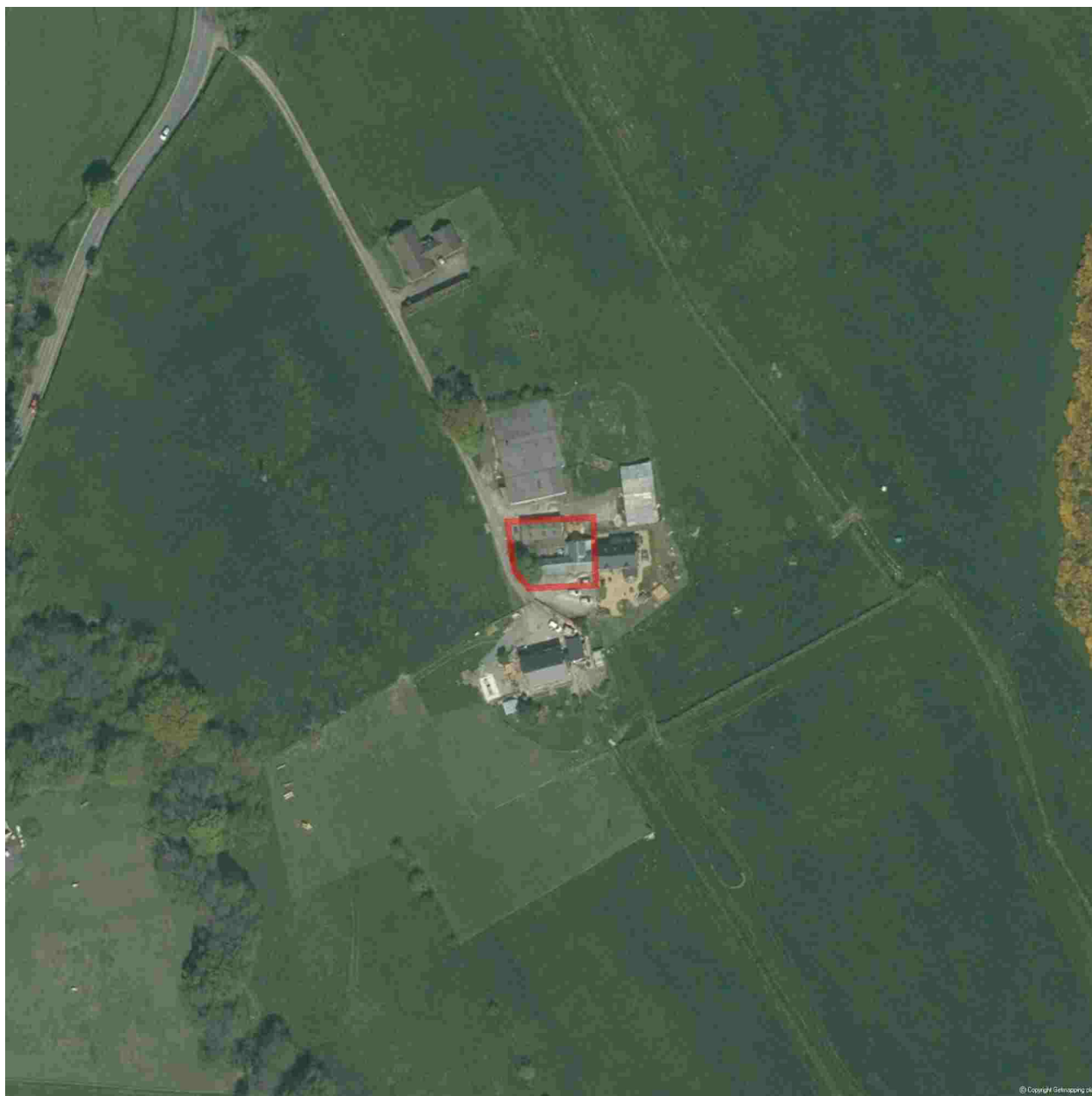


Barn and land at Plas Mostyn Bach, Minera Road, Minera, Wrexham**Report details****Written by:** Alistair Dick MSc CEnv
Reviewed by: Ceri Sansom MSc CEnv MIEMA**Date:** 22 February 2021**Location:** 328035 352776**Report ref:** GSP-2021-1913-1**Area** 0.05 ha**Status:** Final

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Executive Summary

Report objective

The purpose of the commission is to inform the conversion of the property from a redundant farm building to residential dwelling. The proposed development will include the demolition of the attached milking parlour and creation of a garden area.

Site Setting

Current use: Buildings and yard associated with a former dairy farm.

Surroundings: In a rural setting with a farmyard that surrounds the Site and with residential dwellings to the north and south.

History: Part of a farmyard since the earliest mapping in 1972 that was reconfigured into the existing layout by 1993.

Geology: Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation with two inferred coal seams mapped beneath the Site. An area of infilled ground has also been mapped 28m east.

Controlled Waters: Secondary A aquifer within the bedrock. The Afon Gwenfro watercourse has been identified approximately 117m south west down topographic gradient.

Human Health: Future site residents, groundworkers during the proposed development, and residents of the nearby dwellings with private gardens.

Ecology: No designated site identified on or in proximity to the Site.

Site Reconnaissance

A virtual walkover of the Site was carried out on 14 February 2021 using a video call with the client. The Site was being used for the ad hoc storage of materials associated with the former use of the Site and the surrounding farmyard.

Regulatory Consultation

The Council placed land contamination conditions on this planning application to ensure that potentially elevated concentrations of metals in the soils area were considered. These conditions were associated with former lead mining activities across the region.

Conclusions

This preliminary risk assessment considers there to be a **moderate** risk of a potentially active pollutant linked with ground gases migrating onto the Site from underlying coal seams and nearby infilled ground. Further assessment of the ground gas regime would be needed to determine whether ground gas protection measures need to be incorporated into the design and if so to what Characteristic Situation.

With the implementation of recommendations below, it is considered that that low risk could be achieved with respect to the other potential pollutant linkages identified.

NOTE this is not an assessment of ground stability issues in relation to coal seams or associated mining features on the Site. An assessment of this is recommended.

Recommendations

Undertake a ground investigation in line with BS10175 with generic quantitative risk assessment to clarify the risk associated with the gas regime.

However, given the presence of the coal seams beneath the property it is recommended that a coal mining risk assessment is undertaken prior to intrusive works. This assessment may also

provide specialist advice on the assessment of ground gases from coal seams and also may require intrusive works to clarify ground stability risk. It would be most efficient from a cost point of view to amalgamate these investigations.

As is standard practice during construction works, a watching brief should be maintained during excavations. If unexpected contamination is encountered, then works should cease and further assessment undertaken to determine if remedial actions are required.

Imported soils for the garden areas will also require appropriate certification demonstrating that the imported material is free from contamination and is within BS3882 specification.

Basic radon protection measures should be incorporated into the proposed development of the dwelling. These should be designed, installed and verified by appropriately qualified specialists.

This Executive Summary forms part of Groundsure report number GSP-2021-1913-1 is part of a wider document and should not be used in isolation.

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1 Introduction

1.1 Background

Groundsure Ltd was instructed by Katy Davies to complete a Phase 1 Preliminary Risk Assessment on the Site. The report is prepared in accordance with the Groundsure Ltd proposal (ref. GSP-2021-1913P, dated 3 February 2021) and Standard Terms and Conditions of Business for the use of the following entities:

- **Katy Davies**

The study site (known as ‘the Site’) is Barn and land at Plas Mostyn Bach, Minera Road, Minera, Wrexham. A location plan and site layout can be found in Appendix A.

1.2 Purpose of this report

The purpose of the commission is to inform the conversion of the property from a redundant farm building to residential dwelling. The proposed development will include the demolition of the attached milking parlour and installation of garden area. The developer has proposed that the garden area will be grass covered with the existing ground stripped and imported soils used to provide a suitable growing medium.

A planning application to gain consent for the proposed submitted had been conditionally granted on 21 March 2018. The following conditions relate to land contamination matters and state that:

‘8. No part of the development shall commence until a scheme to deal with potential contamination at the site has been submitted to and approved in writing by the Local Planning Authority, The scheme shall include a phased investigation approach to identify the extent of the contamination and any measures required to the remediate the site, including post- development monitoring. Alternatively, gas protection measures should be installed in all new buildings. A methodology of these works (including specification details, design plans, installation, inspection and validation details etc.) should be submitted in writing to the Council for approval prior to any works.

9. Each part of the site subject to remediation under the scheme(s) approved as part of condition 08 shall not be occupied/used until a Validation Report has been completed in respect of that part of the site and submitted to and approved in writing by the Local Planning Authority’

1.3 Scope of works

This Phase 1: Preliminary Risk Assessment comprises a review of readily available environmental, historical and planning records, any additional data supplied by the client and a site reconnaissance (undertaken remotely via video call). Data, where copyright permits, is presented within the appendices of the report.

The risk assessment was based on a qualitative assessment of the Contaminant – Pathway – Receptor linkages that may exist at the Site because of past activities, in accordance with the Environment Agency’s ‘Land Contamination, Risk Management’ (LCRM, 2019)¹ and BS10175:2011+A2:2017 Investigation of Potentially Contaminated Sites Code of Practice.

These assessments are associated with the following UK legislation

- Environmental Protection Act 1990;

¹ <https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks>

- The Water Resources Act 1991.

1.4 Data sources

Data sources include:

- Groundsure data reports (refs. GS-7561419 and GS-7561420)
- Site inspection dated 14 February 2021 that was undertaken remotely via video call with the developers;
- Data found on the Local Authority planning website; and
- Information from the Local Authority Contaminated Land team provided by developers.

1.5 Report limitations

All work has been undertaken in accordance with our standard [terms & conditions](#) for a Consultancy Service. It should be noted that liability for any claim in relation to asbestos is excluded.

The report is based on the data sources listed within the report and is not necessarily exhaustive. The report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the identified land uses. Where access is restricted this limits the data obtained, restricting the effectiveness of site characterise of these inaccessible areas. Hazards associated with any other activities are not assessed.

It has been assumed that the conditions on Site at the time of the site reconnaissance are representative of general conditions and operations unless the Site is to be redeveloped and then it has been assumed operations cease. Furthermore, new information, improved practise and changes in legislation may change the conclusions presented here.

The report may only be relied upon by the Client and those with written approval from Groundsure. It may be submitted to regulatory bodies where appropriate. Groundsure will not accept any responsibility for use of the project outside the scope of the report.

1.5.1 Site reconnaissance

In order to minimise risks of spreading and contracting the Coronavirus, an inspection of the Site was undertaken remotely by video call with the client/developer.

Note that the site reconnaissance was non-intrusive and below ground services were not inspected and samples were not taken.

2 Risk Assessment Methodology

2.1 Qualitative Risk Ranking Criteria

An assessment of environmental risk associated with geo-environmental ground conditions is made in respect of the Environmental Protection Act 1990, the Water Resources Act 1991, the Environmental Damage Regulations 2015 and associated legislation, to provide a balanced and considered opinion of the property regarding the intended end use. Where applicable, recommendations are made in respect of further actions considered to be appropriate.

The report discusses the potential commercial implications of the identified risks with reference to the following risk assessment definitions (based on CIRIA C552):

2.1.1 Consequence

This is based on an assessment of the most likely outcome. All assessments have a degree of uncertainty.

Minor: *Site considered suitable for present use and environmental setting. Contamination may be present but unlikely to have an unacceptable impact on key targets. No action needed while the Site remains in present use.*

- No permanent health effects
- Easily repairable damage to buildings

Mild Risk: *Site is considered suitable for present use and environmental setting. Contamination may be present but unlikely to have an unacceptable impact on key targets. Action unlikely to be needed in present use.*

- Pollution of non-sensitive water resources
- Minor changes to crops, buildings, structures and services

Medium Risk: *Site may not be suitable for present use or environmental setting. Contamination may be present, and likely to have unacceptable impact on key targets. Action may be needed in the medium term.*

- Chronic damage to human health
- Pollution of controlled waters
- Significant change in ecosystem
- Minor repairable damage to property

Severe Risk: *Site probably or certainly unsuitable for present use or environmental setting. Contamination probably or certainly present and likely to have an unacceptable impact on key targets. Urgent action needed.*

- Short term (acute) risk to human health likely to result in significant harm
- Short term (acute) risk to a sensitive water resource
- Significant short-term risk to an ecosystem or organism forming part of an ecosystem
- Catastrophic damage to property

2.1.2 Likelihood

High Likelihood: There is a pollution linkage and an event either appears very likely in the short term or almost inevitable in the long term, or there is evidence at the receptor of harm or pollution.

Likely: There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.

Low Likelihood: There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place, and is less likely in the shorter term.

Unlikely: There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

Risk Table

Likelihood	Consequence (hazard-pathway-target)			
	Severe	Medium	Mild	Minor
High	High	High	Moderate-High	Moderate
Likely	High	Moderate-High	Moderate	Low-Moderate
Low	Moderate-High	Moderate	Low-Moderate	Low
Unlikely	Moderate	Low-Moderate	Low	Low

3 Site Setting & Description

Site Location	425m north of the northern extent of the village of Coedpoeth	
Current use	A disused former dairy farmyard with barn and milking parlour. Milking at the Site was understood to have ceased about 10-11 years ago.	
Proposed use	Residential dwelling with a garden. The proposed layout shown in Appendix F.	
Access/ Security	Open access is possible from Minera Road, 175m north west of the Site via an access road.	
Buildings	The former single storey barn building across the south of the Site was of traditional stone construction. Two further buildings of building block construction comprised the former milking parlour in the west and another barn in the north west. Corrugated cement sheeting walls were present on the barn in the north west and Groundsure was advised that asbestos containing materials were known to be present by the developer.	
Topography	The Site and the areas were generally flat, though ground levels sloped down across the field to the west. Groundsure was advised that the ground level would need to be reduced slightly around the tree in the south west as part of the proposed development.	
External areas	The area to the south of the building was covered in concrete that was worn but in reasonable order. A vegetated area was situated to the west of the building with a tree south in the west corner of the Site that Groundsure understands will be removed as part of the proposed development. The yard area in the north east was covered with overgrown vegetation and may have been covered with compacted earth or hardcore when operational. However, some hard areas were observed indicating that there may be some parts of extremely worn concrete.	
Surface water features	No surface water features were identified on the Site. The closest surface water course is the Afon Gwenfro 117m south west.	
Site drainage	Pipework was visible taking both rainwater from the buildings underground. Limited other drainage features were observed.	
Services	The Site was connected to the mains electricity though the status of the connection to the water network was not known. The proposed development includes the connection water treatment plant/septic tanks to the adjacent farmyard.	
Surroundings	North	Existing farm buildings used for storage and to keep cows in the winter.
	East	Residential house with fields beyond.

	South	Yard area with a residential dwelling and fields beyond.
	West	Fields used for grazing.

Site location plans and a representation of the key site features are presented in Appendix A. Photographs taken during the recent site reconnaissance are shown in Appendix B.

4 Environmental Setting

4.1 Geology

4.1.1 Regional

The anticipated regional geological succession based on 1:10,000 and 1:50,000 scale British Geological Survey (BGS) mapping presented in the Groundsure Insight and summarised in the table below.

Geological Unit	Description*	Comment
Artificial deposits		
Infilled Ground	Variable composition	Mapped at the surface 28m south east.
Superficial		
Till	Diamicton	Mapped at the surface 45m south west.
Bedrock		
Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated)	Mudstone, siltstone and sandstone	Bolsovia Sub-age - Langsettian Sub-age
Notes: * Description is based on information within the BGS Lexicon of Named Rock Units and the Groundsure Insight		

4.1.2 Bedrock faults and other linear features

Linear features mapped to cross the Site in a north-south orientation include two inferred coal seams and a fossil horizon (marine band).

4.1.3 Natural Ground Subsidence

The following table summarises the maximum assessed hazard by the BGS of natural subsidence recorded within 50m of the Site.

Geotechnical Hazards	Maximum Hazard Rating
Shrink-Swell	Very low
Running Sands	Negligible
Compressible deposits	Negligible
Collapsible deposits	Very low
Landslides	Low

Ground dissolution of soluble rocks	Negligible
-------------------------------------	------------

4.1.4 Mining, ground workings and natural cavities

The Site has been identified within a coal mining area as defined by the Coal Authority.

The Site lies within an area which may have been localised small scale underground mining of iron ore may have occurred.

The closest recorded entry in the BritPits database was the Pentresaeson Halt, 422m north west. This ceased working is recorded as being wholly underground with access by shaft, adit or drift.

The closest mapped features to indicate the presence of underground workings are unspecified old shafts 402m north west in 1900.

4.1.5 Radon

The Site has been identified within a Radon Affected Area, with between 5% and 10% of properties estimated to be affected and basic radon protection measures are required.

4.1.6 BGS Estimated Background Soil Chemistry

The table below shows the likely background concentrations of selected harmful elements in the topsoil estimated by the BGS on the Site.

Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
15	300-600	240-360	1.8	60-90	15

Note: All values in mg/kg

4.2 Controlled Waters

4.2.1 Hydrogeology

Groundsure environmental data may be viewed in Appendix C.

Superficial Aquifer	Secondary Undifferentiated (mapped 41m south west): In general these layers have previously been designated as both minor and non-aquifers in different locations due to the variable characteristics of the rock type.
Bedrock Aquifer	Secondary A: Permeable layers capable of supporting water supplies on a local rather than strategic scale and in some cases forming an important source of base flow to rivers.
Groundwater Vulnerability - Superficial	Vulnerability not specified. Thickness - 3-10m
Groundwater Vulnerability - Bedrock	Medium - Intermediate between high and low vulnerability.
Groundwater Abstractions	Two groundwater abstraction licence entries have been identified within 2,000m of the Site. The entries are for historical potable

	abstractions 1,491m and 1,832m to the south west from July 1966 until an unknown end date. *Note <20m³/day Local Authority registered private supply boreholes have not been considered in this assessment.
Source Protection Zones	Not identified to lie within a Source Protection Zone.
Environment Agency WFD Classification	Groundwater body – Dee Carboniferous Coal Measures Overall rating – Poor
Groundwater level and flow	No groundwater level information was available at the time of writing but locally groundwater is anticipated to flow down topographic gradient to the west.

4.2.2 Hydrology

Nearest Surface Water	The Afon Gwenfro watercourse has been identified approximately 117m south west.
Environment Agency WFD Classification	Water body catchment – Gwenfro Location – 2,309m east Overall Quality - Moderate
Surface Water Abstractions	No surface water abstraction licences have been identified within 250m of the Site.

4.2.3 Flood Risk

The table below summarises the highest risk for each flood type data provided in the Groundsure Insight report.

	On Site	Within 50m
Risk of Flooding from Rivers and Sea (RoFRaS)	None	None
Historical Flood Events	Not identified	Not identified
Flood Defences	Not identified	Not identified
Areas Benefiting from Flood Defences	Not identified	Not identified
Flood Storage Areas	Not identified	Not identified
Flood Zone 2	None	None
Flood Zone 3	None	None
Surface water flooding	Negligible	Negligible
Groundwater flooding	Negligible	Low

4.3 Environmental Designations

No environmental designations are recorded in the Groundsure Insight on or within 250m of the Site.

4.4 Culturally and Visually Sensitive Sites

No visual and cultural designations have been recorded in the Groundsure Insight on or within 250m of the Site.

4.5 Agricultural Designations

The Site and the surrounding area has been classified as Grade 3b (moderate quality) agricultural land.

4.6 Ecological Habitat Designations

No ecological habitat designations have been recorded in the Groundsure Insight on or within 250m of the Site.

5 Historical Setting

5.1 Historical Review

The following table provides an outline of the historical land use both on-Site and in the surrounding areas based (unless otherwise referenced) on mapping and aerial imagery from the Groundsure Insight (Appendix C) and MapInsight (Appendix D).

These are not comprehensive as occasionally transient uses existed between map survey dates.

Date	On Site Features	Off Site Features
1872-1873	The Site comprised part of a farmyard labelled as 'Plas-Mostyn-Bach' with a building in the south, yard across the centre and part of a field in the north.	The Site was situated in a rural setting with the farmyard extending to the south and east, and farmhouse adjacent to the east.
1899-1910	No significant changes identified.	A circular feature was mapped 35m east that was likely a pond. However, as coal seams are mapped at the surface beneath the Site, it could not be completely discounted that this feature was associated with coal mining activities such as a bell pit.
1912	A shelter was erected along the northern elevation of the building.	No significant changes identified.
1938-1960	No significant changes identified.	No significant changes identified.
1961-1964	A unit that adjoined the existing building to the north was developed.	The circular feature to the east was no longer shown in the mapping. The farmyard was also developed to the north with a likely residential property constructed to the south.
1976-1989	No significant changes identified.	No significant changes identified.
1993	The building was extended across the north west.	A tank/hopper was erected 38m north.
2001-2009	No significant changes identified.	The quadrant of the farmyard to the north east in aerial photographs appeared to be for slurry management.
2013-2017	No significant changes identified.	No significant changes identified.

5.2 Underground features and proposed infrastructure

No records of tunnels or proposed infrastructure projects have been recorded within the Groundsure Insight.

5.3 Historical military land

No additional records of military land have been recorded within the Groundsure Insight.

5.4 Unexploded Ordnance

The UK has a history of military activity, including extensive military training sites, bombing during the First World War and sustained strategic bombing during the Second World War. A legacy of this military activity is the incidence of UXO encountered throughout Britain to this day, particularly during construction and redevelopment works. However, no evidence of bomb damages (such as ruins) were identified on post war mapping.

6 Potentially Contaminative Land Use

6.1 Permits, Authorisations, Licences and Records

Groundsure environmental data may be viewed in Appendix C.

6.1.1 On site records

Data held by Groundsure indicates that the Site has not been designated as Contaminated Land under Part 2A of the Environmental Protection Act.

No other records of interest have been identified at the Site.

6.1.2 Off site records

The following records were identified within 250m (unless alternative buffer is noted).

Type	No.	Comments
Current industrial land uses		
Recent industrial land uses	1	A tank 43m north.
Licensed Discharges to controlled waters	2	The entries both recorded 217m west relate to an authorisation to discharge sewages (final/treated effluent) into a tributary of Afon Gwenfro.

7 Site Reconnaissance

Given the nature of the Site and the situation with respect to Covid-19, a virtual walkover of the Site was carried out on 14 February 2021 using a video call with the client.

The general description is provided in Section 3.

A site plan of key features (Figure 3) is included in Appendix A and a photographic record of the site walkover is provided in Appendix B.

7.1 Operational and Environmental Observations

Site Activities	Not operational but used for storage
Materials / Waste Stored	A skip was present on the hardstanding to the south of the buildings that contained general waste materials derived from the clearance of a house such as carpets and mattresses. The building in the south was filled with various materials/waste that included: • Bins, • Piping; • Small containers (less than 30l) including disinfectant and paints; • Timber; • Garden furniture; • A lawn mower and strimmer; and • Other tools. The former milking parlour was filled with waste/materials associated with the former use including plastic containers and barrels, equipment, old tools and equipment, and tarpaulins. The barn in the north west was used to store farming equipment and supplies.
Environmental Management	No formal environmental management system was in operation or required. The Site was being used for the ad hoc storage of tools, waste and other materials associated with the former use of the farmyard.
Environmental observations - surroundings	The field adjacent to the east of the residential dwelling to the east of the Site (and mapped as infilled land in geological mapping) was overgrown and appeared not to have been used for farming.
Additional Matters	Groundsure has not had sight of an Asbestos Register or Management plan for the property and, given the age of premises

[REDACTED] and observations during the site reconnaissance, it is likely that presence of asbestos-containing materials. This has been anecdotally confirmed.

7.2 Regulated Activities

No activities requiring environmental permits were being undertaken at the Site.

8 Regulatory Consultations

8.1 Local Authority Environmental Protection Team

Groundsure was provided with information from the Contaminated Land Officer at Wrexham County Borough Council regarding contaminated land matters at the Site.

The Officer stated that the 'area of Minera, Coedpoeth and Bwlchwgyn have all been historically mined for lead and it has been found through other site investigations, undertaken via the planning process, that elevated levels of lead can be found in areas in close proximity to shafts or processing areas (smelters) but also in other areas of these villages not necessarily close to shafts or smelters, it is thought windblown deposition of lead may have played a part in this. These sites have then required remedial works. Due to the widespread impacts of former lead mining the Contaminated Land Team recommend to the Planning Department that all new development in these areas have our standard contamination conditions imposed to ensure the safe development of these sites.'

It was also added that even if the Site was not used for specific mining activities the Council would still expect some soil sampling to be undertaken and tested for a standard suite for metals. It was added that further analysis would be required if other potential sources of contamination were identified as part of the desk study.

However, it was also noted that 'the method of creating the garden area should be considered by your chosen environmental consultant to determine if it negates the need for soil samples to be taken, this would need to be fully justified (taking account of my comments above) within the desk study and then approved by the Council. Please also note if material, such as top soil, is to be imported to site for the garden area then it needs to be demonstrated that it is suitable for use and submitted to the Council for written approval. For your information please see the attached guidance for the importation of material.'

With the respect to the proposed development, it was recommended that due to historical metal mining in and around the area of Minera resulting in ground contamination of some areas the two planning conditions would be imposed that would require the following:

'Condition 8 requires the developer to undertake a phased site investigation, which consists of a desk study and an intrusive investigation (where soil samples are taken) to determine the nature and extent of any contamination that may be present due to the historical mining. The phased investigation should be undertaken by a suitably qualified third party, such as an environmental consultant, and upon completion must be submitted to the Council for approval. If any contamination is found during the site investigation then the condition also requires a remediation scheme to be submitted to the Council for written approval, this scheme sets out how the contamination is going to be remediated to ensure the safe development of the site.'

Condition 9 is only applicable should contamination be identified and require remediation in accordance with condition 8. Should remedial works be required then condition 9 requires a verification report, again undertaken by a suitably qualified third party, be submitted to the

Council for approval. The verification report provides evidence that the remedial works have been undertaken as set out within the remediation scheme approved under condition 8.'

8.2 Local Authority Planning Section

Groundsure did not consider it necessary to undertake consultations with the Local Authority Planning Department. However, Groundsure searched the planning information available on the Wrexham County Borough Council website based on the postcode of the Site that identified nine entries since April 2005.

The granted applications included proposals to convert redundant farm outbuildings, erection of the double garage, conversion of the garage and residential conversion (that this report relates to).

In the granted application for erection of the porch (P/2009/0022), a note was provided to the applicant with respect to the risks associated with the coal mining at the property. These include potential structural issues and gas emissions.

It was advised that in coal mining areas there is a potential for properties to be affected by mined gases, and this must be considered by the developer. It was stated that gas prevention measures must be adopted during construction where there is such as risk. The investigation through drilling alone could displace underground gases or in certain circumstances may create carbon monoxide where air flush drill is adopted.

Any intrusive activities which intersect, disturb or enter any coal seams, coal mine workings or coal mine entries (shafts and adits) require the prior written permission of the Coal Authority.

No other information related to land contamination matters was found, with the exception of the contaminated land conditions imposed on this proposed development.

8.3 Petroleum Licensing Section

Groundsure did not consider it necessary to undertake consultations with the Petroleum Licensing Department.

8.4 Environment Agency

Groundsure did not consider it necessary to undertake consultations with the Environment Agency.

9 Conceptual Site Model

The qualitative assessment provides a conceptual model based on a source-pathway-receptor pollutant linkage risk assessment as detailed in the Environment Agency's Land Contamination, Risk Management model (LCRM). If one of these elements is missing there can be no significant environmental risk according to the statutory definition of "Contaminated Land" under Part 2A of the Environmental Protection Act 1990. This is a test to demonstrate that no significant harm is occurring.

9.1 Overall Environmental Sensitivity

The sensitivity of a Site is a measure of its potential to be impacted should a contaminant be present.

Receptor	Environmental Sensitivity	Reason
Human Health		
Future Site Users	High	Proposed residential use with garden area.
Surrounding Site Users	Moderate-High	Adjacent residents with properties with gardens.
Construction workers	Moderate	Groundworkers during the proposed development.
Controlled Waters		
Groundwater	Moderate	Mapped as being directly underlain by a Secondary A aquifer with Medium vulnerability.
Surface Water	Low-Moderate	The closest surface watercourse is the Afon Gwenfro is 117m south west, down topographic gradient.
Other		
Ecological	Low	No designated ecological habitats have been recorded but in the rural setting with vegetation and ponds on-site could provide potential habitats for vulnerable species.
Property	Moderate	Existing and proposed subsurface buildings and infrastructure
Agricultural	Low-Moderate	Activities typical of a small holding on-site with fields adjacent fields used for arable purposes.

9.2 Overview of potential current and historical sources of contamination and associated contaminants

The following identified potentially contaminative land uses may be a source of environmental hazard if linking pathways are found to be present.

