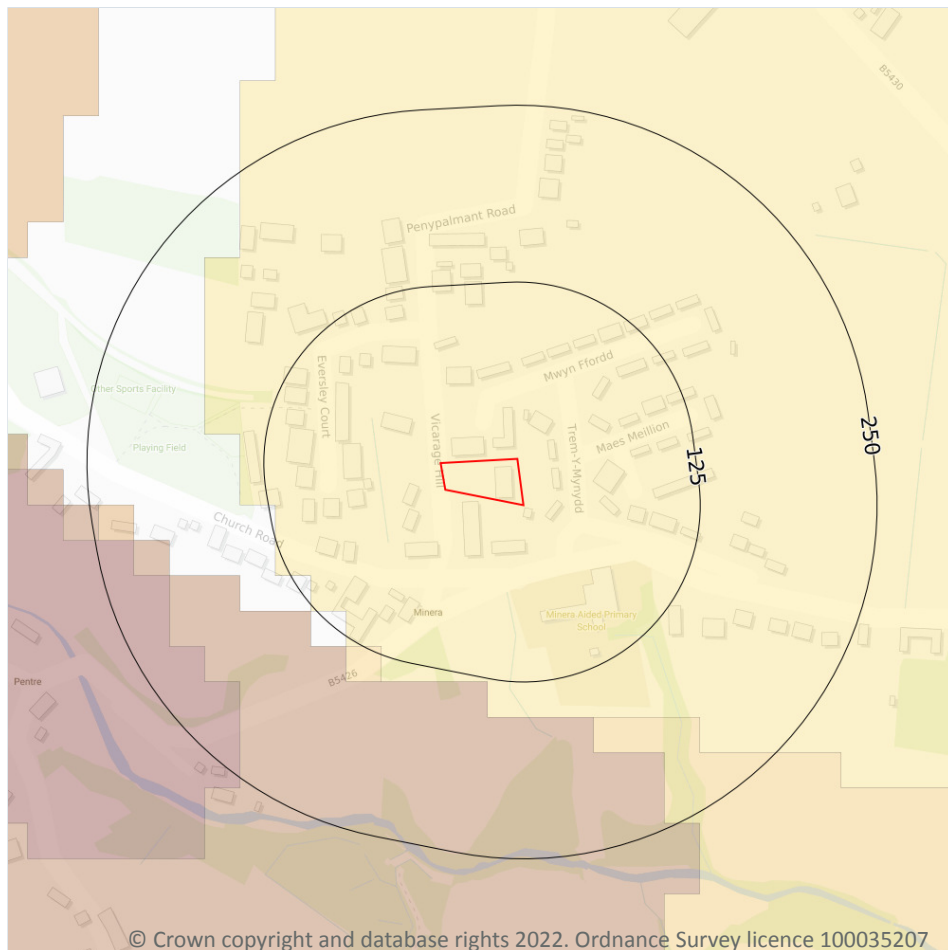
18.13 Clay mining

Records on site	0
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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 101**

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 1% and 3%	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	15 mg/kg	No data	>1200 mg/kg	>720 mg/kg	>6.0 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
43m SW	15 mg/kg	No data	>1200 mg/kg	>720 mg/kg	>6.0 mg/kg	60 - 90 mg/kg	15 - 30 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

