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PROPOSED RESIDENTIAL DEVELOPMENT MAESTEG, GWYNFRYN, WREXHAM FOR WALES & WEST HOUSING ASSOCIATION

JULY 2013

PHASE 1 GEO-ENVIRONMENTAL DESK STUDY REPORT

13057

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PHASE 1 GEO-ENVIRONMENTAL DESK STUDY REPORT

MAESTEG, GWYNFRYN,

WREXHAM

1.0 INTRODUCTION

1.1 Instructions

1.1.1 We are instructed by Wales & West Housing, Flint Office: Unit 2, Acorn Business Park, Aber Road, Flint, CH6 5YN to carry out a detailed Phase I desk study to examine the geotechnical and geo-environmental risks associated with the proposed redevelopment of a site situated off Maesteg, Gwynfryn, Wrexham. This risk assessment has been prepared in support of a planning application to redevelop the site in a private residential manner.

1.2 Objectives

1.2.1 This environmental assessment has been carried out in accordance with the principal recommendations of BS10175 : 2011 "Investigation of Potentially Contaminated Sites" with regard to the consideration of potential soil and groundwater contamination along with the generation and migration of toxic and explosive ground gasses. It is intended that the report will be submitted to the local planning authority as a preliminary risk assessment in support of a planning application. This report has been prepared to document the following:-

- *Review of readily available published data which could provide information on the current status, ground conditions and site history;*
- *Findings of a walkover survey undertaken on the 24th June 2013;*
- *Findings of a preliminary contaminated land risk assessment;*
- *Findings of a preliminary geo-technical risk assessment;*

1.3 Sources Of Information

1.3.1 This report has been prepared using information from the following sources:-

- *Groundsure Enviro-Insight report dated 14th May 2013;*
- *Groundsure Geo-Insight report dated 14th May 2013;*
- *All available old Ordnance survey maps;*
- *Environment Agency information.*

1.4 Development Proposals

1.4.1 The current proposed development is to comprise of five (5 No) two storey residential properties with private and communal gardens, highways and areas of private parking and hard standing. It is understood that access to the site will be from Ffodd Isaf located to the west of the site. It is acknowledged within this report that the proposed redevelopment will be subject to planning approval and it is possible that the development proposals may be amended as a result of local planning requirements. The whole site area has been considered within this report.

1.5 Limitations Of Report

1.5.1 This report is a desk study report which has been prepared using readily available information in accordance with the project stage requirements, budget and time scales. The opinions expressed in this report and the comments and recommendations given are based upon the information obtained from the desk assessment and an initial site reconnaissance. At this stage intrusive investigations have yet to be undertaken at site to establish actual ground and groundwater conditions and provide data for assessment of the environmental status of the site.

1.5.2 The information, views and conclusions drawn concerning the site are based in part on information supplied to Robert E Fry & Associates Ltd (REFA) by other parties. REFA has proceeded in good faith on the assumption that this information is accurate. REFA accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to REFA from others.

1.5.3 The geo-environmental walkover survey consisted of a general externally inspection of the site aimed at identifying any obvious signs of geo-technical hazards affecting the site and potential sources of ground contamination. Any risks identified in this desk study are perceived risks based on the information reviewed and currently available. Actual risks can only be assessed following a physical investigation of the site.

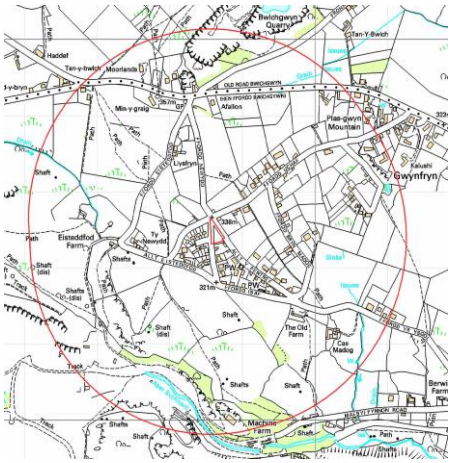
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2.0 THE SITE

2.1 Location

2.1.1 The site is roughly triangular in shape and is located at the junction of Ffodd Isaf and Allt Y Pentref in the village of Gwynfryn. It extends to an area of approximately 0.15 hectares and the centre of the site is situated at approximate National Grid Reference 325731,352495 within a rural area but with existing residential development to the west and south. Its location is shown in figure 1 below.

Figure 1: Site Location



2.2 Description, Geographic Setting & Topography

2.2.1 At the time of the preparation of this report the site appeared to be in a vacant condition and was an open field. The site is covered with long grass and areas of scrub land. Saplings, shrubs and older trees can be seen forming sections of the perimeter of the site.

2.2.2 The topography of the site is generally sloping from east to west. The highest point appears to be the northern most corner of the site with the lowest point being the south west corner of the site. The topography of the surrounding area appears to be typical Welsh low mountain village with undulating roads and countryside surrounding the site. The topography and layout of the site may impact upon the development proposals in terms of finished floor levels to individual properties and garden areas.

2.2.3 The site has regular boundaries which are formed by barbed wire and wooden post fencing. The western and eastern boundaries are formed by the roads Ffodd Isaf and Allt Y Pentref respectively. To the south the site is bounded by existing residential development some of which is shown on the earliest historic map dated 1874.

2.2.4 The site contains no apparent areas of previous development, however, satellite images show the site has been used for horse riding and/or jumping and grazing of animals.

2.2.5 The site contains a number of semi mature trees located at the northern corner of the site and along the southern boundary line. It is strongly recommended that an arboriculturist report should be undertaken upon all trees within and adjacent to this site prior to any development works taking place.

2.2.6 Service records for the site and the surrounding area have been supplied for review. In general, the majority of services run within the adjacent road ways, however, the service plans for British Telecom show underground telephone lines running along both the eastern and western boundaries of the site. The service records also show that overhead electricity cables run along the eastern boundary of the site. The walkover survey confirms that the overhead power lines, including their support posts, lie within the perimeter of the site, running along the eastern boundary of the site.

2.3 Site Walkover

2.3.1 A site walkover was undertaken on the 24th June 2013 in an order to determine the condition and environmental setting of the site to inform the desk study. At the time of walkover survey the weather conditions were warm and dry.

2.3.2 The walkover survey has confirmed that the whole of the site is in a vacant condition and is covered with long grass, bracken and shrubs. Visual appraisal of the vegetation within the site area has not located any areas of unusual "die back" or evidence which may be indicative of potentially contaminated ground conditions.

2.3.3 The walkover survey confirmed the presence of fences running around the perimeter of the site with a gate located in the northern corner of the site.

2.3.4 The site slopes quite significantly from east to west with the steepest section being along the southern boundary of the site.

2.3.5 The walkover survey has confirmed that a small number of semi mature trees and hedges are located in the northern corner of the site and along the southern boundary. It was not clear from the site walkover if the trees and shrubs to the south of the site were within the site boundary or part of the nearby residential gardens. It is strongly recommended that an arboriculturist report should be undertaken upon all trees within and adjacent to this site prior to any development works taking place. There is no visible evidence of any surface vegetation "die back" which may be suggestive of buried pollutants.

3.0 DESK STUDY

3.0.1 As part of our environmental desk studies we have commissioned an Enviro-Insight report by Groundsure which gives details of all recorded environmental features relating to the site and its immediately surrounding area. We have also obtained copies of all available old Ordnance Survey maps for the area and these also give historical guidance regarding the former usage of the site area and its immediate vicinity. A Geo-Insight report has also been commissioned which assess the geological structures within the general area of the site.

3.1 Landfill Sites

3.1.1 The Enviro-Insight report confirms that there are no BGS or Environment Agency Historical Landfill sites lying within a 1000m of the site area.

3.1.2 The report also shows that there are no waste transfer or waste treatment plants located within a 500m buffer zone of the site area. This site is considered to be sufficiently remote from the study site area so as not to represent a potential hazard in terms of laterally migrating pollution.

3.2 Current Land Uses

3.2.1 The environmental report has confirmed that their records indicate two (2 no) potentially contaminative industrial sites lying within 250m of the study site boundary. Both sites are recorded as being unspecified mines or quarries; the closest to the site is recorded as being located approximately 209m site of the site.

3.2.2 There are no records of any petrol or fuel sites located within 500m of the study site boundaries.

3.2.3 There are no records of any underground high pressure oil or gas pipelines located within 500m of the study site boundaries.

3.3 Hydrogeology & Hydrology

3.3.1 The superficial deposits within the vicinity of the site area are designated as Unproductive. These materials comprise of drift deposits with low permeability that have negligible significance for water supply or river base flows.

3.3.2 The bedrock underlying the site is classified as a both a Secondary A Aquifer (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) and a Secondary Undifferentiated Aquifer (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).

A Principal Aquifer is also located approximately 4.0m south west of the site. These are described as geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale

3.3.3 The Enviro-Insight report confirms that there are no records of groundwater abstraction licenses being granted within 1000m of the site of interest. In the main these abstraction points appear to be located in excess of 1.5km or so from the study site area. It is not anticipated that the redevelopment of this site will raise any potential contamination issues to these water abstraction points.

3.3.4 The Enviro-Insight report confirms that there are two (2 no) surface water abstraction licenses within 2000m of the site. The closest is recorded as being approximately 361m south west of the site and is used for mineral washing

3.3.5 The Enviro-Insight report confirms that there are three (3 no) potable water abstraction licenses within 2000m of the site. However, the closest is recorded as being approximately 1482m north west of the site and it is not anticipated that the redevelopment of this site will raise any potential contamination issues to these water abstraction points

3.3.6 The Enviro-Insight report indicates that the site is not located within a Source Protection Zone.

3.3.7 The Enviro-Insight report records a number of Detailed River Network entries within 500m of the study site. The closest being locates approximately 285m west of the site.

3.3.8 There are no recorded surface water features within 250m of the site of interest.

3.4 Flooding

3.4.1 There are no flooding hazards indicated to lie within the site or its immediate proximity. Special precautions against flooding from surface water features is not considered to represent a potential hazard at this site.

3.4.2 Given the overall topography of the site, groundwater flooding is considered to represent a very low possibility. The sloping nature of the site is unlikely to cause areas of standing surface water at times of high rainfall.

3.5 Environmentally Sensitive Sites

3.5.1 The study site area is indicated to lie within the general proximity of six (6 No) designated environmentally sensitive sites. Ruabon/llantysilio Mountains And Minera are recorded as being a Site of Special Scientific Interest. The closest recorded area is situated some 79m south west of the site. Berwyn A Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains is recorded as being a Special Area of Conservation with the closest recorded area being situated some 82m south west of the site

3.5.2 The remaining environmentally sensitive sites are situated between 315m west and 904m south of the site area.

3.5.3 An area of replanted historic woodland is also recorded and situated 1889m north east of the site. The redevelopment of this site on a residential basis would not be anticipated to have any significant impact upon the surrounding environmentally sensitive sites.

3.6 Geology

3.6.1 The superficial deposits located within this area are likely to comprise of Devensian glacial till deposits consisting of boulder clays with interspersed lenses and bands of sands and gravels. No superficial deposits are recorded within the boundary of the site itself; however the glacial till is recorded in outliers 50m and 459m to the north west of the site and 290m east. An area of peat is also shown on the superficial geological map approximately 270 to the north east of the site.

3.6.2 The solid geology underlying the site is relatively complex and comprises of the Bowland Shale Formation and the Gwespyr Sandstone. The strata typically comprises of mudstone and interbedded sandstone and argillaceous rocks respectively. The permeability of these deposits is classed as Low to Moderate. Also worthy of note is the solid geology recorded as being 4m south west of the site. This comprises of the Minera Formation, an interbedded limestone and sandstone.

3.6.3 A number of faults are recorded within 500m of the study site. The closest is located 4.0m south west of the site and is associated with a mineral vein recorded as being at the same position. Other combinations of fault/mineral vein are also recorded at 181m, 224m and 334m south west of the site. In general, the faults trend in a north west to south east direction, however, some adjoining faults trend in a north east to south west direction. Given the location and distance to the fault zone, special considerations may need to be taken into account when designing a foundation solution.

3.6.4 The geological report confirms that the site is located within a coal mining area and as such a Coal Authority Report was obtained. Reference is also made to a significant number of non-coal mining areas, particularly Lead Mining. The geological report confirms that a vein of lead was recorded within the site boundary and therefore it is highly likely that underground mining maybe known within or very close to the area. The closest recorded Lead mine is located approximately 186m south west of the site boundary.

3.6.5 The Coal Authority Report states that the site is not within the zone of likely physical influence on the surface from past underground workings and is not in the likely zone of influence of any present underground coal workings. However, reserves of coal exist in the local area which could be worked at some time in the future.

3.6.6 The site is located within a radon affected area as between 10 and 30% of properties are above the action level. In accordance with Building Research Publication BR211 full radon protective measures are necessary within proposed structures located upon this site.

3.6.7 The Geo-Insight report also shows that the area surrounding the site is subject to the formation of natural cavities within the Carboniferous Limestone. The closest being a vadose cave located 297m south west of the site.

3.7 Ground Workings

3.7.1 The Geo-Insight report has identified a number of historical surface ground workings, the closest of which is a refuse heap located 213m west of the site. The Geo-Insight report also confirms a significant number of historical underground workings. In general these relate to the lead mining identified within their local area particularly the number of unspecified and disused mineshafts. The nearest historical underground working is identified as a lead mine which is located 196m south west of the site.

3.7.2 The Geo-Insight report also identifies a number of current BGS ground workings within 1000m of the study site. These relate to deep coal mining located approximately 220m south east of the site and lead mining located 226m west of the site. All BGS current ground workings are labelled as having a status of ceased.

3.8 Soil Chemistry

3.8.1 The initial desk study information presented by Groundsure now includes an estimation of the natural soil chemistry within 250m of the study site boundary. The estimated geometric mean soil concentrations of arsenic, cadmium, chromium and nickel are all anticipated to lie below the current soil guideline values, however lead is indicated to be in the range of 150 – 300mg/kg and therefore may have potential to exceed the currently accepted soil guideline value of 275mg/kg.

3.9 Site History

3.9.1 Table 1: Review Of Historical Maps

Date	Site	Adjoining Land
1874	*The site itself is shown to be at the junction of five roads and appears to be open farmland.*	*The majority of the area surrounding the site appears to be open farm and marsh land. A number of cottages can be seen adjacent to the southern boundary of the site. A small number of residential properties can also be seen to the south east of the site. Old mineshafts can be seen to the north west, west, south west and south east of the site indicating heavy concentration of mining in the area. Also located to the south of the map is a railway line. This runs in an approximate east to west direction and is located approximately 500m south of the site at its nearest point. The railway line appears to service both the Ragman Lead Mine located approximately 450m south west of the site and the Minera Lime Works. The river named Aber Sychnant can be seen located to the south of the site.*
1875	*The map has been left blank for the site of interest.*	*The majority of the map is left blank. A visible section to the west of the map appears unchanged.*
1899	*No significant changes.*	*A Methodist chapel has been built to the south east of the site, the remaining area appears relatively unchanged.*
1900	*No significant changes*	*No significant changes.*
1912	*No significant changes.*	*No significant changes.*
1914	*No significant changes.*	*The area immediately surrounding the site appears relatively unchanged. Further to the south of the site beyond the river Aber Sychnant it can be seen that mining and quarrying is a significant feature.*
1938	*No significant changes.*	*The western half of the map is left blank. The visible section appears unchanged from the previous map of the same scale.*
1949	*No significant changes.*	*No significant changes.*
1960	*No significant changes.*	*It would appear that a small housing estate and associated roads has been constructed to the immediate west of the site. The remainder of the map appears relatively unchanged from the previous map of the same scale.*
1962	*No significant changes.*	*No significant changes.*

1974	*No significant changes.*	*The area immediately surrounding the site appears unchanged from the previous map of the same scale. Further afield the Minera Lime works located to the south of the site appears to have closed and the railway lines servicing this works are shown as dismantled.*
1985	*No significant changes.*	*The area immediately surrounding the site appears relatively unchanged. Further afield a number of the buildings associated with the Minera Lime works are no longer present. The most westerly section of the map is left blank.*
1989	*No significant changes.*	*The majority of the land surrounding the site appears unchanged from the previous map of the same scale. Some small scale residential expansion can be seen approximately 500m north east of the site.*
1991	*No significant changes.*	*Continued residential expansion can be seen to the north east of the site.*
1993	*No significant changes.*	*No significant changes.*
2002	*No significant changes.*	*No significant changes.*
2012	*No significant changes.*	*No significant changes.*

3.9.2 Careful appraisal of all available historical information has confirmed that the site has been undeveloped since at least 1874. The area immediately surrounding the site has mostly been open farmland. Some small scale residential development can be seen to the north east and south east of the site. The major industry located in the area can be seen approximately 500m south of the site boundary. This industry comprises of large scale mining and quarrying, however it would appear that the majority of the industry activity located in this area has ceased.

4.0 REVIEW OF GEO-ENVIRONMENTAL RISK

4.1 Introduction

4.1.1 This element of the report is aimed at identifying possible risks, if any, arising from substances used or deposited on site or from other sources of land contamination. Both past and current potentially contaminative land uses have been considered.

4.1.2 The risk assessment utilises a source-pathway-receptor methodology for assessing whether a source of contamination could potentially lead to harmful consequences. This requires that there be a pollutant linkage from source to receptor for harm to be caused. The source-pathway-receptor methodology relationship allows an assessment of the environmental risk to be determined based upon the nature of the source, the degree of exposure of the receptor of the source and the sensitivity of the receptor.

Table 2 : Statutory Receptors & Pathways

Target (Receptor)	***Potential Source – Pathway Linkage***
Site Users / Residents	*Inhalation of soil gas, odours or dust. Ingestion of, and skin contact with, contaminated soil. Ingestion of contaminants in vegetables etc. or in soils adhering to vegetable etc.*
Construction / Maintenance Workers	*Inhalation of soil gas, odours or dust. Ingestion of, and skin contact with, contaminated soil.*
Plants	*Adverse effects on growth caused by presence of contaminants in soil.*
Buildings & Structures	*Flow of ground gas into buildings. Asphyxiation, toxicity, explosion & fire hazards. Sulphate attack of foundations. Hydrocarbons penetration plastic water supply pipes.*
Groundwater	*Migration of soluble contaminants into groundwater on/off site. Migration of oils into groundwater on/off site.*

Surface water	*Migration of soluble contaminants and/or direct run off of contaminants. Migration of oils into groundwater on/off site.*

4.1.3 A conceptual model of plausible pollutant linkages has been formulated for the site in accordance with the risk assessment approach applied to contaminated land assessment.

4.2 Potential Sources Of Contamination

4.2.1 The historical Ordnance Survey maps suggest that this site has been undeveloped throughout its recorded history. Historical on line satellite images suggest that the site has been utilised as an area for horse riding and/or jumping and grazing of animals. The site is now mostly overgrown.

4.2.2 The area surrounding the site has mainly been used for residential and agricultural purposes. The OS historic maps show a number of cottages located to the south of the site and during the 1960's a small residential development was constructed to the west of the site. Apart from farming there are no records of any industrial or commercial activity having taken place within the immediate vicinity of the site.

4.2.3 The area surrounding the site is known for lead mining, however, there is no historic evidence for shafts within 250m of the site or waste ever being deposited within the site boundary.

4.2.4 There are no recorded landfill sites indicated within 1000m of the site of interest.

4.2.5 Potential sources of contamination are likely as follows:-

- *Naturally occurring elevated concentrations of contaminants within the topsoil and natural strata;*
- *Wastes derived from general farming activity;*
- *Potential for mine waste being fly tipped within the site boundary.*

4.3 Pathway For Migration

4.3.1 It is recognised that the migration pathways could change during the development of the site. These pathways are summarised below:-

- *Migration of contamination (if present) via the un/saturated zones;*
- *Migration of contamination (if present) via buried services and foundations;*
- *Run-off from adjacent site areas;*
- *Migration of ground gas via soil pores;*
- *Direct contact with contaminated materials.*

4.3.2 This list recognises that it is plausible that there are pathways associated with the presence of both on site and off site contamination. The above list recognises that the new development may not affect certain migration pathways such as migration in the saturated zone from an offsite source but could create new pathways such as the presence of services and foundations

4.3.3 It is anticipated that, if a potential risk is identified, it can be reduced to an acceptable level by using a combination of mitigation measures during construction and in the building design. Site workers may be exposed to bare ground and existing building fabrics when clearing and redeveloping this site.

Precautions should be taken to reduce the risks associated with these pathways including the adoption of personnel protective equipment (PPE), being rigorous in matters of personnel hygiene and adopting safe practices for workers entering enclosed underground cavities. Environmental management practices should be implemented to prevent potential impact associated with dust generation and dispersion and surface water run-off for example.

4.4 Potential Receptors

4.4.1 The principal receptors are considered to be as follows:-

- *Humans – future site users;*
- *Humans – construction and maintenance workers;*
- *Controlled waters;*
- *Building structures and services.*

4.5 Assessment Of Plausible Pollutant Linkages

4.5.1 The overall risk associated with future site users is considered to be very low. It is unlikely that the site contains any elevated concentrations of contaminants. If a risk associated with ground gas is identified it is anticipated that this may be remediated using standard gas protection measures.

4.5.2 Whilst significant or widespread contamination is not expected at this site, site workers should adopt a precautionary approach in respect of land contamination. On the basis of the current assessment and recommendations the overall risk to site workers is considered to be low.

4.5.3 Superficial deposits are not recorded within the site boundary. The lack of any drift deposits overlying both Secondary (A) and Secondary Undifferentiated aquifers increases the potential risk of contamination migrating to controlled waters. However, given the history of the site and the lack of any nearby potentially contaminative industry suggests that the overall risk associated with the water environment is considered to be low.

4.5.4 Substances that may be involved in chemical attack upon building materials, structures and services may be present in the ground and there is the potential for ground gas to migrate through permeable deposits and accumulate in enclosed spaces. Currently the overall risk associated with this category of hazard is considered to be very low with a very low risk level associated with ground gas. The buildings design and the materials used in its construction should be compliant with the prevailing ground conditions in order to mitigate potential harm from chemical attack, where identified.

4.5.5 Careful assessment of all currently available information has enabled a preliminary conceptual model to be prepared and this is detailed in table 3 overleaf.

Table 3 : Preliminary Conceptual Model

Potential Source	Potential Receptor	Possible Pathway	Probability	Consequence	Risk	Mitigation / Investigation
Contaminated Soils	Site personnel during construction	Direct contact of soils Inhalation or ingestion of soil / dust	Lw	Md	Moderate / Low	Soil sampling during intrusive investigations. Laboratory analysis of samples
	Future site users	Direct contact of soils Inhalation or ingestion of soil / dust	Lw	Md	Moderate / Low	
	Surface water in the vicinity of the site	Leaching of contaminants through drainage system	Lw	Mi	Low	
	Ground water in aquifer	Leaching of contaminants to ground water	Lw	Md	Moderate / Low	
	Future site users	Vapour migration from soils	Lw	Md	Moderate / Low	
	Proposed buildings and services	Direct contact with contaminated soils	Lw	Mi	Low	
	Plants in gardens and soft landscaping	Direct contact	Lw	Mi	Low	
Contaminated ground water	Site personnel during construction	Water entering excavations	Lw	Mi	Low	Sampling of ground water (where encountered)
	Future site Users	Retained surface water	Lw	Mi	Low	
Toxic and explosive gasses	Proposed buildings and occupiers	Ground gas migration into buildings	Lw	Md	Very Low	Program of ground gas monitoring (if proved to be necessary)
Mine workings and entries	Site personnel and end users	Surface instability	Li	Md	Moderate	Intrusive investigation

Key: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor
Hi = High, Li = Likely, Lw = Low Likelihood, Ul = Unlikely

4.5.6 *In this qualitative risk assessment a low risk implies that remedial action is unlikely to be necessary at the site, although until an intrusive investigation is carried out, this cannot be positively confirmed. Whilst there is no visible evidence to suggest the presence of any potentially contaminative influences this will require further appraisal.*

4.5.7 *It is recommended that during the intrusive phase of investigations, representative samples of the topsoil and immediately underlying natural soil be subject to a program of chemical analyses to determine their suitability for reuse within a modern residential development.*

5.0 PRELIMINARY GEOTECHNICAL ASSESSMENT

5.1 Details Of The Site

5.1.1 *The site is currently in open/vacant usage and has been utilised throughout the whole of its recorded history for similar purposes. It is therefore anticipated that the natural strata will immediately underlie the surface topsoil layer. However, although there is no evidence to suggest that the site has been subject to any ground disturbance or filling operations, both Lead and Coal mining are known to have been undertaken close to the site and as such it will be necessary to determine if shallow mine workings are present beneath the site.*

The southern and central parts of the site slope steeply from east to west given the historic usage of the site it is unlikely that the site has undergone reprofiling at any point in its history.

5.1.2 It is likely that the development of the site will require the following stages:-

- *Undertake rotary borehole investigation to determine if shallow mine workings are present beneath the site*
- *Reprofiling of the site to provide a level platform for the residential development and the construction of highways;*
- *Provision of foundations typically extending to depths of some 0.9m below ground level;*
- *Construction of drainage and highways;*
- *Construction of residential properties;*
- *Preparation of private garden areas, soft landscaped areas and hard standings.*

5.2 Geotechnical Hazards & Foundation Considerations

5.2.1 Based upon the information available to this desk study the anticipated ground conditions present within this site are outlined in table 4 below:-

Table 4 : Anticipated Ground Conditions

Ground Material	***Anticipated Condition***
Superficial deposits	*Superficial deposits are not recorded within the site boundary*
Bedrock	*Bowland Shale Formation and the Gwespyr Sandstone. Typically comprising of mudstone and interbedded sandstone and argillaceous rocks respectively. The solid geology recorded as being 4m south west of the site.comprises of the Minera Formation, an interbedded limestone and sandstone. Major geological faulting.*
Mining	*The site is recorded as being is a historic lead and coal mining area. A significant number of shafts are shown within close proximity to the site with a mineral vein located approximately 4m south west of the site.*
Ground Water	*Natural groundwater is expected to lie at significant depth and bed rock is classified as both Secondary A and Secondary Undifferentiated aquifers.*

Of course it will be essential for intrusive ground investigation works to be undertaken to confirm that the anticipated ground conditions are an accurate appraisal of the true ground conditions.

5.2.2 A summary of potential geo-technical hazards is detailed within table 5 below:-

Table 5 : Summary Of Potential Geotechnical Hazards

Hazard Category (excluding contamination issues)	***Hazard Status***	***Engineering Considerations***
Highly compressible / low bearing capacity soils (including peat / soft clays)	*Possible*	• *Made ground not likely to be present* • *Previous ground disturbance*
Ground subject to or at risk of landslides	*Possible*	• *Observed slope of site from east to west*

High ground water table	*Unlikely*	• *No recorded superficial deposits* • *Secondary A and Secondary Undifferentiated aquifer bedrock*
Surface water retention	*Unlikely*	• *Lack of superficial deposits* • *Site topography*
Surface water run off	*Likely*	• *Adjoining agricultural land and ditches*
Mining	*Likely*	• *Historic Lead and Coal mining activity in the area.* • *Mine shafts and mineral extraction recorded within 500m of the site.*
Volume change potential of soils	*Possible*	• *Lack of superficial deposits* • *Tree roots* • *Climatic effects*
Adverse ground chemistry	*Possible*	• *Naturally occurring chemical hazards associated with this area* • *No previous history of directly contaminative usage*
Live services	*Possible*	• *Underground services recorded near to the site* • *Overhead power lines crossing eastern boundary of the site.*

5.2.3 It is anticipated that the ground conditions present within this site will be conducive to the adoption of a shallow spread type foundation to traditional residential structures constructed within this site area. It is possible that specialist precautions may be required in those areas where significant re-profiling of the site has been required. The engineering properties of the strata within the site should be assessed during the intrusive phase of investigations.

5.2.4 Whilst the presence of significant thicknesses of made ground are not anticipated to be present within this site, it is nevertheless likely that all properties within this site should be provided with a suspended ground floor construction. This may be of a pre-cast concrete beam and block type arrangement or of a cast insitu construction, though properties which are affected by the presence of tree root may specifically require the provision of a sub floor void.

5.3 Drainage

5.3.1 The geological information relating to this site suggests that there are no superficial strata underlying the site. The geological information also confirms that Secondary (A) and Secondary Undifferentiated aquifers are within the site boundary with surface water abstractions being located within 500m of the site and potable water abstractions being located within 2000m of the site. Based upon the available information, it is considered unlikely that ground conditions within the site boundary will be conducive to the adoption of a ground infiltration method of surface water disposal. It is therefore likely that surface water from this site will require disposal into current surrounding drainage points.

6.0 PROPOSED GROUND INVESTIGATIONS

6.1 General

6.1.1 By undertaking an intrusive ground investigation an assessment of the ground and groundwater profiles may be carried out and the geo-technical and geo-environmental risks associated with this site identified. The investigation will allow a quantitative assessment as to whether any of the potential risks identified in this study are present and are of material concern to the proposed development.

The works should be undertaken in accordance with the recommendations laid down in BS 10175 : 2011 "Investigation of Potentially Contaminated Sites".

6.2 Proposed Scope Of Ground Investigations

6.2.1 On the basis of the currently available information regarding the geo-environmental setting of the site and to confirm the assumptions made, an intrusive ground investigation should be carried out. This should be utilised to confirm the geological succession and engineering properties of the sub surface materials.

Intrusive investigations are required and may extend to the provision of appropriate gas monitoring points to assess the presence of any potential landfill gas generation from unrecorded buried materials. The scope of works for the ground investigation should comprise of the following:-

- *Program of ground investigations to identify the strata sequence and assess engineering properties;*
- *Sampling and testing of the existing strata for chemical and civil engineering laboratory test purposes;*
- *Program of chemical analyses upon representative samples of the strata to determine their suitability for reuse within a residential environment;*
- *Reinstatement;*
- *Commission an arboriculturists report on all trees within and adjacent to the site;*
- *Preparation of factual and interpretative report.*

6.2.2 These ground investigation proposals are intended to represent a preliminary assessment only and it is important that where unusual or suspicious ground conditions are identified, the design of the intrusive investigations should be amended to assess these areas.

Signed for and on behalf of
R E FRY & ASSOCIATES LIMITED



BSc (Dual Hons), MSc.



R E FRY B Sc (Hons), C Eng.,MI Struct.E.,M.a.P.S.

APPENDIX A

centremapslive.com
the mapping portal from Laser Surveys

CENTREMAPS
Brockamin House, ,
Worcester, WR6 5JU

GroundSure Reference:	CMAPS-CM-229255-7904-140513EDR
Your Reference:	7904
Report Date:	14 May 2013
Report Delivery Method:	**Email - pdf**
Client Email:	andy@centremaps.com

GroundSure EnviroInsight

Address: MAESTEG,MINERA,WREXHAM, LL11 5YU

Dear Sir/Madam,

Thank you for placing your order with CENTREMAPS. Please find enclosed the GroundSure EnviroInsight as requested

If you need any further assistance, please do not hesitate to contact our helpline on 01886 832972 quoting the above CENTREMAPS reference number.