Activity	Dates	Location	Potential contaminants of concern
Agricultural use	Since at least 1872	Associated farmyard on and surrounding the Site.	Heavy metals, fuel, oils, paints, solvents, inorganic compounds, acids/alkalis, herbicides and pesticides and asbestos.
Infilled ground (possibly associated with working of shallow coal seams)	Unknown	28m south east	Ground gases metals, fuel and oil hydrocarbons, PAHs, pH, VOCs, ammoniacal compounds, asbestos, and other organic and inorganic compounds.
Coal	-	Underlying geology	Ground gases
Radon			
Lead mining	Unknown	Widespread across the region	Metals

9.3 Conceptual Model

Receptor	Pathways	Risk
SOURCE: Former agricultural activities on the Site and infilled ground (possibly associated with working of shallow coal seams).		
Site Users	Dermal contact; Soil ingestion; Dust ingestion/ inhalation	Low
	Migration via permeable geology and groundwater then Dermal contact; Soil ingestion; Dust ingestion/ inhalation	Low
	Migration via permeable geology and groundwater then Inhalation (ground gases)	Moderate
Surrounding Site Users	Migration via permeable geology and groundwater then Dermal contact (water/ soils); Soil ingestion.	Low
Groundwater	Horizontal and vertical migration	Low
Surface Water	Surface water runoff and/or Lateral migration via permeable geology.	Low
Ecology	Surface water runoff and/or Migration via permeable geology and groundwater then Direct uptake then Bioaccumulation	Low
Property	Direct contact (chemical attack) Explosive conditions	Low
Agricultural	Surface water runoff and/or Migration via permeable geology and groundwater then Direct uptake then Bioaccumulation	Low

Receptor	Pathways	Risk
SOURCE: Naturally occurring coal and radon.		
Site Users	Migration via permeable geology then Inhalation and/or Explosion	Moderate
Property	Migration via permeable geology and groundwater then Explosion	Moderate
SOURCE: Regional historical lead mining activities		
Site Users	Migration via wind blowing then Dermal contact (water/ soils); Soil ingestion.	Low

9.4 Justification

Considering the Site has a long standing history of use as the farmyard, the potential for elevated concentrations of chemicals of concern in the underlying soils and groundwater (Secondary A aquifer) cannot be discounted.

Additionally, given the history of lead mining in the region and the potential for the wind blown migration the potential of elevated metals within the shallow soils is possible. Furthermore, BGS background concentration data for the soils at the Site indicated that concentrations of lead were anticipated to be between 300 and 600mg/kg. Such concentrations would be in exceedance of the C4SL generic screening criteria for residential end use with homegrown produce of 200mg/kg.

However, the developer proposes to establish the garden area by importing topsoil and subsoil soil to provide a suitable and safe growing medium. It considered that this would mitigate the risks associated with direct uptake pathways and prevent any unacceptable risks.

The Site has been identified to lie in an Radon Affected Area that would require the use of the Basic Protection measures as part of a development. Given the successful implementation of these measures, it is considered that this would prevent any unacceptable risks associated with the accumulation of the radon within the property.

However, geological mapping indicated that the Site is underlain by two coal seams. Furthermore, the area 28m to the east is underlain by infilled ground. This could have been associated with shallow workings on coal in the past. The naturally occurring coal seams and the infilled ground have both been considered as potential sources of elevated concentrations of ground gases. Whilst it understood that the inclusion of basic gas protection measures could mitigate this risk to a degree, it considered that further assessment is required to confirm the suitability of these measures and the viability of incorporating them within the design of the existing building.

10 Conclusions & Recommendations

10.1 Conclusions

This preliminary risk assessment considers there to be a **moderate** risk of a potentially active pollutant linked with ground gases migrating onto the Site from underlying coal seams and nearby infilled ground. Further assessment of the ground gas regime would be needed to determine whether ground gas protection measures need to be incorporated into the design and if so to what Characteristic Situation.

With the implementation of recommendations below, it is considered that that low risk could be achieved with respect to the other potential pollutant linkages identified.

NOTE this is not an assessment of ground stability issues in relation to coal seams or associated mining features on the Site. An assessment of this is recommended.

10.2 Recommendations

Undertake a ground investigation in line with BS10175 with generic quantitative risk assessment to clarify the risk associated with the gas regime.

However, given the presence of the coal seams beneath the property it is recommended that a coal mining risk assessment is undertaken prior to intrusive works. This assessment may also provide specialist advice on the assessment of ground gases from coal seams and also may require intrusive works to clarify ground stability risk. It would be most efficient from a cost point of view to amalgamate these investigations. Any ground investigation would require approval by the Coal Authority prior to breaking ground.

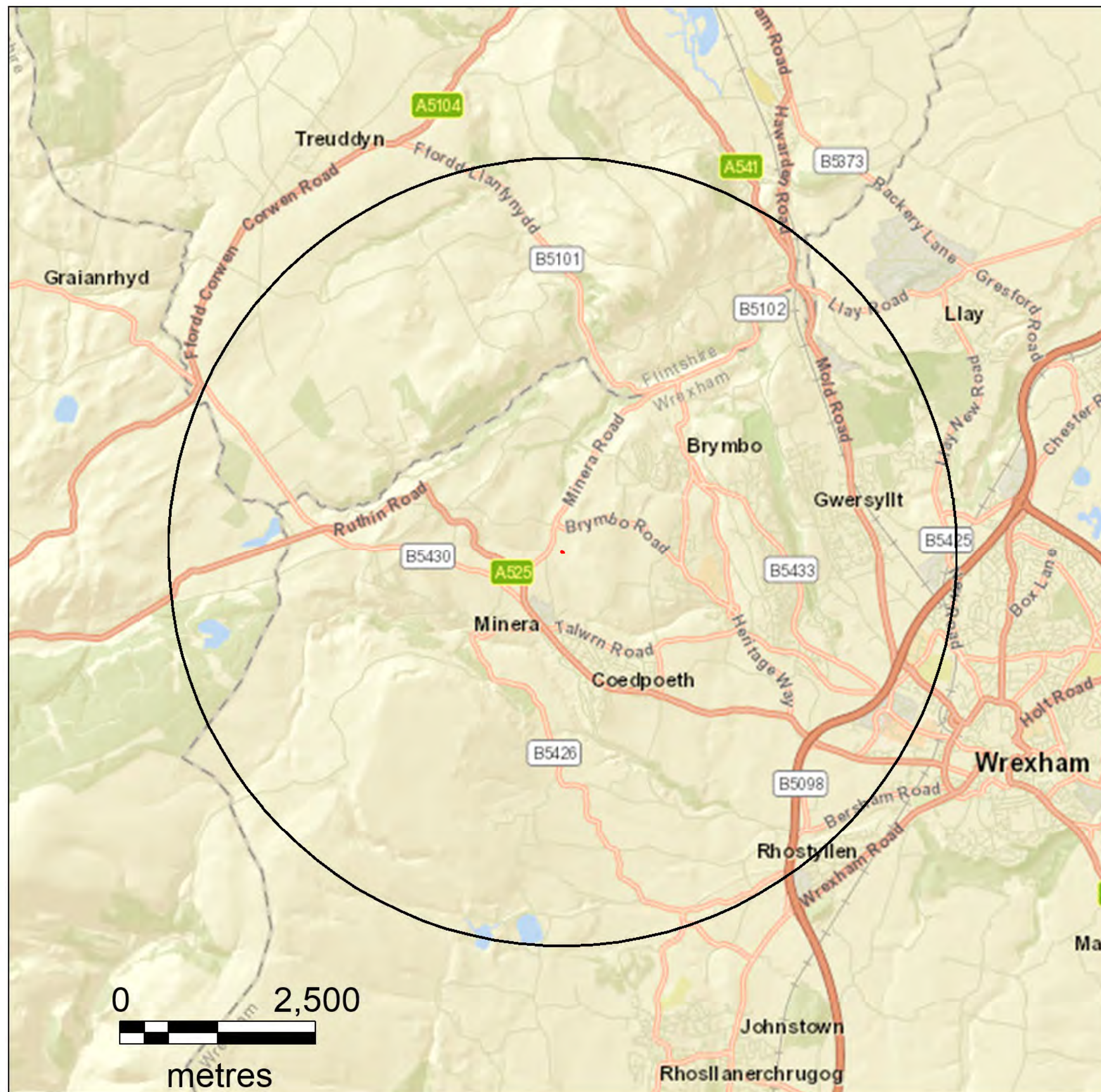
As is standard practice during construction works, a watching brief should be maintained during excavations. If unexpected contamination is encountered, then works should cease and further assessment undertaken to determine if remedial actions are required.

Imported soils for the garden areas will also require appropriate certification demonstrating that the imported material is free from contamination and is within BS3882 specification.

Basic radon protection measures should be incorporated into the proposed development of the dwelling. These should be designed, installed and verified by appropriately qualified specialists.

Appendix A

Figures



Site Address: Barn and land at Plas Mostyn Bach,
Minera Road, Minera,
Wrexham, LL11 3AJ

Project Reference: GSP-2021-1913

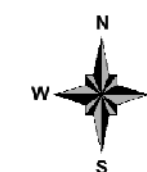
Grid Reference: 328035,352776

Scale at A3: 1:50,000

Figure 1: Small Scale Site Location

Version: A

Date: 23/02/2021



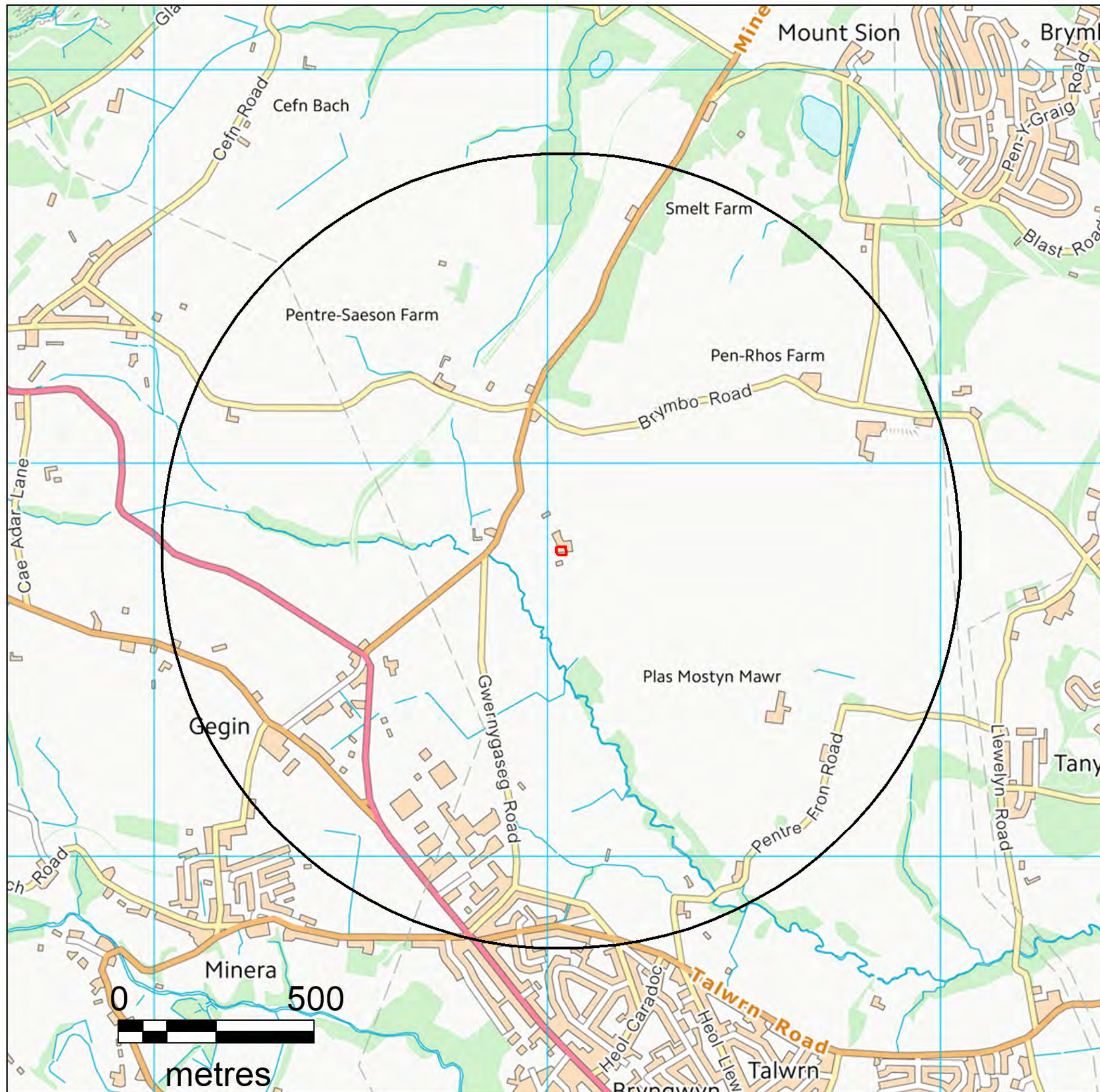
Legend

-  Site Location
-  5km Buffer



Produced By Groundsure
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Sources: Esri, HERE, DeLorme, USGS, Intermap
© OpenStreetMap contributors, and the GIS User Community



Site Address: Barn and land at Plas Mostyn Bach,
Minera Road, Minera,
Wrexham, LL11 3AJ

Project Reference: GSP-2021-1913

Grid Reference: 328035,352776

Scale at A3: 1:10,000

Figure 2: Large Scale Site Location

Version: A

Date: 23/02/2021

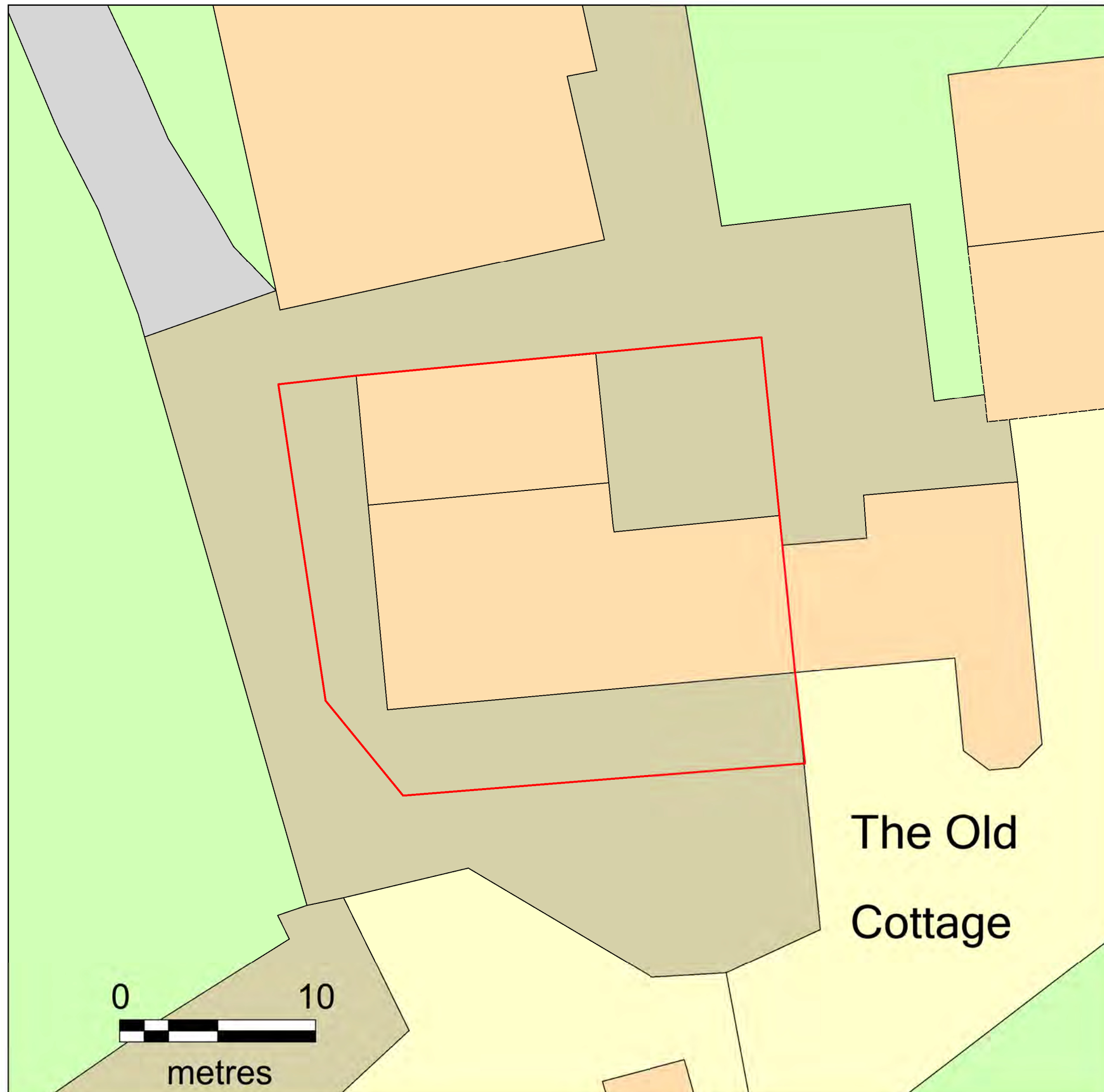


Legend

-  Site Boundary
-  1 Km Buffer
-  Spot Height
-  10m Contours



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W: www.groundsure.com



Site Address: Barn and land at Plas Mostyn Bach,
Minera Road, Minera,
Wrexham, LL11 3AJ

Project Reference: GSP-2021-1913

Grid Reference: 328035,352776

Scale at A3: 1:200

Figure 3: Key Features Plan

Version: A

Date: 23/02/2021



MasterMap Legend

 Building	 Natural Surface
 Manmade Surface	 Road or Track
 Multi Surface	 Structure
 Natural Environment	 Water

Site Legend

	Site boundary
---	---------------



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Appendix B

Photographic Record



Photo 1: View across the south of the Site.



Photo 2: View within the building in the south.



Photo 3: Building in the north west of the Site.



Photo 4: View with the former milking parlour in the west of the Site.



Photo 5: View along the western boundary of the Site.



Photo 6: View along the northern boundary of the Site.



Photo 7: Yard area in the north east of the Site.

Appendix C

Groundsure Insight

PLAS MOSTYN BACH, MINERA ROAD, MINERA, WREXHAM, LL11 3AJ

Order Details

Date: 10/02/2021
Your ref: GSP-2021-1913
Our Ref: GS-7561420
Client: Groundsure

Site Details

Location: 328035 352776
Area: 0.05 ha
Authority: [Wrexham - Wrexham County Borough Council](#)



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Summary of findings

p. 2

Aerial image

p. 8

OS MasterMap site plan

p.12

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
13	1.1	<u>Historical industrial land uses</u>	0	0	0	47	-
15	1.2	<u>Historical tanks</u>	0	1	0	0	-
16	1.3	Historical energy features	0	0	0	0	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	Historical garages	0	0	0	0	-
17	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
18	2.1	<u>Historical industrial land uses</u>	0	0	0	64	-
21	2.2	<u>Historical tanks</u>	0	1	0	0	-
21	2.3	Historical energy features	0	0	0	0	-
21	2.4	Historical petrol stations	0	0	0	0	-
22	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
23	3.1	Active or recent landfill	0	0	0	0	-
23	3.2	Historical landfill (BGS records)	0	0	0	0	-
24	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
24	3.4	<u>Historical landfill (EA/NRW records)</u>	0	0	0	1	-
24	3.5	Historical waste sites	0	0	0	0	-
24	3.6	Licensed waste sites	0	0	0	0	-
25	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
26	4.1	<u>Recent industrial land uses</u>	0	1	0	-	-
27	4.2	Current or recent petrol stations	0	0	0	0	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-



27	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
28	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	2	0	-
29	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
30	4.15	Pollutant release to public sewer	0	0	0	0	-
30	4.16	List 1 Dangerous Substances	0	0	0	0	-
30	4.17	List 2 Dangerous Substances	0	0	0	0	-
30	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
30	4.19	Pollution inventory substances	0	0	0	0	-
31	4.20	Pollution inventory waste transfers	0	0	0	0	-
31	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
32	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
33	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
34	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
35	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
35	5.5	Groundwater vulnerability- local information	None (within 0m)				
37	5.6	<u>Groundwater abstractions</u>	0	0	0	0	2
38	5.7	Surface water abstractions	0	0	0	0	0
38	5.8	<u>Potable abstractions</u>	0	0	0	0	2
39	5.9	Source Protection Zones	0	0	0	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
40	6.1	<u>Water Network (OS MasterMap)</u>	0	0	8	-	-



41	6.2	<u>Surface water features</u>	0	0	5	-	-
41	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
42	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
42	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
43	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
43	7.2	Historical Flood Events	0	0	0	-	-
43	7.3	Flood Defences	0	0	0	-	-
43	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
44	7.5	Flood Storage Areas	0	0	0	-	-
45	7.6	Flood Zone 2	None (within 50m)				
45	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
46	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding					
47	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
48	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	2
49	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
49	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
49	10.4	Special Protection Areas (SPA)	0	0	0	0	0
49	10.5	National Nature Reserves (NNR)	0	0	0	0	0
50	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
50	10.7	<u>Designated Ancient Woodland</u>	0	0	0	2	40
52	10.8	Biosphere Reserves	0	0	0	0	0
52	10.9	Forest Parks	0	0	0	0	0
52	10.10	Marine Conservation Zones	0	0	0	0	0
52	10.11	Green Belt	0	0	0	0	0
52	10.12	Proposed Ramsar sites	0	0	0	0	0



53	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
53	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
53	10.15	Nitrate Sensitive Areas	0	0	0	0	0
53	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
54	10.17	SSSI Impact Risk Zones	0	-	-	-	-
54	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
55	11.1	World Heritage Sites	0	0	0	-	-
55	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
55	11.3	National Parks	0	0	0	-	-
55	11.4	Listed Buildings	0	0	0	-	-
56	11.5	Conservation Areas	0	0	0	-	-
56	11.6	Scheduled Ancient Monuments	0	0	0	-	-
56	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
57	<u>12.1</u>	<u>Agricultural Land Classification</u>	Grade 4 (within 250m)				
58	12.2	Open Access Land	0	0	0	-	-
58	12.3	Tree Felling Licences	0	0	0	-	-
58	12.4	Environmental Stewardship Schemes	0	0	0	-	-
58	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
59	13.1	Priority Habitat Inventory	0	0	0	-	-
59	13.2	Habitat Networks	0	0	0	-	-
59	13.3	Open Mosaic Habitat	0	0	0	-	-
59	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
60	<u>14.1</u>	<u>10k Availability</u>	Identified (within 500m)				
61	<u>14.2</u>	<u>Artificial and made ground (10k)</u>	0	1	0	8	-
63	<u>14.3</u>	<u>Superficial geology (10k)</u>	0	1	0	1	-



64	14.4	Landslip (10k)	0	0	0	0	-
65	14.5	<u>Bedrock geology (10k)</u>	1	3	9	13	-
68	14.6	<u>Bedrock faults and other linear features (10k)</u>	2	2	11	9	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
70	15.1	<u>50k Availability</u>	Identified (within 500m)				
71	15.2	<u>Artificial and made ground (50k)</u>	0	1	0	3	-
72	15.3	Artificial ground permeability (50k)	0	0	-	-	-
73	15.4	<u>Superficial geology (50k)</u>	0	1	0	0	-
74	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
74	15.6	Landslip (50k)	0	0	0	0	-
74	15.7	Landslip permeability (50k)	None (within 50m)				
75	15.8	<u>Bedrock geology (50k)</u>	2	0	9	12	-
78	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
78	15.10	<u>Bedrock faults and other linear features (50k)</u>	1	1	7	5	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
80	16.1	<u>BGS Boreholes</u>	0	8	96	-	-
Page	Section	Natural ground subsidence					
85	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
86	17.2	<u>Running sands</u>	Very low (within 50m)				
88	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
89	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
90	17.5	<u>Landslides</u>	Low (within 50m)				
92	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
93	18.1	Natural cavities	0	0	0	0	-
94	18.2	<u>BritPits</u>	0	0	0	2	-
94	18.3	<u>Surface ground workings</u>	0	0	1	-	-
95	18.4	<u>Underground workings</u>	0	0	0	10	66
98	18.5	Historical Mineral Planning Areas	0	0	0	0	-



98	18.6	<u>Non-coal mining</u>	1	0	0	1	3
99	18.7	Mining cavities	0	0	0	0	0
99	18.8	<u>JPB mining areas</u>	Identified (within 0m)				
99	18.9	<u>Coal mining</u>	Identified (within 0m)				
99	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					
101	19.1	<u>Radon</u>	Between 5% and 10% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
102	20.1	<u>BGS Estimated Background Soil Chemistry</u>	2	5	-	-	-
102	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
103	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
104	21.1	Underground railways (London)	0	0	0	-	-
104	21.2	Underground railways (Non-London)	0	0	0	-	-
104	21.3	Railway tunnels	0	0	0	-	-
104	21.4	Historical railway and tunnel features	0	0	0	-	-
104	21.5	Royal Mail tunnels	0	0	0	-	-
105	21.6	Historical railways	0	0	0	-	-
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 2021. All Rights Reserved.

Capture Date: 07/05/2017

Site Area: 0.05ha



Recent site history - 2013 aerial photograph



Capture Date: 09/06/2013

Site Area: 0.05ha



Recent site history - 2009 aerial photograph



Capture Date: 11/05/2009

Site Area: 0.05ha



Recent site history - 2001 aerial photograph



Capture Date: 28/07/2001

Site Area: 0.05ha



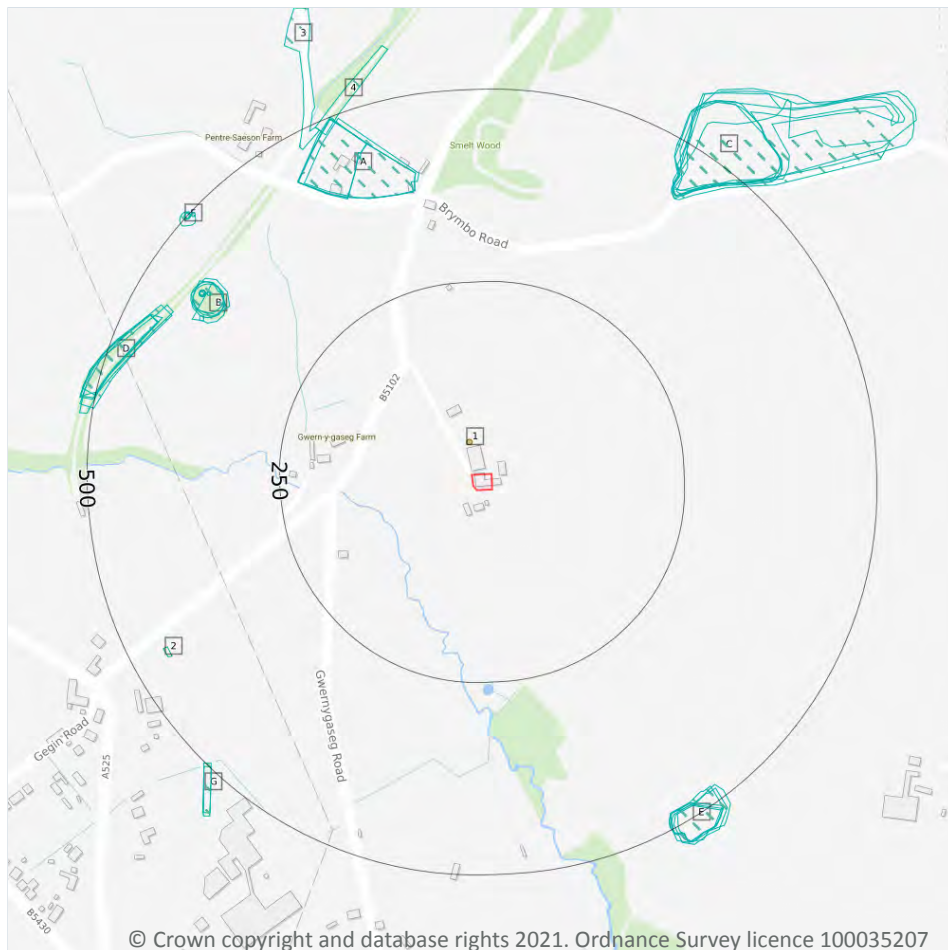
OS MasterMap site plan



Site Area: 0.05ha



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

47

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 13**

ID	Location	Land use	Dates present	Group ID
A	375m N	Unspecified Foundry	1900	809966



ID	Location	Land use	Dates present	Group ID
A	376m N	Unspecified Works	1960 - 1974	883469
A	376m N	Unspecified Works	1985 - 1989	886296
B	383m NW	Unspecified Heap	1872	945249
B	383m NW	Unspecified Heap	1900	899739
B	389m NW	Unspecified Heap	1938 - 1949	981957
B	389m NW	Unspecified Heap	1910	915369
B	393m NW	Unspecified Heap	1960	920707
A	393m NW	Iron Foundry	1949	901753
A	395m NW	Iron Foundry	1910 - 1938	893973
B	402m NW	Unspecified Old Shafts	1900	793183
B	413m NW	Unspecified Old Shafts	1900	793184
B	418m NW	Unspecified Old Shaft	1938	845953
B	419m NW	Unspecified Old Shaft	1949 - 1960	864420
B	419m NW	Unspecified Disused Shaft	1985 - 1989	883757
B	419m NW	Unspecified Disused Shaft	1974	986646
B	420m NW	Unspecified Old Shaft	1910	936971
C	429m NE	Unspecified Heap	1910	876737
C	430m NE	Unspecified Heap	1872	941982
C	433m NE	Unspecified Heap	1949	890158
C	434m NE	Unspecified Ground Workings	1938	892888
C	434m NE	Refuse Heap	1960	966665
C	439m NE	Refuse Heap	1900	913253
C	439m NE	Unspecified Ground Workings	1974	943305
D	441m NW	Cuttings	1900	964914
D	442m NW	Cuttings	1872	961841
C	442m NE	Unspecified Heap	1985 - 1989	907733
2	449m SW	Railway Building	1872	819027
D	451m NW	Cuttings	1960 - 1989	977638



ID	Location	Land use	Dates present	Group ID
D	453m NW	Cuttings	1938	947320
D	453m NW	Cuttings	1949	937550
D	454m NW	Cuttings	1910	975740
3	476m NW	Railway Sidings	1872	794402
E	477m SE	Unspecified Heap	1949	924000
E	480m SE	Refuse Heap	1900	828377
E	480m SE	Unspecified Heap	1938	882746
4	481m NW	Cuttings	1872	795460
E	481m SE	Unspecified Heap	1910	860833
E	483m SE	Unspecified Heap	1872	975185
E	484m SE	Unspecified Heap	1960	935580
F	486m NW	Unspecified Heap	1872	802772
F	493m NW	Unspecified Shafts	1900	808859
G	495m SW	Railway Building	1938	932871
F	496m NW	Unspecified Old Shaft	1938	904555
F	496m NW	Unspecified Old Shaft	1949 - 1960	912407
F	497m NW	Unspecified Old Shaft	1910	963703
G	499m SW	Railway Building	1949 - 1960	948134

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

1

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 13**



ID	Location	Land use	Dates present	Group ID
1	39m N	Unspecified Tank	1993	109436

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.



[illegible]

— Site Outline

Search buffers in metres (m)

 Historical industrial land uses

 Historical tanks

Records within 500m 64

Features are displayed on the Past land use - un-grouped map on **page 18**

ID	Location	Land Use	Date	Group ID
A	375m N	Unspecified Foundry	1900	809966
A	376m N	Unspecified Works	1989	886296
A	376m N	Unspecified Works	1985	886296

ID	Location	Land Use	Date	Group ID
A	376m N	Unspecified Works	1974	883469
A	376m N	Unspecified Works	1960	883469
B	383m NW	Unspecified Heap	1872	945249
B	383m NW	Unspecified Heap	1900	899739
B	389m NW	Unspecified Heap	1949	981957
B	389m NW	Unspecified Heap	1910	915369
B	389m NW	Unspecified Heap	1938	981957
B	389m NW	Unspecified Heap	1938	981957
B	393m NW	Unspecified Heap	1960	920707
A	393m NW	Iron Foundry	1949	901753
A	395m NW	Iron Foundry	1910	893973
A	396m NW	Iron Foundry	1938	893973
B	402m NW	Unspecified Old Shafts	1900	793183
B	413m NW	Unspecified Old Shafts	1900	793184
B	418m NW	Unspecified Old Shaft	1938	845953
B	418m NW	Unspecified Old Shaft	1938	845953
B	419m NW	Unspecified Disused Shaft	1989	883757
B	419m NW	Unspecified Disused Shaft	1985	883757
B	419m NW	Unspecified Disused Shaft	1974	986646
B	419m NW	Unspecified Old Shaft	1960	864420
B	419m NW	Unspecified Old Shaft	1949	864420
B	420m NW	Unspecified Old Shaft	1910	936971
C	429m NE	Unspecified Heap	1910	876737
C	430m NE	Unspecified Heap	1872	941982
C	433m NE	Unspecified Heap	1949	890158
C	434m NE	Refuse Heap	1960	966665
C	434m NE	Unspecified Ground Workings	1938	892888
C	434m NE	Unspecified Ground Workings	1938	892888



ID	Location	Land Use	Date	Group ID
C	439m NE	Refuse Heap	1900	913253
C	439m NE	Unspecified Ground Workings	1974	943305
D	441m NW	Cuttings	1900	964914
D	442m NW	Cuttings	1872	961841
C	442m NE	Unspecified Heap	1989	907733
C	442m NE	Unspecified Heap	1985	907733
2	449m SW	Railway Building	1872	819027
D	451m NW	Cuttings	1989	977638
D	451m NW	Cuttings	1985	977638
D	451m NW	Cuttings	1974	977638
D	451m NW	Cuttings	1960	977638
D	453m NW	Cuttings	1938	947320
D	453m NW	Cuttings	1949	937550
D	454m NW	Cuttings	1910	975740
3	476m NW	Railway Sidings	1872	794402
E	477m SE	Unspecified Heap	1949	924000
E	480m SE	Refuse Heap	1900	828377
E	480m SE	Unspecified Heap	1938	882746
E	480m SE	Unspecified Heap	1938	882746
4	481m NW	Cuttings	1872	795460
E	481m SE	Unspecified Heap	1910	860833
E	483m SE	Unspecified Heap	1872	975185
E	484m SE	Unspecified Heap	1960	935580
F	486m NW	Unspecified Heap	1872	802772
F	493m NW	Unspecified Shafts	1900	808859
G	495m SW	Railway Building	1938	932871
F	496m NW	Unspecified Old Shaft	1938	904555
F	496m NW	Unspecified Old Shaft	1938	904555



ID	Location	Land Use	Date	Group ID
F	496m NW	Unspecified Old Shaft	1949	912407
F	497m NW	Unspecified Old Shaft	1960	912407
F	497m NW	Unspecified Old Shaft	1910	963703
G	499m SW	Railway Building	1960	948134
G	499m SW	Railway Building	1949	948134

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

1

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 18**

ID	Location	Land Use	Date	Group ID
1	39m N	Unspecified Tank	1993	109436

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

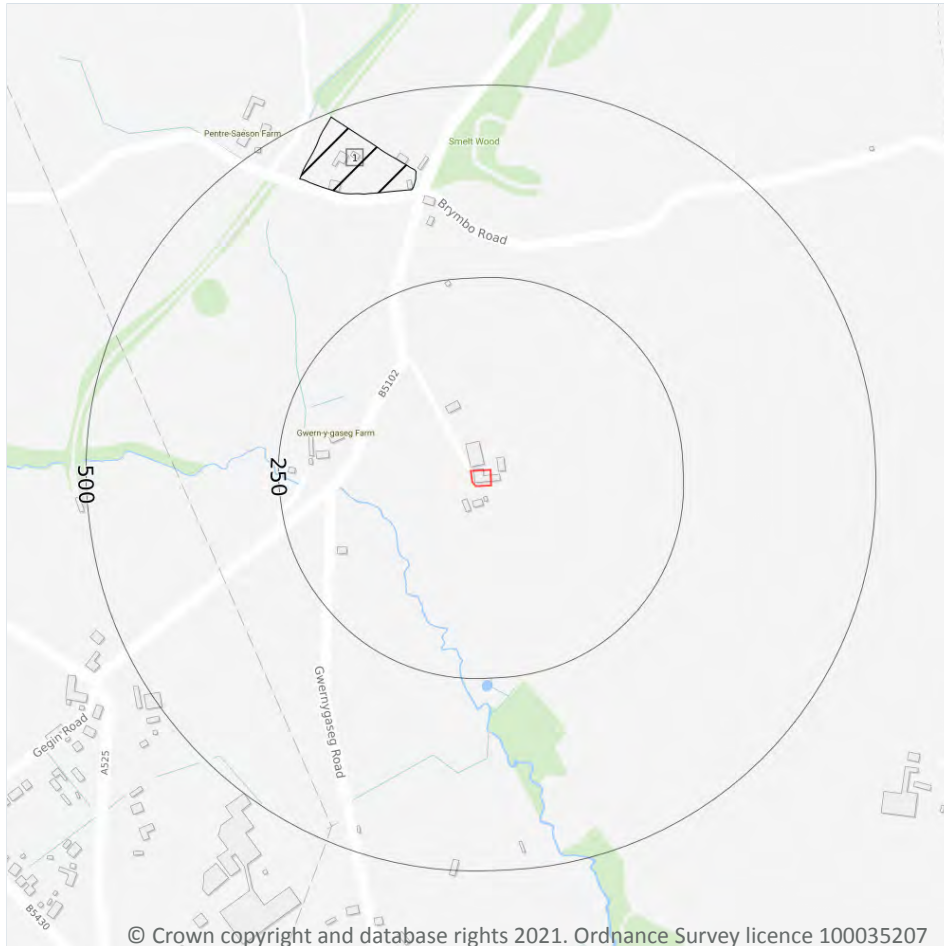
0

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



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

1

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.

Features are displayed on the Waste and landfill map on **page 23**

ID	Location	Details		
1	373m N	Site Address: Pentre Saeson Foundry Licence Holder Address: -	Waste Licence: Yes Site Reference: WMBC L/20 Waste Type: Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 29/09/1977 Licence Surrender: 31/12/1989	Operator: - Licence Holder: Taylor Brothers First Recorded 31/12/1935 Last Recorded: 31/12/1985

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

3.5 Historical waste sites

Records within 500m

0

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

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

3.6 Licensed waste sites

Records within 500m

0

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

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

3.7 Waste exemptions

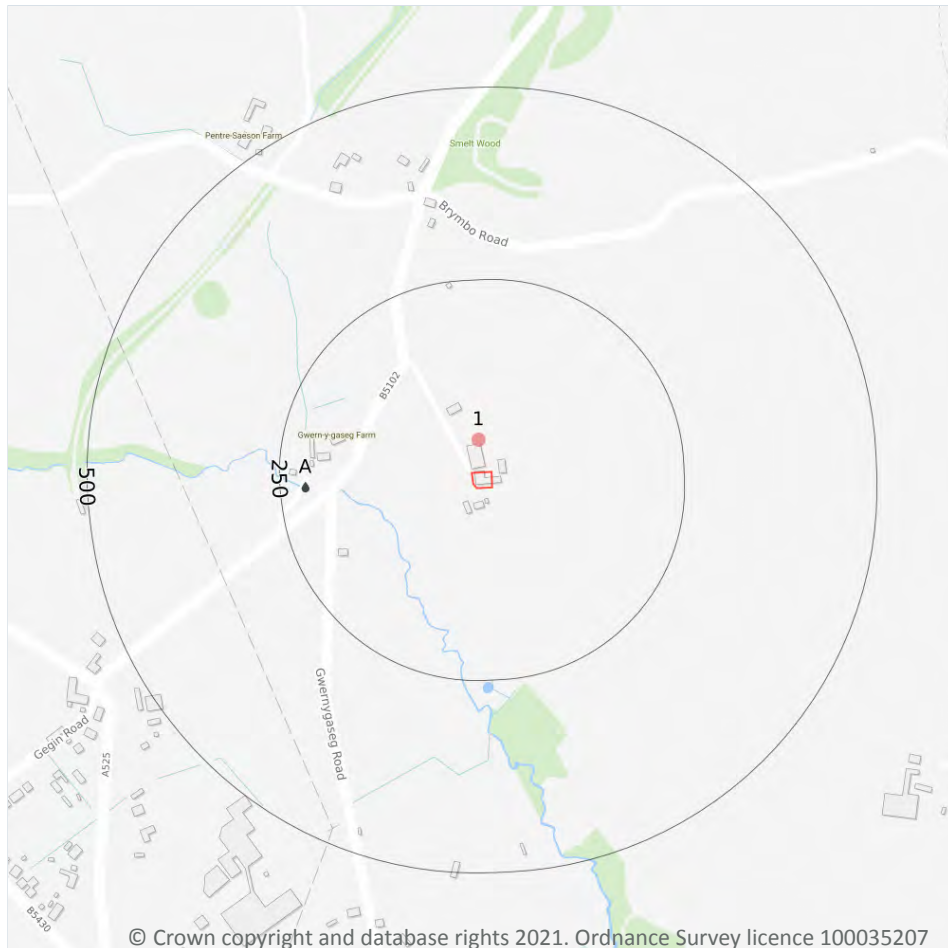
Records within 500m
0

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.

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 Discharges to controlled waters

4.1 Recent industrial land uses

Records within 250m

1

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Company	Address	Activity	Category
1	43m N	Tank	Clwyd, LL11	Tanks (Generic)	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**0**

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

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m

2

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 26**

ID	Location	Address	Details	
A	217m W	BARN A & B, GWERN Y GASEG FARM, MINERA ROAD, MINERA, WREXHAM, CLWYD, LL11 3AJ	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD005307 Permit Version: 1 Receiving Water: TRIBUTARY OF AFON GWENFRO	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY Issue date: 26/11/2008 Effective Date: 26/11/2008 Revocation Date: -
A	217m W	BARN A & B, GWERN Y GASEG FARM, MINERA ROAD, MINERA, WREXHAM, CLWYD, LL11 3AJ	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD005307 Permit Version: 1 Receiving Water: TRIBUTARY OF AFON GWENFRO	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY Issue date: 26/11/2008 Effective Date: 26/11/2008 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**0**

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

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

4.19 Pollution inventory substances

Records within 500m**0**

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

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

4.20 Pollution inventory waste transfers

Records within 500m**0**

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

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

4.21 Pollution inventory radioactive waste

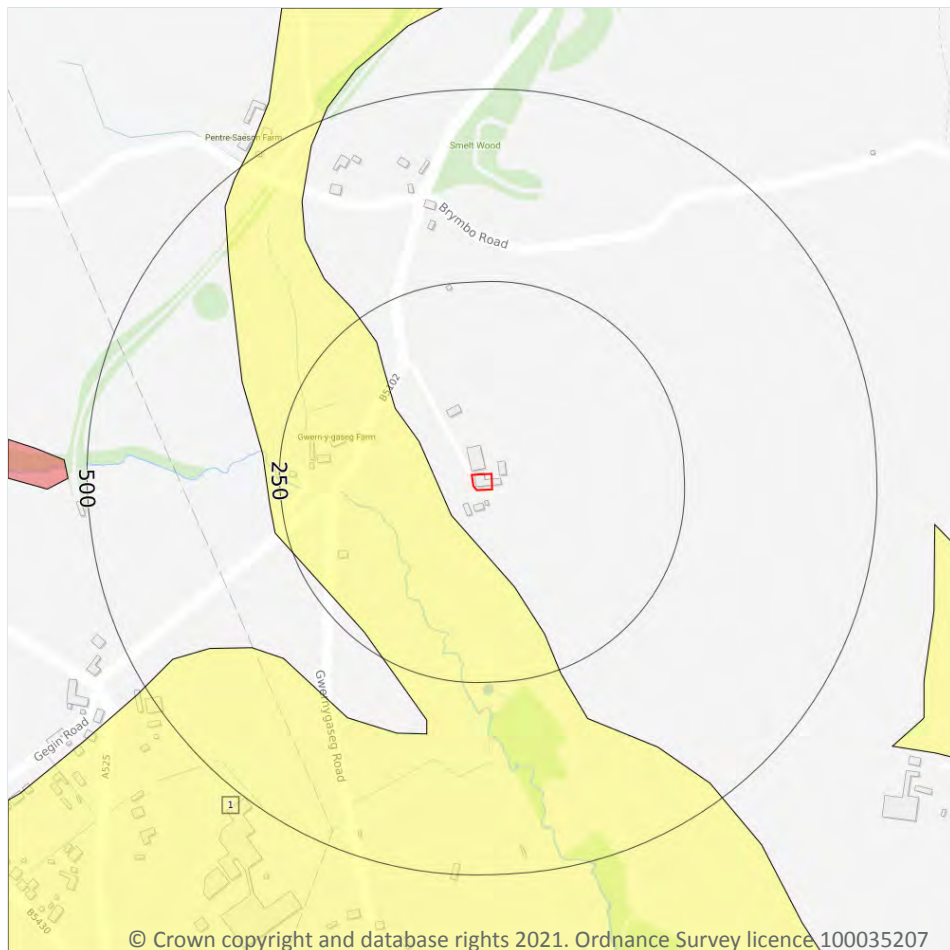
Records within 500m**0**

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

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



5 Hydrogeology - Superficial aquifer



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

5.1 Superficial aquifer

Records within 500m

1

Aquifer status of groundwater held within superficial geology.

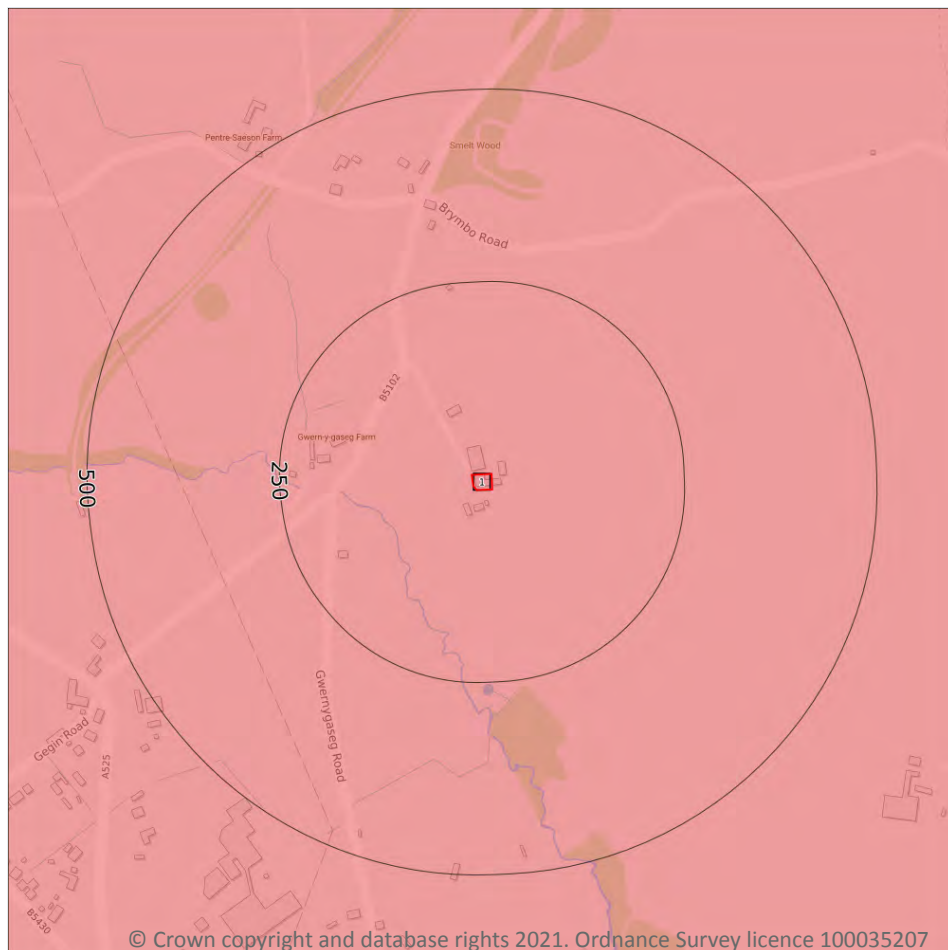
Features are displayed on the Hydrogeology map on **page 32**

ID	Location	Designation	Description
1	41m 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

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

1

Aquifer status of groundwater held within bedrock geology.

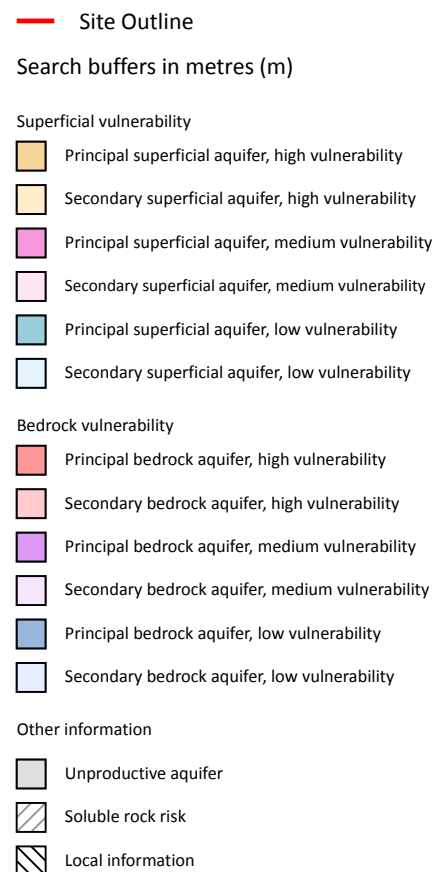
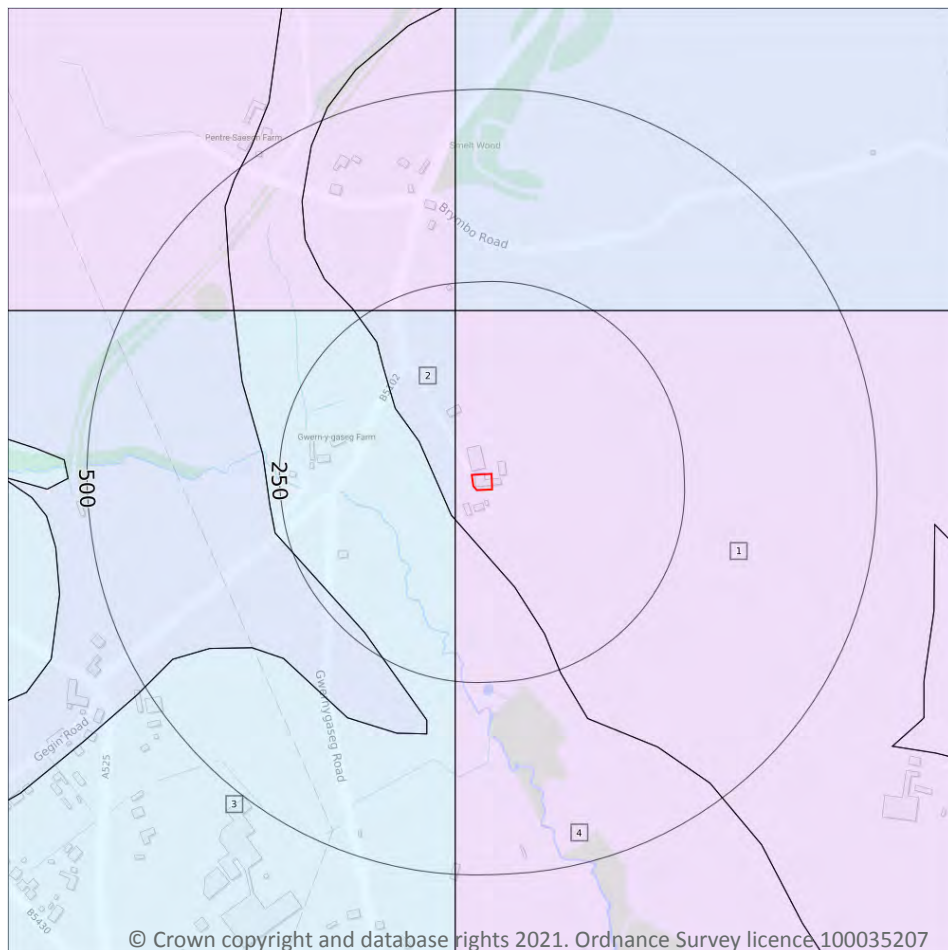
Features are displayed on the Bedrock aquifer map on **page 33**

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

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



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

4

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 34**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures
2	21m W	Summary Classification: Secondary bedrock aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
3	41m SW	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
4	47m SW	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site

0

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

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

5.5 Groundwater vulnerability- local information

Records on site

0

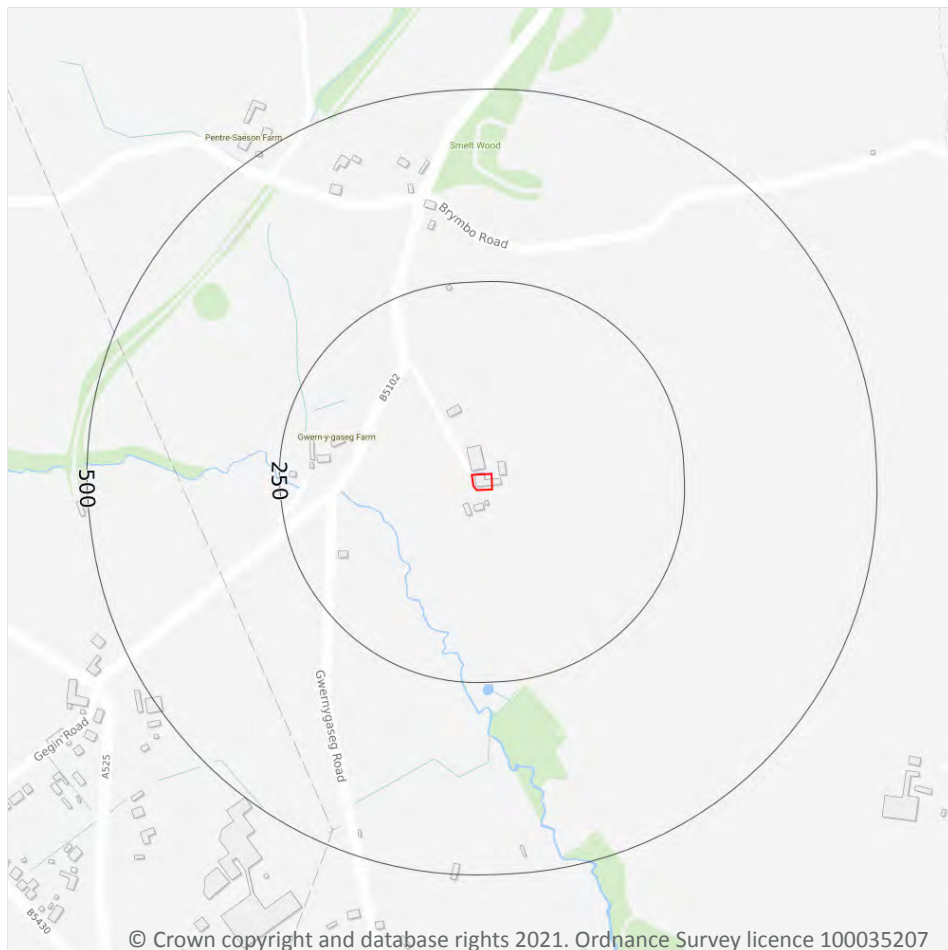
This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506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



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



Abstractions and Source Protection Zones



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

5.6 Groundwater abstractions

Records within 2000m

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 37**

ID	Location	Details	
-	1491m 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: -
-	1832m 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

0

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.

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

5.8 Potable abstractions

Records within 2000m

2

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 37**

ID	Location	Details	
-	1491m 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: -
-	1832m 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.

ID	Location	Type of water feature	Ground level	Permanence	Name
B	172m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Afon Gwenfro
B	181m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Gwenfro
B	184m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	184m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Afon Gwenfro
B	190m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	221m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	228m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

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 40**

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 40**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	On site	River WB catchment	Gwenfro	GB111067051730	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 40**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	2309m E	River	Gwenfro	GB111067051730	Moderate	Fail	Good	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 40**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	On site	Dee Carboniferous Coal Measures	GB41102G204800	Poor	Poor	Good	2016

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

7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

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

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

7.2 Historical Flood Events

Records within 250m

0

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

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

7.3 Flood Defences

Records within 250m

0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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



7.5 Flood Storage Areas

Records within 250m

0

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

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

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

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

7.7 Flood Zone 3

Records within 50m

0

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

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



8 Surface water flooding

8.1 Surface water flooding

Highest risk on site

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.

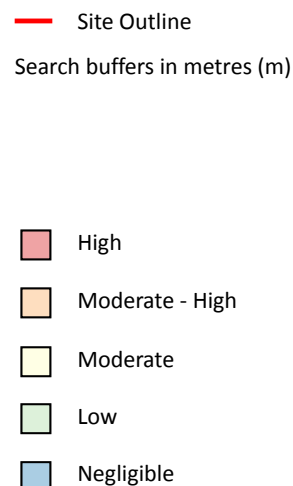
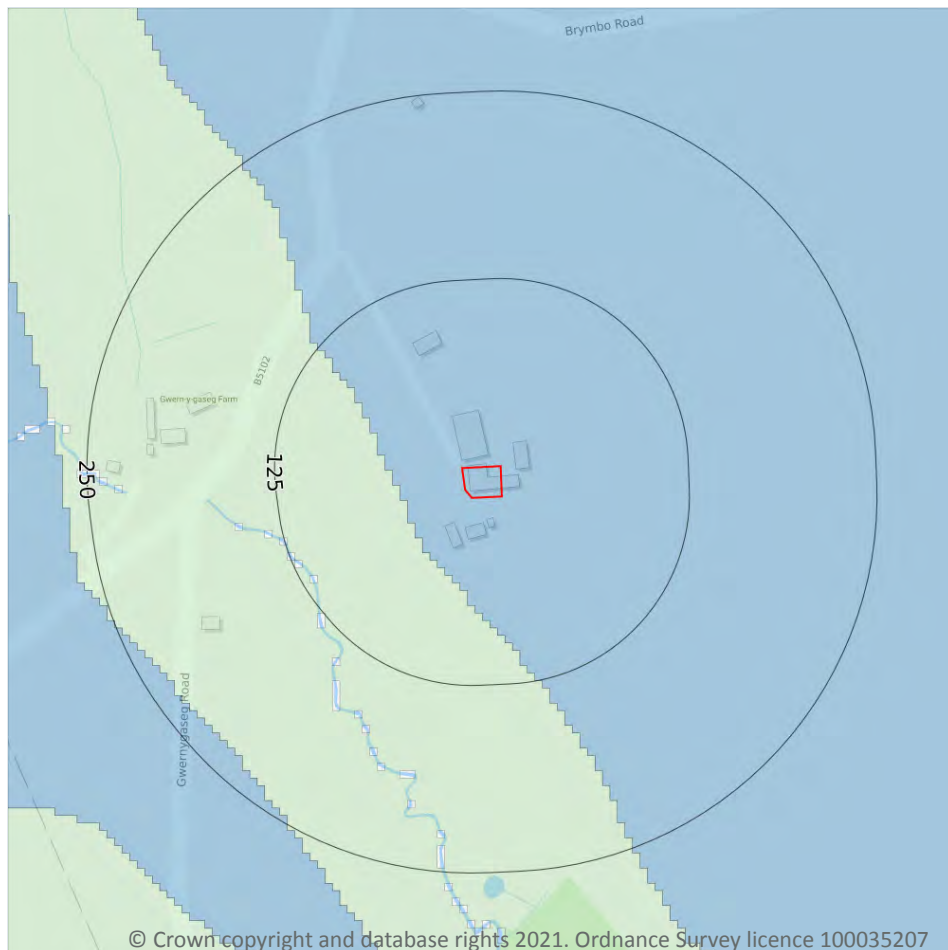
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site. The table below shows the maximum flood depths for a range of return periods for the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

Negligible

Highest risk within 50m

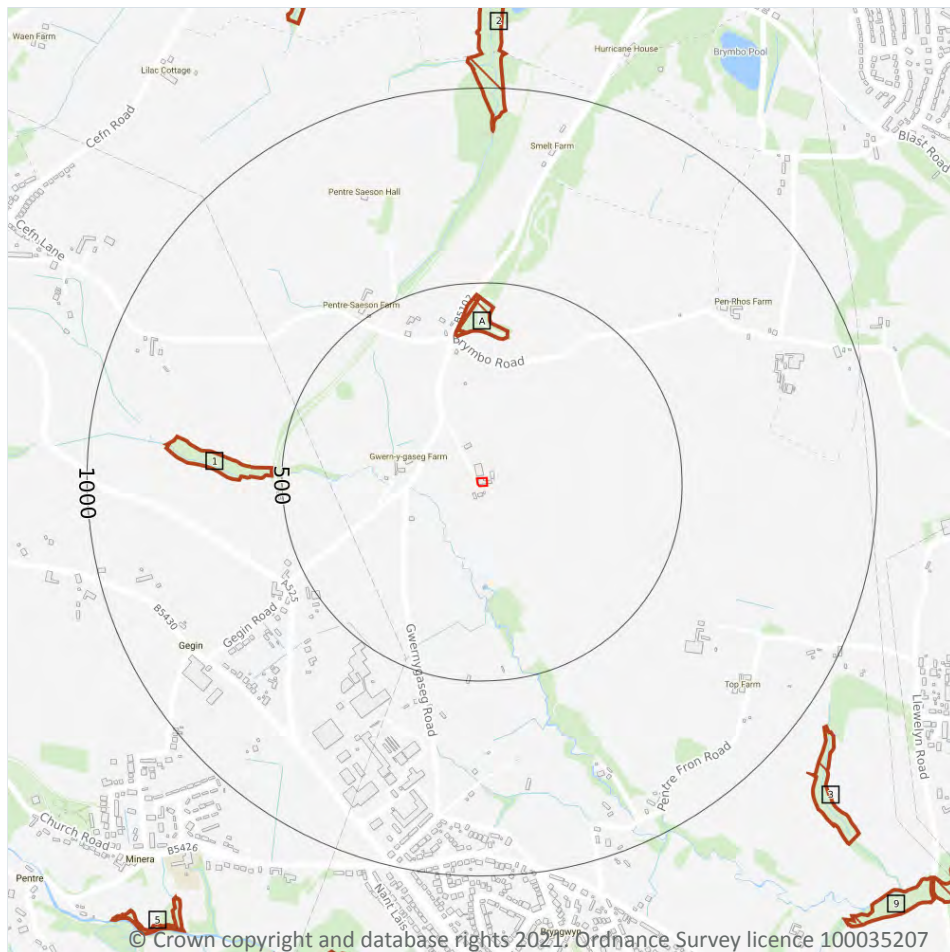
Low

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 47**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



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

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

2

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 48**

ID	Location	Name	Data source
-	1582m NE	Coedwig Ffossil Brymbo Fossil Forest	Natural Resources Wales



ID	Location	Name	Data source
-	1784m SW	Ruabon/Ilantysilio 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
-----------------------------	----------

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0
-----------------------------	----------

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0
-----------------------------	----------

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0
-----------------------------	----------

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m

0

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

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

10.7 Designated Ancient Woodland

Records within 2000m

42

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 48**

ID	Location	Name	Woodland Type
A	358m N	Unknown	Restored Ancient Woodland Site
A	369m N	Unknown	Restored Ancient Woodland Site
1	526m W	Unknown	Restored Ancient Woodland Site
2	891m N	Unknown	Ancient Semi Natural Woodland
3	1064m SE	Unknown	Ancient Semi Natural Woodland
4	1247m S	Unknown	Ancient Semi Natural Woodland
B	1254m N	Unknown	Plantation on Ancient Woodland Site
5	1310m SW	Unknown	Ancient Semi Natural Woodland
-	1336m N	Unknown	Ancient Semi Natural Woodland
-	1338m N	Unknown	Ancient Semi Natural Woodland
-	1360m N	Unknown	Plantation on Ancient Woodland Site
-	1363m N	Unknown	Ancient Semi Natural Woodland
-	1388m N	Unknown	Ancient Semi Natural Woodland
-	1437m N	Unknown	Ancient Semi Natural Woodland
9	1442m SE	Unknown	Ancient Semi Natural Woodland
10	1525m SE	Unknown	Ancient Semi Natural Woodland



ID	Location	Name	Woodland Type
-	1542m NE	Unknown	Ancient Woodland Site of Unknown Category
-	1561m NE	Unknown	Ancient Woodland Site of Unknown Category
-	1611m S	Unknown	Ancient Semi Natural Woodland
-	1695m E	Unknown	Ancient Woodland Site of Unknown Category
-	1705m S	Unknown	Restored Ancient Woodland Site
-	1707m SW	Unknown	Ancient Semi Natural Woodland
-	1711m E	Unknown	Ancient Woodland Site of Unknown Category
-	1721m SE	Unknown	Ancient Semi Natural Woodland
-	1793m N	Unknown	Restored Ancient Woodland Site
-	1805m N	Unknown	Ancient Semi Natural Woodland
-	1820m NW	Unknown	Restored Ancient Woodland Site
-	1853m NW	Unknown	Plantation on Ancient Woodland Site
-	1857m NW	Unknown	Plantation on Ancient Woodland Site
-	1868m NW	Unknown	Restored Ancient Woodland Site
-	1870m NW	Unknown	Ancient Semi Natural Woodland
-	1874m NW	Unknown	Plantation on Ancient Woodland Site
-	1884m NW	Unknown	Restored Ancient Woodland Site
-	1889m NW	Unknown	Ancient Semi Natural Woodland
-	1906m NW	Unknown	Plantation on Ancient Woodland Site
-	1912m NW	Unknown	Restored Ancient Woodland Site
-	1921m NW	Unknown	Restored Ancient Woodland Site
-	1922m NW	Unknown	Plantation on Ancient Woodland Site
-	1927m NW	Unknown	Plantation on Ancient Woodland Site
-	1951m S	Unknown	Ancient Semi Natural Woodland
-	1995m N	Unknown	Ancient Semi Natural Woodland
-	1996m NW	Unknown	Restored Ancient Woodland Site

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

10.8 Biosphere Reserves

Records within 2000m

0

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

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

10.9 Forest Parks

Records within 2000m

0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

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

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

10.11 Green Belt

Records within 2000m

0

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

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

10.12 Proposed Ramsar sites

Records within 2000m

0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m**0**

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m**0**

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m**0**

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m**0**

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

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

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site

0

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

11.1 World Heritage Sites

Records within 250m

0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

11.3 National Parks

Records within 250m

0

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

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

11.4 Listed Buildings

Records within 250m

0

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



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

11.5 Conservation Areas

Records within 250m

0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m

0

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

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

11.7 Registered Parks and Gardens

Records within 250m

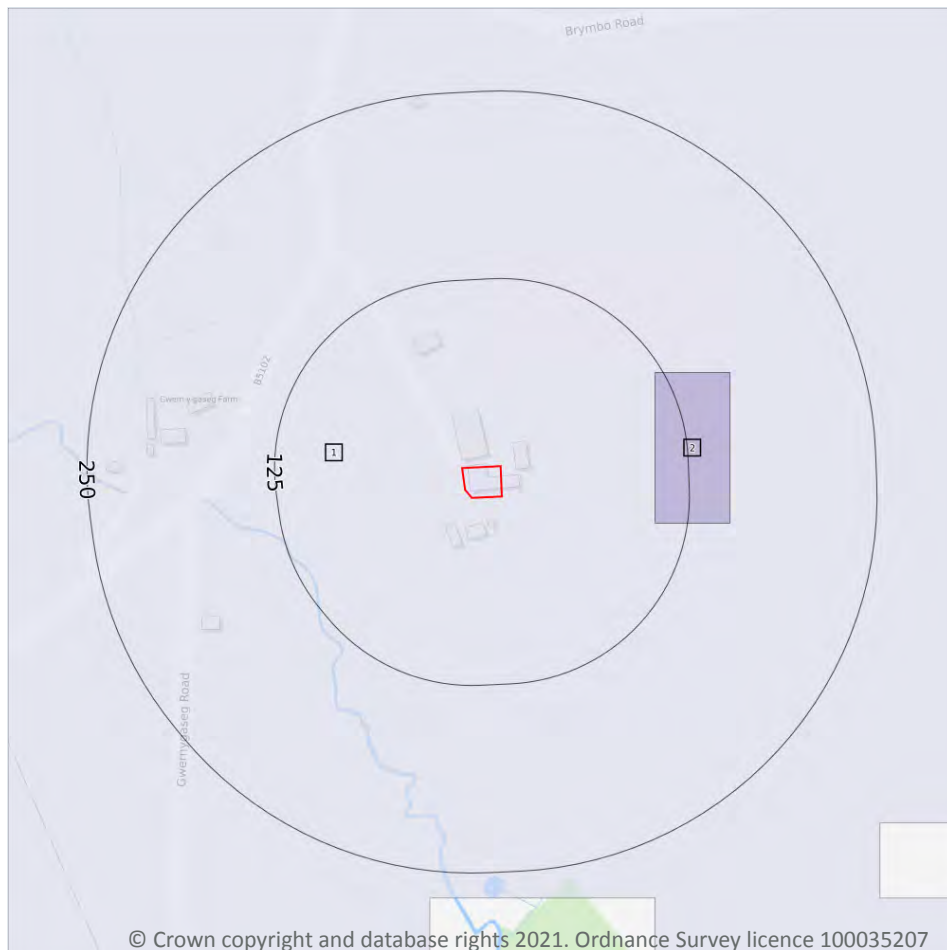
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Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process,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

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



12 Agricultural designations



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

12.1 Agricultural Land Classification

Records within 250m

2

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 57**

ID	Location	Classification	Description
1	On site	Grade 3b	Moderate quality agricultural land
2	102m E	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.

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

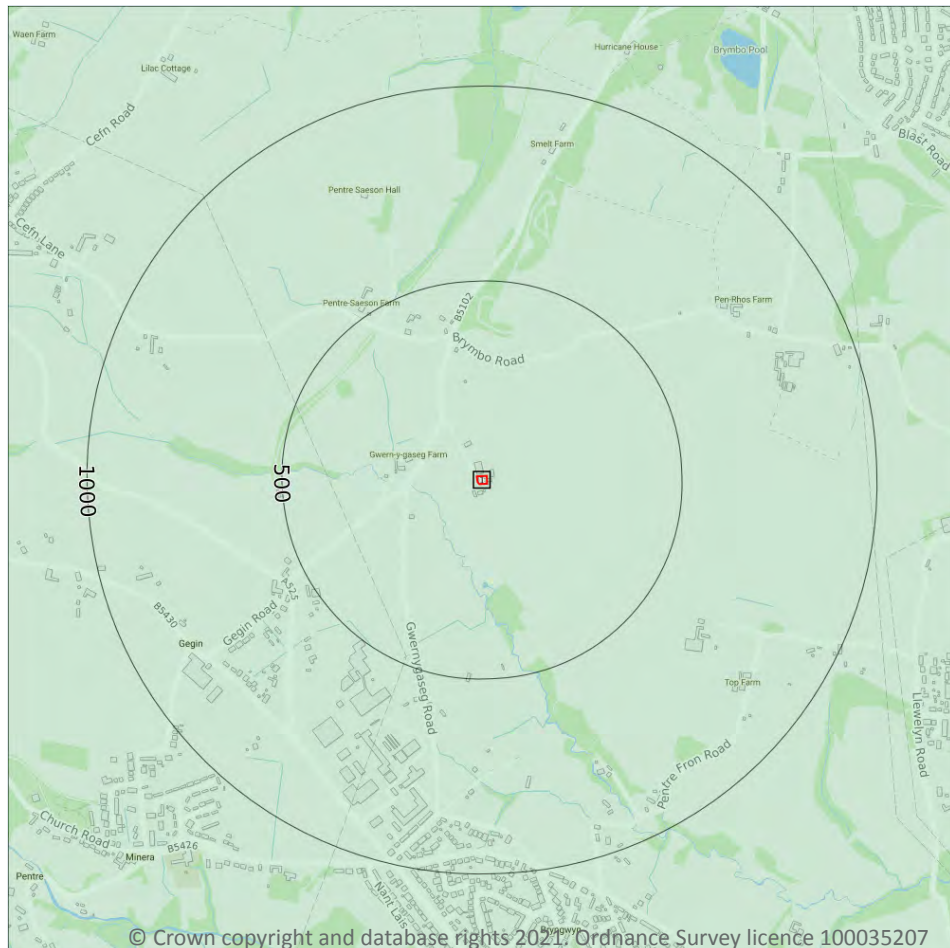
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Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable 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 60**

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

9

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 61**

ID	Location	LEX Code	Description	Rock description
1	28m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	320m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	361m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	390m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

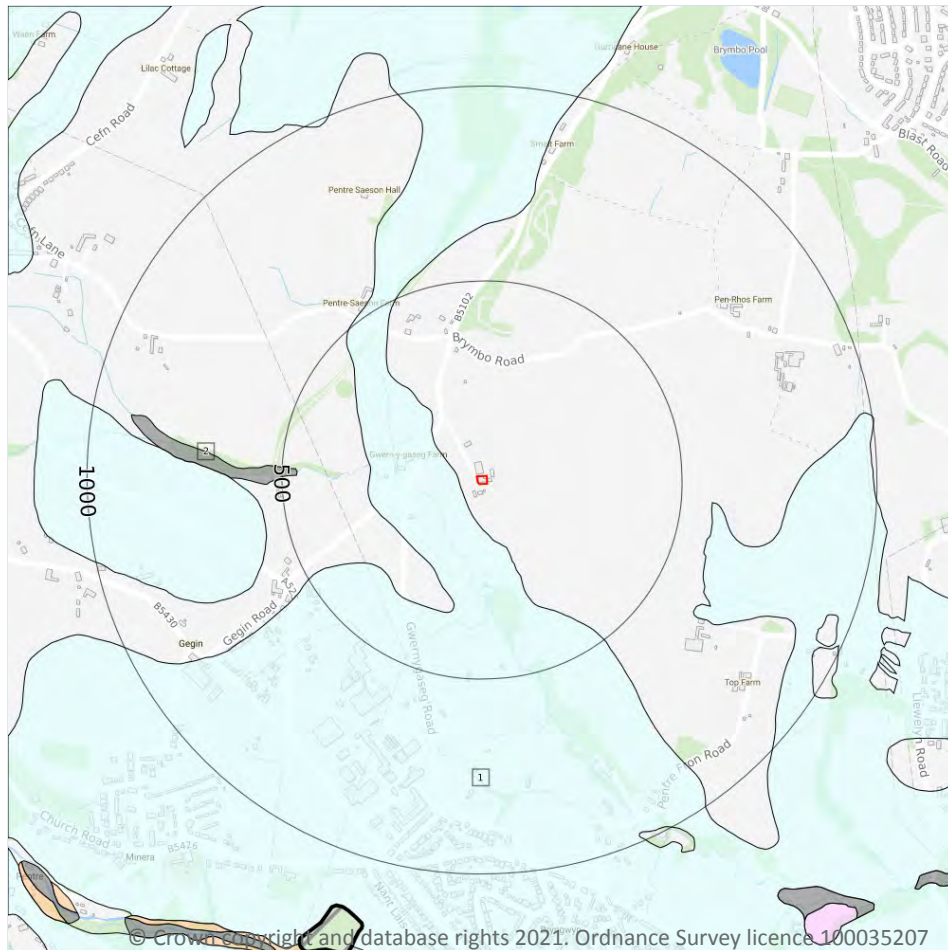


ID	Location	LEX Code	Description	Rock description
5	394m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
6	431m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	472m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	486m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	498m SW	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

2

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 63**

ID	Location	LEX Code	Description	Rock description
1	45m SW	TILL-DMTN	Till - Diamicton	Diamicton
2	461m 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

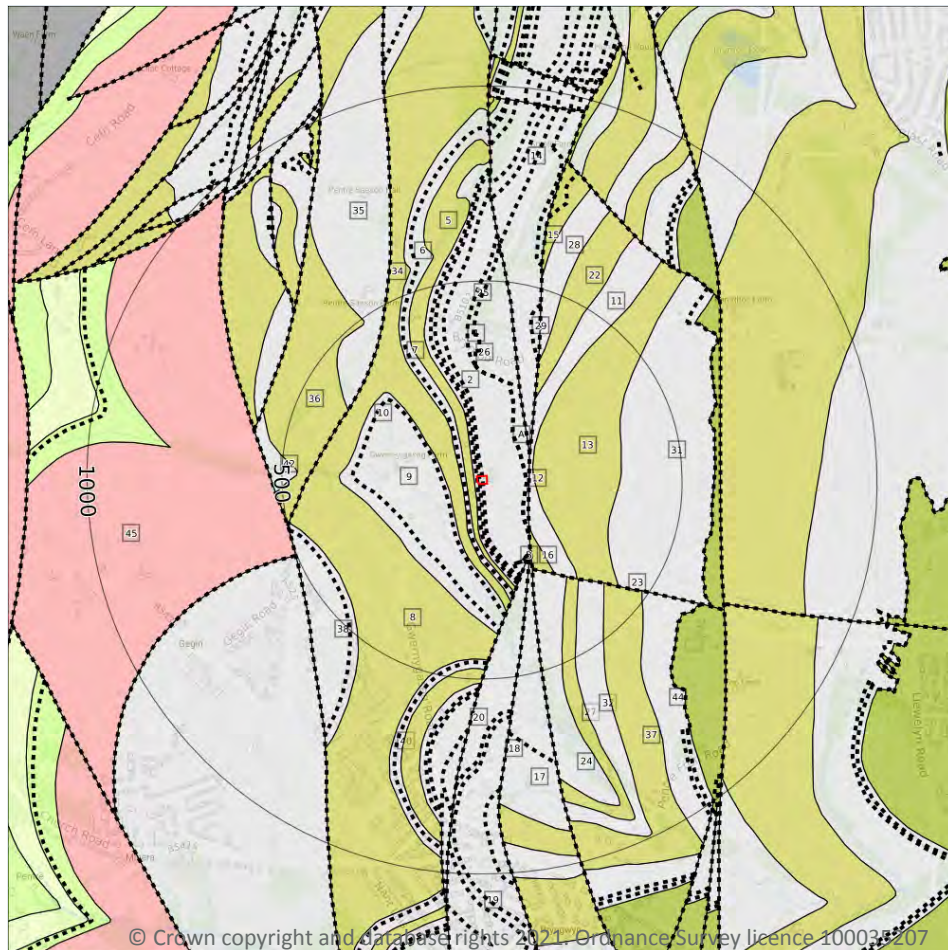
0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

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

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

14.5 Bedrock geology (10k)

Records within 500m

26

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 65**

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
5	8m W	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovia Sub-age - Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
6	28m 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
8	40m W	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
9	76m 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
11	107m E	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
13	119m E	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
14	124m 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
16	154m SE	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
17	203m SE	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
19	203m SE	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
22	232m NE	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
24	248m SE	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
27	314m SE	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
28	319m 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



ID	Location	LEX Code	Description	Rock age
31	326m E	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
32	339m SE	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
35	370m NW	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
36	370m NW	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
37	393m SE	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
38	426m SW	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
40	449m 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
42	461m 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
43	473m S	PLMC-SDST	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Sandstone	Bolsovian Sub-age - Langsettian Sub-age
44	483m SE	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Langsettian Sub-age
45	499m W	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian Sub-age - Yeadonian Sub-age

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

24

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 65**

ID	Location	Category	Description
2	On site	ROCK	Coal seam, inferred
3	On site	FOSSIL_HORIZON	Fossil horizon, marine band
4	0m W	ROCK	Coal seam, inferred
7	35m W	ROCK	Coal seam, inferred
10	86m W	ROCK	Coal seam, inferred
A	97m E	ROCK	Coal seam, observed
A	97m E	ROCK	Coal seam, observed
12	107m E	FAULT	Normal fault, inferred
15	124m NE	FAULT	Normal fault, inferred
18	203m SE	FAULT	Normal fault, inferred
20	203m SE	FAULT	Normal fault, inferred
B	211m SE	ROCK	Coal seam, observed
B	211m SE	ROCK	Coal seam, observed
21	217m S	ROCK	Coal seam, inferred
23	248m SE	FAULT	Normal fault, inferred
25	286m N	ROCK	Coal seam, inferred
26	286m N	ROCK	Coal seam, inferred
29	319m NE	ROCK	Coal seam, observed
30	320m N	ROCK	Coal seam, observed
33	364m N	ROCK	Coal seam, inferred
34	370m NW	FAULT	Normal fault, inferred
39	444m SW	ROCK	Coal seam, inferred
41	457m S	ROCK	Coal seam, inferred

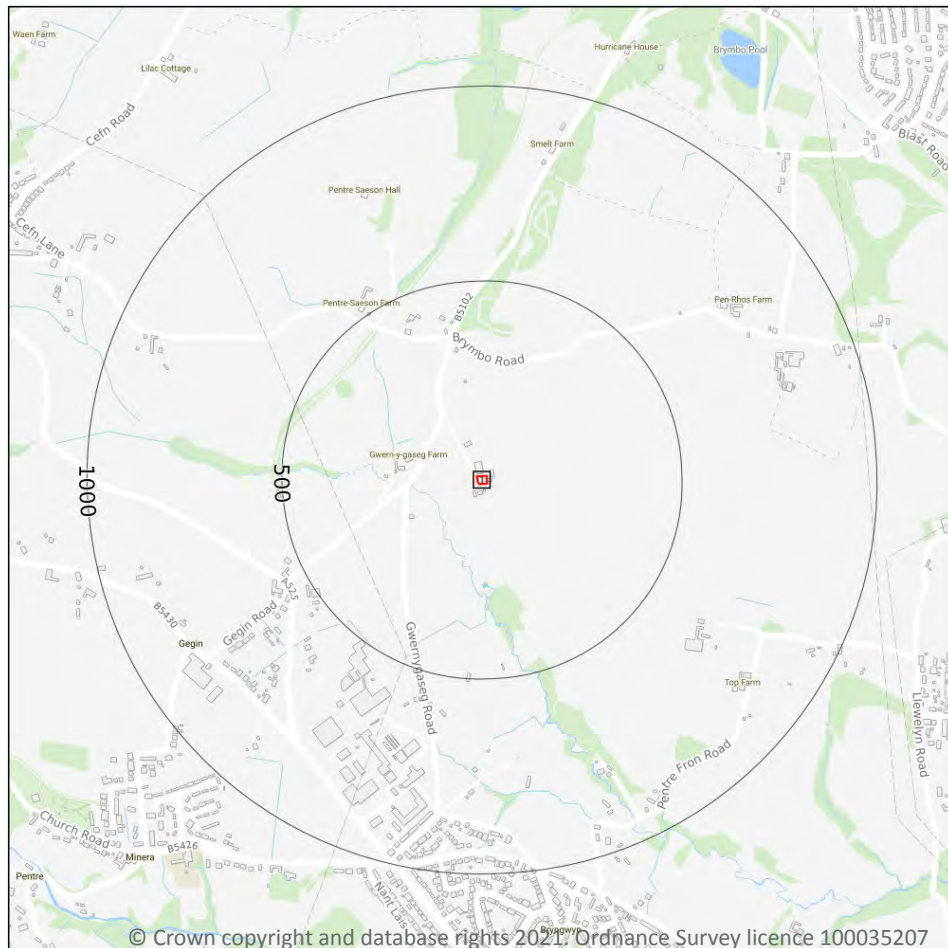


ID	Location	Category	Description
46	499m W	FAULT	Normal fault, inferred

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



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

15.1 50k Availability

Records within 500m

1

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

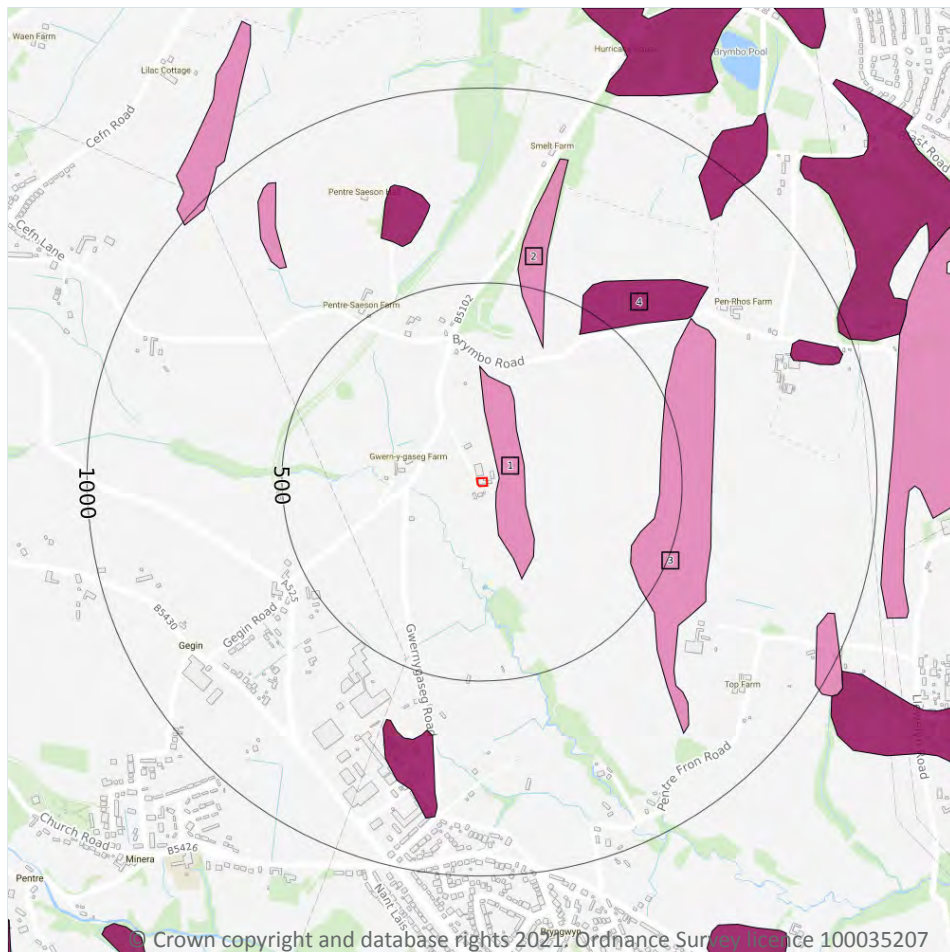
Features are displayed on the Geology 1:50,000 scale - Availability map on **page 70**

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

4

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 71**

ID	Location	LEX Code	Description	Rock description
1	26m E	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
2	365m NE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
3	401m E	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
4	438m NE	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.



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

73

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
41m S	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

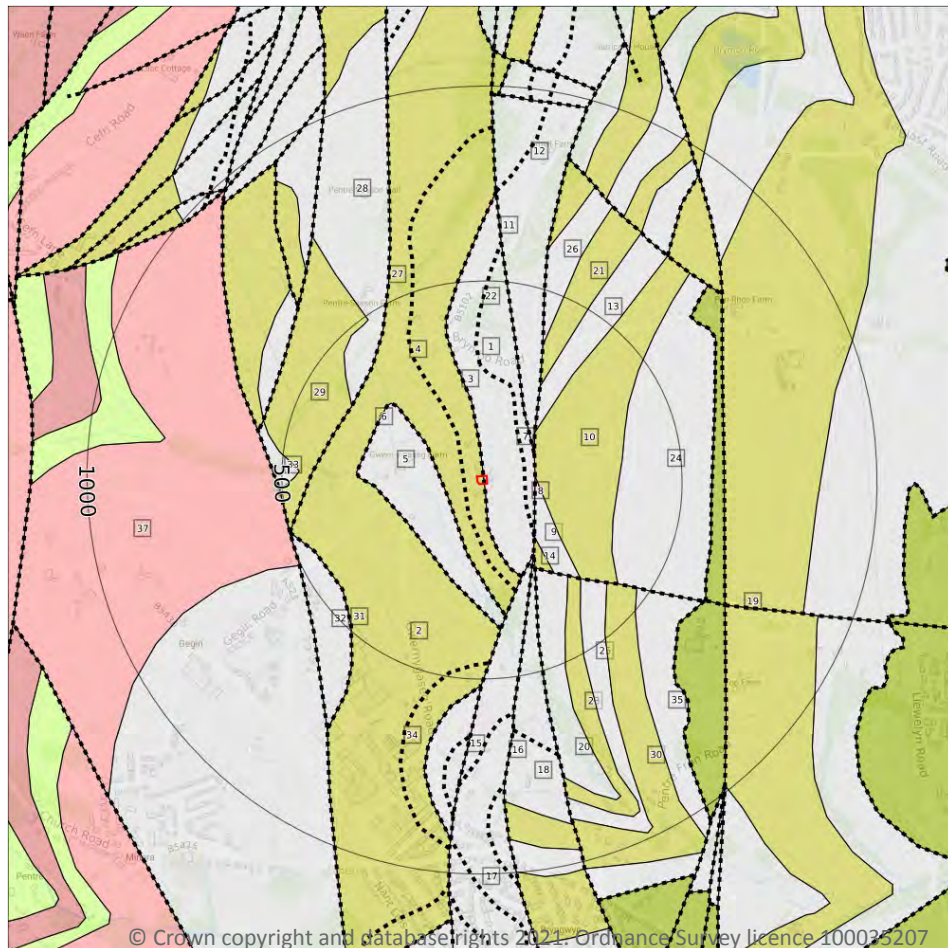
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

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

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

15.8 Bedrock geology (50k)

Records within 500m

23

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 75**

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	On site	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
5	85m W	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9	123m E	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10	124m E	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
12	134m NE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13	166m NE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14	182m SE	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
17	217m SE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
18	217m SE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
20	248m SE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
21	268m NE	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN



ID	Location	LEX Code	Description	Rock age
23	314m SE	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
24	333m E	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
25	342m SE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
26	365m NE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
28	368m NW	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
29	368m NW	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
30	398m SE	PLMC-SDST	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - SANDSTONE	WESTPHALIAN
32	442m SW	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
33	456m W	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
35	468m SE	PLMC-MDSS	PENNINE LOWER COAL MEASURES FORMATION AND PENNINE MIDDLE COAL MEASURES FORMATION (UNDIFFERENTIATED) - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
37	498m W	GS-SDAR	GWESPYR SANDSTONE - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	NAMURIAN

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	High	Moderate
On site	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

14

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 75**

ID	Location	Category	Description
3	On site	ROCK	Coal seam, inferred
4	34m W	ROCK	Coal seam, inferred
6	85m W	ROCK	Coal seam, inferred
7	97m E	ROCK	Coal seam, observed
8	123m E	FAULT	Fault, inferred, displacement unknown
11	134m NE	FAULT	Fault, inferred, displacement unknown
15	217m SE	FAULT	Fault, inferred, displacement unknown
16	217m SE	FAULT	Fault, inferred, displacement unknown
19	248m SE	FAULT	Fault, inferred, displacement unknown
22	287m N	ROCK	Coal seam, inferred
27	368m NW	FAULT	Fault, inferred, displacement unknown
31	442m SW	ROCK	Coal seam, inferred
34	459m S	ROCK	Coal seam, inferred

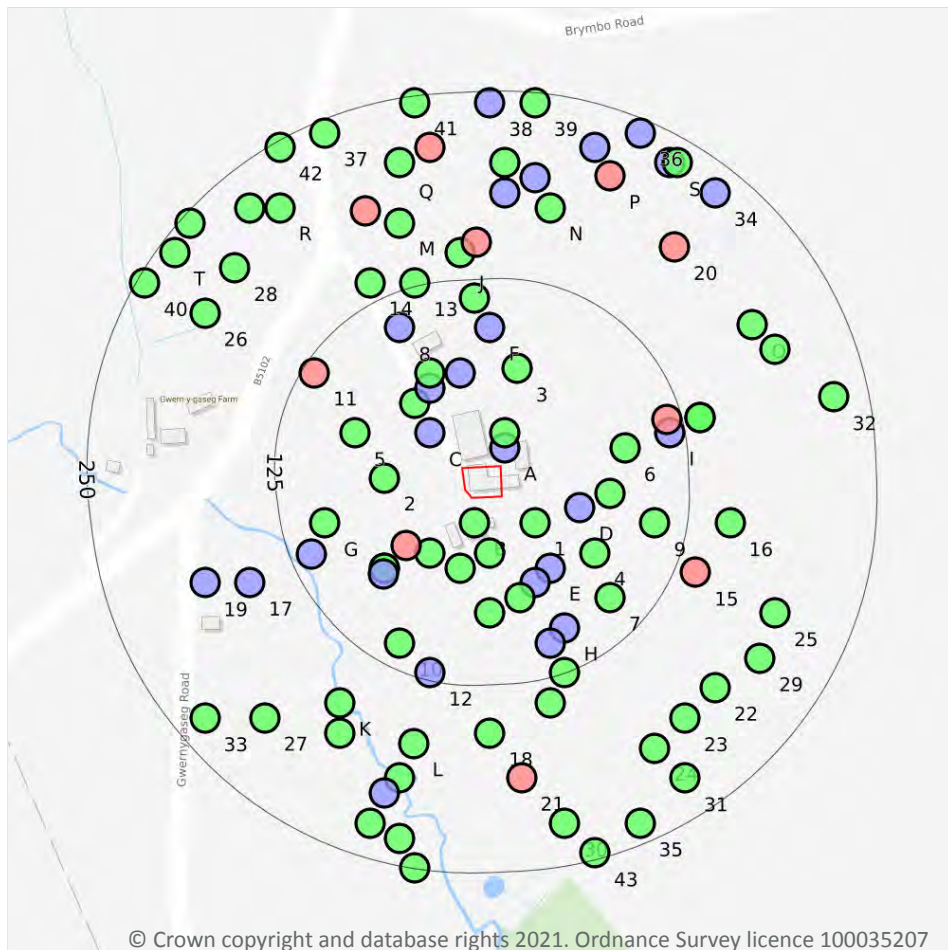


ID	Location	Category	Description
36	498m W	FAULT	Fault, inferred, displacement unknown

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

104

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 80**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	13m N	328050 352800	PLAS MOSTYN BACH O/C BH752/3CP	9.0	N	145838
B	17m S	328030 352750	PLAS MOSTYN BACH O/C BH615/15	13.0	N	145822
A	22m N	328050 352810	PLAS MOSTYN BACH O/C BH617/5CP	11.0	N	145837



ID	Location	Grid reference	Name	Length	Confidential	Web link
1	28m SE	328070 352750	PLAS MOSTYN BACH O/C BH752/2	12.19	N	145829
C	32m NW	328000 352810	PLAS MOSTYN BACH O/C BH616/1	4.0	N	145840
B	37m S	328040 352730	PLAS MOSTYN BACH O/C BH615/3	15.24	N	145825
B	46m SW	328000 352730	PLAS MOSTYN BACH O/C BH615/12	13.0	N	145821
B	47m S	328020 352720	PLAS MOSTYN BACH O/C BH615/4	13.0	N	145826
2	52m W	327970 352780	PLAS MOSTYN BACH O/C BH616/3	12.19	N	145841
D	53m E	328100 352760	PLAS MOSTYN BACH O/C BH752/4	9.0	N	145830
C	54m NW	327990 352830	PLAS MOSTYN BACH O/C BH616/8	13.0	N	145843
B	54m SW	327984 352735	GWERN Y GASEG O/C SITE 19	36.58	N	146230
E	57m SE	328080 352720	PLAS MOSTYN BACH O/C BH755/6	5.18	N	145918
C	58m N	328000 352840	PLAS MOSTYN BACH O/C BH617/408	4.0	N	145854
E	62m S	328070 352710	PLAS MOSTYN BACH O/C BH755/7	3.66	N	145919
C	64m N	328020 352850	PLAS MOSTYN BACH O/C BH617/409	7.0	N	145853
3	66m N	328058 352853	GWERN Y GASEG O/C SITE 112	12.8	N	146234
C	67m N	328000 352850	PLAS MOSTYN BACH O/C BH617/216	13.0	N	145852
E	69m S	328060 352700	PLAS MOSTYN BACH O/C BH615/1	12.19	N	145827
D	72m E	328120 352770	PLAS MOSTYN BACH O/C BH752/6	13.0	N	145831
4	73m SE	328110 352730	PLAS MOSTYN BACH O/C BH755/4	18.29	N	145917
B	74m SW	327970 352720	PLAS MOSTYN BACH TRIAL HOLE	19.99	N	145010
B	74m SW	327970 352720	PLAS MOSTYN BACH O/C BH615/10	16.0	N	145820
5	75m W	327950 352810	PLAS MOSTYN BACH O/C BH616/10	13.0	N	145844
E	77m S	328040 352690	PLAS MOSTYN BACH O/C BH615/2	12.19	N	145828
B	78m SW	327969 352716	UNNAMED SHAFT	-2.0	N	146852
6	84m E	328130 352800	PLAS MOSTYN BACH O/C BH619/101	13.0	N	145832
F	92m N	328040 352880	PLAS MOSTYN BACH O/C BH617/410	10.0	N	145845
G	96m W	327930 352750	PLAS MOSTYN BACH O/C BH616/7	13.0	N	145842
H	97m SE	328090 352680	PLAS MOSTYN BACH O/C BH755/9	9.0	N	145800
7	99m SE	328120 352700	PLAS MOSTYN BACH O/C BH755/8	14.0	N	145799



ID	Location	Grid reference	Name	Length	Confidential	Web link
8	102m NW	327980 352880	PLAS MOSTYN BACH O/C BH617/217	3.0	N	145851
H	103m S	328080 352670	PLAS MOSTYN BACH O/C BH614/1	9.14	N	145801
9	104m E	328150 352750	PLAS MOSTYN BACH O/C BH755/1	19.0	N	145916
10	108m SW	327980 352670	PLAS MOSTYN BACH O/C BH615/7	16.0	N	145824
G	111m SW	327921 352729	NEW PLAS MOSTYN COLL. ADIT	-2.0	N	146750
F	113m N	328030 352900	PLAS MOSTYN BACH O/C BH617/215	15.0	N	145846
I	115m E	328160 352810	PLAS MOSTYN BACH O/C BH619/102	6.0	N	145833
I	115m E	328158 352819	GWERN Y GASEG O/C SITE 24	35.05	N	146233
11	117m NW	327923 352850	GWERN Y GASEG O/C SITE 9	38.1	N	146225
12	120m S	328000 352650	PLAS MOSTYN BACH O/C BH615/5	6.0	N	145823
H	125m S	328090 352650	PLAS MOSTYN BACH O/C BH614/2	12.19	N	145802
13	127m N	327990 352910	PLAS MOSTYN BACH O/C BH617/213	13.0	N	145850
I	137m E	328180 352820	PLAS MOSTYN BACH O/C BH619/103	13.0	N	145834
I	137m E	328180 352820	PLAS MOSTYN BACH O/C BH752/4CP	16.0	N	145839
14	138m NW	327960 352910	PLAS MOSTYN BACH O/C BH617/218	12.19	N	145849
15	139m E	328177 352717	GWERN Y GASEG O/C SITE 301	33.53	N	146235
H	141m S	328080 352630	PLAS MOSTYN BACH O/C BH614/3	12.19	N	145803
J	143m N	328020 352930	PLAS MOSTYN BACH O/C BH617/212	13.0	N	145847
J	150m N	328031 352937	GWERN Y GASEG O/C SITE 3	36.58	N	146223
16	153m E	328200 352750	PLAS MOSTYN BACH O/C BH619/104	13.0	N	145798
17	156m SW	327880 352710	PLAS MOSTYN BACH O/C BH601/2CP	3.0	N	145836
18	157m S	328040 352610	PLAS MOSTYN BACH O/C BH614/6	13.0	N	145804
K	163m SW	327940 352630	PLAS MOSTYN BACH O/C BH255/7	18.0	N	145818
L	168m S	327989 352603	GWERN Y GASEG O/C SITE 11	24.38	N	146236
M	169m N	327980 352950	PLAS MOSTYN BACH O/C BH617/214	12.19	N	145848
N	175m N	328080 352960	PLAS MOSTYN BACH O/C BH619/211	13.0	N	145859
K	180m SW	327940 352610	PLAS MOSTYN BACH O/C BH255/8	18.29	N	145819
N	182m N	328050 352970	PLAS MOSTYN BACH O/C BH619/209	10.0	N	145878



ID	Location	Grid reference	Name	Length	Confidential	Web link
M	183m N	327957 352958	GWERN Y GASEG O/C SITE 7	39.62	N	146224
19	184m W	327850 352710	PLAS MOSTYN BACH O/C BH601/1CP	3.0	N	145835
20	187m NE	328163 352934	GWERN Y GASEG O/C SITE 15	33.53	N	146228
21	188m S	328061 352580	GWERN Y GASEG O/C SITE 17	48.77	N	146229
22	191m SE	328190 352640	PLAS MOSTYN BACH O/C BH755/107	16.0	N	145795
23	192m SE	328170 352620	PLAS MOSTYN BACH O/C BH755/108	13.0	N	145794
O	192m NE	328215 352882	PENTRE FRON O/C SITE 9	14.63	N	146345
L	193m S	327980 352580	PLAS MOSTYN BACH O/C BH614/9	13.0	N	145805
N	194m N	328070 352980	PLAS MOSTYN BACH O/C BH619/208	-2.0	N	145872
24	196m SE	328150 352600	PLAS MOSTYN BACH O/C BH755/109	13.0	N	145793
25	198m SE	328230 352690	PLAS MOSTYN BACH O/C BH619/105	13.0	N	145797
O	199m NE	328230 352866	PENTRE FRON O/C SITE 7	19.81	N	146343
26	200m NW	327850 352890	NEW GROSVENOR O/C SITE 12	17.37	N	145411
27	201m SW	327890 352620	PLAS MOSTYN BACH O/C BH255/4	10.06	N	145817
28	202m NW	327870 352920	NEW GROSVENOR O/C SITE 8	20.42	N	145407
N	202m N	328050 352990	PLAS MOSTYN BACH O/C BH619/210	12.19	N	145877
29	203m SE	328220 352660	PLAS MOSTYN BACH O/C BH619/106	13.0	N	145796
L	205m S	327970 352570	PLAS MOSTYN BACH O/C BH255/9	10.0	N	145811
P	206m N	328120 352981	GWERN Y GASEG O/C SITE 1	48.46	N	146222
Q	208m N	327980 352990	PLAS MOSTYN BACH O/C BH618/303	12.19	N	145856
R	212m NW	327900 352960	NEW GROSVENOR O/C SITE 13	25.3	N	145412
Q	215m N	328000 353000	SMELT ROW	33.83	N	145108
P	221m N	328110 353000	PLAS MOSTYN BACH O/C BH619/204	2.0	N	145871
30	222m S	328090 352550	PLAS MOSTYN BACH O/C BH806/113	13.0	N	145789
31	224m SE	328170 352580	PLAS MOSTYN BACH O/C BH755/110	13.0	N	145792
R	224m NW	327880 352960	NEW GROSVENOR O/C SITE 24	27.43	N	145423
32	227m E	328269 352834	PENTRE FRON O/C SITE 5	15.24	N	146341
L	227m S	327960 352550	PLAS MOSTYN BACH O/C BH255/11	11.0	N	145812

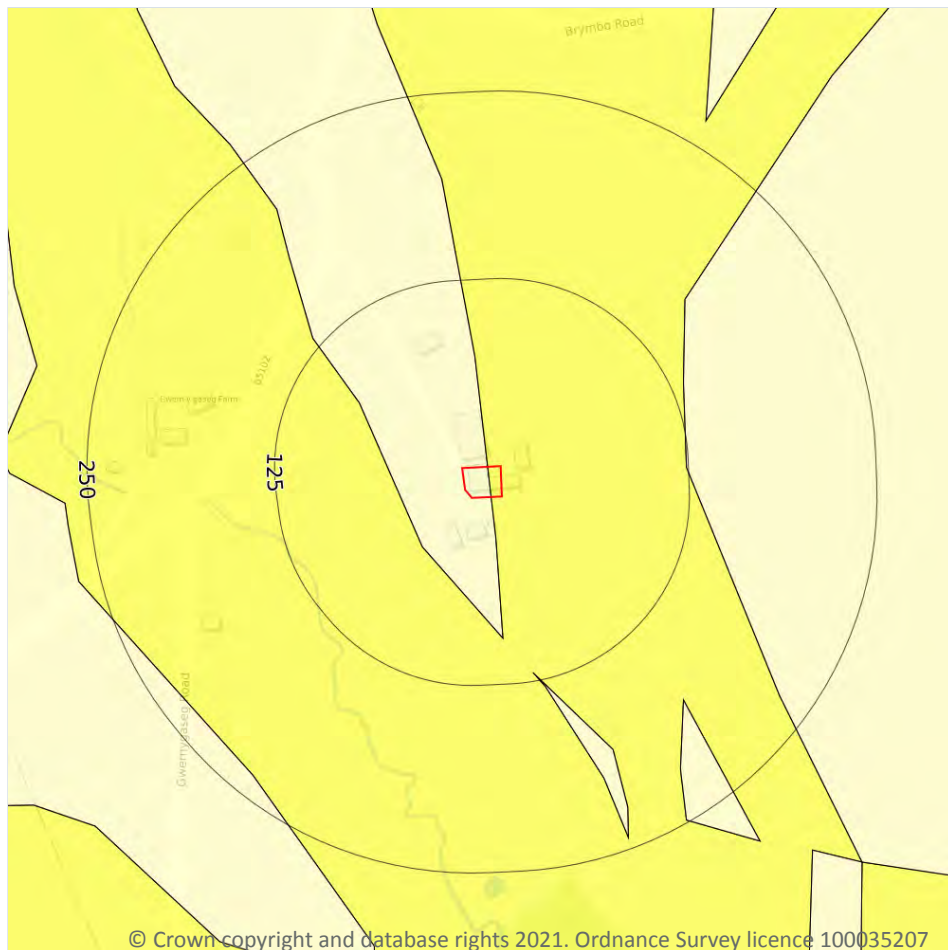


ID	Location	Grid reference	Name	Length	Confidential	Web link
33	231m SW	327850 352620	PLAS MOSTYN BACH O/C BH255/1	18.0	N	145816
34	232m NE	328190 352970	PLAS MOSTYN BACH O/C BH751/520	6.0	N	145860
S	232m NE	328160 352990	PLAS MOSTYN BACH O/C BH751/521	7.0	N	145861
L	232m S	327980 352540	PLAS MOSTYN BACH O/C BH255/10	11.0	N	145810
S	234m NE	328165 352990	PENTRE FRON O/C SITE 180	18.29	N	146401
35	236m SE	328140 352550	PLAS MOSTYN BACH O/C BH755/111	12.19	N	145791
T	239m NW	327830 352930	NEW GROSVENOR O/C SITE 25	15.24	N	145424
36	241m NE	328140 353010	PLAS MOSTYN BACH O/C BH619/202	6.0	N	145870
37	242m N	327930 353010	PLAS MOSTYN BACH O/C BH618/301	11.0	N	145855
38	242m N	328040 353030	PLAS MOSTYN BACH O/C BH619/308	4.57	N	145876
39	243m N	328070 353030	PLAS MOSTYN BACH O/C BH619/307	11.0	N	145875
T	244m NW	327840 352950	NEW GROSVENOR O/C SITE 7	18.29	N	145416
40	245m NW	327810 352910	NEW GROSVENOR O/C SITE 14	18.29	N	145413
41	246m N	327990 353030	PLAS MOSTYN BACH O/C BH618/302	12.19	N	145857
42	246m NW	327900 353000	NEW GROSVENOR O/C SITE 9	24.38	N	145408
43	246m S	328110 352530	PLAS MOSTYN BACH O/C BH755/112	13.0	N	145790
L	250m S	327990 352520	PLAS MOSTYN BACH O/C BH255/21	13.0	N	145809

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

2

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).

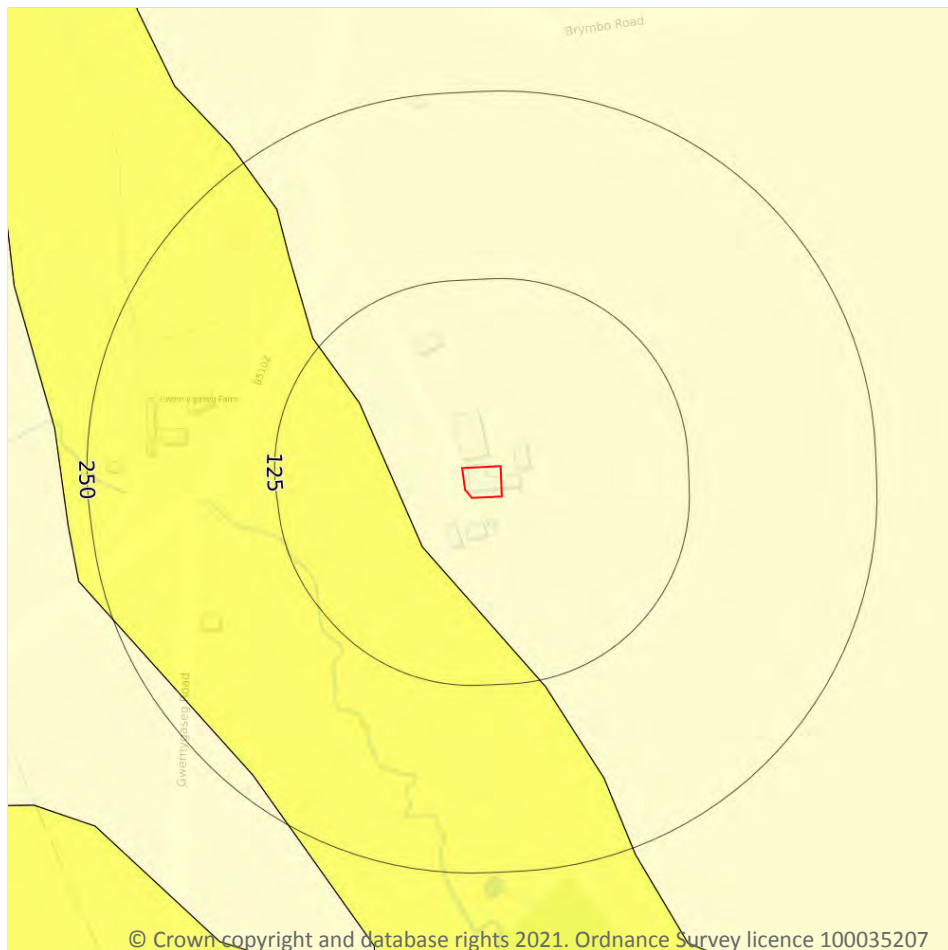
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 85**

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
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

2

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**

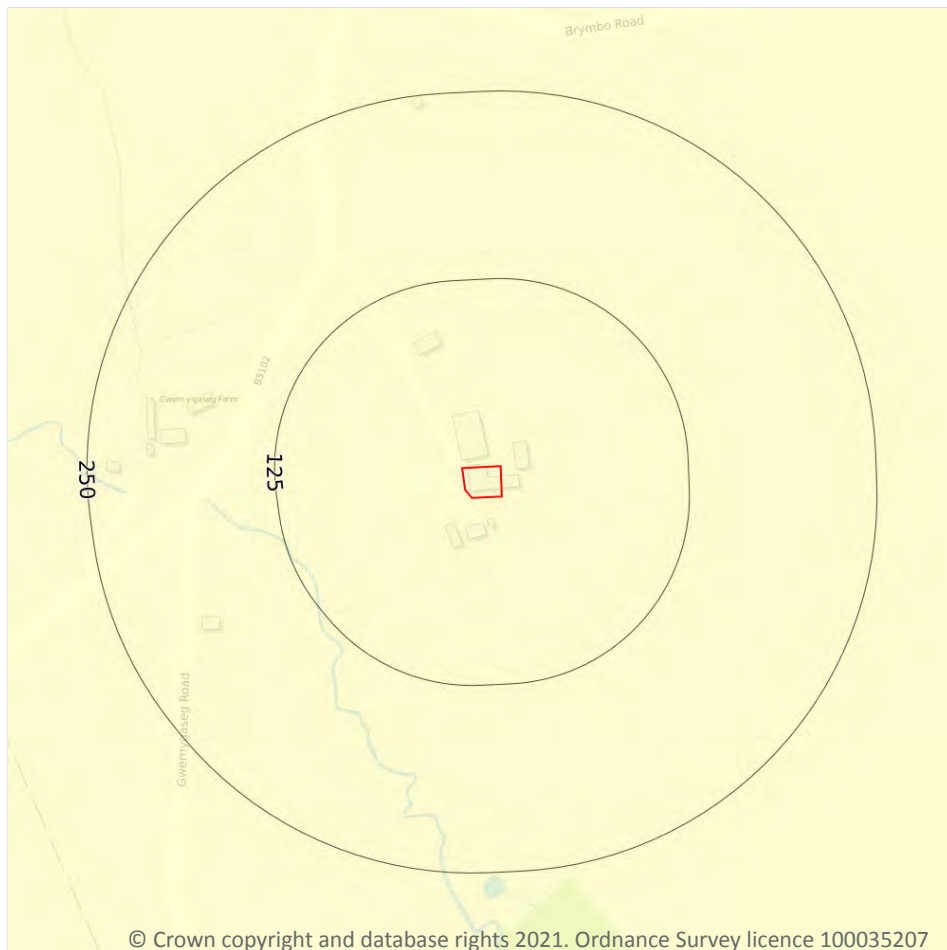
Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

Location	Hazard rating	Details
41m SW	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.

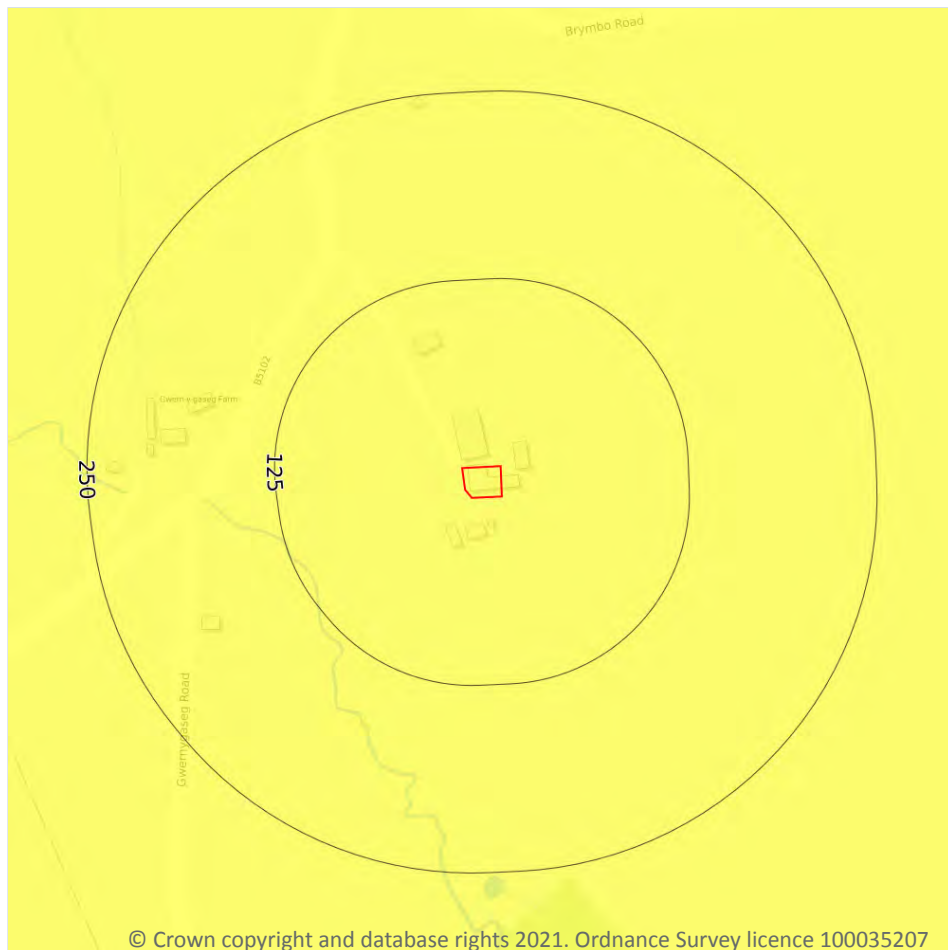
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 88**

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.

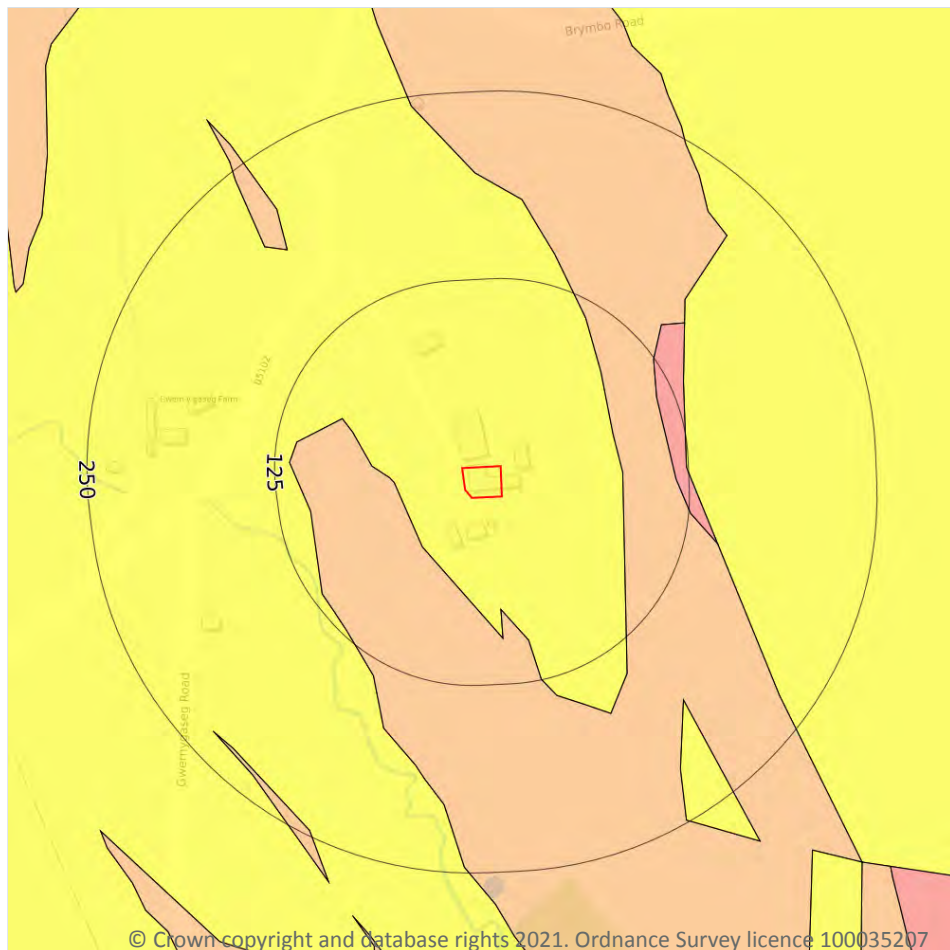
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 89**

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

2

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 90**

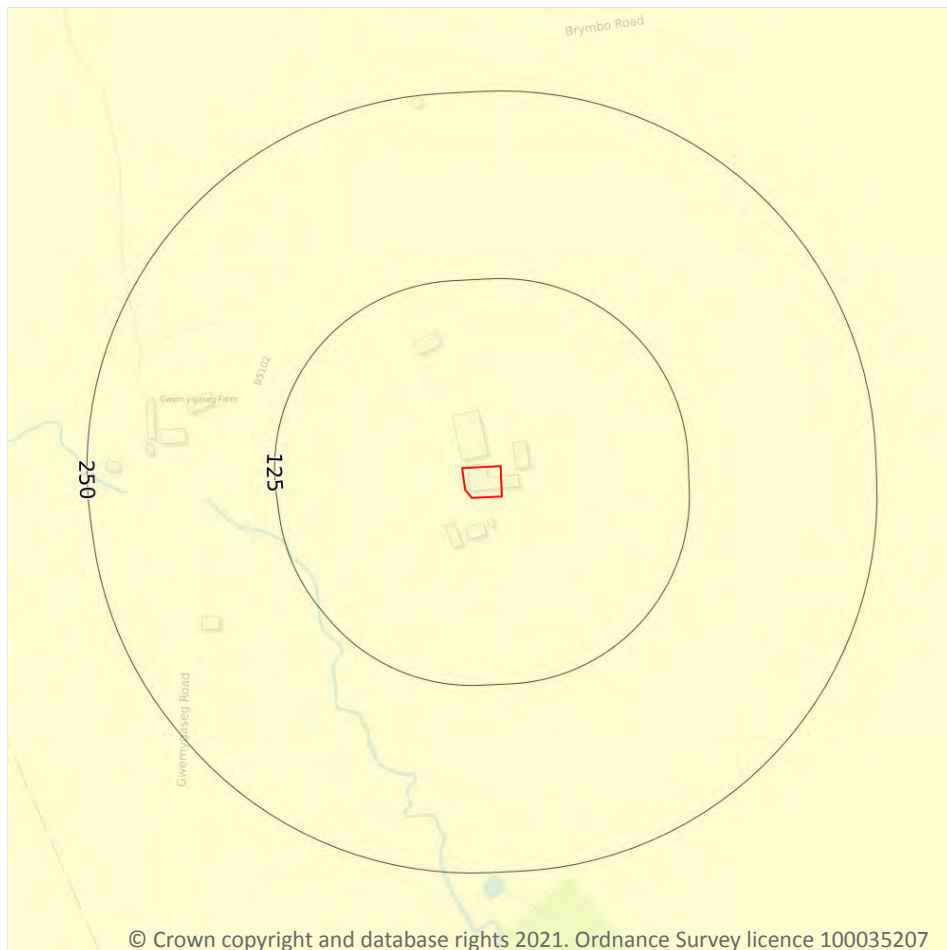
Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

Location	Hazard rating	Details
41m SW	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

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.

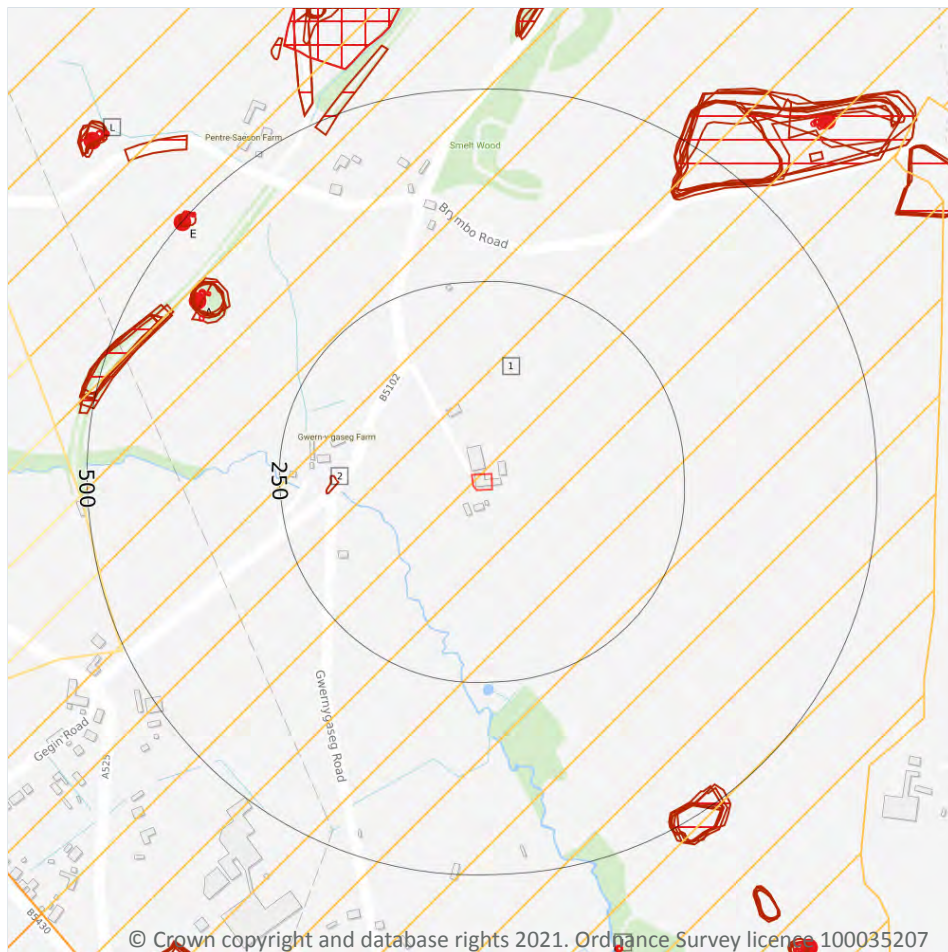
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 92**

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

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



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

18.1 Natural cavities

Records within 500m

0

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

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

18.2 BritPits

Records within 500m

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 93**

ID	Location	Details	Description
A	422m NW	Name: Pentresaeson Halt Address: Brymbo, WREXHAM, Clwyd Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
E	499m NW	Name: Pentresaeson Halt Address: Brymbo, WREXHAM, Clwyd Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

1

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 93**

ID	Location	Land Use	Year of mapping	Mapping scale
2	174m W	Pond	1872	1:10560

This data is sourced from Ordnance Survey/Groundsure.



18.4 Underground workings

Records within 1000m

76

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 93**

ID	Location	Land Use	Year of mapping	Mapping scale
A	402m NW	Unspecified Old Shafts	1900	1:10560
A	413m NW	Unspecified Old Shafts	1900	1:10560
A	419m NW	Unspecified Disused Shaft	1989	1:10560
A	419m NW	Unspecified Disused Shaft	1985	1:10000
A	419m NW	Unspecified Disused Shaft	1974	1:10000
A	419m NW	Unspecified Old Shaft	1960	1:10560
A	419m NW	Unspecified Old Shaft	1949	1:10560
E	493m NW	Unspecified Shafts	1900	1:10560
E	496m NW	Unspecified Old Shaft	1949	1:10560
E	497m NW	Unspecified Old Shaft	1960	1:10560
E	501m NW	Unspecified Shafts	1900	1:10560
5	552m N	Colliery	1872	1:10560
B	615m NE	Unspecified Old Shaft	1949	1:10560
I	615m S	Unspecified Old Shaft	1949	1:10560
I	616m S	Unspecified Disused Shaft	1989	1:10560
I	616m S	Unspecified Disused Shaft	1985	1:10000
I	616m S	Unspecified Disused Shaft	1974	1:10000
I	616m S	Unspecified Old Shaft	1960	1:10560
B	618m NE	Coal Shaft	1872	1:10560
B	619m NE	Unspecified Disused Shaft	1989	1:10560
B	619m NE	Unspecified Disused Shaft	1985	1:10000
B	619m NE	Unspecified Disused Shaft	1974	1:10000
B	619m NE	Unspecified Old Shaft	1960	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
B	623m NE	Unspecified Old Shaft	1900	1:10560
L	646m NW	Unspecified Shaft	1900	1:10560
L	651m NW	Unspecified Shaft	1960	1:10560
L	653m NW	Unspecified Shaft	1949	1:10560
L	660m NW	Coal Shaft	1872	1:10560
-	706m S	Unspecified Old Shafts	1900	1:10560
M	711m SE	Unspecified Old Shaft	1900	1:10560
-	711m S	Unspecified Old Shafts	1949	1:10560
-	713m S	Unspecified Old Shafts	1960	1:10560
M	715m SE	Unspecified Old Shaft	1949	1:10560
M	716m SE	Unspecified Old Shaft	1960	1:10560
-	718m N	Coal Shafts	1872	1:10560
-	723m N	Unspecified Old Shafts	1949	1:10560
-	724m NE	Coal Shaft	1872	1:10560
-	724m N	Unspecified Old Shafts	1960	1:10560
-	726m N	Coal Shafts	1872	1:10560
-	729m N	Unspecified Old Shafts	1900	1:10560
-	730m N	Unspecified Old Shafts	1949	1:10560
-	736m N	Unspecified Old Shafts	1900	1:10560
-	768m S	Unspecified Old Shafts	1949	1:10560
-	770m S	Unspecified Old Shafts	1900	1:10560
-	771m S	Unspecified Old Shafts	1960	1:10560
-	796m SE	Unspecified Shaft	1949	1:10560
-	800m SE	Unspecified Shaft	1960	1:10560
-	802m S	Unspecified Old Shaft	1900	1:10560
-	804m SE	Air Shaft	1872	1:10560
-	807m S	Unspecified Old Shaft	1949	1:10560
-	807m SE	Air Shaft	1900	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
-	809m S	Unspecified Disused Shaft	1985	1:10000
-	809m S	Unspecified Disused Shaft	1974	1:10000
-	809m S	Unspecified Old Shaft	1960	1:10560
-	809m SE	Unspecified Shaft	1949	1:10560
-	836m E	Coal Shaft	1872	1:10560
-	879m S	Old Colliery	1949	1:10560
-	883m S	Unspecified Old Shaft	1900	1:10560
-	899m SE	Disused Colliery	1949	1:10560
-	905m E	Unspecified Old Shaft	1900	1:10560
-	934m NE	Unspecified Old Shaft	1949	1:10560
-	938m NE	Unspecified Disused Shafts	1989	1:10560
-	938m NE	Unspecified Disused Shafts	1985	1:10000
-	938m NE	Unspecified Disused Shafts	1974	1:10000
-	938m NE	Unspecified Old Shaft	1960	1:10560
-	967m SE	Colliery	1900	1:10560
-	970m S	Unspecified Old Shaft	1900	1:10560
-	970m S	Unspecified Old Shaft	1949	1:10560
-	971m S	Unspecified Old Shaft	1960	1:10560
-	972m S	Unspecified Disused Shafts	1985	1:10000
-	972m S	Unspecified Disused Shafts	1974	1:10000
-	975m S	Unspecified Disused Shafts	1985	1:10000
-	975m S	Unspecified Disused Shafts	1974	1:10000
-	978m S	Unspecified Old Shaft	1900	1:10560
-	980m S	Unspecified Old Shaft	1949	1:10560
-	983m S	Unspecified Old Shaft	1960	1:10560

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

5

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 93**

ID	Location	Name	Commodity	Class	Likelihood
1	On site	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
4	498m W	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
8	787m SW	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
-	806m W	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
-	820m 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

This data is sourced from the British Geological Survey.



18.7 Mining cavities

Records within 1000m

0

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

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

18.8 JPB mining areas

Records on site

1

Areas which could be affected by former coal 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. Further details and a quote for services 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

Areas which could be affected by past, current or future coal mining.

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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site

0

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

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



18.11 Gypsum areas

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

This data is sourced from British Gypsum.

18.12 Tin mining

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

This data is sourced from Mining Searches UK.

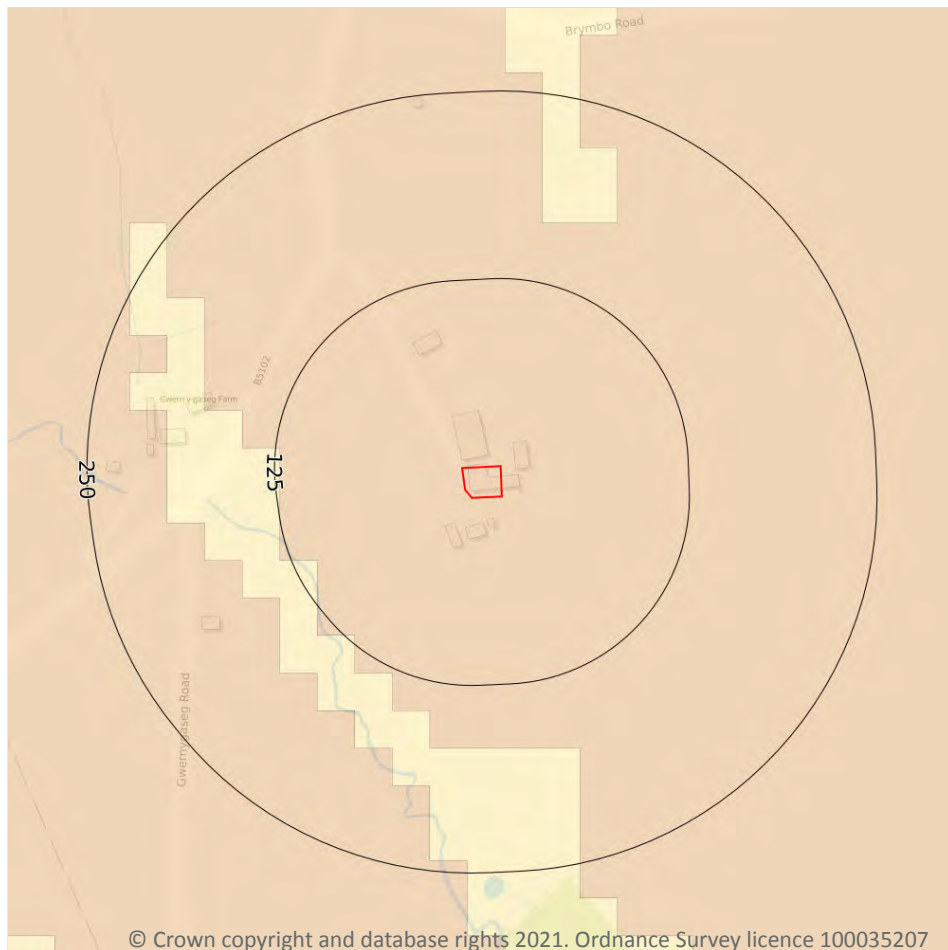
18.13 Clay mining

Records on site	0
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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 5% and 10%	Basic

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

7

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	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
On site	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
22m N	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
22m NW	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
41m NW	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
47m S	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
47m S	15 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 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

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**0**

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.

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m**0**

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



This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m

0

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

This data is sourced from HS2 Ltd.



Data providers

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

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Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



Appendix D

Groundsure Historical Map Pack

Site Details:

PLAS MOSTYN BACH, MINERA ROAD, MINERA, WREXHAM, LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1873

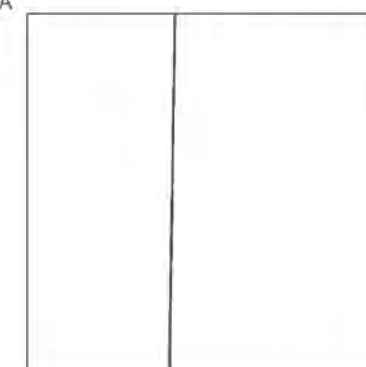
Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1873
 Revised 1873
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1873
 Revised 1873
 Edition N/A
 Copyright N/A
 Levelled N/A

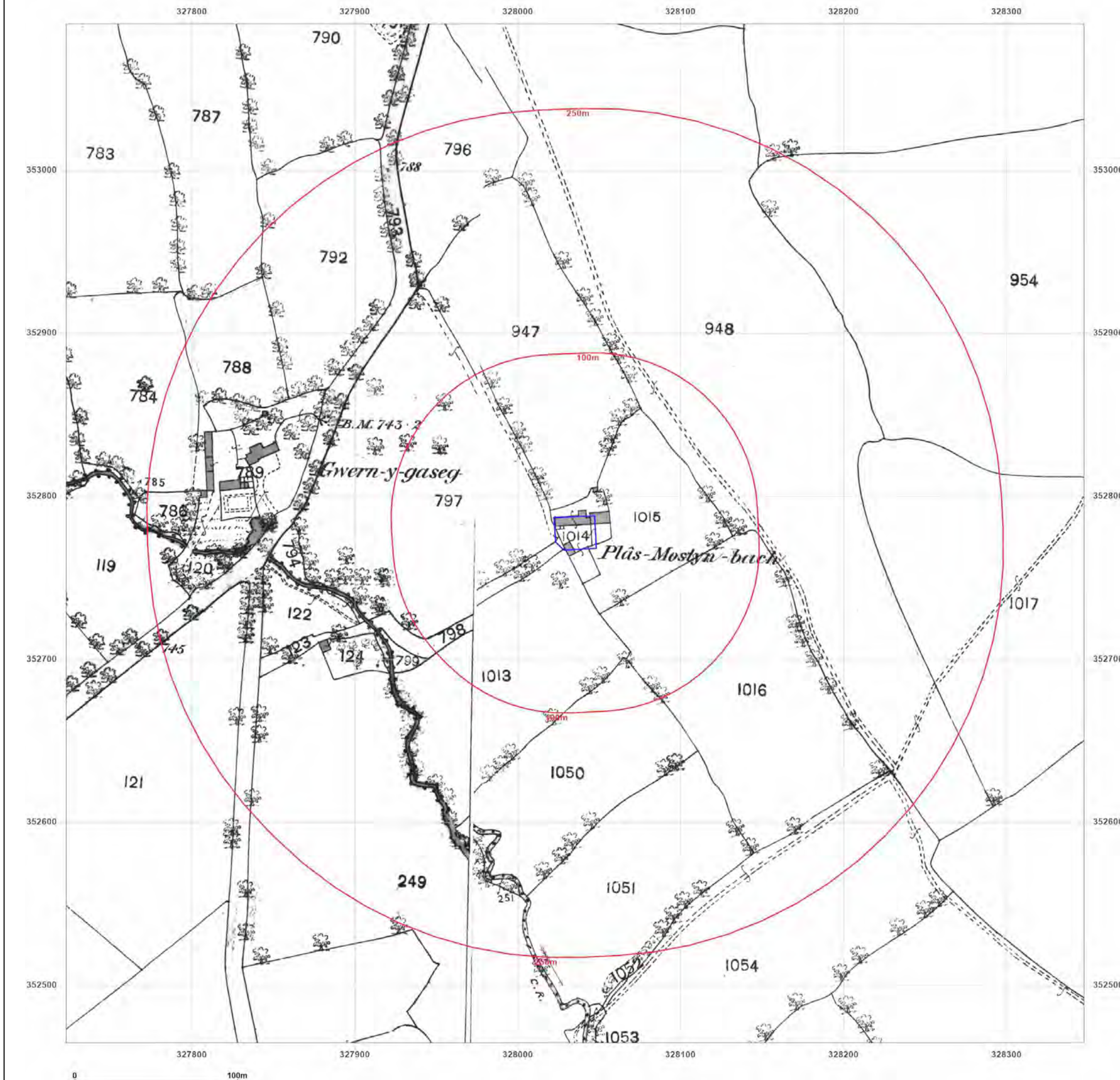


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Production date: 10 February 2021

Map legend available at:
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Site Details:

PLAS MOSTYN BACH, MINERA ROAD, MINERA, WREXHAM, LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1899

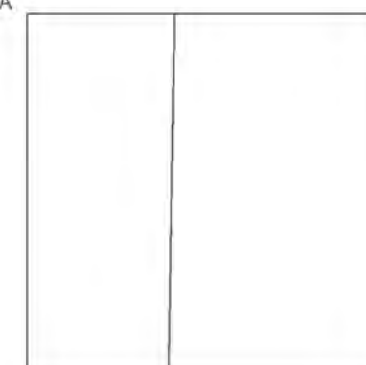
Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1899
 Revised 1899
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1899
 Revised 1899
 Edition N/A
 Copyright N/A
 Levelled N/A

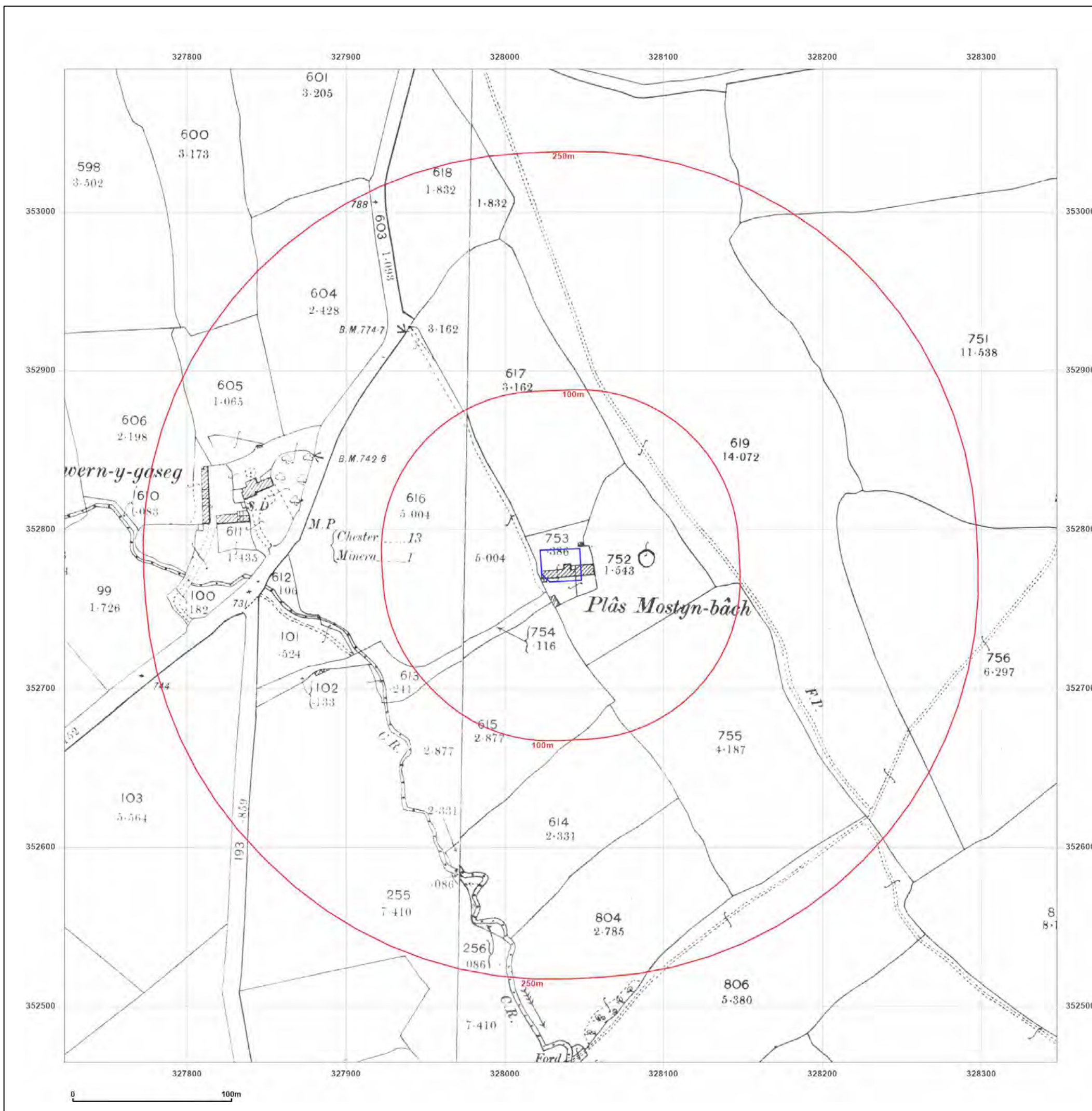


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Site Details:

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LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1912

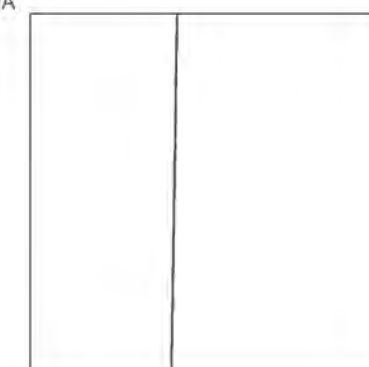
Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1912
Revised 1912
Edition N/A
Copyright N/A
Levelled N/A

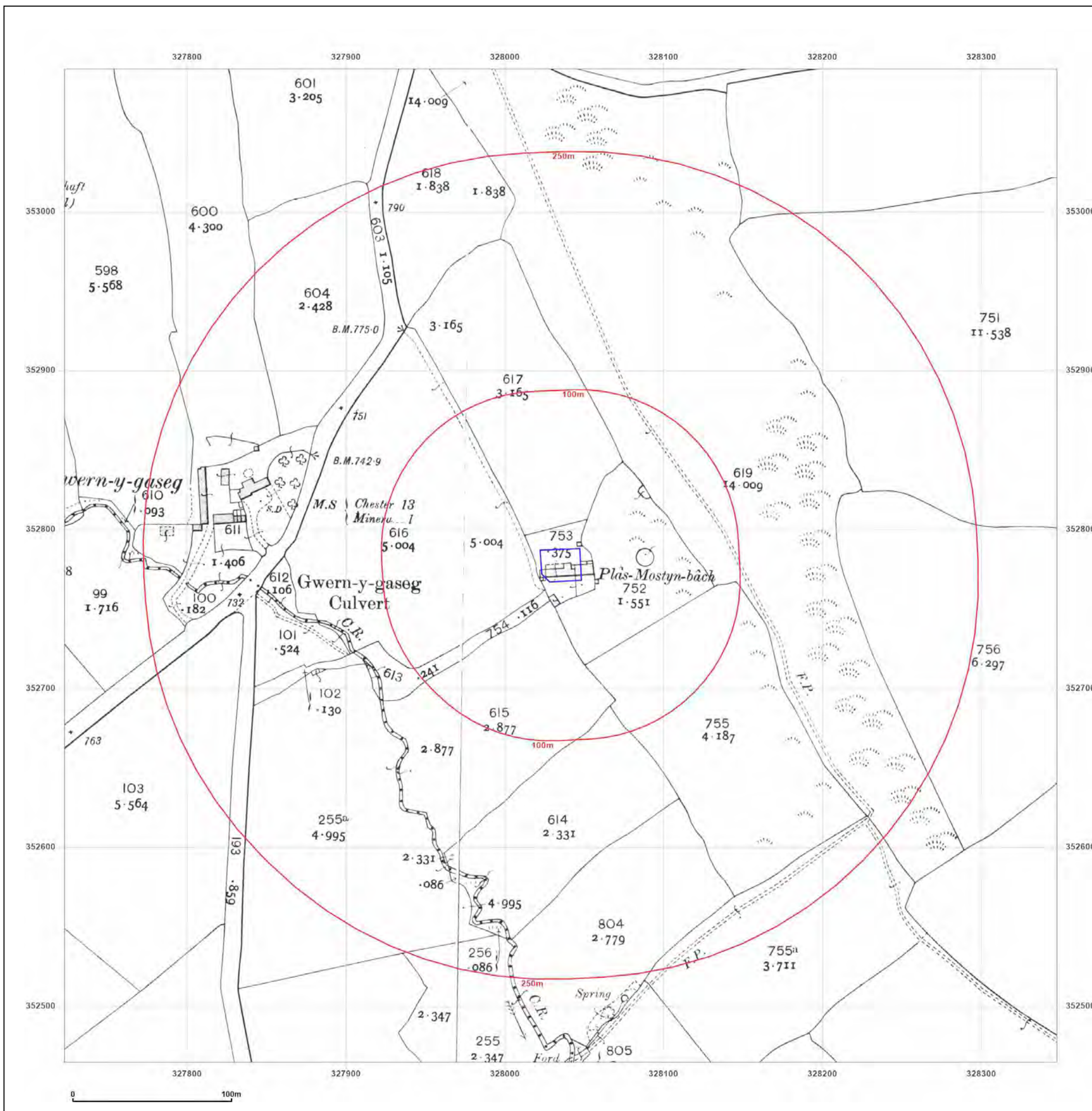


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Site Details:

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LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 1961-1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1959

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1959

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1959

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1963
Levelled 1959

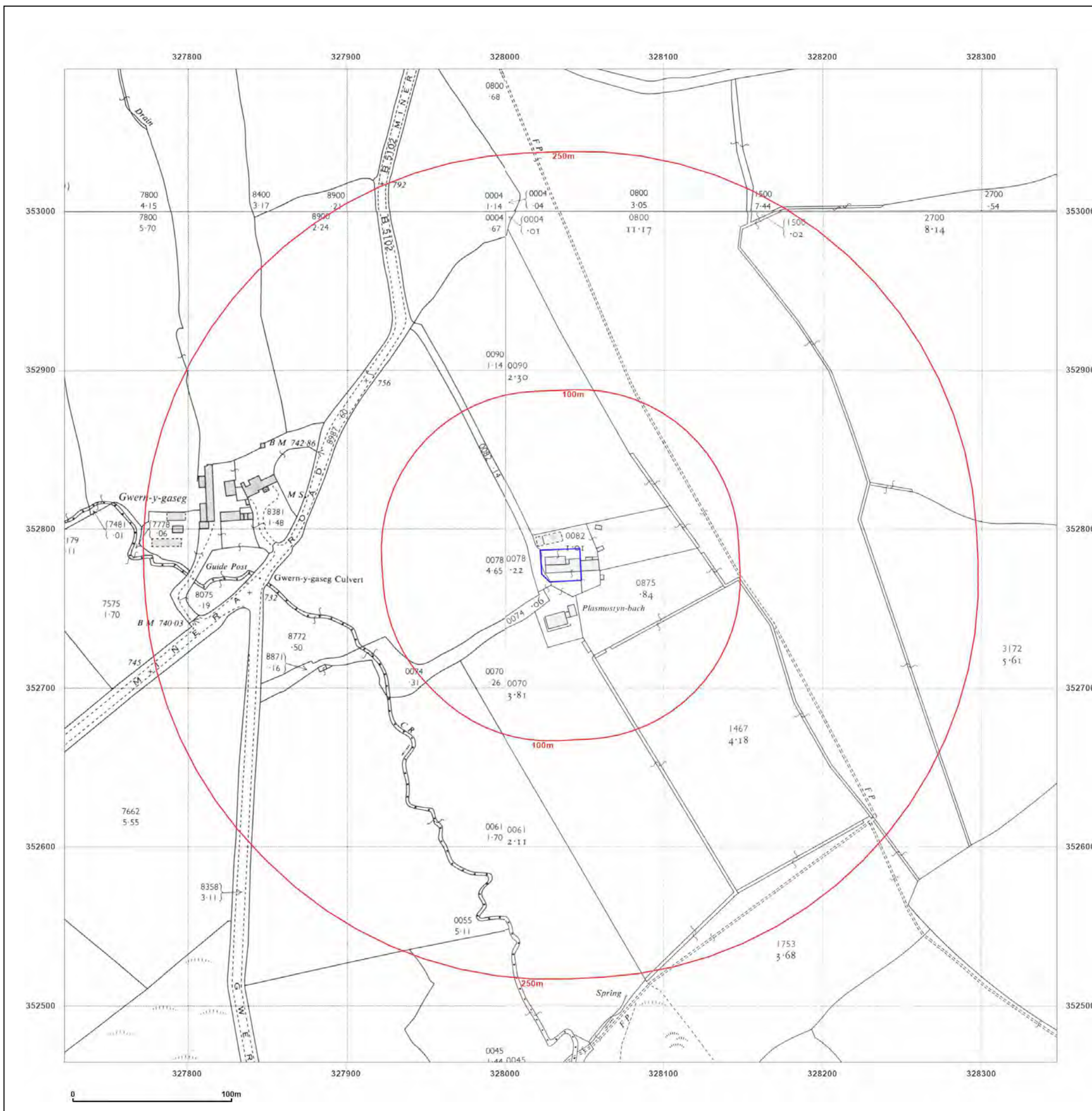


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LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 1963-1967

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
Edition N/A
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Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
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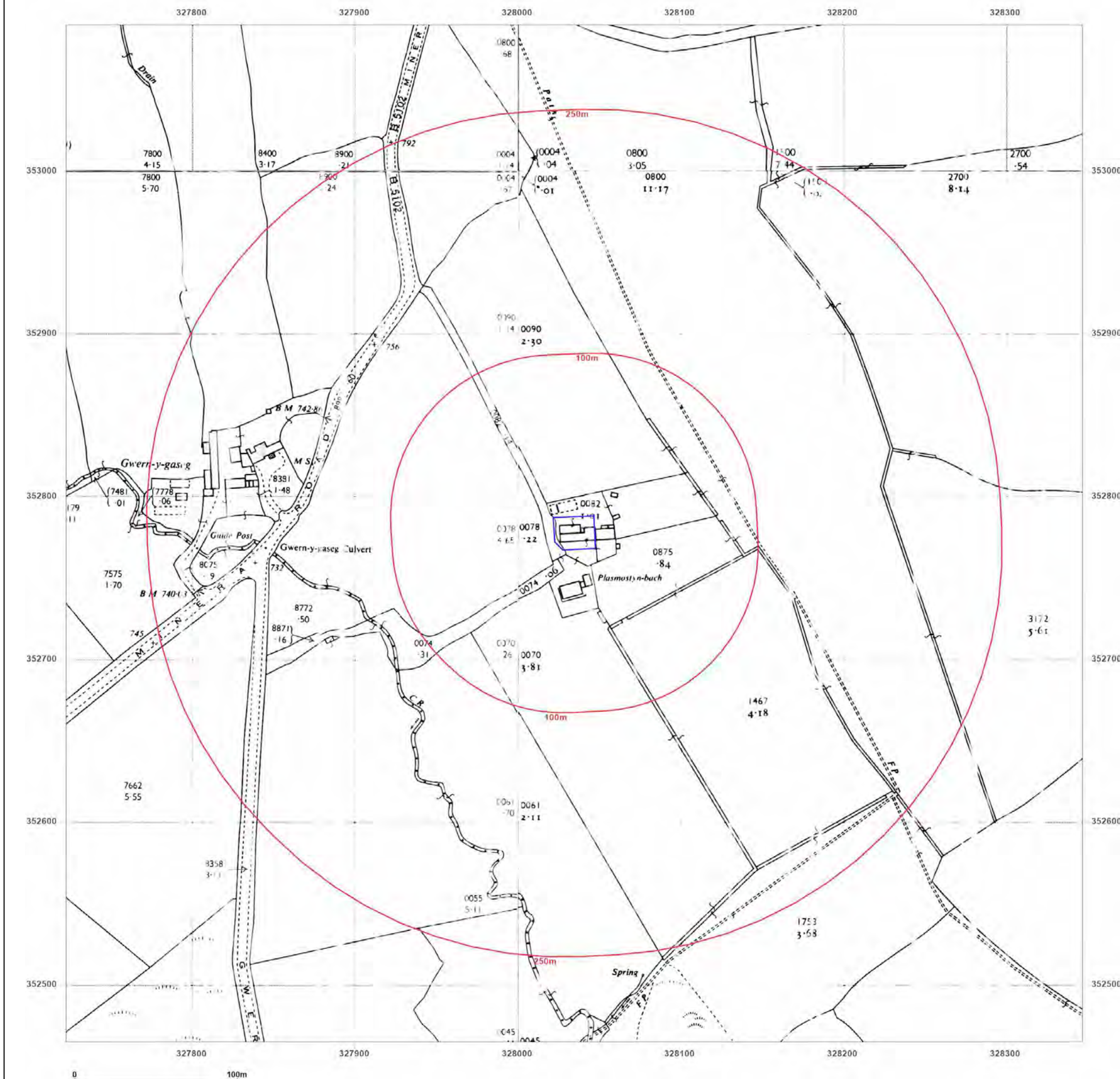


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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 1983-1984

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1959

Surveyed 1959
Revised 1984
Edition N/A
Copyright 1984
Levelled 1959

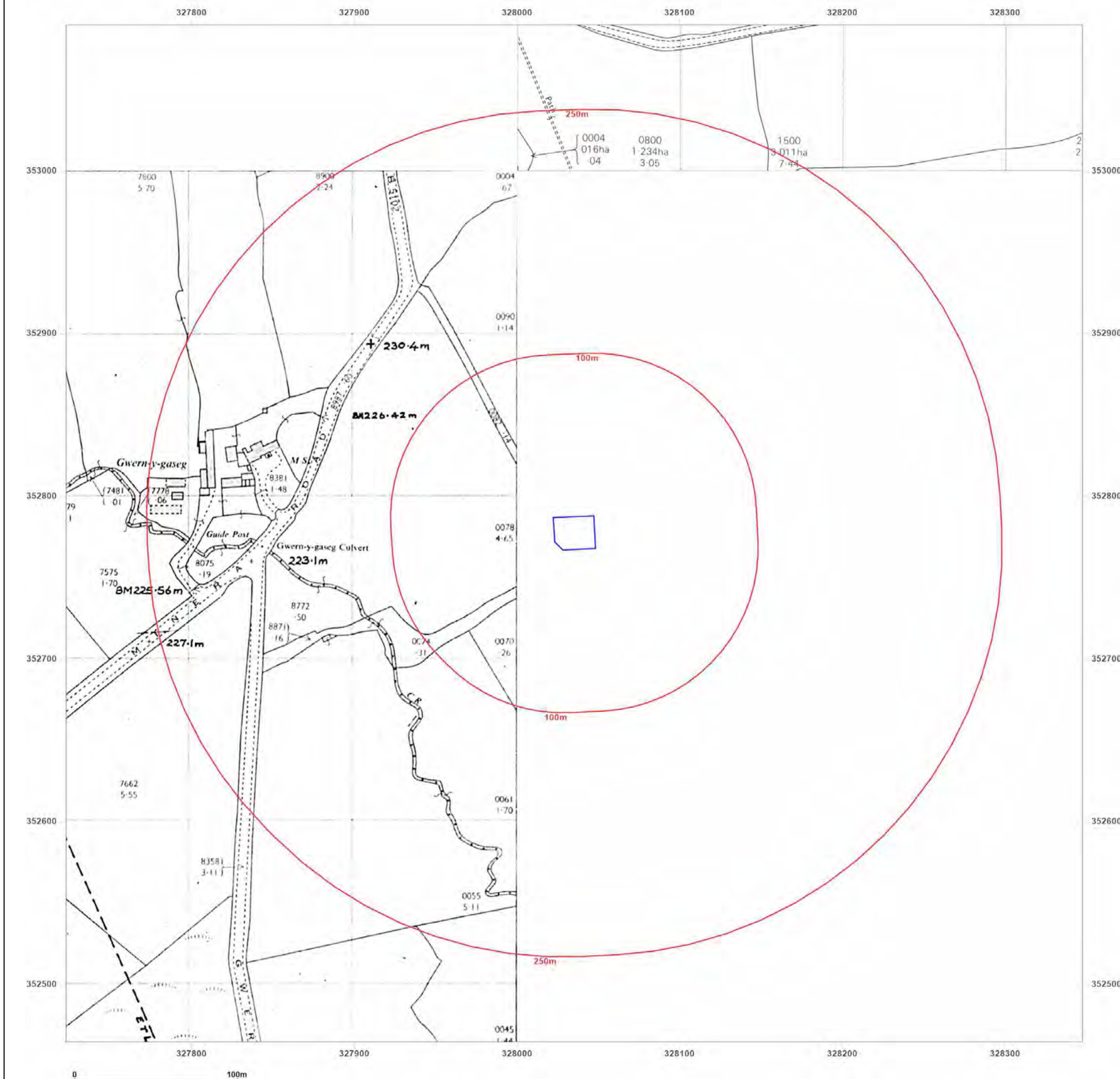


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LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1993
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Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1993
Revised N/A
Edition N/A
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Levelled N/A

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Revised N/A
Edition N/A
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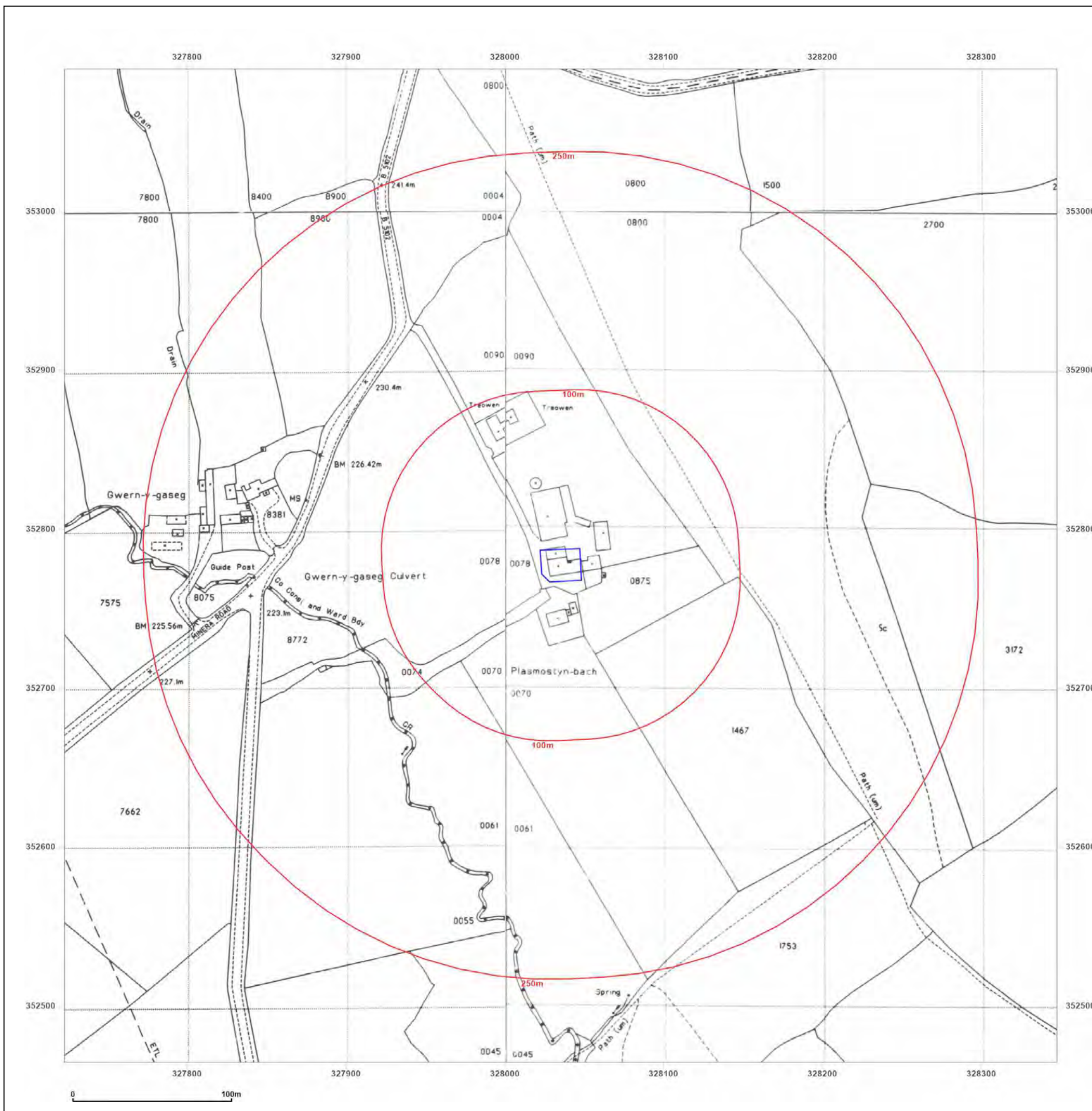


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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250

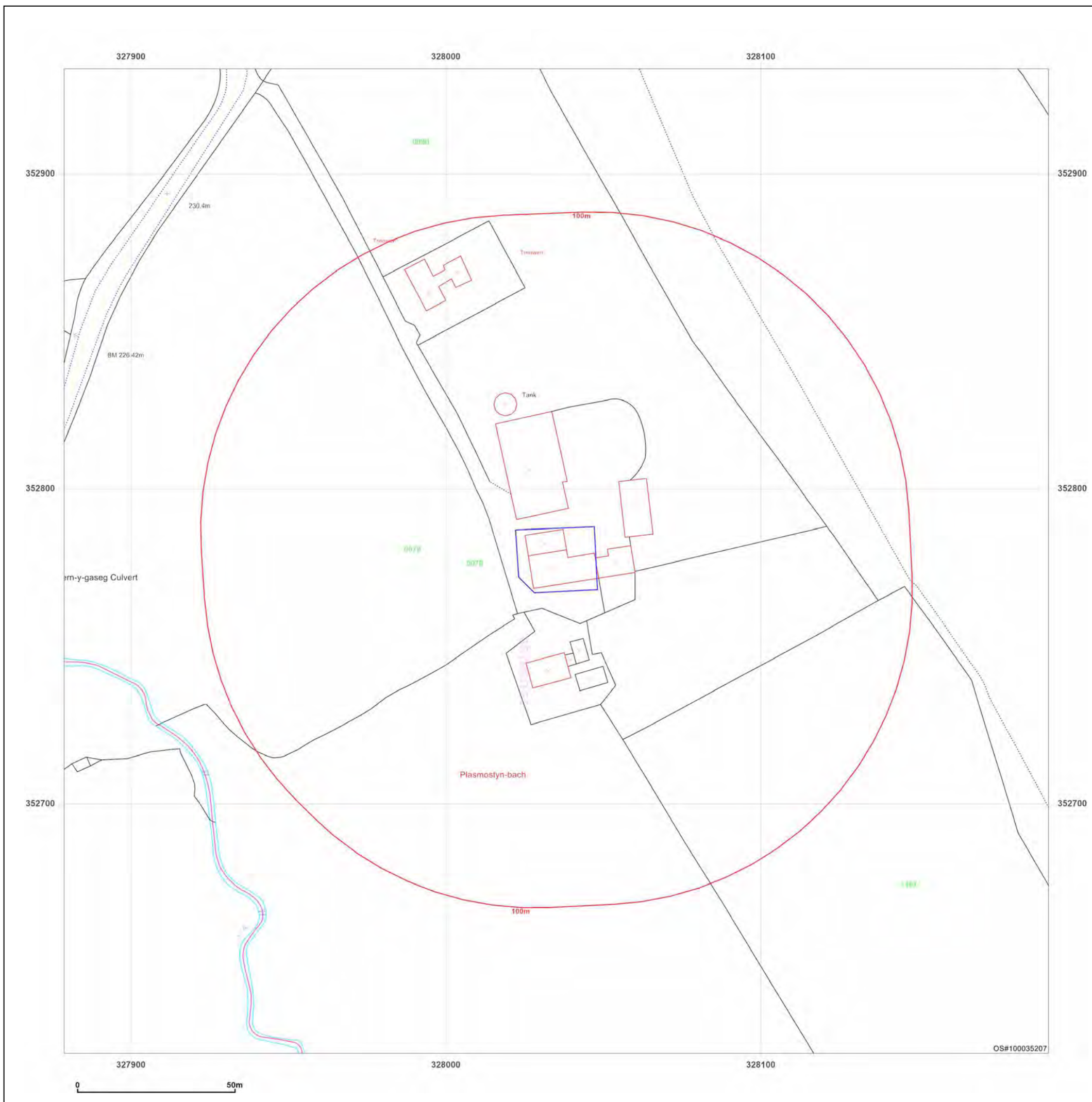


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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1872

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

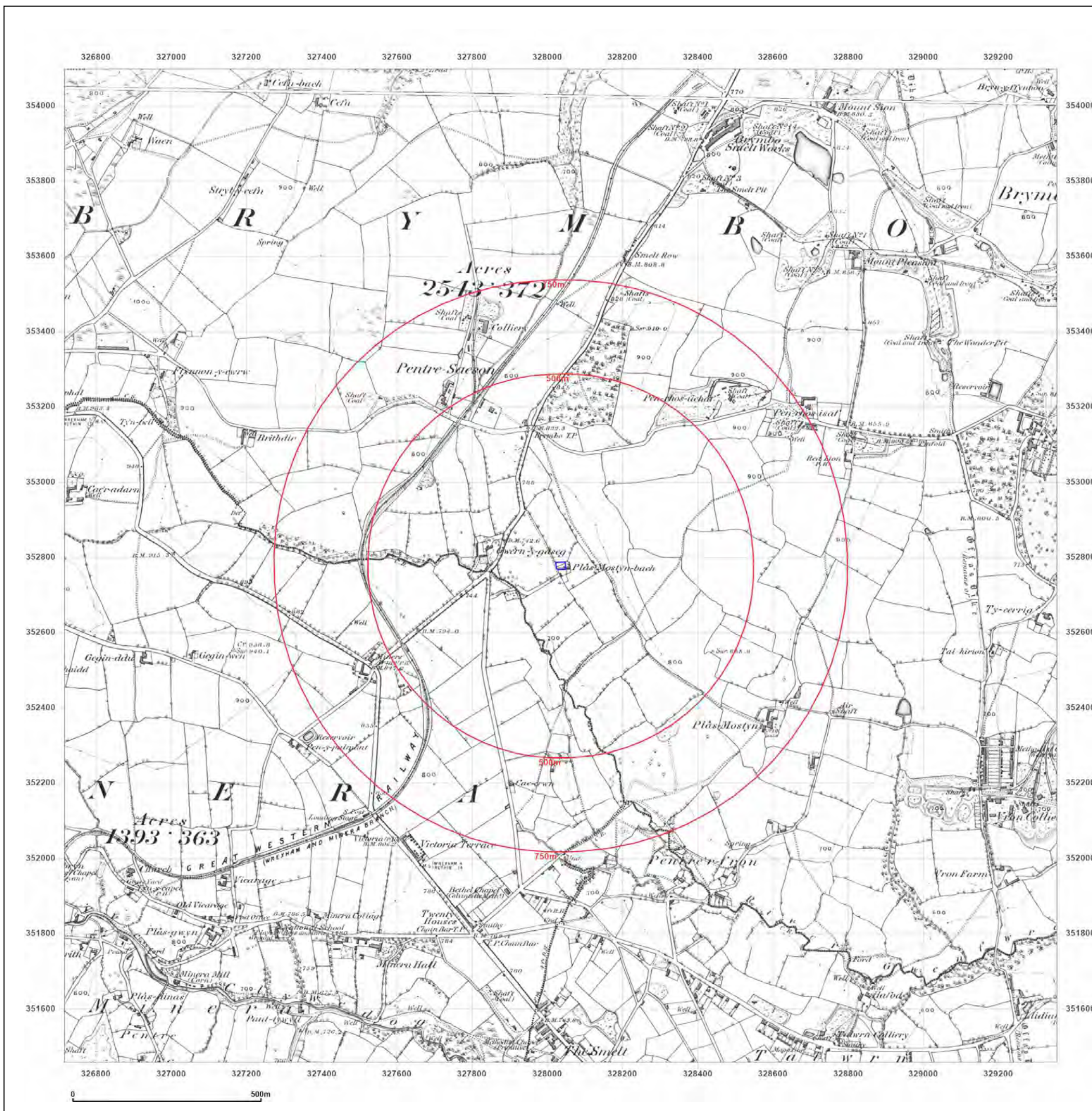


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Site Details:

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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1900

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
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Revised 1900
Edition N/A
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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1910-1914

Scale: 1:10,560

Printed at: 1:10,560



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Levelled N/A

Surveyed 1871
Revised 1910
Edition N/A
Copyright N/A
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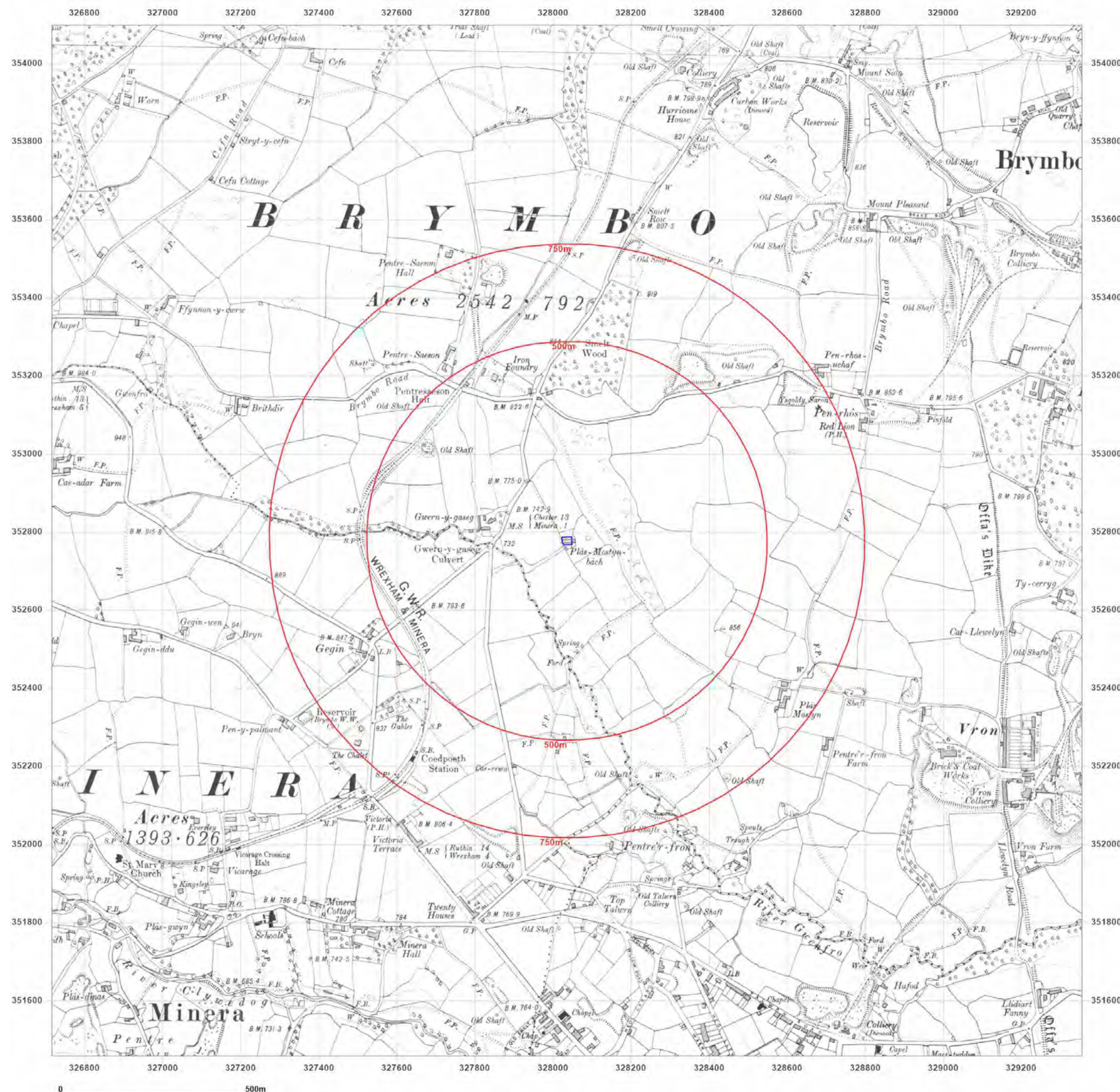


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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1871
Revised 1938
Edition 1938
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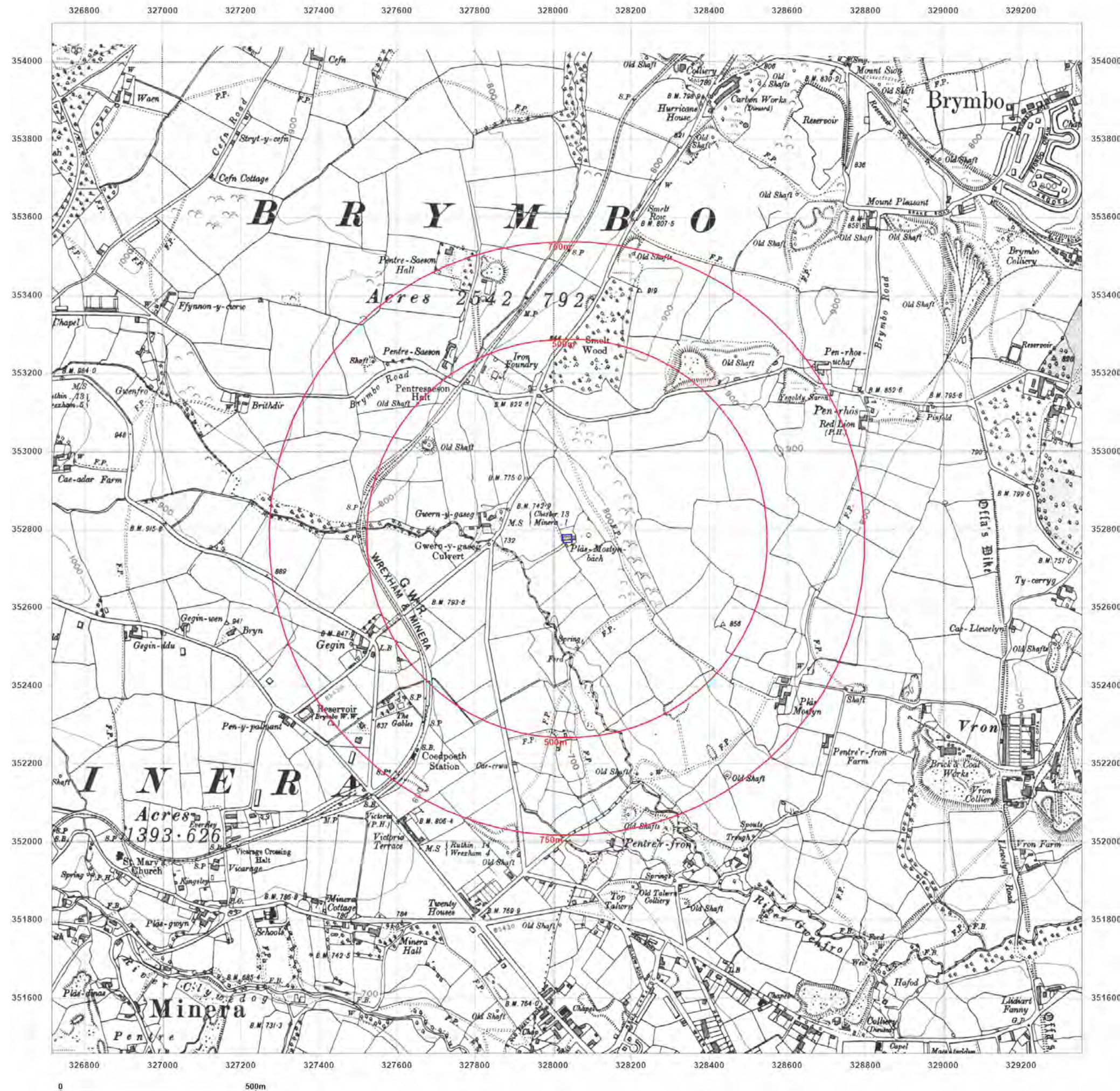


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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: County Series

Map date: 1949

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1871
Revised 1949
Edition N/A
Copyright N/A
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Surveyed 1871
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

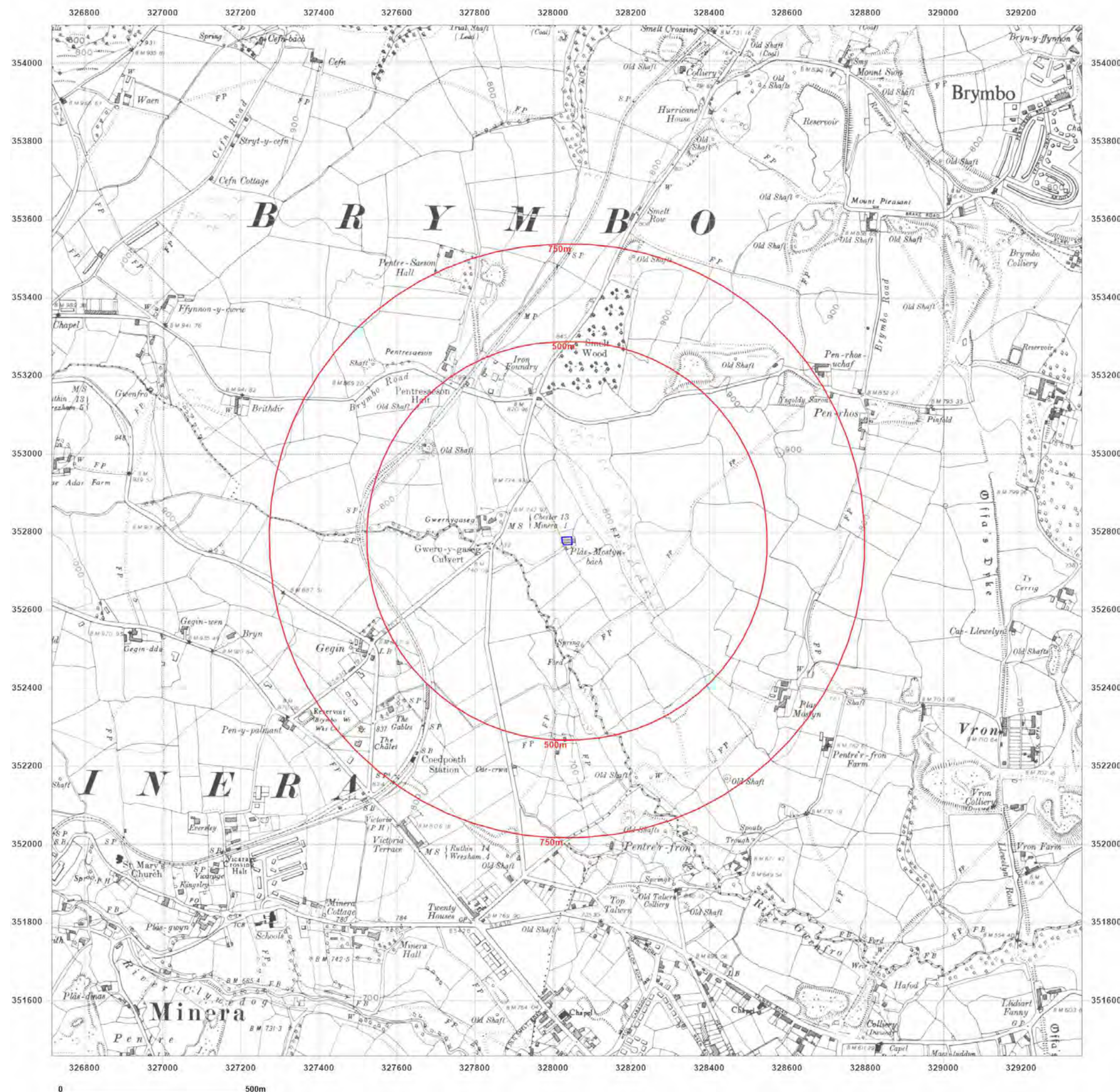


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Site Details:

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LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: Provisional

Map date: 1960

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1960
Revised 1960
Edition N/A
Copyright N/A
Levelled N/A

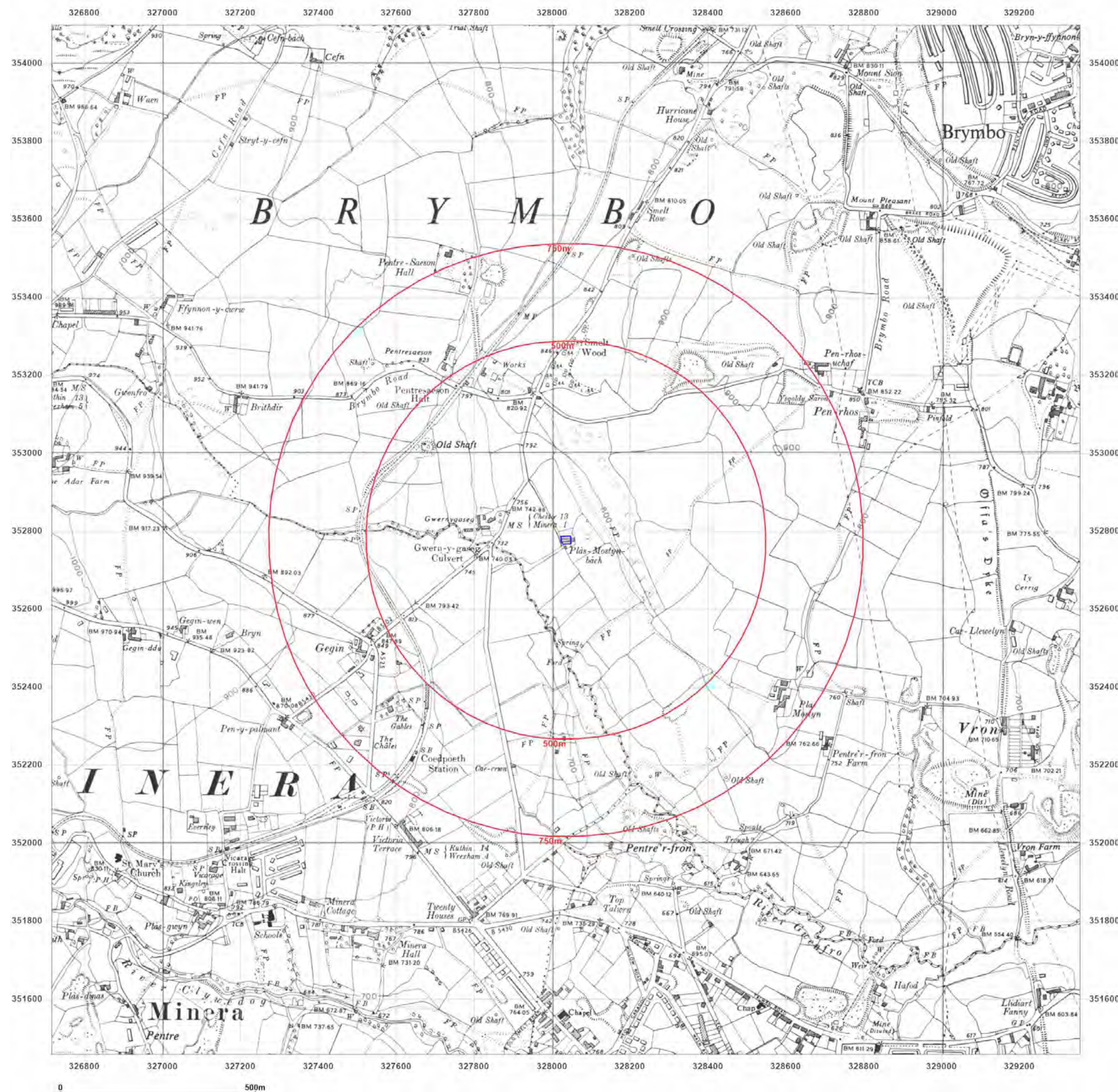


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ROAD, MINERA, WREXHAM,
LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 1976

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1970
Revised 1976
Edition N/A
Copyright 1976
Levelled 1973

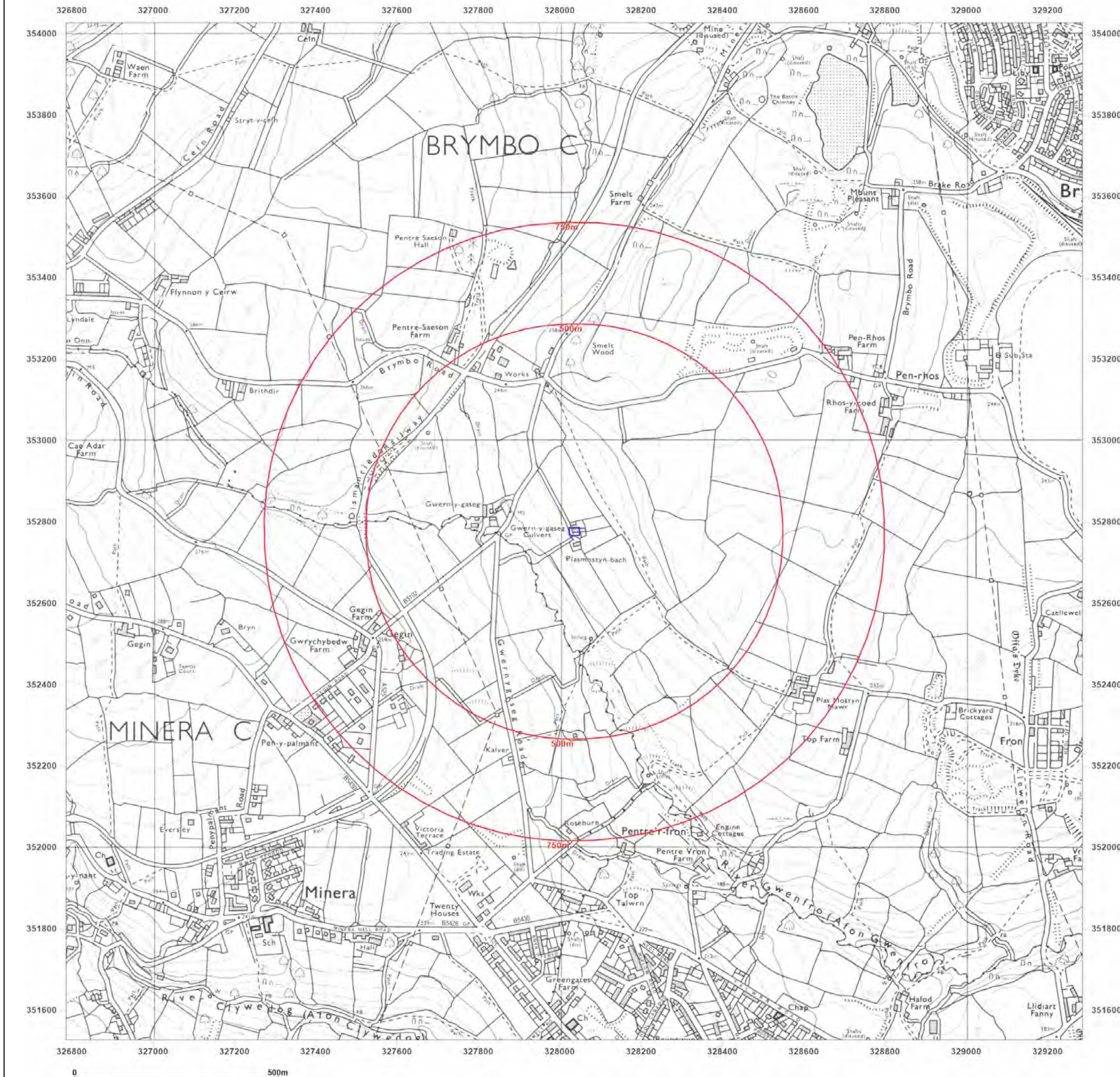


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Site Details:

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ROAD, MINERA, WREXHAM,
LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 1985

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1970
Revised 1985
Edition N/A
Copyright N/A
Levelled N/A

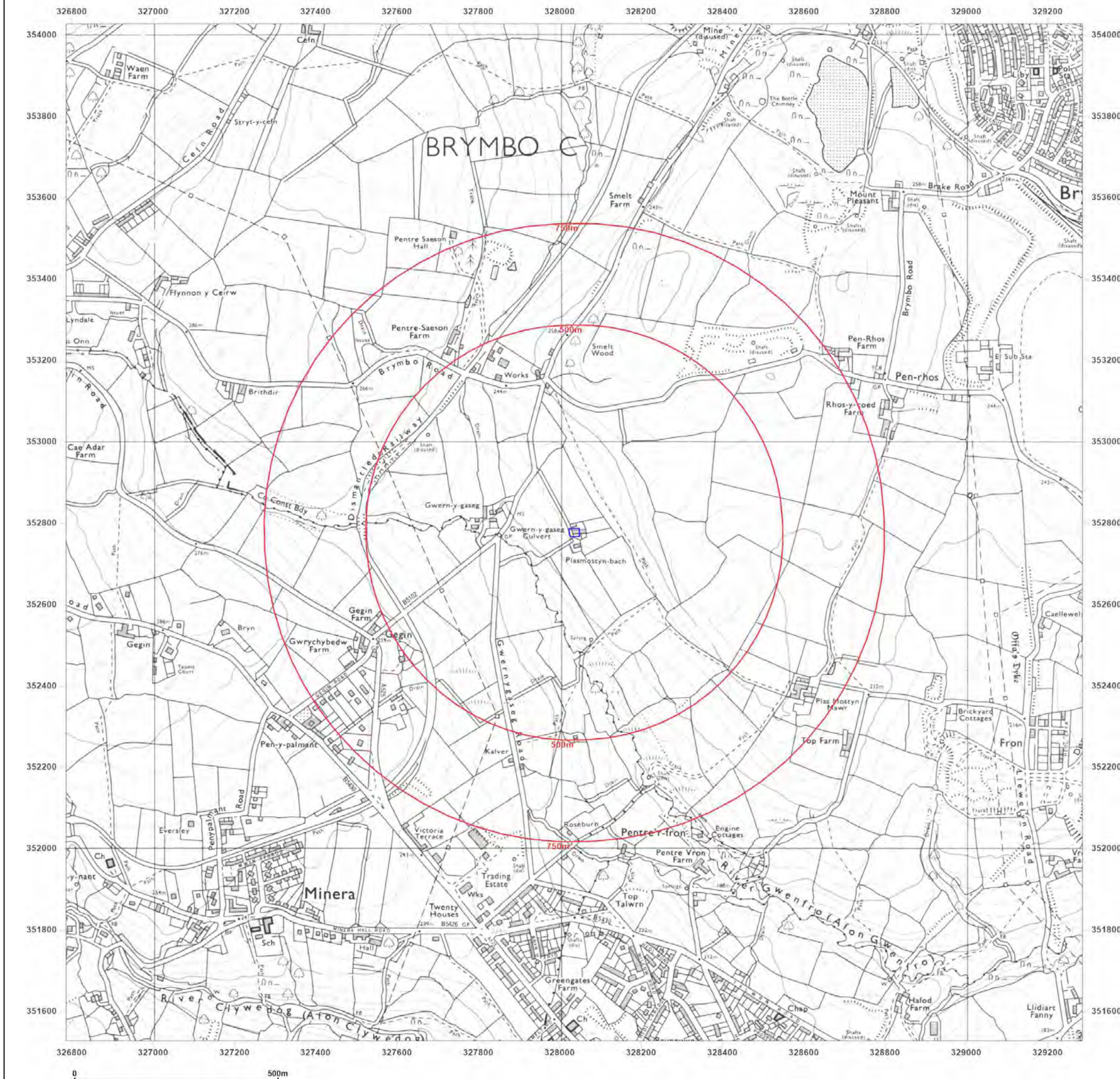


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Site Details:

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LL11 3AJ

Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 1989

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1983
Revised 1989
Edition N/A
Copyright N/A
Levelled N/A

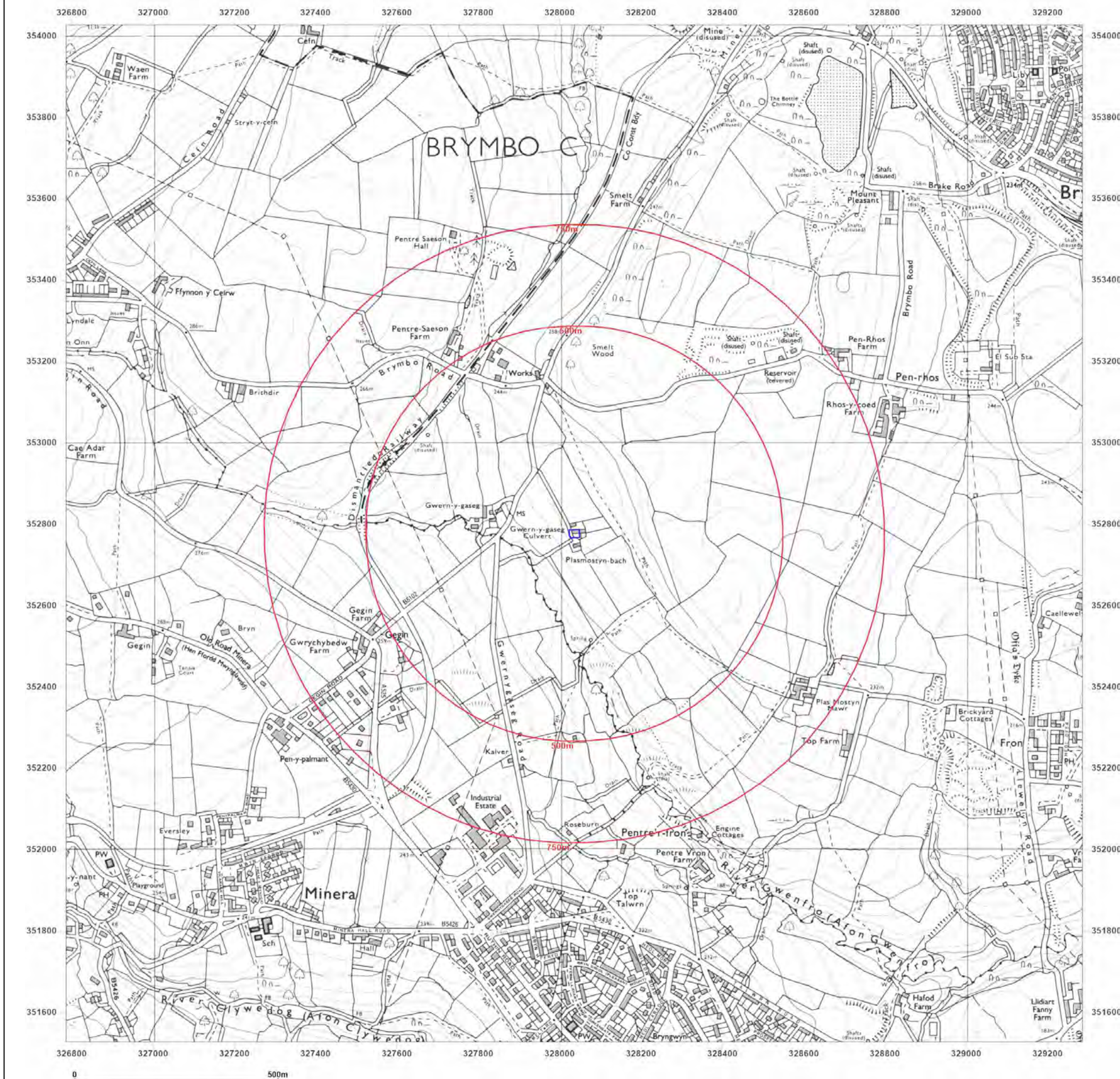


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Site Details:

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Client Ref: GSP-2021-1913
Report Ref: GS-7561419
Grid Ref: 328035, 352777

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000

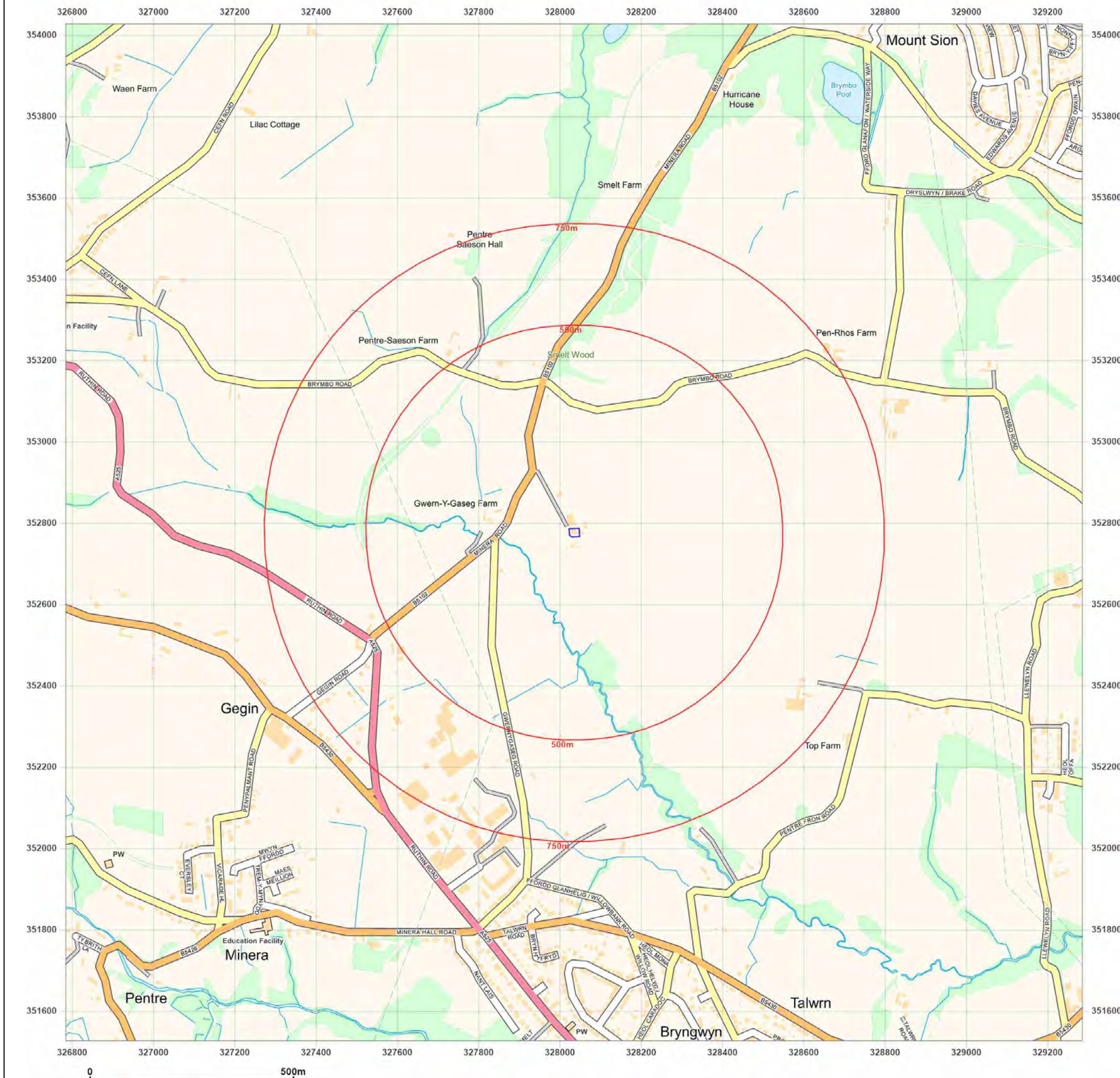


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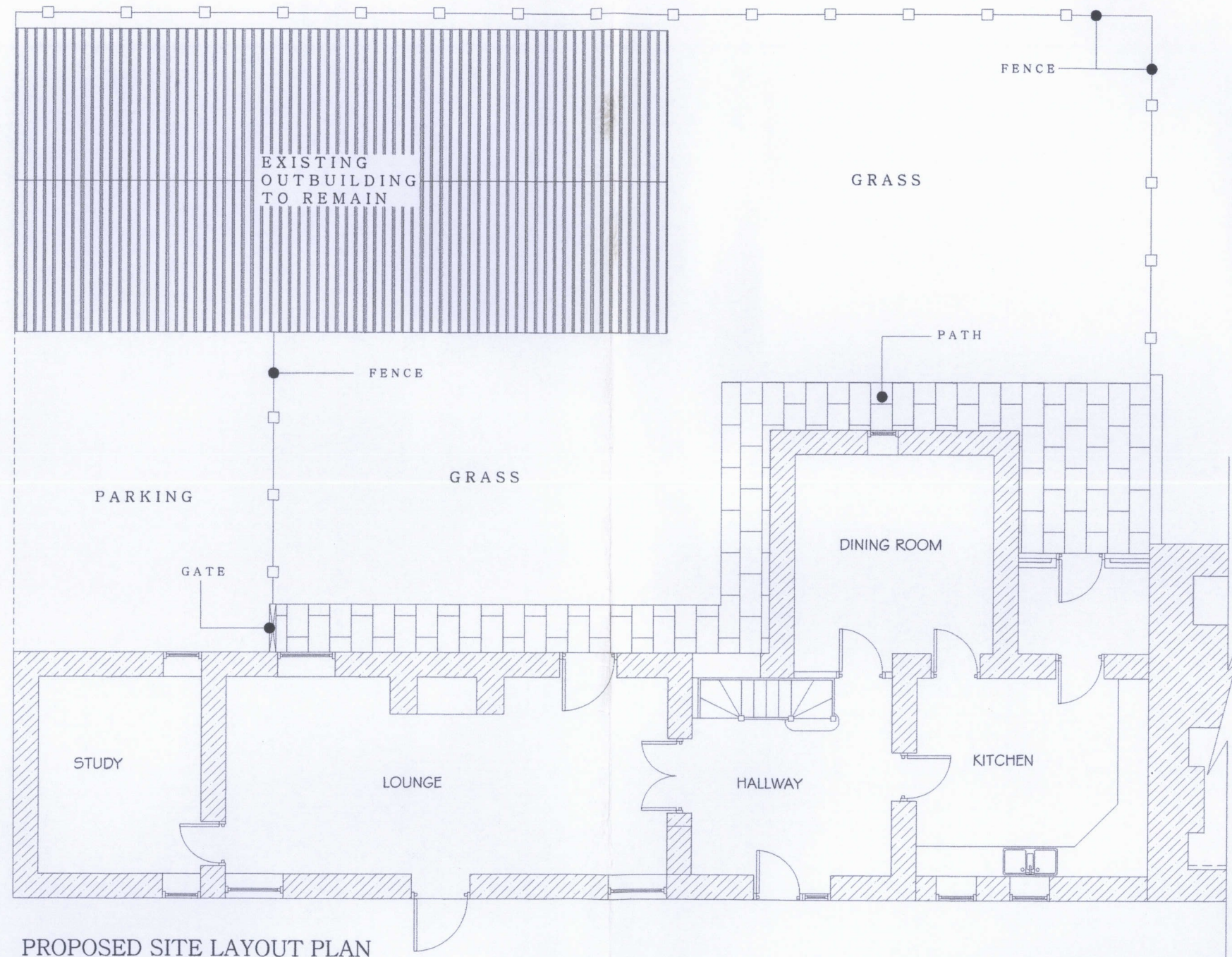
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Appendix E

Proposed Development Drawing

P /2017/0758



12 SEP 2017
PLANNING DEPARTMENT

PROPOSED