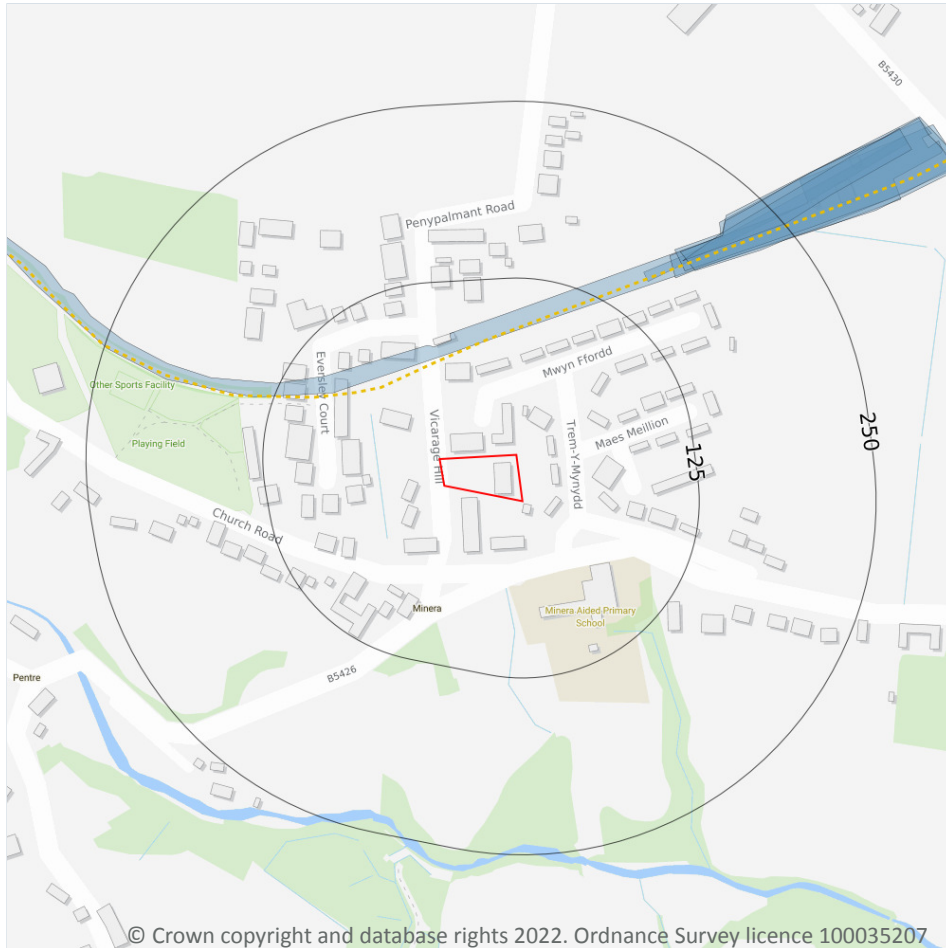
Records within 50m

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

6

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 103**

Location	Land Use	Year of mapping	Mapping scale
68m N	Railway Sidings	1900	10560
154m NE	Mineral Railway Sidings	1962	2500
168m NE	Railway Sidings	1960	10560
176m NE	Mineral Railway Sidings	1938	10560
181m NE	Railway Sidings	1910	10560
181m NE	Railway Sidings	1949	10560

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**1**

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

Features are displayed on the Railway infrastructure and projects map on **page 103**

Location	Description
63m NW	Abandoned

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>.

Terms and conditions

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APPENDIX D - COAL AUTHORITY COAL MINING REPORT

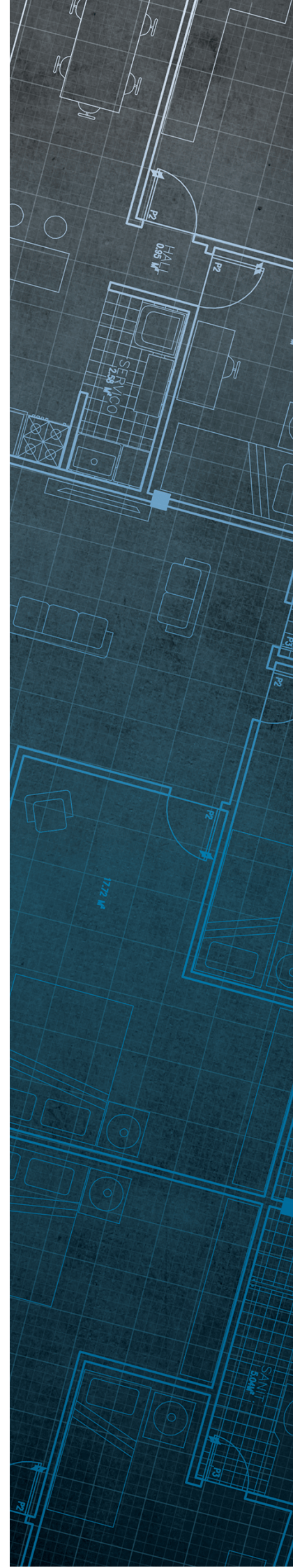


The Coal
Authority

Consultants Coal Mining Report

Vicarage Hill
Minera
Wrexham
LL11 3YL

Date of enquiry:	9 February 2022
Date enquiry received:	9 February 2022
Issue date:	9 February 2022
Our reference:	51002964852001
Your reference:	2398AB