Yours faithfully,

CENTREMAPS

Enc.
GroundSure EnviroInsight

GroundSure EnviroInsight

Address: MAESTEG,MINERA,WREXHAM, LL11 5YU

Date: 14 May 2013

GroundSure Reference: CMAPS-CM-229255-7904-140513EDR

Your Reference: 7904

Client: CENTREMAPS



Brought to you by CENTREMAPS

Aerial Photograph of Study Site

NW ▲ N NE

◄W



E►

SW ▼ S SE

Aerial photography supplied by Getmapping PLC.
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Site Name: MAESTEG,MINERA,WREXHAM, LL11 5YU
Grid Reference: 325731,352495
Size of Site: 0.15 ha

Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Report Section	Number of records found within (X) m of the study site boundary					
1. Environmental Permits, Incidents and Registers	on-site	0-50	51-250	251-500	501-1000	1000-1500
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations						
Records of historic IPC Authorisations	0	0	0	0	-	-
Records of Part A(1) and IPPC Authorised Activities	0	0	0	0	-	-
Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0	-	-
Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0	-	-
Records of List 1 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of List 2 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0	-	-
Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0	-	-
Records of Licensed Discharge Consents	0	0	1	1	-	-
Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0		
1.2 Records of COMAH and NIHHS sites	0	0	0	0	-	-
1.3 Environment Agency Recorded Pollution Incidents						
National Incidents Recording System, List 2	0	0	0	-	-	-
National Incidents Recording System, List 1	0	0	0	-	-	-
1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990	0	0	0	0	-	-
2. Landfill and Other Waste Sites	on-site	0-50	51-250	251-500	501-1000	1000-1500
2.1 Landfill Sites						
Environment Agency Registered Landfill Sites	0	0	0	0	0	-
Landfill Data – Operational Landfill Sites	0	0	0	0	0	-
Environment Agency Historic Landfill Sites	0	0	0	0	0	0
Landfill Data – Non-Operational Landfill Sites	0	0	0	0	0	-
BGS/DoE Landfill Site Survey	0	0	0	0	0	0
GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	0
2.2 Landfill and Other Waste Sites Findings						
Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Environment Agency Licensed Waste Sites	0	0	0	0	0	0

3. Current Land Uses	on-site	0-50	51-250	251-500	501-1000	1000-1500
3.1 Current Industrial Sites Data	0	0	2	-	-	-
3.2 Records of Petrol and Fuel Sites	0	0	0	0	-	-
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0	-	-

4. Geology	Description
4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site? *	No
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site? *	Yes
4.3 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
Source: Scale: 1:50,000 BGS Sheet 121	

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

5. Hydrogeology and Hydrology	on-site	0-50	51-250	251-500	501-1000	1001-2000
5.1 Are there any records of Productive Strata in the Superficial Geology within 500m of the study site?				Yes		
5.2 Are there any records of Productive Strata in the Bedrock Geology within 500m of the study site?				Yes		
5.3 Groundwater Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	2
5.4 Surface Water Abstraction Licences (within 2000m of the study site).	0	0	0	1	0	1
5.5 Potable Water Abstraction Licences (within 2000m of the study site).	0	0	0	0	0	3
5.6 Are there any Source Protection Zones within 500m of the study site?					No	

5.7 River Quality	on-site	0-50	51-250	251-500	501-1000	1001-1500
Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
5.8 Detailed River Network entries within 500m of the site	0	0	0	12	-	-
5.9 Surface water features within 250m of the study site	No	No	No	-	-	-

6. Flooding	
6.1 Are there any Environment Agency indicative Zone 2 floodplains within 250m of the study site?	No
6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Very Low
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High

7. Designated Environmentally Sensitive Sites	on-site	0-50	51-250	251-500	501-1000	1001-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	1	2	0	0
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0

7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	1	2	0	0
7.3 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
7.4 Records of Special Areas of Conservation (SAC)	0	0	1	1	1	0
7.5 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.6 Records of Ramsar sites	0	0	0	0	0	0
7.7 Records of World Heritage Sites	0	0	0	0	0	0
7.8 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
7.9 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.10 Records of National Parks	0	0	0	0	0	0
7.11 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.12 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
7.13 Records of Ancient Woodlands	0	0	0	0	0	1

8. Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?	Low

9. Mining

9.1 Are there any coal mining areas within 75m of the study site?	Yes
9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site?	Low-Moderate
9.3 Are there any brine affected areas within 75m of the study site?	No

Using this Report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between GroundSure and the Client. The document contains the following sections:

1. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

2. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

3. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure underground oil and gas pipelines.

4. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

5. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

6. Flooding

Provides information on surface water flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

8. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence.

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, GroundSure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Environmental Permits, Incidents and Registers Map

NW N NE



W E

SW S SE

Authorisations,Incidents and Registers Legend

Mapping sourced from Ordnance Survey

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- Site Outline
- Search Buffers (m) — 250 — 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

1.Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

Records of historic IPC Authorisations within 500m of the study site: **0**

Database searched and no data found.

Records of Part A(1) and IPPC Authorised Activities within 500m of the study site: **0**

Database searched and no data found.

Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site: **0**

Database searched and no data found.

Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site: **0**

Database searched and no data found.

Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: **0**

Database searched and no data found.

Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site: **0**

Database searched and no data found.

Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: **0**

Database searched and no data found.

Records of Category 3 or 4 Radioactive Substance Licences within 500m of the study site: **0**

Database searched and no data found.

Records of Licensed Discharge Consents within 500m of the study site: **2**

The following Licensed Discharge Consents records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
1	150.0	S	325760, 352320	Address: Gwynfryn "acrefair" Extended F, Gwynfryn "acrefair" Extended F Effluent Type: Unspecified Permit Number: CM0060101 Permit Version: 1	Receiving Water: Un-named Trib. Of Clywedog Status: Consent Expired - Time Limit Issue date: - Effective Date: - Revocation Date: -
2	426.0	S	325660, 352040	Address: Minera Quarry Maesyffynnon Road Min, Minera Quarry Maesyffynnon Road, Maesyffynnon Road Minera Wrexham, Minera Wrexham , Wrexham , Effluent Type: Trade Discharges - Unspecified Permit Number: CG0326201 Permit Version: 1	Receiving Water: Aber Sychnant Status: Revoked (wra 91, S88 & Sched 10 As Amended By Env Act 1995) Issue date: 1/6/1992 Effective Date: 1/6/1992 Revocation Date: -

Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 0

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

Records of National Incidents Recording System, List 2 within 250m of the study site: 0

Database searched and no data found.

Records of National Incidents Recording System, List 1 within 250m of the study site: 0

Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

2. Landfill and Other Waste Sites Map

NW N NE



W ◄ E ►

SW S SE

Landfill & Other Waste Sites Legend

Mapping sourced from Ordnance Survey

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- Site Outline
- Search Buffers (m): 250, 500
- E.A. Active Landfill
- E.A. Historic Landfill (Area Data)
- E.A. Historic Landfill (Point Data)
- BGS / DoE Survey Landfill
- Local Authority Landfill (Area Data)
- Local Authority Landfill (Point Data)
- Operational Waste Treatment Licence
- Closed Waste Treatment Licence
- REGIS Waste Licence
- Operational Landfill
- Closed Landfill

2. Landfill and Other Waste Sites

2.1 Landfill Sites

Records from Environment Agency landfill data within 1000m of the study site: **0**

Database searched and no data found.

Records of operational landfill sites sourced from Landmark within 1000m of the study site: **0**

Database searched and no data found.

Records of Environment Agency historic landfill sites within 1500m of the study site: **0**

Database searched and no data found.

Records of non-operational landfill sites sourced from Landmark within 1000m of the study site: **0**

Database searched and no data found.

Records of BGS/DoE non-operational landfill sites within 1500m of the study site: **0**

Database searched and no data found.

Records of Local Authority landfill sites within 1500m of the study site: **0**

Database searched and no data found.

2.2 Other Waste Sites

Records of operational waste treatment, transfer or disposal sites within 500m of the study site: **0**

Database searched and no data found.

Records of non-operational waste treatment, transfer or disposal sites within 500m of the study site: **0**

Database searched and no data found.

Records of Environment Agency licensed waste sites within 1500m of the study site: **0**

Database searched and no data found.

---

3. Current Land Use Map

NW N NE



◄W E►

SW S SE

Current Land Use Legend

Mapping sourced from Ordnance Survey

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Site Outline

250
500
Search Buffers (m)

Current Industrial Sites

Petrol & Fuel Sites

Underground High Pressure Oil & Fuel Pipelines

3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: **2**

The following records are represented as points on the Current Land Uses map.

ID	Distance	Direction	Company	Address	Activity	Category
1	209.0	S	Shaft	LL11	Unspecified Quarries Or Mines	Extractive Industries
2	226.0	W	Shafts	LL11	Unspecified Quarries Or Mines	Extractive Industries

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: **0**

Database searched and no data found.

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site: **0**

Database searched and no data found.

4. Geology

4.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

4.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

4.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

LEX Code	Description	Rock Type
BSG-MDST	BOWLAND SHALE FORMATION	MUDSTONE
GS-SDAR	GWESPYR SANDSTONE	INTERBEDDED SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS
MRF-LMSD	MINERA FORMATION	INTERBEDDED LIMESTONE AND [SUBEQUAL/SUBORDINATE] SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

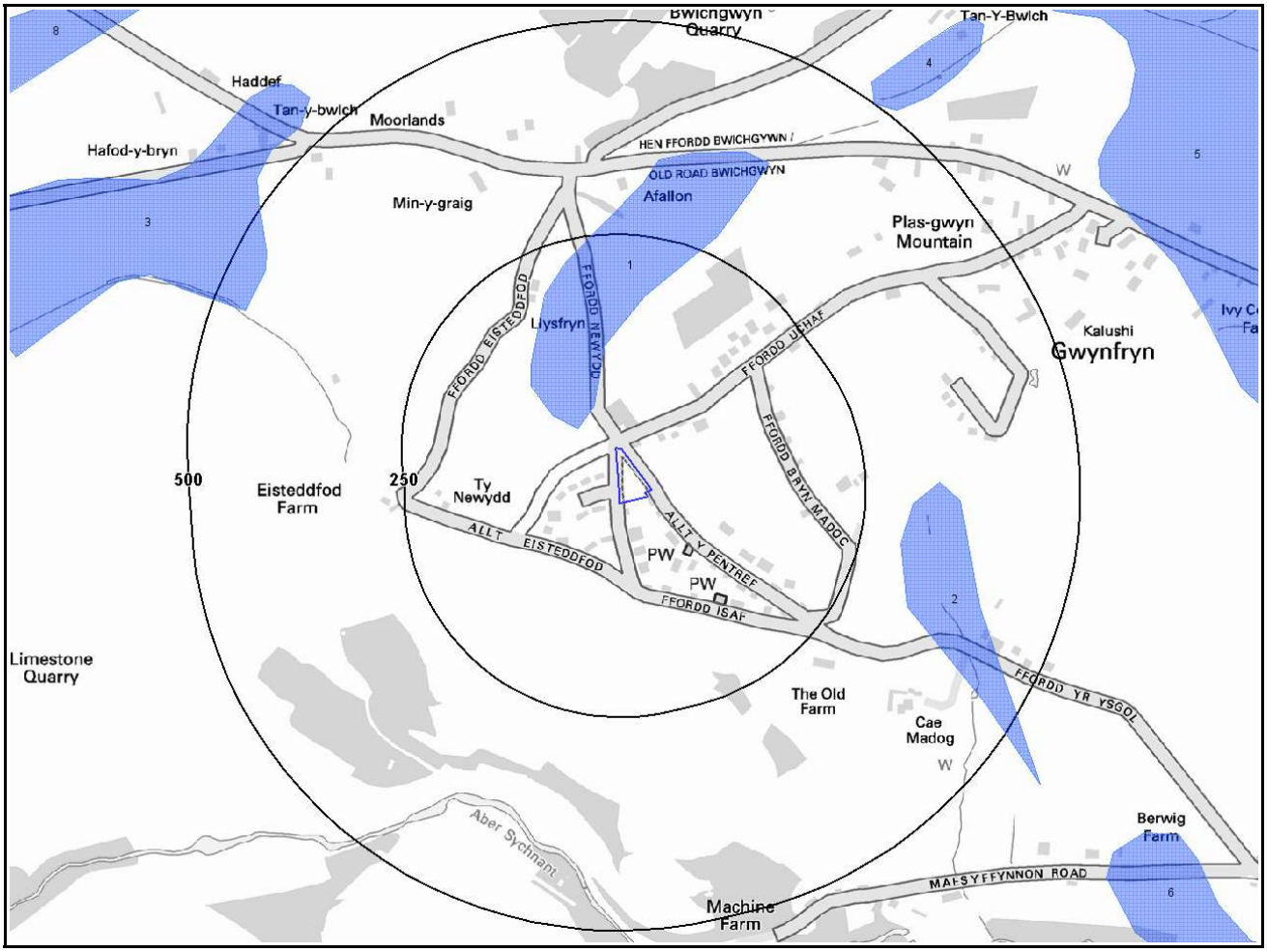
For more detailed geological and ground stability data please refer to the "GroundSure GeoInsight". Available from our website.

5a. Hydrogeology - Aquifer Within Superficial Geology

NW N NE

W E

SW S SE



Aquifer Within Superficial Geology Legend

Mapping sourced from Ordnance Survey

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Site Outline

Search Buffers (m)

250

500

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

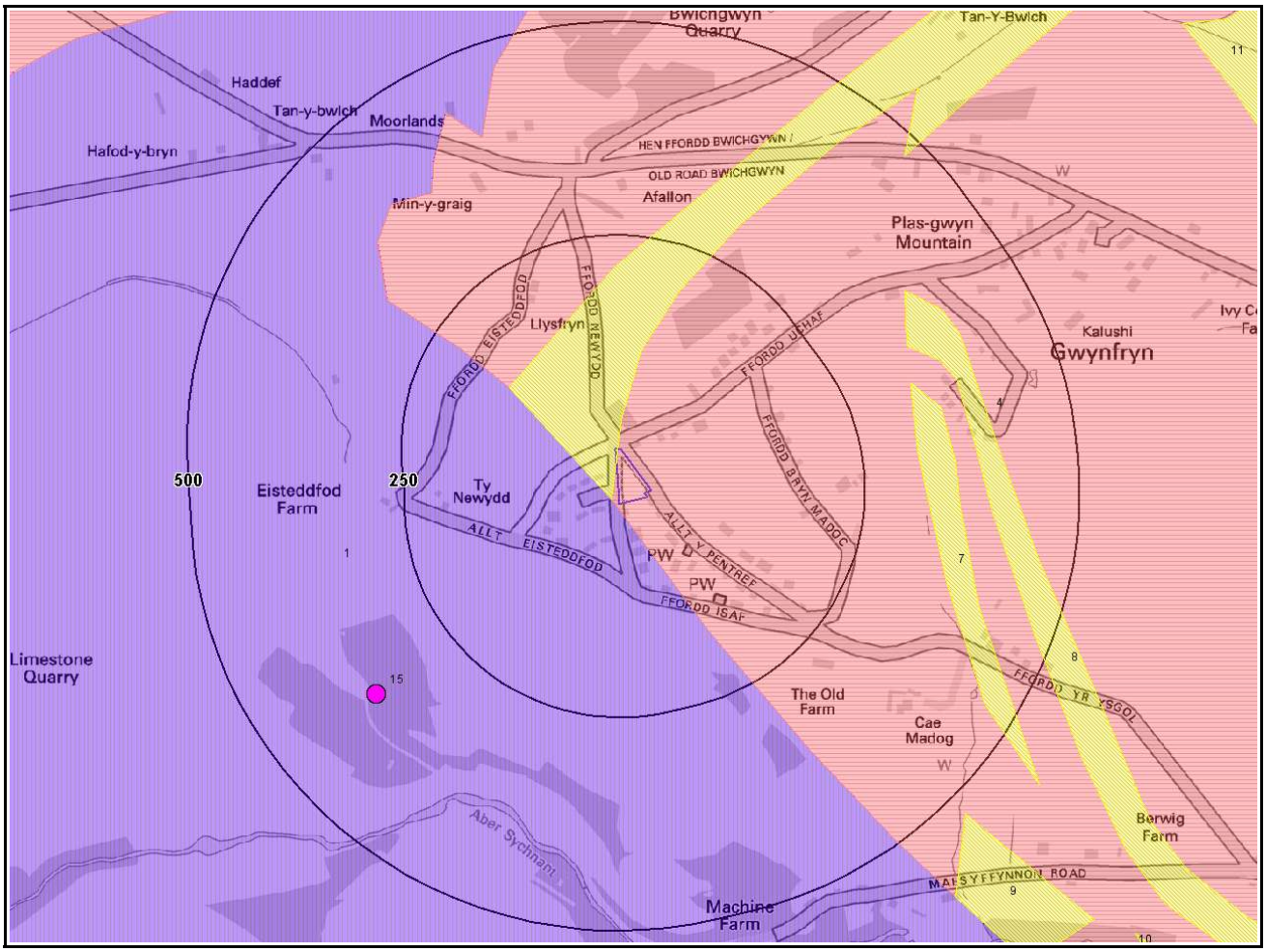
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

5b. Hydrogeology - Aquifer Within Bedrock Geology and Abstraction Licenses

NW N NE



W E

SW S SE

Aquifer Within Bedrock Geology Legend

Mapping sourced from Ordnance Survey

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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

Secondary Aquifer - Undifferentiated Layers

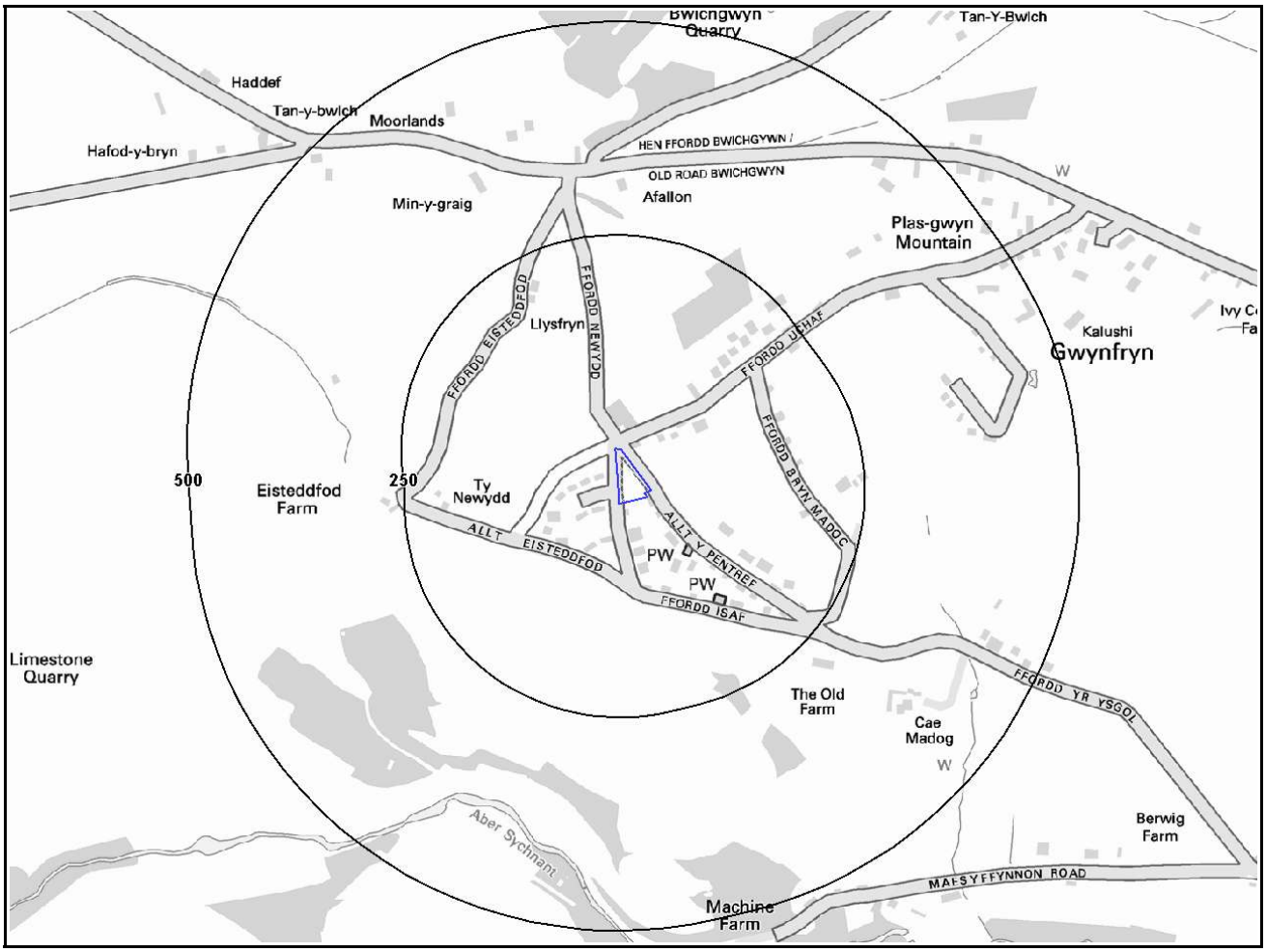
Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses

NW N NE



W E

SW S SE

SPZ and Potable Water Abstraction Licenses
Legend

Mapping sourced from Ordnance Survey

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Site Outline

250
500
Search Buffers (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

Potable Water Abstraction Licence

5d. Hydrology – Detailed River Network and River Quality

NW N NE

W E

SW S SE



Hydrology Legend

Mapping sourced from Ordnance Survey

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- Site Outline
- 250 / 500 Search Buffers (m)
- Primary River
- Secondary River
- Tertiary River
- Lake/Reservoir
- Underground River (inferred)
- General Quality Assessment: Chemistry
- Canal
- Canal Tunnel
- Extended Culvert (greater than 50m)
- D/S of High Water Mark
- D/S seaward extension
- General Quality Assessment: Biology

5.Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

Are there records of productive strata within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (5a):

ID	Distance [m]	Direction	Designation	Description
1	50.0	NW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	298.0	E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
3	459.0	NW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	500.0	NE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

5.2 Aquifer within Bedrock Deposits

Are there records of productive strata within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance [m]	Direction	Designation	Description
4	0.0	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
6	0.0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
1	4.0	SW	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
7	315.0	E	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
8	343.0	NE	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

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? **Yes**

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance	Direction	NGR	Details	
Not shown	1545.0	SE		Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: Eaw Groundwater Point: Park Day Level Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 4/9(h) Original Start Date: 5/7/1966 Expiry Date: - Issue No: 100 Version Start Date: 5/7/1966 Version End Date:
Not shown	1615.0	SE		Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: Eaw Groundwater Point: Speedwell Shaft Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 4/9(h) Original Start Date: 5/7/1966 Expiry Date: - Issue No: 100 Version Start Date: 5/7/1966 Version End Date:

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? **Yes**

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance	Direction	NGR	Details	
15	361.0	SW	325430, 352240	Licence No: 24/67/7/0143 Details: Mineral Washing Direct Source: Eaw Surface Water Point: Stream Data Type: Point	Annual Volume (m³): 1363.8 Max Daily Volume (m³): 22.73 Application No: - Original Start Date: 24/2/1967 Expiry Date: - Issue No: 102 Version Start Date: 1/4/2008 Version End Date:
Not shown	1482.0	NW	324405, 353230	Licence No: 24/67/8/0003 Details: Potable Water Supply - Direct Direct Source: Eaw Surface Water Point: Nantyffrith Reservoir Data Type: Point	Annual Volume (m³): 361084.23 Max Daily Volume (m³): 1231.96 Application No: NPS/WR/002365 Original Start Date: 5/7/1966 Expiry Date: - Issue No: 101 Version Start Date: 2/9/2009 Version End Date:

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? **Yes**

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (5c):

ID	Distance	Direction	NGR	Details

Not shown	1482.0	NW	324405, 353230	Licence No: 24/67/8/0003 Details: Potable Water Supply - Direct Direct Source: Eaw Surface Water Point: Nantyffrith Reservoir Data Type: Point	Annual Volume (m³): 361084.23 Max Daily Volume (m³): 1231.96 Original Application No: NPS/WR/002365 Original Start Date: 5/7/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1545.0	SE	327050, 351641	Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: Eaw Groundwater Point: Park Day Level Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 4/9(h) Original Start Date: 5/7/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1615.0	SE	326890, 351330	Licence No: 24/67/7/0035 Details: Potable Water Supply - Direct Direct Source: Eaw Groundwater Point: Speedwell Shaft Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 4/9(h) Original Start Date: 5/7/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? **No**

Database searched and no data found.

5.7 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? **No**

Biological Quality:

Database searched and no data found.

Chemical Quality:

Database searched and no data found.

5.8 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? **Yes**

The following Detailed River Network records are represented on the Hydrology Map (5d):

ID	Distance	Direction		Details
1	285.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
2	310.0	W	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined

3	322.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
4	328.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
5	362.0	E	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
6	379.0	S	River Name: Aber Sychnant Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Primary River Catchment: - Drain: NO Main River Status: Currently Undefined
7	384.0	SW	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Extended Culvert (greater than 50m) Catchment: - Drain: NO Main River Status: Currently Undefined
8	401.0	NE	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
9	443.0	SE	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Catchment: - Drain: NO Main River Status: Currently Undefined
10	447.0	SE	River Name: - Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: NO Main River Status: Currently Undefined
11A	468.0	W	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined
12A	468.0	W	River Name: Drain Water Course Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Catchment: - Drain: YES Main River Status: Currently Undefined

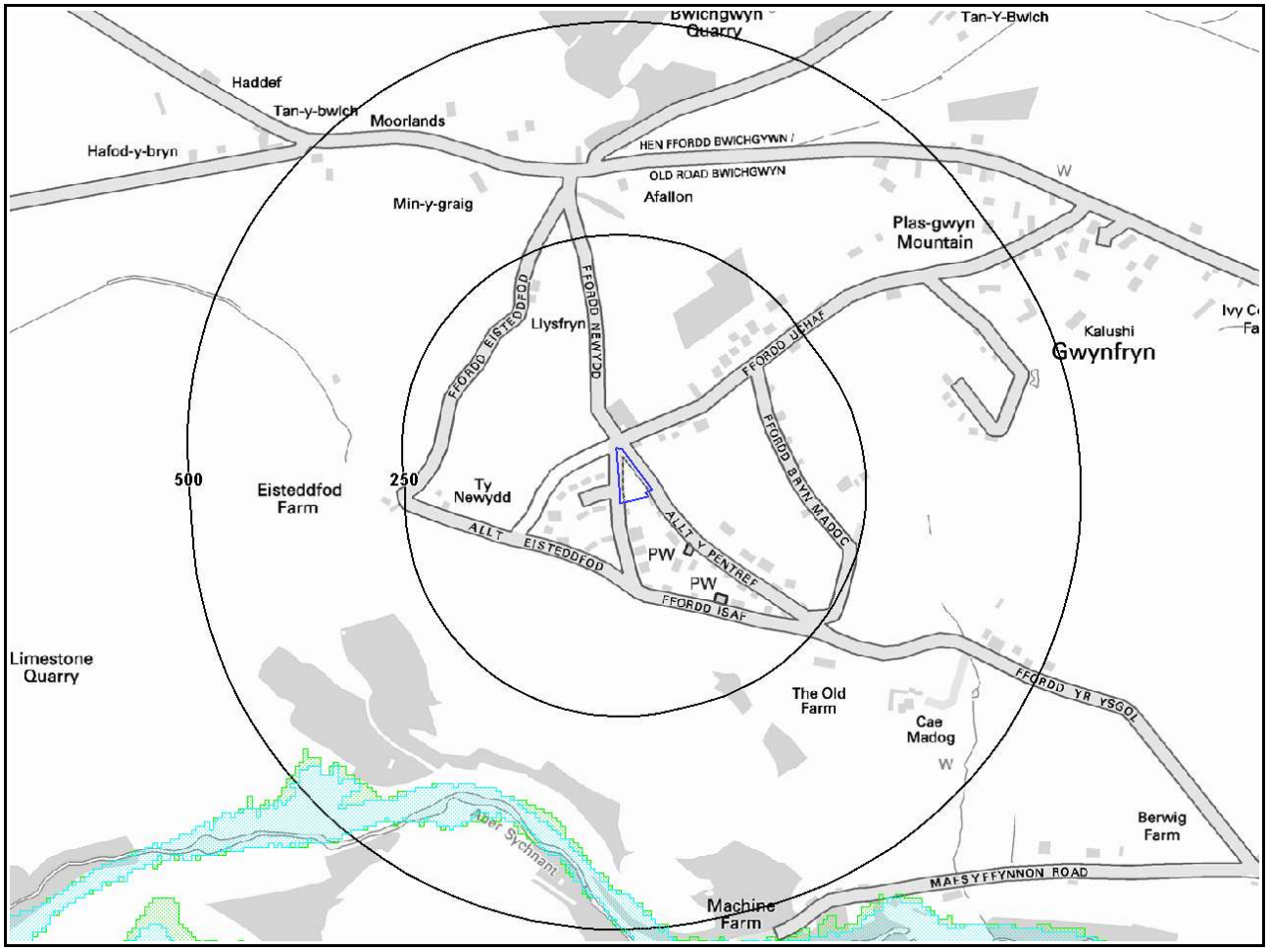
5.9 Surface Water Features

Are there any surface water features within 250m of the study site? **No**

Database searched and no data found.

6. Environment Agency Flood Map

NW ▲ N NE



◄W E► SW ▼ S SE

Environment Agency Flood Legend

Mapping sourced from Ordnance Survey

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Site Outline

250
500
Search Buffers (m)

Zone 2 Floodplain

Zone 3 Floodplain

Flood Storage Area

Area Benefiting from Flood Defences

Flood Defences

6. Flooding

6.1 Zone 2 Flooding

Zone 2 floodplain estimates the annual probability of flooding as one in one thousand (0.1%) or greater from rivers and the sea but less than 1% from rivers or 0.5% from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 2 floodplain? **No**

Database searched and no data found.

6.2 Zone 3 Flooding

Zone 3 estimates the annual probability of flooding as one in one hundred (1%) or greater from rivers and a one in two hundred (0.5%) or greater from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 3 floodplain? **No**

Database searched and no data found.

6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? **No**

6.4 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? **No**

6.5 Areas used for Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? **No**

6.6 Groundwater Flooding Susceptibility Areas

Are there any British Geological Survey groundwater flooding susceptibility flood areas within 50m of the boundary of the study site? **Yes**

What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions? **Very Low**

6.7 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? **High**

Notes:

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

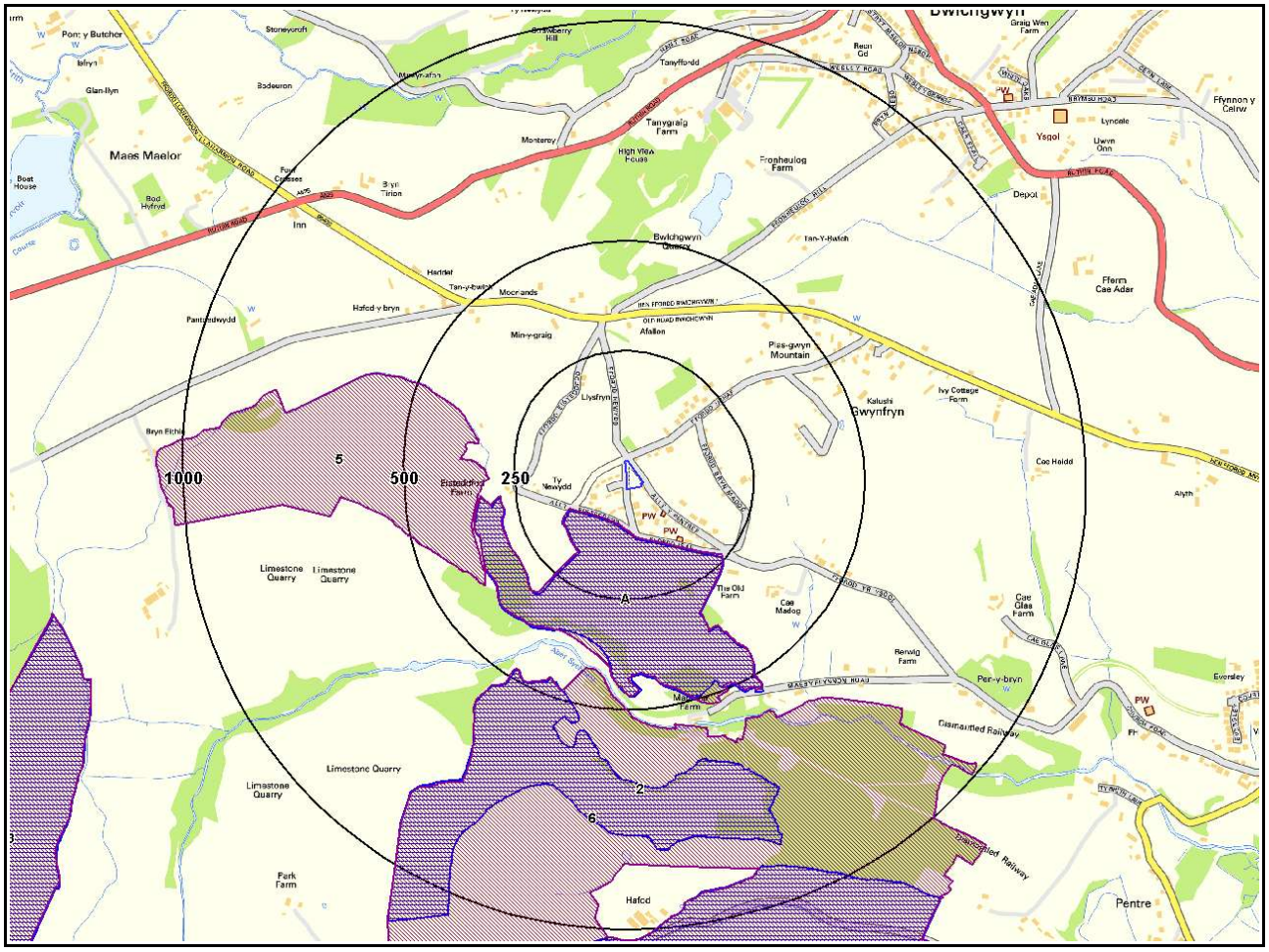
The **confidence rating** is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

7.Designated Environmentally Sensitive Sites Map

NW ▲ N NE

◄W E►

SW S ▼ SE



Designated Environmentally Sensitive Sites Legend

Mapping sourced from Ordnance Survey

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- Site Outline
- Areas of Outstanding Natural Beauty
- SAC
- SPA
- Nitrate Vulnerable Zones
- SSSI
- Ramsar
- Nitrate Sensitive Areas
- NNR
- LNR
- National Parks
- World Heritage Sites
- Environmentally Sensitive Areas
- Ancient Woodlands

7.Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 3

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	SSSI Name	Data Source
4A	79.0	SW	Ruabon/llantysilio Mountains And Minera	CCW
5	310.0	W	Ruabon/llantysilio Mountains And Minera	CCW
6	415.0	S	Ruabon/llantysilio Mountains And Minera	CCW

Records of National Nature Reserves (NNR) within 2000m of the study site: 0

Database searched and no data found.

Records of Special Areas of Conservation (SAC) within 2000m of the study site: 3

The following Special Area of Conservation (SAC) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	SAC Name	Data Source
1A	82.0	SW	Berwyn A Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains	Countryside Council for Wales
2	461.0	S	Berwyn A Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains	Countryside Council for Wales
3	904.0	S	Berwyn A Mynyddoedd De Clwyd / Berwyn and South Clwyd Mountains	Countryside Council for Wales

Records of Special Protection Areas (SPA) within 2000m of the study site: 0

Database searched and no data found.

Records of Ramsar sites within 2000m of the study site: 0

Database searched and no data found.

Records of Local Nature Reserves (LNR) within 2000m of the study site: 0

Database searched and no data found.

Records of World Heritage Sites within 2000m of the study site: 0

Database searched and no data found.

Records of Environmentally Sensitive Areas within 2000m of the study site: 0

Database searched and no data found.

Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: **0**

Database searched and no data found.

Records of National Parks (NP) within 2000m of the study site: **0**

Database searched and no data found.

Records of Nitrate Sensitive Areas within 2000m of the study site: **0**

Database searched and no data found.

Records of Nitrate Vulnerable Zones within 2000m of the study site: **0**

Database searched and no data found.

Records of Ancient Woodland within 2000m of the study site: **1**

The following Ancient Woodland records are supplied by English Nature/Scottish Natural Heritage/Countryside Council for Wales and are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance	Direction	Ancient Woodland Name	Type
Not shown	1889.0	NE	BLACK/NANT WOODS	Ancient Replanted Woodland

8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a GroundSure GeoInsight, available from our website. The following information has been found:

8.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? **Very Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

8.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? **Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

8.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? **Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property possible increase in insurance risk due to soluble rocks.

8.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? **Negligible**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

8.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? **Very Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

8.1.6Running Sand

What is the maximum Running Sand* hazard rating identified on the study site? **Very Low**

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site? **Yes**

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*? **Low-Moderate**

*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? **No**

Guidance: No Guidance Required.

10.Contacts

CENTREMAPS

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

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British Geological Survey (England & Wales)

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143. Fax: 0115 936 3276. Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk
BGS Geological Hazards Reports and general geological enquiries

Environment Agency

National Customer Contact Centre
PO Box 544
Rotherham
S60 1BY
Tel: 08708 506 506
Web: www.environment-agency.gov.uk
Email: enquiries@environment-agency.gov.uk

Health Protection Agency

Chilton, Didcot, Oxon, OX11 0RQ
Tel: 01235 822622 www.hpa.org.uk/radiation
Radon measures and general radon information and guidance

The Coal Authority

200 Lichfield Lane, Mansfield, Notts NG18 4RG
Tel: 0845 762 6848
DX 716176 Mansfield 5
Web: www.groundstability.com

Ordnance Survey

Romsey Road
Southampton SO16 4GU
Tel: 08456 050505

Local Authority

Authority: Wrexham County Borough Council
Phone: 01978 292000
Web: www.wrexham.gov.uk
Address: The Guildhall, Wrexham, LL11 1AY

Get Mapping PLC

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Report Reference: CMAPS-CM-229255-7904-140513EDR

This report has been prepared in accordance with the GroundSure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

1 Definitions

In these conditions unless the context otherwise requires:

"Beneficiary" means the Client or the customer of the Client for whom the Client has procured the Services.
"Commercial" means any building which is not Residential.
"Commission" means an order for Consultancy Services submitted by a Client.
"Consultancy Services" mean consultancy services provided by GroundSure including, without limitation, carrying out interpretation of third party and in-house environmental data, provision of environmental consultancy advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.
"Contract" means the contract between GroundSure and the Client for the performance of the Services which arises upon GroundSure's acceptance of an Order or Commission and which shall incorporate these conditions, the relevant GroundSure User Guide, proposal by GroundSure and the content of any subsequent report, and any agreed amendments in accordance with clause 11.
"Client" means the party that submits an Order or Commission.
"Data Provider" means any third party providing Third Party Content to GroundSure.
"Data Report" means reports comprising factual data with no professional interpretation in respect of the level of likely risk and/or liability available from GroundSure.
"GroundSure" means GroundSure Limited, a company registered in England and Wales under number 03421028 and whose registered office is at GroundSure Ltd, c/o Top Right Group Limited, The Prow, 1 Wilder Walk, London W1B 5AP, United Kingdom.
"GroundSure Materials" means all materials prepared by GroundSure as a result of the provision of the Services, including but not limited to Data Reports, Mapping and Risk Screening Reports.
"Intellectual Property" means any patent, copyright, design rights, service marks, moral rights, data protection rights, know-how, trade mark or any other intellectual property rights.
"Mapping" an historical map or a combination of historical maps of various ages, time periods and scales available from GroundSure.
"Order" means an order form submitted by the Client requiring Services from GroundSure in respect of a specified Site.
"Order Website" means online platform via which Orders may be placed.
"Report" means a Risk Screening Report or Data Report for commercial or residential property available from GroundSure relating to the Site prepared in accordance with the specifications set out in the relevant User Guide.
"Residential" means any building used as or suitable for use as an individual dwelling.
"Risk Screening Report" means one of GroundSure's risk screening reports, comprising factual data with interpretation in respect of the level of likely risk and/or liability, excluding **"Consultancy Services"**.
"Services" means the provision of any Report, Mapping or Consultancy Services which GroundSure has agreed to carry out for the Client/Beneficiary on these terms and conditions in respect of the Site.
"Site" means the landsite in respect of which GroundSure provides the Services.
"Third Party Content" means any data, database or other information contained in a Report or Mapping which is provided to GroundSure by a Data Provider.
"User Guide" means the relevant current version of the user guide, available upon request from GroundSure.

2 Scope of Services

2.1 GroundSure agrees to carry out the Services in accordance with the Contract and to the extent set out therein.
2.2 GroundSure shall exercise all the reasonable skill, care and diligence to be expected of experienced environmental consultants in the performance of the Services.
2.3 The Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in the Contract.
2.4 Terms and conditions appearing on a Client's order form, printed stationery or other communication, including invoices, to GroundSure, its employees, servants, agents or other representatives or any terms implied by custom, practice or course of dealing shall be of no effect and these terms and conditions shall prevail over all others.
2.5 If a Client/Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to procure such insurance, but makes no warranty that such insurance shall be available from insurers or offered on reasonable terms. GroundSure does not endorse or recommend any particular insurance product, policy or insurer. Any insurance purchased shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. The Client/Beneficiary should take independent advice to ensure that the insurance policy requested and/or offered is suitable for its requirements.
2.6 GroundSure's quotations/proposals are valid for a period of 30 days only. GroundSure reserves the right to withdraw any quotation at any time before GroundSure accepts an Order or Commission. GroundSure's acceptance of an Order or Commission shall be effective only where such acceptance is in writing and signed by GroundSure's authorised representative or where accepted via GroundSure's Order Website.

3 The Client's obligations

3.1 The Client shall ensure the Beneficiary complies with and is bound by the terms and conditions set out in the Contract and shall provide that Groundsure may in its own right enforce such terms and conditions against the Beneficiary pursuant to the Contracts (Rights of Third parties) Act 1999. The Client shall be liable for all breaches of the Contract by the Beneficiary as if they were breaches by the Client. The Client shall be solely responsible for ensuring that the Report/Mapping ordered is appropriate and suitable for the Beneficiary's needs.
3.2 The Client shall (or shall procure that the Beneficiary shall) supply to GroundSure as soon as practicable and without charge all information necessary and accurate relevant data including any specific and/or unusual environmental information relating to the Site known to the Client/Beneficiary which may pertain to the Services and shall give such assistance as GroundSure shall reasonably require in the performance of the Services (including, without limitation, access to a Site, facilities and equipment as agreed in the Contract).
3.3 Where Client/Beneficiary approval or decision is required, such approval or decision shall be given or procured in reasonable time as not to delay or disrupt the performance of any other part of the Services.
3.4 The Client shall not and shall not knowingly permit the Beneficiary to, save as expressly permitted by these terms and conditions, re-sell, alter, add to, amend or use out of context the content of any Report, Mapping or, in respect of any Services, information given by GroundSure. For the avoidance of doubt, the Client and Beneficiary may make the Report, Mapping or GroundSure's findings available to a third party who is considering acquiring the whole or part of the Site, or providing funding in relation to the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.
3.5 The Client is responsible for maintaining the confidentiality of its user name and password if using GroundSure's internet ordering service and accepts responsibility for all activity that occurs under such account and password.

4 Reliance

4.1 Upon full payment of all relevant fees and subject to the provisions of these terms and conditions, the Client and Beneficiary are granted an irrevocable royalty-free licence to access the information contained in a Report, Mapping or in a report prepared by GroundSure in respect of or arising out of Consultancy Services. The Services may only be used for the benefit of the Client and those persons listed in clauses 4.2 and 4.3.
4.2 In relation to Data Reports, Mapping and Risk Screening Reports, the Client shall be entitled to make Reports available to (i) the Beneficiary, (ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate), (iv) the first purchaser or first tenant of the Site (v) the professional advisers and lenders of the first purchaser or tenant of the Site. Accordingly GroundSure shall have the same duties and obligations to those persons in respect of the Services as it has to the Client and those persons shall have the benefit of any of the Client's rights under the Contract as if those persons were parties to the Contract. For the avoidance of doubt, the limitations of GroundSure's liability as set out in clauses 7 and 11.6 shall apply.
4.3 In relation to Consultancy Services, reliance shall be limited to the Client, Beneficiary and named parties on the Report.
4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise agreed in writing with GroundSure, any other party considering the information supplied by GroundSure as part of the Services, including (but not limited to) insurance underwriters, does so at their own risk and GroundSure has no legal obligations to such party unless otherwise agreed in writing.
4.5 The Client shall not and shall not knowingly permit any person (including the Beneficiary) who is provided with a copy of any Report, (except as permitted herein or by separate agreement with GroundSure) to,: (a) remove, suppress or modify any trade mark, copyright or other proprietary marking from the Report or Mapping; (b) create any product which is derived directly or indirectly from the data contained in the Report or Mapping; (c) combine the Report or Mapping with, or incorporate the Report or Mapping into any other information data or service; or (d) re-format or otherwise change (whether by modification, addition or enhancement) data or images contained in the Report or Mapping.
4.6 Notwithstanding clause 4.5, if the Client acts in a professional capacity, it may make reasonable use of a Report and/or findings made as a result of Consultancy Services to advise Beneficiaries. However, GroundSure shall have no liability in respect of any opinion or report given to such Beneficiaries by the Client or a third party.

5 Fees and Disbursements

5.1 GroundSure shall charge the Client fees at the rate and frequency specified in the Contract together, in the case of Consultancy Services, with all proper disbursements incurred by GroundSure in performing the Services. For the avoidance of doubt, the fees payable for the Services are as set out in GroundSure's written proposal, Order Website or Order acknowledgement form. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services.
5.2 Unless GroundSure requires prepayment, the Client shall promptly pay all fees disbursements and other monies due to GroundSure in full without deduction, counterclaim or set off together with such value added tax or other tax as may be required within 30 days from the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client (**"Payment Date"**). GroundSure reserves the right to charge interest which shall accrue on a daily basis from 30 days after the date of Payment Date until the date of payment (whether before or after judgment) at the rate of five per cent per annum above the Bank of England base rate from time to time.
5.3 In the event that the Client disputes the amount payable in respect of GroundSure's invoice it shall notify GroundSure no later than 28 days after the date thereof that it is in dispute. In default of such notification the Client shall be deemed to have agreed the amount thereof. As soon as reasonably practicable following receipt of a notification in respect of any disputed invoice, a member of the management team at GroundSure shall contact the Client and the parties shall use all reasonable endeavours to resolve the dispute.

6 Intellectual Property and Confidentiality

6.1 Subject to the provisions of clause 4.1, the Client and the Beneficiary hereby acknowledge that all Intellectual Property in the Services and Content are and shall remain owned by either GroundSure or the Data Providers and nothing in these terms purports to transfer or assign any rights to the Client or the Beneficiary in respect of the Intellectual Property.
6.2 The Client shall acknowledge the ownership of the **Third Party** Content where such **Third Party** Content is incorporated or used in the Client's own documents, reports, systems or services whether or not these are supplied to a third party.
6.3 Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.
6.4 The Client acknowledges that the proprietary rights subsisting in copyright, database rights and any other intellectual property rights in respect of any data and information contained in any Report are and shall remain (subject to clause 11.1) the property of GroundSure and/or any third party that has supplied data or information used to create a Report, and that these conditions do not purport to grant, assign or transfer any such rights in respect thereof to a Client and/or a Beneficiary.
6.5 The Client shall (and shall procure that any recipients of the Report as permitted under clause 4.2 shall):
(i) not remove, suppress or modify any trademark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;
(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the data contained in the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);
(iv) not combine the Services with or incorporate such Services into any other information data or service; and
(v) not reformat or otherwise change (whether by modification, addition or enhancement), data contained in the Services (save that those acting in a professional capacity to the Beneficiary shall not be in breach of this clause 6.5(v) where such reformatting is in the normal course of providing advice based upon the Services),
in each case of parts (iii) to (v) inclusive, whether or not such product or report is produced for commercial profit or not.

6.6 The Client and/or Beneficiary shall and shall procure that any party to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

6.8 Save as otherwise set out in these terms and conditions, any information provided by one party ("**Disclosing Party**") to the other party ("**Receiving Party**") shall be treated as confidential and only used for the purposes of these terms and conditions, except in so far as the Receiving Party is authorised by the Disclosing Party to provide such information in whole or in part to a third party.

7 Liability

THE CLIENT'S ATTENTION IS DRAWN TO THIS PROVISION

7.1Subject to the provisions of this clause 7, GroundSure shall be liable to the Beneficiary only in relation to any direct losses or damages caused by any negligent act or omission of GroundSure in preparing the GroundSure Materials and provided that the Beneficiary has used all reasonable endeavours to mitigate any such losses.

7.2GroundSure shall not be liable for any other losses or damages incurred by the Beneficiary, including but not limited to:
(i) loss of profit, revenue, business or goodwill, losses relating to business interruption, loss of anticipated savings, loss of or corruption to data or for any special, indirect or consequential loss or damage which arise out of or in connection with the GroundSure Materials or otherwise in relation to a Contract;
(ii) any losses or damages that arise as a result of the use of all or part of the GroundSure Materials in breach of these terms and conditions or contrary to the terms of the relevant User Guide;
(iii) any losses or damages that arise as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such part is based on any Third Party Content or any reasonable interpretation of Third Party Content. The Client accepts, and shall procure that any other Beneficiary shall accept, that it has no claim or recourse to any Data Provider in relation to Third Party Content; and/or
(iv) any loss or damage to a Client's computer, software, modem, telephone or other property caused by a delay or loss of use of GroundSure's internet ordering service.

7.3 GroudSure's total liability in contract, tort (including negligence or breach of statutory duty), misrepresentation, restitution or otherwise, arising in connection with the GroundSure Materials or otherwise in relation to the Contract shall be limited to £10 million in total (i) for any one claim or (ii) for a series of connected claims brought by one or more parties.

7.4 For the duration of the liability periods set out in clauses 7.5 and 7.6 below, GroundSure shall maintain professional indemnity insurance in respect of its liability under these terms and conditions provided such insurance is readily available at commercially viable rates. GroundSure shall produce evidence of such insurance if reasonably requested by the Client. A level of cover greater than GroundSure's current level of cover may be available upon request and agreement with the Client.

7.5 Any claim under the Contract in relation to Data Reports, Mapping and Risk Screening Reports, must be brought within six years from the date when the Beneficiary became aware that it may have a claim and in no event may a claim be brought twelve years or more after completion of such a Contract. For the avoidance of doubt, any claim in respect of which proceedings are notified to GroundSure in writing prior to the expiry of the time periods referred to in this clause 7.5 shall survive the expiry of those time periods provided the claim is actually commenced within six months of notification.

7.6 Any claim under the Contract in relation to Consultancy Services, must be brought within six years from the date the Consultancy Services were completed.

7.7 he Client accepts and shall procure that any other Beneficiary shall accept that it has no claim or recourse to any Data Provider or to GroundSure in respect of the acts or omissions of any Data Provider and/or any Third Party Content provided by a Data Provider.

7.8 Nothing in these terms and conditions:
(i) excludes or limits the liability of GroundSure for death or personal injury caused by GroundSure's negligence, or for fraudulent misrepresentation; or
(ii) shall affect the statutory rights of a consumer under the applicable legislation.

8 GroundSure right to suspend or terminate

8.1 In the event that GroundSure reasonably believes that the Client or Beneficiary as applicable has not provided the information or assistance required to enable the proper performance of the Services, GroundSure shall be entitled on fourteen days written notice to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure may additionally terminate the Contract immediately on written notice in the event that:
(i)the Client shall fail to pay any sum due to GroundSure within 28 days of the Payment Date; or
(ii)the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an Administration Order made against it or if a Receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or
(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or
(iv)the Client or the Beneficiary breaches any material term of the Contract (including, but not limited to, the obligations in clause 4) incapable of remedy or if remediable, is not remedied within 14 days of notice of the breach.

9 Client's Right to Terminate and Suspend

9.1 Subject to clause 10.2, the Client may at any time after commencement of the Services by notice in writing to GroundSure require GroundSure to terminate or suspend immediately performance of all or any of the Services.

9.2 The Client waives all and any right of cancellation it may have under the Consumer Protection (Distance Selling) Regulations 2000 (as amended) in respect of the Order of a Report/Mapping. This does not affect the Beneficiary's statutory rights.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination or any suspension of the Services, GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client/Beneficiary any property of the Client/ Beneficiary in GroundSure's possession or control.

10.2 In the event of termination/suspension of the Contract under clauses 8 or 9, the Client shall pay to GroundSure all and any fees payable in respect of the performance of the Services up to the date of termination/suspension. In respect of any Consultancy Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination/suspension of the Contract.

11 General

11.1 The mapping contained in the Services is protected by Crown copyright and must not be used for any purpose outside the context of the Services or as specifically provided in these terms.

11.2 GroundSure reserves the right to amend these terms and conditions. No variation to these terms shall be valid unless signed by an authorised representative of GroundSure.

11.3 No failure on the part of GroundSure to exercise and no delay in exercising, any right, power or provision under these terms and conditions shall operate as a waiver thereof.

11.4 Save as expressly provided in clauses 4.2, 4.3, 6.3 and 11.5, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

11.5 The Secretary of State for Communities and Local Government acting through Ordnance Survey may enforce breach of clause 6.1 of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

11.6 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:
(i) the Client or Beneficiary's failure to provide facilities, access or information;
(ii) fire, storm, flood, tempest or epidemic;
(iii) Acts of God or the public enemy;
(iv) riot, civil commotion or war;
(v) strikes, labour disputes or industrial action;
(vi) acts or regulations of any governmental or other agency;
(vii) suspension or delay of services at public registries by Data Providers; or
(viii) changes in law.

11.7 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

11.8 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email and on the second working day after the day of posting if sent by first class post.

11.9 The Contract constitutes the entire contract between the parties and shall supersede all previous arrangements between the parties.

11.10 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

11.11 These terms and conditions shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with these terms and conditions shall be subject to the exclusive jurisdiction of the English courts.

11.12 If the Client or Beneficiary has a complaint about the Services, notice can be given in any format eg writing, phone, email to the Compliance Officer at GroundSure who will respond in a timely manner.

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APPENDIX B

centremapslive.com
the mapping portal from Laser Surveys

CENTREMAPS
Brockamin House,
Worcester, WR6 5JU

Report Reference:	CMAPS-CM-229255-7904-140513GEO
Your Reference:	7904
Report Date	14 May 2013
Report Delivery Method:	Email - pdf

GroundSure GeoInsight

Address: MAESTEG,MINERA,WREXHAM, LL11 5YU

Dear Sir/Madam,

Thank you for placing your order with GroundSure. Please find enclosed the **GroundSure GeoInsight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 01886 832972 quoting the above CENTREMAPS reference number.

Yours faithfully,

CENTREMAPS

Enc.
GroundSure GeoInsight

centremapslive.com
the mapping portal from Laser Surveys

GroundSure
ENVIRONMENTAL INSIGHT

GroundSure GeoInsight

Address: MAESTEG,MINERA,WREXHAM, LL11 5YU

Date: 14 May 2013

Report Reference: CMAPS-CM-229255-7904-140513GEO

Your Reference: 7904



Brought to you by CENTREMAPS

If you would like any further assistance regarding this report then please contact
CENTREMAPS on (T) 01886 832972, (F) 01883 833485, email: groundsure@centremaps.co.uk

Aerial Photograph of Study Site

NW N NE



W E

SW S SE

Aerial photography supplied by Getmapping PLC.
© Copyright Getmapping PLC 2003. All Rights Reserved.

Site Name: MAESTEG,MINERA,WREXHAM, LL11 5YU
Grid Reference: 325731,352495
Size of Site: 0.15 ha

Overview of Findings

The GroundSure GeoInsight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow Mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and GroundSure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Report Section	Number of records found within (X) m of the study site boundary
1. Geology	**Description**
1.1 Artificial Ground,	
1.1.1 Is there any Artificial Ground /Made Ground present beneath the study site?*	No
1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology & Landslips	
1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
1.2.2 Are there any records relating to permeability of superficial geology within the study site* boundary?	No
1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
1.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No
1.3 Bedrock, Solid Geology & Faults	
1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
1.3.2 Are there any records relating to permeability of bedrock within the study site* boundary?	Yes
1.3.3 Are there any records of faults within 500m of the study site boundary?	Yes
1.3.4 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level
1.3.5 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	Full radon protective measures are necessary

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

Source:Scale 1:50,000 BGS Sheet No:121

2. Ground Workings	on-site	0-50	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	6	-	-
2.2 Historical Underground Workings Features from Small Scale Mapping	0	0	22	101	148
2.3 Current Ground Workings	0	0	2	18	31

3. Mining, Extraction & Natural Cavities	on-site	0-50	51-250	251-500	501-1000
3.1 Historical Mining	0	0	22	101	148
3.2 Coal Mining	1	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	1	0	1	2	5
3.4 Non-Coal Mining*	1	0	3	1	7
3.5 Non–Coal Mining Cavities	0	0	1	3	3
3.6 Natural Cavities	0	0	0	2	3
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0

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

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

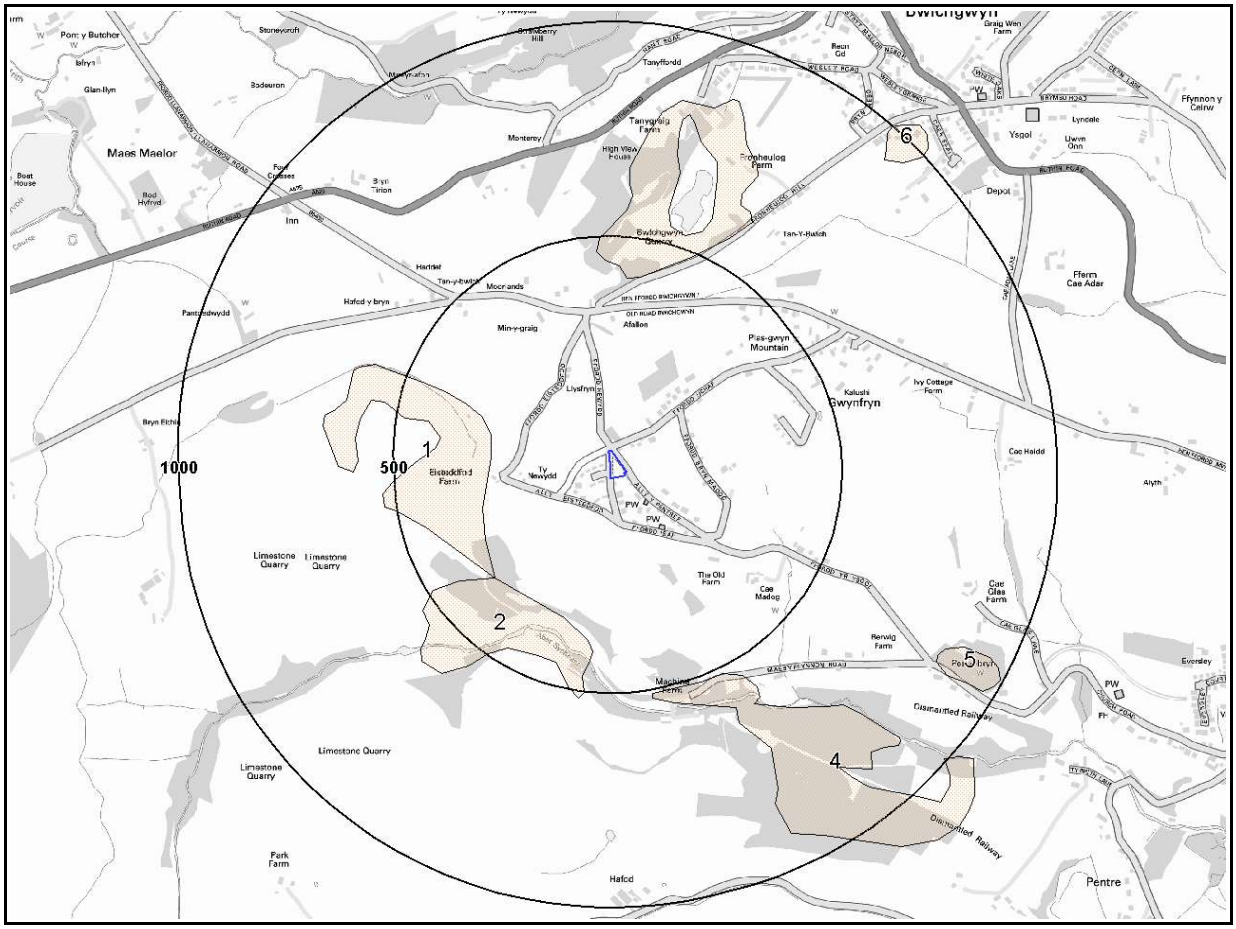
* This includes an automatically generated 50m buffer zone around the site

5. Borehole Records	on-site	0-50	51-250	251-500	501-1000
5.1 BGS Recorded Boreholes	0	0	6	-	-

6. Estimated Background Soil Chemistry	on-site	0-50	51-250	251-500	501-1000
6.1 Records of Background Soil Chemistry	2	1	0	-	-

1.1 Artificial Ground Map

NW N NE



W E

SW S SE

Artificial Ground Legend

Mapping sourced from Ordnance Survey

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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

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

1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:121

1.1.1 Artificial/Made Ground

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	273.0	W	MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	334.0	SW	MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	404.0	N	MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

1.1.2 Permeability of Artificial Ground

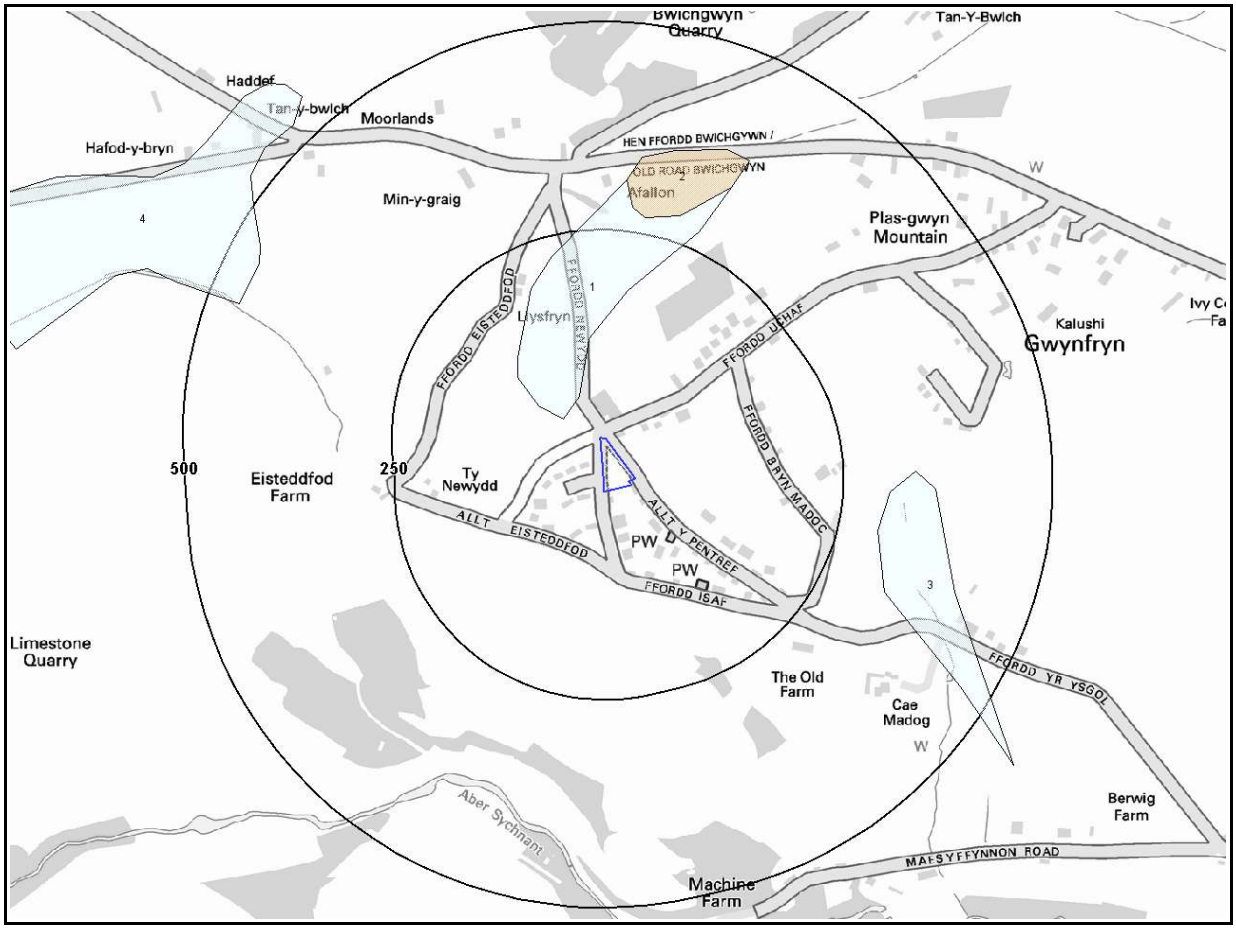
Are there any records relating to permeability of artificial ground within the study site* boundary? No

Database searched and no data found.

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

1.2 Superficial Deposits and Landslips Map

NW N NE



W E

SW S SE

Superficial and Landslips Legend

Mapping sourced from Ordnance Survey

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Site Outline

500
1000

Search Buffers (m)

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

1.2 Superficial Deposits and Landslips

1.2.1 Superficial Deposits/Drift Geology

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

ID	Distance (m)	Direction	Lex Code	Description	Rock Description
1	50.0	NW	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
2	270.0	N	PEAT-P	PEAT	PEAT
3	298.0	E	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
4	459.0	NW	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

1.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site* boundary? No

Database searched and no data found.

1.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site* boundary? No

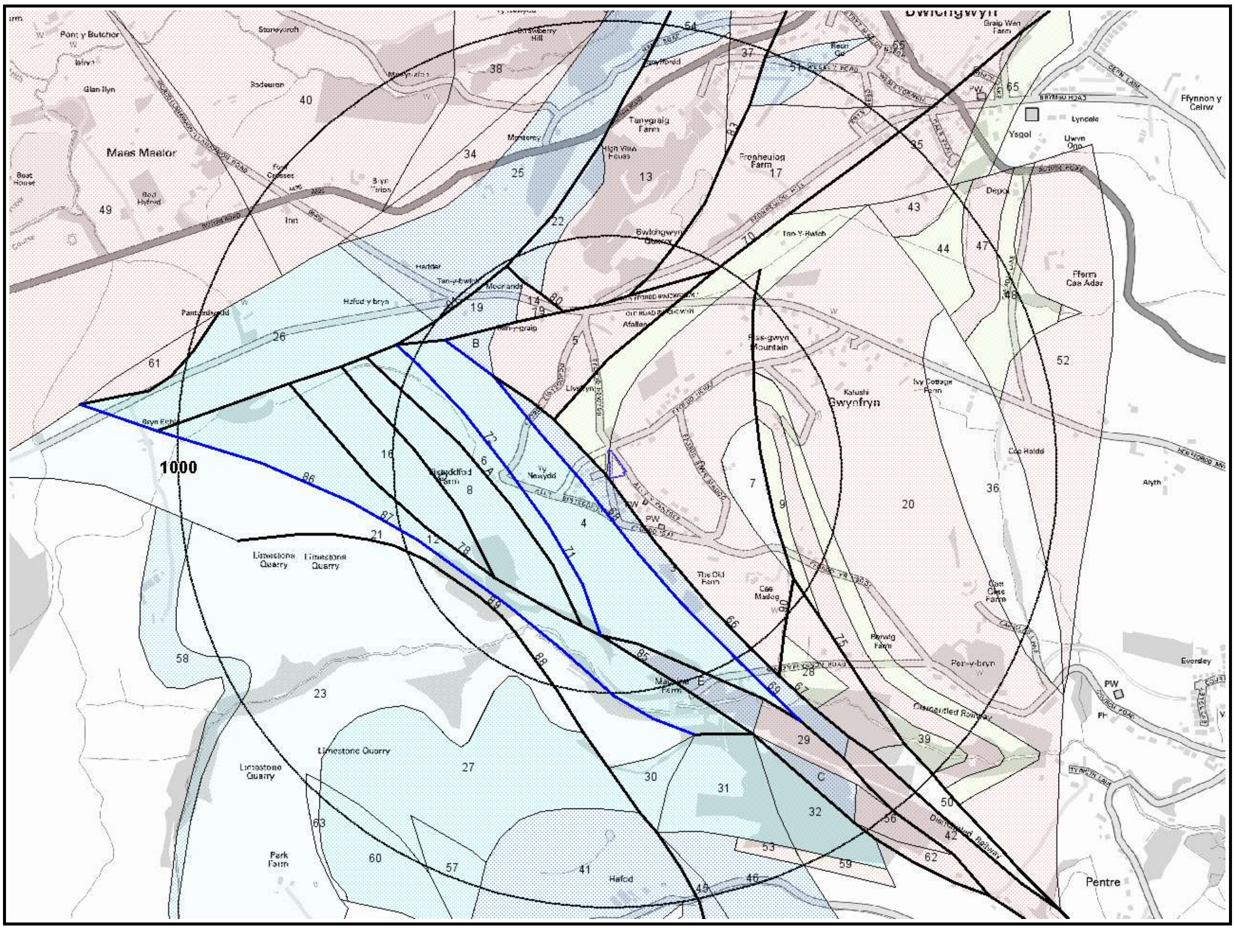
Database searched and no data found.

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

1.3 Bedrock and Faults Map

NW N NE

W E



SW S SE

Bedrock & Faults Deposits Legend

Mapping sourced from Ordnance Survey

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Site Outline

500
1000
Search Buffers (m)

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

1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:121

1.3.1 Bedrock/Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	BSG-MDST	Bowland Shale Formation - Mudstone	Yeadonian / Asbian
2	0.0	On Site	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian (westphalian A) / Yeadonian
3	4.0	SW	MRF-LMSD	Minera Formation - Interbedded Limestone And [subequal/subordinate] Sandstone	Brigantian
4	57.0	SW	CFML-LMAR	Cefn Mawr Limestone Formation - Interbedded Limestone And [subequal/subordinate] Argillaceous Rocks	Brigantian / Asbian
5	141.0	NW	CFS-SDAR	Cefn-y-fedw Sandstone Formation - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Marsdenian / Brigantian
6	181.0	SW	CFML-LMAR	Cefn Mawr Limestone Formation - Interbedded Limestone And [subequal/subordinate] Argillaceous Rocks	Brigantian / Asbian
7	222.0	E	PLMC-MDSS	Pennine Lower Coal Measures Formation And Pennine Middle Coal Measures Formation (undifferentiated) - Mudstone, Siltston	Bolsovian (westphalian C) / Langsettian (westphalian A)
8	224.0	SW	CFML-LMAR	Cefn Mawr Limestone Formation - Interbedded Limestone And [subequal/subordinate] Argillaceous Rocks	Brigantian / Asbian
9	315.0	E	BSG-MDST	Bowland Shale Formation - Mudstone	Yeadonian / Asbian
10 B	319.0	NW	MRF-LMSD	Minera Formation - Interbedded Limestone And [subequal/subordinate] Sandstone	Brigantian
11	328.0	NE	CFS-SDAR	Cefn-y-fedw Sandstone Formation - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Marsdenian / Brigantian
12	334.0	SW	CFML-LMAR	Cefn Mawr Limestone Formation - Interbedded Limestone And [subequal/subordinate] Argillaceous Rocks	Brigantian / Asbian
13	337.0	N	CFS-SDAR	Cefn-y-fedw Sandstone Formation - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Marsdenian / Brigantian
14	339.0	N	CFS-SDAR	Cefn-y-fedw Sandstone Formation - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Marsdenian / Brigantian
15	343.0	NE	BSG-MDST	Bowland Shale Formation - Mudstone	Yeadonian / Asbian
16	343.0	SW	CFML-LMAR	Cefn Mawr Limestone Formation - Interbedded Limestone And [subequal/subordinate] Argillaceous Rocks	Brigantian / Asbian

17	364.0	N	CFS-SDAR	Cefn-y-fedw Sandstone Formation - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Marsdenian / Brigantian
18 E	366.0	S	MRF-LMSD	Minera Formation - Interbedded Limestone And [subequal/subordinate] Sandstone	Brigantian
19	369.0	NW	MRF-LMSD	Minera Formation - Interbedded Limestone And [subequal/subordinate] Sandstone	Brigantian
20	377.0	NE	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian (westphalian A) / Yeadonian
21	379.0	SW	LGHL-LMST	Loggerheads Limestone Formation - Limestone	Asbian
22	397.0	NW	MRF-LMSD	Minera Formation - Interbedded Limestone And [subequal/subordinate] Sandstone	Brigantian
23	407.0	SW	LGHL-LMST	Loggerheads Limestone Formation - Limestone	Asbian
24	462.0	SE	GS-SDAR	Gwespyr Sandstone - Interbedded Sandstone And [subequal/subordinate] Argillaceous Rocks	Langsettian (westphalian A) / Yeadonian
25	481.0	NW	MRF-LMSD	Minera Formation - Interbedded Limestone And [subequal/subordinate] Sandstone	Brigantian

1.3.2 Permeability of Bedrock Ground

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

Distance (m)	Direction	Flow type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Moderate	Low
0.0	On Site	Fracture	Low	Low
4.0	SW	Fracture	High	Moderate

1.3.3 Faults

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

ID	Distance (m)	Direction	Category Description	Feature Description
66	4.0	SW	FAULT	Normal fault, inferred
67	4.0	SW	MINERAL_VEIN	Mineral vein, inferred
68	57.0	SW	MINERAL_VEIN	Mineral vein, inferred
69	57.0	SW	FAULT	Normal fault, inferred
70	141.0	NW	FAULT	Normal fault, inferred
71	181.0	SW	FAULT	Normal fault, inferred
72	181.0	SW	MINERAL_VEIN	Mineral vein, inferred
73 A	224.0	SW	FAULT	Normal fault, inferred
74 A	224.0	SW	MINERAL_VEIN	Mineral vein, inferred
75	315.0	E	FAULT	Normal fault, inferred
76 B	319.0	NW	MINERAL_VEIN	Mineral vein, inferred
77 C	334.0	SW	FAULT	Normal fault, inferred
78	334.0	SW	MINERAL_VEIN	Mineral vein, inferred
79	337.0	N	FAULT	Normal fault, inferred

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

80	339.0	N	FAULT	Normal fault, inferred
81	343.0	SW	FAULT	Normal fault, inferred
82	343.0	SW	MINERAL_VEIN	Mineral vein, inferred
83	364.0	N	FAULT	Normal fault, inferred
84	366.0	S	MINERAL_VEIN	Mineral vein, inferred
85	366.0	S	MINERAL_VEIN	Mineral vein, inferred
86	379.0	SW	FAULT	Normal fault, inferred
87	379.0	SW	MINERAL_VEIN	Mineral vein, inferred
88	407.0	SW	FAULT	Normal fault, inferred
89	407.0	SW	MINERAL_VEIN	Mineral vein, inferred
90	462.0	SE	FAULT	Normal fault, inferred
91	481.0	NW	FAULT	Normal fault, inferred

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3.4 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level

1.3.5 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?

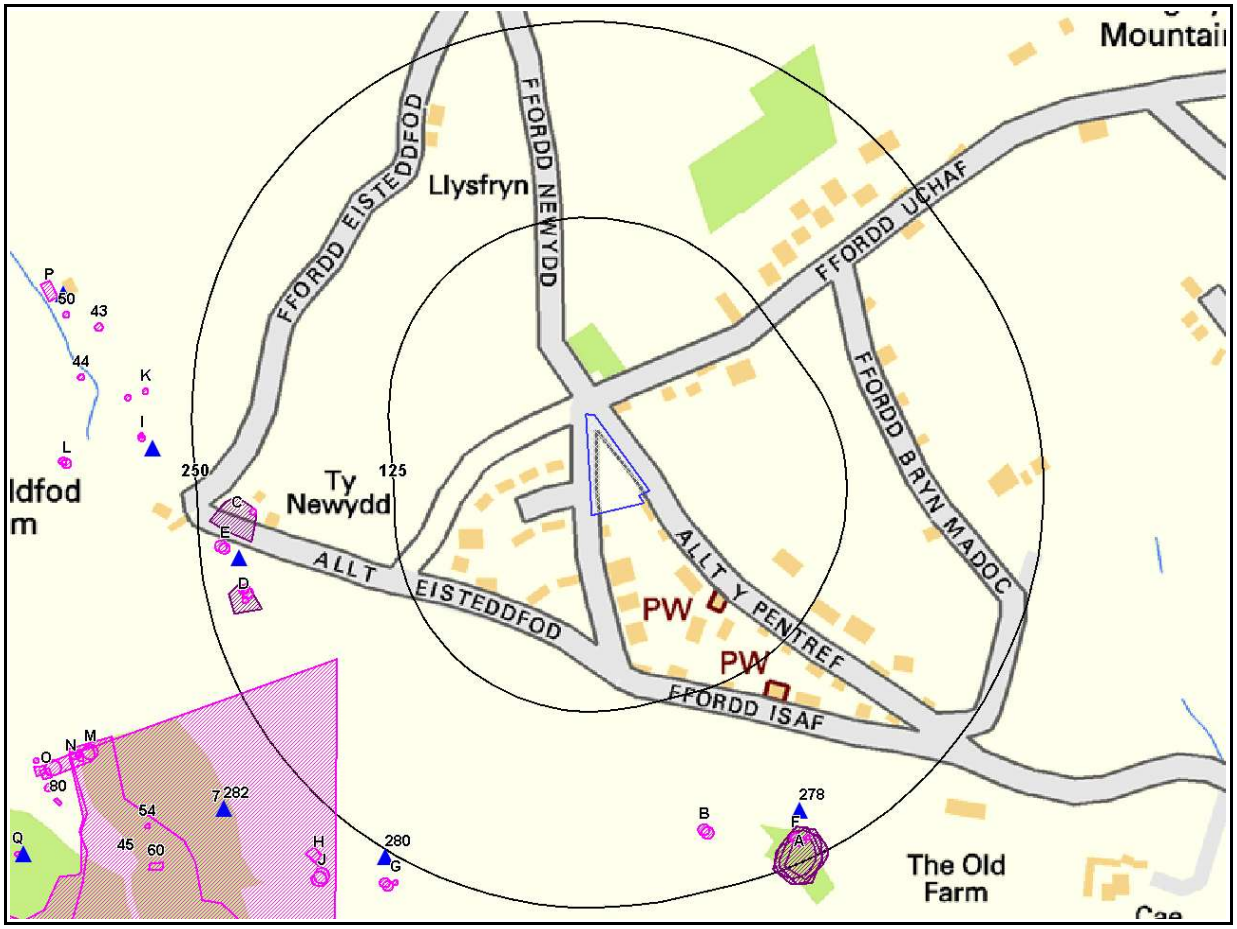
Full radon protective measures are necessary

2. Ground Workings Map

NW N NE

W E

SW S SE



Ground Workings Legend

Mapping sourced from Ordnance Survey

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Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

2. Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on GroundSure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping.

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

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

ID	Distance (m)	Direction	NGR	Use	Date
1C	213.0	W	325486,352461	Refuse Heap	1874
2D	218.0	W	325494,352410	Refuse Heap	1874
3A	228.0	SE	325845,352243	Unspecified Heap	1949
4A	230.0	SE	325847,352245	Refuse Heap	1872
5A	231.0	SE	325850,352248	Refuse Heap	1900
6A	235.0	SE	325843,352244	Unspecified Heap	1960

2.2 Historical Underground Workings Features derived from Historical Mapping

This data is derived from the GroundSure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by GroundSure:

ID	Distance (m)	Direction	NGR	Use	Date
7	186.0	SW	325460,352250	Lead Mine	1874
8B	208.0	S	325785,352263	Unspecified Disused Shaft	1989
9B	208.0	S	325785,352263	Unspecified Old Shafts	1960
10B	208.0	S	325785,352263	Unspecified Disused Shaft	1974
11B	208.0	S	325785,352263	Unspecified Disused Shaft	1985
12B	210.0	S	325788,352261	Unspecified Old Shafts	1949
13C	213.0	W	325499,352465	Lead Shaft	1874
14D	221.0	W	325496,352413	Old Lead Shafts	1949
15D	223.0	W	325493,352416	Unspecified Old Shafts	1960
16D	223.0	W	325493,352416	Unspecified Disused Shafts	1974
17D	223.0	W	325493,352416	Unspecified Disused Shafts	1985
18D	223.0	W	325494,352416	Unspecified Shaft	1900
19D	224.0	W	325494,352409	Lead Shaft	1874
20E	231.0	W	325481,352442	Old Lead Shafts	1949
21F	231.0	SE	325843,352257	Unspecified Old Shafts	1960
22E	232.0	W	325479,352443	Unspecified Disused Shafts	1974
23E	232.0	W	325479,352443	Unspecified Disused Shafts	1985
24E	232.0	W	325479,352443	Unspecified Disused Shafts	1989
25E	232.0	W	325479,352443	Unspecified Old Shafts	1960
26F	233.0	SE	325845,352255	Unspecified Old Shafts	1949
27F	236.0	SE	325848,352256	Unspecified Shaft	1872
28F	236.0	SE	325851,352258	Unspecified Shaft	1900
29G	264.0	SW	325589,352229	Unspecified Old Shaft	1900
30G	265.0	SW	325583,352229	Unspecified Old Shafts	1960
31G	266.0	SW	325585,352227	Unspecified Old Shafts	1949

Not shown	271.0	S	325655,352195	Unspecified Old Shafts	1960
Not shown	274.0	S	325657,352192	Unspecified Old Shafts	1949
34H	275.0	SW	325541,352244	Old Lead Shafts	1949
35H	275.0	SW	325537,352247	Unspecified Old Shafts	1960
36K	278.0	W	325431,352542	Lead Shaft	1874
37I	280.0	W	325428,352512	Lead Shaft	1874
38I	281.0	W	325428,352514	Unspecified Shafts	1900
39J	282.0	SW	325543,352233	Unspecified Disused Shaft	1985
40J	282.0	SW	325543,352233	Unspecified Disused Shaft	1974
41J	284.0	SW	325541,352231	Unspecified Disused Shaft	1989
42K	289.0	W	325419,352538	Lead Shafts	1874
43	311.0	W	325401,352583	Old Lead Shaft	1949
44	319.0	W	325390,352551	Lead Shaft	1874
45	323.0	SW	325399,352204	Unspecified Mine	1900
Not shown	328.0	SE	325888,352170	Lead Shafts	1872
47L	328.0	W	325381,352496	Old Lead Shafts	1949
48L	331.0	W	325378,352498	Unspecified Old Shafts	1960
49L	331.0	W	325379,352497	Unspecified Shafts	1900
50	333.0	W	325380,352591	Lead Shafts	1874
Not shown	339.0	SE	325894,352162	Unspecified Old Shaft	1960
Not shown	340.0	SE	325894,352160	Unspecified Old Shaft	1949
Not shown	342.0	SE	325900,352164	Unspecified Shafts	1900
54	343.0	SW	325432,352265	Unspecified Old Shafts	1900
55P	343.0	W	325370,352606	Unspecified Old Shaft	1960
56M	347.0	SW	325396,352312	Unspecified Disused Shafts	1974
57M	347.0	SW	325396,352312	Unspecified Disused Shafts	1985
Not shown	349.0	S	325767,352114	Unspecified Old Shafts	1900
59N	350.0	SW	325382,352306	Unspecified Disused Shaft	1989
60	351.0	SW	325437,352239	Old Lead Shafts	1949
Not shown	351.0	S	325752,352110	Unspecified Old Shafts	1960
Not shown	354.0	S	325754,352107	Unspecified Old Shafts	1949
Not shown	356.0	SE	325918,352157	Unspecified Shafts	1900
64M	357.0	SW	325389,352308	Old Lead Shafts	1949
65M	358.0	SW	325388,352312	Unspecified Old Shafts	1900
66M	359.0	SW	325386,352310	Unspecified Old Shafts	1960
Not shown	361.0	S	325749,352098	Unspecified Disused Shaft	1974
Not shown	362.0	S	325748,352098	Unspecified Disused Shaft	1989
Not shown	362.0	S	325748,352098	Unspecified Disused Shaft	1985
Not shown	363.0	S	325741,352097	Unspecified Old Shafts	1960
Not shown	364.0	S	325751,352098	Unspecified Old Shafts	1900
Not shown	366.0	S	325744,352095	Unspecified Old Shafts	1949
73N	373.0	SW	325372,352302	Unspecified Disused Shafts	1974
74N	373.0	SW	325372,352302	Unspecified Disused Shafts	1985
Not shown	379.0	SW	325446,352192	Lead Shaft	1874
76O	380.0	SW	325367,352298	Old Lead Shafts	1949
Not shown	381.0	S	325828,352095	Lead Shafts	1872
Not shown	381.0	W	325337,352616	Old Lead Shafts	1949
79O	382.0	SW	325364,352300	Unspecified Old Shafts	1960
80	383.0	SW	325375,352280	Old Lead Shafts	1949
81O	383.0	SW	325369,352289	Old Lead Shafts	1949
82O	384.0	SW	325361,352307	Unspecified Old Shafts	1900
Not shown	389.0	SW	325473,352155	Lead Shaft	1874
Not shown	390.0	W	325323,352412	Old Lead Shaft	1949
Not shown	392.0	W	325323,352608	Unspecified Old Shafts	1960
Not shown	393.0	W	325320,352414	Unspecified Old Shaft	1960

Not shown	393.0	W	325325,352620	Old Lead Shafts	1949
Not shown	394.0	W	325329,352638	Old Lead Shafts	1949
Not shown	395.0	W	325319,352414	Unspecified Old Shafts	1900
Not shown	400.0	SW	325427,352182	Unspecified Shaft	1900
Not shown	405.0	W	325318,352639	Old Lead Shafts	1949
Not shown	411.0	W	325308,352625	Old Lead Shafts	1949
Not shown	416.0	NW	325508,352901	Unspecified Old Shaft	1960
Not shown	419.0	W	325305,352647	Old Lead Shafts	1949
Not shown	420.0	NW	325512,352901	Old Lead Shaft	1949
Not shown	420.0	W	325302,352640	Old Lead Shafts	1949
97Q	422.0	SW	325350,352247	Unspecified Shafts	1900
Not shown	424.0	S	325841,352054	Unspecified Shaft	1872
Not shown	424.0	S	325848,352057	Unspecified Shaft	1900
Not shown	427.0	NW	325502,352903	Unspecified Old Shaft	1900
Not shown	428.0	W	325291,352624	Old Lead Shafts	1949
Not shown	428.0	W	325279,352515	Old Lead Shafts	1949
Not shown	431.0	W	325275,352517	Unspecified Old Shafts	1960
Not shown	434.0	W	325274,352513	Lead Shaft	1874
Not shown	435.0	W	325283,352639	Unspecified Disused Shaft	1985
Not shown	435.0	W	325283,352639	Unspecified Disused Shaft	1989
Not shown	435.0	W	325283,352639	Unspecified Disused Shaft	1974
Not shown	442.0	W	325280,352638	Unspecified Shaft	1900
Not shown	443.0	W	325277,352632	Lead Shaft	1874
Not shown	444.0	SE	325954,352074	Unspecified Old Shaft	1960
Not shown	444.0	SE	325954,352074	Unspecified Disused Shaft	1974
Not shown	444.0	SE	325954,352074	Unspecified Disused Shaft	1985
Not shown	444.0	SE	325954,352074	Unspecified Disused Shaft	1989
Not shown	444.0	SE	325955,352074	Unspecified Old Shaft	1949
Not shown	448.0	SE	325959,352073	Lead Shaft	1872
Not shown	449.0	SW	325301,352283	Unspecified Shafts	1900
Not shown	450.0	SE	325968,352076	Unspecified Shaft	1900
Not shown	458.0	S	325884,352031	Lead Shaft	1872
Not shown	476.0	S	325917,352023	Lead Shaft	1872
Not shown	482.0	W	325246,352664	Old Lead Shafts	1949
Not shown	485.0	S	325900,352008	Lead Shaft	1872
Not shown	486.0	SE	325948,352026	Lead Shaft	1872
Not shown	488.0	S	325904,352008	Unspecified Shaft	1900
Not shown	489.0	W	325244,352683	Unspecified Shaft	1874
Not shown	491.0	W	325222,352404	Unspecified Disused Shaft	1985
Not shown	491.0	W	325222,352404	Unspecified Disused Shaft	1974

Not shown	491.0	W	325222,352404	Unspecified Disused Shaft	1989
Not shown	497.0	S	325915,351999	Lead Shaft	1872
Not shown	498.0	W	325243,352724	Old Lead Shaft	1949
Not shown	503.0	W	325212,352405	Unspecified Old Shafts	1900
Not shown	504.0	W	325223,352667	Lead Shaft	1874
Not shown	507.0	NW	325241,352725	Unspecified Shaft	1900
Not shown	508.0	NW	325240,352730	Unspecified Old Shaft	1960
Not shown	509.0	W	325238,352723	Lead Shaft	1874
Not shown	514.0	SE	325988,352010	Unspecified Disused Shaft	1974
Not shown	514.0	SE	325988,352010	Unspecified Disused Shaft	1985
Not shown	516.0	SE	325987,352009	Unspecified Disused Shaft	1989
Not shown	518.0	SW	325464,352006	Unspecified Disused Shafts	1985
Not shown	518.0	SW	325464,352006	Unspecified Disused Shafts	1974
Not shown	518.0	SW	325464,352006	Unspecified Old Shafts	1960
Not shown	518.0	SW	325464,352006	Unspecified Disused Shafts	1989
Not shown	518.0	SW	325460,352009	Unspecified Old Shafts	1900
Not shown	520.0	SW	325466,352003	Old Lead Shafts	1949
Not shown	528.0	SE	325963,351984	Lead Shaft	1872
Not shown	530.0	S	325552,351954	Unspecified Disused Shaft	1985
Not shown	530.0	S	325552,351954	Unspecified Disused Shaft	1989
Not shown	530.0	S	325552,351954	Unspecified Disused Shaft	1974
Not shown	533.0	S	325504,351970	Unspecified Old Shafts	1960
Not shown	535.0	SW	325507,351967	Old Lead Shafts	1949
Not shown	536.0	S	325591,351939	Unspecified Shaft	1872
Not shown	536.0	SW	325427,352005	Unspecified Disused Shafts	1985
Not shown	536.0	SW	325427,352005	Unspecified Disused Shafts	1974
Not shown	537.0	SW	325426,352006	Unspecified Disused Shafts	1989
Not shown	538.0	SE	325977,351980	Unspecified Disused Shaft	1989
Not shown	538.0	S	325544,351949	Old Lead Shafts	1949
Not shown	538.0	SE	325979,351981	Unspecified Disused Shaft	1974
Not shown	538.0	SE	325979,351981	Unspecified Disused Shaft	1985
Not shown	544.0	SW	325423,352001	Old Lead Shafts	1949
Not shown	544.0	SW	325420,352003	Unspecified Old Shafts	1900
Not shown	545.0	SW	325413,352004	Unspecified Disused Shafts	1974
Not shown	545.0	SW	325413,352004	Unspecified Disused Shafts	1985
Not shown	545.0	SW	325410,352005	Unspecified Disused Shafts	1989
Not shown	551.0	SW	325408,352002	Old Lead Shafts	1949
Not shown	555.0	W	325162,352377	Old Lead Shaft	1949
Not shown	557.0	W	325159,352379	Unspecified Disused Shaft	1985

Not shown	557.0	W	325159,352379	Unspecified Disused Shaft	1989
Not shown	557.0	W	325159,352379	Unspecified Old Shaft	1960
Not shown	557.0	W	325159,352379	Unspecified Disused Shaft	1974
Not shown	561.0	W	325157,352380	Unspecified Old Shafts	1900
Not shown	576.0	W	325131,352486	Old Lead Shafts	1949
Not shown	580.0	W	325127,352487	Unspecified Old Shafts	1960
Not shown	581.0	W	325129,352487	Unspecified Old Shafts	1900
Not shown	602.0	W	325122,352671	Old Lead Shaft	1949
Not shown	605.0	W	325119,352673	Unspecified Old Shaft	1960
Not shown	608.0	SE	325988,351910	Lead Shaft	1872
Not shown	611.0	S	325973,351898	Unspecified Disused Shafts	1974
Not shown	611.0	S	325973,351898	Unspecified Disused Shafts	1985
Not shown	611.0	S	325969,351898	Unspecified Disused Shafts	1989
Not shown	615.0	W	325091,352527	Old Lead Shafts	1949
Not shown	617.0	SE	326085,351950	Lead Shaft	1872
Not shown	619.0	W	325087,352530	Unspecified Old Shafts	1960
Not shown	620.0	W	325088,352528	Unspecified Old Shafts	1900
Not shown	621.0	S	325964,351887	Lead Shafts	1872
Not shown	622.0	SE	326089,351948	Unspecified Shaft	1900
Not shown	642.0	S	325963,351862	Unspecified Disused Shafts	1989
Not shown	643.0	S	325965,351861	Unspecified Disused Shafts	1974
Not shown	643.0	S	325965,351861	Unspecified Disused Shafts	1985
Not shown	645.0	SE	326017,351881	Unspecified Disused Shafts	1974
Not shown	645.0	SE	326017,351881	Unspecified Disused Shaft	1960
Not shown	645.0	SE	326017,351881	Unspecified Disused Shafts	1989
Not shown	645.0	SE	326017,351881	Unspecified Disused Shafts	1985
Not shown	647.0	SE	326152,351957	Unspecified Old Shafts	1960
Not shown	648.0	SE	326019,351879	Disused Lead Shaft	1949
Not shown	649.0	SE	326150,351959	Unspecified Disused Shafts	1989
Not shown	649.0	SE	326025,351880	Unspecified Shaft	1900
Not shown	650.0	SE	326149,351956	Unspecified Old Shafts	1949
Not shown	650.0	SE	326153,351958	Unspecified Disused Shafts	1974
Not shown	650.0	SE	326153,351958	Unspecified Disused Shafts	1985
Not shown	653.0	SE	326157,351958	Unspecified Shaft	1900
Not shown	654.0	SE	326163,351962	Unspecified Disused Shafts	1989
Not shown	654.0	SE	326030,351878	Lead Shaft	1872
Not shown	655.0	SE	326165,351960	Unspecified Disused Shafts	1974
Not shown	655.0	SE	326165,351960	Unspecified Disused Shafts	1985
Not shown	656.0	SE	326160,351956	Unspecified Old Shafts	1949

Not shown	659.0	SE	326168,351960	Unspecified Shaft	1900
Not shown	668.0	S	325682,351792	Unspecified Disused Shaft	1974
Not shown	668.0	S	325682,351792	Unspecified Disused Shaft	1985
Not shown	668.0	S	325682,351792	Unspecified Disused Shaft	1989
Not shown	677.0	SE	326094,351887	Lead Shaft	1872
Not shown	694.0	W	325019,352425	Unspecified Old Shafts	1900
Not shown	700.0	SE	326227,351957	Unspecified Disused Shafts	1989
Not shown	701.0	SE	326222,351950	Unspecified Disused Shaft	1985
Not shown	701.0	SE	326222,351950	Unspecified Old Shafts	1960
Not shown	701.0	SE	326222,351950	Unspecified Disused Shaft	1974
Not shown	702.0	SE	326223,351951	Unspecified Old Shafts	1949
Not shown	706.0	SE	326231,351952	Unspecified Shaft	1900
Not shown	736.0	W	325029,352191	Unspecified Old Shafts	1900
Not shown	741.0	SE	326109,351821	Unspecified Disused Shafts	1985
Not shown	741.0	SE	326109,351821	Unspecified Disused Shafts	1974
Not shown	741.0	SE	326109,351821	Unspecified Disused Shafts	1989
Not shown	741.0	SE	326109,351821	Unspecified Disused Shaft	1960
Not shown	743.0	SE	326112,351820	Disused Lead Shaft	1949
Not shown	744.0	SE	326120,351823	Unspecified Shaft	1900
Not shown	767.0	SE	326129,351802	Lead Shaft	1872
Not shown	782.0	W	324962,352238	Unspecified Old Shafts	1900
Not shown	793.0	SW	325287,351793	Unspecified Old Shafts	1900
Not shown	793.0	SW	325287,351790	Unspecified Disused Shaft	1974
Not shown	793.0	SW	325287,351790	Unspecified Disused Shaft	1985
Not shown	793.0	SW	325287,351790	Unspecified Old Shaft	1960
Not shown	793.0	SW	325287,351790	Unspecified Disused Shaft	1989
Not shown	794.0	SW	325290,351787	Unspecified Old Shaft	1949
Not shown	795.0	W	324927,352337	Unspecified Old Shafts	1900
Not shown	800.0	W	324940,352250	Unspecified Old Shafts	1900
Not shown	803.0	S	325807,351663	Unspecified Old Shaft	1900
Not shown	805.0	S	325807,351659	Unspecified Old Shaft	1949
Not shown	806.0	S	325803,351658	Unspecified Disused Shaft	1985
Not shown	806.0	S	325803,351658	Unspecified Disused Shaft	1974
Not shown	806.0	S	325803,351658	Unspecified Disused Shaft	1989
Not shown	806.0	S	325803,351658	Unspecified Old Shaft	1960
Not shown	806.0	SW	325351,351742	Unspecified Old Shafts	1900
Not shown	825.0	SE	326215,351787	Unspecified Shaft	1900
Not shown	826.0	SE	326166,351756	Unspecified Disused Shaft	1989
Not shown	826.0	SE	326166,351756	Unspecified Old Shaft	1960

Not shown	826.0	SE	326166,351756	Unspecified Disused Shaft	1974
Not shown	826.0	SE	326166,351756	Unspecified Disused Shaft	1985
Not shown	827.0	SE	326168,351756	Unspecified Old Shaft	1949
Not shown	829.0	W	324904,352283	Unspecified Old Shafts	1900
Not shown	844.0	W	324917,352182	Unspecified Old Shafts	1900
Not shown	851.0	W	324874,352304	Unspecified Old Shafts	1900
Not shown	867.0	W	324856,352319	Unspecified Old Shafts	1900
Not shown	893.0	SW	325245,351698	Unspecified Disused Shafts	1974
Not shown	893.0	SW	325245,351698	Unspecified Disused Shafts	1985
Not shown	893.0	SW	325245,351698	Unspecified Disused Shafts	1989
Not shown	896.0	SW	325237,351700	Unspecified Shafts	1900
Not shown	901.0	SW	325236,351696	Unspecified Old Shafts	1960
Not shown	903.0	SW	325238,351693	Unspecified Old Shafts	1949
Not shown	905.0	SW	325238,351690	Lead Shaft	1874
Not shown	928.0	SE	326335,351750	Unspecified Old Shaft	1900
Not shown	947.0	SE	326297,351696	Unspecified Disused Shaft	1974
Not shown	947.0	SE	326297,351696	Unspecified Disused Shaft	1985
Not shown	947.0	SE	326297,351696	Unspecified Disused Shaft	1989
Not shown	947.0	SE	326297,351696	Unspecified Shaft	1960
Not shown	948.0	SE	326300,351697	Unspecified Shaft	1949
Not shown	949.0	SE	326306,351701	Unspecified Shaft	1900
Not shown	949.0	SE	326302,351698	Lead Shaft	1872
Not shown	952.0	SW	325227,351640	Unspecified Shafts	1900
Not shown	959.0	SW	325223,351636	Unspecified Disused Shafts	1985
Not shown	959.0	SW	325223,351636	Unspecified Old Shafts	1960
Not shown	959.0	SW	325223,351636	Unspecified Disused Shafts	1989
Not shown	959.0	SW	325223,351636	Unspecified Disused Shafts	1974
Not shown	960.0	SW	325226,351634	Unspecified Old Shafts	1949
Not shown	962.0	SW	325200,351644	Unspecified Disused Shafts	1989
Not shown	962.0	SW	325200,351644	Unspecified Disused Shafts	1974
Not shown	962.0	SW	325200,351644	Unspecified Disused Shafts	1985
Not shown	964.0	SW	325198,351644	Unspecified Shafts	1900
Not shown	970.0	SW	325198,351638	Lead Shafts	1874
Not shown	995.0	NE	326293,353340	Lead Shafts	1872

2.3 Current Ground Workings

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

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

The following Current Ground Workings information is provided by British Geological Society:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
278	220.0	SE	3258 46,35 2275	Coal, Deep	Cae-fadog	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)	Ceased
279E	226.0	W	3254 90,35 2436	Lead	Eisteddfod	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)	Ceased
280	254.0	SW	3255 83,35 2245	Coal, Deep	Cae-fadog	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)	Ceased
281I	276.0	W	3254 35,35 2506	Lead	Eisteddfod	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)	Ceased
282	300.0	SW	3254 80,35 2276	Lead	Eisteddfod	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)	Ceased
Not shown	328.0	SE	3258 98,35 2180	Coal, Deep	Cae-fadog	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)	Ceased
Not shown	336.0	S	3257 63,35 2131	Coal, Deep	Cae-fadog	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)	Ceased

285P	341.0	W	3253 78,35 2604	Lead	Eisteddfod	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)	Ceased
Not shown	367.0	S	3256 58,35 2100	Limestone	Cae-fadog	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	388.0	SW	3254 74,35 2158	Lead	Eisteddfod	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)	Ceased
Not shown	392.0	W	3253 25,35 2411	Lead	Eisteddfod	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)	Ceased
Not shown	400.0	N	3256 36,35 2921	Sandstone	Fron-heulog	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	401.0	SW	3254 29,35 2181	Lead	Eisteddfod	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)	Ceased
Not shown	410.0	S	3258 45,35 2073	Coal, Deep	Low's Shaft	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)	Ceased
292Q	421.0	SW	3253 53,35 2247	Lead	Eisteddfod	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)	Ceased
Not shown	425.0	NW	3255 08,35 2902	Lead	Tan-y-bwlch	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)	Ceased

Not shown	429.0	W	3252 81,35 2515	Lead	Eisteddfod	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)	Ceased
Not shown	438.0	SE	3259 64,35 2091	Coal, Deep	Cae-fadog	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)	Ceased
Not shown	439.0	W	3252 85,35 2636	Lead	Tan-y-bwlch	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)	Ceased
Not shown	456.0	NE	3261 62,35 2677	Sandstone	Bryn-ffynnon	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	512.0	NW	3252 39,35 2728	Lead	Tan-y-bwlch	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)	Ceased
Not shown	520.0	S	3256 30,35 1950	Limestone	Minera	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	552.0	SE	3260 60,35 2016	Coal, Deep	Minera Union Mine	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)	Ceased
Not shown	556.0	S	3255 68,35 1926	Limestone	Minera Lime Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	559.0	W	3251 62,35 2378	Lead	Top Eisteddfod	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)	Ceased
Not shown	564.0	SW	3254 41,35 1970	Lead	Park Farm	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)	Ceased

Not shown	586.0	SW	3251 95,35 2190	Limestone	Minera	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	594.0	S	3259 50,35 1913	Lead	Cornish Shaft	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)	Ceased
Not shown	594.0	SE	3262 63,35 2177	Clay & Shale	Cae-glas	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	617.0	W	3250 93,35 2527	Lead	Top Eisteddfod	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)	Ceased
Not shown	635.0	S	3257 65,35 1830	Limestone	Minera	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	644.0	SE	3261 53,35 1971	Coal, Deep	Minera Union Mine	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)	Ceased
Not shown	677.0	N	3258 75,35 3185	Silica Rock	Bwlchgwyn	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	677.0	N	3258 75,35 3185	Sandstone	Bwlchgwyn	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	695.0	SW	3253 09,35 1898	Limestone	Park Farm	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	700.0	SE	3262 30,35 1964	Coal, Deep	Minera Union Mine	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)	Ceased
Not shown	735.0	W	3250 30,35 2193	Lead	Ty-hir	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)	Ceased

Not shown	741.0	SE	3261 22,35 1832	Lead	Boundary Shaft	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)	Ceased
Not shown	749.0	W	3249 89,35 2273	Lead	Ty-hir	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)	Ceased
Not shown	751.0	S	3259 73,35 1755	Limestone	Hafod	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	793.0	S	3258 02,35 1675	Lead	Hafod	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)	Ceased
Not shown	802.0	SE	3261 54,35 1780	Lead	Busy Bee Shaft	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)	Ceased
Not shown	806.0	SW	3253 58,35 1740	Lead	Park Farm	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)	Ceased
Not shown	837.0	SE	3260 80,35 1703	Limestone	Hafod	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	909.0	NE	3262 02,35 3295	Silica Rock	Bwlchgwyn	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	925.0	SE	3265 55,35 2020	Sandstone	Berwig	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	935.0	SE	3261 86,35 1646	Limestone	Hafod	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	938.0	W	3248 33,35 2140	Limestone	Ty-hir	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

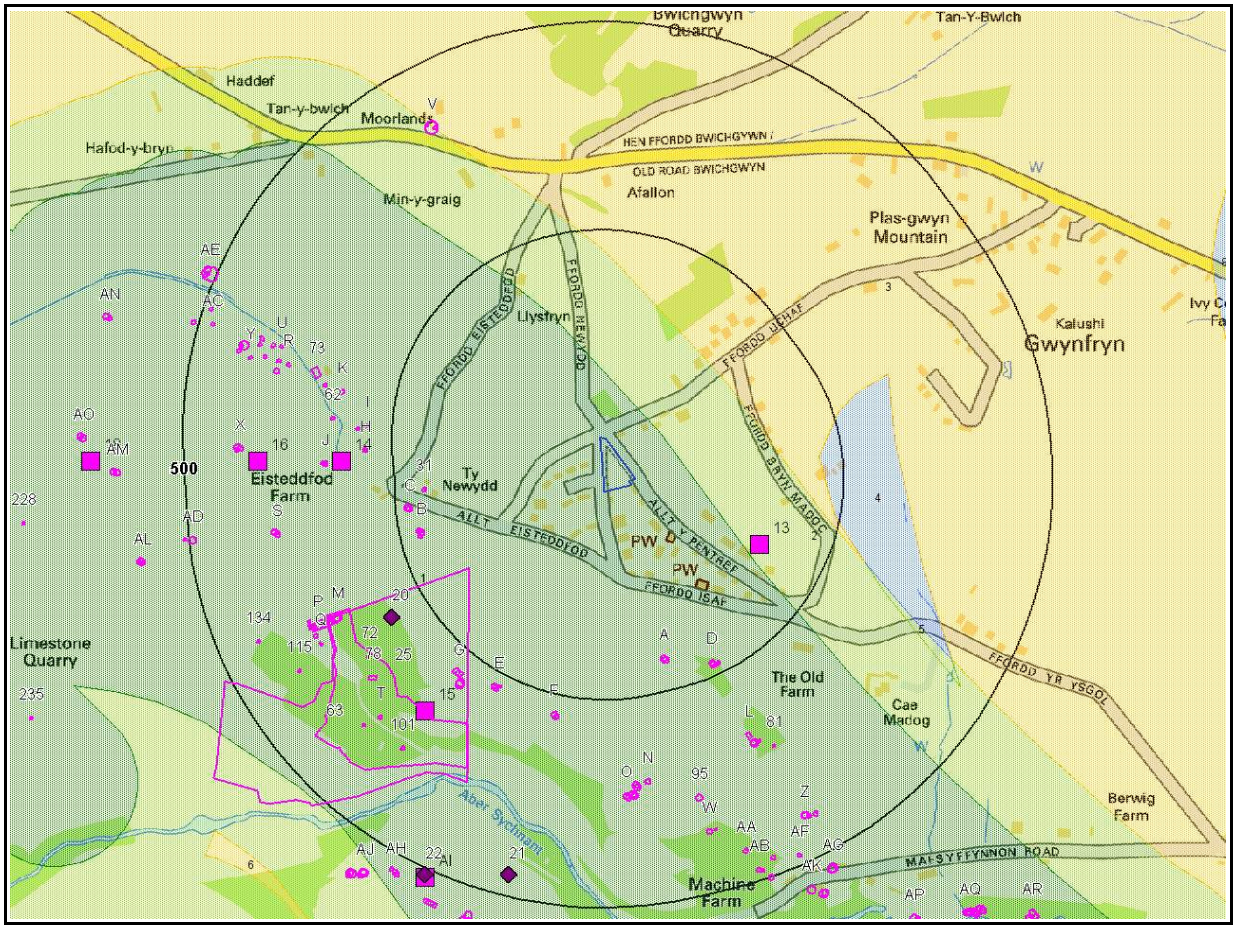
Not shown	938.0	SE	3263 07,35 1718	Lead	Hafod	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	949.0	W	3247 93,35 2236	Limestone	Ty-hir	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	972.0	SW	3252 01,35 1637	Lead	Park Farm	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)	Ceased

3. Mining, Extraction & Natural Cavities Map

NW N NE

W E

SW S SE



Mining, Extraction & Natural Cavities Legend

Mapping sourced from Ordnance Survey

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Site Outline

250
500
Search Buffers (m)

Historical Mining

Non-Coal Mining Cavities

Natural Cavities

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

3.Mining, Extraction & Natural Cavities

3.1 Historical Mining

This dataset is derived from GroundSure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? **Yes**

The following Historical Mining information is provided by Groundsure :

ID	Distance (m)	Direction	NGR	Details	Date
25	186.0	SW	325460,352 250	Lead Mine	1874
26A	208.0	S	325785,352 263	Unspecified Disused Shaft	1974
27A	208.0	S	325785,352 263	Unspecified Disused Shaft	1989
28A	208.0	S	325785,352 263	Unspecified Disused Shaft	1985
29A	208.0	S	325785,352 263	Unspecified Old Shafts	1960
30A	210.0	S	325788,352 261	Unspecified Old Shafts	1949
31	213.0	W	325499,352 465	Lead Shaft	1874
32B	221.0	W	325496,352 413	Old Lead Shafts	1949
33B	223.0	W	325493,352 416	Unspecified Disused Shafts	1985
34B	223.0	W	325493,352 416	Unspecified Disused Shafts	1974
35B	223.0	W	325493,352 416	Unspecified Old Shafts	1960
36B	223.0	W	325494,352 416	Unspecified Shaft	1900
37B	224.0	W	325494,352 409	Lead Shaft	1874
38C	231.0	W	325481,352 442	Old Lead Shafts	1949
39D	231.0	SE	325843,352 257	Unspecified Old Shafts	1960
40C	232.0	W	325479,352 443	Unspecified Disused Shafts	1974
41C	232.0	W	325479,352 443	Unspecified Disused Shafts	1989
42C	232.0	W	325479,352 443	Unspecified Disused Shafts	1985
43C	232.0	W	325479,352 443	Unspecified Old Shafts	1960
44D	233.0	SE	325845,352 255	Unspecified Old Shafts	1949
45D	236.0	SE	325848,352 256	Unspecified Shaft	1872
46D	236.0	SE	325851,352 258	Unspecified Shaft	1900
47E	264.0	SW	325589,352 229	Unspecified Old Shaft	1900
48E	265.0	SW	325583,352 229	Unspecified Old Shafts	1960
49E	266.0	SW	325585,352 227	Unspecified Old Shafts	1949
50F	271.0	S	325655,352 195	Unspecified Old Shafts	1960
51F	274.0	S	325657,352 192	Unspecified Old Shafts	1949
52G	275.0	SW	325541,352 244	Old Lead Shafts	1949
53G	275.0	SW	325537,352 247	Unspecified Old Shafts	1960

54I	278.0	W	325431,352 542	Lead Shaft	1874
55H	280.0	W	325428,352 512	Lead Shaft	1874
56H	281.0	W	325428,352 514	Unspecified Shafts	1900
57G	282.0	SW	325543,352 233	Unspecified Disused Shaft	1985
58G	282.0	SW	325543,352 233	Unspecified Disused Shaft	1974
59G	284.0	SW	325541,352 231	Unspecified Disused Shaft	1989
60I	289.0	W	325419,352 538	Lead Shafts	1874
61K	311.0	W	325401,352 583	Old Lead Shaft	1949
62	319.0	W	325390,352 551	Lead Shaft	1874
63	323.0	SW	325399,352 204	Unspecified Mine	1900
64L	328.0	SE	325888,352 170	Lead Shafts	1872
65J	328.0	W	325381,352 496	Old Lead Shafts	1949
66J	331.0	W	325378,352 498	Unspecified Old Shafts	1960
67J	331.0	W	325379,352 497	Unspecified Shafts	1900
68K	333.0	W	325380,352 591	Lead Shafts	1874
69L	339.0	SE	325894,352 162	Unspecified Old Shaft	1960
70L	340.0	SE	325894,352 160	Unspecified Old Shaft	1949
71L	342.0	SE	325900,352 164	Unspecified Shafts	1900
72	343.0	SW	325432,352 265	Unspecified Old Shafts	1900
73	343.0	W	325370,352 606	Unspecified Old Shaft	1960
74M	347.0	SW	325396,352 312	Unspecified Disused Shafts	1985
75M	347.0	SW	325396,352 312	Unspecified Disused Shafts	1974
76N	349.0	S	325767,352 114	Unspecified Old Shafts	1900
77M	350.0	SW	325382,352 306	Unspecified Disused Shaft	1989
78	351.0	SW	325437,352 239	Old Lead Shafts	1949
79N	351.0	S	325752,352 110	Unspecified Old Shafts	1960
80N	354.0	S	325754,352 107	Unspecified Old Shafts	1949
81	356.0	SE	325918,352 157	Unspecified Shafts	1900
82M	357.0	SW	325389,352 308	Old Lead Shafts	1949
83M	358.0	SW	325388,352 312	Unspecified Old Shafts	1900
84M	359.0	SW	325386,352 310	Unspecified Old Shafts	1960
85N	361.0	S	325749,352 098	Unspecified Disused Shaft	1974
86N	362.0	S	325748,352 098	Unspecified Disused Shaft	1985
87N	362.0	S	325748,352 098	Unspecified Disused Shaft	1989
88O	363.0	S	325741,352 097	Unspecified Old Shafts	1960
89O	364.0	S	325751,352 098	Unspecified Old Shafts	1900
90O	366.0	S	325744,352 095	Unspecified Old Shafts	1949
91P	373.0	SW	325372,352 302	Unspecified Disused Shafts	1974
92P	373.0	SW	325372,352 302	Unspecified Disused Shafts	1985

93T	379.0	SW	325446,352192	Lead Shaft	1874
94P	380.0	SW	325367,352298	Old Lead Shafts	1949
95	381.0	S	325828,352095	Lead Shafts	1872
96R	381.0	W	325337,352616	Old Lead Shafts	1949
97P	382.0	SW	325364,352300	Unspecified Old Shafts	1960
98Q	383.0	SW	325375,352280	Old Lead Shafts	1949
99Q	383.0	SW	325369,352289	Old Lead Shafts	1949
100P	384.0	SW	325361,352307	Unspecified Old Shafts	1900
101	389.0	SW	325473,352155	Lead Shaft	1874
102S	390.0	W	325323,352412	Old Lead Shaft	1949
103R	392.0	W	325323,352608	Unspecified Old Shafts	1960
104S	393.0	W	325320,352414	Unspecified Old Shaft	1960
105R	393.0	W	325325,352620	Old Lead Shafts	1949
106U	394.0	W	325329,352638	Old Lead Shafts	1949
107S	395.0	W	325319,352414	Unspecified Old Shafts	1900
108T	400.0	SW	325427,352182	Unspecified Shaft	1900
109U	405.0	W	325318,352639	Old Lead Shafts	1949
110R	411.0	W	325308,352625	Old Lead Shafts	1949
111V	416.0	NW	325508,352901	Unspecified Old Shaft	1960
112U	419.0	W	325305,352647	Old Lead Shafts	1949
113V	420.0	NW	325512,352901	Old Lead Shaft	1949
114U	420.0	W	325302,352640	Old Lead Shafts	1949
115	422.0	SW	325350,352247	Unspecified Shafts	1900
116W	424.0	S	325841,352054	Unspecified Shaft	1872
117W	424.0	S	325848,352057	Unspecified Shaft	1900
118V	427.0	NW	325502,352903	Unspecified Old Shaft	1900
119Y	428.0	W	325291,352624	Old Lead Shafts	1949
120X	428.0	W	325279,352515	Old Lead Shafts	1949
121X	431.0	W	325275,352517	Unspecified Old Shafts	1960
122X	434.0	W	325274,352513	Lead Shaft	1874
123Y	435.0	W	325283,352639	Unspecified Disused Shaft	1974
124Y	435.0	W	325283,352639	Unspecified Disused Shaft	1989
125Y	435.0	W	325283,352639	Unspecified Disused Shaft	1985
126Y	442.0	W	325280,352638	Unspecified Shaft	1900
127Y	443.0	W	325277,352632	Lead Shaft	1874
128Z	444.0	SE	325954,352074	Unspecified Disused Shaft	1985
129Z	444.0	SE	325954,352074	Unspecified Disused Shaft	1989
130Z	444.0	SE	325954,352074	Unspecified Disused Shaft	1974
131Z	444.0	SE	325954,352074	Unspecified Old Shaft	1960

132Z	444.0	SE	325955,352 074	Unspecified Old Shaft	1949
133Z	448.0	SE	325959,352 073	Lead Shaft	1872
134	449.0	SW	325301,352 283	Unspecified Shafts	1900
135Z	450.0	SE	325968,352 076	Unspecified Shaft	1900
136AA	458.0	S	325884,352 031	Lead Shaft	1872
137AA	476.0	S	325917,352 023	Lead Shaft	1872
138AC	482.0	W	325246,352 664	Old Lead Shafts	1949
139AB	485.0	S	325900,352 008	Lead Shaft	1872
140AF	486.0	SE	325948,352 026	Lead Shaft	1872
141AB	488.0	S	325904,352 008	Unspecified Shaft	1900
142AC	489.0	W	325244,352 683	Unspecified Shaft	1874
143AD	491.0	W	325222,352 404	Unspecified Disused Shaft	1989
144AD	491.0	W	325222,352 404	Unspecified Disused Shaft	1985
145AD	491.0	W	325222,352 404	Unspecified Disused Shaft	1974
146AB	497.0	S	325915,351 999	Lead Shaft	1872
147AE	498.0	W	325243,352 724	Old Lead Shaft	1949
148AD	503.0	W	325212,352 405	Unspecified Old Shafts	1900
149AC	504.0	W	325223,352 667	Lead Shaft	1874
150AE	507.0	NW	325241,352 725	Unspecified Shaft	1900
151AE	508.0	NW	325240,352 730	Unspecified Old Shaft	1960
152AE	509.0	W	325238,352 723	Lead Shaft	1874
153AF	514.0	SE	325988,352 010	Unspecified Disused Shaft	1985
154AG	514.0	SE	325988,352 010	Unspecified Disused Shaft	1974
155AG	516.0	SE	325987,352 009	Unspecified Disused Shaft	1989
156AH	518.0	SW	325464,352 006	Unspecified Disused Shafts	1974
157AH	518.0	SW	325464,352 006	Unspecified Disused Shafts	1989
158AH	518.0	SW	325464,352 006	Unspecified Disused Shafts	1985
159AH	518.0	SW	325464,352 006	Unspecified Old Shafts	1960
160AH	518.0	SW	325460,352 009	Unspecified Old Shafts	1900
161AH	520.0	SW	325466,352 003	Old Lead Shafts	1949
162AK	528.0	SE	325963,351 984	Lead Shaft	1872
163AI	530.0	S	325552,351 954	Unspecified Disused Shaft	1989
164AI	530.0	S	325552,351 954	Unspecified Disused Shaft	1974
165AI	530.0	S	325552,351 954	Unspecified Disused Shaft	1985
166AI	533.0	S	325504,351 970	Unspecified Old Shafts	1960
167AI	535.0	SW	325507,351 967	Old Lead Shafts	1949
Not shown	536.0	S	325591,351 939	Unspecified Shaft	1872
169AJ	536.0	SW	325427,352 005	Unspecified Disused Shafts	1985
170AJ	536.0	SW	325427,352 005	Unspecified Disused Shafts	1974

171AJ	537.0	SW	325426,352 006	Unspecified Disused Shafts	1989
172AK	538.0	SE	325977,351 980	Unspecified Disused Shaft	1989
173AI	538.0	S	325544,351 949	Old Lead Shafts	1949
174AK	538.0	SE	325979,351 981	Unspecified Disused Shaft	1974
175AK	538.0	SE	325979,351 981	Unspecified Disused Shaft	1985
176AJ	544.0	SW	325423,352 001	Old Lead Shafts	1949
177AJ	544.0	SW	325420,352 003	Unspecified Old Shafts	1900
178AJ	545.0	SW	325413,352 004	Unspecified Disused Shafts	1985
179AJ	545.0	SW	325413,352 004	Unspecified Disused Shafts	1974
180AJ	545.0	SW	325410,352 005	Unspecified Disused Shafts	1989
181AJ	551.0	SW	325408,352 002	Old Lead Shafts	1949
182AL	555.0	W	325162,352 377	Old Lead Shaft	1949
183AL	557.0	W	325159,352 379	Unspecified Old Shaft	1960
184AL	557.0	W	325159,352 379	Unspecified Disused Shaft	1974
185AL	557.0	W	325159,352 379	Unspecified Disused Shaft	1989
186AL	557.0	W	325159,352 379	Unspecified Disused Shaft	1985
187AL	561.0	W	325157,352 380	Unspecified Old Shafts	1900
188AM	576.0	W	325131,352 486	Old Lead Shafts	1949
189AM	580.0	W	325127,352 487	Unspecified Old Shafts	1960
190AM	581.0	W	325129,352 487	Unspecified Old Shafts	1900
191AN	602.0	W	325122,352 671	Old Lead Shaft	1949
192AN	605.0	W	325119,352 673	Unspecified Old Shaft	1960
Not shown	608.0	SE	325988,351 910	Lead Shaft	1872
Not shown	611.0	S	325973,351 898	Unspecified Disused Shafts	1974
Not shown	611.0	S	325973,351 898	Unspecified Disused Shafts	1985
Not shown	611.0	S	325969,351 898	Unspecified Disused Shafts	1989
197AO	615.0	W	325091,352 527	Old Lead Shafts	1949
198AP	617.0	SE	326085,351 950	Lead Shaft	1872
199AO	619.0	W	325087,352 530	Unspecified Old Shafts	1960
200AO	620.0	W	325088,352 528	Unspecified Old Shafts	1900
Not shown	621.0	S	325964,351 887	Lead Shafts	1872
202AP	622.0	SE	326089,351 948	Unspecified Shaft	1900
Not shown	642.0	S	325963,351 862	Unspecified Disused Shafts	1989
Not shown	643.0	S	325965,351 861	Unspecified Disused Shafts	1985
Not shown	643.0	S	325965,351 861	Unspecified Disused Shafts	1974
Not shown	645.0	SE	326017,351 881	Unspecified Disused Shafts	1989
Not shown	645.0	SE	326017,351 881	Unspecified Disused Shafts	1985
Not shown	645.0	SE	326017,351 881	Unspecified Disused Shafts	1974
Not shown	645.0	SE	326017,351 881	Unspecified Disused Shaft	1960

210AQ	647.0	SE	326152,351 957	Unspecified Old Shafts	1960
Not shown	648.0	SE	326019,351 879	Disused Lead Shaft	1949
212AQ	649.0	SE	326150,351 959	Unspecified Disused Shafts	1989
Not shown	649.0	SE	326025,351 880	Unspecified Shaft	1900
214AQ	650.0	SE	326149,351 956	Unspecified Old Shafts	1949
215AQ	650.0	SE	326153,351 958	Unspecified Disused Shafts	1974
216AQ	650.0	SE	326153,351 958	Unspecified Disused Shafts	1985
217AQ	653.0	SE	326157,351 958	Unspecified Shaft	1900
218AQ	654.0	SE	326163,351 962	Unspecified Disused Shafts	1989
Not shown	654.0	SE	326030,351 878	Lead Shaft	1872
220AQ	655.0	SE	326165,351 960	Unspecified Disused Shafts	1985
221AQ	655.0	SE	326165,351 960	Unspecified Disused Shafts	1974
222AQ	656.0	SE	326160,351 956	Unspecified Old Shafts	1949
223AQ	659.0	SE	326168,351 960	Unspecified Shaft	1900
Not shown	668.0	S	325682,351 792	Unspecified Disused Shaft	1985
Not shown	668.0	S	325682,351 792	Unspecified Disused Shaft	1989
Not shown	668.0	S	325682,351 792	Unspecified Disused Shaft	1974
Not shown	677.0	SE	326094,351 887	Lead Shaft	1872
228	694.0	W	325019,352 425	Unspecified Old Shafts	1900
229AR	700.0	SE	326227,351 957	Unspecified Disused Shafts	1989
230AR	701.0	SE	326222,351 950	Unspecified Disused Shaft	1974
231AR	701.0	SE	326222,351 950	Unspecified Disused Shaft	1985
232AR	701.0	SE	326222,351 950	Unspecified Old Shafts	1960
233AR	702.0	SE	326223,351 951	Unspecified Old Shafts	1949
234AR	706.0	SE	326231,351 952	Unspecified Shaft	1900
235	736.0	W	325029,352 191	Unspecified Old Shafts	1900
Not shown	741.0	SE	326109,351 821	Unspecified Disused Shafts	1985
Not shown	741.0	SE	326109,351 821	Unspecified Disused Shafts	1974
Not shown	741.0	SE	326109,351 821	Unspecified Disused Shafts	1989
Not shown	741.0	SE	326109,351 821	Unspecified Disused Shaft	1960
Not shown	743.0	SE	326112,351 820	Disused Lead Shaft	1949
Not shown	744.0	SE	326120,351 823	Unspecified Shaft	1900
Not shown	767.0	SE	326129,351 802	Lead Shaft	1872
Not shown	782.0	W	324962,352 238	Unspecified Old Shafts	1900
Not shown	793.0	SW	325287,351 793	Unspecified Old Shafts	1900
Not shown	793.0	SW	325287,351 790	Unspecified Disused Shaft	1989
Not shown	793.0	SW	325287,351 790	Unspecified Disused Shaft	1985
Not shown	793.0	SW	325287,351 790	Unspecified Disused Shaft	1974
Not shown	793.0	SW	325287,351 790	Unspecified Old Shaft	1960

Not shown	794.0	SW	325290,351 787	Unspecified Old Shaft	1949
Not shown	795.0	W	324927,352 337	Unspecified Old Shafts	1900
Not shown	800.0	W	324940,352 250	Unspecified Old Shafts	1900
Not shown	803.0	S	325807,351 663	Unspecified Old Shaft	1900
Not shown	805.0	S	325807,351 659	Unspecified Old Shaft	1949
Not shown	806.0	S	325803,351 658	Unspecified Disused Shaft	1974
Not shown	806.0	S	325803,351 658	Unspecified Disused Shaft	1985
Not shown	806.0	S	325803,351 658	Unspecified Disused Shaft	1989
Not shown	806.0	S	325803,351 658	Unspecified Old Shaft	1960
Not shown	806.0	SW	325351,351 742	Unspecified Old Shafts	1900
Not shown	825.0	SE	326215,351 787	Unspecified Shaft	1900
Not shown	826.0	SE	326166,351 756	Unspecified Disused Shaft	1974
Not shown	826.0	SE	326166,351 756	Unspecified Disused Shaft	1985
Not shown	826.0	SE	326166,351 756	Unspecified Disused Shaft	1989
Not shown	826.0	SE	326166,351 756	Unspecified Old Shaft	1960
Not shown	827.0	SE	326168,351 756	Unspecified Old Shaft	1949
Not shown	829.0	W	324904,352 283	Unspecified Old Shafts	1900
Not shown	844.0	W	324917,352 182	Unspecified Old Shafts	1900
Not shown	851.0	W	324874,352 304	Unspecified Old Shafts	1900
Not shown	867.0	W	324856,352 319	Unspecified Old Shafts	1900
Not shown	893.0	SW	325245,351 698	Unspecified Disused Shafts	1974
Not shown	893.0	SW	325245,351 698	Unspecified Disused Shafts	1985
Not shown	893.0	SW	325245,351 698	Unspecified Disused Shafts	1989
Not shown	896.0	SW	325237,351 700	Unspecified Shafts	1900
Not shown	901.0	SW	325236,351 696	Unspecified Old Shafts	1960
Not shown	903.0	SW	325238,351 693	Unspecified Old Shafts	1949
Not shown	905.0	SW	325238,351 690	Lead Shaft	1874
Not shown	928.0	SE	326335,351 750	Unspecified Old Shaft	1900
Not shown	947.0	SE	326297,351 696	Unspecified Disused Shaft	1985
Not shown	947.0	SE	326297,351 696	Unspecified Disused Shaft	1974
Not shown	947.0	SE	326297,351 696	Unspecified Disused Shaft	1989
Not shown	947.0	SE	326297,351 696	Unspecified Shaft	1960
Not shown	948.0	SE	326300,351 697	Unspecified Shaft	1949
Not shown	949.0	SE	326306,351 701	Unspecified Shaft	1900
Not shown	949.0	SE	326302,351 698	Lead Shaft	1872
Not shown	952.0	SW	325227,351 640	Unspecified Shafts	1900
Not shown	959.0	SW	325223,351 636	Unspecified Disused Shafts	1989
Not shown	959.0	SW	325223,351 636	Unspecified Disused Shafts	1985
Not shown	959.0	SW	325223,351 636	Unspecified Disused Shafts	1974

Not shown	959.0	SW	325223,351 636	Unspecified Old Shafts	1960
Not shown	960.0	SW	325226,351 634	Unspecified Old Shafts	1949
Not shown	962.0	SW	325200,351 644	Unspecified Disused Shafts	1985
Not shown	962.0	SW	325200,351 644	Unspecified Disused Shafts	1974
Not shown	962.0	SW	325200,351 644	Unspecified Disused Shafts	1989
Not shown	964.0	SW	325198,351 644	Unspecified Shafts	1900
Not shown	970.0	SW	325198,351 638	Lead Shafts	1874
Not shown	995.0	NE	326293,353 340	Lead Shafts	1872

3.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? **Yes**

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

3.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? **Yes**

The following information provided by JPB is not represented on Mapping:

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.

3.4 Non – Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? **Yes**

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Highly likely - Underground mining known within or very close to the area.

2	53.0	NE	Not available	Vein Mineral	Likely - Underground mining known or suspected within or close to the area.
3	153.0	NE	North Wales (Minera)	Vein Mineral	Unlikely - Some small scale mining may have occurred but restricted in extent.
4	222.0	E	North Wales (Minera)	Iron Ore (Bedded)/Vein Mineral	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
5	293.0	E	Not available	Iron Ore (Bedded)/Vein Mineral	Likely - Underground mining known or suspected within or close to the area.
6	607.0	SW	North Wales (Minera)	Vein Mineral	Unlikely - Some small scale mining may have occurred but restricted in extent.
Not shown	712.0	N	Not available	Vein Mineral	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
8	726.0	E	North Wales (Minera)	Iron Ore (Bedded)/Vein Mineral	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
Not shown	738.0	S	Not available	Vein Mineral	Likely - Underground mining known or suspected within or close to the area.
Not shown	861.0	SE	Not available	Iron Ore (Bedded)/Vein Mineral	Highly likely - Underground mining known within or very close to the area.
Not shown	952.0	SW	North Wales (Minera)	Vein Mineral	Unlikely - Some small scale mining may have occurred but restricted in extent.
Not shown	993.0	NW	Not available	Vein Mineral	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.

3.5 Non – Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? **Yes**

The following Non-Coal Mining Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Address	Superficial Deposits	Bedrock Deposits	Extracted Mineral
13	169.0	SE	325900, 352400	Minera Central, Clwyd	-	-	-
14	311.0	W	325400, 352500	Minera West, Clwyd	-	-	-
15	339.0	SW	325500, 352200	Ragman, Clwyd	-	-	-
16	411.0	W	325300, 352500	Minera Union, Clwyd	-	-	-
17AI	510.0	SW	325500, 352000	Limeworks Trials, Clwyd	-	-	-
18	611.0	W	325100, 352500	Twelve Apostles, Clwyd	-	-	-
Not shown	758.0	SE	326100, 351800	Boundary Shaft, Clwyd	-	-	-

3.6 Natural Cavities

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

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

The following Natural Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
20	297.0	SW	SJ	-	Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone	Vadose Cave x 1
21	477.0	S	SJ	-	Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone	Vadose Cave x 1
22	510.0	SW	SJ	-	Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone	Vadose Cave x 1
Not shown	574.0	S	SJ	-	Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone	Vadose Cave x 1
Not shown	758.0	SE	SJ	-	Carboniferous Limestone Supergroup, Lower Carboniferous Limestone, Upper Carboniferous Limestone	Vadose Cave x 1

3.7 Brine Extraction

This dataset provides information from the Brine Compensation Board which has been discontinued and is now covered by the Coal Authority.

Are there any Brine Extraction areas within 1000m of the study site boundary? **No**

Database searched and no data found.

3.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? **No**

Database searched and no data found.

3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level. More detailed information on potential Tin Mining may be found in Section 3.4 – Non-Coal Mining Hazards.

Are there any Tin Mining areas within 1000m of the study site boundary? **No**

Database searched and no data found.

3.10 Clay Mining

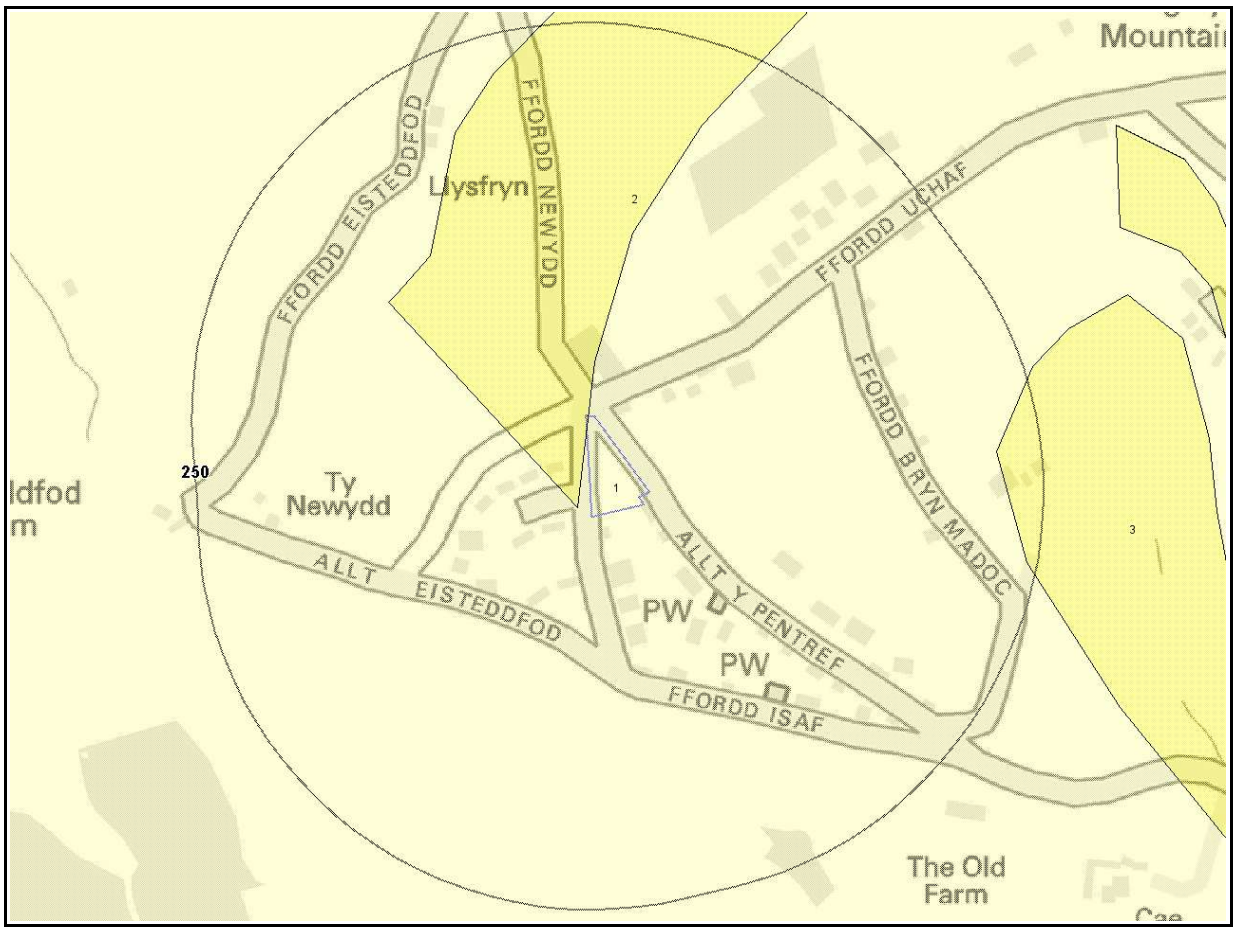
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? **No**

Database searched and no data found.

4. Natural Ground Subsidence
4.1 Shrink-Swell Clay Map

NW N NE



W E

SW S SE

Shrink-Swell Clay Legend

Mapping sourced from Ordnance Survey

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Site Outline

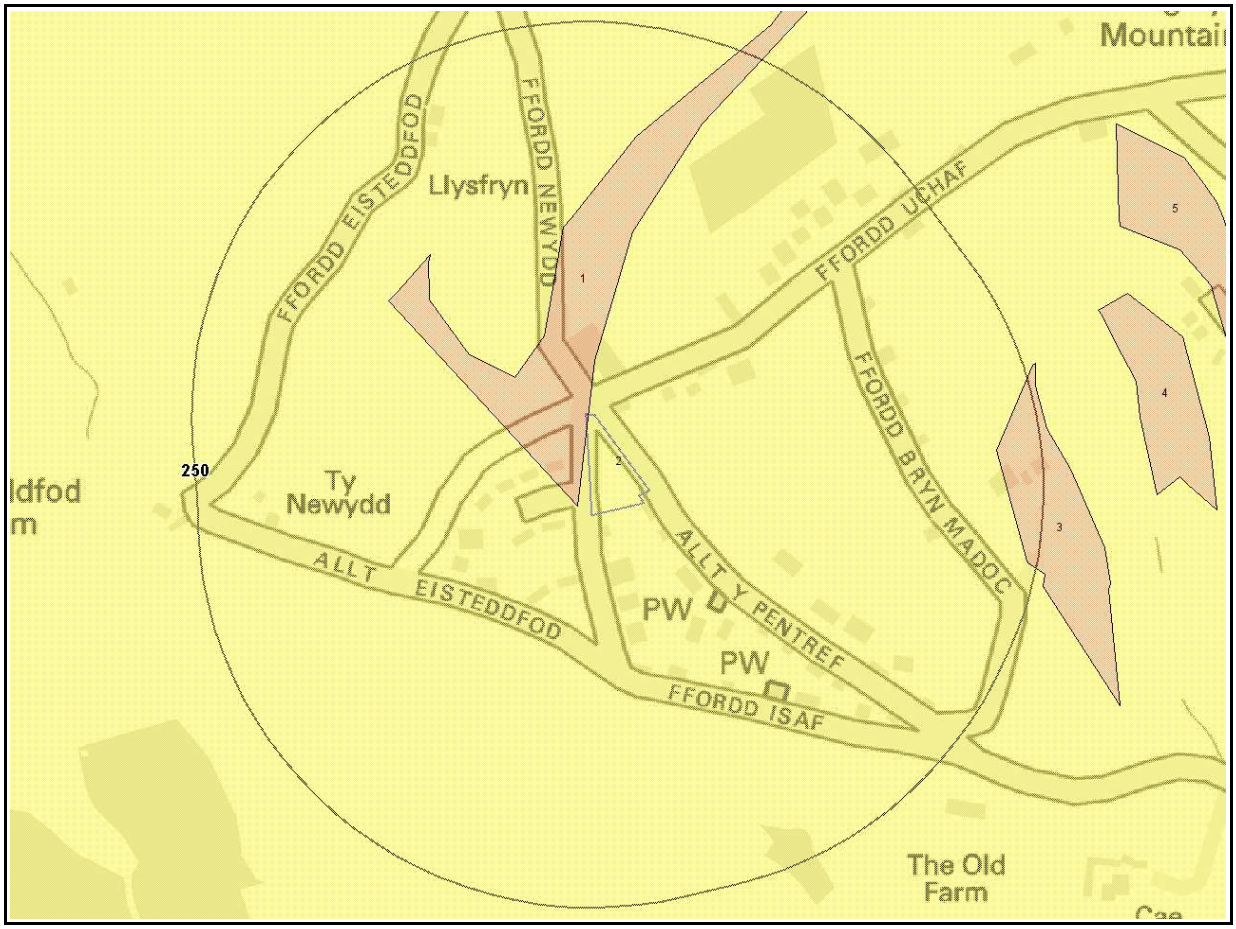
125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

4.2 Landslides Map

NW N NE



W E

SW S SE

Landslides Legend

Mapping sourced from Ordnance Survey
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Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

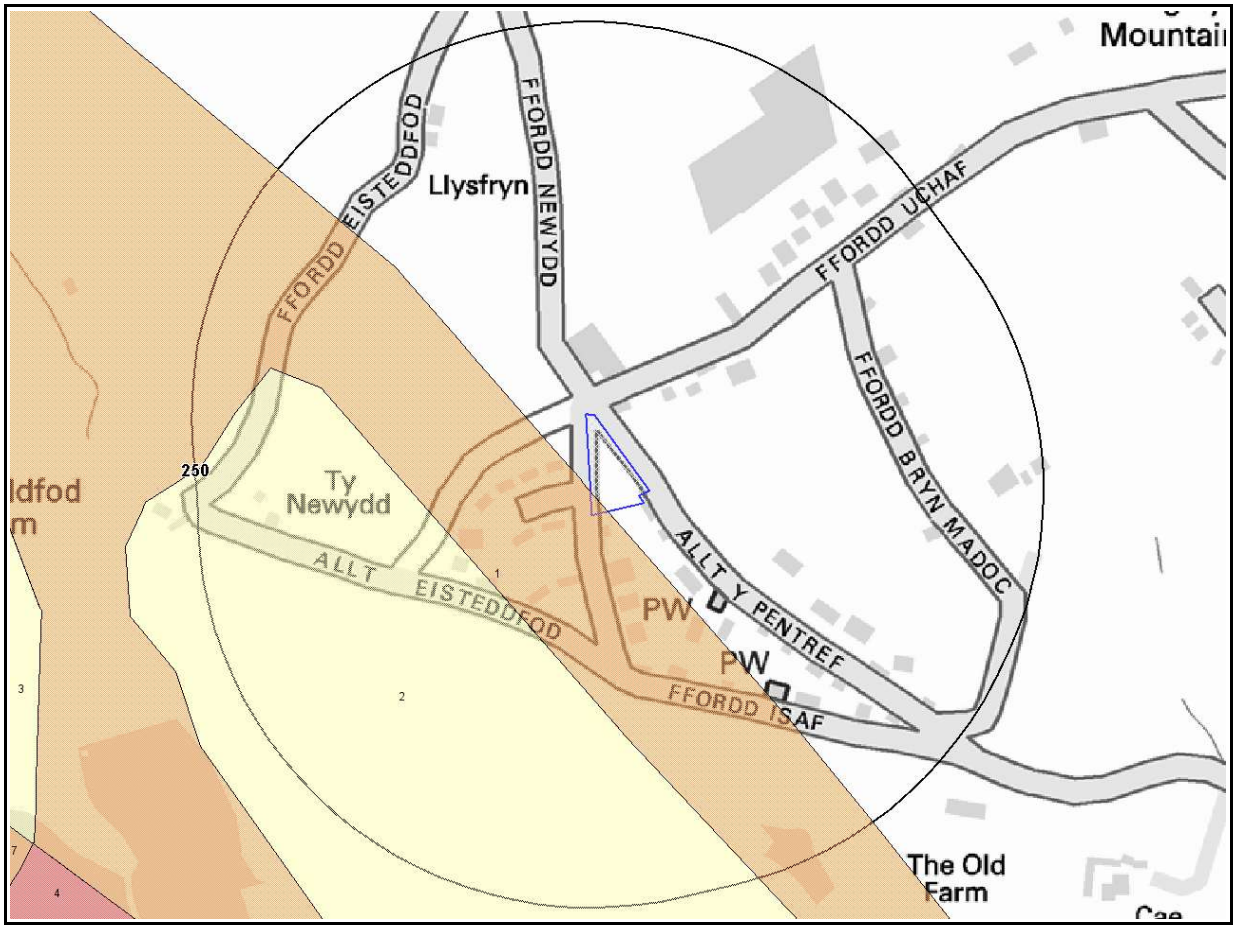
Low
Moderate
High

4.3 Ground Dissolution Soluble Rocks Map

NW N NE

W E

SW S SE



Ground Dissolution Soluble Rocks Legend

Mapping sourced from Ordnance Survey
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Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

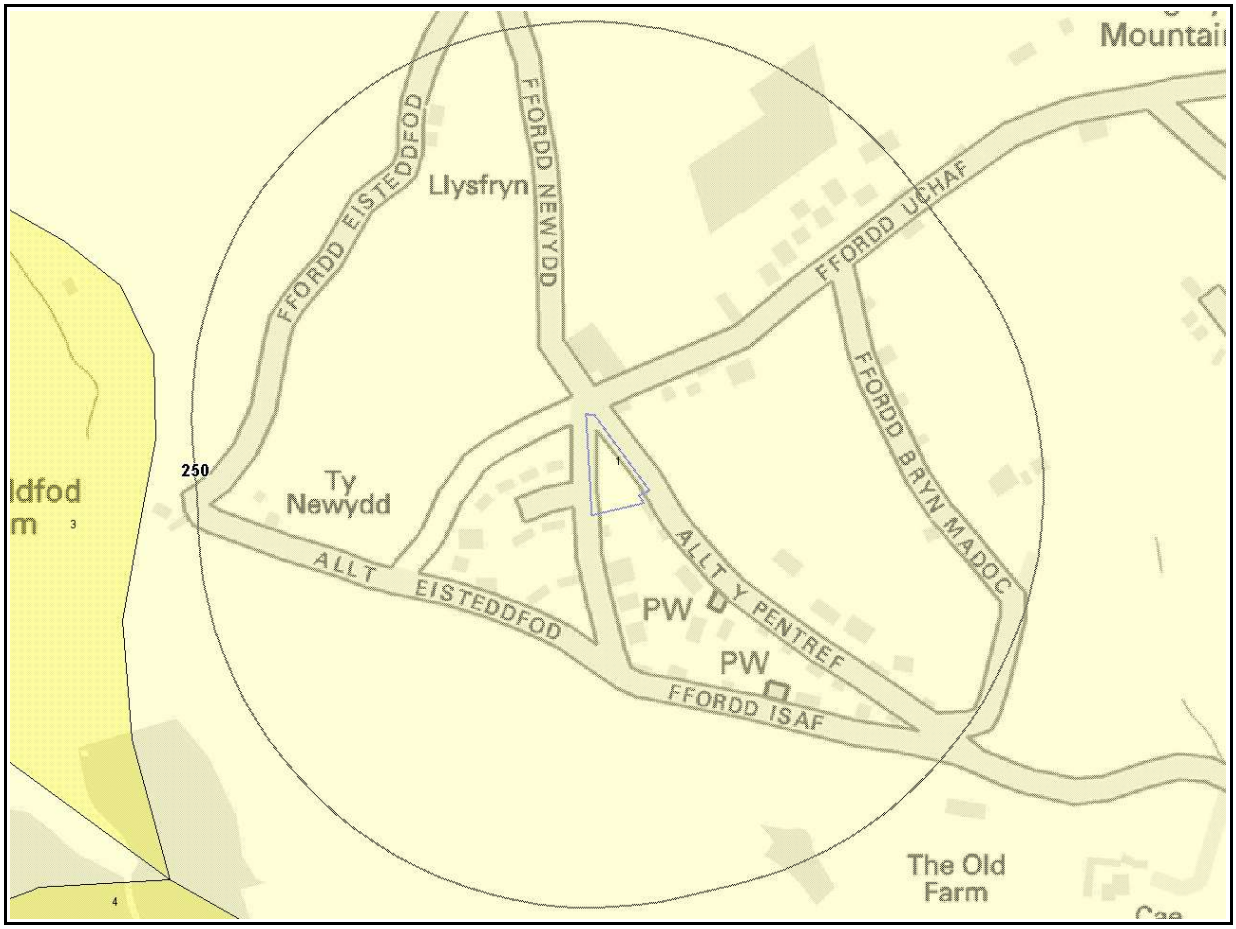
Low
Moderate
High

4.4 Compressible Deposits Map

NW N NE

W E

SW S SE



Compressible Deposits Legend

Mapping sourced from Ordnance Survey

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Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

Site Outline

125
250
Search Buffers (m)

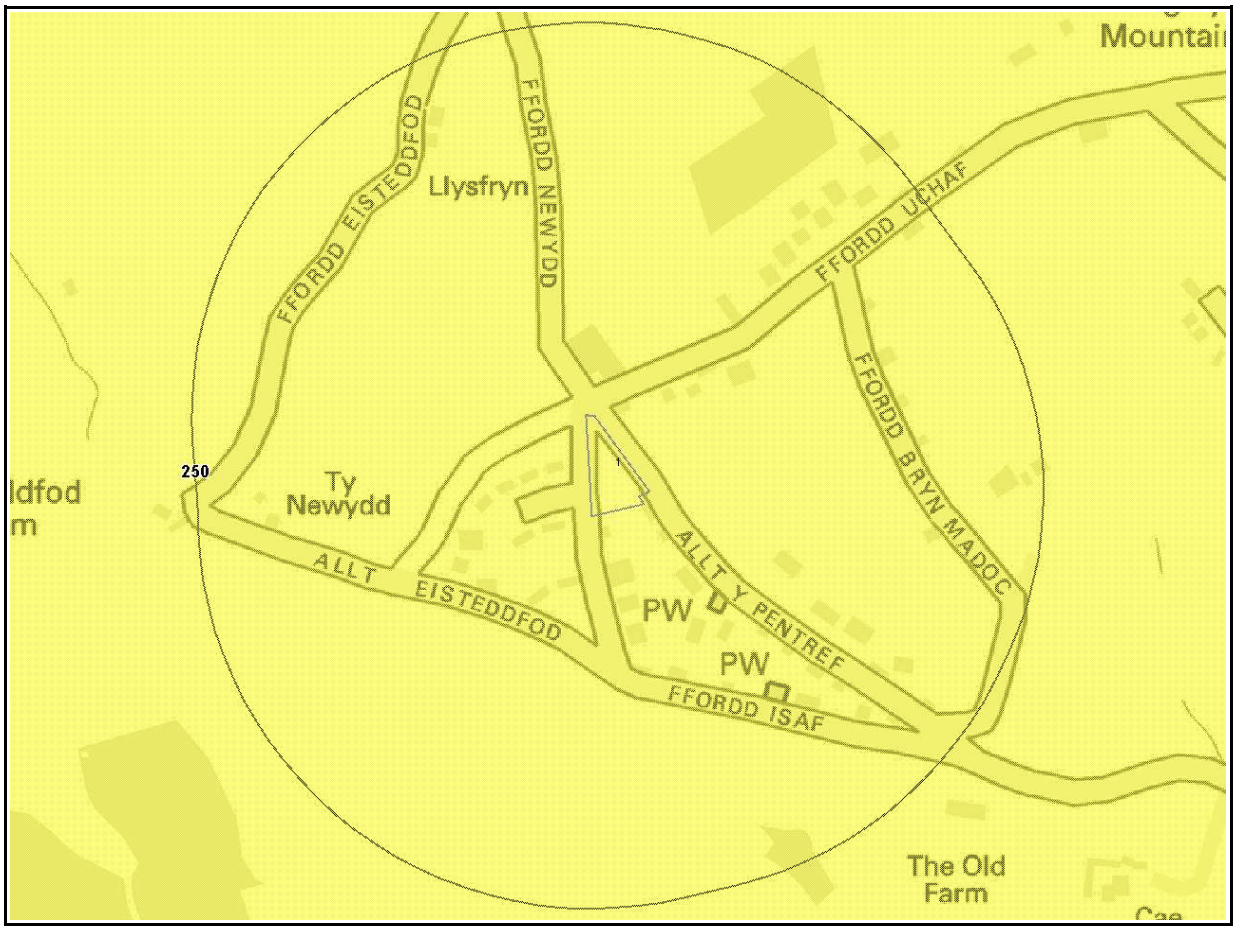
No Data / Null
Negligible
Very Low

Low
Moderate
High

NW N NE

W E

SW S SE



Collapsible Deposits Legend

Mapping sourced from Ordnance Survey

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Site Outline

125
250
Search Buffers (m)

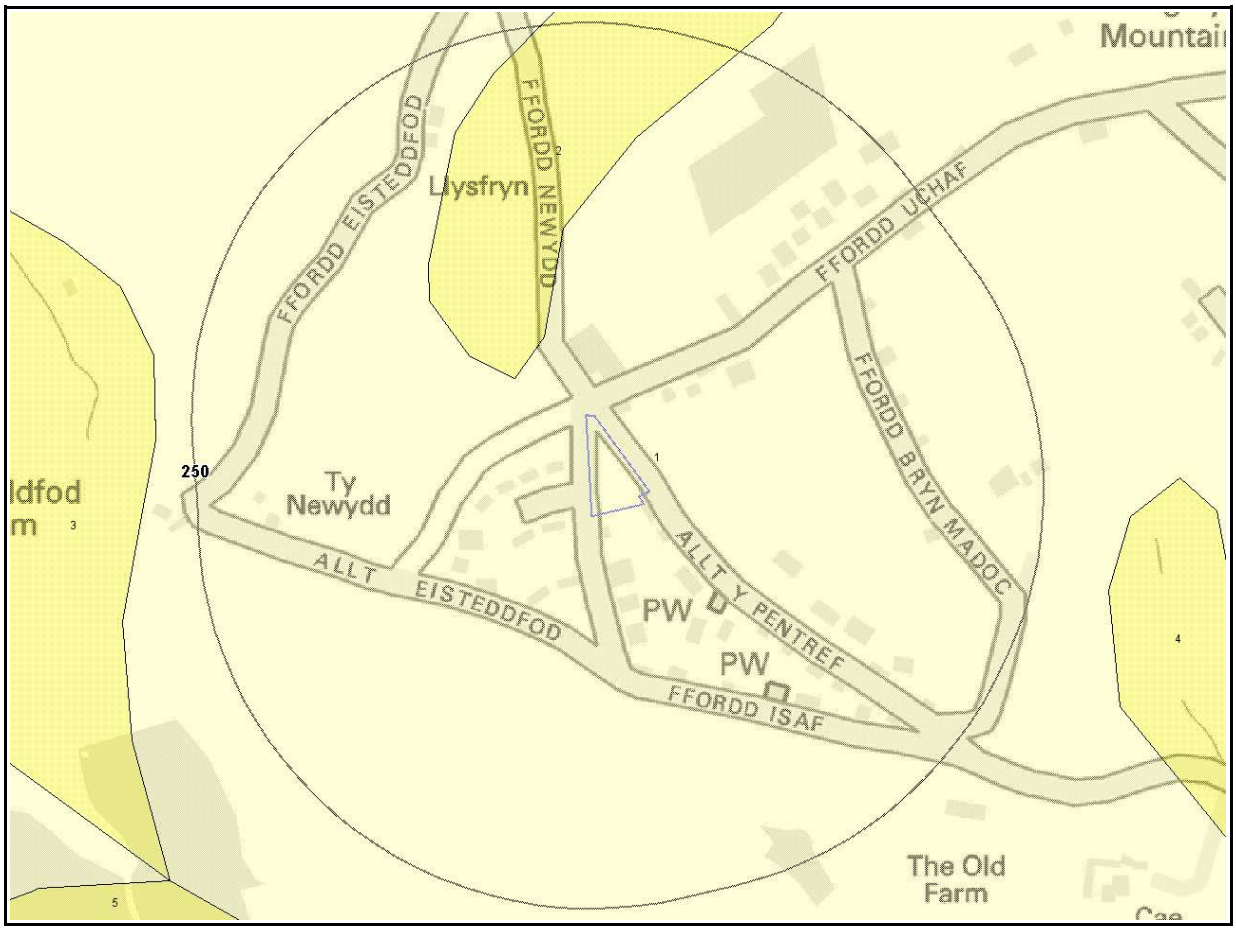
No Data / Null
Negligible
Very Low

Low
Moderate
High

NW N NE

W E

SW S SE



Running Sand Legend

Mapping sourced from Ordnance Survey

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4.Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

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

What is the maximum hazard rating of natural subsidence within the study site* boundary? Low

4.1 Shrink – Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m) *	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
2	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.
2	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

4.3 Ground Dissolution of Soluble Rocks

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

ID	Distance (m)*	Direction	Hazard Rating	Details

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

1	0.0	On Site	Low	Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property possible increase in insurance risk due to soluble rocks.

4.4 Compressible Deposits

The following Compressible Ground information provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

4.5 Collapsible Deposits

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

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

4.6 Running Sands

The following Running Sands information is provided by the British Geological Survey:

ID	Distance (m)*	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	50.0	NW	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

Site Outline

Borehole Locations

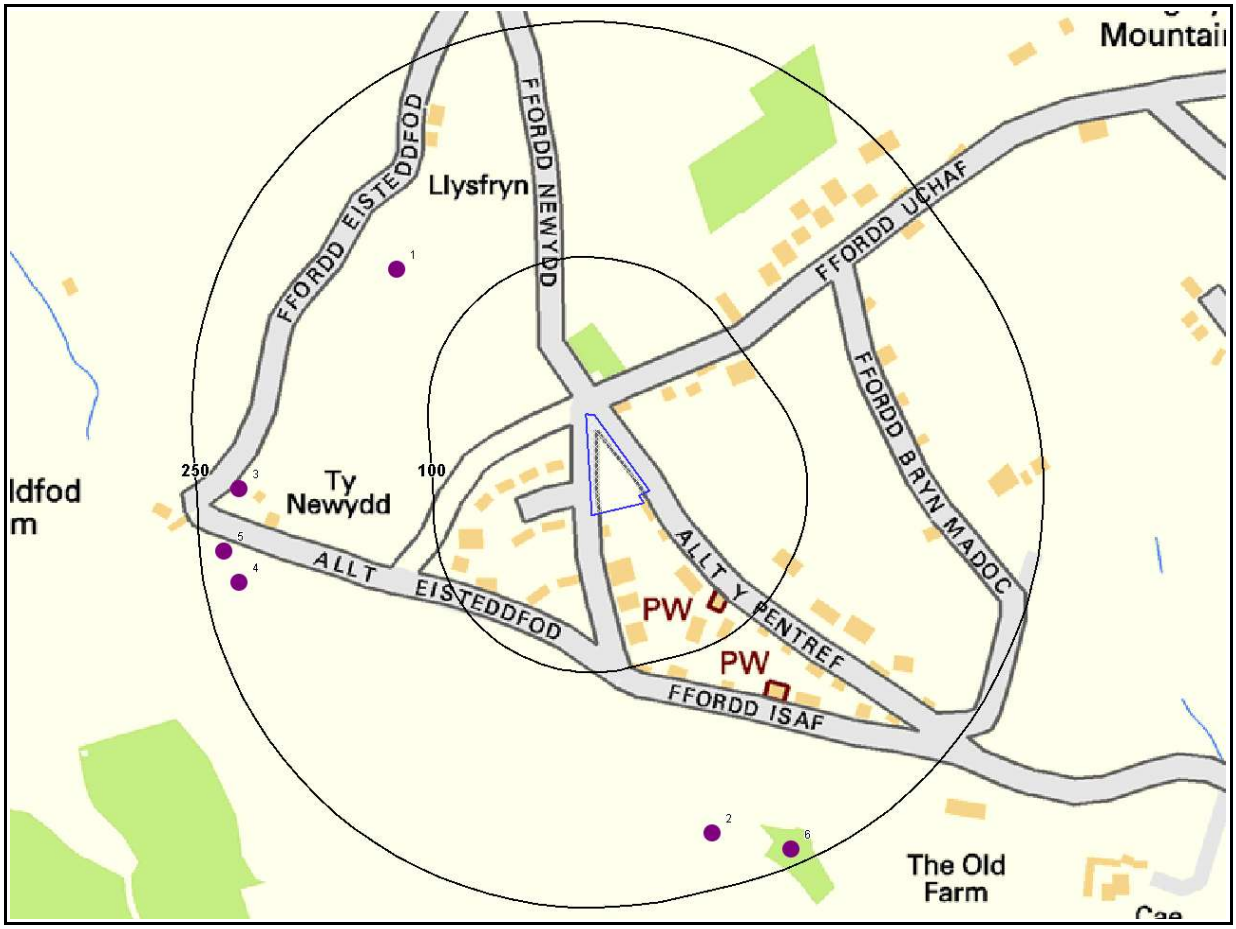
125
250

Search Buffers (m)

NW N NE

W E

SW S SE



Borehole Records Legend

Mapping sourced from Ordnance Survey

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5.Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 6

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length (m)	Borehole Name
1	151.0	NW	325590,352620	SJ25SE1394	-1.0	UNNAMED SHAFT
2	215.0	S	325790,352260	SJ25SE1399	-1.0	UNNAMED SHAFT
3	223.0	W	325490,352480	SJ25SE1447	-1.0	MINERA MINES, EDGEWORTH SHAFT
4	228.0	W	325490,352420	SJ25SE1391	-1.0	UNNAMED SHAFT
5	235.0	W	325480,352440	SJ25SE1390	-1.0	UNNAMED SHAFT
6	240.0	SE	325840,352250	SJ25SE1400	-1.0	UNNAMED SHAFT

Additional online information is available for the following boreholes listed above:

#1: http://scans.bgs.ac.uk/sobi_scans/boreholes/146536
#2: http://scans.bgs.ac.uk/sobi_scans/boreholes/146541
#3: http://scans.bgs.ac.uk/sobi_scans/boreholes/146589
#4: http://scans.bgs.ac.uk/sobi_scans/boreholes/146533
#5: http://scans.bgs.ac.uk/sobi_scans/boreholes/146532
#6: http://scans.bgs.ac.uk/sobi_scans/boreholes/146542

6.Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary: 3

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

			Estimated Geometric Mean Soil Concentrations (mg/kg)				
Distance (m)*	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	150 - 300 mg/kg
0.0	On Site	RuSoilExAs	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	150 - 300 mg/kg
4.0	SW	RuSoilExAs	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	150 - 300 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

7. Contacts

CENTREMAPS

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

centremapslive.com
the mapping portal from Laser Surveys

Directors: M C Walker, MInst C.E.S., C M Walker, S J Hawkins BSc (Hons), S E Stewart BSc (Hons)
Registered No. 1890261 Registered in England and Wales
Registered Company: Laser Surveys Limited
Brockamin House, Leigh, Worcester, WR6 5JU.

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143. Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk
BGS Geological Hazards Reports and general geological enquiries

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

British Gypsum

British Gypsum Ltd, East Leake, Loughborough, Leicestershire, LE12 6HX
Tel: www.british-gypsum.com

British Gypsum

The Coal Authority

200 Lichfield Lane, Mansfield, Notts NG18 4RG
Tel: 0845 762 6848
DX 716176 Mansfield 5 www.coal.gov.uk

The COAL AUTHORITY

Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettel Lane, Brierley Hill, West Midlands DY5 3LH
Tel: +44 (0) 1384 262 000
Email: enquiries.gs@jpb.co.uk
Website: www.jpb.co.uk

JOHNSON POOLE & BLOOMER CONSULTANTS

Ordnance Survey

Romsey Road, Southampton SO16 4GU
Tel: 08456 050505

Mapping sourced from Ordnance Survey

Getmapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

getmapping®

Peter Brett Associates

Caversham Bridge House, Waterman Place, Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail: reading@pba.co.uk

pba

Acknowledgements

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This report has been prepared in accordance with the GroundSure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

1 Definitions

In these conditions unless the context otherwise requires:
"Beneficiary" means the Client or the customer of the Client for whom the Client has procured the Services.
"Commercial" means any building which is not Residential.
"Commission" means an order for Consultancy Services submitted by a Client.
"Consultancy Services" mean consultancy services provided by GroundSure including, without limitation, carrying out interpretation of third party and in-house environmental data, provision of environmental consultancy advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.
"Contract" means the contract between GroundSure and the Client for the performance of the Services which arises upon GroundSure's acceptance of an Order or Commission and which shall incorporate these conditions, the relevant GroundSure User Guide, proposal by GroundSure and the content of any subsequent report, and any agreed amendments in accordance with clause 11.
"Client" means the party that submits an Order or Commission.
"Data Provider" means any third party providing Third Party Content to GroundSure.
"Data Report" means reports comprising factual data with no professional interpretation in respect of the level of likely risk and/or liability available from GroundSure.
"GroundSure" means GroundSure Limited, a company registered in England and Wales under number 03421028 and whose registered office is at GroundSure Ltd, c/o Top Right Group Limited, The Prow, 1 Wilder Walk, London W1B 5AP, United Kingdom.
"GroundSure Materials" means all materials prepared by GroundSure as a result of the provision of the Services, including but not limited to Data Reports, Mapping and Risk Screening Reports.
"Intellectual Property" means any patent, copyright, design rights, service marks, moral rights, data protection rights, know-how, trade mark or any other intellectual property rights.
"Mapping" an historical map or a combination of historical maps of various ages, time periods and scales available from GroundSure.
"Order" means an order form submitted by the Client requiring Services from GroundSure in respect of a specified Site.
"Order Website" means online platform via which Orders may be placed.
"Report" means a Risk Screening Report or Data Report for commercial or residential property available from GroundSure relating to the Site prepared in accordance with the specifications set out in the relevant User Guide.
"Residential" means any building used as or suitable for use as an individual dwelling.
"Risk Screening Report" means one of GroundSure's risk screening reports, comprising factual data with interpretation in respect of the level of likely risk and/or liability, excluding **"Consultancy Services"**.
"Services" means the provision of any Report, Mapping or Consultancy Services which GroundSure has agreed to carry out for the Client/Beneficiary on these terms and conditions in respect of the Site.
"Site" means the landsite in respect of which GroundSure provides the Services.
"Third Party Content" means any data, database or other information contained in a Report or Mapping which is provided to GroundSure by a Data Provider.
"User Guide" means the relevant current version of the user guide, available upon request from GroundSure.

2 Scope of Services

2.1 GroundSure agrees to carry out the Services in accordance with the Contract and to the extent set out therein.
2.2 GroundSure shall exercise all the reasonable skill, care and diligence to be expected of experienced environmental consultants in the performance of the Services.
2.3 The Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in the Contract.
2.4 Terms and conditions appearing on a Client's order form, printed stationery or other communication, including invoices, to GroundSure, its employees, servants, agents or other representatives or any terms implied by custom, practice or course of dealing shall be of no effect and these terms and conditions shall prevail over all others.
2.5 If a Client/Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to procure such insurance, but makes no warranty that such insurance shall be available from insurers or offered on reasonable terms. GroundSure does not endorse or recommend any particular insurance product, policy or insurer. Any insurance purchased shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. The Client/Beneficiary should take independent advice to ensure that the insurance policy requested and/or offered is suitable for its requirements.
2.6 GroundSure's quotations/proposals are valid for a period of 30 days only. GroundSure reserves the right to withdraw any quotation at any time before GroundSure accepts an Order or Commission. GroundSure's acceptance of an Order or Commission shall be effective only where such acceptance is in writing and signed by GroundSure's authorised representative or where accepted via GroundSure's Order Website.

3 The Client's obligations

3.1 The Client shall ensure the Beneficiary complies with and is bound by the terms and conditions set out in the Contract and shall provide that Groundsure may in its own right enforce such terms and conditions against the Beneficiary pursuant to the Contracts (Rights of Third parties) Act 1999. The Client shall be liable for all breaches of the Contract by the Beneficiary as if they were breaches by the Client. The Client shall be solely responsible for ensuring that the Report/Mapping ordered is appropriate and suitable for the Beneficiary's needs.
3.2 The Client shall (or shall procure that the Beneficiary shall) supply to GroundSure as soon as practicable and without charge all information necessary and accurate relevant data including any specific and/or unusual environmental information relating to the Site known to the Client/Beneficiary which may pertain to the Services and shall give such assistance as GroundSure shall reasonably require in the performance of the Services (including, without limitation, access to a Site, facilities and equipment as agreed in the Contract).
3.3 Where Client/Beneficiary approval or decision is required, such approval or decision shall be given or procured in reasonable time as not to delay or disrupt the performance of any other part of the Services.
3.4 The Client shall not and shall not knowingly permit the Beneficiary to, save as expressly permitted by these terms and conditions, re-sell, alter, add to, amend or use out of context the content of any Report, Mapping or, in respect of any Services, information given by GroundSure. For the avoidance of doubt, the Client and Beneficiary may make the Report, Mapping or GroundSure's findings available to a third party who is considering acquiring the whole or part of the Site, or providing funding in relation to the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.
3.5 The Client is responsible for maintaining the confidentiality of its user name and password if using GroundSure's internet ordering service and accepts responsibility for all activity that occurs under such account and password.

4 Reliance

4.1 Upon full payment of all relevant fees and subject to the provisions of these terms and conditions, the Client and Beneficiary are granted an irrevocable royalty-free licence to access the information contained in a Report, Mapping or in a report prepared by GroundSure in respect of or arising out of Consultancy Services. The Services may only be used for the benefit of the Client and those persons listed in clauses 4.2 and 4.3.
4.2 In relation to Data Reports, Mapping and Risk Screening Reports, the Client shall be entitled to make Reports available to (i) the Beneficiary, (ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate), (iv) the first purchaser or first tenant of the Site (v) the professional advisers and lenders of the first purchaser or tenant of the Site. Accordingly GroundSure shall have the same duties and obligations to those persons in respect of the Services as it has to the Client and those persons shall have the benefit of any of the Client's rights under the Contract as if those persons were parties to the Contract. For the avoidance of doubt, the limitations of GroundSure's liability as set out in clauses 7 and 11.6 shall apply.
4.3 In relation to Consultancy Services, reliance shall be limited to the Client, Beneficiary and named parties on the Report.
4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise agreed in writing with GroundSure, any other party considering the information supplied by GroundSure as part of the Services, including (but not limited to) insurance underwriters, does so at their own risk and GroundSure has no legal obligations to such party unless otherwise agreed in writing.
4.5 The Client shall not and shall not knowingly permit any person (including the Beneficiary) who is provided with a copy of any Report, (except as permitted herein or by separate agreement with GroundSure) to,: (a) remove, suppress or modify any trade mark, copyright or other proprietary marking from the Report or Mapping; (b) create any product which is derived directly or indirectly from the data contained in the Report or Mapping; (c) combine the Report or Mapping with, or incorporate the Report or Mapping into any other information data or service; or (d) re-format or otherwise change (whether by modification, addition or enhancement) data or images contained in the Report or Mapping.
4.6 Notwithstanding clause 4.5, if the Client acts in a professional capacity, it may make reasonable use of a Report and/or findings made as a result of Consultancy Services to advise Beneficiaries. However, GroundSure shall have no liability in respect of any opinion or report given to such Beneficiaries by the Client or a third party.

5 Fees and Disbursements

5.1 GroundSure shall charge the Client fees at the rate and frequency specified in the Contract together, in the case of Consultancy Services, with all proper disbursements incurred by GroundSure in performing the Services. For the avoidance of doubt, the fees payable for the Services are as set out in GroundSure's written proposal, Order Website or Order acknowledgement form. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services.
5.2 Unless GroundSure requires prepayment, the Client shall promptly pay all fees disbursements and other monies due to GroundSure in full without deduction, counterclaim or set off together with such value added tax or other tax as may be required within 30 days from the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client (**"Payment Date"**). GroundSure reserves the right to charge interest which shall accrue on a daily basis from 30 days after the date of Payment Date until the date of payment (whether before or after judgment) at the rate of five per cent per annum above the Bank of England base rate from time to time.
5.3 In the event that the Client disputes the amount payable in respect of GroundSure's invoice it shall notify GroundSure no later than 28 days after the date thereof that it is in dispute. In default of such notification the Client shall be deemed to have agreed the amount thereof. As soon as reasonably practicable following receipt of a notification in respect of any disputed invoice, a member of the management team at GroundSure shall contact the Client and the parties shall use all reasonable endeavours to resolve the dispute.

6 Intellectual Property and Confidentiality

6.1 Subject to the provisions of clause 4.1, the Client and the Beneficiary hereby acknowledge that all Intellectual Property in the Services and Content are and shall remain owned by either GroundSure or the Data Providers and nothing in these terms purports to transfer or assign any rights to the Client or the Beneficiary in respect of the Intellectual Property.
6.2 The Client shall acknowledge the ownership of the **Third Party** Content where such **Third Party** Content is incorporated or used in the Client's own documents, reports, systems or services whether or not these are supplied to a third party.
6.3 Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.
6.4 The Client acknowledges that the proprietary rights subsisting in copyright, database rights and any other intellectual property rights in respect of any data and information contained in any Report are and shall remain (subject to clause 11.1) the property of GroundSure and/or any third party that has supplied data or information used to create a Report, and that these conditions do not purport to grant, assign or transfer any such rights in respect thereof to a Client and/or a Beneficiary.
6.5 The Client shall (and shall procure that any recipients of the Report as permitted under clause 4.2 shall):
(i) not remove, suppress or modify any trademark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;
(iii) not create any product or report which is derived directly or indirectly from the data contained in the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);
(iv) not combine the Services with or incorporate such Services into any other information data or service; and
(v) not reformat or otherwise change (whether by modification, addition or enhancement), data contained in the Services (save that those acting in a professional capacity to the Beneficiary shall not be in breach of this clause 6.5(v) where such reformatting is in the normal course of providing advice based upon the Services),
in each case of parts (iii) to (v) inclusive, whether or not such product or report is produced for commercial profit or not.

6.6 The Client and/or Beneficiary shall and shall procure that any party to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

6.8 Save as otherwise set out in these terms and conditions, any information provided by one party ("**Disclosing Party**") to the other party ("**Receiving Party**") shall be treated as confidential and only used for the purposes of these terms and conditions, except in so far as the Receiving Party is authorised by the Disclosing Party to provide such information in whole or in part to a third party.

7 Liability

THE CLIENT'S ATTENTION IS DRAWN TO THIS PROVISION

7.1 Subject to the provisions of this clause 7, GroundSure shall be liable to the Beneficiary only in relation to any direct losses or damages caused by any negligent act or omission of GroundSure in preparing the GroundSure Materials and provided that the Beneficiary has used all reasonable endeavours to mitigate any such losses.

7.2 GroundSure shall not be liable for any other losses or damages incurred by the Beneficiary, including but not limited to:
(i) loss of profit, revenue, business or goodwill, losses relating to business interruption, loss of anticipated savings, loss of or corruption to data or for any special, indirect or consequential loss or damage which arise out of or in connection with the GroundSure Materials or otherwise in relation to a Contract;
(ii) any losses or damages that arise as a result of the use of all or part of the GroundSure Materials in breach of these terms and conditions or contrary to the terms of the relevant User Guide;
(iii) any losses or damages that arise as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such part is based on any Third Party Content or any reasonable interpretation of Third Party Content. The Client accepts, and shall procure that any other Beneficiary shall accept, that it has no claim or recourse to any Data Provider in relation to Third Party Content; and/or
(iv) any loss or damage to a Client's computer, software, modem, telephone or other property caused by a delay or loss of use of GroundSure's internet ordering service.

7.3 GroudSure's total liability in contract, tort (including negligence or breach of statutory duty), misrepresentation, restitution or otherwise, arising in connection with the GroundSure Materials or otherwise in relation to the Contract shall be limited to £10 million in total (i) for any one claim or (ii) for a series of connected claims brought by one or more parties.

7.4 For the duration of the liability periods set out in clauses 7.5 and 7.6 below, GroundSure shall maintain professional indemnity insurance in respect of its liability under these terms and conditions provided such insurance is readily available at commercially viable rates. GroundSure shall produce evidence of such insurance if reasonably requested by the Client. A level of cover greater than GroundSure's current level of cover may be available upon request and agreement with the Client.

7.5 Any claim under the Contract in relation to Data Reports, Mapping and Risk Screening Reports, must be brought within six years from the date when the Beneficiary became aware that it may have a claim and in no event may a claim be brought twelve years or more after completion of such a Contract. For the avoidance of doubt, any claim in respect of which proceedings are notified to GroundSure in writing prior to the expiry of the time periods referred to in this clause 7.5 shall survive the expiry of those time periods provided the claim is actually commenced within six months of notification.

7.6 Any claim under the Contract in relation to Consultancy Services, must be brought within six years from the date the Consultancy Services were completed.

7.7 he Client accepts and shall procure that any other Beneficiary shall accept that it has no claim or recourse to any Data Provider or to GroundSure in respect of the acts or omissions of any Data Provider and/or any Third Party Content provided by a Data Provider.

7.8 Nothing in these terms and conditions:
(i) excludes or limits the liability of GroundSure for death or personal injury caused by GroundSure's negligence, or for fraudulent misrepresentation; or
(ii) shall affect the statutory rights of a consumer under the applicable legislation.

8 GroundSure right to suspend or terminate

8.1 In the event that GroundSure reasonably believes that the Client or Beneficiary as applicable has not provided the information or assistance required to enable the proper performance of the Services, GroundSure shall be entitled on fourteen days written notice to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure may additionally terminate the Contract immediately on written notice in the event that:
(i) the Client shall fail to pay any sum due to GroundSure within 28 days of the Payment Date; or
(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an Administration Order made against it or if a Receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or
(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or
(iv) the Client or the Beneficiary breaches any material term of the Contract (including, but not limited to, the obligations in clause 4) incapable of remedy or if remediable, is not remedied within 14 days of notice of the breach.

9 Client's Right to Terminate and Suspend

9.1 Subject to clause 10.2, the Client may at any time after commencement of the Services by notice in writing to GroundSure require GroundSure to terminate or suspend immediately performance of all or any of the Services.

9.2 The Client waives all and any right of cancellation it may have under the Consumer Protection (Distance Selling) Regulations 2000 (as amended) in respect of the Order of a Report/Mapping. This does not affect the Beneficiary's statutory rights.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination or any suspension of the Services, GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client/Beneficiary any property of the Client/ Beneficiary in GroundSure's possession or control.

10.2 In the event of termination/suspension of the Contract under clauses 8 or 9, the Client shall pay to GroundSure all and any fees payable in respect of the performance of the Services up to the date of termination/suspension. In respect of any Consultancy Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination/suspension of the Contract.

11 General

11.1 The mapping contained in the Services is protected by Crown copyright and must not be used for any purpose outside the context of the Services or as specifically provided in these terms.

11.2 GroundSure reserves the right to amend these terms and conditions. No variation to these terms shall be valid unless signed by an authorised representative of GroundSure.

11.3 No failure on the part of GroundSure to exercise and no delay in exercising, any right, power or provision under these terms and conditions shall operate as a waiver thereof.

11.4 Save as expressly provided in clauses 4.2, 4.3, 6.3 and 11.5, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

11.5 The Secretary of State for Communities and Local Government acting through Ordnance Survey may enforce breach of clause 6.1 of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

11.6 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:
(i) the Client or Beneficiary's failure to provide facilities, access or information;
(ii) fire, storm, flood, tempest or epidemic;
(iii) Acts of God or the public enemy;
(iv) riot, civil commotion or war;
(v) strikes, labour disputes or industrial action;
(vi) acts or regulations of any governmental or other agency;
(vii) suspension or delay of services at public registries by Data Providers; or
(viii) changes in law.

11.7 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

11.8 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email and on the second working day after the day of posting if sent by first class post.

11.9 The Contract constitutes the entire contract between the parties and shall supersede all previous arrangements between the parties.

11.10 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

11.11 These terms and conditions shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with these terms and conditions shall be subject to the exclusive jurisdiction of the English courts.

11.12 If the Client or Beneficiary has a complaint about the Services, notice can be given in any format eg writing, phone, email to the Compliance Officer at GroundSure who will respond in a timely manner.

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APPENDIX C

These Ordnance Survey maps are not printed to scale and have been reduced to A4 size

A3 1/10,000 plans are available upon request



Ordnance Survey®
Historical Mapping Extract

www.centremaps*live*.com

Site Details:

MAESTEG,MINERA,WREXHAM,
LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: MasterMap

Map date: **2012**

Scale: 1:1,250

Printed at: 1:2,500

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2012

Produced by
GroundSure Environmental Insight
www.groundsure.com

Supplied by:
www.centremapslive.com
groundsure@centremaps.com

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Production date: 14 May 2013

To view map legend click here *Legend*

Ordnance Survey®
Historical Mapping Extract

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Site Details:

MAESTEG,MINERA,WREXHAM,
LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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GroundSure Environmental Insight
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Supplied by:
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Site Details:

MAESTEG,MINERA,WREXHAM,
LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: National Grid

Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

GroundSure

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GroundSure Environmental Insight
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Site Details:

MAESTEG,MINERA,WREXHAM,
LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

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

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

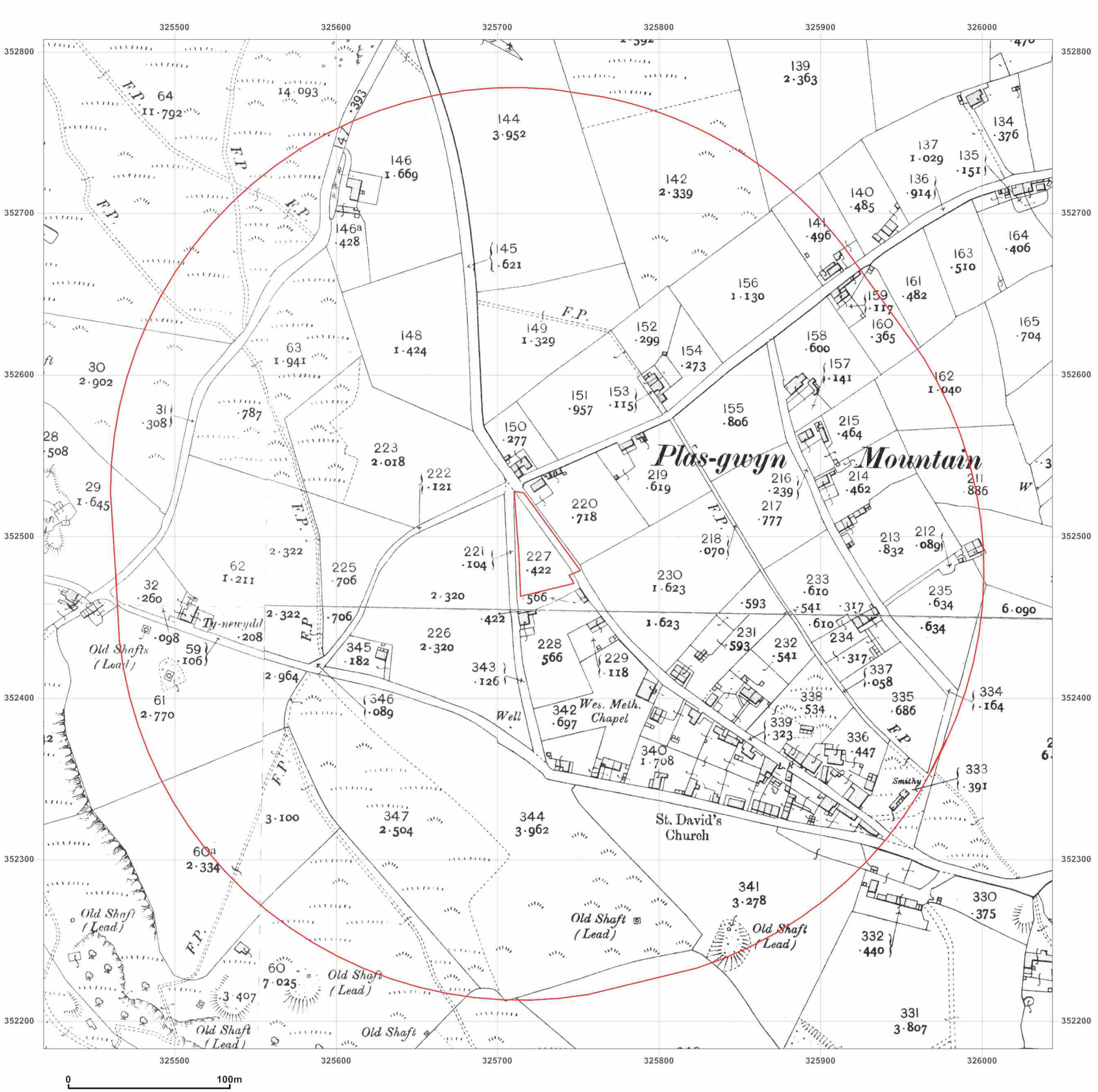
Produced by
GroundSure Environmental Insight
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Supplied by:
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groundsure@centremaps.com

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Production date: 14 May 2013

To view map legend click here *Legend*



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Site Details:

MAESTEG,MINERA,WREXHAM,
LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: County Series

Map date: **1912**

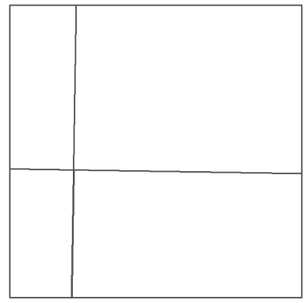
Scale: 1:2,500

Printed at: 1:2,500

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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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Revised 1912
Edition N/A
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Levelled N/A

Surveyed 1912
Revised 1912
Edition N/A
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Site Details:

MAESTEG,MINERA,WREXHAM,
LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: County Series

Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

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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
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

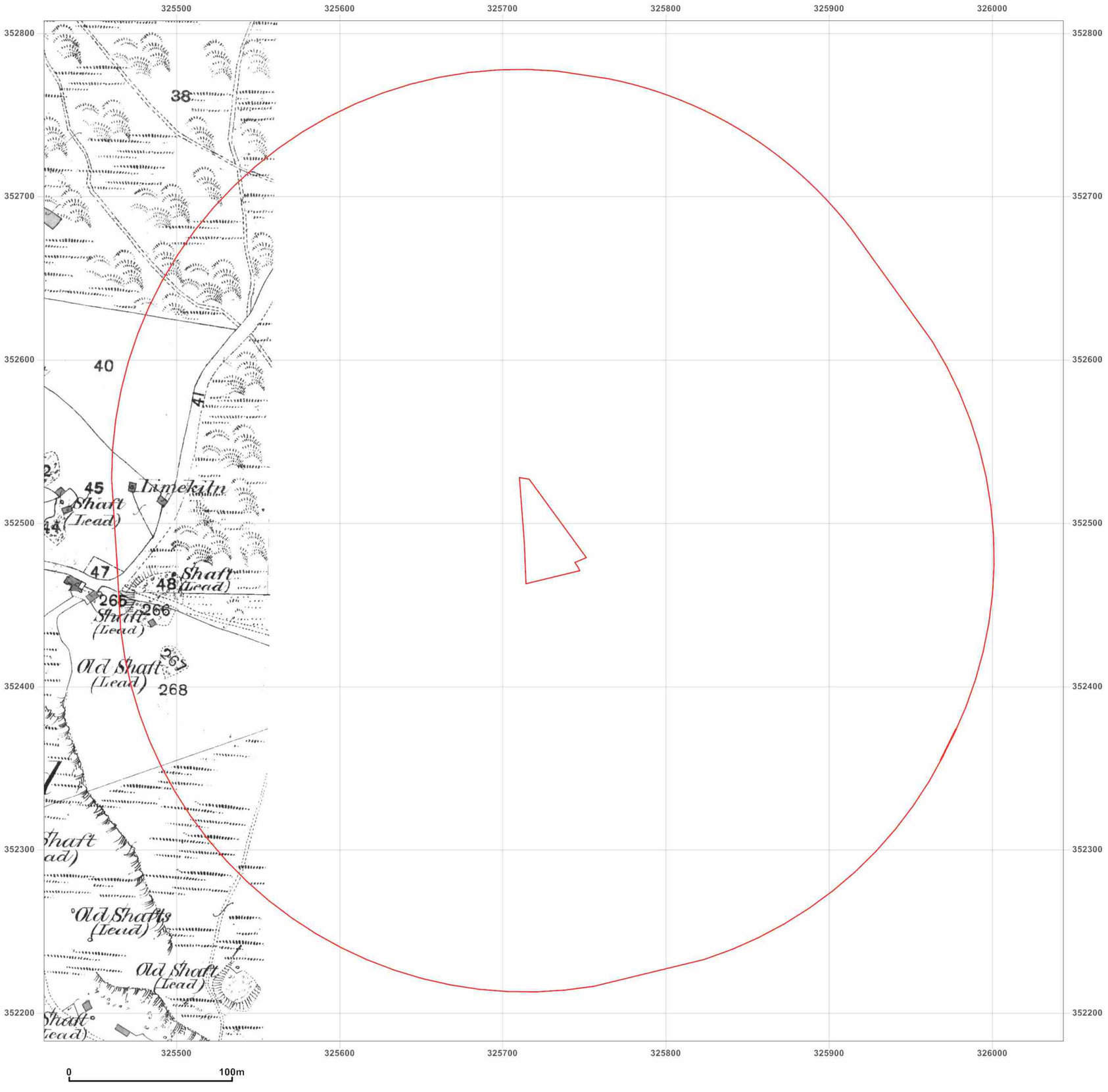
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Site Details:

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LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: County Series

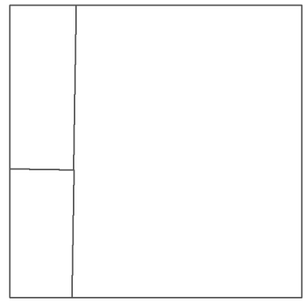
Map date: **1873-1875**

Scale: 1:2,500

Printed at: 1:2,500

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



Surveyed 1875
Revised 1875
Edition N/A
Copyright N/A
Levelled N/A

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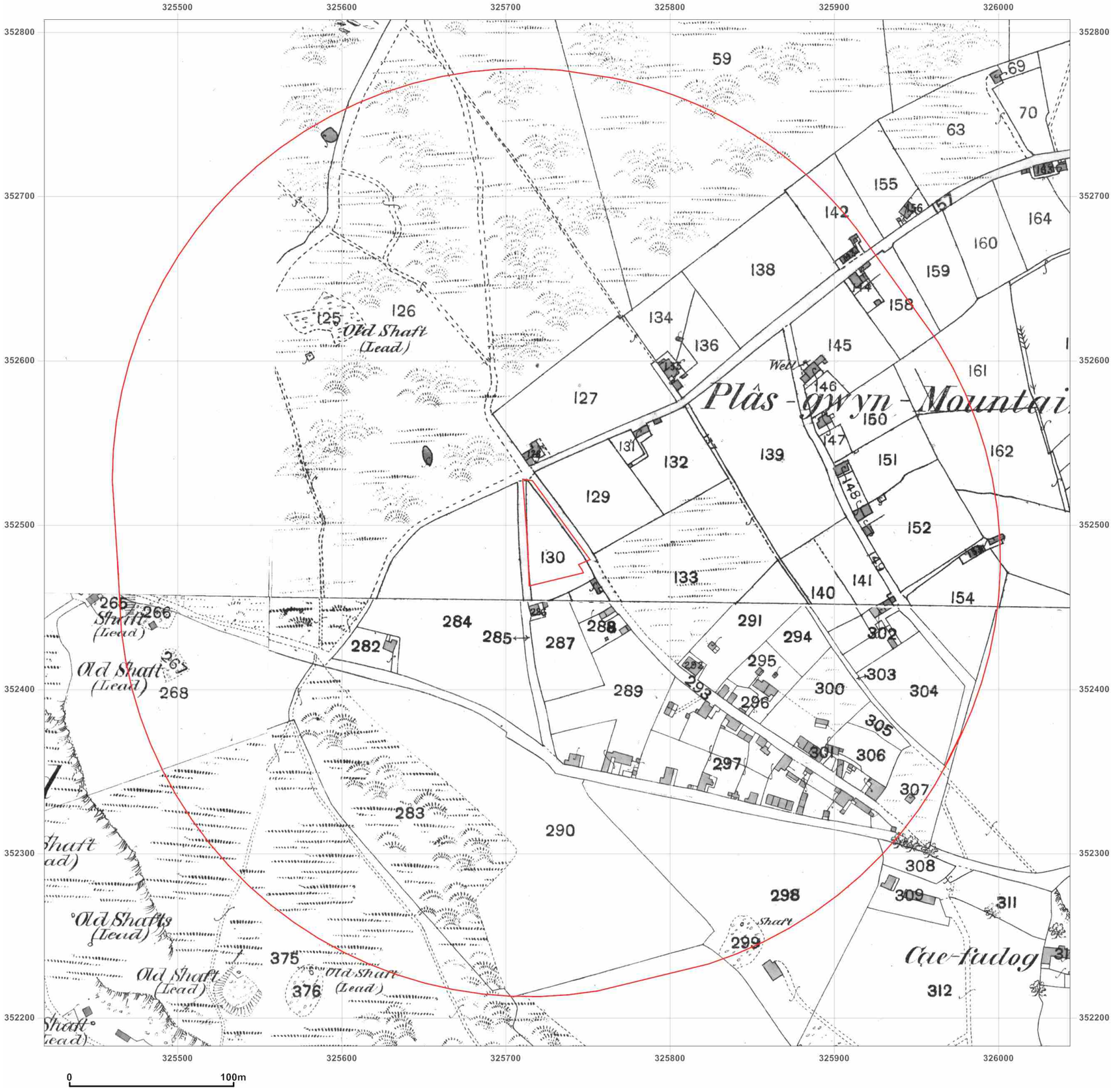
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Grid Ref: 325731, 352495

Map Name: County Series

Map date: **1872-1874**

Scale: 1:2,500

Printed at: 1:2,500

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

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

Surveyed 1874
Revised 1874
Edition N/A
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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: National Grid

Map date: **2012**

Scale: 1:10,000

Printed at: 1:10,000

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2012

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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2002

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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: National Grid

Map date: **1989**

Scale: 1:10,000

Printed at: 1:10,000

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

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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

Printed at: 1:10,000

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

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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: National Grid

Map date: **1974**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1970 Revised 1974 Edition N/A Copyright N/A Levelled N/A		Surveyed 1970 Revised 1974 Edition N/A Copyright N/A Levelled N/A

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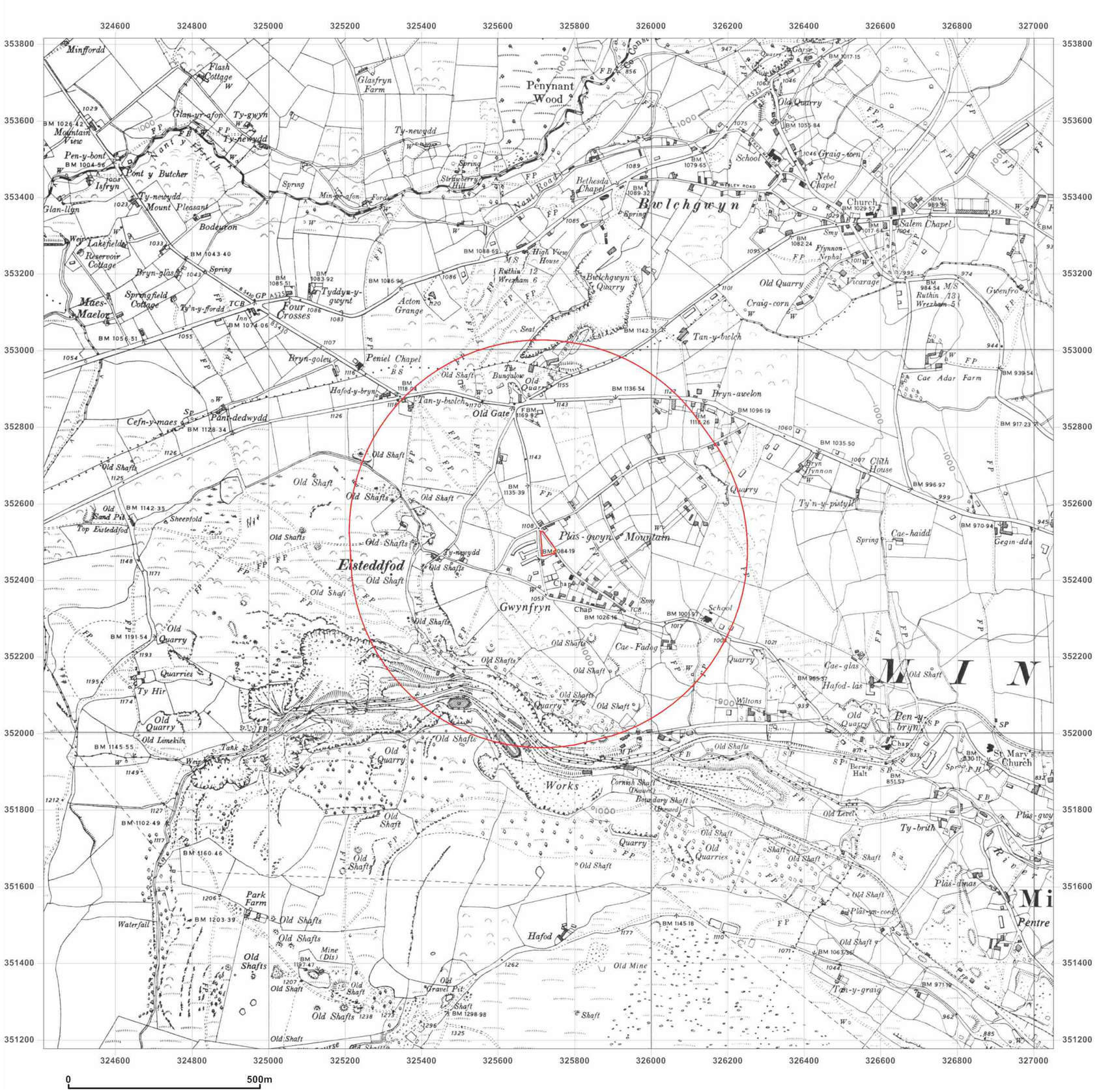
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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: Provisional

Map date: **1959-1960**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1960
Revised 1960
Edition N/A
Copyright N/A
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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

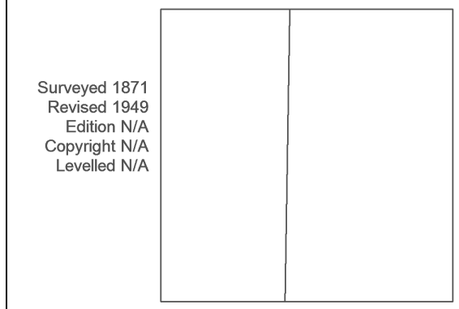
Map Name: County Series

Map date: **1949**

Scale: 1:10,560

Printed at: 1:10,560

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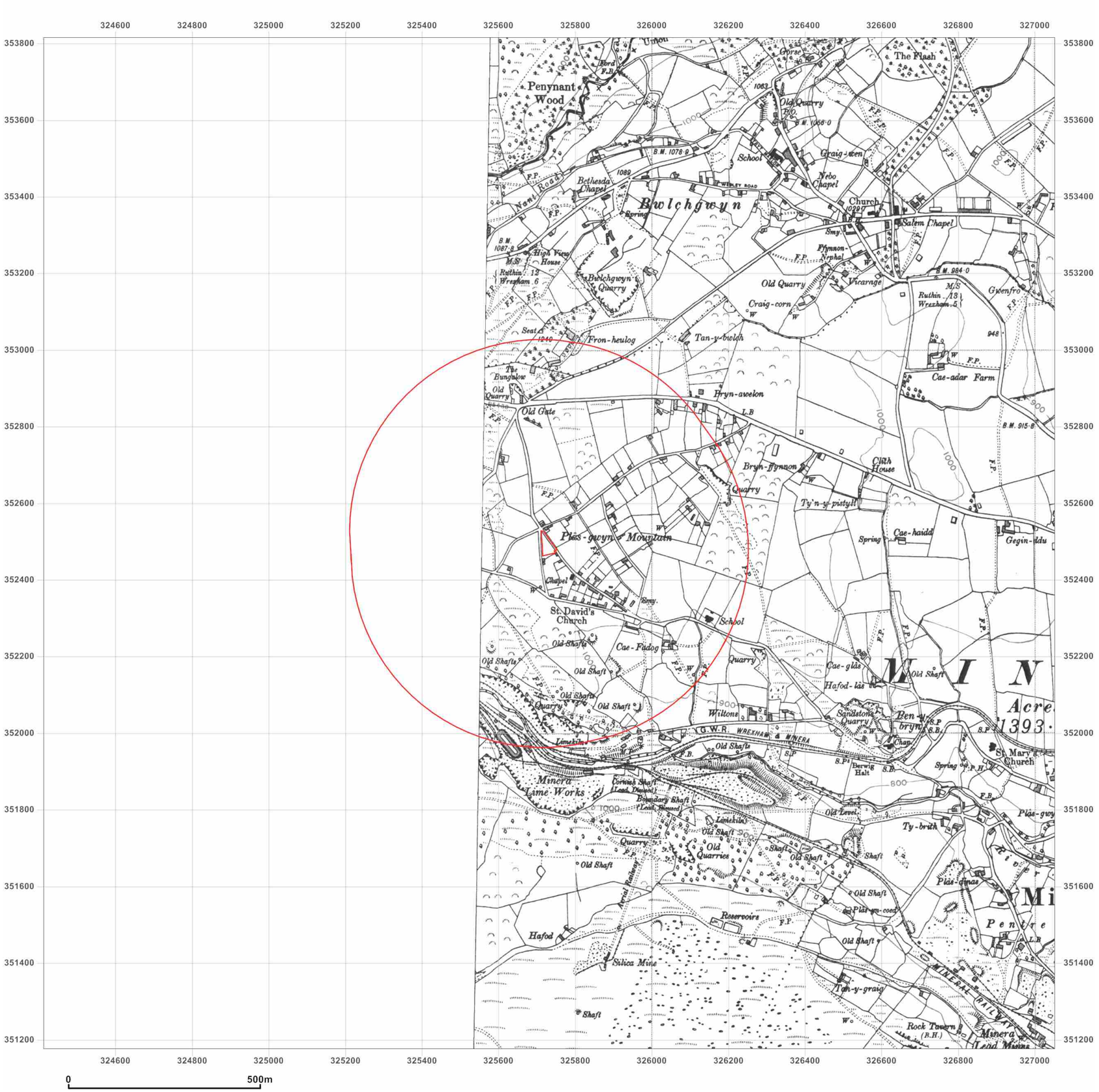
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LL11 5YU

Client Ref: 7904
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Grid Ref: 325731, 352495

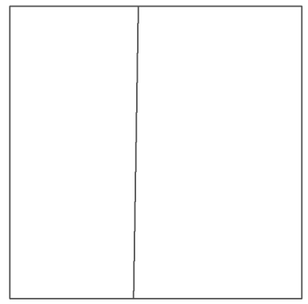
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Edition 1938
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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: County Series

Map date: **1910-1914**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1871 Revised 1914 Edition 1914 Copyright N/A Levelled N/A		Surveyed 1871 Revised 1910 Edition N/A Copyright N/A Levelled N/A

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LL11 5YU

Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1870
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

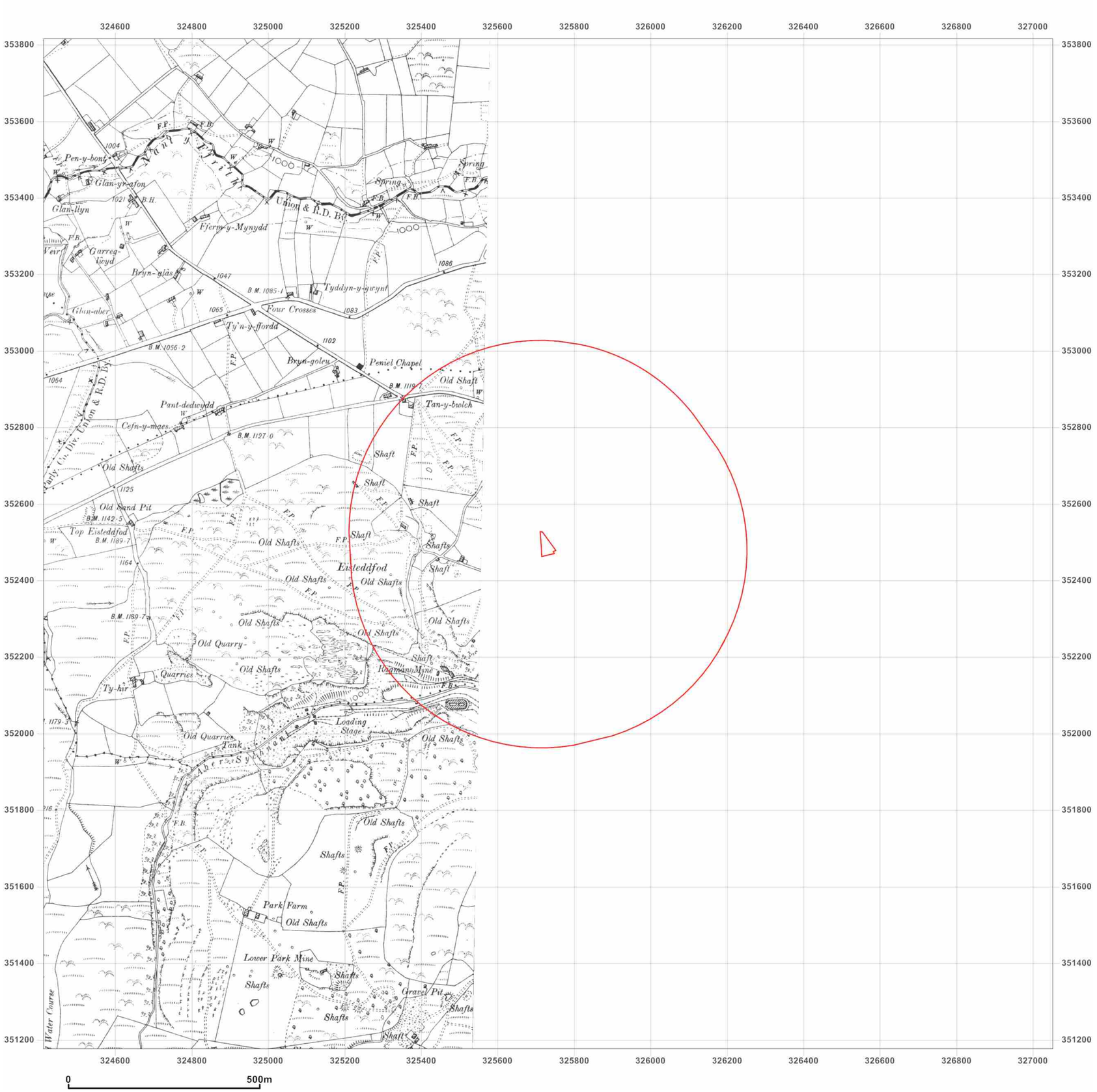
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Client Ref: 7904
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Grid Ref: 325731, 352495

Map Name: County Series

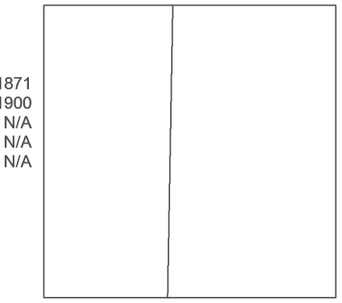
Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1871
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A



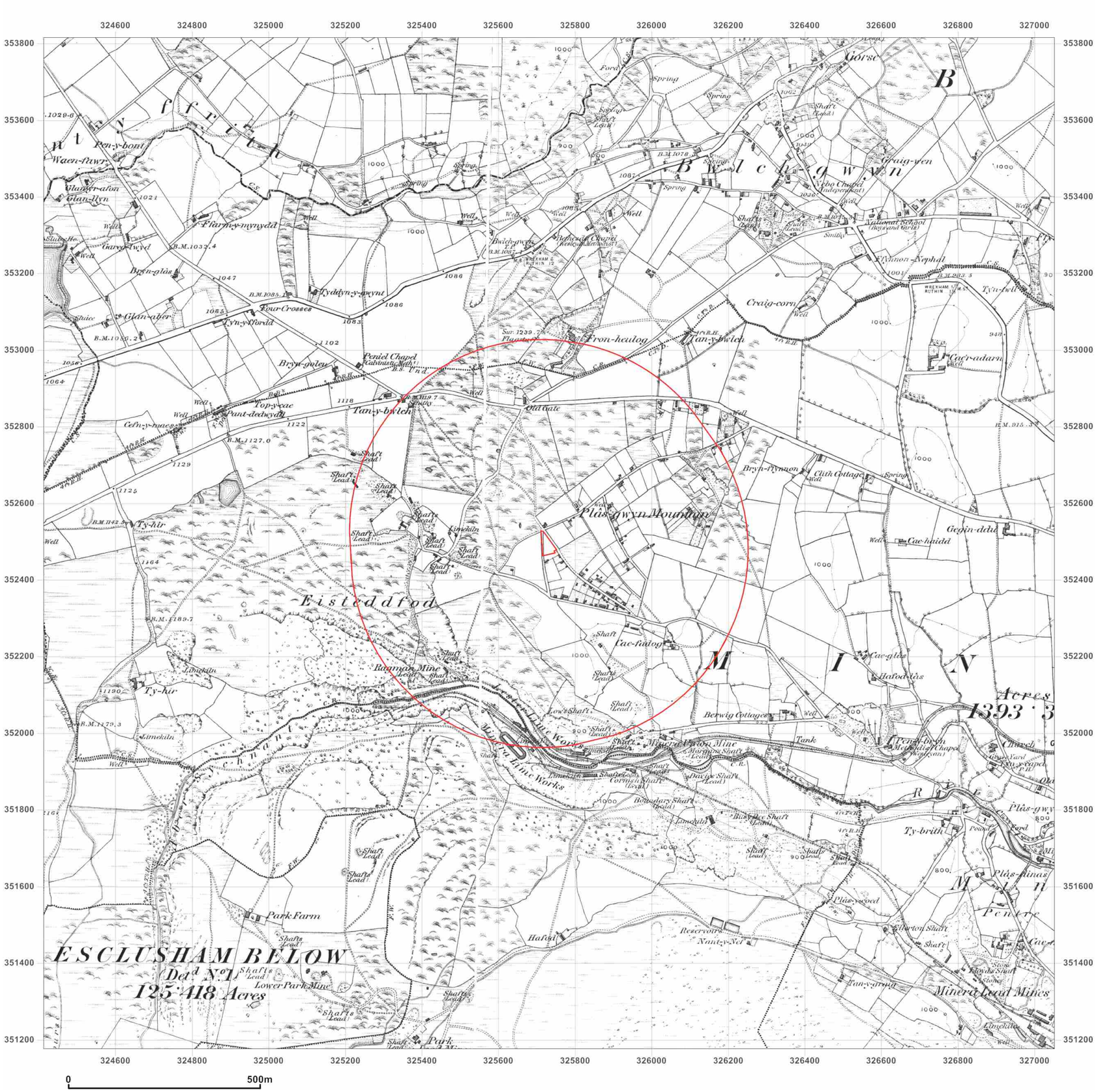
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Client Ref: 7904
Report Ref: CMAPS-CM-229255-7904-140513HIS
Grid Ref: 325731, 352495

Map Name: County Series

Map date: **1872-1874**

Scale: 1:10,560

Printed at: 1:10,560

N W E S

Surveyed 1874	Surveyed 1872
Revised 1874	Revised 1872
Edition N/A	Edition N/A
Copyright N/A	Copyright N/A
Levelled N/A	Levelled N/A

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APPENDIX D

The COAL AUTHORITY

Issued by:
The Coal Authority, Property Search Services, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire, NG18 4RG
Website: www.groundstability.com Phone: 0845 762 6848 DX 716176 MANSFIELD 5

LANDMARK INFORMATION GROUP LIMITED
SOWTON INDUSTRIAL ESTATE
ABBEY COURT
UNIT 5/7 EAGLE WAY
EXETER
DEVON
EX2 7HY

Our reference:	**51000289878001**
Your reference:	**46151215**
Date of your enquiry:	**15 May 2013**
Date we received your enquiry:	**15 May 2013**
Date of issue:	**15 May 2013**

This report is for the property described in the address below and the attached plan.

Non-Residential Coal Authority Mining Report

MAESTEG, GWYNFRYN WREXHAM, CLWYD, FLINTSHIRE, LL11 5YU

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	See comments below
Brine Compensation District	No

Information from the Coal Authority

Underground coal mining

Past

According to the records in our possession, the property is not within the zone of likely physical influence on the surface from past underground workings.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

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Coal mining geology

The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.

Opencast coal mining

Past

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal mining subsidence

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

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

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

Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of support

The property is not in an area for which a notice of entitlement to withdraw support has been published.

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

Working facilities orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to owners of former copyhold land

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

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Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional Remarks

This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006.

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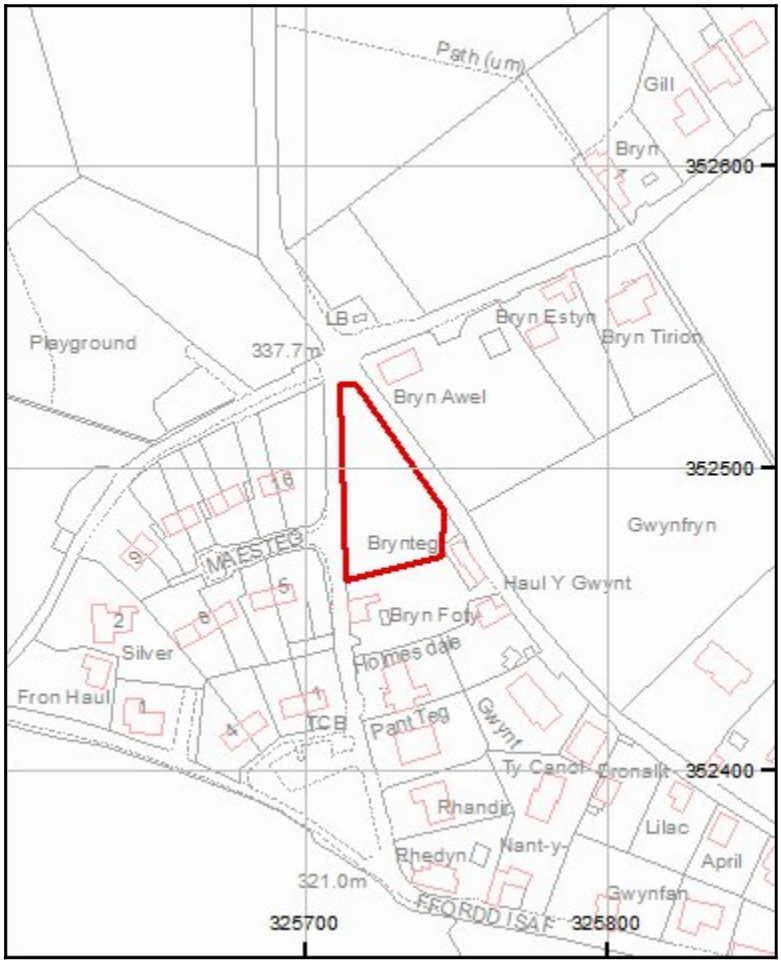
Location map

Approximate position of property



Enquiry boundary

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Key

Approximate position of enquiry boundary shown

Mapping sourced from Ordnance Survey

APPENDIX E

Photographs of site at walk over appraisal



Photo 1 – Looking south west from northern corner of the site



Photo 2 – Looking west from south eastern corner of the site



Photo 3 – Looking north from south eastern corner of the site



Photo 4 - Looking south – Showing slope of site from east to west