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

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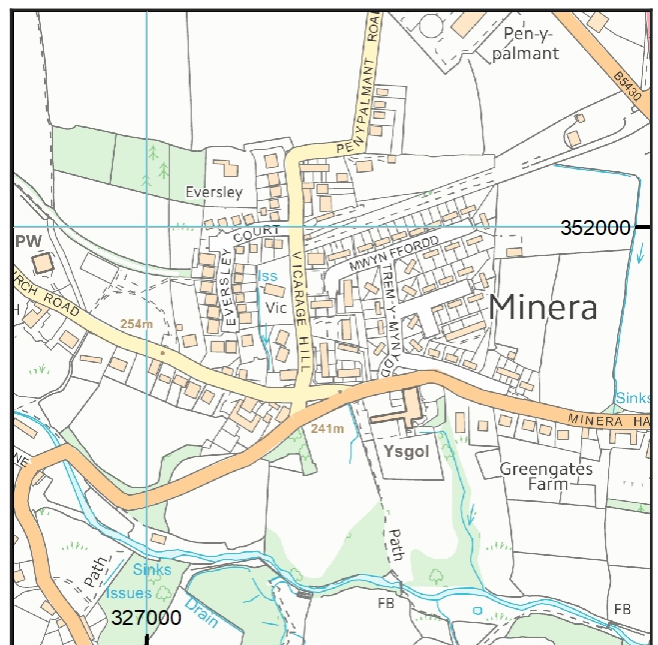
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 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

No past mining recorded.

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

None available.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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APPENDIX E - REGULATOR PROVIDED INFORMATION

APPENDIX F - DEFINITIONS OF TERMS USED IN QUALITATIVE AND QUANTITATIVE RISK ASSESSMENTS

CIRIA C552 Terminology

For the qualitative and quantitative assessment of risks posed by potential pollutant linkages have been undertaken using the risk matrix adapted from CIRIA C552 and outlined in the table below.

	Category	Definition
Potential severity	Severe	Acute (short term) risk to human health, Major pollution of sensitive controlled waters, ecosystems or habitat. Catastrophic damage to buildings or property or crops.
	Medium	Chronic (Medium / long term) risk to human health Pollution of sensitive controlled waters, ecosystems or species, Significant damage to crops, buildings or structures
	Mild	Easily preventable permanent health effects on humans. Pollution of non-sensitive controlled waters. Minor damage to buildings or structures.
	Minor	Easily preventable non-permanent health effects on humans, or no effects. Minor, low level and localised contamination of on-site soil. Easily repairable damage to buildings or structures.
Probability of risk	High Likelihood	Pollutant linkage may be present, and the risk is almost certain to occur , or there is evidence of harm already occurring.
	Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
	Low Likelihood	Pollutant linkages may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
	Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur are improbable.

		Potential Severity			
		Severe	Medium	Mild	Minor
Probability of risk	High Likelihood	Very high risk	High risk	Moderate risk	Moderate / low risk
	Likely	High risk	Moderate risk	Moderate / low risk	Low risk
	Low Likelihood	Moderate risk	Moderate / low risk	Low risk	Very low risk
	Unlikely	Moderate / low risk	Low risk	very low risk	Very low risk

APPENDIX G - CONTROLLED WATERS RISK ASSESSMENT

CURRENT GUIDANCE FOR CONTROLLED WATERS RISK ASSESSMENT

Regulatory Context

Government policy is based upon a “suitable for use approach,” which is relevant to both the current use of land and also to any proposed future use. When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health, controlled waters or the wider environment given the current use and circumstances of the land. Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

“any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, 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.”

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

“the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter”

Controlled Waters are defined Section 104 of the Water Resources Act 1991. In summary, they comprise relevant territorial waters which extend seaward for three miles from the low-tide limit from which the territorial sea adjacent to England and Wales is measured.

The Environment Agency has powers under Part 7 of The Water Resources Act (1991) to take action to prevent or remedy the pollution of controlled waters, including circumstances where the pollution arises from contamination in the land. This is reinforced in The Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, 2012) which came into force in early April 2012.

Part IIA introduces the concept of a contaminant linkage; where for potential harm to exist there must be a connection between the source of the hazard and the receptor via a pathway. Risk assessment in contaminated land is therefore directed towards identifying the contaminants, pathways and receptors that can provide contaminant linkages. This is known as the contaminant-pathway-receptor link (CPR or contaminant linkage).

Part IIA places contaminated land responsibility as a part of the planning and redevelopment process, rather than Local Authority or Environment Agency directly, except in cases of very high pollution risk or where harm is occurring. In the planning process, guidance is provided by National Planning Policy Framework (NPPF) of March 2012. The NPPF requires that a site which has been developed shall not be capable of being determined “contaminated land” under Part IIA. Therefore, appropriate risk-based investigation is required to identify the contaminant linkages that can then be assessed, and then mitigated using methods that can be agreed with the planners.

Source Protection Zones

Source Protection Zones (SPZs) are defined by the Environment Agency (for England and Wales), SEPA (Scotland) and the Environment and Heritage Service (Northern Ireland) for groundwater sources such as wells, boreholes and springs that are used for public drinking water supply. The zones show the risk of contamination from activities that might cause groundwater pollution in the area. The size and shape of a zone depends upon subsurface conditions, how the groundwater is removed, and other environmental factors.

SPZs are classified into four categories:

- **Zone 1 (Inner protection zone).** Any pollution that can travel to the abstraction point within 50 days from any point within the zone is classified as being inside Zone 1. This applies at and below the groundwater table. This zone also has a minimum 50 m protection radius around the abstraction point. These criteria are designed to protect against the transmission of toxic chemicals and water-borne disease.
- **Zone 2 (Outer protection zone).** The outer zone covers pollution that takes up to 400 days to travel to the abstraction point, or 25% of the total catchment area, whichever area is the largest. This travel time is the minimum period over which the Environment Agency considers that pollutants need to be diluted, reduced in strength or delayed by the time they reach the abstraction point.
- **Zone 3 (Total catchment).** This is the total area needed to support removal of water from the abstraction point, and to support any discharge from this.
- **Zone of special interest.** This may occasionally be defined as a special case. This is usually where local conditions mean that industrial sites and other potential sources of contamination could affect the groundwater source, even though they are outside the normal catchment area.

Groundwater Vulnerability Assessments

From 1 April 2010 The Environment Agency Groundwater Protection Policy began to use aquifer designations which are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems.

The aquifer designation data is based on geological mapping provided by the British Geological Survey. It is updated regularly to reflect their ongoing programme of improvements to these maps. The maps are split into two different types of aquifer designation:

- Superficial (Drift) - permeable unconsolidated (loose) deposits. For example, sands and gravels.
- Bedrock - solid permeable formations e.g. sandstone, chalk and limestone.

The maps display the following aquifer designations:

Table 1. Aquifer Classification ("Geological Classification").

Classification	Definition
Principal Aquifers (Highly Permeable)	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
Secondary A Aquifers	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.
Secondary B Aquifers	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
Secondary Undifferentiated Aquifers	This has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Environment Agency Guidance

The Environment Agency's stance on groundwater resources is:

"to protect and manage groundwater resources for present and future generations in ways that are appropriate for the risks we identify"
(Groundwater Protection: Policy and Practice GP3, 2012).

At present, the legislation and guidance pertaining to the protection of controlled waters in the UK is complex; however, the core objectives seek to enforce the position given above.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document introduced areas of focus for developments such as Source Protection Zones (SPZs) and Groundwater Vulnerability Maps. The Policy was revised in 1998, since which there have been substantial changes in legislation, driven by key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991 as amended by the Water Act 2003. Gaps in the 1998 PPPG that emerged as the result of further legislative changes were addressed in the Environment Agency Policy document Groundwater Protection: Policy and Practice (GP3), Version 1 of November 2012. The three main parts of GP3 were:

- Groundwater principals;
- Position statements and legislation; and
- Technical information.

The Environment Agency has a tiered risk-based approach to drinking water protection as summarised below:

