



LIGHTSOURCE BP

BRYN HENLLYS EXTENSION

PHASE I GEO ENVIRONMENTAL DESK STUDY

JULY 2019

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JULY 2019

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ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
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LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT

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DRAWINGS	TITLE	SCALE
CA11620-001	Site Location Plan	1:25,000

EXECUTIVE SUMMARY

The Client, Lightsource BP, is proposing the redevelopment of a former Opencast Mine Site, Bryn Henllys, located north of Cwmtwrch within South Wales. The site is centralised at an approximate National Grid coordinate of E 276007, N212610. It is proposed that a solar photovoltaic farm with ancillary equipment be installed at the site. The infrastructure would have capacity to generate c.9.9 MW.

Wardell Armstrong LLP (WA LLP) has been commissioned to undertake a geo-environmental desk study to support planning requirements for the proposed redevelopment.

The purpose of this report is to identify and examine in broad terms readily available information relating to the:

- past and current uses of the site and surrounding area;
- environmental setting including geology, mining, hydrogeology, and hydrology;
- likely ground conditions beneath the site including soil/rock types, groundwater and potential geohazards;
- potential contamination sources, pathways, and receptors as part of a preliminary conceptual model; and
- potential contamination constraints and liabilities that may arise in connection with the present use or proposed use of the site.

A summary of the site historical, geological, hydrogeological setting and the qualitative risk assessment is presented in Table 1.

Table 1: Executive Summary			
Issue	Summary	Qualitative Risk Category	
		Humans	Property/ Environment
Present site use	The site is an irregular shape and comprises approximately 25 hectares of generally restored opencast. The site is currently used as agricultural land.	Low	Low
Past site use	The site has been subjected to numerous phases of opencast coal mining during its history. The most recent phase (c.1995 – c.2003) of opencast excavation covered the entire site except, a small area of the west of the southern site portion and two small areas in the northwest and southwest corners of the northern site portion.	Low to moderate	Low to moderate

Table 1: Executive Summary

Issue	Summary	Qualitative Risk Category	
		Humans	Property/ Environment
Adjacent land uses	The areas surrounding the site have historically been subject to opencast coal mining, underground coal mining, brick works, refuse heaps (red ash tip) and railway lines. The area surrounding the site has been restored to agricultural land.	Low to moderate	Low to moderate
Asbestos	Asbestos is a potential contaminant of concern associated with backfilled made ground and asbestos containing materials within historic structures.	Low to moderate	Low
Geology	The site is expected to be underlain by backfilled opencast/made ground. The underlying bedrock geology comprises rocks of the Lower and Middle Measure of the South Wales Coal Measures.	-	Low to moderate
Mining	Five shafts and 4no. adits are recorded directly within the site foot print or between the northern and southern parcels. All 5no. shafts have been removed to the Peacock Seam. The 4no. adits have been removed to the Peacock Seam where they intersect the opencast area. Parts of the adits located within the highwall within the western portion of the site are likely to remain present.		Low
Groundwater vulnerability	The bedrock is designated as a Secondary A Aquifer.	Low	Low to moderate
Surface water vulnerability	There are four records for watercourses on site which are classified as inland rivers not influenced by tidal action, 10no. within 50m and 92no. within 250m of the site boundary. The Groundsure report details one recorded licensed discharge consent within the site boundary which is related to the historic Waun Lwyd North Opencast Site.	Low	Low to moderate
Flooding	The risk of flooding from rivers and the sea is recorded as very low.	Low	Low
Ecology	An ecological assessment has not been carried out. A desk based preliminary ecological assessment and Phase 1 habitat survey should be undertaken in the first instance to assess ecological constraints.	-	-
Japanese Knotweed	No Japanese knotweed was observed during the site walk over survey. The presence of invasive plant species should be confirmed by a phase 1 habitat survey.	Low	Low

Table 1: Executive Summary			
Issue	Summary	Qualitative Risk Category	
		Humans	Property/ Environment
Other risks	Ground/mine gas	Low to moderate	Low to moderate
	Unexploded ordnance	Low	Low
Geological Hazard Rating	<ul style="list-style-type: none"> Shrink/Swell Clays Landslides Ground dissolution Compressible soils Collapsible deposits Running sands 	Very Low Very Low to moderate Negligible Very Low Very Low Very Low	Very Low Very Low to moderate Negligible Very Low Very Low Very Low
Overall Risk	Low to Moderate - Based on the available information summarised in this report the site is considered to present a Low to Moderate environmental/ground condition risk when assessing past land use, adjacent operations, and human, environmental and controlled waters receptor vulnerability. Site investigation is recommended to quantify the risk and assess environmental liability.		

The executive summary forms part of the overall report and should not be considered in isolation.

1 INTRODUCTION

1.1 Instructions

- 1.1.1 This report is prepared in accordance with written instruction from Jessica Gittoes of Lightsource BP to Simon Allen of Wardell Armstrong LLP (WA LLP) dated 10 June 2019. This follows a proposal (LD/PE/PE10869/LetRef006 Rev A) dated 3 June 2019 by WA LLP. The Purchase Order no. for the instructed works is PO-LSRD-247, dated 5 June 2019.
- 1.1.2 WA LLP outlined the required works to comprise of a geo-environmental desk study. This report has been produced to begin fulfilling planning condition requirements and facilitate redevelopment of the site as a proposed solar photovoltaic farm.
- 1.1.3 The Standard Terms and Conditions and Limitations to this Report are presented in Appendix I.
- 1.1.4 WA LLP has also been commissioned to carry out a Coal Mining Risk Assessment (CMRA) for the investigation site. This has been carried out separately, Report CA11620 – 003 has been produced. Information from the CMRA has been utilised within this desk study report where pertinent.

1.2 Site Location & Description

- 1.2.1 The site is located approximately 1.5km north of Cwmtwrch within the Swansea Valley, South Wales as shown on Drawing CA11620-001. The site is located to the east of Ystradowen village and is centralised at an approximate National Grid coordinate of E 276007, N 212610.
- 1.2.2 The site is irregularly shaped and comprises of approximately 25 hectares of restored opencast. The site is currently used as agricultural land. To the west of the site is the River Twrch (125m) which runs in a northeast to south easterly direction.
- 1.2.3 The site is generally split into two parcels, one to the north of Waun Lwyd Farm and one to the south, the sites are linked by an access road. The site is considered as one portion of land for the purposes of this desk study. However, the parcel of land north of Waun Lwyd Farm is referred to as the “northern portion” and the parcel of land south of Waun Lwyd Farm, the “southern portion”.
- 1.2.4 The area of land being reviewed as part of this report is bounded by woodlands and farm buildings to the south of the northern site portion and to the north and east of the southern site portion. The east of the northern portion of the site is bounded by open agricultural land. The entire site is hedge/tree lined or demarked by a track

(eastern perimeter of northern portion). The site comprises almost entirely of soft standing, discrete areas of gravel hard standing are observed in the northwest corner of the southern portion and southwest corner of the northern portion of the site.



Figure 1: Aerial Image Showing the Approximate Site Boundary

Reproduced from Groundsure 2019

1.3 Scope and Objectives

1.3.1 The purpose of this report is to identify and examine in broad terms readily available information relating to the:

- past and current uses of the site and surrounding area;
- environmental setting including geology, mining, hydrogeology, and hydrology;

- likely ground conditions beneath the site including soil/rock types, groundwater and potential geohazards;
- potential contamination sources, pathways, and receptors as part of a preliminary conceptual model;
- potential contamination constraints and liabilities that may arise in connection with the present use or proposed use of the site;
- requirement for future studies including intrusive site investigation prior to redevelopment; and
- information relevant to health and safety and environmental protection prior to intrusive investigation.

1.3.2 The report has been produced in general accordance with the first incremental stage of a Land Quality Statement as set out by the Royal Institution of Chartered Surveyors (RICS) in their publication "Contamination, the Environment and Sustainability" dated April 2010. The report also draws on Environment Agency Report 11 entitled "Model Procedures for the Management of Land Contamination" dated September 2004. Further background to government guidance on contamination and the purpose and use of Land Quality Statements in assessing the risk of contamination at a site is described at Appendix II.

1.3.3 This report does not constitute or contain a valuation nor is it a full rigorous environmental audit or assessment of geotechnical risks and potential abnormal costs. In this instance this report is prepared as a geo-environmental desktop study which has been requested to support planning requirements for the proposed redevelopment.

1.3.4 The report has been undertaken in accordance with recognised UK best practice (including CLR11, BS 5930: 2015 and BS10175:2011+A2:2017) and includes a review of existing data and a site walk over survey. The site walkover record and photographs is presented in Appendix IV.

1.4 **Proposed Site Use**

1.4.1 It is proposed that the site be developed as a large solar photovoltaic farm (c. 9.9MW) with associated ancillary equipment.

1.4.2 The proposed development will comprise of:

- Vehicular access from the unnamed road east of the A4068;

- Rows of photovoltaic panels, typically of dimensions of 1m x 2m and 50mm depth, arranged on mounting racks/galvanised metal frames set into the ground by either direct piling or screw piling and tilted southwards at 20 degrees from the horizontal. The lower edge of a solar panel will be 0.6m from the ground and the highest point is 2.5m from the ground;
- Underground electrical cables;
- A 2m high timber & post/deer fence around the site;
- CCTV cameras will be positioned on 3m high poles along the security fence;
- A Distribution Network Operator substation;
- Production substations (8m x 1m x 3.1m);
- Switchgear substations (6m x 5m x 4m);
- Access tracks will be 3.5m wide and formed of crushed aggregate; and
- Lighting (only for maintenance purposes).

2 SITE HISTORY AND CURRENT LAND USE

2.1 Data Sources

2.1.1 The history of the site and the surrounding land has been investigated by consultation with a range of archive sources and statutory bodies as summarised at Appendix III. The topographical and environmental data is based primarily on an environmental data search prepared by Groundsure and dated June 2019 (Groundsure Report, Appendix V).

2.1.2 In addition, the following reports have been used for information and review purposes only which relate to the adjacent Bryn Henllys Solar Farm site:

- Phase I Desk Study of Bryn Henllys Solar Farm, Wardell Armstrong LLP, dated 6th December 2018; and
- Phase II Geo-environmental and Geotechnical Ground Investigation, Wardell Armstrong LLP, dated March 2019.

2.2 Site History

2.2.1 Table 2 summarises the history of the site and its immediate vicinity from around 1870 to the present day. Historic maps provided in the Groundsure report have been assessed to identify previous land uses, including any potentially significant contaminative uses. Other features that may have an effect on the proposed development of the site have also been identified. Information from the WA LLP CMRA Report CA11620-003 has also been utilised for the period between c.1995 - c.2003.

Table 2: Summary of Historic Land Uses		
Date	Site Land Use	Adjacent Land Use
1870-1900	<p>The site typically comprises agricultural land.</p> <p>Coal levels are located within the southern part of the northern portion of the site.</p> <p>A stream runs in an east to west direction in the southern part of the northern portion of the site.</p>	<p>Typically land to the east of the site comprises agricultural land. Bryn Moel Farm is located c100m to the south of the site. Bryn Henllys Farm is located directly adjacent to the west of the site. Waun Lwyd Farm is located directly adjacent to the south west of the site.</p> <p>With regards to the northern portion of the site, to the west, the land typically comprises dense woodland. Old coal levels and coal pits are located c.100m and c.300m to the west, south west, north and north west. An old Limekiln is located greater than c.250m to the north east. A well is located c.20m to the south.</p> <p>With regards to the southern portion of the site, two old coal drifts are located c.100m and c.250m to the south/south west of the site. Two old coal levels are located c.100m-250m north west of the site. A railway line trends in a north east to south westerly direction c.100-200m to the west of the site.</p>
1900-1910	<p>Within the northern portion of the site the old coal levels previously identified within the site boundary are no longer present. There is no significant change in the southern portion of the site.</p>	<p>Within the northern portion of the site an airshaft is located c.80m to the west. A Brick Works is located >250m from the south west perimeter. A railway line trends in a northeast to south westerly direction c.100-200m to the west of the site.</p> <p>Within the southern portion of the site a woollen Factory is located c.300m to the south/south west. A Brick Works is located c.150m to the north west. A reservoir is located c.500m to the south. Ystrad-Owen Colliery is located c.100mm to the south/south west. Numerous coal levels and trial shafts are located >100m to the south/south west and south east of the site.</p>
1910-1920	<p>No significant change.</p>	<p>Reference to a number of collieries, shafts and adits has been removed.</p> <p>The Woollen Factory previously observed is no longer detailed within these editions.</p> <p>Within the northern portion of the site Bryn Henllys Colliery is observed c.100m to the west/north west.</p>

Table 2: Summary of Historic Land Uses		
Date	Site Land Use	Adjacent Land Use
		In the southern portion of the site the previously noted railway line and railways siding have increased in size in a westerly direction away from the site. Bryn Henllys Colliery is located c.100m to the west of the site.
1920-1970 (no significant changes in map editions between dates)	Opencast workings are shown to be present across the eastern part of the northern portion of the site and the majority of the southern portion.	<p>Opencast workings extend eastwards from the site. The railway to the west has been removed. The Brick Works has been removed.</p> <p>In the northern portion a slag heap is recorded c.100m to the north, north west and west of the site. A pond is located c.80m to the north of the site. Reference to Bryn Henllys has been removed. Reference to the well has been removed.</p> <p>In the southern portion of the site the opencast workings are observed to extend eastwards. There is a tank located c.80m to the west of the site. A slag heap is recorded c.150m to the west of the site. Residential development has increased c.250m to the west of the site. A tank is located c.500m south of the site. The reservoir has been removed.</p>
1970-1990	The opencast formerly onsite appears to have been restored and appears to be used for agricultural use in the northern portion of the site.	<p>Opencast workings to the north and east of the site are shown to have been partly restored.</p> <p>In the northern portion of the site there are opencast workings to the south. A pond is located c.100m south east of the site.</p> <p>Within the southern portion of the site opencast workings to the east of the site are shown to have been restored, replanted trees are observed. Two ponds are located c.100m and 250m to the east of the site.</p>
CMRA data c.1995-c.2003	Brynhenllys opencast coal mining site opened and covered almost the entire investigation area (a thin sliver in the west of the site is unlikely to have been	Brynhenllys opencast coal mining site opened, (c.1995) the area to the east of the investigation site was re-excavated for the extraction of the Peacock seam c.<60m depth below existing ground level. The area to the east of the site was also designated a tipping area. The site was restored to agricultural land following the opencast works.

Table 2: Summary of Historic Land Uses		
Date	Site Land Use	Adjacent Land Use
	fully opencast as it lies outside of the opencast extent). The site was re-excavated for the extraction of the Peacock seam c.<60m depth below existing ground level. The site was restored to agricultural land following the opencast works.	
Present day	It is not known when the restoration of the site took place following the opencast works. It is likely to have taken place within a couple of years following the end of mining activities. The site comprises almost entirely soft standing agricultural land. Two storage areas of gravel hard standing for hay bales are observed in the northwest corner of the southern portion of the site and southwest corner of the northern portion of the site.	The area surrounding the site is dominated by open agricultural land with small areas of dense woodlands.

2.3 Review of Aerial Photographs

- 2.3.1 Freely available aerial photographs held by the Welsh Government were requested for the site. A summary of the pertinent observations is given below.
- 2.3.2 The 1945 aerial photograph shows the site to be open agricultural land, the stream observed in the early map editions is noted within the southern part of the northern portion of the site running broadly northeast to southwest.
- 2.3.3 The 1951 aerial photograph shows possible excavated material from suspected opencast operations to the east stored within the eastern area of the southern portion of the site.
- 2.3.4 The 1962 aerial photograph shows further possible excavated material within the southern portion of the site. The deposited material covers most of the southern portion of the site. Material is also covering the eastern half of the northern portion of the site. Three tracks enter the northern portion from the south.
- 2.3.5 The 1973 aerial photograph shows the site to be restored to agricultural land. Opencast operations are still active to the east of the site. A small area of deposited material remains in the northwest corner of the northern portion of the site. A suspected pond is observed to the north of the site. The pond is observed in the 1962 mapping edition.
- 2.3.6 The 1994 colour aerial photograph shows the site to be largely unchanged from the previous edition. The area of deposited material in the northwest corner of the northern portion of the appears to remain although it presents as partially overgrown. The suspected pond highlighted in the previous edition remains to the north.

2.4 Bryn Henllys Opencast Restoration Information

- 2.4.1 Bryn Henllys opencast site extended to 219 hectares of land and coalmining ceased in September 2003. Since then, the site has been restored to grassland for sheep and cattle grazing. The investigation site lies almost entirely within the footprint of the former Bryn Henllys Opencast site.
- 2.4.2 Desk study research identified a Powys County Council Planning Committee report dated 28 October 2008 which outlines the restoration and aftercare scheme for the opencast site. The planning report is presented in Appendix VI and a summary is presented below.
- 2.4.3 The overall restoration scheme was agreed with Powys County Council on 16 September 2003, and since then there have been several variations following

discussions and site visits culminating in the scheme prepared by Celtic Energy in July 2008 and approved on 28 October 2008, subject to conditions.

- 2.4.4 The opencast comprised of three distinct areas, the investigation site lies wholly within Area A; Area A comprised 175.1 hectares, north eastern section within the Brecon Beacons National Park where the principal coaling activities took place, including the excavation area, overburden storage area and offices etc; Area B (36.9 hectares, small section in north within the National Park) which was an area to the east of the site workings which had been poorly restored as part of a former opencast coal operation; and Area C (7.4 hectares – 1.4 hectares of which was leased) which comprises the corridor along which the site access road was constructed.

Area A Restoration

- 2.4.5 Area A, where the investigation site is located, is where the principal coaling activities took place, including the excavation area, overburden storage and offices etc. A restoration plan was submitted in April 1998 and restoration commenced in the southern area. A detailed restoration and aftercare scheme was submitted in December 2000. A revised restoration and aftercare scheme was submitted in February 2003 and further revised in May 2003. The most recent restoration and aftercare scheme was submitted by Celtic Energy in July 2008 and approved by Powys County Council in October 2008.
- 2.4.6 The area has been restored and consists of enclosed agricultural land and woodland on the lower slopes rising through areas of moorland grazing to the open stretches of the Beacons National Park.
- 2.4.7 Due to the lack of soil available on site, a significant area was restored using soil forming material (SFM), a geological material with low fertility characteristics.
- 2.4.8 An area labelled 'red ash tip' is observed within information supplied to WA LLP. The red ash tip area appears to intersect the northwest corner of the northern site portion. The degree of restoration to this area is also unknown.

Site Specific Planning Conditions

- 2.4.9 Planning permission for the opencast works at Bryn Henllys were granted by Powys County Council, these included site specific conditions, Condition 9 (Phased Restoration), Condition 10 (Competition of Restoration) and Condition 11 (Aftercare). The condition requirements are discussed below.

Condition 9 - Phased Restoration

2.4.10 Condition 9 required that each phase of working was to be restored in accordance with a scheme to be agreed with the Mineral Planning Authority, that each scheme was to be agreed before that phase of working commences, and would include provision for:

- A. The final levels of the restored area and surrounding land within the site;
- B. The natural or artificial drainage of the site including during and after backfilling;
- C. The replacement of topsoil, subsoil and any suitable soil-forming material;
- D. Restoration of the land to agriculture, woodland or amenity uses;
- E. Removal of buildings, plant and machinery on completion of the final phase of the restoration;
- F. The treatment of the Palleg fault, if disturbed, to prevent the ingress of water from the Farewell Rock; and
- G. The restoration of the private access road.

Condition 10 – Completion of Restoration

2.4.11 Condition 10 required that all site restoration and landscaping operations were to be completed within 3 years of the completion of coal extraction.

Condition 11 – Aftercare

2.4.12 Condition 11 required that each phase of working was subject to an aftercare scheme, requiring such steps as may be necessary to bring the land to a condition reasonably fit for the proposed end uses, the details of which were submitted to the Mineral Planning Authority at the same time as the scheme required by condition 9 (Phased restoration).

2.4.13 The aftercare scheme included:

- A. Tree planting and landscaping;
- B. Cultivations, seeding and management of grassland heath and woodland in accordance with the principles of good husbandry, silvicultural and nature conservation practice;
- C. Fertiliser and lime application based on soil analysis;
- D. Grazing management;

- E. Field water supplies;
- F. Ditches/watercourses and piped ditch systems to control surface run-off and prevent erosion and a piped drainage system consistent with good practice for the restoration of land to the uses specified; and
- G. Any other agricultural treatment particularly relevant to the site.

2.5 Current Site Use

2.5.1 The site was visited on 18 June 2019 by a Wardell Armstrong LLP representative. At the time of the visit the site comprised agricultural land. A detailed record from the site walkover and photographs are attached in Appendix IV. The following points are of note:

- Dense vegetation noted along field boundaries comprising a mixture of trees and hedges; and
- Hay storage area noted in the north west corner of the southern portion of the site and southwest corner of the northern portion as seen in the latest aerial image. Hard standing in the area of hay storage consisted of loose angular fine to coarse GRAVEL of suspected mudstone with high cobble content.

2.5.2 It should be noted that whilst no Japanese Knotweed or other invasive plant species has been identified during the site walkover, an ecological survey has not been carried out nor should the current site walkover be considered an ecological survey of the site. It is recommended that an ecological survey is undertaken to assess habitat quality and the potential presence of invasive species.

3 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

3.1 Geology

3.1.1 The assessment of the site geology is based on the published geological mapping sheet (Sheet No SN 71 SE, Solid and Drift Edition, 1: 10,560 scale), the British Geological Survey (BGS) online GeoIndex, Groundsure Report data, Coal Authority Interactive Map Viewer and the WA LLP CMRA Report.

3.1.2 A summary of the relevant geological information is provided below in Table 3.

Table 3: Summary of Relevant Geological Data	
Strata	Description
Made ground (backfilled opencast workings)	<p>Made ground associated with opencast works is anticipated across the site. Made ground is likely to consist of opencast backfill comprised of rockfill and unsaleable Coal Measure Strata (coal, mudstone, siltstone and occasional sandstone).</p> <p>As part of the restoration works a capping layer may have been required. If present, any capping will be of unknown thickness and composition.</p>
Natural superficial deposits	<p>Geological maps indicate the western area of the site to be underlain by Devensian Till (Boulder Clay). Natural superficial deposits are likely to have been removed as part of the opencast mining operations. However, the superficial deposits may have been replaced across the entirety of the site as part of the restoration process.</p>
Solid strata	<p>The site is underlain by the Middle Coal Measures which consists of grey coal bearing mudstones/siltstones with seat earth and minor sandstones.</p> <p>Coal seams recorded to outcrop beneath the site include the Stanllyd Seam (locally known as the "Big" seam). The Stanllyd seam crops north to south beneath the entire site, sheet SN71SE shows the geology to dip 10 degrees south southwest. This seam has been extracted as part of opencast mining operations. The thickness of the Stanllyd seam ranges from c.1.5m to c.2.1m.</p> <p>The Brasllyd seam (locally known as the "Brass" or "Peacock" seam) is shown to outcrop adjacent to the north western boundary of the northern portion of the site. The thickness of the Brasllyd seam is c.0.9m to 1.2m. It is likely this seam has been removed during the opencast works c.1995 – c.2003.</p>

Table 3: Summary of Relevant Geological Data	
Strata	Description
Geological structure	Review of geological sheet SN71SE details beds in the area to dip south southwest/southwest, the geological map also indicates that folding and faulting is present. Faulting includes reverse faults that downthrow to the south east and normal faults that downthrow to the west. Faults within the site are of an unknown displacement.
Ground Dissolution Hazard Rating	Negligible hazard rating.
Compressible Ground Hazard Rating	Very low hazard rating.
Collapsible Ground Hazard Rating	Very low hazard rating.
Landslide Ground Stability Hazard Rating	Very low to moderate hazard rating. A moderate hazard rating for landsides has been identified in the northern region of the site. Where a moderate hazard rating has been identified there is significant potential for slope instability with relatively small changes in ground conditions. The hazard rating elsewhere is very low.
Running Sand Ground Stability Hazard Rating	Very low hazard rating.
Shrinking or Swelling Clay Hazard Rating	Very low hazard rating.

3.2 Natural Soil Chemistry

- 3.2.1 Natural concentrations for a selection of determinants have been estimated by the BGS and are shown in Table 4 below. These are estimated on a regional basis and should not be taken as representative of the actual soil chemistry of the site.

Table 4: Summary of BGS Estimated Soil Chemistry					
Determinant	Arsenic	Cadmium	Chromium	Lead	Nickel
Estimated Site Concentration Ranges (mg/kg)	15-35	<1.8	60-90	<100	15-30

3.3 Hydrogeology

- 3.3.1 Hydrogeological information has been obtained from a review of the Groundsure Report.
- 3.3.2 This information indicates the site to be underlain by Superficial Deposits which are classified as a Secondary Undifferentiated aquifer. These are deposits which are variable in nature and thus difficult to classify.
- 3.3.3 The underlying solid strata are classified as a Secondary A Aquifer. Secondary A Aquifers are described by the Environment Agency / Natural Resources Wales (EA / NRW) as being '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'.
- 3.3.4 The site does not lie within in a groundwater source protection zone and there are none identified within 500m of the site. One groundwater abstraction license is observed within 2km of the site. The abstraction is historic and relates to general farming and domestic, the abstraction is detailed 1703m north west of the site boundary.
- 3.3.5 Four surface water abstraction licenses are noted within 2km of the site boundary ranging from 437m north of the site to 777m east of the site. All surface water abstractions are listed as historical and relate to dust suppression.

3.4 Soil Vulnerability Classification – Leaching Potential

- 3.4.1 The soil vulnerability classification groups the many different soil types of England and Wales into three soil vulnerability classes and six sub-classes. Each is based on the physical and chemical properties of the soil, which affect the downward passage of water and contaminants. This classification is not applied to soil above non-aquifers.

3.4.2 The on-site soil has been classified as having high leaching potential. Soil information for urban areas is based on fewer observations than elsewhere. A worst-case vulnerability classification of High (HU) is therefore assumed until proved otherwise.

3.5 Hydrology

3.5.1 There are four records for watercourses on site which are classified as inland rivers not influenced by tidal action, 10no. within 50m and 92no. within 250m of the site boundary. One culverted water course was observed between the two portions of the site during the site walk over.

3.5.2 The EA/NRW maintains national flood maps based on ground levels, predicted flood levels, information on flood defences and local knowledge. The flood maps show the predicted likelihood of flooding in an area relating to the context of current and proposed land use (considered in development planning).

3.5.3 The site itself does not lie within a designated flood zone (from rivers and the sea).

3.5.4 The site is not designated with an NRW flood zone prediction. The nearest flood zone is 104m north west of the site. NRW Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea.

3.5.5 The risk of flooding from rivers and the sea (RoFRaS) is recorded as very low for the site itself and less than a 1 in 1000 chance of flooding in any given year.

3.5.6 Groundwater flooding susceptibility areas (based on the British Geological Survey) within 50m of the site have been identified. Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

3.5.7 Where a potential for groundwater flooding has been identified, a flooding hazard should be considered in all land-use planning decisions.

3.6 Mining

- 3.6.1 The Groundsure Geo-Insight Report identifies coal mining activities onsite, it also states non-coal mining activities took place within 78m north west of the Application Site boundary. The non-coal mining commodity is described as iron ore and localised small-scale underground mining may have occurred.
- 3.6.2 Unspecified disused mining and opencast works are detailed within the Application Site boundary (dating to 1965).
- 3.6.3 Four shafts are detailed within 100m of the Application Site boundary, three are located to the west of the southern portion, one to the west of the northern portion of the site.
- 3.6.4 A Coal Mining Risk Assessment (CMRA) has been commissioned for the site, WA Report CA11620-003 has been produced. The following information is summarised from the CMRA; Five shafts and 4no. adits are recorded directly within the site foot print or between the northern and southern parcels. All 5no. shafts have been removed to the Peacock Seam. The 4no. adits have been removed to the Peacock Seam where they intersect the opencast area. Parts of the adits located within the highwall are likely to remain present.
- 3.6.5 The Coal Authority interactive viewer states that shallow underground coal mining has taken place in the west of the site. The extent of underground mining at the site is unknown. Information utilised from the WA LLP CMRA outlines that almost the entire investigation site was opencast between c.1995 - c.2003 to c.60m depth and to the depth of the Peacock coal seam.
- 3.6.6 A small area within the west of the southern portion of the site and two areas in the northwest and southwest of the northern portion of the site are unlikely to have been fully opencast given the boundary of the opencast site. Remnant coal mine workings at shallow depth are likely to be found beneath those areas of the site that lie outside of the opencast extent.

4 ENVIRONMENTAL SETTING AND CONSULTATIONS

4.1 Statutory Sources

4.1.1 Information from various statutory sources has been summarised from the Groundsure report, prepared specifically for this site, and included as Appendix V.

4.2 Contaminated Land Register Entries and Notices

4.2.1 No contaminated land entries or notices are identified within 500m of the site.

4.2.2 There are no records of sites being determined as contaminated land under Section 78R of the Environmental Protection Act 1990 within 500m of the study site.

4.3 Waste Management

4.3.1 The Groundsure report indicates one waste transfer site within 500m of the site boundary. The entry relates to a recycling site 417m north west of the site boundary.

4.3.2 The Groundsure report details no historic landfill sites within 1000m of the site boundary.

4.4 Pollution Incidents

4.4.1 The Natural Resources Wales data via the Groundsure report indicates there has been eight incidents of wastes impacting upon controlled waters within 500m of the site boundary, none of these position within the site itself. The incidents date from 2002 to 2016 and include crude sewage and firefighting contaminated water. The impact to water, land and air range from no impact to minor. All incidents locate to the west and southwest of the site and the most proximal pollution incident located 199m west.

4.5 Discharge Consents

4.5.1 The Groundsure report details one recoded licensed discharge consent within the site boundary which is related to the historic Waun Lwyd North Opencast Site. The discharge consent related to unspecified discharge to an unnamed tributary of the River Twrch, the discharge consent was revoked in 1992. A further five discharge consents are recorded within 500m of the site boundary from 6m – 475m. Only one of the discharge consents retains an effective status, located 312m south west of the site boundary and relates to sewage discharges.

4.5.2 There are no records of Red List Discharge consents within 500m of the site.

4.6 Pollution Prevention Controls

- 4.6.1 The Natural Resources Wales data via the Groundsure report indicates there are no records of Part A(1) Integrated Pollution Prevention and Control (IPPC) authorised activities within 500m of the site.
- 4.6.2 One record of a Part A(2) and Part B Activities Environmental Permit is noted 41m northwest of the site boundary. The permit relates to Celtic Energy Ltd, Bryn Henllys. The Permit related to mineral activity and has been revoked. No other permits are detailed within 500m of the site boundary.

4.7 Dangerous Substances

- 4.7.1 The Natural Resources Wales data via the Groundsure report indicates there are no Dangerous Substance Inventory records within 500m of the site.

4.8 Dangerous or Hazardous Sites

- 4.8.1 There are no records of Control of Major Accident Hazards (COMAH) & Notification of Installations Handling Hazardous Substances (NIHHS) sites within 500m of the study site.

4.9 Prosecutions and Enforcements

- 4.9.1 There are no records of prosecutions or enforcements in relation to Part 2(A) or Part B activities, hazardous substances consents or pollution incidents within the site or surrounding area.

4.10 Designated Environmentally Sensitive Sites

- 4.10.1 There are a number of legal or planning constraints relating to wildlife habitats and protected plant and animal species. Wildlife habitats and protected species can occur on or adjacent to a site. They can also be linked via surface or groundwater and can be affected by activities on the site such as noise, dust or pollution.
- 4.10.2 It is recommended that a Preliminary Ecological Appraisal Report is undertaken. This report will identify all habitats onsite and all potential ecological constraints.
- 4.10.3 Reference to the Groundsure (Enviro Insight) report indicates that there is one recorded Sites of Special Scientific Interest (SSSI) within 2000m of the site. The site is named Cwm Twrch and lies 124m north of the northern portion of the site. The site is notable for its geology. River erosion provides the best exposes the Amman Marine Band, a sedimentary layer showing a diverse fauna of fossils.
- 4.10.4 There are no recorded National Nature Reserves (NNR) within 2km of the site.

4.10.5 There are no recorded Special Area of Conservation, Special Protection Area or Ramsar sites within 2000m of the site.

4.10.6 There are 62no records of Ancient and Semi-Natural Woodland within 2000m of the site, 4no. within 50m, 8no. within 250m.

4.10.7 There are no records of a Local Nature Reserve within 2000m of the site.

4.10.8 Other non-statutory sites (e.g. Sites of Importance for Nature Conservation) which are protected by Local Planning Authority (LPA) policy rather than statute are omitted, as are Biodiversity Action Plan (BAP) habitats which are 'protected' by Planning Policy Wales (PPW).

4.11 **Japanese Knotweed, Himalayan Balsam and Giant Hogweed**

4.11.1 Many foreign plants were introduced to Britain in the 19th Century, mainly for ornamental reasons. A few have become aggressively dominant, creating serious problems in some areas. The Wildlife and Countryside Act 1981 states that it is an offence to "plant or otherwise cause to grow in the wild" any plant listed in Schedule nine, Part II of the Act. This lists over 30 plants including the terrestrial plants, Japanese knotweed and giant hogweed. Their spread is primarily the result of human activities, which aid their dispersal along linear corridors such as railway tracks, rivers and road verges. By forming dense stands, they can displace native species and reduce wildlife interest.

4.11.2 None of the mentioned invasive plants were identified on site during the site walkover. However, it should be noted that the survey was not specifically for ecological or invasive weed purposes. An ecological survey is recommended.

4.12 **Environmental Management**

4.12.1 The overall standard of housekeeping and environmental management was observed to be very good in general across the site. Long grass was observed during the site walk over.

4.13 **Asbestos**

4.13.1 A review of aerial photographs and historical maps has not identified the presence of historic structures/buildings on site with exception to a historic brick works that may have encroached into the western site area. In addition, there are gaps in mapping and therefore it is possible that unrecorded structures existed that could have been constructed out of asbestos containing materials.

4.13.2 There is also potential for asbestos to be present within made ground on site associated with its past use as an opencast site. The nature of the opencast backfill materials is unknown and the detailed restoration plans are not available for inspection. Based on our experience however, opencast backfill materials typically comprise of rockfill and unsaleable Coal Measures strata (coal, mudstone, siltstone etc).

4.14 Radon

4.14.1 Radon can be a hazard within built developments and especially within enclosed or confined spaces. The Health Protection Agency and British Geological Survey document "Indicative Atlas of Radon in England and Wales" (2007) provides a summary of the number of homes in a given area which are above the "Action Level" for radon.

4.14.2 Although the radon atlas relates directly to measurements taken from homes or dwellings, it is also relevant to employers assessing risks for enclosed underground and ground floor work places.

4.14.3 The BRE document "Radon: guidance on protective measures for new buildings" (2015) provides guidance for reducing the concentration of radon in new buildings and a two-stage procedure using accompanying maps needed to determine the level of protection for a given site. The Groundsure report details the site is in a Radon Affected area, with between 1-3% of properties displaying records above the action level.

4.14.4 No protective measures are required for new developments at the investigation site.

4.15 Historical and Industrial Land Use

4.15.1 The Groundsure report records data on sites with a potentially contaminative past land use. The data details 153no entries of potentially contaminative uses within or within 500m of the site. Ten of the entries are listed within the site boundary, these are listed as a colliery, old brick works, coal levels, unspecified disused mine, refuse heap and opencast workings.

4.15.2 The Groundsure Report also details 10no. records of potentially infilled features/land on site. These are derived from the historical mapping and relate to the previously stated industrial land uses.

4.15.3 It should be noted that the brick works is highlighted as being located within the site boundary in the Groundsure report. However, based on review of the historic mapping

it appears that the brick works was located outside and west of the site boundary however extents may have changed between mapping editions and encroached within the site boundary. For the purposes of this Desk Study it is assumed that part of the bricks was located within site boundary.

4.15.4 A railway line is located adjacent to the western and north western boundary of the site.

4.15.5 There are seven listed records of tanks within 500m of the site boundary. They range from 69m - 277m from the site boundary and are listed as unspecified tanks.

4.15.6 The Groundsure report lists no fuel stations within 500m of the site boundary.

4.15.7 Information obtained by WA LLP shows a former red ash tip on the western boundary of the northern portion of the site, a small part of the red ash tip intersects the northwest corner of the northern site portion. Review of aerial photographs highlights a tip area to the northwest of the site; however, it is difficult to ascertain the extent of the tip. The red ash tip was not observed during the site walk over and the ash tip is not highlighted within the historical mapping editions. The detailed restoration plan of the site is unavailable for inspection and therefore we do not know how the red ash tip was dealt with and whether this material remains in-situ.

4.16 **Potentially Infilled Land**

4.16.1 There are 131no records of potentially infilled land on site relating previous activities within or within 500m of the site boundary. Ten of the records relate to infilled land within the site boundary associated with unspecified disused mine, refuse heaps, colliery, old brick works, coal levels, and opencast workings.

4.17 **Archaeology**

4.17.1 Examination of historical mapping has not identified any archaeological features on-site. Preliminary examination of the Archi UK online data source indicates that the general vicinity of the study site contains 222no. sites within a 10km radius of the site and may be of archaeological interest. Further specialist surveys are recommended.

4.18 **Unexploded Ordnance**

4.18.1 A preliminary Unexploded Ordnance (UXO) threat assessment has been commissioned as part of this desk study. The assessment was undertaken by Zetica Ltd, who are a specialist in risk mitigation and the removal and management of UXO. A copy of the UXO Pre-Desk Study Assessment can be found in Appendix VIII.

4.18.2 Preliminary review of readily available sources indicates the site is not located at or near World War I or World War II military activity sites (this includes activity sites identified pre- and post-war).

4.18.3 The report displays transport infrastructure and public utilities as strategic targets within 5km of the site during both WWI and WWII.

4.18.4 During WWII the site was located within the Rural District (RD) of Ystradgynlais, which officially recorded 6no. High Explosive (HE) bombs with a bomb density of 0.3 bombs per 405 hectares. However, no records have been found to indicate that the site was bombed.

4.18.5 The initial assessment undertaken by Zetica Ltd states that a detailed desk study, whilst always prudent, is not considered essential in this instance.

4.19 Local Authority Environmental Searches

4.19.1 As part of the desk study the Local Authority Environmental Health Department were commissioned to provide a review of Local Authority environmental records for the site and local area.

4.19.2 Powys Local Authority have confirmed that the site is in a 'development high risk area' as defined as the Coal Authority. It is stated that gas protection measures will be required in any buildings onsite.

4.19.3 The council have identified the following potential contamination features in and around the site:

Table 5: Recorded Contamination Features		
Feature	National Grid Reference	Location
Unknown filled ground, mining & quarrying, mining of coal & lignite	276320, 212440	Approximately 380m east site.
	275470, 212230	Approximately 550m south west of site.
	276110, 211370	Approximately 1.1km south east of site.
	276606, 211340	Approximately 1.3km south east of site.
	276380, 211290	Approximately 1.3km south east of site.
	276210, 213750	Approximately 1.3km north of site.
	275880, 213050	Approximately 550m west of site.
Mining of coal & lignite	275950, 212620	Located within the south of the northern site.

Heap, unknown filled ground, quarrying & mining	275720, 212590	Approximately 250m west of site.
Former Gilfach Colliery	275940, 211490	Approximately 1kn south of site.
Glyn Cynwal Isaf Landfill	275960, 211250	Approximately 1.2km south of site
Tir Canol Landfill	277130, 211550	Approximately 1.5km east of site.

4.19.4 The council holds no records of UXO or groundwater abstraction records for the site or surrounding land.

4.19.5 The Powys Council Environmental Response is displayed within Appendix VII.

DRAFT

5 CONCEPTUAL SITE MODEL

5.1 Environmental Issues

5.1.1 Conclusions are drawn from the preceding information in terms of potential sources of contamination, possible receptors that may be affected by any sources of contamination and the pathways that exist between source and receptor. This basic risk assessment allows identification of the suitability of the site for its current and future use and evaluation of any potential environmental liability that may be attached to the site.

5.1.2 The issues associated with contamination can broadly be addressed as follows: land contamination, groundwater contamination, surface water contamination, ground gases and air pollution.

5.2 Sources

5.2.1 Backfilling the historical opencast mine to its present condition will present the potential for made ground and/or reworked naturally occurring materials. The presence of made ground/backfilled material may also give rise to contaminants such as asbestos, heavy metals, sulphates, polychlorinated biphenyls, polyaromatic hydrocarbons and petroleum hydrocarbons, along with the potential for the generation of ground gases and associated explosive and asphyxiation risks. There is also a potential risk of ground gas associated with historical mine workings.

5.2.2 A review of the historical maps and aerial photographs confirms that the main buildings associated with the former opencast mine were located off site and to the east. However, it is possible that an old brick works encroached into western site area. In addition, there are gaps in mapping and therefore it is possible that unrecorded structures existed that could have been constructed out of asbestos containing materials.

5.2.3 Information obtained by WA LLP shows a former red ash tip located on the western boundary of the northern portion of the site. Part of the ash tip may have intersected the northwest corner of the northern portion of the site. The red ash tip was not observed during the site walk over however there are no details available on the restoration of this area and whether the red ash tip remains in-situ.

5.2.4 The type of explosive that was likely utilised within the opencast is ANFO which is a widely used as bulk industrial dry powered explosive consisting of ammonium nitrate and fuel oil. An ANFO gel explosive may have been used in wet conditions.

- 5.2.5 General surface water runoff and water discharging from the mine is likely to have been routed to settling ponds on site. A flocculating or clarifying agent (dry or liquid form) would have been added to the water to promote suspended solids (silt etc) to form aggregates (flocs) which would likely have been skimmed off and disposed of. Water would have been discharged into the environment/to a local surface water body. A commonly used flocculating agent is polyacrylamide which is a chemical compound (acrylamide) that decomposes to form ammonia, carbon dioxide and oxides of nitrogen.
- 5.2.6 A general understanding of the restoration and aftercare scheme approved by Powys County Council is discussed in Section 3, details of the proposed scheme and undertaken restoration by Celtic Energy are unknown.
- 5.2.7 Restoration would have included:
- Natural or artificial drainage of the site including during and after backfilling;
 - Replacement of topsoil, subsoil and any suitable soil forming material;
 - Restoration of land to agriculture, woodland or amenity uses;
 - Removal of buildings, plant and machinery on completion of the final phase of restoration; and
 - Restoration of the private access road.
- 5.2.8 Aftercare provisions included:
- Tree planting and landscaping;
 - Cultivations, seeding and management of grassland health and woodland;
 - Fertiliser and lime application based on soil analysis;
 - Grazing management;
 - Field water supplies;
 - Ditched/watercourses and piped ditch systems to control water runoff and prevent erosion and a piped drainage system consistent with good practise for restoration of land to the uses specified; and
 - Any agricultural treatment particularly relevant to the site.
- 5.2.9 The degree to which any 'contaminated land or potentially contaminated land' was investigated and remediated to a standard fit for the proposed land end use

(agriculture, woodland or amenity uses as defined in Planning Condition 9) is unknown at this stage.

5.2.10 Identification of potentially significant contamination sources on and off site is based on the available desk study information and does not take into consideration potential remediation undertaken during the restoration and aftercare scheme as this information is unavailable for inspection. No information relating to the restoration of the site is held by the Environmental Health Officer at Powys County Council.

5.2.11 Site investigation and assessment at an adjacent development site within the former Bryn Henllys Mine has not identified the presence of metal, inorganic or organic contamination, asbestos containing materials or loose fibres within the backfill samples tested. The current study site lies within the same restoration area as the adjacent land and if the study site was restored to a similar state as the adjacent site, the potential for encountering contaminated land could be judged as low.

5.2.12 This assessment is however qualitative at best because we have little detailed information on the restoration process and materials utilised and an absence of site-specific data. Therefore, the potential for encountering contamination associated with historical land use and environmental setting should be assessed based on the desk study findings and potential contaminant linkages identified.

5.3 Potentially Significant Contamination Source on Site:

1. Potentially contaminative historic land use associated with opencast mine works;
2. Potentially contaminative historic land uses within site boundary as listed within the Groundsure Enviro Insight Report: colliery, old brick works, coal levels, unspecified disused mine and refuse heap/s;
3. Backfilled material (made ground) associated with known infilled ground, opencast or pond in south of northern portion of land and potentially infilled land within site boundary as listed within the Groundsure Enviro Insight Report unspecified disused mine, refuse heaps, red ash tip in northwest corner of northern portion of site, colliery, old brick works and coal levels; and
4. Ground gas from backfill materials/made ground and mine gas from historical shallow mine workings.

5.4 Potentially Significant Contamination Source off Site (<250m radius):

5. Works associated with opencast and shallow mine workings;

6. Backfilled material (made ground) within opencast workings;
7. Refuse heap/s including red ash tip western edge of site (ash tip possibly encroaches into the northwest corner of the site);
8. Former railway line adjacent to the west and north west of the site;
9. Tank located 80m west of site;
10. Brick works 150m north west of site; and
11. Infilled pond 80m north of the site.

5.5 Pathways

5.5.1 Whilst potential contaminant sources have been identified in relation to the site, a viable pathway must exist between the sources and receptors in order for a risk to be present. The level of risk posed by a potential contaminant source is therefore largely dependent on the viability of pathways and receptor sensitivity.

5.5.2 Humans may be exposed to contamination at the site via the following:

- Ingestion of soil;
- Ingestion of dust/fibres;
- Dermal contact with soil;
- Dermal contact with dust/fibres;
- Inhalation of fugitive soil dust/fibres; and
- Inhalation of vapours.

5.5.3 These pathways are considered viable for both construction workers and future solar farm maintenance staff. However, it is expected that construction workers will be equipped with appropriate PPE, follow appropriate safe working procedures. Construction workers and future solar farm maintenance workers are expected to spend a relatively short period of time on site, thereby largely mitigating potential effects on them. Permanent site based human receptors are not anticipated in association with the proposed solar photovoltaic farm.

5.5.4 The potential pathways in relation to groundwater contamination are as follows:

- Any contamination within the near surface soils has the potential to leach and to be transmitted to groundwater via percolation (i.e. Secondary A aquifer below site). The near surface deposits that underlie the site are likely to consist of

reworked superficial deposits and opencast backfill in the form of reworked Middle Coal Measures strata (mudstone, siltstone, coal and occasional sandstone). Granular materials which are likely to be permeable will give rise to the potential for vertical and lateral hydraulic continuity between groundwater within the made ground and any potential groundwater within the underlying aquifer. The presence of clay material is likely to limit the flow where present. The backfilled made ground deposits will likely position directly above the bedrock (Secondary A Aquifers), as such, there is potential for direct hydraulic continuity between the made ground and bedrock aquifer.

- Similarly, there is the potential for groundwater contamination associated with the identified off-site sources to migrate beneath the site via the permeable strata within the Secondary A aquifer;

5.5.5 The potential migration pathways in relation to surface water are:

- Surface run-off and/or shallow groundwater flow into any drains/springs/rises on site and surrounding the site; and
- Migration of any groundwater contamination derived from the site to the onsite and local surface water features, including drains and issues.

5.5.6 The potential migration pathways identified in relation to ground gas are:

- Any gas generated by shallow deposits at the site (e.g. any made ground present) may have the potential for direct upwards migration; and
- Gas generated from historical shallow mine workings may have the potential to migrate upwards through fissures and backfill materials.

5.6 Receptors

5.6.1 The critical receptors in relation to human health are considered to be construction workers during site development and future site occupiers which in this type of development will be limited to periodic visits by solar farm maintenance staff. Therefore, the proposed end use is considered to be of low receptor sensitivity.

5.6.2 Based on the worst-case scenario of an acute risk to human health from any of the contaminant sources identified above during the construction phase, the potential severity of effects is considered to be low to moderate.

5.6.3 The definition of controlled waters includes groundwater, rivers, lakes and ponds. The sensitivity of controlled water as a receptor is medium. The site is underlain by the

Middle Coal Measures, identified by the Natural Resources Wales as a Secondary A aquifer. Based on the worst-case scenario that the aquifers are polluted by contaminants leached from onsite soils, the potential severity of effects is considered to be low to moderate.

- 5.6.4 A pond and drains are noted within the site boundary in the 2002 historical map edition, other surface water features are noted surrounding the site including The River Twrch (c125m west). The River Twrch is the nearest identifiable River to the site, at its closest point c125m west of the site (north of site), smaller issues are noted to the south of the site which later join the River Twrch further west. The sensitivity of controlled water as a receptor is medium. Due to potential for surface runoff and groundwater migration to and from the site, the potential severity of effects is considered to be low to moderate.
- 5.6.5 The sources, pathways and receptors provided above have been assessed using Table 5 below, which is generally based on guidance within CIRIA C552 "Contaminated Land Risk Assessment A Guide to Good Practice" (2001). The outcome of this assessment is summarised in Table 6, which provides a preliminary CSM based on the current understanding of the site. This includes a preliminary classification of the possible level of risk associated with each source-pathway-receptor linkage. As the assessment of the site is currently at desk study stage, this is based on qualitative judgement with regard to currently available information.

Table 6: Risk Assessment Matrix				
Receptor Sensitivity		Low	Medium	High
Contaminant Source (Potential Severity of Contamination)	Low	Low	Low to Moderate	Moderate
	Moderate	Low to Moderate	Moderate	Moderate to High
	High	Moderate	Moderate to High	High
<p><u>Notes</u></p> <p>The classification of “high”, “moderate” or “low” is made based on qualitative judgement. Discussion of the risk classification assigned in the CSM is provided below.</p>				

Table 7: Preliminary Conceptual Site Model			
Source	Pathway	Receptor	Risk
Human Health			
<p>On-Site:</p> <ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and other listed historic site uses Enviro Insight report colliery, old brick works, coal levels, unspecified disused mine and refuse heaps. Red ash tip possibly encroached into the northwest site area. Opencast operations – these include blasting explosives, lubricants/oils/fuels associated with site plant/vehicles, and potential flocculating agents Asbestos – potential for asbestos in the made ground and associated with historic buildings. Ground gas – made ground, mine workings <p>Off-Site:</p>	<ul style="list-style-type: none"> Ingestion of soil Ingestion of dust Dermal contact with soil Dermal contact with dust Inhalation of fugitive soil dust Inhalation of vapours Inhalation of vapours 	Human health - construction and maintenance workers (low receptor sensitivity for proposed site end use)	Low to moderate

Table 7: Preliminary Conceptual Site Model			
Source	Pathway	Receptor	Risk
<ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and surrounding historic land uses related to mining (including former red ash tip). Ground gas – made ground, mine workings Former railway line adjacent to the west and north west of the site. Former tank identified 80m west of site in historic mapping. Infilled pond 80m north of site. Former brick works identified 150m north west of site in historic mapping. 			
Groundwater			
<p>On-Site:</p> <ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and other listed historic site uses Enviro Insight report colliery, old brick works, coal levels, unspecified disused mine and refuse heap. Red ash tip possibly encroached into the northwest site area. Opencast operations – these include blasting explosives, lubricants/oils/fuels associated with site plant/vehicles, and potential flocculating agents. <p>Offsite:</p> <ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and surrounding historic land uses related to mining (including former red ash tip). Former railway line adjacent to the west and north west of the site. Former tank identified 80m west of site in historic mapping. Infilled pond 80m north of site. Former brick works identified 150m north west of site in historic mapping. 	<ul style="list-style-type: none"> Leaching of made ground. Shallow groundwater migration within made ground. Vertical migration to the underlying solid aquifers. Ingress of contaminated groundwater from identified off-site sources (either via superficial or solid aquifers). 	Controlled Waters (Secondary A Aquifer moderate receptor sensitivity).	Low to moderate

Table 7: Preliminary Conceptual Site Model

Source	Pathway	Receptor	Risk
Surface Water			
<ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and other listed historic site uses Enviro Insight report colliery, old brick works, coal levels, unspecified disused mine and refuse heap. Opencast operations – these include blasting explosives, lubricants/oils/fuels associated with site plant/vehicles, and potential flocculating agents 	<ul style="list-style-type: none"> Surface run-off and / or shallow groundwater flow. Groundwater baseflow within solid and/or bedrock aquifers. 	Drains/springs/rises/issues on site and within local surrounding area. Local river system. Moderate receptor sensitivity.	Low to moderate
Ground Gas			
<p>On-Site:</p> <ul style="list-style-type: none"> Shallow made ground deposits within the backfilled material associated with historic site uses specifically opencast workings and refuse heap. Shallow mine workings – potential of mine gas migration. Infilled pond 80m north of site. <p>Offsite:</p> <ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and surrounding historic land uses related to mining (including former red ash tip). Infilled pond 80m north of site. 	<ul style="list-style-type: none"> Vertical migration of any gas generated on site. Lateral gas migration within the superficial deposits from identified off-site gas sources. 	Human health during construction especially working in confined spaces e.g. excavations. No occupied buildings are proposed on the site area. There is potential accumulation of gas at proposed substations within confined spaces (design and construction unknown at this stage)	Low to moderate
SSSI and Ancient Woodland			
<p>On-Site:</p> <ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and other listed historic site uses Enviro Insight report colliery, old brick 	<p>SSSI (geological exposure)</p> <ul style="list-style-type: none"> No relevant exposure pathways 	The receptor sensitivity of the protected sites is high by virtue of their protected status. Cwm	Cwm Twrch SSSI – Very Low

Table 7: Preliminary Conceptual Site Model			
Source	Pathway	Receptor	Risk
<p>works, coal levels, unspecified disused mine and refuse heap. Red ash tip may have encroached into the northwest of the site.</p> <ul style="list-style-type: none"> Opencast operations – these include blasting explosives, lubricants/oils/fuels associated with site plant/vehicles, and potential flocculating agents. <p>Offsite</p> <p>Offsite:</p> <ul style="list-style-type: none"> Made ground / soil contamination associated with backfilling of historic opencast workings and surrounding historic land uses related to mining (including former red ash tip). Former railway line adjacent to the west and north west of the site. Former tank identified 80m west of site in historic mapping. Former brick works identified 150m north west of site in historic mapping. 	<p>Ancient woodland:</p> <ul style="list-style-type: none"> Surface run-off and / or shallow groundwater flow, drainage conditions, generation of dust <p>It should be noted that the available restoration plans detail that the restoration scheme needed to include provision for restoration of land to agriculture and woodland with respect to soil replacement and drainage and therefore the risk to the local ancient woodland is considered to be very low.</p>	<p>Twrch lies 124m north of the northern portion of the site. Within 250m of the site are several records of ancient woodlands located between 6m north and 154m west.</p>	<p>Ancient woodland: very low</p>

5.6.6 The rationale for each of the preliminary risk assessment classifications within Tables 5, 6 and 7 is discussed below.

5.7 Risks to Human Health (Future Site Users)

5.7.1 The identified potential contamination sources are generally considered to be low to moderate risk and therefore the potential of soil contamination is considered to be low to moderate.

5.7.2 The receptor sensitivity is considered to be 'low', in accordance with current contaminated land legislation due to the end use being commercial/industrial and this also takes into consideration that future solar farm maintenance workers would be on site for short periods of time i.e. no permanent occupation of the site.

5.7.3 The combination of a low receptor sensitivity and low to moderate severity of contamination provides a preliminary qualitative risk classification to human health of 'low to moderate'.

5.7.4 Investigation of the site and ground conditions is required to clarify the risk and to determine the potential liability.

5.8 Risks to Construction Workers

5.8.1 It is assumed that risks to construction workers will be generally low due to short exposure periods and use of personal protective equipment (PPE). Subsequently, the risk to construction workers is classified as 'low'.

5.9 Risk to Groundwater

5.9.1 The principal receptors are groundwater within the backfilled/made ground materials and the underlying a Secondary A aquifer (bedrock). Historically the site would have been underlain by superficial deposits which are classified as a Secondary Undifferentiated Aquifer, however these materials would have been stripped away and removed by opencast mining activity. The superficial materials are likely to have been reworked and reinstated during the backfilling of the opencast pit.

5.9.2 The identified potential contamination sources are generally considered to be low to moderate risk. Accordingly, the 'contaminant source' criterion for the risk to groundwater has been assessed as 'low to moderate'.

5.9.3 Investigation of the site and ground conditions is required to clarify the risk and to determine the potential liability.

5.10 Risk to Surface Water

5.10.1 The principal receptors are the drains/rises/issues on site, drains/rises within the local area and the River Twrch c125m west of the site.

5.10.2 The receptor sensitivity is considered to be low to moderate. Together with a 'low to moderate' contaminant source, this would provide an overall risk to surface water of 'low to moderate' based on professional judgement.

5.10.3 Investigation of the site and ground conditions is required to clarify the risk and to determine the potential liability.

5.11 Ground Gas

5.11.1 The potential gas generation sources are considered to have 'low to moderate' gas generation potential.

5.11.2 Receptor sensitivity for ground gas risk is considered to be 'low' and in conjunction with a 'low to moderate' contamination source this would provide a ground gas risk classification of 'low to moderate'.

5.11.3 Depending on the requirement for as yet unplanned maintenance buildings or additional site structures on site, there may be a requirement to monitor and measure the potential risk of gas accumulation within the building to ensure risk is quantified and mitigated.

5.12 Summary

5.12.1 The preliminary risk assessment identifies a low to moderate risk. A low level of risk is defined as *'it is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would as worst normally be mild.'*

5.12.2 A moderate level of risk is defined as *'it is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.'*

5.12.3 Site investigation is recommended to quantify the risk and to determine the potential liability.

6 CONCLUSIONS AND RECOMMENDATIONS

- 6.1.1 Historically, the site was occupied by agricultural land, coal levels were noted in early mapping editions within the southern part of the northern portion of the site. Opencast workings dominate the majority of the southern portion of the site and the eastern area of the northern portion from 1965. By the 1980's restoration of the opencast has taken over the site. By c.1995 the site is re-excavated for further opencast coal mining activities. Almost the entire site was excavated to the peacock seam c.60m below ground level. A small area within the west of the southern site portion and two areas in the northwest and southwest of the northern site portion are unlikely to have been fully opencast given the boundary of the opencast site. Opencast activities are estimated to end c.2003. The site is laid to agricultural ground by the latest editions.
- 6.1.2 Geologically, the site is underlain by suspected backfilled opencast material, likely to comprise of reworked Middle Coal Measures deposits. The original Superficial Deposits would have likely been excavated away as part of the opencast activities; however, it is unknown if these materials have been redeposited during reclamation works. The underlying bedrock comprises of Middle Coal Measures.
- 6.1.3 The geological hazard ratings as listed in the Groundsure report include; shrink/swell clays, landslide activity, ground dissolution, running sands etc are concluded to be very low and very low to moderate (landslides).
- 6.1.4 A preliminary conceptual model has been developed for the site. The potential sources of contamination identified include backfilled opencast/made ground and activities associated with the opencast mine including explosive use, plant/vehicle use on site and former adjacent land uses as listed in paragraph 5.4.
- 6.1.5 The main pathways identified are direct exposure to humans, groundwater dissolution and migration, runoff and groundwater flow into surface waters and ground gas migration and build up.
- 6.1.6 The principal receptors identified are construction workers, future solar farm maintenance staff, groundwater and surface water. Ancient woodlands and Cwm Twrch SSSI are also highlighted as potential receptors.
- 6.1.7 The preliminary UXO desktop threat assessment concludes a low risk from UXO and that a detailed assessment is not considered to be essential.

- 6.1.8 Based on the available information summarised within this report, the site is considered to present a low to moderate environmental/ground condition risk associated with past use, adjacent operations, and the outline receptors and their respective vulnerabilities. The classification is made based on qualitative professional judgement.
- 6.1.9 Site investigation is recommended to quantify the risk and to determine the potential liability. The ground investigation strategy should be based upon the preliminary conceptual site model and the proposed re-development.
- 6.1.10 The general objectives of the ground investigation would be as follows:
- To obtain further information on the ground conditions at the site – soil types, stratigraphy, groundwater etc;
 - To obtain further information on the geology, hydrogeology and hydrology of the site and in relation to potential sources of contamination, pathways and receptors;
 - To provide further information to assist in the design of the main stage ground investigation;
 - To obtain data on the extent and nature of soil/water contamination, the geology, hydrogeology and hydrology of the site;
 - Data should be of sufficient quantity and quality, taking full account of site history, sources of contamination and likely heterogeneity of the ground conditions;
 - To reduce uncertainty in knowledge of the site enabling the initial conceptual model(s) to be refined and reassessment of risk;
 - To provide preliminary data to outline potential remedial options if required;
 - To establish parameters for design prior to the start of detailed design – foundation optioneering, bearing capacity criteria, settlement criteria, road and pavement construction and CBR design, if required; and
 - Provide information for adequate design of temporary and permanent works including method of construction, if required.
- 6.1.11 The ground investigation should be designed and carried out in accordance with the UK Specification for Ground Investigation, Environment Agency Document CLR11 Model Procedures, Environment Agency Guiding Principles for Contaminated Land (GPCL) 1-3, BS10175:2017 Code of Practice or investigation of potentially contaminated sites and BS5930:2015 Code of Practice for Ground Investigations.

6.1.12 The Local Environmental Health officer at Powys County Council should be informed of the ground investigation strategy in advance of works commencing to ensure regulatory engagement.

DRAFT

Appendix I
Standard Terms and Conditions

STANDARD TERMS AND CONDITIONS AND LIMITATIONS TO REPORTS

This Report is provided for the stated purpose and for the sole use of the client in accordance with the Terms and Conditions of Appointment under which the services were performed. The Report is confidential to the client and no other warranty, expressed or implied, is made as to the professional advice included in the Report or any other services provided by Wardell Armstrong LLP. This Report may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of Wardell Armstrong LLP.

The conclusions and recommendations contained in this Report are based upon information provided by others including details supplied by the client and/or professional advisors on the assumption that all relevant information from whom it has been requested and/or supplied is accurate. Information so provided and/or supplied has not been verified independently by Wardell Armstrong LLP, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by Wardell Armstrong LLP in providing the services are outlined in this Report. The work described in this Report is based on the conditions and information as stated at the date the Report was completed. The scope of this Report and the services are accordingly limited by these circumstances. The findings outlined in the Report together with any opinions expressed and recommendations made are considered to be valid and appropriate at the time of preparation and for the specific purpose or purposes intended. Whilst a walk over site visit may have been carried out as part of the work this has been limited to observations only and no other physical investigations, sampling and testing work has been carried out as part of this work.

Wardell Armstrong LLP disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report which may come or be brought to Wardell Armstrong LLP's attention after the date of the Report. Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Where any site observations have been carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results from any site observations made may vary and further confirmatory work should be made after the issuance of this Report. Wardell Armstrong LLP does not guarantee or warrant any estimates or projections contained in this Report.

Appendix II

Guidance on Contaminated Land and Quality Statements

CONTAMINATION

Environmental Protection Act Part IIA

Contaminated land was defined for the first time under Part IIA of the Environmental Protection Act 1990. Part IIA was inserted into the 1990 Act by section 57 of the *Environment Act 1995*. The regime came into effect in England on 1 April 2000, Scotland on 12 July 2000 and Wales on 15 September 2001.

Contaminated land is defined as “any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

- (a) significant harm is being caused or there is a significant possibility of such harm being caused;
- or
- (b) significant pollution of the water environment is being caused or there is a significant possibility of such pollution being caused.”

Harm is described in the EPA 1990 as being “*harm to the health of living organisms or other interference with ecological systems of which they form part and, in the case of man, includes harm to his property*”.

There are a number of important government policies and priorities underlying the Act. The first priority is to prevent the creation of new contamination by use of this Act and other controls such as Environmental Permitting (formerly regulated by Integrated Pollution Prevention and Control and Waste Management licensing). The second is to identify and remove unacceptable risks to human health and the environment. In addition there is a desire to bring contaminated land back into beneficial use whilst seeking to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

Under Part II(a), Local Authorities are responsible for the inspection of contaminated land and for ensuring that remediation is undertaken where necessary. Local Authorities also maintain a Public Register detailing the regulatory actions that they have implemented. The Environment Agency has a complementary role and act as the enforcing Authority for designated special sites.

The policy objectives are underlain by the “suitable for use” approach to the remediation of contaminated land, which the Government considers is the most appropriate approach to achieving sustainable development. This approach recognises that the risks presented by any given level of contamination will vary greatly on a site by site basis.

In general the responsibility for paying for remediation will, where feasible, follow the “polluter pays” principle. In the first instance, any person who caused or knowingly permitted the contaminating substance to be in, or under the land will be the appropriate person(s) to undertake

the remediation and meet its costs. If it is not possible to find such a person, responsibility will pass to the current owner or occupier of the land.

Planning Regime

Land contamination, or the possibility of it, is a material consideration for the purposes of town and country planning. This means that the planning authority has to consider the potential implications of contamination both when it is developing structure or local plans and when it is considering individual applications for planning permission. Under the suitable for use approach, risks should be assessed and remediation requirements set, on the basis of both the current use and its proposed new use.

Model Procedures for the Management of Contaminated Land - CLR 11

The Model Procedures for the Management of Contaminated Land (CLR11) was published by the Environment Agency and DEFRA in September 2004. It provides a technical framework for applying a risk management process when dealing with land affected by contamination in a way that is consistent with government policies and legislation within the UK.

The approach presented is designed to be applicable to a range of regulatory and non-regulatory contexts including:

- i. Development or redevelopment of land under the planning regime;
- ii. Regulatory intervention under Part IIA of the EPA 1990;
- iii. Voluntary investigation and remediation; and
- iv. Managing potential liabilities of those responsible for individual sites or a portfolio of sites.

The definition of contaminated land is based upon the principles of risk assessment. *“Risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence”.*

CLR 11 uses the concept of “pollutant linkage” and identifies that there are three essential elements for any risk:

- A **contaminant** – a substance that is in, on or under the land and has the potential to cause harm or cause pollution
- A **receptor** – something that could be adversely affected by a contaminant, such as people, an ecological system, property or a water body; and
- A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

Each of these elements can exist independently, but they only create a risk when all three are present and linked together.

CLR 11 is structured as follows:

Chapter 1 Overview of Model Procedures		
Chapter 2 Risk Assessment	Chapter 3 Options Appraisal	Chapter 4 Implementation of the Remediation Strategy
Preliminary Risk Assessment	Identification of feasible remediation options	Preparation of the implementation plan
Generic quantitative risk assessment	Detailed evaluation of options	Design, implementation and verification
Detailed quantitative risk assessment	Developing the remediation strategy	Long term monitoring and maintenance
Chapter 5 References and Glossary		

A Phase I Environmental Assessment provides the first stage of the risk assessment (Preliminary Risk Assessment in the table above). Further risk assessment (described in Chapter 2) and the subsequent sections (Chapters 3 and 4) of CLR11 are dealt with through site investigation and any subsequent remediation reports.

CLR11 defines the purpose of the Preliminary Risk Assessment to “*develop an initial **conceptual model** of the site and establish whether or not there are potentially unacceptable risks*”. It identifies that during a preliminary risk assessment “*the assessor collects and reviews largely desk-based information to prepare an initial conceptual model to identify possible pollutant linkages. The assessor then evaluates the possible linkages, using criteria appropriate to the risk assessment context*”.

CLR 11 states that “*Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process*”. The Conceptual model presents the characteristics of the site in diagrammatic or written form and shows the possible relationships between potential contaminants, pathways and receptors. This then forms the basis of the further risk assessment and any site investigation or other works.

RICS Guidance Note: Contamination, the environment and sustainability (GN13/2010)

The document is intended to provide guidance to chartered surveyors (members of RICS). It supersedes an earlier document "Contamination and its implications for Chartered Surveyors" (September 1997) which promoted the concept of a Land Quality Statement (LQS) as the written output of an environmental risk assessment.

In addition to contamination, the document provides a summary and guidance on other factors which might affect land value and environmental duties and/or liabilities. These factors assist with the overall assessment of the site and often provide valuable information to consider within the conceptual model required in CLR11. These factors include, but are not limited to, flooding and flood risk management, invasive species, mineral workings, shallow mining subsidence, natural subsidence risk and radon.

Section 11.8 of the RICS guidance note which sets out what is usually incorporated within a Land Quality Statement as follows:

- *a detailed description of the site and its location, by reference to a plan;*
- *a description of the current uses of the land and of the adjacent land;*
- *a summary of the site history, produced by reference to historical maps, archive records, and statutory, local authority and water authority registers and records;*
- *identification of potential contaminants associated with existing and previous uses, or with geological and hydrogeological features, through site investigation reports and the specialists' own observations;*
- *identification of other relevant issues, including those pertaining to archaeology, ecology, sites of special scientific interest (SSSIs), human population exposure and characteristics of off-site locations that could have an environmental impact or be sensitive to effects from the subject site;*
- *conclusions as to:*
 - *whether remedial treatment is necessary or prudent to enable the continued use of the property for its current use without undue risk to the health of persons using the property;*
 - *whether remedial treatment is necessary or prudent to reduce the risk of damage to a third party's health or property, or damage to the environment, which may give rise to a claim for damages, prosecution or action by the appropriate regulatory authorities;*
 - *if remedial treatment is not warranted, whether a residual risk of future claims from third parties and regulatory authorities remains;*
 - *whether concern regarding the risks associated with the known or suspected presence of contamination restricts the prudent use of the property compared with its likely range of possible uses if the site were uncontaminated;*
 - *if the property is to be redeveloped for a specified purpose, how much additional expense would be incurred in investigating contamination of the property further, and in carrying out any necessary remedial work, as compared with an uncontaminated property. Estimates produced prior to intensive investigations are often extremely broad; and*
 - *whether there is a likely implication from the foregoing for the value and/or the viability of development.*

Further information is available from a range of public and professional bodies including central government, local Council and the Environment Agency. Pertinent documents for additional information include Safe Development of Housing on Contaminated Land, 2014; , Managing and Reducing Land Contamination: Guiding Principles, 2010 and the Water Framework Directive (2000/60/EC, 23 October 2000).

Appendix III

Sources of Information

The following principal sources of information have been consulted in the preparation of this report:

- Ordnance Survey County and National Grid Series Plans;
- Information supplied directly by Powys Council;
- Groundsure Report;
- Other library archive information as relevant;
- British Geological Survey published maps and memoirs;
- Environment Agency/Natural Resources Wales database and public information;
- British Geological Survey borehole database;
- Coal Authority;
- In-house Wardell Armstrong archives; and
- Statutory Undertakers

Appendix IV

Site Visit Record and Photographs

SITE VISIT RECORD

Date of Visit: 18th June 2019.....

Client: Lightsource BP

Site Name: Bryn Henllys Solar Farm (Extension)

Refer to Drawing No: Photo locations key plan (attached at end of this report).....

Visited by: Marc Jones.....

Job No: CA11620

Site Contact Name: Mrs. Katie Davies

Access (key required): No key, but prior permission required from Mrs. Davies.....

Site Area (Ha): Approximately 25 ha over two groups of fields.

GENERAL SITE DETAILS

Relevant Identification (*names of buildings, roads etc*):

Two areas of enclosed fields immediately to the north and south of Waun Lwyd Farm, off Pen y graig Road, Ystradowen, Powys.

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Present Land Use:

Enclosed farm fields, currently empty of livestock.

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Adjacent Land Uses:

Farmed fields

.....

.....

Adjacent public highways, roads leading to / crossing / servicing the site:

No roads running across the fields. Private tracks adjacent to the western boundary of both areas.

Waun Lwyd Farm situated between the two areas accessed from Pen y Graig Road, Ystradowen.

.....

Site Access (*main access points, dimensions, by rig/excavator etc, footpaths*):

Via Waun Lwyd Farm yard (reached off Pen y Graig Road, Ystradowen) All fields have standard field gate access (3.6m wide).

.....

Site Boundary (*hedges, walls and fences open etc*):

All fields doubly bounded by stockproof fencing with hedgerow in between the fencing. Small lengths of boundary have no hedgerow. All fields accessible through standard 3.6m metal gates. ..

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.....

Topography (*general site setting, land gradients, slopes etc*):

. Predominantly uniformly sloping in a southerly direction

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.....

EVIDENCE OF LAND USE:

Archaeology (*old buildings, monuments, mounds, ditches, artefacts in soil, pottery/glass*):

No evidence of past use. Area known to be infilled former opencast coal mine.....

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.....

Site Relics (*evidence of past land use, building remains, roads, humps, bumps, hollows etc*):

None.....

Buildings (*general condition/construction, eg: brick/steel framed, asbestos, pits / basement, use*):

None.

.....

Storage Facilities (*eg: tanks/drums/chemicals/ capacity/condition/bunding/containment*):

Hard core hard standing in southwest corner of northern fields and in northwest corner of southern fields. Bagged hay stacked up in these areas. Photo locations 1 & 12 south

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Activities/Processes on Site (past and present/materials/equipment):

Former open cast area, now fully reinstated. Currently all the fields are empty of livestock and not ploughed or farmed – grass knee-high at time of visit.

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Observable Environment (*noise/dust/odours/emissions*):

Typically rural. None of the above seen / heard of note.

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Waste Management (*fly tipping/waste disposal/fires*):

None seen.

.....

Underground Services (*evidence of manholes, grates, culverts, water supply, telephone*):

None seen.

.....

Overhead Services (*overhead cables/pipes etc*):

Low voltage electricity cables / telephone line at extreme north western corner of southern fields – photo location 12 south.

.....

EVIDENCE OF GROUND CONDITIONS

Vegetation (*description and condition, tree, frequency and age, bare patches, saplings, new growth*):

All fields are on restored former opencast land. All hedgerows emplaced after circa. 2003. No vegetation (i.e. lone trees) other than in the hedgerows

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Ecology (*woodland, trees, hedges, ponds, running water, water loving plants, wild flowers, wildlife*):

Note that walk over survey carried out by engineering geologist, not an ecologist. Hedgerows planted circa 2003. All fields covered in grass. No ponds or running water seen in the fields. No water loving plants. Occasional wild flowers in the hedgerows. No wildlife noted.

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Soil Cover (*vegetated/unvegetated soil/made ground/hardstanding/condition/cracks/staining*):

Depth of soil cover not known, other than entire area is reinstated, restored former opencasted area. Initial research at time of survey suggests that at least 26m depth of backfilled rock underlies ground surface.

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Evidence of Geological Setting (*made ground, natural superfcials and underlying rock*):

Land is on Carboniferous rocks, previously excavated to Peacock coal seam level, approximately at least 26m below current ground level.....

Groundwater and Drainage (*ponding, streams, springs, wells, marshes, tides, rivers, etc*):

No groundwater seen; no ponding, streams, springs, wells, marshes seen (tides & rivers n/a).

.....
.....

Subsidence (*fissures, abrupt changes in slope, collapse, tilting trees/posts, property damage*):

None seen.

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.....

Evidence of Mining (*surface features, shafts, trenches, tunnels, caves, wells, boreholes, gas, etc*):

None seen, other than 'typically standard' look of reinstated ground following opencast restoration i.e. neat hedgerows with associated fencing all looking of similar type / age surrounding planar fields of uniform gradient. No rock outcrops, no ponds, no lone trees in the middle of fields.

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HAZARDS identified:

No major hazards. Minor hazards identified include overhead services at extreme northwest corner of southern field, barbed wire on stockproof fencing.

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Additional Remarks: The fields are typical of restored former open cast coal sites.....

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Photographs/Video:.....

Comprehensive photographs taken, key photograph location plan attached below:

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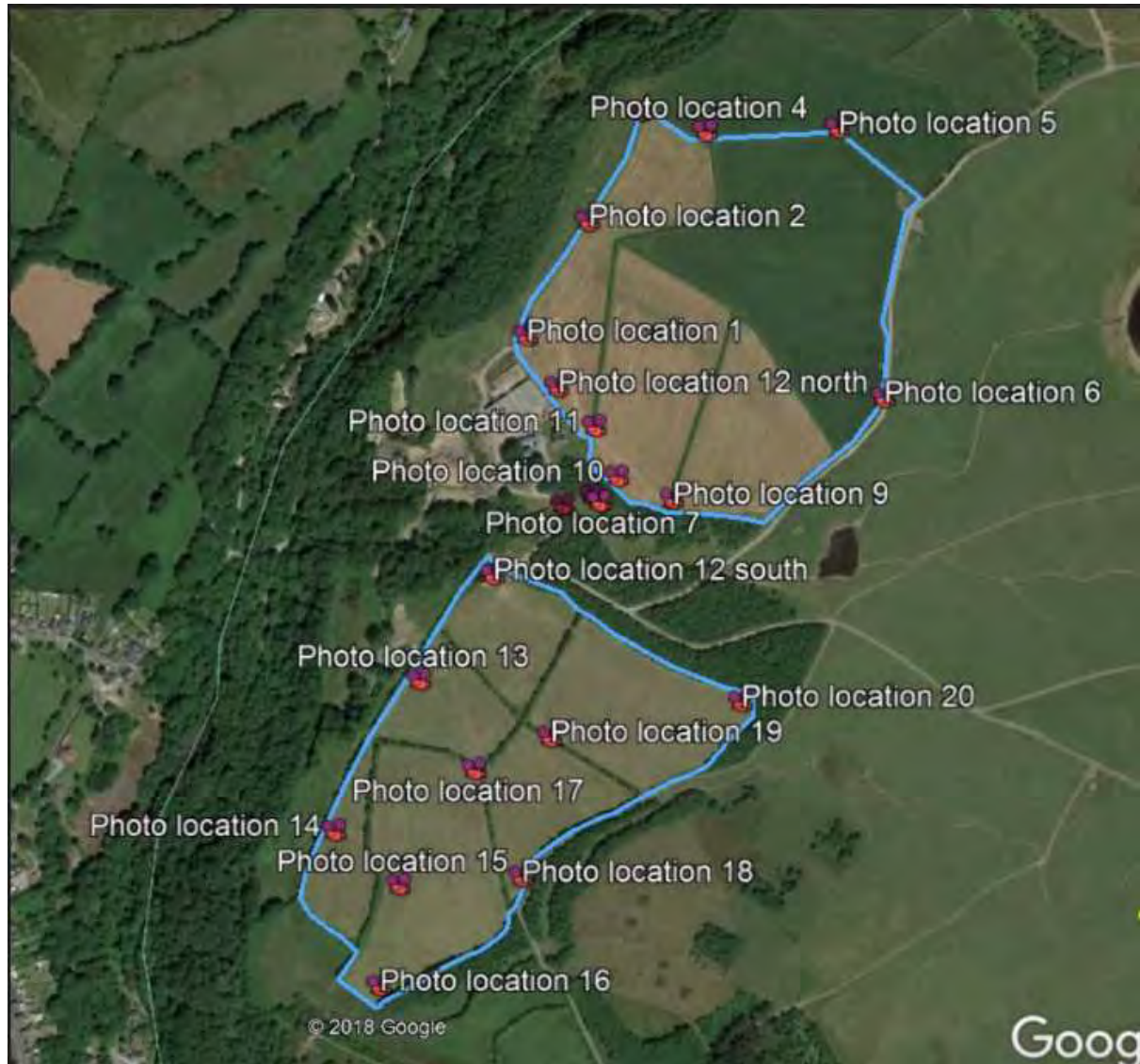


Photo location 1



Photo location 2



Photo location 3



Photo location 4



Photo location 5



Photo location 6



Photo location 7



Photo location 8 (next to loc. 7)



Photo location 9



Photo location 10



Photo location 11



Photo location 12 north



Photo location 12 south



Photo location 13



Photo location 14



Photo location 15



Photo location 16



Photo location 17



Photo location 18



Photo location 19



Photo location 20



Appendix V

Groundsure Report



Wardell Armstrong LLP
22, WINDSOR PLACE,
CARDIFF, CF10 3BY

Groundsure Reference: GS-6079652
Your Reference: Bryn_Henllys_Extension

Report Date 6 Jun 2019

Report Delivery Method: Email - pdf

Enviro Insight

Address: 276031, 212872,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Address: 276031, 212872,
Date: 6 Jun 2019
Reference: GS-6079652
Client: Wardell Armstrong LLP



Aerial Photograph Capture date: 26-May-2017
Grid Reference: 276030,212509
Site Size: 25.0930ha

Report Reference: GS-6079652
Client Reference: Bryn_Henllys_Extension

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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.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	10	15	78	50
1.2 Additional Information – Historical Tank Database	0	0	3	4
1.3 Additional Information – Historical Energy Features Database	0	0	0	2
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	2
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	10	12	64	45
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	1	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	1	1	1	3
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	5	3
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	3
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	1	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	14

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	10	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	Identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	2	2	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	2	0	0	1	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	Yes	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	4	10	92	88	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	Identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High					

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	1	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	4	8	7	22	21
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	1	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards		
9.1 Maximum risk of natural ground subsidence		Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site		Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site		Moderate
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site		Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site		Very Low
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site		Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site		Very Low
9.2 Radon		
9.2.1 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 site is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.	
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.	

Section 10: Mining	
10.1 Coal mining areas within 75m of the study site	Identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

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. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. 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.

3. 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.

4. 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 gas pipelines and underground electricity transmission lines.

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. 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.

9. 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 and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. 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.

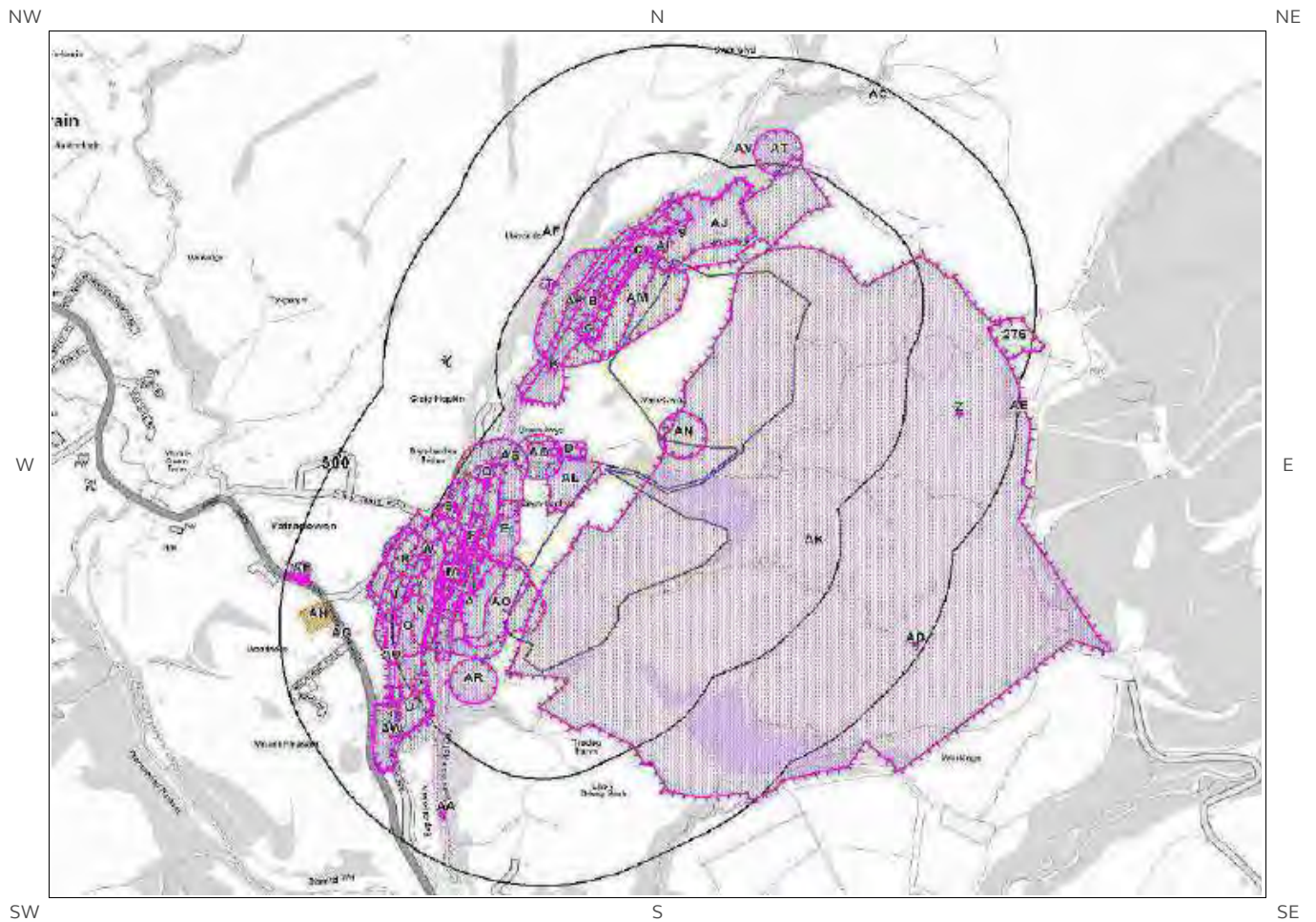
Note: Maps

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. Historical Land Use



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1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 153

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Colliery	1903
2AL	0	On Site	Old Brick Works	1921
3AN	0	On Site	Coal Levels	1877
4AI	0	On Site	Unspecified Disused Mine	1965
5AO	0	On Site	Unspecified Disused Mine	1985
6A	0	On Site	Colliery	1877
7AM	0	On Site	Unspecified Disused Mine	1985
8AJ	0	On Site	Refuse Heap	1985
9	0	On Site	Refuse Heap	1965
10AK	0	On Site	Opencast Workings	1965
11B	5	NW	Colliery	1948
12H	26	N	Railway Sidings	1948
13B	30	NW	Colliery	1921
14	33	NW	Railway Sidings	1921
15B	33	NW	Colliery	1921
16B	33	NW	Colliery	1921
17C	33	NW	Refuse Heap	1921
18C	33	NW	Refuse Heap	1921
19B	36	NW	Tramway Sidings	1921
20D	38	NW	Unspecified Quarry	1948
21D	38	NW	Unspecified Old Quarry	1877
22D	38	NW	Unspecified Old Quarry	1903
23D	39	NW	Refuse Heap	1985
24A	40	NW	Disused Colliery	1921
25E	43	NW	Unspecified Disused Mine	1965
26G	57	NW	Colliery	1921
27E	67	NW	Unspecified Tank	1985
28E	67	NW	Unspecified Tank	1965
29AQ	69	NW	Old Coal Level	1877
30AR	71	SW	Old Coal Drift	1877
31F	81	NW	Railway Sidings	1903
32F	81	W	Colliery	1901
33G	86	NW	Drift	1921
34B	86	NW	Railway Buildings	1903

35I	87	W	Unspecified Pit	1877
36G	87	NW	Railway Building	1903
37H	88	NW	Brick Works	1903
38I	92	W	Colliery	1948
39G	93	NW	Unspecified Drift	1903
40G	93	NW	Unspecified Drift	1948
41I	94	W	Disused Colliery	1921
42I	94	W	Disused Colliery	1921
43G	94	NW	Unspecified Drift	1921
44I	97	W	Old Air Shaft	1903
45A	103	NW	Disused Colliery	1921
46J	106	W	Railway Sidings	1921
47J	107	NW	Unspecified Heap	1901
48A	111	W	Drift	1877
49K	115	W	Old Coal Level	1877
50P	115	NW	Railway Sidings	1877
51K	116	W	Unspecified Disused Level	1985
52K	118	W	Old Coal Level	1901
53J	121	W	Tramway Sidings	1921
54L	121	NW	Tramway Sidings	1921
55J	123	NW	Railway Sidings	1921
56K	124	W	Old Coal Level	1921
57K	124	W	Old Coal Level	1921
58K	124	W	Old Coal Level	1921
59K	125	W	Old Coal Level	1948
60L	125	W	Railway Sidings	1921
61K	126	W	Old Coal Level	1921
62J	126	NW	Refuse Heap	1965
63AP	128	NW	Tramway Sidings	1921
64F	134	NW	Refuse Heap	1985
65M	138	NW	Refuse Heaps	1921
66M	138	NW	Refuse Heaps	1921
67V	141	W	Colliery	1948
68N	156	W	Colliery	1921
69O	160	W	Colliery	1921
70N	160	W	Colliery	1921
71O	160	W	Colliery	1921
72AS	166	NW	Coal Level	1877
73O	167	W	Tramway Sidings	1921
74O	170	W	Railway Sidings	1921
75O	170	W	Railway Sidings	1921
76Q	173	NW	Old Brick Works	1921
77P	174	SW	Old Coal Drift	1901
78Q	174	NW	Old Brick Works	1921
79Q	183	NW	Unspecified Heap	1877
80U	190	SW	Woollen Factory	1903

81R	199	NW	Unspecified Disused Mine	1965
82R	199	NW	Unspecified Disused Mine	1985
83S	202	NW	Refuse Heap	1985
84S	202	NW	Refuse Heap	1965
85N	207	W	Railway Sidings	1921
86T	207	NW	Coal Levels	1877
87R	207	W	Unspecified Drift	1948
88S	207	NW	Unspecified Drift	1921
89T	208	NW	Coal Levels	1877
90S	208	NW	Drift	1921
91T	208	NW	Coal Levels	1901
92S	211	NW	Unspecified Drift	1921
93S	211	NW	Drift	1903
94S	211	NW	Unspecified Drift	1948
95X	213	SW	Unspecified Heap	1877
96U	214	SW	Colliery	1903
97W	214	NW	Drift	1921
98V	215	W	Cuttings	1877
99W	217	W	Unspecified Drift	1921
100AT	225	N	Old Coal Level	1877
101R	229	W	Unspecified Drift	1921
102O	240	W	Unspecified Pit	1921
103O	240	W	Unspecified Pit	1921
104AU	253	W	Unspecified Pit	1901
105X	262	SW	Unspecified Old Levels	1903
106X	262	SW	Unspecified Old Levels	1948
107X	262	SW	Unspecified Old Levels	1921
108X	262	SW	Unspecified Old Levels	1921
109X	269	SW	Old Levels	1921
110AV	279	N	Old Coal Level	1901
111Y	356	W	Old Coal Pit	1877
112Y	360	W	Old Coal Pit	1901
113Z	365	E	Coal Trial Shafts	1921
114Z	366	E	Coal Trial Shafts	1921
115Z	366	E	Coal Trial Shafts	1948
116Z	366	E	Trial Shafts	1903
117Z	367	E	Coal Trial Shafts	1921
118Z	367	E	Coal Trial Shafts	1921
119AA	383	SW	Disused Air Shaft	1965
120AA	383	SW	Disused Air Shaft	1985
121AA	385	SW	Old Air Shaft	1877
122AA	385	SW	Old Air Shaft	1903
123AA	385	SW	Old Air Shaft	1948
124AA	388	SW	Old Air Shaft	1901
125AA	390	SW	Old Air Shaft	1921
126AA	395	SW	Old Air Shaft	1921

127AA	399	SW	Old Air Shaft	1921
128AB	446	W	Unspecified Pit	1965
129AB	446	W	Sand Pit	1921
130AB	447	W	Sand Pit	1921
131AB	448	W	Sand Pit	1948
132AB	449	W	Sand Pit	1921
133AB	455	W	Sand Pit	1903
134AB	460	W	Gravel Pit	1901
135AB	460	W	Gravel Pit	1877
136AC	470	NE	Old Lime Kiln	1948
137AC	470	NE	Old Lime Kiln	1903
138AC	471	NE	Old Lime Kiln	1877
139AC	473	NE	Old Lime Kiln	1921
140AC	473	NE	Old Lime Kiln	1921
141AD	473	SE	Coal Trial Shaft	1921
142AD	474	SE	Coal Trial Shaft	1948
143AD	474	SE	Trial Shaft	1903
144AD	474	SE	Coal Trial Shaft	1921
145AD	474	SE	Coal Trial Shaft	1921
146AC	475	NE	Unspecified Disused Kiln	1985
147AD	478	SE	Coal Trial Shaft	1921
148AC	480	NE	Old Lime Kiln	1921
149AB	498	W	Telecomm Exchange	1965
150AE	498	E	Coal Trial Shafts	1921
151AE	498	E	Coal Trial Shafts	1948
152AE	498	E	Trial Shafts	1903
153AE	499	E	Coal Trial Shafts	1921

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary:

7

ID	Distance (m)	Direction	Use	Date
154E	69	NW	Unspecified Tank	1993
155E	69	NW	Unspecified Tank	1961
156E	70	NW	Unspecified Tank	1982
157AF	275	NW	Unspecified Tank	1993
158AF	276	W	Unspecified Tank	1961
159AF	277	W	Unspecified Tank	1988
160AF	277	W	Unspecified Tank	1989

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 2

ID	Distance (m)	Direction	Use	Date
161AG	360	W	Electricity Substation	1982
162AG	367	W	Electricity Substation	1993

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 2

ID	Distance (m)	Direction	Use	Date
163AH	377	W	Garage	1982
164AH	379	W	Garage	1993

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary:

0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 131

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

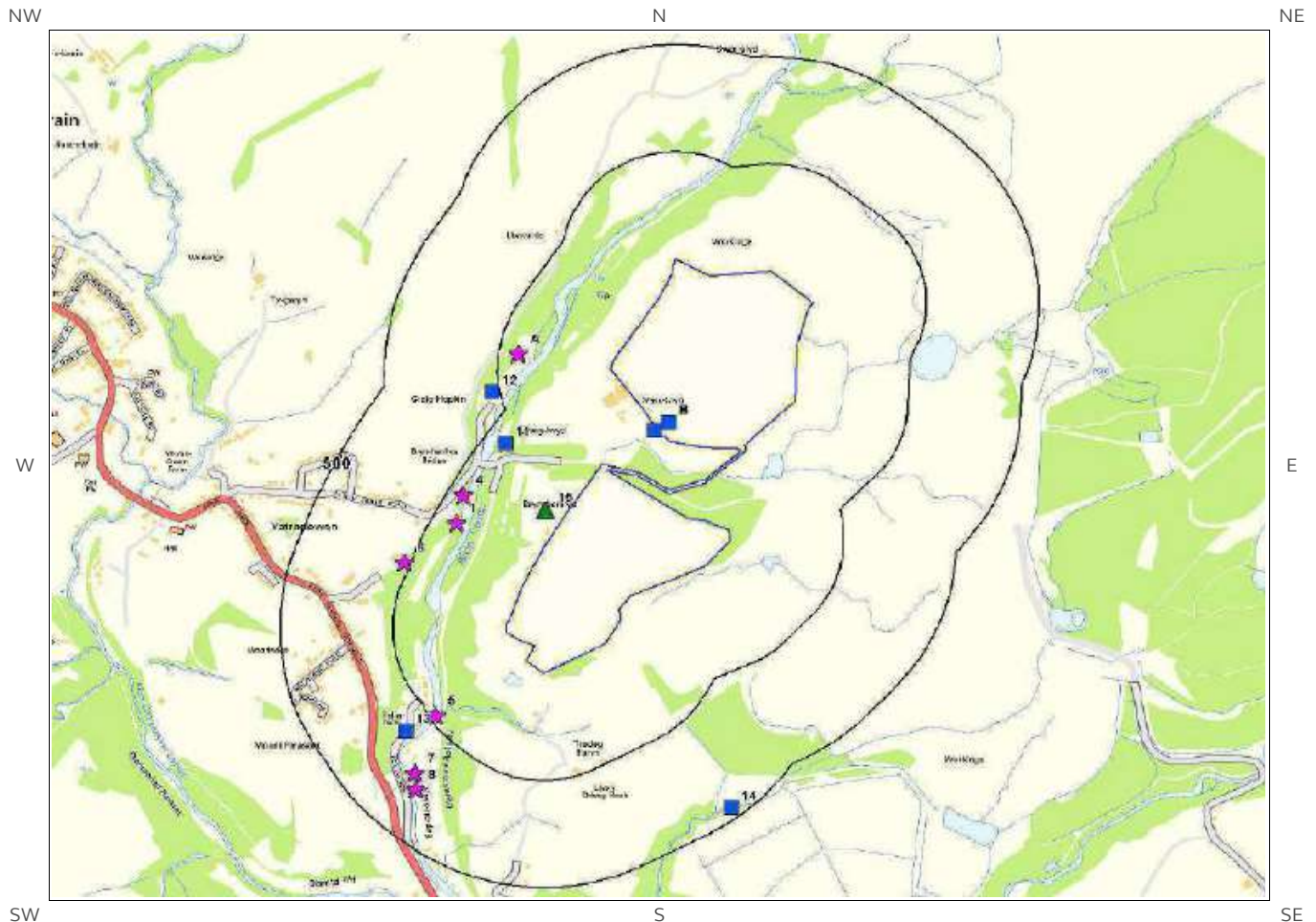
ID	Distance(m)	Direction	Use	Date
165AI	0	On Site	Unspecified Disused Mine	1965
166AI	0	On Site	Refuse Heap	1965
167AJ	0	On Site	Refuse Heap	1985
168AK	0	On Site	Opencast Workings	1965
169A	0	On Site	Colliery	1877
170A	0	On Site	Colliery	1903
171AL	0	On Site	Old Brick Works	1921
172AM	0	On Site	Unspecified Disused Mine	1985
173AN	0	On Site	Coal Levels	1877
174AO	0	On Site	Unspecified Disused Mine	1985
175AP	5	NW	Colliery	1948
176AP	30	NW	Colliery	1921
177AP	33	NW	Colliery	1921
178AP	33	NW	Colliery	1921
179AI	33	NW	Refuse Heap	1921
180AI	33	NW	Refuse Heap	1921
181D	38	NW	Unspecified Quarry	1948
182D	38	NW	Unspecified Old Quarry	1877
183D	38	NW	Unspecified Old Quarry	1903
184D	39	NW	Refuse Heap	1985
185AO	40	NW	Disused Colliery	1921
186E	43	NW	Unspecified Disused Mine	1965
187G	57	NW	Colliery	1921
188AQ	69	NW	Old Coal Level	1877
189AR	71	SW	Old Coal Drift	1877
190G	78	NW	Air Shaft	1903
191F	81	W	Colliery	1901
192AP	86	NW	Drift	1921
193I	87	W	Unspecified Pit	1877
194Q	88	NW	Brick Works	1903
195M	92	W	Colliery	1948
196I	92	W	Air Shaft	1877
197G	93	NW	Unspecified Drift	1948
198G	93	NW	Unspecified Drift	1903
199M	94	W	Disused Colliery	1921

200M	94	W	Disused Colliery	1921
201G	94	NW	Unspecified Drift	1921
202M	94	W	Air Shaft	1901
203M	97	W	Old Air Shaft	1903
204A	103	NW	Disused Colliery	1921
205J	107	NW	Unspecified Heap	1901
206A	111	W	Drift	1877
207K	115	W	Old Coal Level	1877
208K	116	W	Unspecified Disused Level	1985
209K	118	W	Old Coal Level	1901
210K	124	W	Old Coal Level	1921
211K	124	W	Old Coal Level	1921
212K	124	W	Old Coal Level	1921
213K	125	W	Old Coal Level	1948
214K	126	W	Old Coal Level	1921
215J	126	NW	Refuse Heap	1965
216F	134	NW	Refuse Heap	1985
217M	138	NW	Refuse Heaps	1921
218M	138	NW	Refuse Heaps	1921
219V	141	W	Colliery	1948
220N	156	W	Colliery	1921
221O	160	W	Colliery	1921
222N	160	W	Colliery	1921
223N	160	W	Colliery	1921
224AS	166	NW	Coal Level	1877
225Q	173	NW	Old Brick Works	1921
226P	174	SW	Old Coal Drift	1901
227Q	174	NW	Old Brick Works	1921
228Q	183	NW	Unspecified Heap	1877
229R	199	NW	Unspecified Disused Mine	1965
230R	199	NW	Unspecified Disused Mine	1985
231S	202	NW	Refuse Heap	1985
232S	202	NW	Refuse Heap	1965
233T	207	NW	Coal Levels	1877
234R	207	W	Unspecified Drift	1948
235S	207	NW	Unspecified Drift	1921
236T	208	NW	Coal Levels	1877
237S	208	NW	Drift	1921
238T	208	NW	Coal Levels	1901
239S	211	NW	Unspecified Drift	1921
240S	211	NW	Drift	1903
241S	211	NW	Unspecified Drift	1948
242X	213	SW	Unspecified Heap	1877
243U	214	SW	Colliery	1903
244W	214	NW	Drift	1921
245V	215	W	Cuttings	1877

246W	217	W	Unspecified Drift	1921
247AT	225	N	Old Coal Level	1877
248R	229	W	Unspecified Drift	1921
249O	240	W	Unspecified Pit	1921
250O	240	W	Unspecified Pit	1921
251AU	253	W	Unspecified Pit	1901
252X	262	SW	Unspecified Old Levels	1903
253X	262	SW	Unspecified Old Levels	1948
254X	262	SW	Unspecified Old Levels	1921
255X	262	SW	Unspecified Old Levels	1921
256X	269	SW	Old Levels	1921
257AV	279	N	Old Coal Level	1901
258AW	340	SW	Air Shaft	1877
259AW	343	SW	Air Shaft	1901
260Y	356	W	Old Coal Pit	1877
261Y	360	W	Old Coal Pit	1901
262Z	365	E	Coal Trial Shafts	1921
263Z	366	E	Coal Trial Shafts	1921
264Z	366	E	Trial Shafts	1903
265Z	366	E	Coal Trial Shafts	1948
266Z	367	E	Coal Trial Shafts	1921
267Z	367	E	Coal Trial Shafts	1921
268AA	383	SW	Disused Air Shaft	1965
269AA	383	SW	Disused Air Shaft	1985
270AA	385	SW	Old Air Shaft	1903
271AA	385	SW	Old Air Shaft	1948
272AA	385	SW	Old Air Shaft	1877
273AA	388	SW	Old Air Shaft	1901
274AA	390	SW	Old Air Shaft	1921
275AA	395	SW	Old Air Shaft	1921
276	396	E	Pond	1965
277AA	399	SW	Old Air Shaft	1921
278AB	446	W	Unspecified Pit	1965
279AB	446	W	Sand Pit	1921
280AB	447	W	Sand Pit	1921
281AB	448	W	Sand Pit	1948
282AB	449	W	Sand Pit	1921
283AB	455	W	Sand Pit	1903
284AB	460	W	Gravel Pit	1901
285AB	460	W	Gravel Pit	1877
286AD	473	SE	Coal Trial Shaft	1921
287AD	474	SE	Trial Shaft	1903
288AD	474	SE	Coal Trial Shaft	1948
289AD	474	SE	Coal Trial Shaft	1921
290AD	474	SE	Coal Trial Shaft	1921
291AD	478	SE	Coal Trial Shaft	1921

292AE	498	E	Coal Trial Shafts	1921
293AE	498	E	Trial Shafts	1903
294AE	498	E	Coal Trial Shafts	1948
295AE	499	E	Coal Trial Shafts	1921

2. Environmental Permits, Incidents and Registers Map



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2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.1.3 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.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
15	41	NW	275687 212440	Address: Celtic Energy Ltd, Brynhenllys Revised Site, Upper Cwmtwrch, Swansea Process: Other Mineral Processes Status: Revoked Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

6

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
9B	0	On Site	275960 212650	Address: WAUNLWYDD NORTH OPENCAST SITE Effluent Type: UNSPECIFIED Permit Number: BC0013602 Permit Version: 1 Receiving Water: UNNAMED TRIB. RIVER TWRCH Status: CONSENT EXPIRED - TIME LIMIT Issue date: 10/05/1972 Effective Date: 10-May-1972 Revocation Date: 22/01/1992
10B	6	SW	275930 212630	Address: WAUNLWYDD NORTH OPENCAST SITE Effluent Type: UNSPECIFIED Permit Number: BC0013601 Permit Version: 1 Receiving Water: UNNAMED TRIB. RIVER TWRCH Status: CONSENT EXPIRED - TIME LIMIT Issue date: 10/05/1972 Effective Date: 10-May-1972 Revocation Date: 22/01/1992
11	203	NW	275600 212600	Address: BRYNHENLLYS OCCS OUTLET C, Effluent Type: UNSPECIFIED Permit Number: BM0043603 Permit Version: 1 Receiving Water: AFON TWRCH Status: CONSENT EXPIRED - TIME LIMIT Issue date: 30/01/1985 Effective Date: 30-Jan-1985 Revocation Date: 19/05/1998
12	268	W	275570 212720	Address: YSTRADOWEN NO 1 YNYS Y BONT COTTAGE, YSTRADOWEN NO 1 YNYS Y BONT COTT, NO 1 YNYS Y BONT COTTAGE Effluent Type: UNSPECIFIED Permit Number: BP0026301 Permit Version: 1 Receiving Water: TO LAND Status: CONSENT EXPIRED - TIME LIMIT Issue date: 15/10/1986 Effective Date: 15-Oct-1986 Revocation Date: 10/10/1994
13	312	SW	275380 211930	Address: SWO. FELINFACH RD. YSTRADOWEN., YSTRADOWEN. Receiving Water: RIVER TWRCH Status: Effective

ID	Distance (m)	Direction	NGR	Details
				Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: BW1400101 Permit Version: 1 Issue date: 01/01/1974 Effective Date: 01-Jan-1974 Revocation Date: -
14	475	SE	276100 211750	Address: TREDEG OPENCASIT SITE OUTLET D,, TREDEG OPENCASIT SITE OUTLET D,, OUTLET D,, Effluent Type: UNSPECIFIED Permit Number: BF0118104 Permit Version: 1 Receiving Water: UNNAMED TRIB OF NANT GWYS Status: CONSENT EXPIRED - TIME LIMIT Issue date: 13/03/1979 Effective Date: 13-Mar-1979 Revocation Date: 19/05/1998

2.1.9 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.

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

8

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	199	NW	275491.0 212416.0	Incident Date: 08-Jul-2014 Incident Identification: 1253896.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage Water Impact: Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
2A	209	W	275627.0	Incident Date: 22-Mar-2016 Water Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details	
			212809.0	Incident Identification: 1601165.0 Pollutant: Contaminated Water Pollutant Description: Firefighting Run	Land Impact: No Details Air Impact: Category 4 (No Impact)
3A	209	W	275627.0 212809.0	Incident Date: 22-Mar-2016 Incident Identification: 1601165.0 Pollutant: Pollutant Description:	Water Impact: Category 4 (No Impact) Land Impact: No Details Air Impact: Category 4 (No Impact)
4	217	NW	275505.0 212480.0	Incident Date: 13-Dec-2015 Incident Identification: 1394328.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
5	237	SW	275445.0 211966.0	Incident Date: 17-Oct-2002 Incident Identification: 115308.0 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	265	W	275375.0 212323.0	Incident Date: 30-Dec-2014 Incident Identification: 1303335.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
7	360	SW	275398.0 211831.0	Incident Date: 26-Aug-2015 Incident Identification: 1368383.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
8	386	SW	275401.0 211794.0	Incident Date: 20-Feb-2015 Incident Identification: 1315911.0 Pollutant: Sewage Materials Pollutant Description: Other Sewage Material	Water Impact: Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

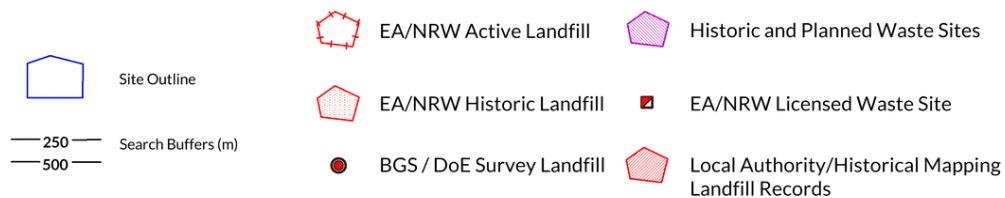
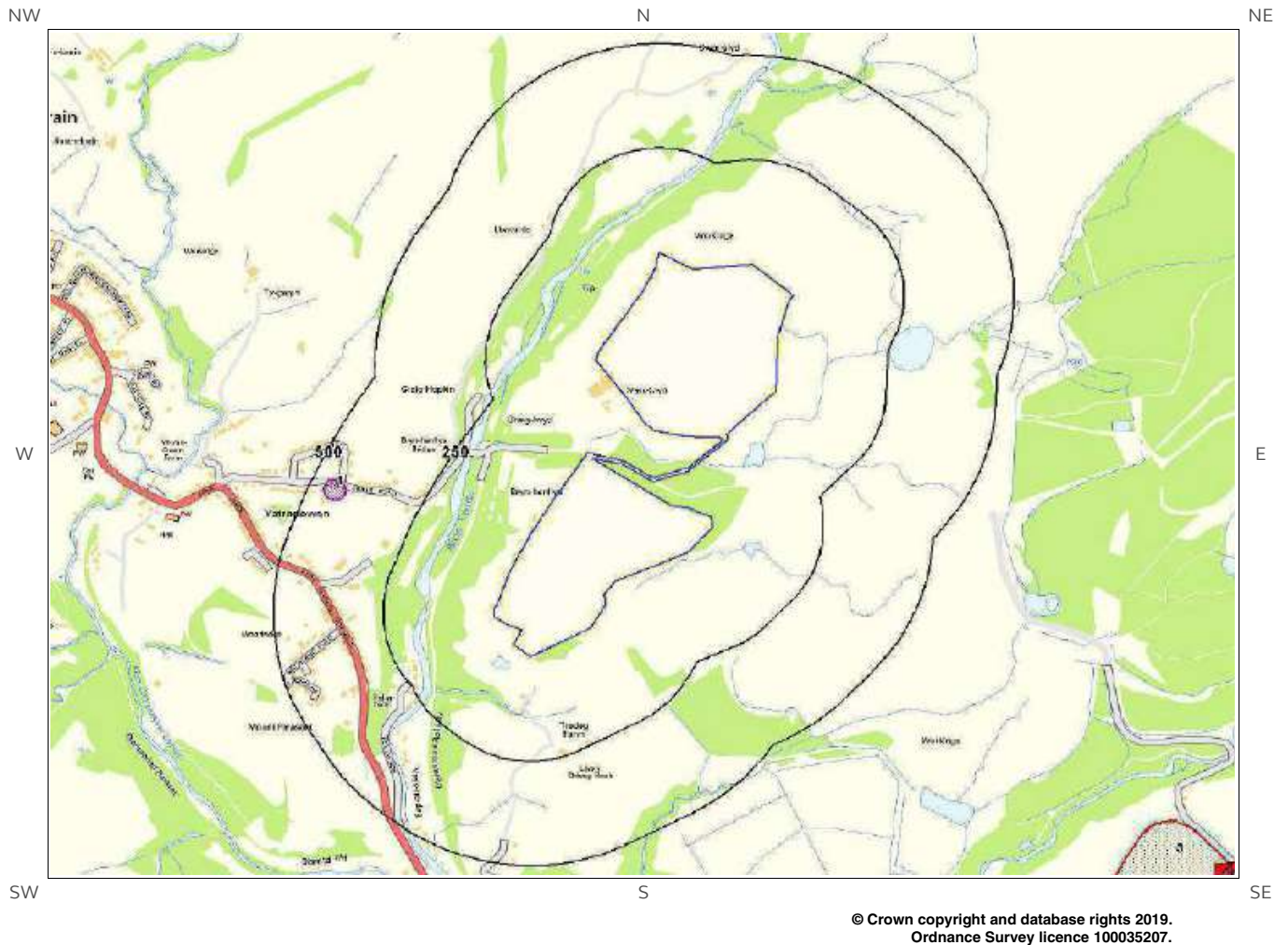
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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.

3. Landfill and Other Waste Sites Map



3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

3

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	1030	S		Site Address: Glyn Cynwal Isaf Waste Licence: - Site Reference: CS11/37 Waste Type: Commercial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1974
3	1219	SE		Site Address: Palleg Landfill Site Waste Licence: Yes Site Reference: - Waste Type: Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: WU1/L/PAL001 Licence Issue: 03-Nov-1993 Licence Surrendered: Licence Holder Address: Lower Cwmtwrch, Swansea Operator: Palleg Refuse & Recycling Co Ltd Licence Holder: Palleg Refuse & Recycling Co Ltd First Recorded: - Last Recorded: -
4	1221	SE		Site Address: Tir Canol Landfill Waste Licence: - Site Reference: BRE/50/5.93 Waste Type: Inert, Industrial, Commercial, Household, Special Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Brecknock Borough Council First Recorded: 31-Dec-1975 Last Recorded: 31-Dec-1992

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

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

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

1

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1	417	NW	275241 212463	Type of Site: Recycling Site Site Address: Car Park, Pen Y Graig Road, Ystradowen, SWANSEA, West Glamorgan,	Planning Application Reference: 622/93 Date: -	Further Details: An application (ref: 622/93) for Detailed Planning permission was submitted to Carmarthenshire D.C. on 16th September 1993. Data Source: Historic Planning Application Data Type: Point

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

14

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

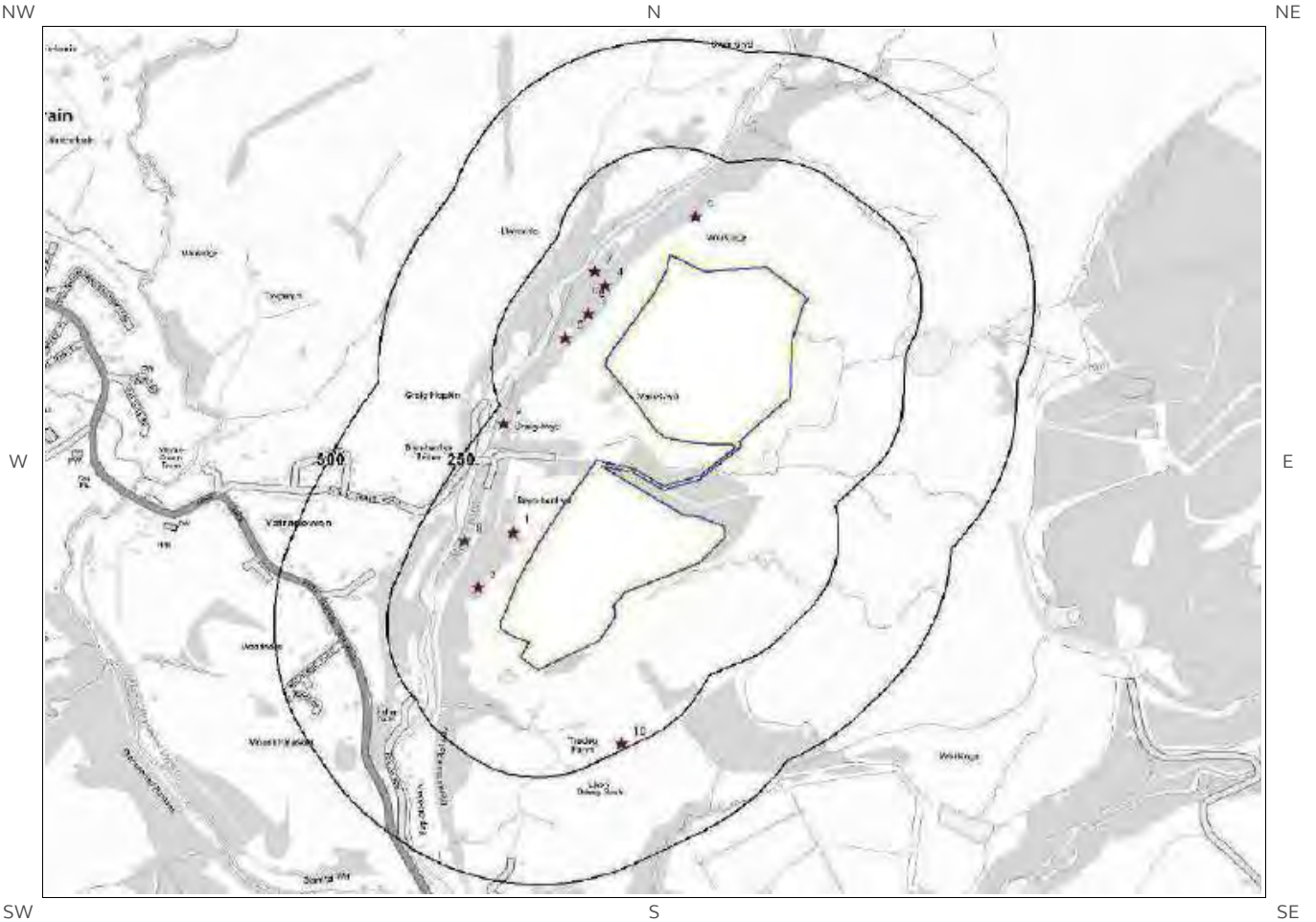
ID	Distance (m)	Direction	NGR	Details		
Not shown	1155	SE	276870 211510	Site Address: JLA Disposal Limited, Palleg Landfill Phase II EPR/BT1908IX, Tir Canol Palleg Road, Lower Cwmtwrch, SWANSEA, SA9 2QQ Type: Borehole Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: BT1908IX EPR reference: -	Issue Date: 21/02/2013 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Effective Site Name: Palleg Landfill Phase II EPR/BT1908IX	

ID	Distance (m)	Direction	NGR	Details
				Operator: JLA Disposal Limited Waste Management licence No: 0 Annual Tonnage: 24999.0
Not shown	1155	SE	276870 211510	<p>Site Address: JLA Disposal Limited, Palleg Landfill Phase II EPR/BT1908IX, Tir Canol Palleg Road, Lower Cwmtwrch, SWANSEA, SA9 2QQ</p> <p>Type: Landfill taking Non-Biodegradeable Wastes</p> <p>Size: Unknown</p> <p>Environmental Permitting Regulations (Waste) Licence Number: BT1908IX</p> <p>EPR reference: -</p> <p>Operator: JLA Disposal Limited</p> <p>Waste Management licence No: 0</p> <p>Annual Tonnage: 24999.0</p>
				Correspondence Address: -
				<p>Issue Date: 21/02/2013</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Effective</p> <p>Site Name: Palleg Landfill Phase II EPR/BT1908IX</p> <p>Correspondence Address: -</p>
7A	1418	SE	277254 211551	<p>Site Address: Bulky Waste Recycling Centre, Tir Canol Landfill, Palleg Road, , Ystradgynlais, Powys, SA9 2QQ</p> <p>Type: Household, Commercial & Industrial Waste T Stn</p> <p>Size: -</p> <p>Environmental Permitting Regulations (Waste) Licence Number: NP3498FK</p> <p>EPR reference: -</p> <p>Operator: J L A Recycling Limited</p> <p>Waste Management licence No: 34190</p> <p>Annual Tonnage: 75000.0</p>
				<p>Issue Date: 09/01/2019</p> <p>Effective Date: 09/01/2019</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Effective</p> <p>Site Name: -</p> <p>Correspondence Address: -</p>
8A	1418	SE	277254 211551	<p>Site Address: Bulky Waste Recycling Centre, Tir Canol Landfill, Palleg Road, , Ystradgynlais, Powys, SA9 2QQ</p> <p>Type: Metal Recycling Site (mixed MRS's)</p> <p>Size: -</p> <p>Environmental Permitting Regulations (Waste) Licence Number: NP3498FK</p> <p>EPR reference: -</p> <p>Operator: J L A Recycling Limited</p> <p>Waste Management licence No: 34190</p> <p>Annual Tonnage: 75000.0</p>
				<p>Issue Date: 09/01/2019</p> <p>Effective Date: 09/01/2019</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Effective</p> <p>Site Name: -</p> <p>Correspondence Address: -</p>
9B	1439	SE	277281 211553	<p>Site Address: SA9 2QQ</p> <p>Type: Household, Commercial & Industrial Waste Landfill</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: JLA004</p> <p>EPR reference: -</p> <p>Operator: JLA Disposal Ltd</p> <p>Waste Management licence No: 34276</p> <p>Annual Tonnage: 0.0</p>
				<p>Issue Date: 26/07/2005</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: IPPC</p> <p>Site Name: Palleg Landfill Phase II (ppc)</p> <p>Correspondence Address: SA9 2QQ</p>
10A	1442	SE	277283 211552	<p>Site Address: Ty Canol Farm, Cwmtwrch Isaf, C & C Swansea, SA9 2UP</p> <p>Type: Household, Commercial & Industrial Waste Landfill</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: JLA004</p> <p>EPR reference: EA/EPR/YP3798FB/A001</p> <p>Operator: J L A Disposal Ltd</p> <p>Waste Management licence No: 34276</p> <p>Annual Tonnage: 75000.0</p>
				<p>Issue Date: 26/07/2005</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: To PPC</p> <p>Site Name: Palleg Landfill Phase 2 (P P C)</p> <p>Correspondence Address: -</p>
11A	1442	SE	277283 211552	<p>Site Address: Palleg Landfill Phase 2 (P P C), Cwmtwrch Isaf, Swansea, SA9 2UP</p> <p>Type: -</p> <p>Size: Unknown</p> <p>Environmental Permitting Regulations</p>
				<p>Issue Date: 26/07/2005</p> <p>Effective Date: 26/07/2005</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p>

ID	Distance (m)	Direction	NGR	Details
				(Waste) Licence Number: YP3798FB EPR reference: - Operator: J L A Disposal Ltd Waste Management licence No: 0 Annual Tonnage: 0.0 Canceled Date: - Status: Expired Site Name: - Correspondence Address: -
12A	1442	SE	277283 211552	Site Address: Palleg Landfill Phase 2 (P P C), Cwmtwrch Isaf, C & C Swansea, SA9 2UP Type: Household, Commercial & Industrial Waste Landfill Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: YP3798FB EPR reference: - Operator: - Waste Management licence No: 34276 Annual Tonnage: 0.0 Issue Date: 26/07/2005 Effective Date: 26/07/2005 Modified: - Surrendered Date: - Expiry Date: 25/07/2005 Canceled Date: - Status: Expired Site Name: - Correspondence Address: -
13A	1442	SE	277283 211552	Site Address: Palleg Landfill Phase 2 (P P C), , , , Cwmtwrch Isaf, C & C Swansea, SA9 2UP Type: Household, Commercial & Industrial Waste Landfill Size: - Environmental Permitting Regulations (Waste) Licence Number: YP3798FB EPR reference: - Operator: J L A Disposal Ltd Waste Management licence No: 34276 Annual Tonnage: 0.0 Issue Date: 26/07/2005 Effective Date: 26/07/2005 Modified: - Surrendered Date: - Expiry Date: 25/07/2005 Canceled Date: - Status: Expired Site Name: - Correspondence Address: -
14A	1442	SE	277283 211552	Site Address: Palleg Landfill Phase 2 (P P C), , , , Cwmtwrch Isaf, C & C Swansea, SA9 2UP Type: Household, Commercial & Industrial Waste Landfill Size: - Environmental Permitting Regulations (Waste) Licence Number: YP3798FB EPR reference: - Operator: J L A Disposal Ltd Waste Management licence No: 34276 Annual Tonnage: 0.0 Issue Date: 26/07/2005 Effective Date: 26/07/2005 Modified: - Surrendered Date: - Expiry Date: 25/07/2005 Canceled Date: - Status: Expired Site Name: - Correspondence Address: -
15A	1442	SE	277283 211552	Site Address: Palleg Landfill Phase 2 (P P C), C & C Swansea, Cwmtwrch Isaf, Swansea, SA9 2UP Type: - Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: YP3798FB EPR reference: - Operator: J L A Disposal Ltd Waste Management licence No: 34276 Annual Tonnage: 0.0 Issue Date: 26/07/2005 Effective Date: 26/07/2005 Modified: - Surrendered Date: - Expiry Date: 25/07/2005 Canceled Date: - Status: Expired Site Name: - Correspondence Address: -
16B	1442	SE	277284 211553	Site Address: Ty Canol Farm, Cwmtwrch Isaf, C & C Swansea, SA9 2UP Type: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JLA004 EPR reference: YP3798FB/A001 Operator: J L A Disposal Ltd Waste Management licence No: 34276 Annual Tonnage: 75000.0 Issue Date: 26/07/2005 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Canceled Date: 0 Status: To PPC Site Name: Palleg Landfill Phase 2 (P P C) Correspondence Address: -
17B	1442	SE	277281 211548	Site Address: Tir Canol Farm, Lower Cwmtwrch, Powys, SA9 2QQ Issue Date: 03/11/1993 Effective Date: -

ID	Distance (m)	Direction	NGR	Details
				<p>Type: Household, Commercial & Industrial Waste Landfill</p> <p>Size: >= 25000 tonnes < 75000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: PAL001</p> <p>EPR reference: GP3098FW/A001</p> <p>Operator: Palleg Refuse & Recycling Co Ltd</p> <p>Waste Management licence No: 34111</p> <p>Annual Tonnage: 74999.0</p> <p>Modified: -</p> <p>Surrendered Date: 0</p> <p>Expiry Date: 2.00707e+016</p> <p>Cancelled Date: 0</p> <p>Status: Expired</p> <p>Site Name: Palleg Landfill Site</p> <p>Correspondence Address: -</p>
Not shown	1486	SE	277300 211500	<p>Site Address: -</p> <p>Type: Household, Commercial & Industrial Waste Landfill</p> <p>Size: >= 25000 tonnes < 75000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: PAL001</p> <p>EPR reference: -</p> <p>Operator: Palleg Refuse & Recycling Company Ltd</p> <p>Waste Management licence No: 34111</p> <p>Annual Tonnage: 0.0</p> <p>Issue Date: 03/11/1993</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Issued</p> <p>Site Name: Palleg Landfill Site</p> <p>Correspondence Address: -</p>

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 10

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	62	NW	Tank	275629 212385	Powys, SA9	Tanks (Generic)	Industrial Features
2	76	W	Mine (Disused)	275552 212256	Powys, SA9	Unspecified Quarries Or Mines	Extractive Industries
3	93	NW	Mine (Disused)	275795 212895	Powys, SA9	Unspecified Quarries Or Mines	Extractive Industries
4	99	NW	Refuse Tip (Disused)	275833 212961	Powys, SA9	Refuse Disposal Facilities	Infrastructure and Facilities
5	105	NW	Slag Heap	275744 212839	Powys, SA9	Refuse Disposal Facilities	Infrastructure and Facilities
6	107	NE	Refuse Tip (Disused)	276033 213121	Powys, SA9	Refuse Disposal Facilities	Infrastructure and Facilities
7	137	NW	Slag Heap	275809 212993	Powys, SA9	Refuse Disposal Facilities	Infrastructure and Facilities
8	148	NW	Slag Heap	275522 212365	Powys, SA9	Refuse Disposal Facilities	Infrastructure and Facilities
9	218	NW	Slag Heap	275608 212638	Powys, SA9	Refuse Disposal Facilities	Infrastructure and Facilities
10	237	SE	Electricity Sub Station	275869 211893	Powys, SA9	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

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

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site:

0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site:

0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

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

Lex Code	Description	Rock Type
WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

5.2 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

5.3 Bedrock and Solid Geology

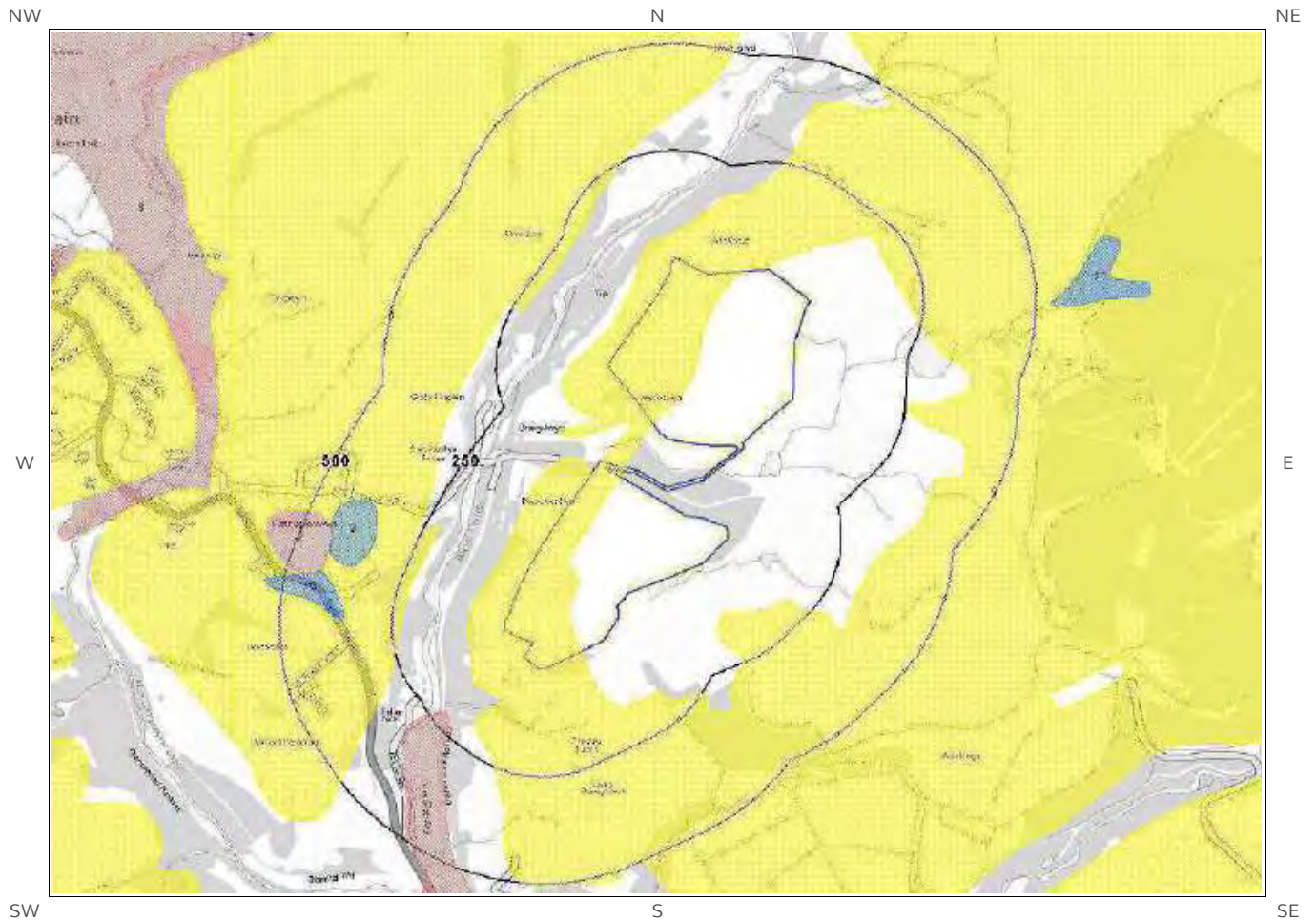
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
SWMCM-MDSS	SOUTH WALES MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE

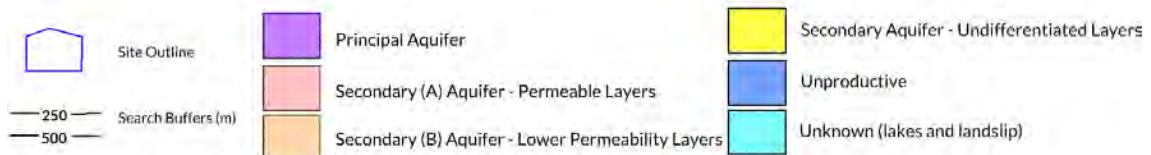
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

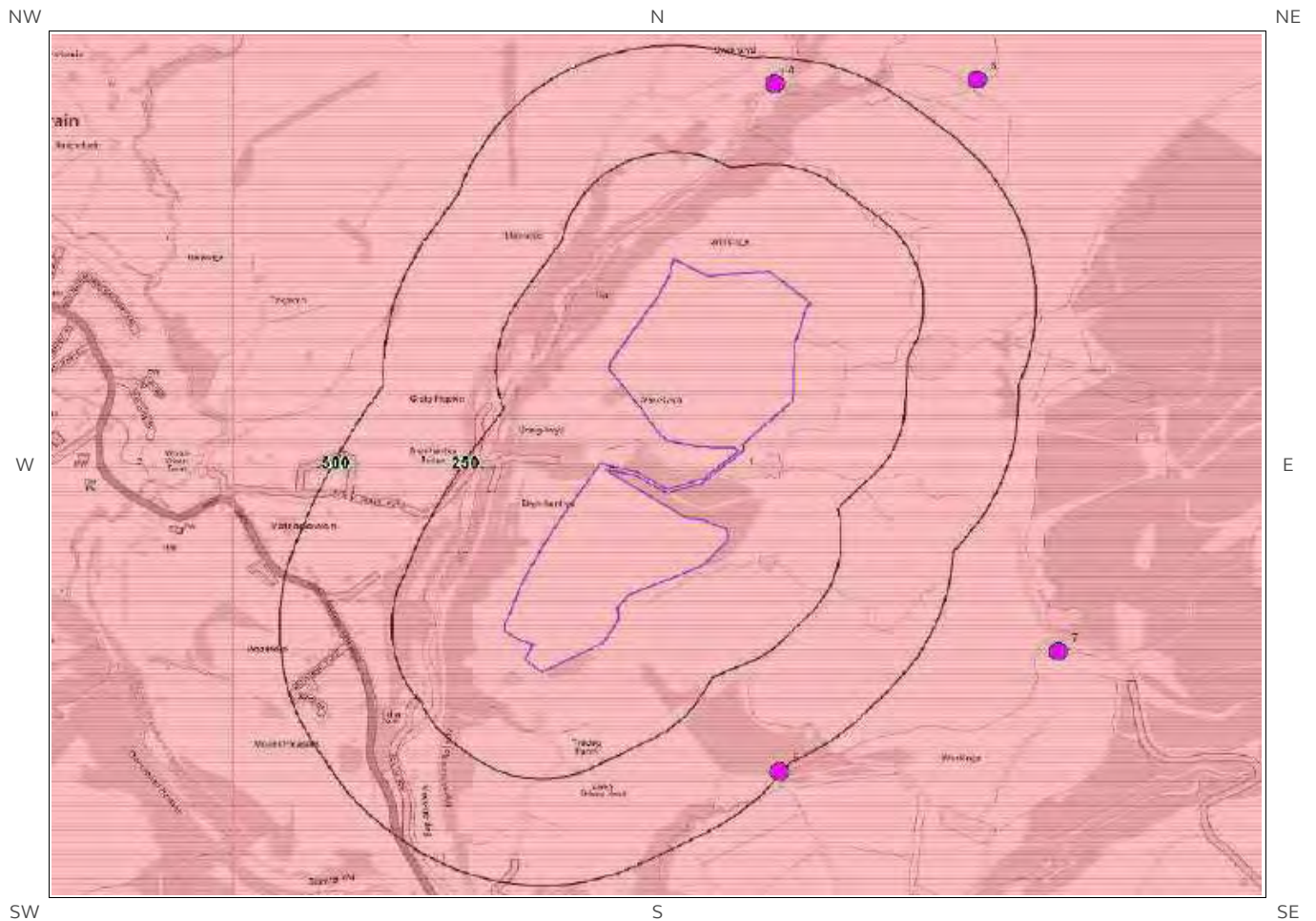
6a. Aquifer Within Superficial Geology



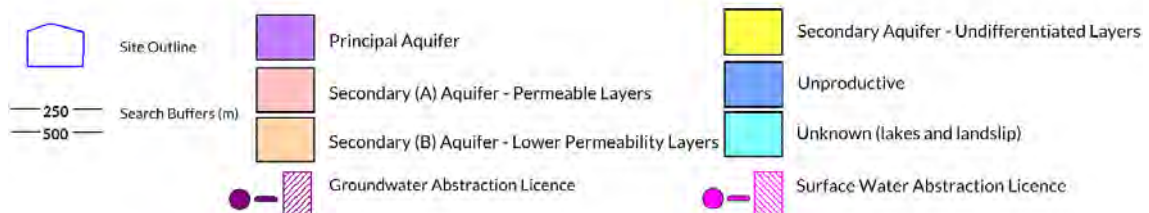
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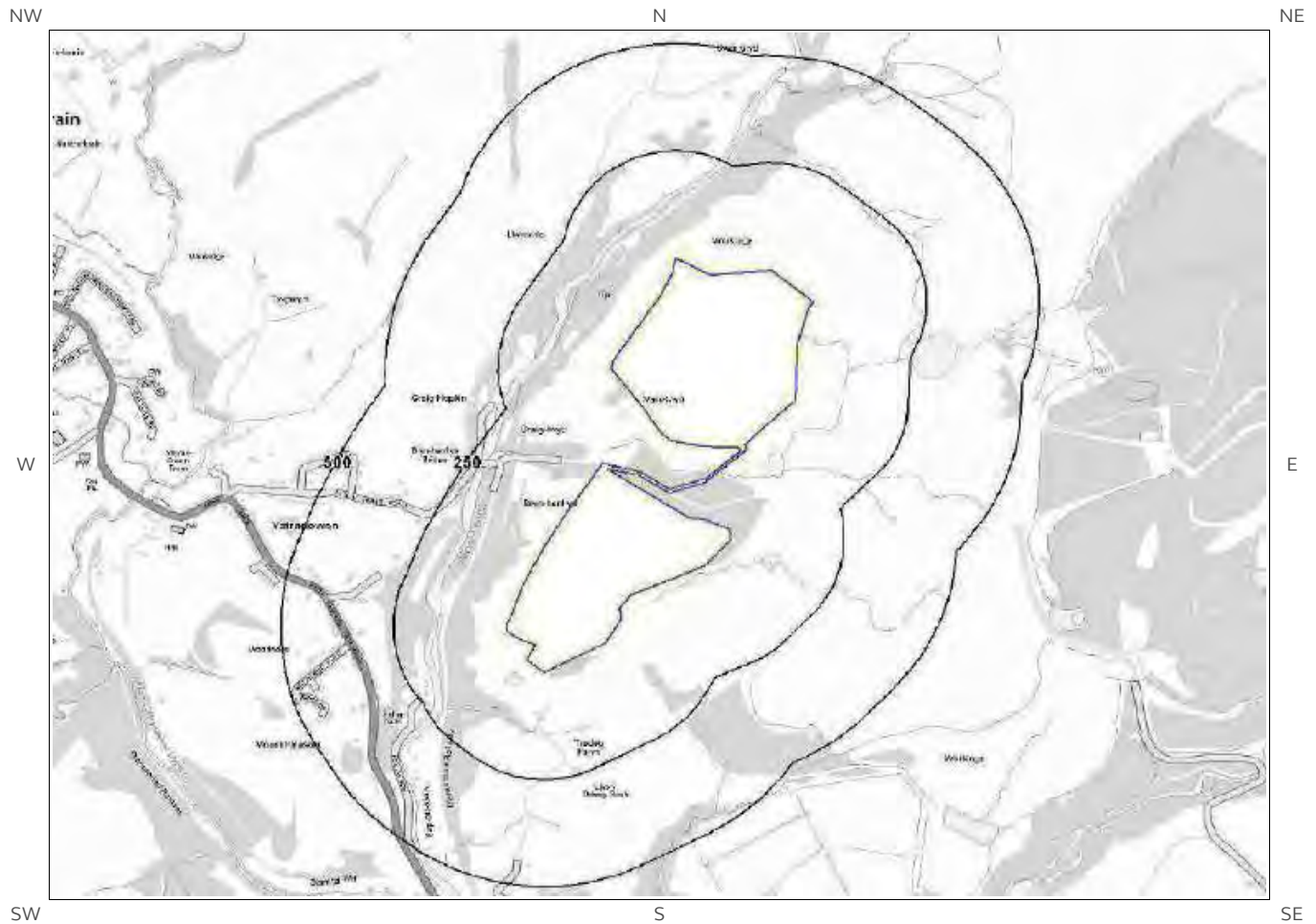
6b. Aquifer Within Bedrock Geology and Abstraction Licences



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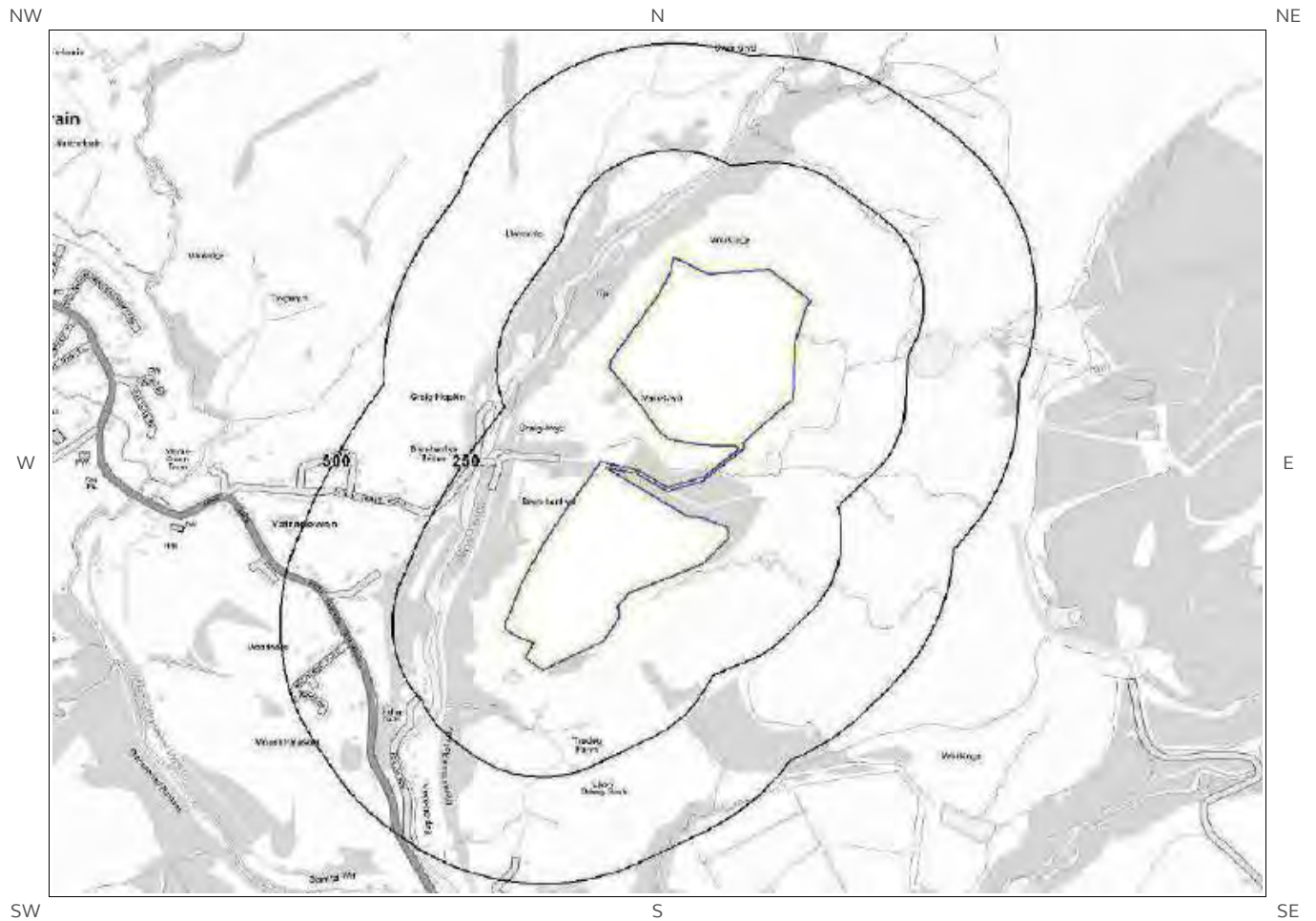


6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences

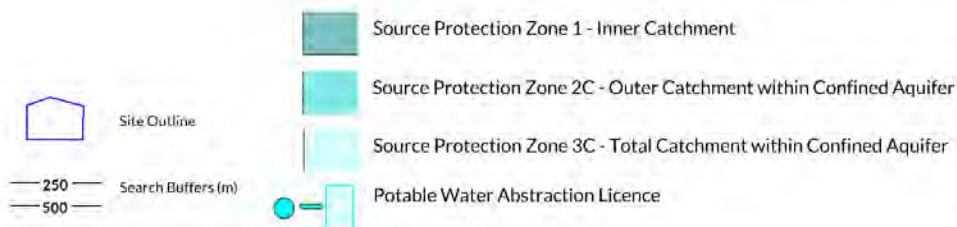


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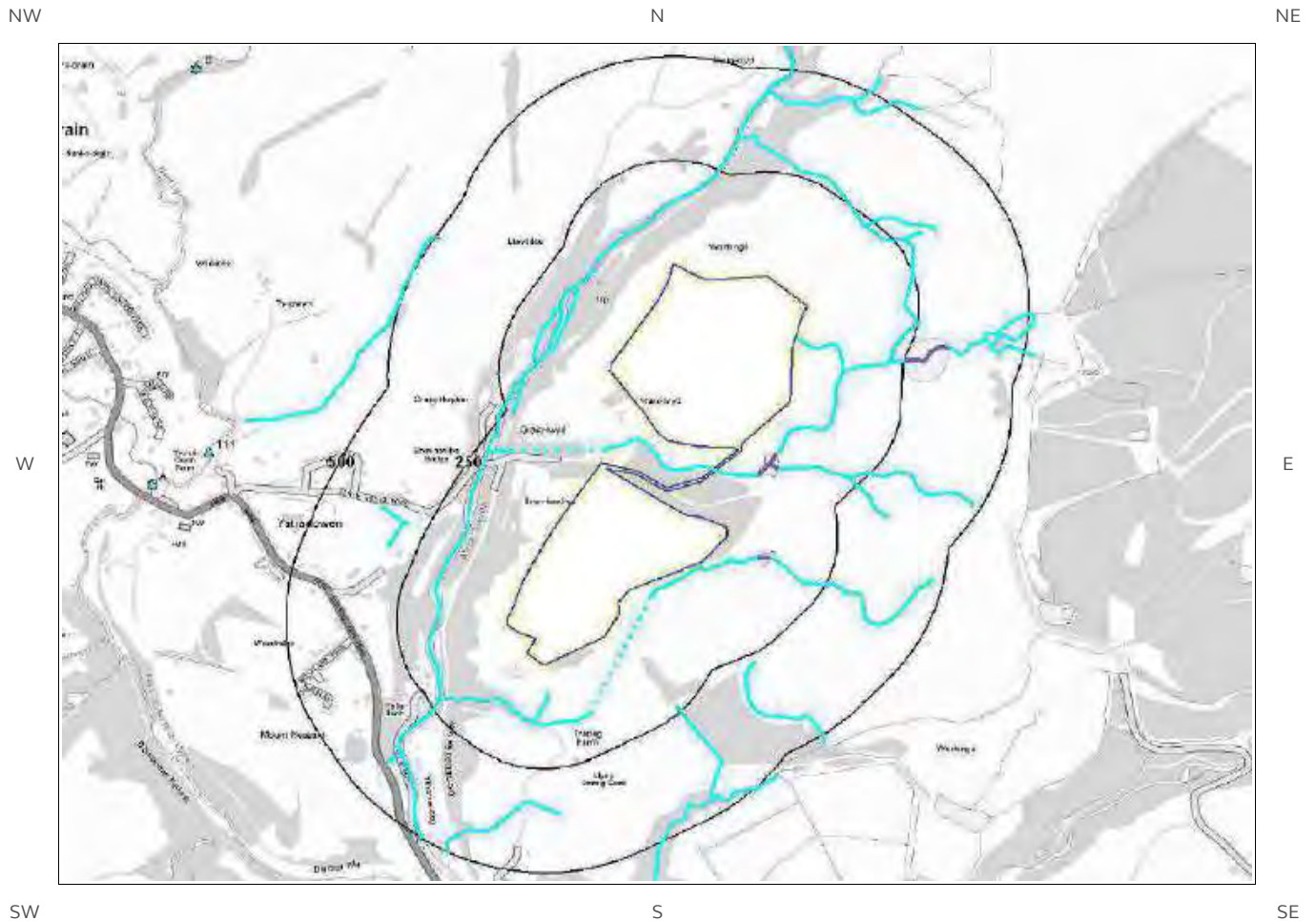
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales'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 Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
5	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
6	209	NW	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	213	SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
9	338	W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
10	359	W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	417	W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales'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 Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	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

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1703	NW	274990 214420	Status: Historical Licence No: 22/59/1/0016 Details: General Farming & Domestic Direct Source: EAW Groundwater Point: UNDERGROUND SOURCE IN FIELD NO. 315 AT LLWYNMOCH Data Type: Point Name: Thomas Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 01/12/1965 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
4	437	N	276200 213440	Status: Historical Licence No: 22/59/1/0116 Details: Dust suppression Direct Source: EAW Surface Water Point: UNNAMED TRIB OF AFON TWRCH Data Type: Point Name: Taylor Woodrow Civil Eng. Ltd Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 12/09/2000 Version End Date:
5	494	SE	276210 211830	Status: Historical Licence No: 22/59/1/0116 Details: Dust suppression Direct Source: EAW Surface Water Point: UNNAMED TRIB OF NANT GWYS Data Type: Point Name: Taylor Woodrow Civil Eng. Ltd Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 12/09/2000 Version End Date:
6	637	NE	276650 213450	Status: Historical Licence No: 22/59/1/0116 Details: Dust suppression Direct Source: EAW Surface Water Point: UNNAMED TRIB OF THE AFON TWRCH Data Type: Point Name: Taylor Woodrow Civil Eng. Ltd Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 12/09/2000 Version End Date:
7	777	E	276830 212110	Status: Historical Licence No: 22/59/1/0116 Details: Dust suppression Direct Source: EAW Surface Water Point: INLAND WATER, UNAMED TRIB OF NANTGWYS, YSTRADGYNLAIS Data Type: Point Name: Taylor Woodrow Civil Eng. Ltd Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 12/09/2000 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site

None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site

Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
0	On Site	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
488	SW	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	689	S	275500 211400	River Name: Tawe Twrch Reach: Conf.r.tawe - Conf.nantllynfell End/Start of Stretch: Start of Stretch NGR	C	B	B	B	C
Not shown	689	S	275500 211400	River Name: Llynfell Reach: Conf Twrch-conf Unnamed Stream Sn748125 End/Start of Stretch: End of Stretch NGR	C	C	A	A	A
Not shown	689	S	275500 211400	River Name: Tawe Twrch Reach: Conf.nantllynfell-conf. Nant Ffridiau End/Start of Stretch: End of Stretch NGR	C	B	B	B	C
Not shown	765	S	275700 211300	River Name: Gwys Reach: Conf.r.twrch - Gelli Farm End/Start of Stretch: End of Stretch NGR	C	B	B	B	B
102A	864	W	274800 212500	River Name: Llynfell Reach: Conf Unnamed Stream - Brynbrain End/Start of Stretch: End of Stretch NGR	B	B	B	B	A
103A	864	W	274800 212500	River Name: Llynfell Reach: Conf Twrch-conf Unnamed Stream Sn748125 End/Start of Stretch: Start of Stretch NGR	C	C	A	A	A
104B	1173	NW	274900 213500	River Name: Llynfell Reach: Conf Unnamed Stream - Brynbrain End/Start of Stretch: Start of Stretch NGR	B	B	B	B	A

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAH). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
Not shown	619	S	275487 211478	River Name: Twrch Reach: Conf.nantllynfell-conf. Nant Ffridiau End/Start of Stretch: Sample Point NGR	A	A	A	A	-
Not shown	656	S	275460 211448	River Name: Llynfell Reach: Conf Twrch-conf Unnamed Stream Sn748125 End/Start of Stretch: Sample Point NGR	A	A	A	A	-
Not shown	689	S	275500 211400	River Name: Twrch Reach: Conf.r.tawc - Conf.nantllynfell End/Start of Stretch: Start of Stretch NGR	A	A	A	A	-
Not shown	689	S	275500 211400	River Name: Llynfell Reach: Conf Twrch-conf Unnamed Stream Sn748125 End/Start of Stretch: End of Stretch NGR	A	A	A	A	-
Not shown	689	S	275500 211400	River Name: Twrch Reach: Conf.nantllynfell-conf. Nant Ffridiau End/Start of Stretch: End of Stretch NGR	A	A	A	A	-
Not shown	765	S	275700 211300	River Name: Nant Gwys Reach: Conf.r.twrch - Gelli Farm End/Start of Stretch: End of Stretch NGR	B	B	B	B	-
111	774	NW	274927 212574	River Name: Llynfell Reach: Conf Unnamed Stream - Brynbrain End/Start of Stretch: Sample Point NGR	A	A	A	A	-
Not shown	788	S	275730 211278	River Name: Nant Gwys Reach: Conf.r.twrch - Gelli Farm End/Start of Stretch: Sample Point NGR	B	B	B	B	-
113A	864	W	274800 212500	River Name: Llynfell Reach: Conf Unnamed Stream - Brynbrain End/Start of Stretch: End of Stretch NGR	A	A	A	A	-
114A	864	W	274800 212500	River Name: Llynfell Reach: Conf Twrch-conf Unnamed Stream Sn748125 End/Start of Stretch: Start of Stretch NGR	A	A	A	A	-
115B	1173	NW	274900 213500	River Name: Llynfell Reach: Conf Unnamed Stream - Brynbrain End/Start of Stretch: Start of Stretch NGR	A	A	A	A	-

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
3	2 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	2 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	4 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
30	4 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
5	10 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				conditions) Average Width in Watercourse Section (m): Not Provided
31	10 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	29 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
32	29 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
7	35 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
33	35 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	53 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	53 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	68 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 26.0
35	68 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 26.0
10	69 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
11	69 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 26.0
12	69 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
36	69 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	69 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 26.0
38	69 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
13	71 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
14	71 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
39	71 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
40	71 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	85 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.9
41	85 SE	-	Lake, loch or reservoir.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.9
16	92 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
42	92 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
17	113 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
43	113	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
18	114 NW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.5
44	114 NW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.5
19	115 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
45	115 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
20	118 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
46	118 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	124 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
47	124 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
22	125 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.3
48	125 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.3
23	135 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
49	135 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 2.1
24	139 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	139 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
50	139 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	139 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
26	141 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	141 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
52	141 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
53	141 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	143 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
54	143 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	145 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	145 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
30	146 NW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
56	146 NW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
31	148 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
57	148 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
32	153 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
58	153 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
33	164 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
34	164 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
35	164 NW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
59	164 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
60	164 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
61	164 NW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
36	169	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
62	169 NW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
37	181 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
63	181 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
38	188 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
64	188 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
39	194 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
65	194 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
40	199 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
66	199 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
41	201 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
67	201 W	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.2
42	209 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
68	209 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
43	215 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
69	215 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
44	217 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
45	217 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
70	217 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
71	217 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
46	221 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
47	221 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
72	221 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
73	221 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	225 SW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.5

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
74	225 SW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.5
49	231 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
75	231 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
50	232 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	232 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
52	232 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
76	232 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	232 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
78	232 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
53	248 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
79	248 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
54	252 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	252	-	Reservoir. An area of non-tidal water used for storing	Catchment Area: Tawe Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	E		water.	Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 50.4
80	252 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
81	252 E	-	Reservoir. An area of non-tidal water used for storing water.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 50.4
56	267 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
82	267 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
57	268 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
83	268 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
58	271 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
84	271 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
59	272 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
85	272 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
60	274 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
86	274 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
61	275 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
87	275 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
62	283 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.0
88	283 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.0
63	290 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
89	290 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
64	305 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
65	305 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
90	305 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
91	305 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
66	308 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
92	308 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
67	312 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
93	312 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
68	327 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	327 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
69	328 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
70	328 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	328 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	328 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
71	332 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
97	332 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
72	339 N	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.2
Not shown	339 N	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.2
73	342	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
99	342 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
74	373 SW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.1
75	373 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
100	373 SW	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.1
101	373 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
76	384 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
102	384 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	394 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
103	394 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
78	403 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
79	403 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
104	403 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
105	403 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
80	407 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
106	407 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
81	419 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
Not shown	419 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
82	422 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
83	422 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
108	422 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
109	422 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
84	437 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	437 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
85	439 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.2

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	439 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.2
86	446 N	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.3
Not shown	446 N	Afon Twrch	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.3
87	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
88	451 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
Not shown	451 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
89	462 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.4
Not shown	462 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.4
90	463 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
91	463 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	463 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
Not shown	463	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
92	464 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
Not shown	464 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
93	480 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	480 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
94	492 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
95	492 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
96	492 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
120	492 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	492 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
122	492 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
97	496 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	496 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Tawe Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Average Width in Watercourse Section (m): Not Provided				

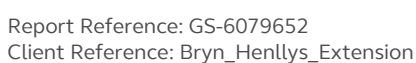
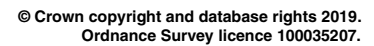
6.11 Surface Water Features

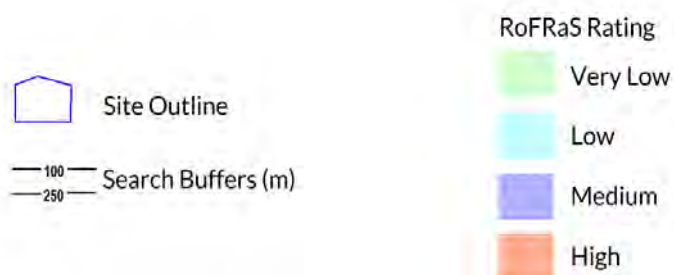
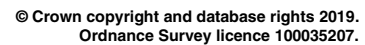
Surface water features within 250m of the study site

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
2	NW
4	E
10	SE
29	N
52	E
53	SE
71	S
81	SE
92	SE
107	NW
113	SE
115	E
121	NW
123	SW
124	S
135	NW
143	SE
171	W
181	NW
199	NW
217	E
217	E
221	SE
221	SE
232	NE
232	NE
232	NE
232	SE
249	SE





7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m

Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1A	104	NW	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
2	147	W	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m

Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1A	106	NW	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)
2	147	W	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite

Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Flood Defences within 250m of the study site None identified
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site Identified

Clearwater Flooding or Superficial Deposits Flooding Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

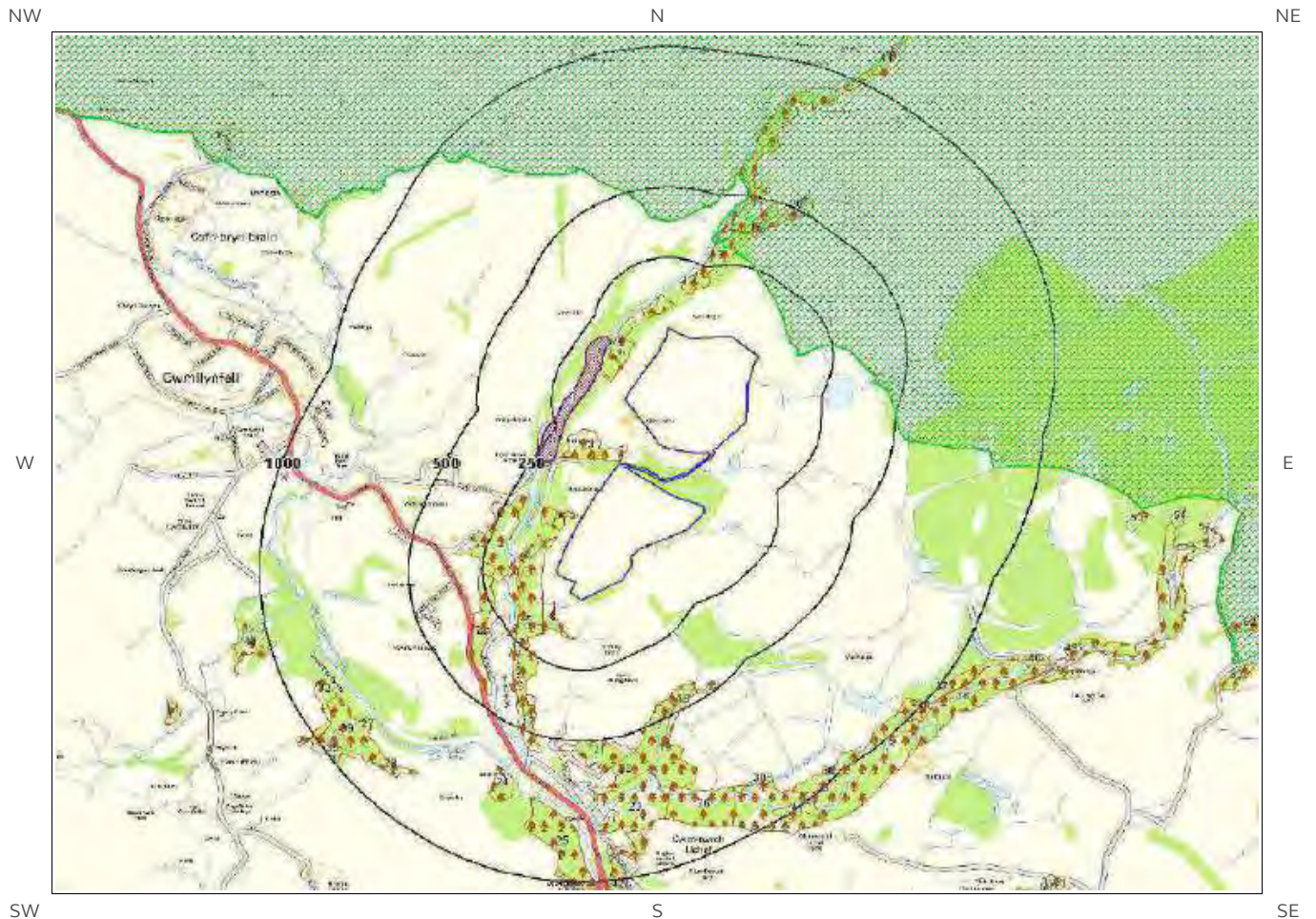
7.8 Groundwater Flooding Confidence Areas

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.

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

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

1

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

ID	Distance (m)	Direction	SSSI Name	Data Source
1	124	NW	CWM TWRCH	Natural Resources Wales

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

62

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
3	6	N	UNKNOWN	Ancient and Semi-Natural Woodland
4A	17	NW	UNKNOWN	Ancient and Semi-Natural Woodland
5	41	NW	UNKNOWN	Restored Ancient Woodland Site
6	48	NW	UNKNOWN	Ancient and Semi-Natural Woodland
7	57	NW	UNKNOWN	Ancient and Semi-Natural Woodland
8	66	SW	UNKNOWN	Ancient and Semi-Natural Woodland
9	71	NW	UNKNOWN	Ancient and Semi-Natural Woodland
10A	74	NW	UNKNOWN	Ancient and Semi-Natural Woodland
11	127	W	UNKNOWN	Ancient and Semi-Natural Woodland
12	136	NE	UNKNOWN	Ancient and Semi-Natural Woodland
13	136	NE	UNKNOWN	Ancient and Semi-Natural Woodland
14	154	W	UNKNOWN	Ancient and Semi-Natural Woodland
15	363	N	UNKNOWN	Ancient and Semi-Natural Woodland
16	372	N	UNKNOWN	Ancient and Semi-Natural Woodland
17	378	SW	UNKNOWN	Restored Ancient Woodland Site
18	421	SE	UNKNOWN	Ancient and Semi-Natural Woodland
19	438	SE	UNKNOWN	Ancient and Semi-Natural Woodland
20	461	N	UNKNOWN	Ancient and Semi-Natural Woodland
21	497	S	UNKNOWN	Ancient and Semi-Natural Woodland
22	562	S	UNKNOWN	Ancient and Semi-Natural Woodland
23	641	S	UNKNOWN	Restored Ancient Woodland Site
24	651	SW	UNKNOWN	Ancient and Semi-Natural Woodland
25	718	S	UNKNOWN	Ancient and Semi-Natural Woodland
26	732	SE	UNKNOWN	Restored Ancient Woodland Site
27	815	SW	UNKNOWN	Ancient and Semi-Natural Woodland
28	819	SW	UNKNOWN	Ancient and Semi-Natural Woodland
29	828	SW	UNKNOWN	Ancient and Semi-Natural Woodland

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
30	833	SE	UNKNOWN	Ancient and Semi-Natural Woodland
31	841	SE	UNKNOWN	Ancient and Semi-Natural Woodland
32	862	SW	UNKNOWN	Ancient and Semi-Natural Woodland
33	863	S	UNKNOWN	Ancient and Semi-Natural Woodland
34	905	SW	UNKNOWN	Ancient and Semi-Natural Woodland
35	922	SW	UNKNOWN	Ancient and Semi-Natural Woodland
36	932	SE	UNKNOWN	Ancient Replanted Woodland
37	944	SE	UNKNOWN	Ancient Replanted Woodland
38	951	SE	UNKNOWN	Restored Ancient Woodland Site
39	954	S	UNKNOWN	Ancient and Semi-Natural Woodland
40	955	SE	UNKNOWN	Ancient Replanted Woodland
41	960	SE	UNKNOWN	Ancient and Semi-Natural Woodland
42	974	S	UNKNOWN	Restored Ancient Woodland Site
43	976	W	UNKNOWN	Ancient and Semi-Natural Woodland
44	1008	NE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1157	S	UNKNOWN	Ancient and Semi-Natural Woodland
46	1168	SE	UNKNOWN	Ancient and Semi-Natural Woodland
47	1184	SE	UNKNOWN	Ancient and Semi-Natural Woodland
48	1251	SE	UNKNOWN	Ancient and Semi-Natural Woodland
49	1300	E	UNKNOWN	Ancient Replanted Woodland
50	1329	E	UNKNOWN	Ancient Replanted Woodland
51	1357	W	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1396	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1433	NE	UNKNOWN	Restored Ancient Woodland Site
54	1467	E	UNKNOWN	Ancient Replanted Woodland
Not shown	1535	SE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1576	NE	UNKNOWN	Restored Ancient Woodland Site
57	1585	E	UNKNOWN	Ancient Replanted Woodland
58	1688	SE	UNKNOWN	Restored Ancient Woodland Site
Not	1717	NE	UNKNOWN	Restored Ancient Woodland

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
shown				Site
Not shown	1724	E	UNKNOWN	Ancient Replanted Woodland
Not shown	1771	SE	UNKNOWN	Restored Ancient Woodland Site
62	1776	SE	UNKNOWN	Ancient and Semi-Natural Woodland
63	1828	E	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1849	W	UNKNOWN	Ancient and Semi-Natural Woodland

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

The following National Park records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NP Name	Data Source
2	115	NE	Brecon Beacons	Natural Resources Wales

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

0

Database searched and no data found.

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

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 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 Geo Insight**, available from our **website**. The following information has been found:

9.1.1 Shrink Swell

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.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Moderate

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

Hazard
Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* 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
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

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

9.1.4 Compressible Ground

Maximum Compressible Ground* 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 compressible deposits to be present. 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.

9.1.5 Collapsible Rocks

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.

9.1.6 Running Sand

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.

9.2 Radon

9.2.1 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 site is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

Identified

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

Distance (m)	Direction	Details
0	On Site	The site lies in or in proximity to the coal mining reporting area as defined by the Coal Authority

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:

Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Natural Resources Wales

Ty Cambria
29 Newport Road
Cardiff
CF24 0TP
Tel: 0300 065 3000
Email: enquiries@naturalresourceswales.gov.uk

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority

Authority: Powys County Council
Phone: 01597 826000

Web: <http://www.powys.gov.uk>

Address: County Hall, Spa Road East, Llandrindod Wells, Powys, LD1



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



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England/Natural Resources Wales who retain the Copyright and Intellectual Property Rights for the data.

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<https://www.groundsure.com/terms-and-conditions-feb11-2019>

Wardell Armstrong LLP
22, WINDSOR PLACE,
CARDIFF, CF10 3BY

Groundsure Reference: GS-6079653
Your Reference: Bryn_Henllys_Extension
Report Date: 6 Jun 2019
Report Delivery Method: Email - pdf

Geo Insight

Address: 276031, 212872,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Address: 276031, 212872,
Date: 6 Jun 2019
Reference: GS-6079653
Client: Wardell Armstrong LLP



Aerial Photograph Capture date: 26-May-2017
Grid Reference: 276030,212509
Site Size: 25.0930ha

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Overview of Findings

The Groundsure Geo Insight 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 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal 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.

Section 1: Geology 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	Yes
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslide within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	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 of linear features within 500m of the study site boundary at 1:10,000 scale?	Yes

Section 2: Geology 1:50,000 Scale

2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	Yes
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	Yes
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslide within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.

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

Yes

2.3.3 Are there any records of linear features within 500m of the study site boundary?

Yes

Section 3: Radon

3. Radon

3.1 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 1 and 3% of properties are above the Action Level.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

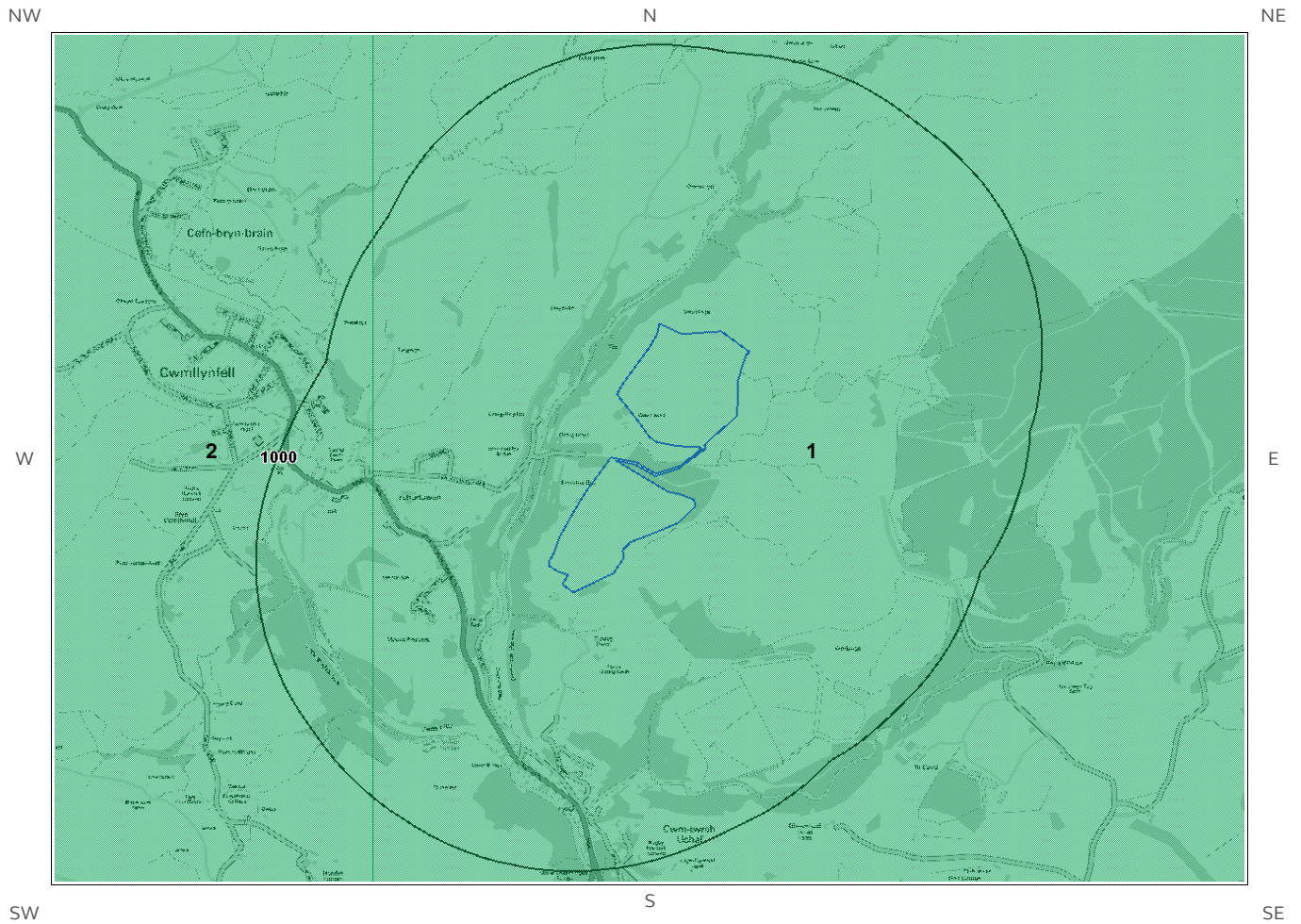
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	7	11	58	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	1	1	23	19	56
4.3 Current Ground Workings	4	2	19	9	25

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	2	1	23	19	58
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	1	0	1
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

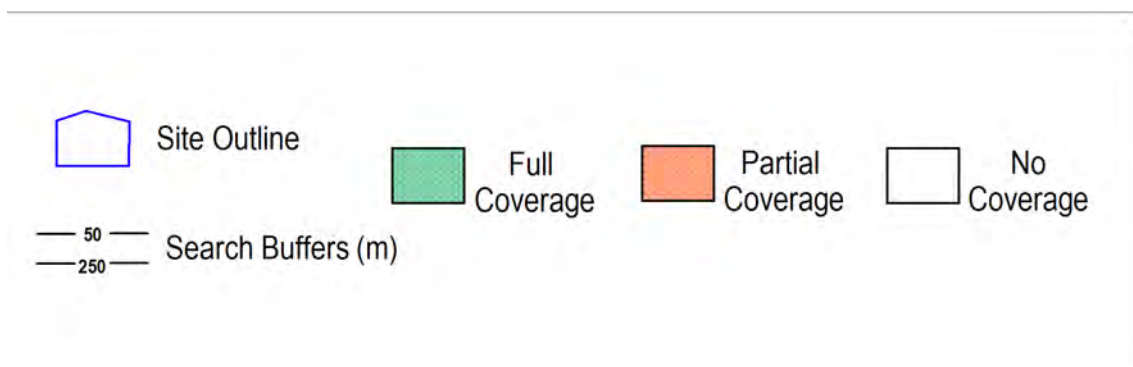
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Moderate				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Very Low				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Very Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	0	2		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	19	0	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	4	18	Not Searched	
9.3 Historical Railways	0	0	2	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
2	603.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1969.0	No deposits are mapped	Full	Full	Some deposits are mapped

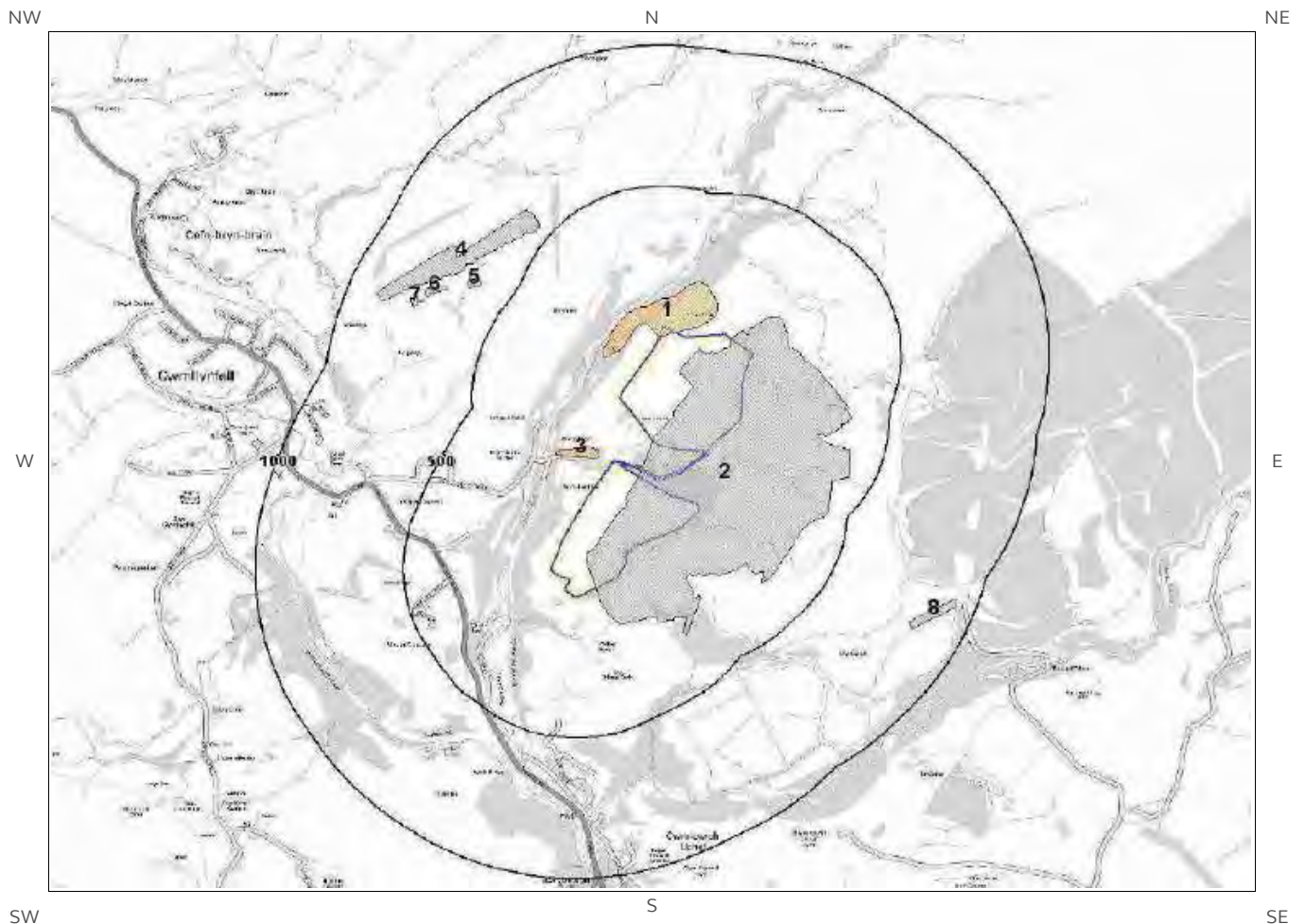
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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1. Geology 1:10,000 scale

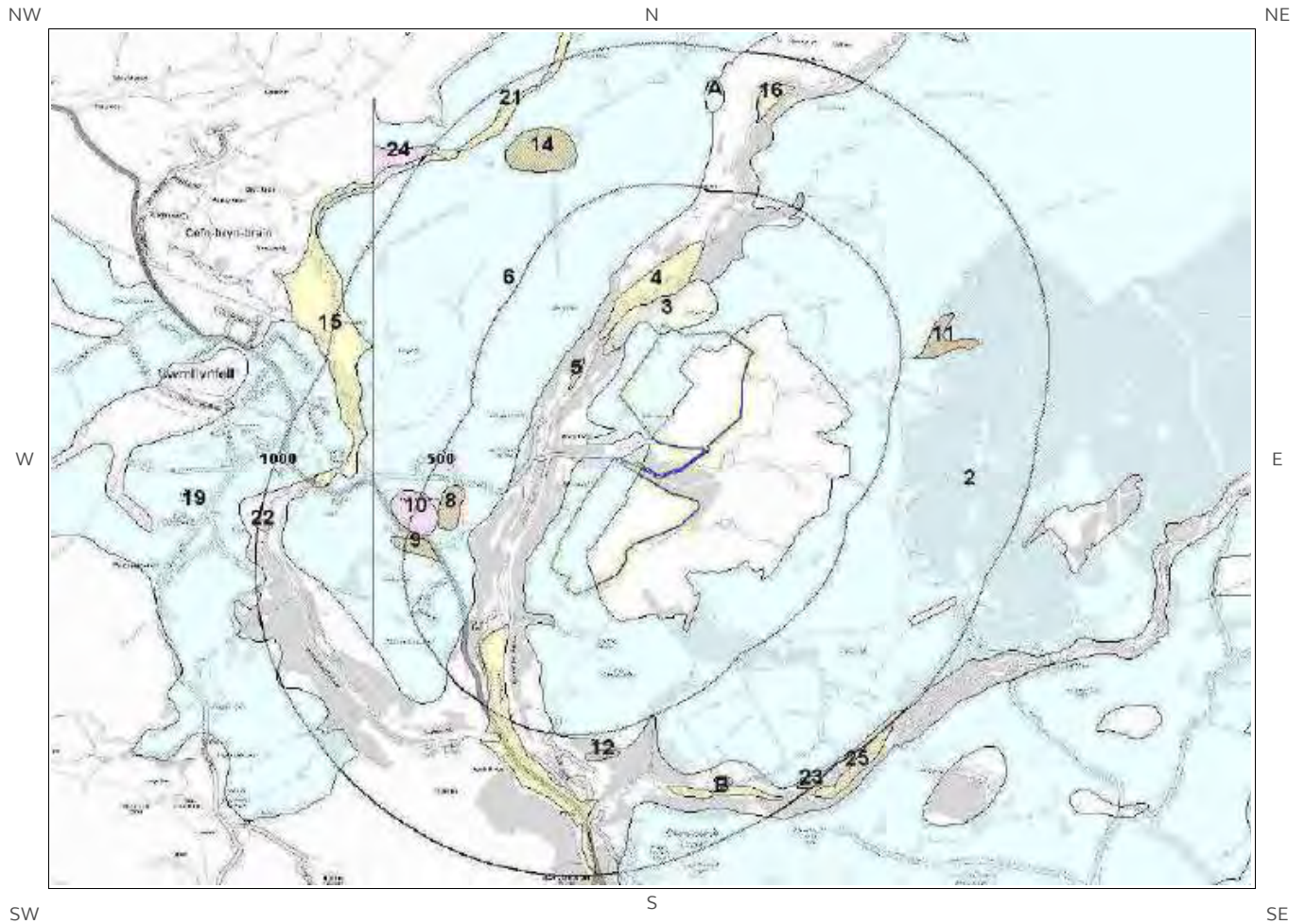
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

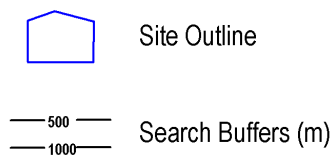
ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	0.0	On Site	WGR-VOID	Worked Ground (Undivided)	Void
3	53.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
2	0.0	On Site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
3	0.0	On Site	SUPNM-UNKNOWN	Superficial Theme Not Mapped [for Digital Map Use Only] - Unknown/unclassified Entry	Unknown/unclassified Entry
4	86.0	NW	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
5	152.0	W	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
6	212.0	NW	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
7	230.0	SW	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
8	348.0	NW	PEAT-P	Peat - Peat	Peat
9	384.0	W	PEAT-P	Peat - Peat	Peat
10	413.0	W	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel

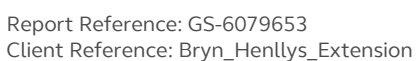
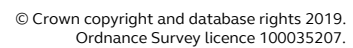
1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? 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 1:10,000 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.



1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1Z	0.0	On Site	SWMCM-MDSS	South Wales Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovia Sub-age - Duckmantian Sub-age
2	62.0	NW	SWLCM-MDSS	South Wales Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
3	345.0	E	SWLCM-MDSS	South Wales Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
4	356.0	NE	SWLCM-MDSS	South Wales Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	Category Description	Feature Description
18	0.0	On Site	FOLD_AXIS	Trace of upper hinge of major monocline; barbs on steep limb
19	0.0	On Site	ROCK	Coal seam, inferred
20	0.0	On Site	ROCK	Coal seam, inferred
21	0.0	On Site	FOLD_AXIS	Trace of upper hinge of major monocline; barbs on steep limb
22	0.0	On Site	ROCK	Coal seam, observed
23C	0.0	On Site	ROCK	Coal seam, observed
24C	0.0	On Site	ROCK	Coal seam, observed
25C	0.0	On Site	ROCK	Coal seam, inferred
26	0.0	On Site	ROCK	Coal seam, observed
27C	20.0	NE	ROCK	Coal seam, observed
28	34.0	SW	ROCK	Coal seam, inferred
29D	35.0	NE	ROCK	Coal seam, observed
30	44.0	NW	ROCK	Coal seam, inferred
31	46.0	NW	ROCK	Coal seam, observed
32D	47.0	NE	ROCK	Coal seam, observed
33L	62.0	NW	FOSSIL_HORIZON	Fossil horizon, marine band
34E	72.0	NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
35E	73.0	W	ROCK	Coal seam, inferred
36N	76.0	NW	FOSSIL_HORIZON	Fossil horizon, marine band
37	78.0	NE	FOLD_AXIS	Trace of upper hinge of major monocline; barbs on steep limb
38F	81.0	SW	ROCK	Coal seam, inferred

ID	Distance (m)	Direction	Category Description	Feature Description
39F	88.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
40G	89.0	W	ROCK	Coal seam, inferred
41H	92.0	N	ROCK	Coal seam, observed
42G	102.0	NW	ROCK	Coal seam, inferred
43H	104.0	NW	ROCK	Coal seam, observed
44I	110.0	SW	ROCK	Coal seam, inferred
45	111.0	NW	ROCK	Coal seam, inferred
46H	113.0	N	ROCK	Coal seam, observed
47H	119.0	NW	FOLD_AXIS	Axial plane trace of major anticline
48I	125.0	W	FOLD_AXIS	Axial plane trace of major anticline
49J	125.0	E	ROCK	Coal seam, observed
50G	132.0	W	FOLD_AXIS	Axial plane trace of major anticline
51G	137.0	W	FOLD_AXIS	Axial plane trace of major syncline
52M	143.0	W	FAULT	Thrust fault, observed; barb on original hanging wall side
53K	144.0	NW	ROCK	Coal seam, observed
54I	151.0	SW	FOLD_AXIS	Axial plane trace of major anticline
55I	153.0	SW	FOLD_AXIS	Axial plane trace of major syncline
56O	153.0	W	ROCK	Coal seam, observed
57E	154.0	W	ROCK	Coal seam, inferred
58J	159.0	NE	ROCK	Coal seam, inferred
59K	163.0	NW	ROCK	Coal seam, observed
60K	172.0	NW	ROCK	Coal seam, observed
61	173.0	SW	FOLD_AXIS	Axial plane trace of major syncline
62L	173.0	NE	ROCK	Coal seam, observed
63Q	177.0	W	ROCK	Coal seam, observed
64M	181.0	NW	ROCK	Coal seam, inferred
65M	181.0	NW	ROCK	Coal seam, inferred
66P	204.0	NW	ROCK	Coal seam, observed
67M	209.0	NW	ROCK	Coal seam, inferred
68	210.0	SE	ROCK	Coal seam, inferred
69M	216.0	NW	ROCK	Coal seam, inferred
70N	217.0	W	ROCK	Coal seam, observed
71R	223.0	N	FOLD_AXIS	Axial plane trace of major syncline
72O	228.0	W	ROCK	Coal seam, observed
73P	232.0	NW	ROCK	Coal seam, observed
74N	244.0	NW	ROCK	Coal seam, inferred
75	245.0	N	FOLD_AXIS	Trace of upper hinge of major monocline; barbs on steep limb
76Q	249.0	NW	ROCK	Coal seam, inferred
77P	267.0	NW	ROCK	Coal seam, inferred
78	279.0	W	FAULT	Reverse fault, inferred
79	279.0	W	ROCK	Coal seam, inferred
80	302.0	NW	ROCK	Coal seam, inferred
81	303.0	SE	ROCK	Coal seam, inferred
82T	306.0	SW	ROCK	Coal seam, inferred
83	319.0	NW	FOLD_AXIS	Trace of upper hinge of major monocline; barbs on steep limb
84S	326.0	NW	ROCK	Coal seam, inferred
85R	343.0	N	ROCK	Coal seam, observed
86	345.0	E	FAULT	Normal fault, observed; crossmark on downthrow side
87S	353.0	NW	FOSSIL_HORIZON	Fossil horizon, marine band

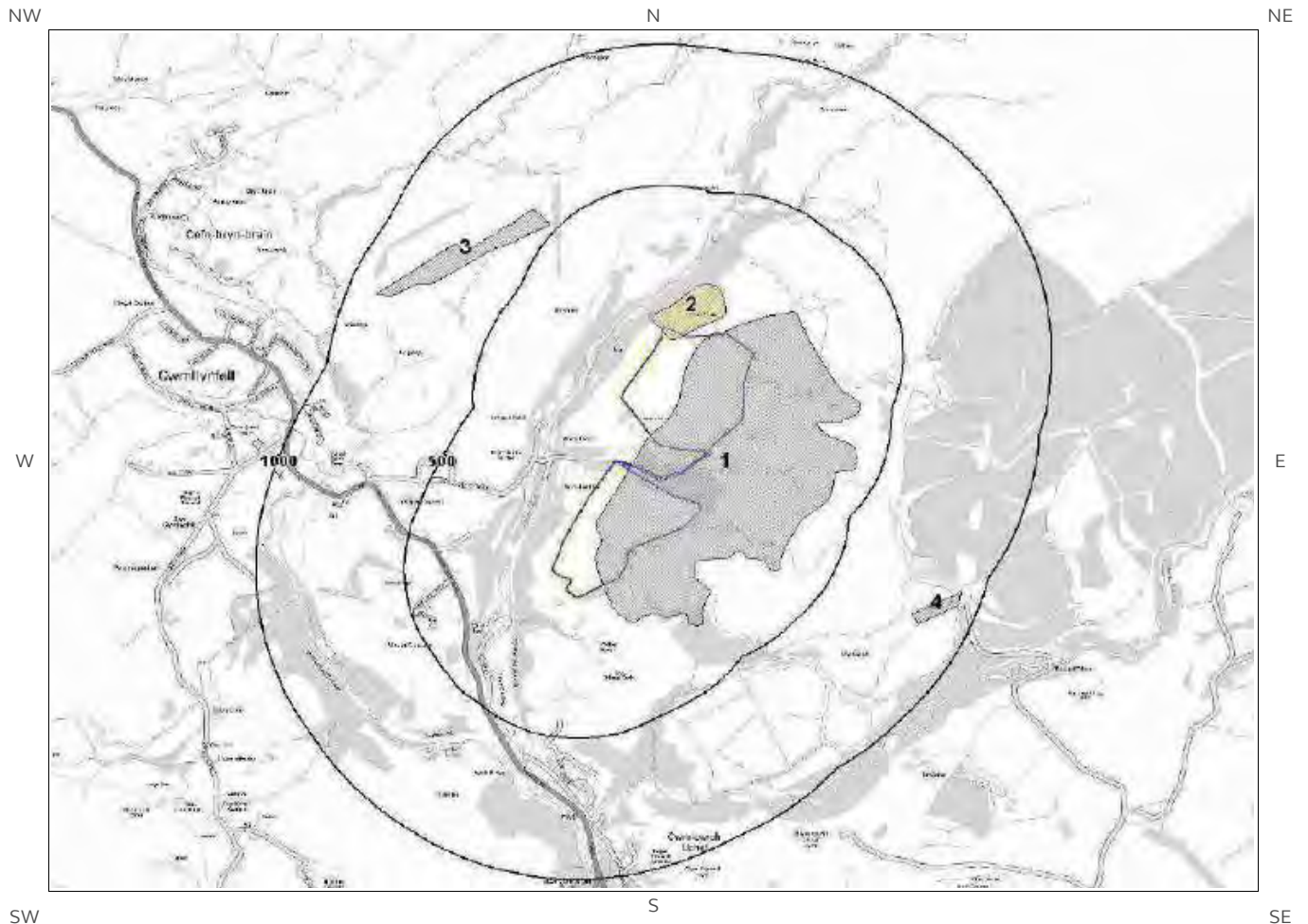
ID	Distance (m)	Direction	Category Description	Feature Description
88	356.0	NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
89	356.0	NE	FAULT	Normal fault, observed; crossmark on downthrow side
90	358.0	E	ROCK	Coal seam, observed
91T	369.0	SW	FOLD_AXIS	Axial plane trace of major anticline
92T	370.0	SW	ROCK	Coal seam, inferred
93	393.0	NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
94W	408.0	SW	FOLD_AXIS	Axial plane trace of major syncline
95U	429.0	N	FOSSIL_HORIZON	Fossil horizon, marine band
96	429.0	W	FAULT	Reverse fault, inferred
97U	437.0	N	ROCK	Coal seam, observed
98V	459.0	N	ROCK	Coal seam, observed
99AF	460.0	NE	FAULT	Normal fault, observed; crossmark on downthrow side
100V	464.0	N	ROCK	Coal seam, inferred
101W	471.0	SW	ROCK	Coal seam, inferred
102U	471.0	N	ROCK	Coal seam, inferred
103Y	471.0	SW	FOLD_AXIS	Axial plane trace of major anticline
104	472.0	SW	ROCK	Coal seam, inferred

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 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.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 230

2.1.1 Artificial/ Made Ground

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

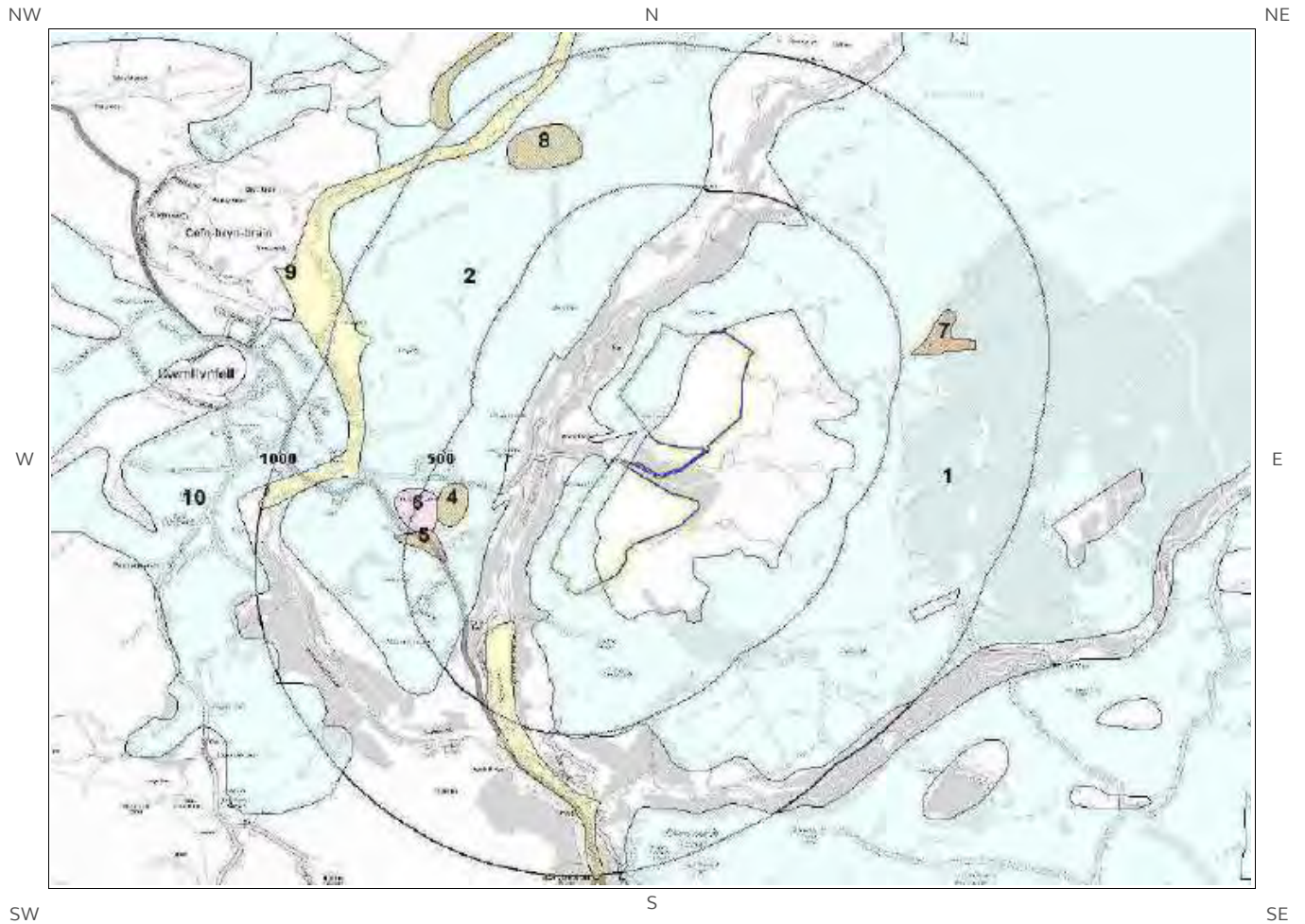
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
2	0.0	On Site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Very High	Low

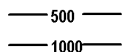
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
2	209.0	NW	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	213.0	SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
4	338.0	W	PEAT-P	PEAT	PEAT
5	359.0	W	PEAT-P	PEAT	PEAT
6	417.0	W	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low

2.2.3 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.

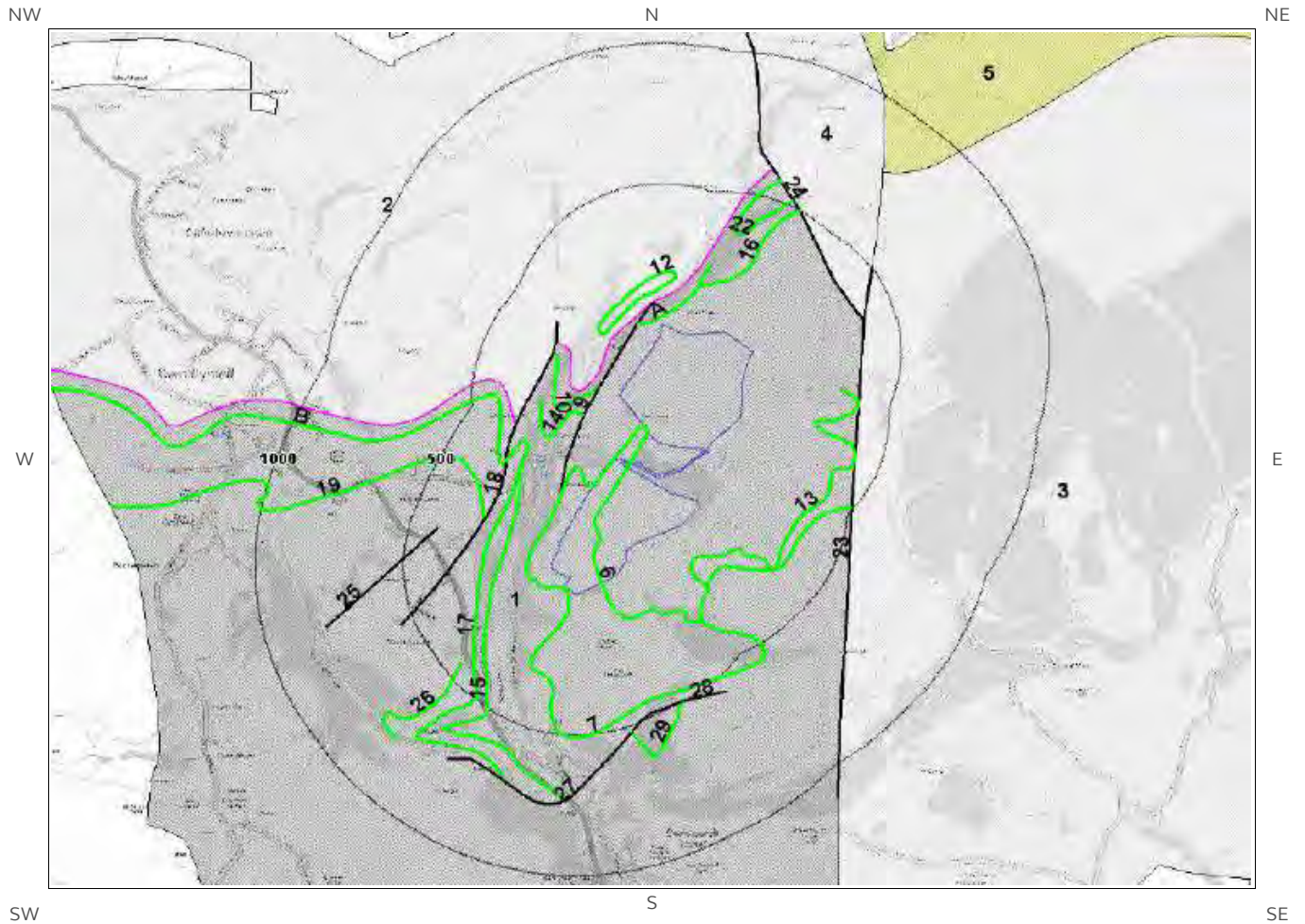
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

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

Database searched and no data found.

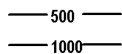
2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 230

2.3.1 Bedrock/Solid Geology

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

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	SWMCM-MDSS	SOUTH WALES MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	79.0	NW	SWLCM-MDSS	SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3	368.0	E	SWLCM-MDSS	SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
4	369.0	NE	SWLCM-MDSS	SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

2.3.2 Permeability of Bedrock Ground

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

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Moderate	Low

2.3.3 Linear features

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

ID	Distance	Direction	Category Description	Feature Description
6	0.0	On Site	ROCK	Coal seam, observed
7	0.0	On Site	ROCK	Coal seam, inferred
8A	24.0	NW	ROCK	Coal seam, inferred
9	71.0	NW	FAULT	Fault, inferred, displacement unknown
10	76.0	W	ROCK	Coal seam, inferred
11A	79.0	NW	FOSSIL_HORIZON	Marine band
12	116.0	NW	ROCK	Coal seam, inferred

ID	Distance	Direction	Category Description	Feature Description
13	125.0	SE	ROCK	Coal seam, observed
14	141.0	SW	ROCK	Coal seam, inferred
15	165.0	W	ROCK	Coal seam, inferred
16	169.0	N	ROCK	Coal seam, inferred
17	218.0	NW	ROCK	Coal seam, inferred
18	262.0	NW	FAULT	Fault, inferred, displacement unknown
19	269.0	W	ROCK	Coal seam, inferred
20B	290.0	NW	ROCK	Coal seam, inferred
21B	344.0	NW	FOSSIL_HORIZON	Marine band
22	352.0	N	ROCK	Coal seam, inferred
23	368.0	E	FAULT	Fault, observed, displacement unknown
24	369.0	NE	FAULT	Fault, inferred, displacement unknown
25	404.0	W	FAULT	Fault, inferred, displacement unknown
26	440.0	SW	ROCK	Coal seam, inferred
27	488.0	SE	FAULT	Fault, inferred, displacement unknown
28	496.0	SE	FAULT	Fault, observed, displacement unknown
29	500.0	SE	ROCK	Coal seam, inferred

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

This Geology shows the main components as 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 nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

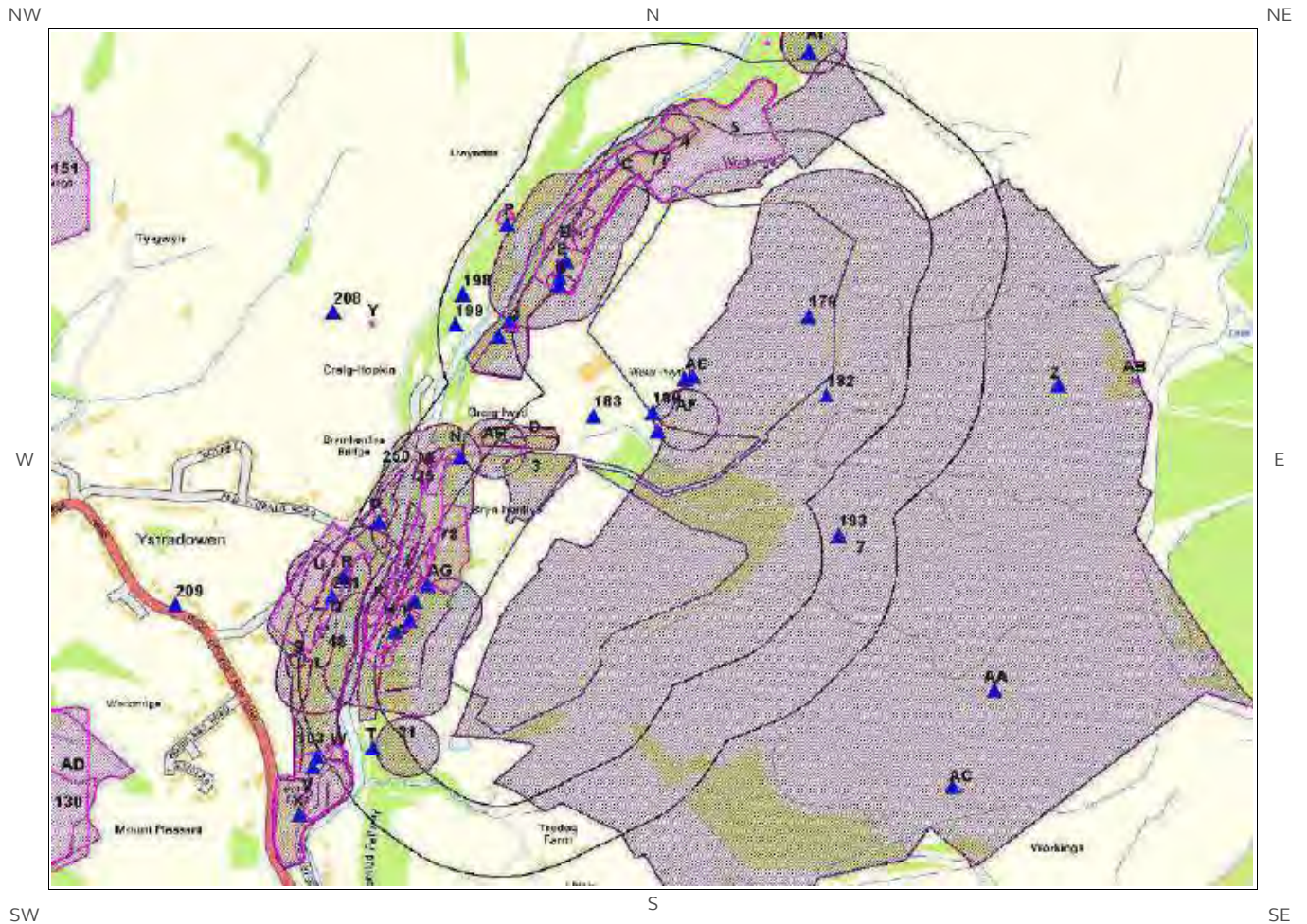
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

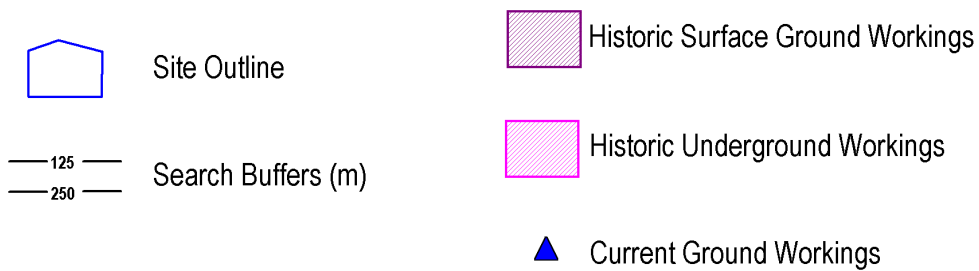
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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4 Ground Workings

4.1 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

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	275525 212219	Colliery	1903
2A	0.0	On Site	275525 212219	Colliery	1877
3	0.0	On Site	275754 212498	Old Brick Works	1921
4	0.0	On Site	275975 213063	Refuse Heap	1965
5	0.0	On Site	276066 213093	Refuse Heap	1985
6AF	0.0	On Site	275997 212618	Coal Levels	1877
7	0.0	On Site	276275 212413	Opencast Workings	1965
8B	5.0	NW	275801 212919	Colliery	1948
9E	30.0	NW	275803 212894	Colliery	1921
10C	33.0	NW	275876 213038	Refuse Heap	1921
11B	33.0	NW	275824 212934	Colliery	1921
12C	33.0	NW	275876 213038	Refuse Heap	1921
13B	33.0	NW	275824 212934	Colliery	1921
14D	38.0	NW	275734 212578	Unspecified Quarry	1948
15D	38.0	NW	275734 212578	Unspecified Old Quarry	1877
16D	38.0	NW	275734 212578	Unspecified Old Quarry	1903
17D	39.0	NW	275718 212586	Refuse Heap	1985
18A	40.0	NW	275544 212167	Disused Colliery	1921
19G	57.0	NW	275787 212861	Colliery	1921
20AH	69.0	NW	275677 212568	Old Coal Level	1877
21	71.0	SW	275532 212042	Old Coal Drift	1877

ID	Distance (m)	Direction	NGR	Use	Date
22I	81.0	W	275522 212260	Colliery	1901
23E	86.0	NW	275791 212892	Drift	1921
24F	87.0	W	275532 212258	Unspecified Pit	1877
25	88.0	NW	275564 212491	Brick Works	1903
26F	92.0	W	275504 212261	Colliery	1948
27G	93.0	NW	275777 212872	Unspecified Drift	1948
28G	93.0	NW	275777 212872	Unspecified Drift	1903
29H	94.0	W	275517 212244	Disused Colliery	1921
30H	94.0	W	275517 212244	Disused Colliery	1921
31G	94.0	NW	275775 212872	Unspecified Drift	1921
32A	103.0	NW	275504 212224	Disused Colliery	1921
33I	107.0	NW	275530 212313	Unspecified Heap	1901
34A	111.0	W	275495 212218	Drift	1877
35J	115.0	W	275711 212777	Old Coal Level	1877
36J	116.0	W	275713 212785	Unspecified Disused Level	1985
37J	118.0	W	275706 212782	Old Coal Level	1901
38J	124.0	W	275702 212778	Old Coal Level	1921
39J	124.0	W	275702 212778	Old Coal Level	1921
40J	124.0	W	275702 212778	Old Coal Level	1921
41J	125.0	W	275704 212778	Old Coal Level	1948
42J	126.0	W	275703 212776	Old Coal Level	1921
43I	126.0	NW	275508 212323	Refuse Heap	1965
44I	134.0	NW	275510 212364	Refuse Heap	1985
45K	138.0	NW	275478 212281	Refuse Heaps	1921
46K	138.0	NW	275478 212281	Refuse Heaps	1921
47Q	141.0	W	275416 212265	Colliery	1948
48	156.0	W	275436 212223	Colliery	1921
49L	160.0	W	275403 212134	Colliery	1921
50L	160.0	W	275402 212193	Colliery	1921

ID	Distance (m)	Direction	NGR	Use	Date
51L	160.0	W	275402 212193	Colliery	1921
52N	166.0	NW	275612 212562	Coal Level	1877
53M	173.0	NW	275559 212522	Old Brick Works	1921
54T	174.0	SW	275471 212039	Old Coal Drift	1901
55M	174.0	NW	275558 212523	Old Brick Works	1921
56N	183.0	NW	275579 212553	Unspecified Heap	1877
57O	202.0	NW	275475 212448	Refuse Heap	1965
58O	202.0	NW	275475 212448	Refuse Heap	1985
59P	207.0	NW	275701 212963	Coal Levels	1877
60U	207.0	W	275386 212338	Unspecified Drift	1948
61O	207.0	NW	275495 212451	Unspecified Drift	1921
62P	208.0	NW	275707 212974	Coal Levels	1877
63O	208.0	NW	275496 212451	Drift	1921
64P	208.0	NW	275695 212974	Coal Levels	1901
65O	211.0	NW	275494 212456	Unspecified Drift	1921
66O	211.0	NW	275494 212453	Unspecified Drift	1948
67O	211.0	NW	275494 212453	Drift	1903
68W	213.0	SW	275418 212034	Unspecified Heap	1877
69V	214.0	SW	275376 211940	Colliery	1903
70R	214.0	NW	275431 212343	Drift	1921
71Q	215.0	W	275392 212247	Cuttings	1877
72R	217.0	W	275430 212347	Unspecified Drift	1921
73AI	225.0	N	276209 213281	Old Coal Level	1877
74R	229.0	W	275411 212331	Unspecified Drift	1921
75S	240.0	W	275350 212192	Unspecified Pit	1921
76S	240.0	W	275350 212192	Unspecified Pit	1921

4.2 Historical Underground Working 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
77	0.0	On Site	275952 213029	Unspecified Disused Mine	1965
78	43.0	NW	275600 212392	Unspecified Disused Mine	1965
79G	78.0	NW	275783 212854	Air Shaft	1903
80I	81.0	W	275522 212260	Colliery	1901
81F	92.0	W	275504 212261	Colliery	1948
82F	92.0	W	275533 212256	Air Shaft	1877
83G	93.0	NW	275777 212872	Unspecified Drift	1903
84G	93.0	NW	275777 212872	Unspecified Drift	1948
85F	94.0	W	275531 212259	Air Shaft	1901
86F	97.0	W	275530 212262	Old Air Shaft	1903
87A	111.0	W	275495 212218	Drift	1877
88J	115.0	W	275711 212777	Old Coal Level	1877
89J	116.0	W	275713 212785	Unspecified Disused Level	1985
90J	118.0	W	275706 212782	Old Coal Level	1901
91J	125.0	W	275704 212778	Old Coal Level	1948
92N	166.0	NW	275612 212562	Coal Level	1877
93T	174.0	SW	275471 212039	Old Coal Drift	1901
94U	199.0	NW	275388 212323	Unspecified Disused Mine	1965
95U	199.0	NW	275388 212323	Unspecified Disused Mine	1985
96P	207.0	NW	275701 212963	Coal Levels	1877
97P	208.0	NW	275707 212974	Coal Levels	1877
98P	208.0	NW	275695 212974	Coal Levels	1901

ID	Distance (m)	Direction	NGR	Use	Date
99O	211.0	NW	275494 212453	Drift	1903
100O	211.0	NW	275494 212453	Unspecified Drift	1948
101V	214.0	SW	275376 211940	Colliery	1903
102W	262.0	SW	275371 212031	Unspecified Old Levels	1948
103	262.0	SW	275371 212031	Unspecified Old Levels	1903
104	279.0	N	276131 213281	Old Coal Level	1901
105X	340.0	SW	275349 211922	Air Shaft	1877
106X	343.0	SW	275349 211915	Air Shaft	1901
107Y	356.0	W	275475 212785	Old Coal Pit	1877
108Y	360.0	W	275471 212790	Old Coal Pit	1901
109Z	366.0	E	276610 212675	Trial Shafts	1903
110Z	366.0	E	276610 212675	Coal Trial Shafts	1948
Not shown	383.0	SW	275469 211741	Disused Air Shaft	1965
Not shown	383.0	SW	275469 211741	Disused Air Shaft	1985
Not shown	385.0	SW	275462 211746	Old Air Shaft	1903
Not shown	385.0	SW	275462 211746	Old Air Shaft	1877
Not shown	385.0	SW	275462 211746	Old Air Shaft	1948
Not shown	388.0	SW	275465 211741	Old Air Shaft	1901
117A A	474.0	SE	276512 212139	Coal Trial Shaft	1948
118A A	474.0	SE	276512 212139	Trial Shaft	1903
119AB	498.0	E	276743 212686	Coal Trial Shafts	1948
120AB	498.0	E	276743 212686	Trial Shafts	1903
121AC	538.0	SE	276454 211965	Trial Shaft	1903
122AC	538.0	SE	276454 211965	Coal Trial Shaft	1948
Not shown	539.0	S	275838 211432	Disused Colliery	1903
124A D	549.0	W	274925 211970	Colliery	1948
Not shown	570.0	SE	275855 211423	Colliery	1877
Not shown	576.0	N	276206 213723	Colliery	1948
Not shown	576.0	N	276206 213723	Colliery	1903

ID	Distance (m)	Direction	NGR	Use	Date
128A D	603.0	W	274894 211962	Unspecified Disused Mine	1988
Not shown	609.0	SE	275641 211398	Colliery	1901
130	613.0	W	274912 211941	Colliery	1877
Not shown	619.0	N	276170 213759	Unspecified Disused Mine	1985
Not shown	619.0	N	276170 213759	Unspecified Disused Mine	1965
Not shown	635.0	SE	275917 211466	Old Coal Levels	1901
Not shown	665.0	SE	275984 211453	Unspecified Old Level	1903
Not shown	665.0	SE	275984 211453	Old Coal Level	1877
Not shown	672.0	S	275456 211275	Old Coal Level	1901
Not shown	678.0	W	274896 211977	Old Coal Pit	1901
Not shown	703.0	SE	275961 211415	Old Coal Level	1877
Not shown	711.0	W	274894 211954	Coal Pits	1876
Not shown	736.0	S	275551 211329	Old Coal Pit	1877
Not shown	769.0	SE	276019 211362	Unspecified Old Level	1948
Not shown	772.0	SE	276002 211357	Old Coal Level	1901
Not shown	779.0	W	274864 211907	Air Shaft	1876
Not shown	787.0	W	274852 211915	Air Shaft	1877
Not shown	789.0	SW	274934 211624	Colliery	1877
Not shown	789.0	SW	274934 211624	Colliery	1903
Not shown	797.0	SW	274930 211563	Unspecified Disused Mine	1988
Not shown	806.0	SW	274931 211611	Colliery	1901
Not shown	839.0	W	274789 211947	Coal Pit	1877
Not shown	844.0	SW	274973 211577	Unspecified Drift	1876
151	851.0	W	274902 213044	Unspecified Disused Mine	1988
Not shown	852.0	W	274752 211910	Coal Pits	1876
Not shown	856.0	SW	274963 211571	Unspecified Drift	1877
Not shown	866.0	W	274646 212030	Colliery	1877
Not shown	868.0	SE	276188 211339	Unspecified Old Level	1948
Not shown	876.0	SW	274916 211604	Air Shaft	1877

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	878.0	S	275424 211221	Old Coal Level	1948
Not shown	878.0	W	274682 211943	Colliery	1877
Not shown	886.0	S	275408 211218	Old Coal Level	1903
Not shown	923.0	S	275482 211149	Old Coal Level	1903
Not shown	925.0	SW	274871 211582	Air Shaft	1876
Not shown	926.0	S	275675 211127	Old Coal Level	1901
Not shown	931.0	S	275613 211102	Old Coal Level	1901
Not shown	937.0	W	274673 212028	Unspecified Shaft	1877
Not shown	937.0	W	274670 212047	Unspecified Old Shaft	1900
Not shown	937.0	W	274671 212034	Unspecified Shaft	1877
Not shown	940.0	W	274667 212044	Unspecified Old Shaft	1905
Not shown	957.0	S	275496 210972	Colliery	1877
Not shown	957.0	S	275496 210972	Disused Colliery	1903
Not shown	957.0	S	275496 210972	Disused Colliery	1948
Not shown	963.0	S	275837 211111	Air Shaft	1901
Not shown	965.0	S	275841 211111	Air Shaft	1877
Not shown	968.0	W	274640 212309	Unspecified Shaft	1900
Not shown	979.0	W	274574 212206	Old Coal Levels	1900
Not shown	983.0	W	274612 212297	Old Coal Levels	1900
Not shown	984.0	W	274609 212294	Old Coal Levels	1948

4.3 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 Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
177AE	0.0	On Site	275993 212690	Coal, Deep	Waun-lwyd Level	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
178AE	0.0	On Site	276007 212693	Coal, Deep	Waun-lwyd Level	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
179	0.0	On Site	276200 212800	Coal, Surface Mined	Brynhenllys Revised OCCS	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
180	0.0	On Site	275941 212631	Coal, Deep	Waun-lwyd Air 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
181AF	16.0	SW	275948 212598	Coal, Deep	Bryn-henllys Level	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
182	21.0	SE	276230 212660	Coal, Surface Mined	Brynhenllys OCCS	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
183	77.0	N	275841 212625	Sandstone	Graig-lwyd Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
184G	81.0	NW	275783 212856	Coal, Deep	Bryn-henllys Colliery Air 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
185G	86.0	NW	275785 212868	Coal, Deep	Bryn-henllys Colliery	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
186B	92.0	NW	275797 212896	Coal, Deep	Bryn-henllys Colliery	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
187AG	92.0	NW	275565 212327	Coal, Deep	Bryn-henllys Colliery	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

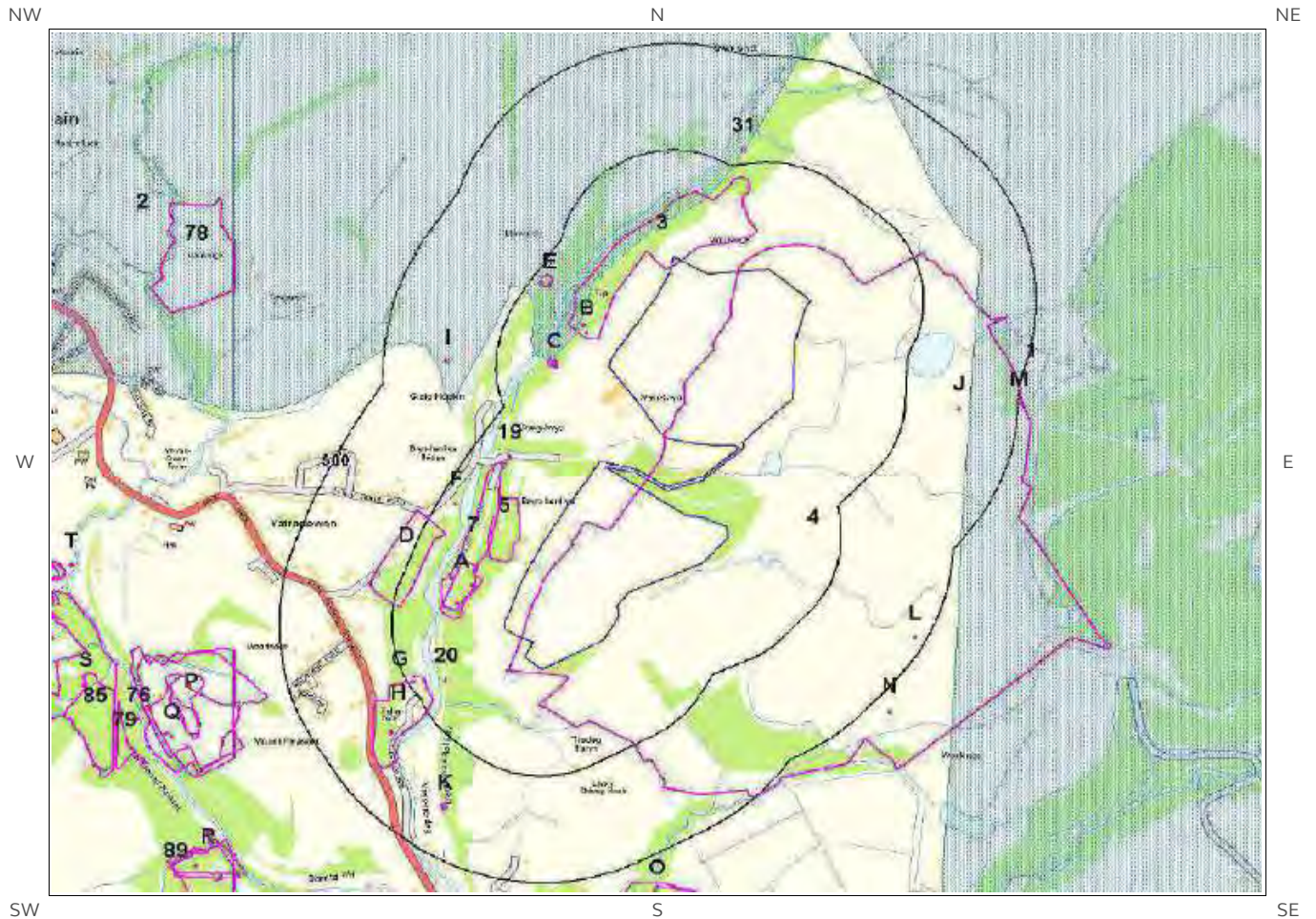
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
188F	96.0	W	275535 212266	Coal, Deep	Bryn-henllys Colliery	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
189AG	98.0	W	275544 212299	Coal, Deep	Bryn-henllys Colliery	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
190A	111.0	W	275511 212244	Coal, Deep	Bryn-henllys Colliery	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
191J	134.0	W	275700 212792	Coal, Deep	Waun-lwyd Level	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
192J	149.0	W	275684 212765	Coal, Deep	Waun-lwyd Level	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
193	154.0	E	276250 212415	Coal, Surface Mined	Waun Llwyd OCCS	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
194AH	161.0	NW	275619 212553	Coal, Deep	Graig-lwyd 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
195T	175.0	SW	275474 212041	Coal, Deep	Bryn Moel Drift	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
196P	211.0	NW	275697 212961	Coal, Deep	Craig-Hopkin Level	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
197O	214.0	NW	275485 212438	Coal, Deep	Pen-y-Graig Level	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
198	219.0	W	275624 212838	Coal, Deep	Craig-Hopkin Levels	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
199	222.0	W	275611 212785	Coal, Deep	Craig-Hopkin Levels	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
200R	225.0	W	275425 212341	Coal, Deep	Ystrad-Owen Colliery	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

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
201	231.0	W	275406 212306	Coal, Deep	Ystrad-Owen Colliery	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
202W	260.0	SW	275381 212024	Coal, Deep	Ystrad-Owen Colliery	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
203AI	263.0	N	276200 213266	Coal, Deep	Cwm-twrch	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
204W	276.0	SW	275373 212007	Coal, Deep	Ystrad-Owen Colliery	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
205X	340.0	SW	275351 211923	Coal, Deep	Ystrad-Owen Colliery Air 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
206Z	375.0	E	276616 212679	Coal, Deep	Gelli	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	409.0	NW	275800 213400	Coal, Surface Mined	Cwm Clyd Farm	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
208	426.0	W	275408 212807	Coal, Deep	Craig-Hopkin Trail Pit	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
209	471.0	W	275145 212292	Sand	Ystrad-Owen	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
210AA	472.0	SE	276510 212142	Coal, Deep	Tir-y-gol	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
211AC	523.0	SE	276439 211973	Coal, Deep	Tir-y-gol	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	619.0	SE	275927 211495	Coal, Deep	Gilfach Colliery	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	647.0	N	276200 213650	Coal, Deep	Henllys Vale Colliery	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

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	666.0	SE	275977 211466	Coal, Deep	Gilfach Colliery	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	678.0	SE	276320 211675	Coal, Surface Mined	Tredeg OCCS	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	707.0	SE	275959 211413	Coal, Deep	Gilfach Colliery	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	750.0	S	275575 211322	Coal, Deep	Gwys Bridge	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	771.0	SE	276015 211368	Coal, Deep	Gilfach Colliery	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	793.0	W	274851 211906	Coal, Deep	Cwmllynfell Colliery Balance Pit	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	794.0	W	274839 211941	Coal, Deep	Cwmllynfell Colliery, No. 1 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	809.0	SW	275206 211412	Sandstone	Lamb Bridge	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	829.0	NW	275590 213765	Coal, Surface Mined	Ddolgarn	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	831.0	SW	274967 211613	Coal, Deep	Hendre Forgan Colliery	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	861.0	SE	276186 211354	Coal, Deep	Glyn Cynnal-Uchaf	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	884.0	S	275412 211223	Coal, Deep	Old Tredegar Arms	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	898.0	SW	274815 211728	Coal, Deep	Coedffaldau Colliery	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

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	898.0	W	274725 212371	Coal, Deep	Cwmllynfell Level	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	901.0	SW	274772 211811	Coal, Deep	Coedffaldau Colliery	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	903.0	SW	274825 211700	Coal, Deep	Coedffaldau Colliery	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	907.0	SW	275105 211364	Sandstone	Lamb Bridge	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	934.0	W	274676 212039	Coal, Deep	Cwmllynfell Colliery	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	944.0	S	275490 211140	Coal, Deep	Upper Bryn-Morgan Bridge	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	969.0	W	274642 212306	Coal, Deep	Cwmllynfell Pit	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	980.0	W	274625 212241	Coal, Deep	Cwmllynfell Level	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	984.0	W	274621 212249	Coal, Deep	Cwmllynfell Level	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

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and
Natural Cavities Legend

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5 Mining, Extraction & Natural Cavities

5.1 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
3	0.0	On Site	275952 213029	Unspecified Disused Mine	1965
4	0.0	On Site	276275 212413	Opencast Workings	1965
5	43.0	NW	275600 212392	Unspecified Disused Mine	1965
6B	78.0	NW	275783 212854	Air Shaft	1903
7	81.0	W	275522 212260	Colliery	1901
8A	92.0	W	275504 212261	Colliery	1948
9A	92.0	W	275533 212256	Air Shaft	1877
10B	93.0	NW	275777 212872	Unspecified Drift	1903
11B	93.0	NW	275777 212872	Unspecified Drift	1948
12A	94.0	W	275531 212259	Air Shaft	1901
13A	97.0	W	275530 212262	Old Air Shaft	1903
14A	111.0	W	275495 212218	Drift	1877
15C	115.0	W	275711 212777	Old Coal Level	1877
16C	116.0	W	275713 212785	Unspecified Disused Level	1985
17C	118.0	W	275706 212782	Old Coal Level	1901
18C	125.0	W	275704 212778	Old Coal Level	1948
19	166.0	NW	275612 212562	Coal Level	1877
20	174.0	SW	275471 212039	Old Coal Drift	1901
21D	199.0	NW	275388 212323	Unspecified Disused Mine	1965
22D	199.0	NW	275388 212323	Unspecified Disused Mine	1985

ID	Distance (m)	Direction	NGR	Details	Date
23E	207.0	NW	275701 212963	Coal Levels	1877
24E	208.0	NW	275707 212974	Coal Levels	1877
25E	208.0	NW	275695 212974	Coal Levels	1901
26F	211.0	NW	275494 212453	Drift	1903
27F	211.0	NW	275494 212453	Unspecified Drift	1948
28H	214.0	SW	275376 211940	Colliery	1903
29G	262.0	SW	275371 212031	Unspecified Old Levels	1903
30G	262.0	SW	275371 212031	Unspecified Old Levels	1948
31	279.0	N	276131 213281	Old Coal Level	1901
32H	340.0	SW	275349 211922	Air Shaft	1877
33H	343.0	SW	275349 211915	Air Shaft	1901
34I	356.0	W	275475 212785	Old Coal Pit	1877
35I	360.0	W	275471 212790	Old Coal Pit	1901
36J	366.0	E	276610 212675	Trial Shafts	1903
37J	366.0	E	276610 212675	Coal Trial Shafts	1948
38K	383.0	SW	275469 211741	Disused Air Shaft	1965
39K	383.0	SW	275469 211741	Disused Air Shaft	1985
40K	385.0	SW	275462 211746	Old Air Shaft	1948
41K	385.0	SW	275462 211746	Old Air Shaft	1903
42K	385.0	SW	275462 211746	Old Air Shaft	1877
43K	388.0	SW	275465 211741	Old Air Shaft	1901
44L	474.0	SE	276512 212139	Coal Trial Shaft	1948
45L	474.0	SE	276512 212139	Trial Shaft	1903
46M	498.0	E	276743 212686	Coal Trial Shafts	1948
47M	498.0	E	276743 212686	Trial Shafts	1903
48N	538.0	SE	276454 211965	Trial Shaft	1903
49N	538.0	SE	276454 211965	Coal Trial Shaft	1948
50O	539.0	S	275838 211432	Disused Colliery	1903
51P	549.0	W	274925 211970	Colliery	1948

ID	Distance (m)	Direction	NGR	Details	Date
52O	570.0	SE	275855 211423	Colliery	1877
Not shown	576.0	N	276206 213723	Colliery	1903
Not shown	576.0	N	276206 213723	Colliery	1948
55P	603.0	W	274894 211962	Unspecified Disused Mine	1988
Not shown	609.0	SE	275641 211398	Colliery	1901
57P	613.0	W	274912 211941	Colliery	1877
Not shown	619.0	N	276170 213759	Unspecified Disused Mine	1985
Not shown	619.0	N	276170 213759	Unspecified Disused Mine	1965
Not shown	635.0	SE	275917 211466	Old Coal Levels	1901
Not shown	665.0	SE	275984 211453	Unspecified Old Level	1903
Not shown	665.0	SE	275984 211453	Old Coal Level	1877
Not shown	672.0	S	275456 211275	Old Coal Level	1901
64P	678.0	W	274896 211977	Old Coal Pit	1901
Not shown	703.0	SE	275961 211415	Old Coal Level	1877
66P	711.0	W	274894 211954	Coal Pits	1876
Not shown	736.0	S	275551 211329	Old Coal Pit	1877
Not shown	769.0	SE	276019 211362	Unspecified Old Level	1948
Not shown	772.0	SE	276002 211357	Old Coal Level	1901
70Q	779.0	W	274864 211907	Air Shaft	1876
71Q	787.0	W	274852 211915	Air Shaft	1877
72R	789.0	SW	274934 211624	Colliery	1877
73R	789.0	SW	274934 211624	Colliery	1903
74R	797.0	SW	274930 211563	Unspecified Disused Mine	1988
75R	806.0	SW	274931 211611	Colliery	1901
76	839.0	W	274789 211947	Coal Pit	1877
77R	844.0	SW	274973 211577	Unspecified Drift	1876
78	851.0	W	274902 213044	Unspecified Disused Mine	1988
79	852.0	W	274752 211910	Coal Pits	1876
80R	856.0	SW	274963 211571	Unspecified Drift	1877

ID	Distance (m)	Direction	NGR	Details	Date
81S	866.0	W	274646 212030	Colliery	1877
Not shown	868.0	SE	276188 211339	Unspecified Old Level	1948
83R	876.0	SW	274916 211604	Air Shaft	1877
Not shown	878.0	S	275424 211221	Old Coal Level	1948
85	878.0	W	274682 211943	Colliery	1877
Not shown	883.0	SW	275309 211093	OpenCast Working	1965
Not shown	886.0	S	275408 211218	Old Coal Level	1903
Not shown	923.0	S	275482 211149	Old Coal Level	1903
89	925.0	SW	274871 211582	Air Shaft	1876
Not shown	926.0	S	275675 211127	Old Coal Level	1901
Not shown	931.0	S	275613 211102	Old Coal Level	1901
92S	937.0	W	274673 212028	Unspecified Shaft	1877
93S	937.0	W	274670 212047	Unspecified Old Shaft	1900
94S	937.0	W	274671 212034	Unspecified Shaft	1877
95S	940.0	W	274667 212044	Unspecified Old Shaft	1905
Not shown	948.0	SW	274828 211122	Opencast Workings	1965
Not shown	957.0	S	275496 210972	Colliery	1877
Not shown	957.0	S	275496 210972	Disused Colliery	1948
Not shown	957.0	S	275496 210972	Disused Colliery	1903
Not shown	963.0	S	275837 211111	Air Shaft	1901
Not shown	965.0	S	275841 211111	Air Shaft	1877
102T	968.0	W	274640 212309	Unspecified Shaft	1900
103	979.0	W	274574 212206	Old Coal Levels	1900
104T	983.0	W	274612 212297	Old Coal Levels	1900
105T	984.0	W	274609 212294	Old Coal Levels	1948

5.2 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 site lies in or in proximity to the coal mining reporting area as defined by the Coal Authority

5.3 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? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 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	79.0	NW	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
2	753.0	NW	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

5.5 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? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

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

Database searched and no data found.

5.8 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.

5.9 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..

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

Database searched and no data found.

5.10 Clay Mining

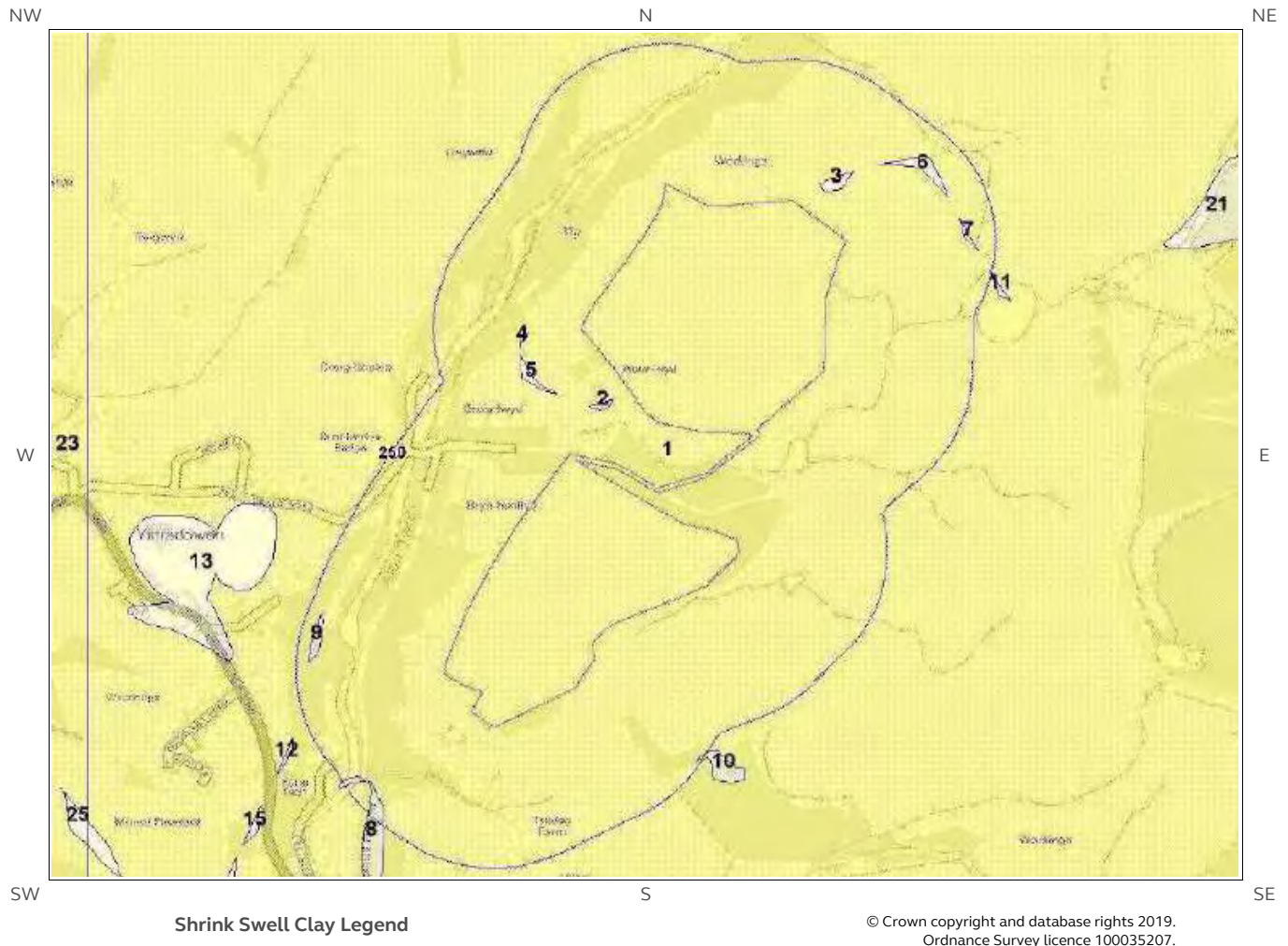
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

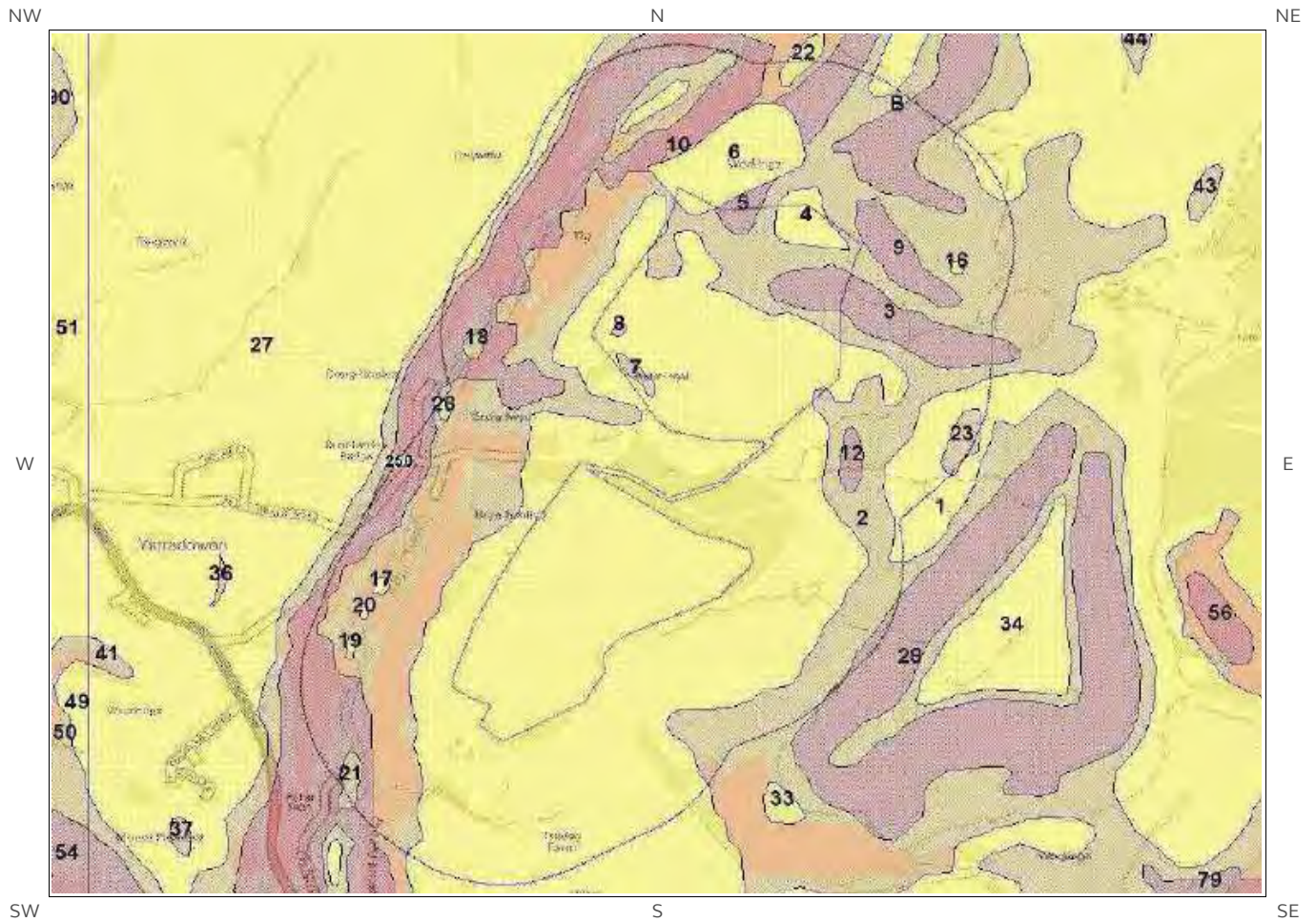
Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



6.2 Landslides map

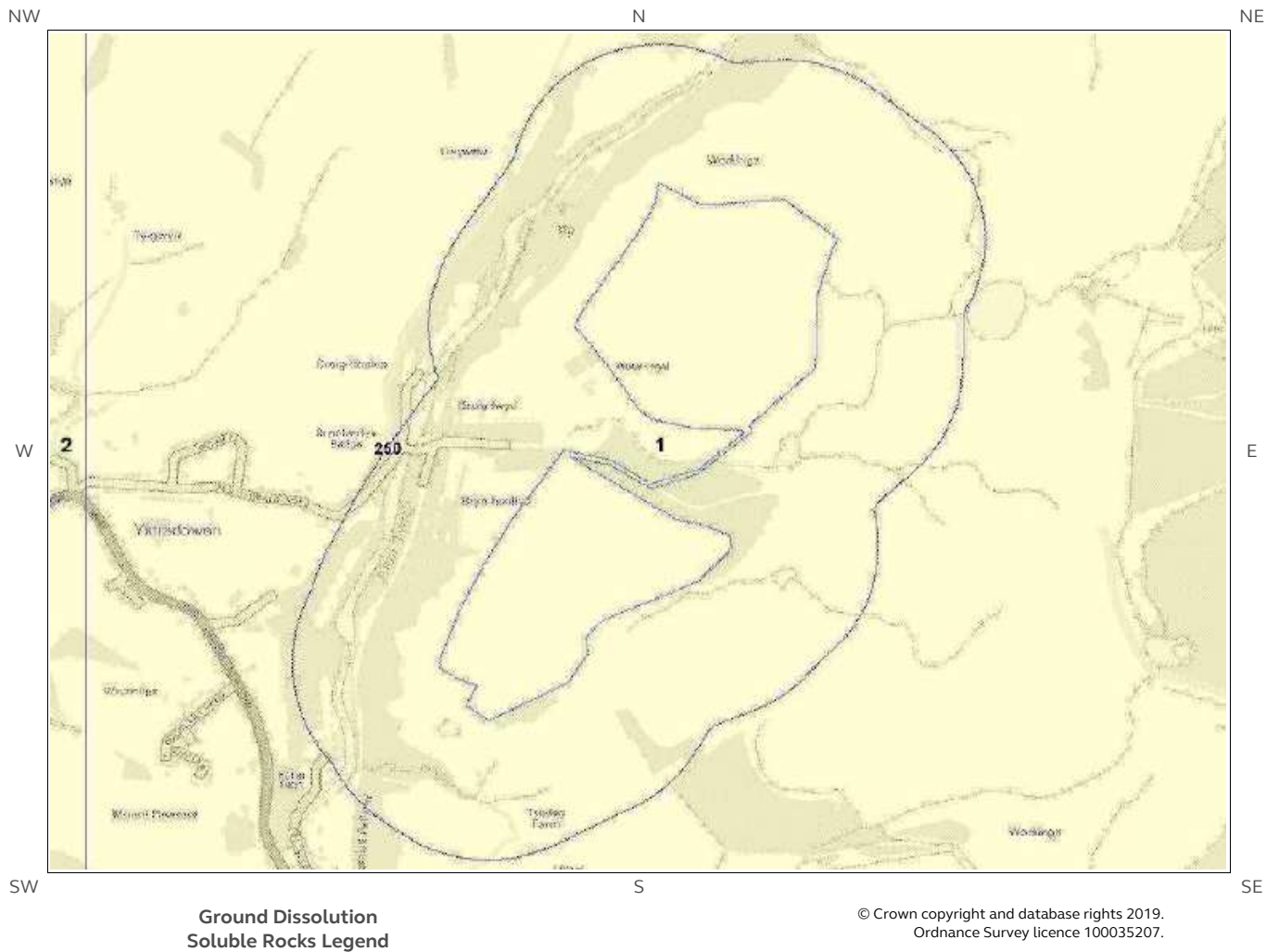


Landslides Legend

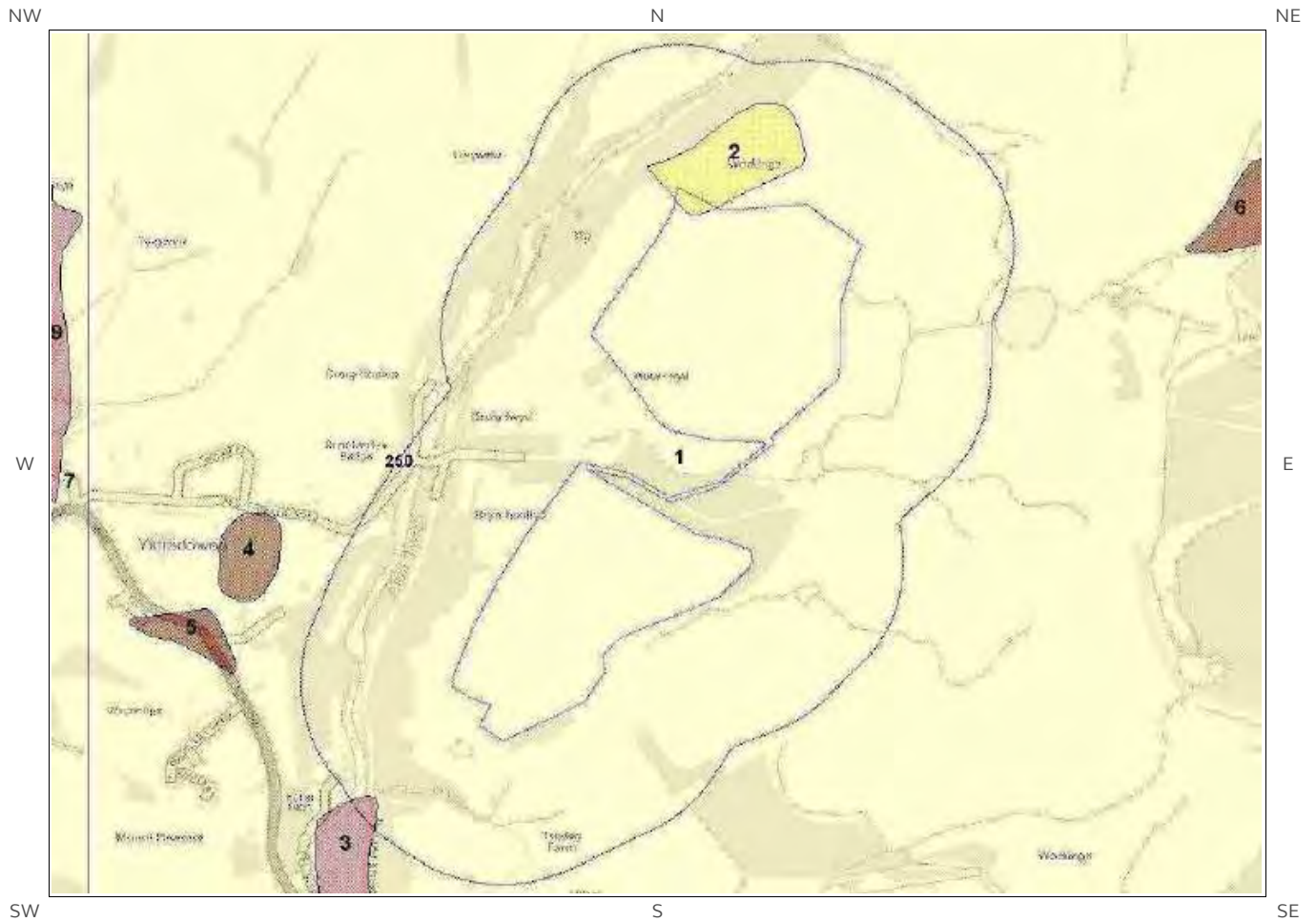
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6.3 Ground Dissolution of Soluble Rocks map



6.4 Compressible Deposits map

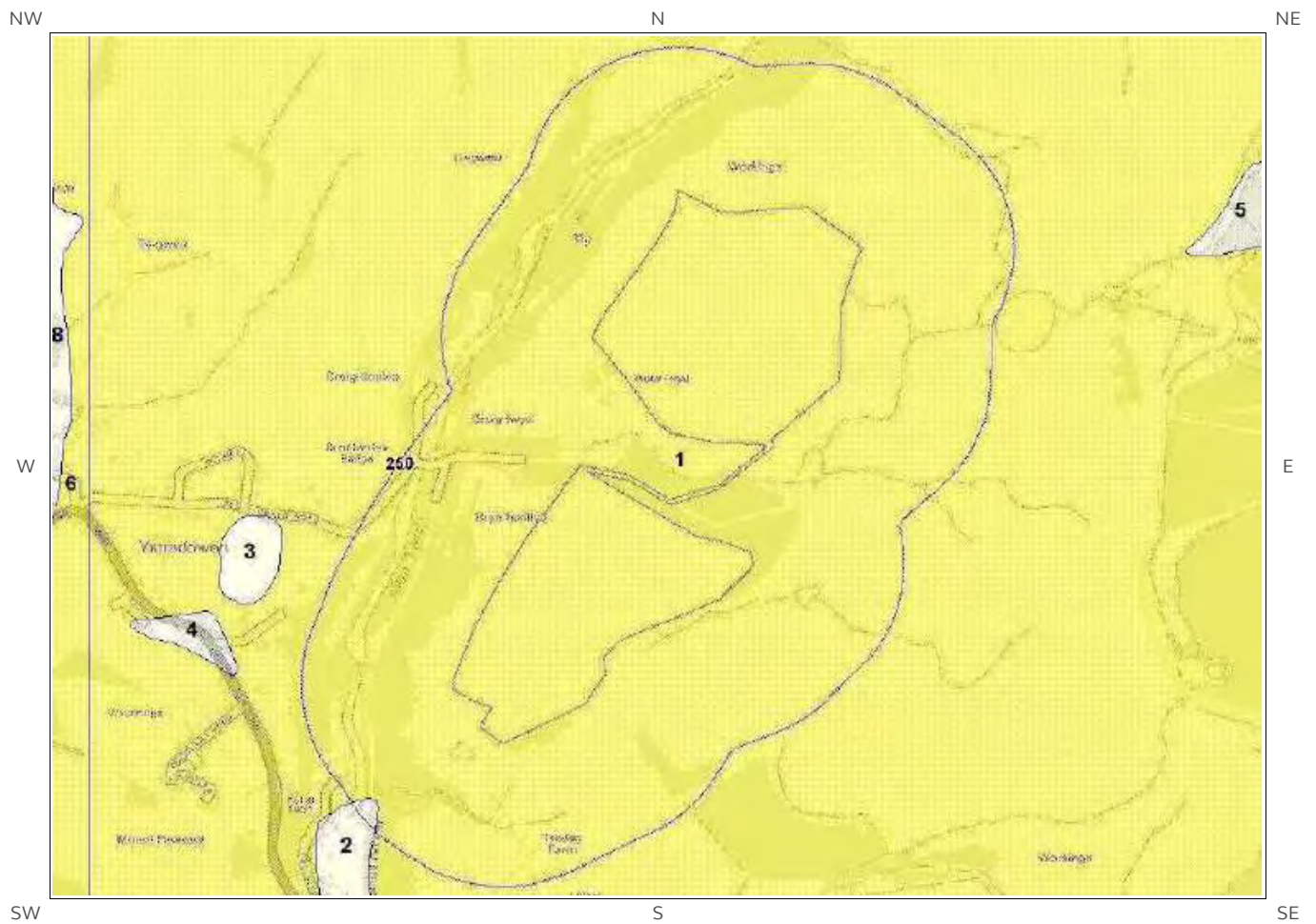


Compressible Deposits Legend

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6.5 Collapsible Deposits map

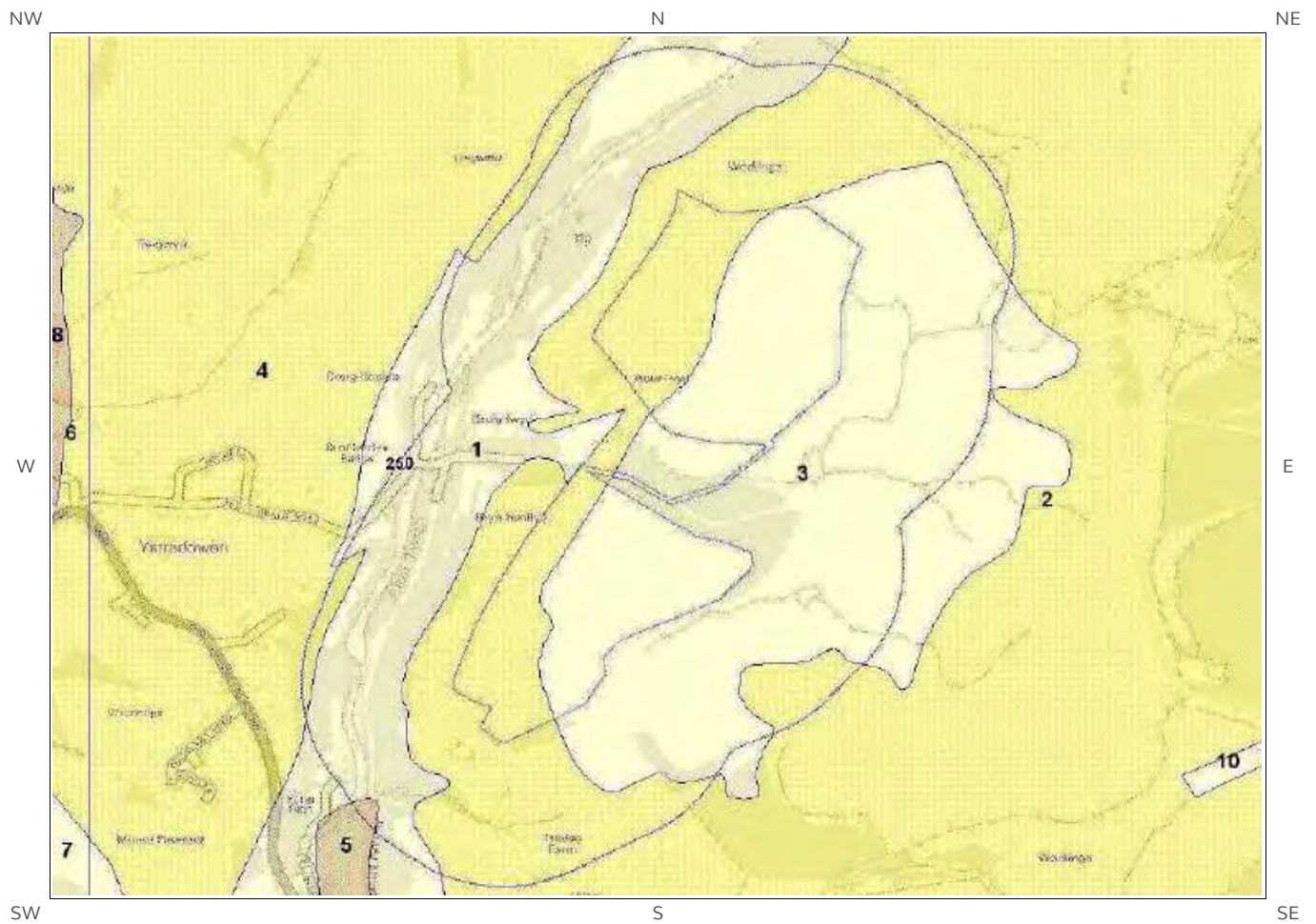


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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6 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? Moderate

6.1 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	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.
2	32.0	SW	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.
3	45.0	NE	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.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	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.

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

ID	Distance (m)	Direction	Hazard Rating	Details
2	0.0	On Site	Low	<p>Possibility of slope instability problems after major changes in ground conditions.</p> <p>Consideration should be given to stability if changes to drainage or excavations take place.</p> <p>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.</p>
3	0.0	On Site	Moderate	<p>Significant potential for slope instability with relatively small changes in ground conditions.</p> <p>Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage.</p> <p>For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.</p>
4	0.0	On Site	Very Low	<p>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.</p>
5	0.0	On Site	Moderate	<p>Significant potential for slope instability with relatively small changes in ground conditions.</p> <p>Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage.</p> <p>For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.</p>
6	0.0	On Site	Very Low	<p>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.</p>
7	0.0	On Site	Low	<p>Possibility of slope instability problems after major changes in ground conditions.</p> <p>Consideration should be given to stability if changes to drainage or excavations take place.</p> <p>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.</p>

ID	Distance (m)	Direction	Hazard Rating	Details
8	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.
9	4.0	NE	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

6.3 Ground Dissolution of Soluble Rocks

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

The following Compressible Deposits 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.
2	0.0	On Site	Very Low	Very low potential for compressible deposits to be present. 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.

6.5 Collapsible Deposits

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

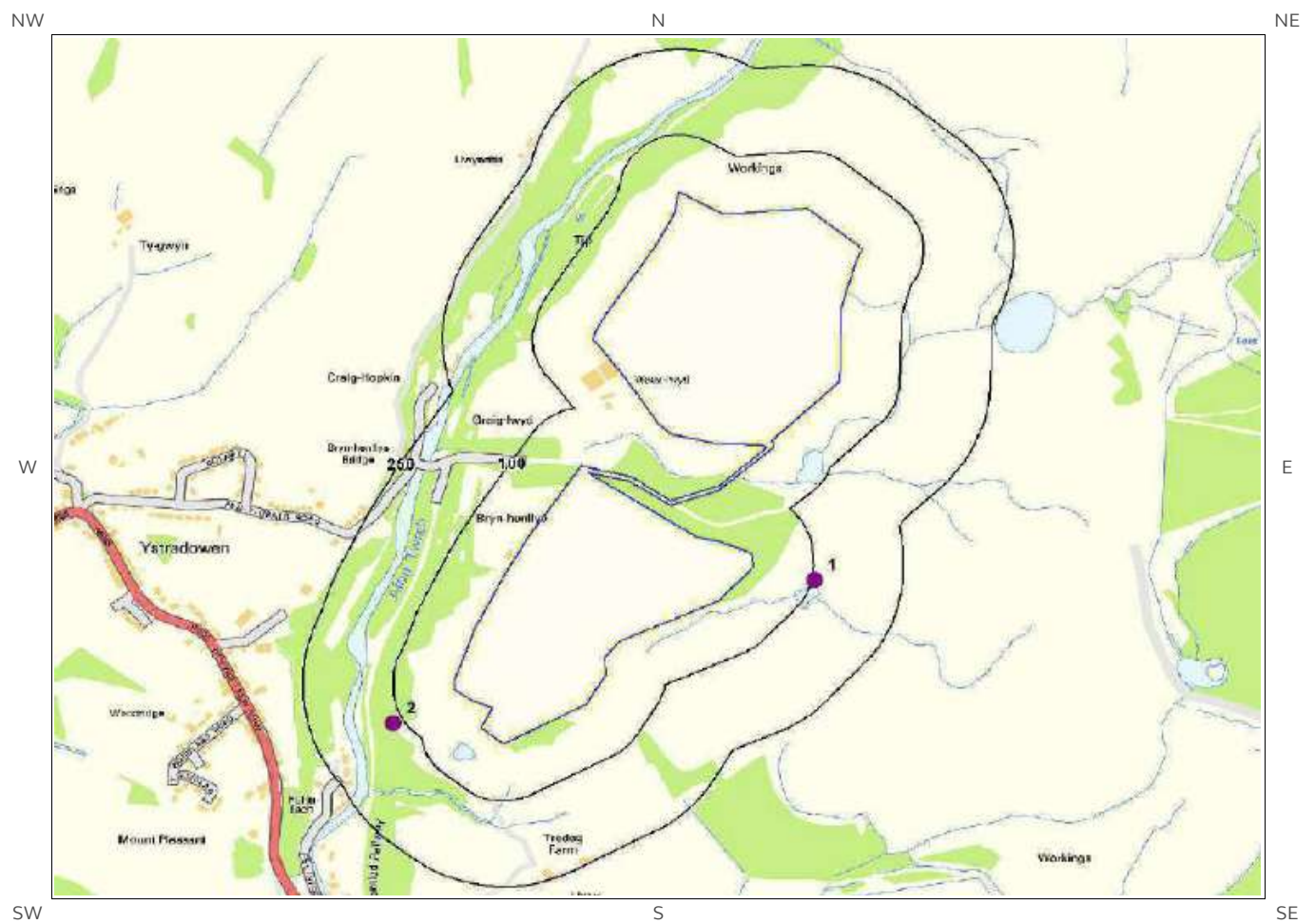
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

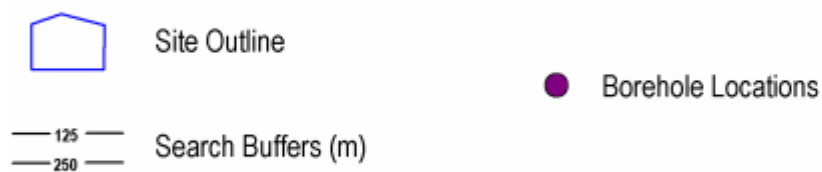
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	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.
3	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.

7 Borehole Records map



Borehole Records Legend

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7 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: 2

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	104.0	E	276200 212350	SN71SE1	20	BRYN HENLLYS/CWM-PHIL. WAUN LWYD
2	119.0	SW	275500 212100	SN71SE19	Not available	BRYNHENLLYS COLLIERY

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/257389
 #2: scans.bgs.ac.uk/sobi_scans/boreholes/257407

8 Estimated Background Soil Chemistry

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

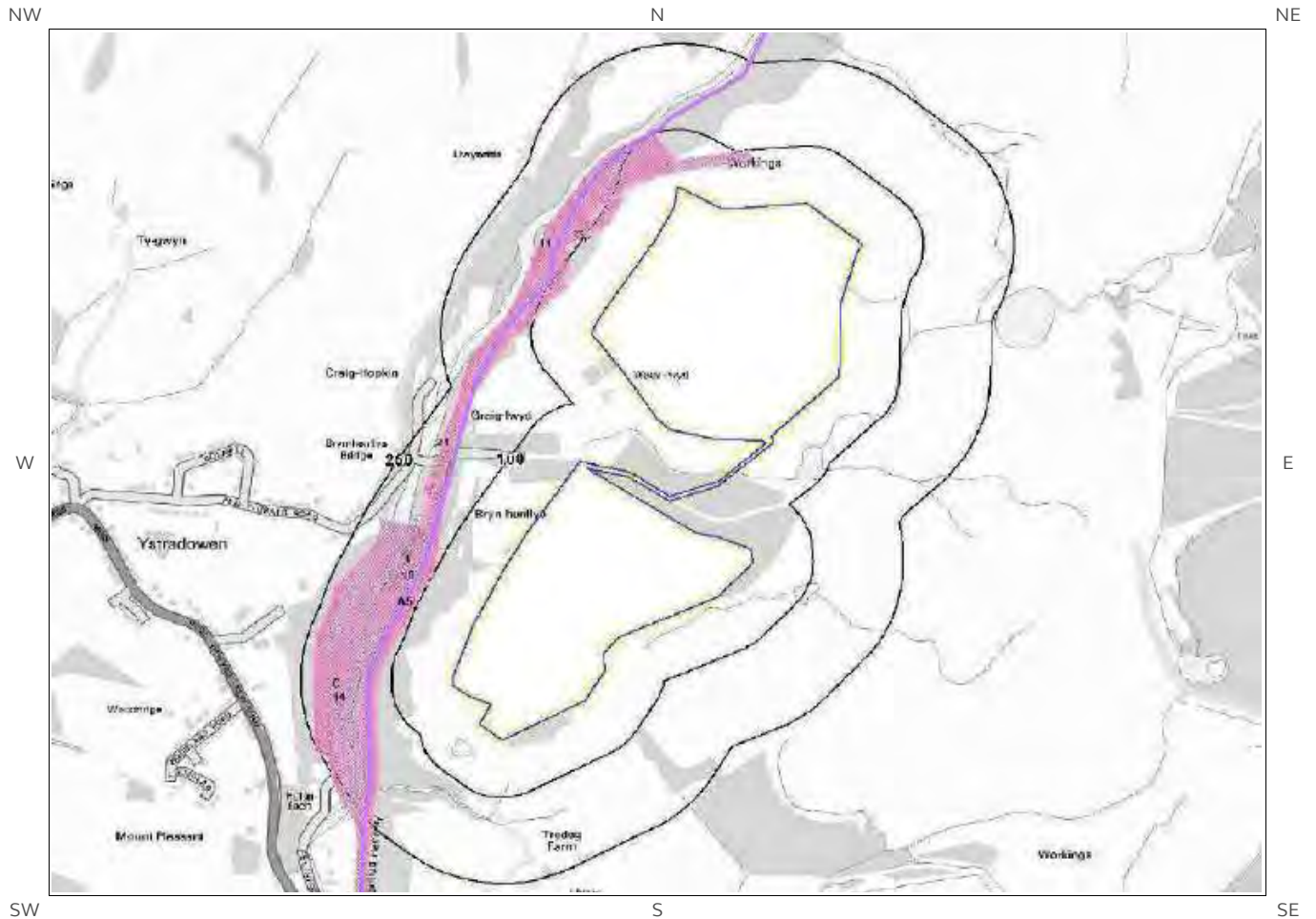
19

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	25 - 35 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
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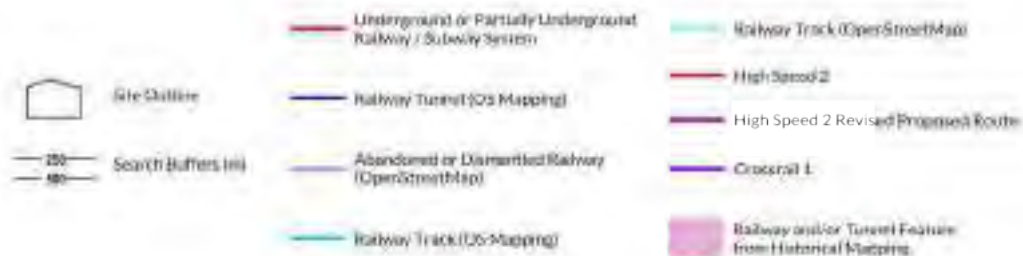
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1	26	N	275565 212439	Railway Sidings	1948
2	33	NW	275605 212611	Railway Sidings	1921
3	36	NW	275786 212936	Tramway Sidings	1921
16	37	N	275574 212484	Railway Sidings	1918
4	81	NW	275565 212439	Railway Sidings	1903
17	86	NW	275716 212835	Tramway Sidings	1905

ID	Distance (m)	Direction	NGR	Details	Date
5	106	W	275531 212302	Railway Sidings	1921
18A	113	W	275516 212305	Tramway Sidings	1905
6	115	NW	275469 211999	Railway Sidings	1877
19	119	W	275524 212338	Railway Sidings	1877
7A	121	W	275517 212302	Tramway Sidings	1921
8B	121	NW	275470 212178	Tramway Sidings	1921
9A	123	NW	275517 212305	Railway Sidings	1921
20B	123	NW	275468 212190	Railway Sidings	1961
10B	125	W	275468 212180	Railway Sidings	1921
11	128	NW	275753 212924	Tramway Sidings	1921
12C	167	W	275410 212141	Tramway Sidings	1921
13C	170	W	275396 212108	Railway Sidings	1921
14	170	W	275419 212143	Railway Sidings	1921
21	176	NW	275583 212578	Tramway Sidings	1905
22C	190	W	275376 212162	Tramway Sidings	1905
15	207	W	275383 212189	Railway Sidings	1921

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Status
102	NW	Razed
102	NW	Abandoned

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

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Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk



BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
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The Coal Authority

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Notts NG18 4RG
Tel: 0345 7626 848
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www.coal.gov.uk



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Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



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Website: <http://www.peterbrett.com/home>



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Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: County Series

Map date: 1876-1877

Scale: 1:10,560

Printed at: 1:10,560



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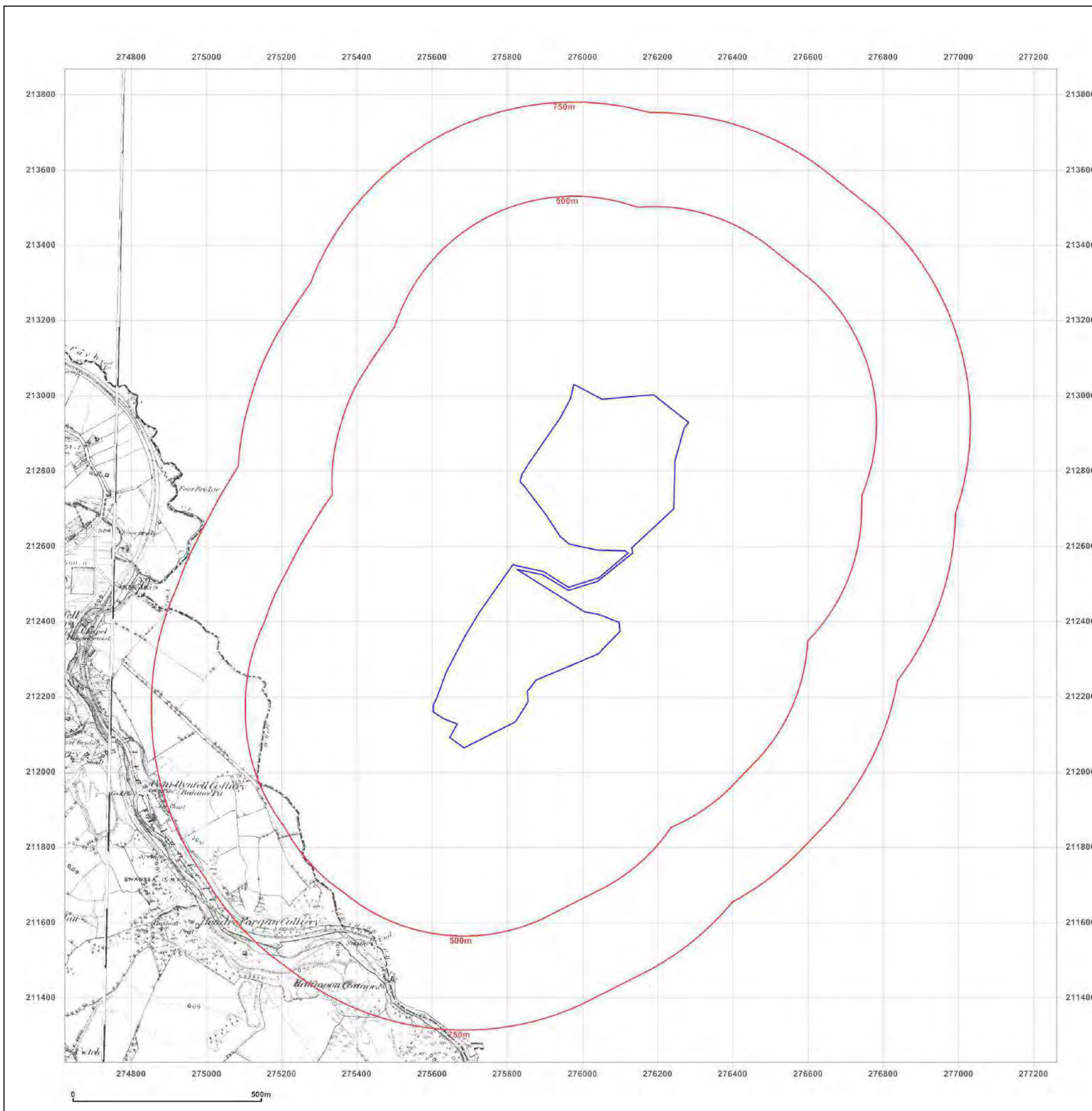


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Site Details:

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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: County Series

Map date: 1877

Scale: 1:10,560

Printed at: 1:10,560



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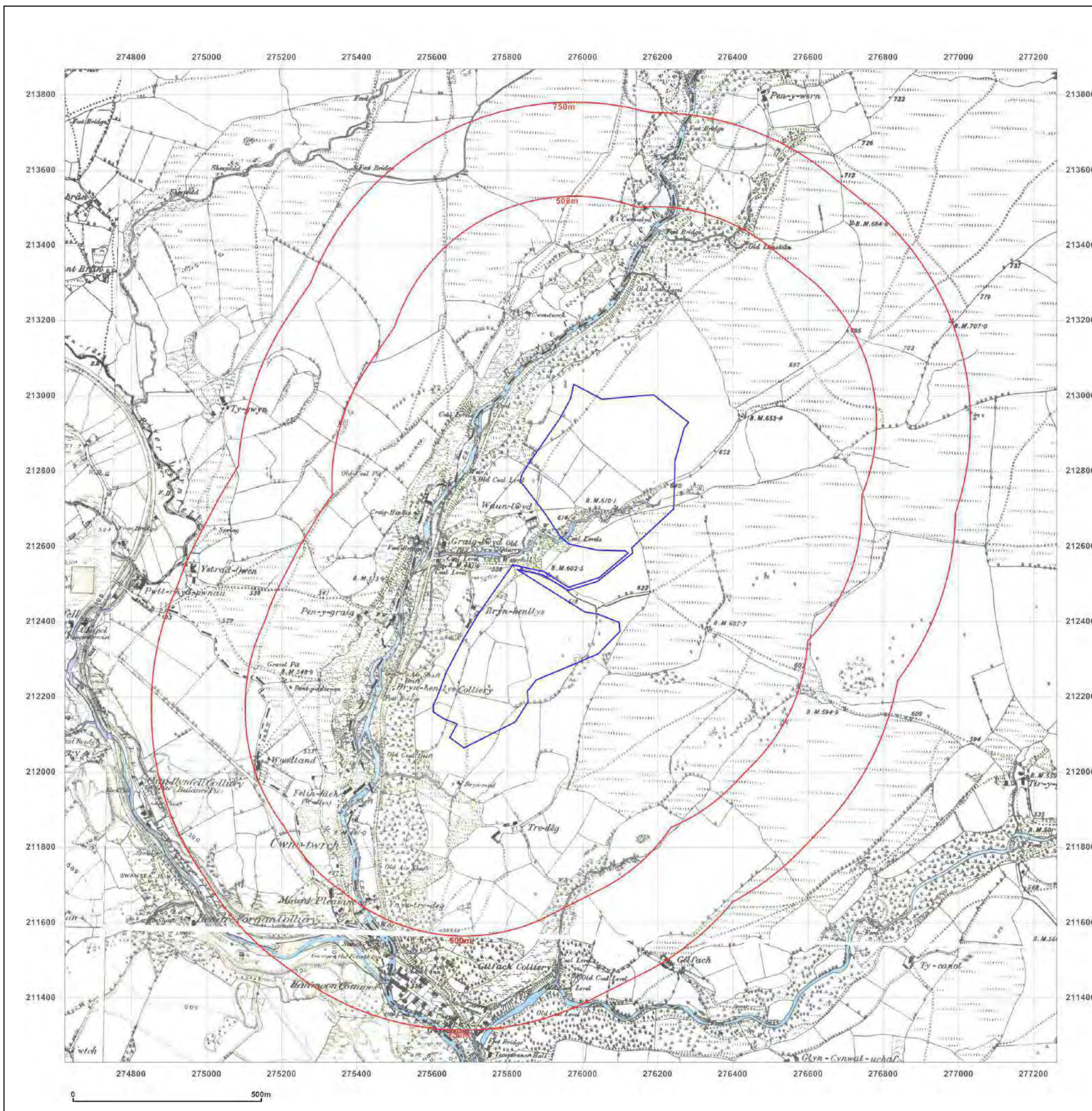


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Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: County Series

Map date: 1900-1905

Scale: 1:10,560

Printed at: 1:10,560



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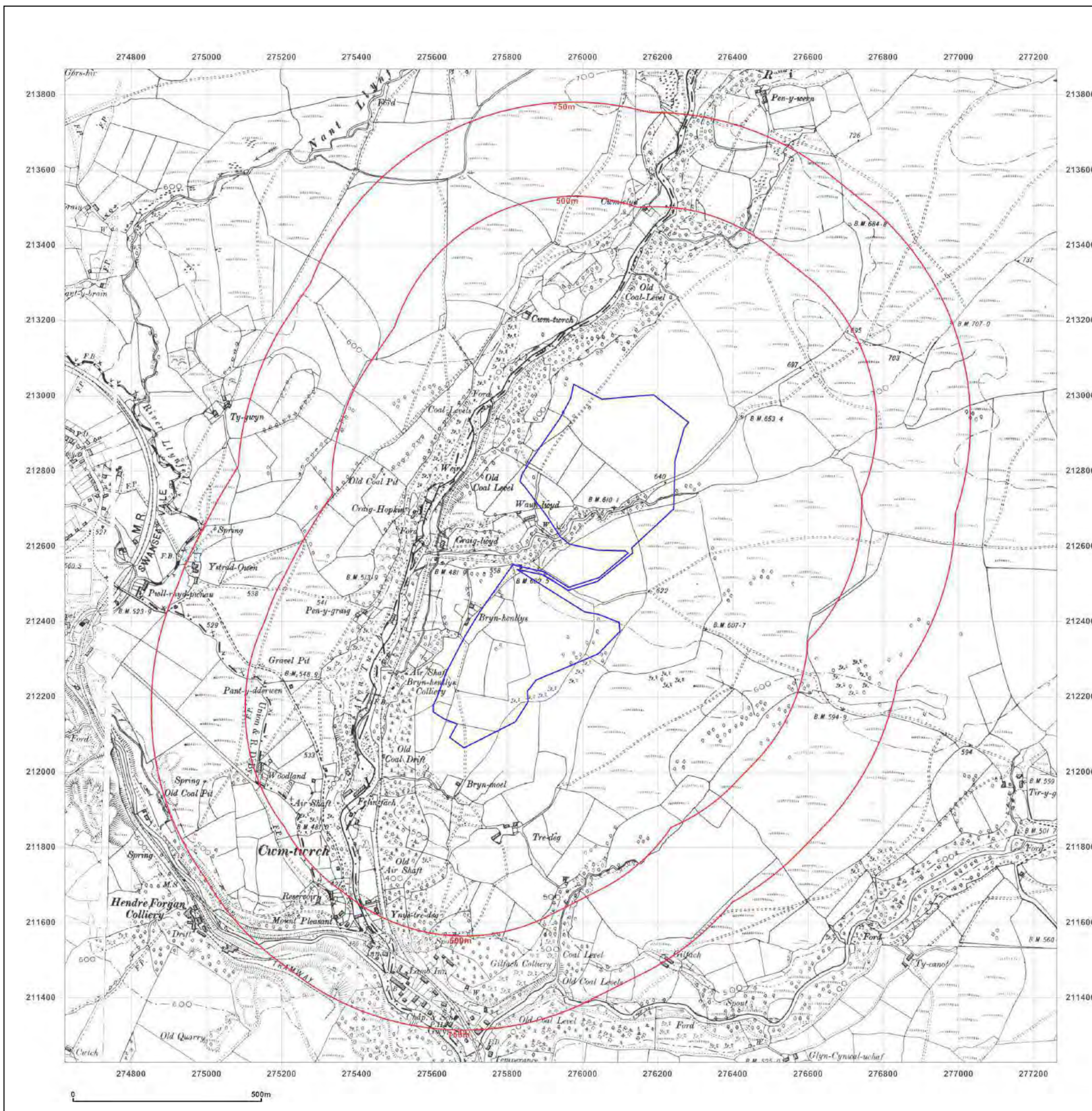


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Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: County Series

Map date: 1900-1905

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 Revised 1903
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 Edition N/A
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 Levelled N/A

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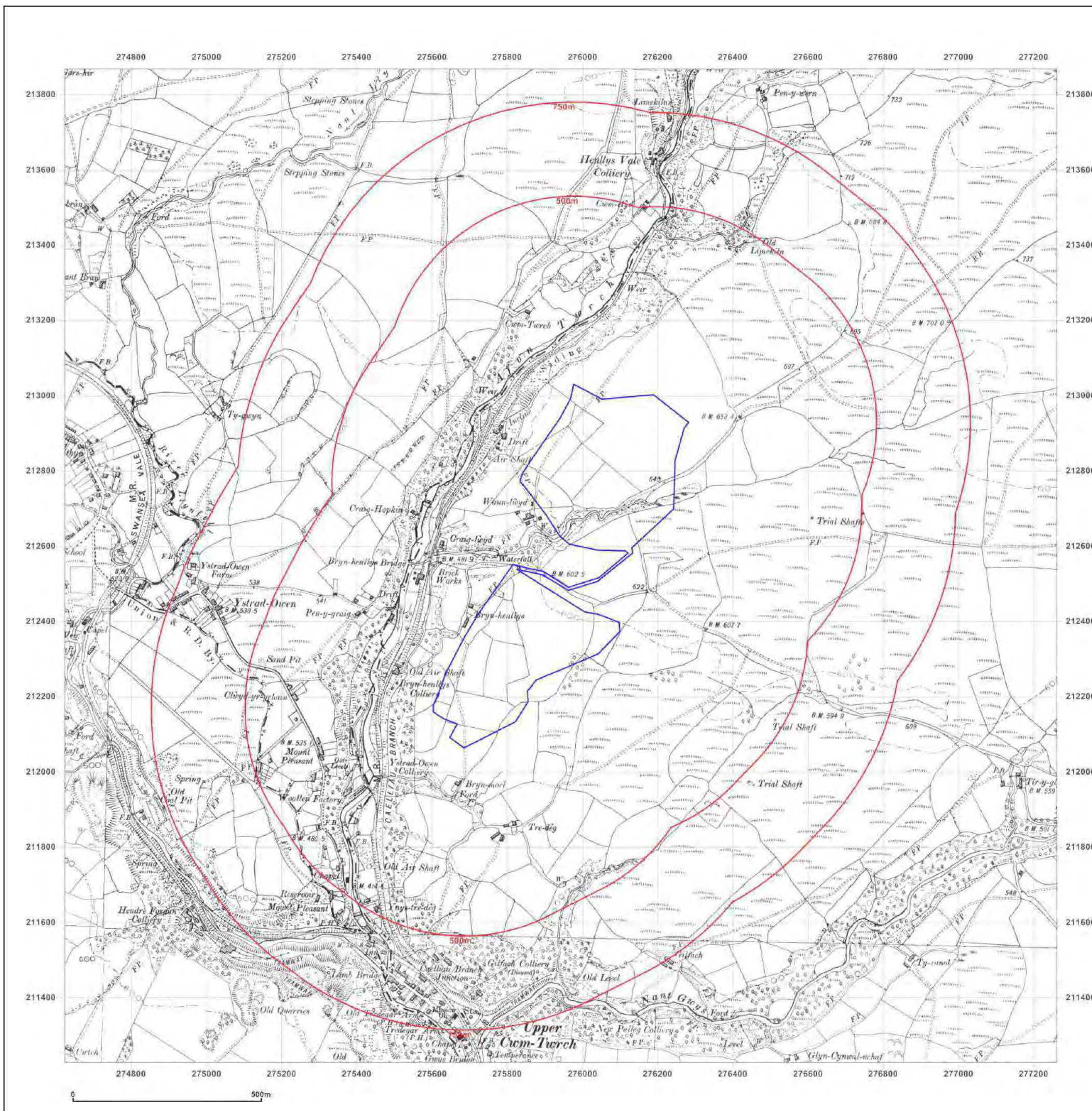


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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: County Series

Map date: 1921

Scale: 1:10,560

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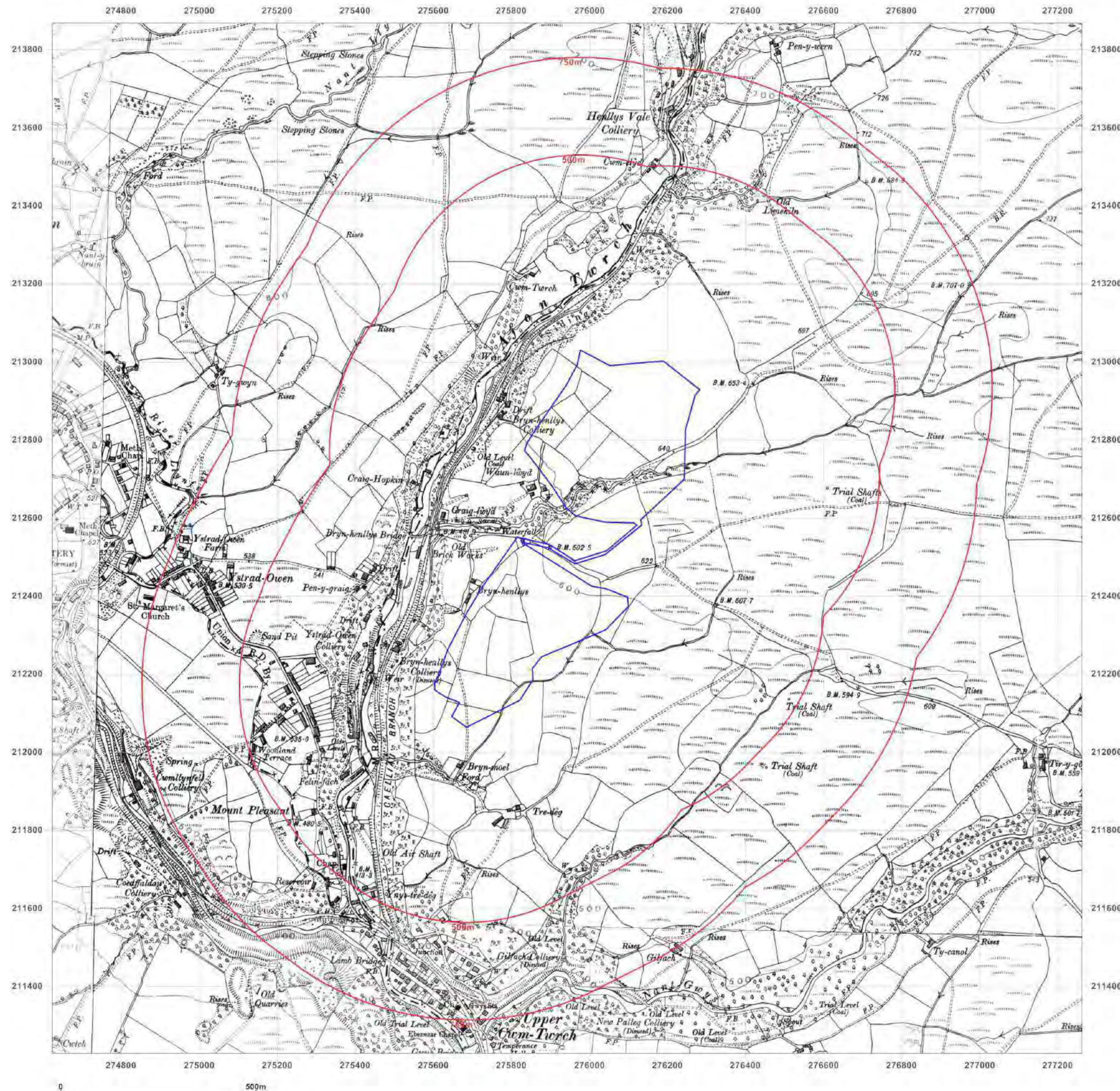


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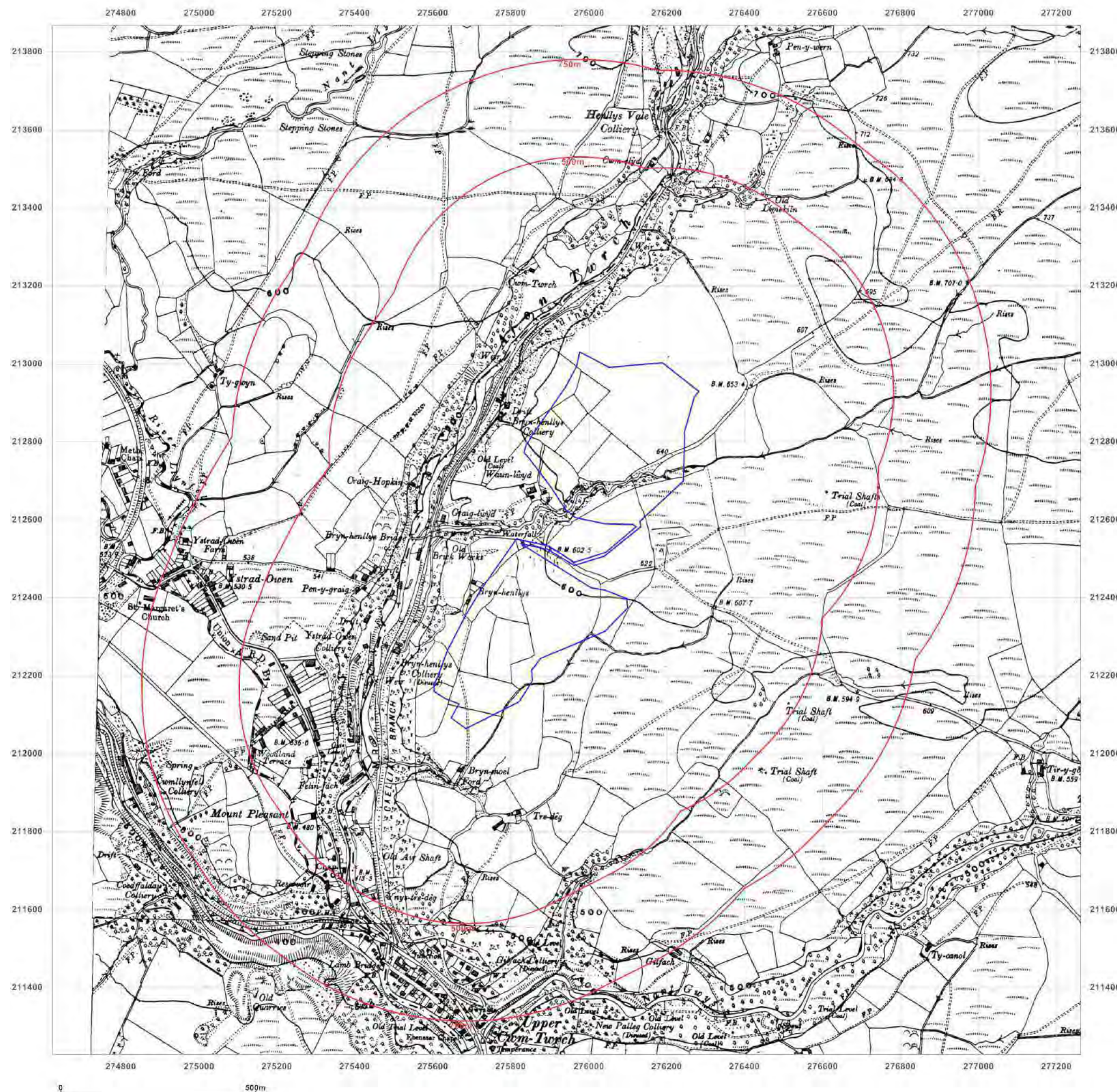


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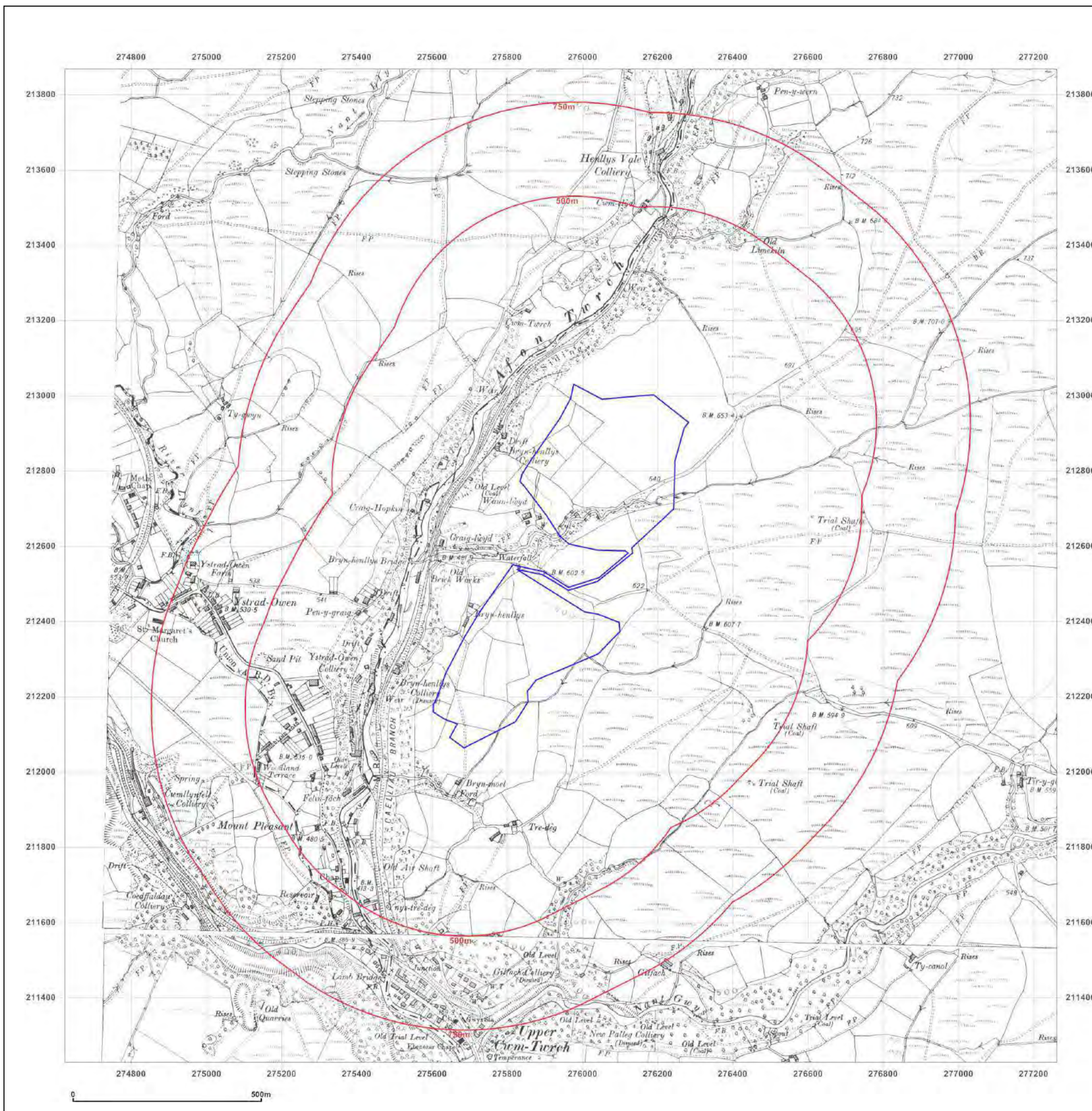


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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: County Series

Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



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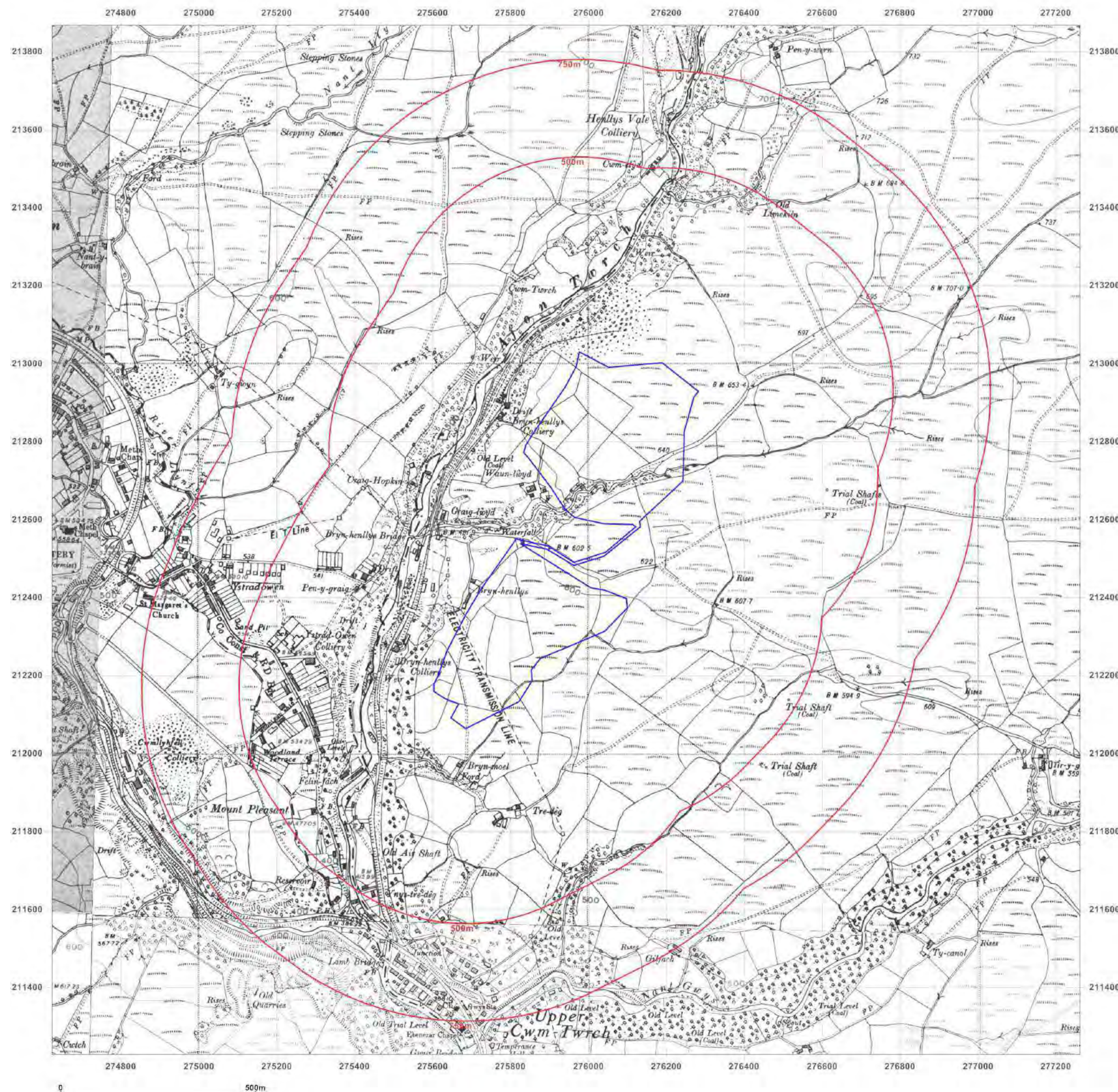


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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: Provisional

Map date: 1965

Scale: 1:10,560

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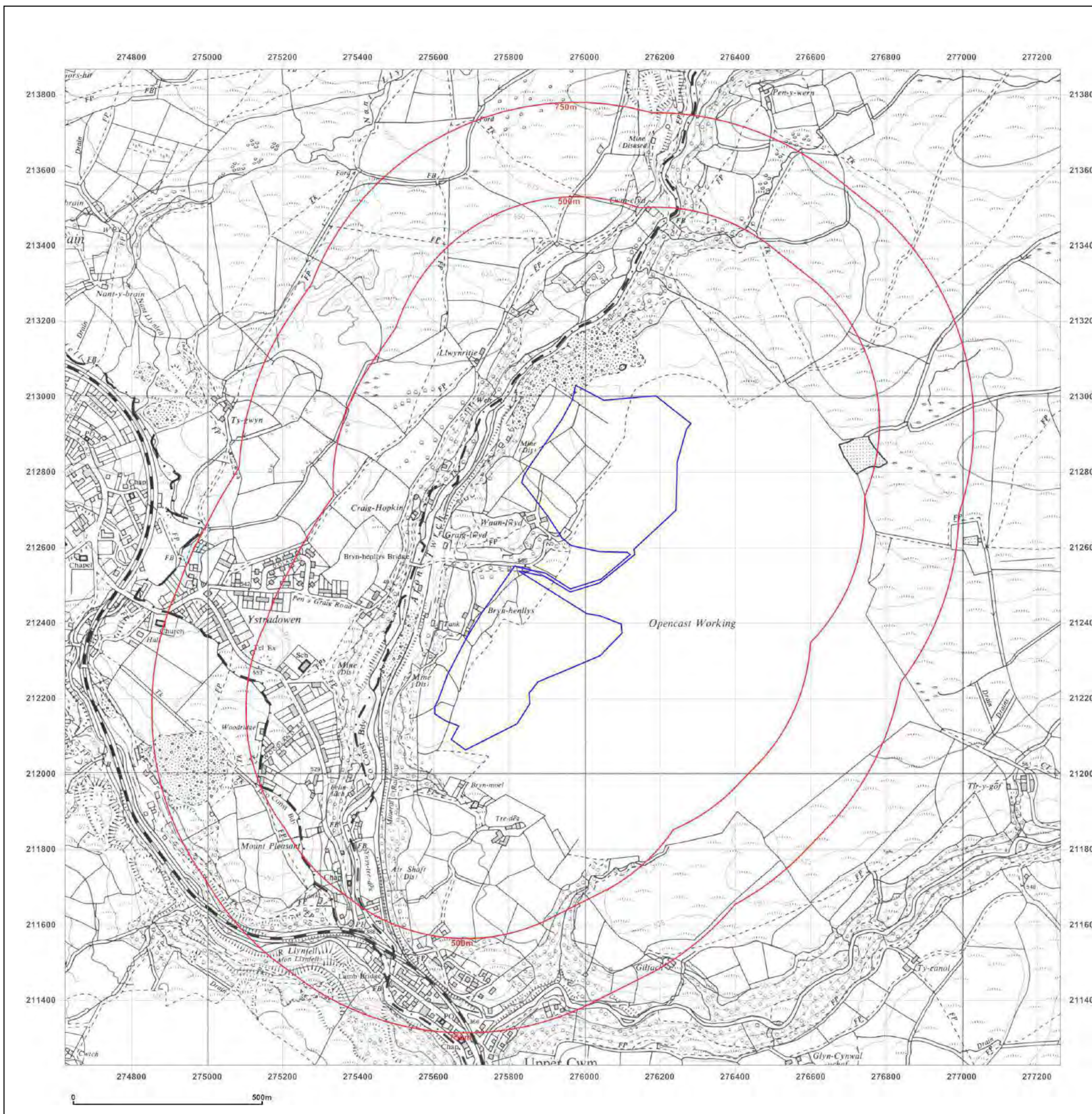


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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654
Grid Ref: 275942, 212548

Map Name: National Grid

Map date: 1985-1988

Scale: 1:10,000

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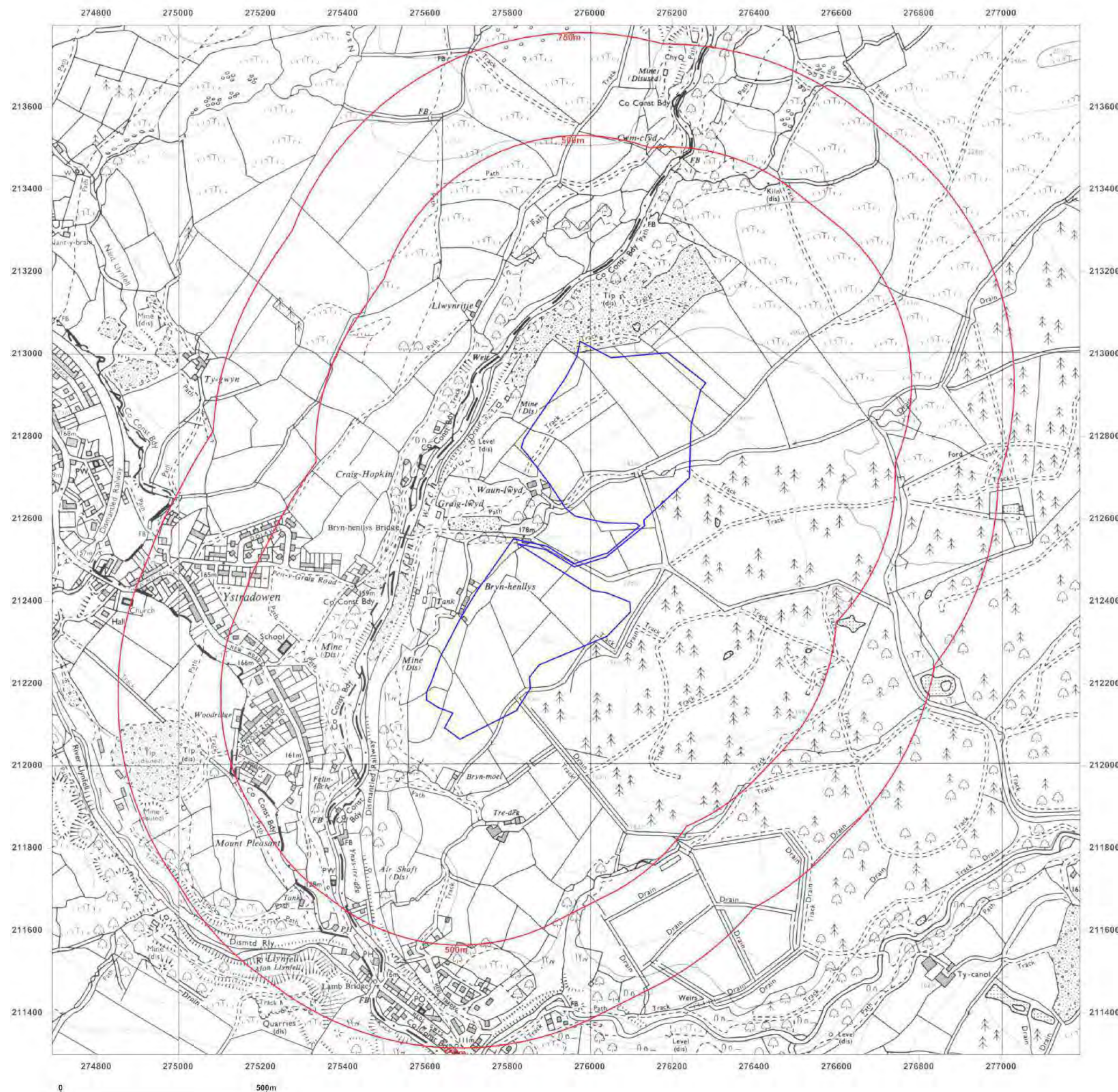


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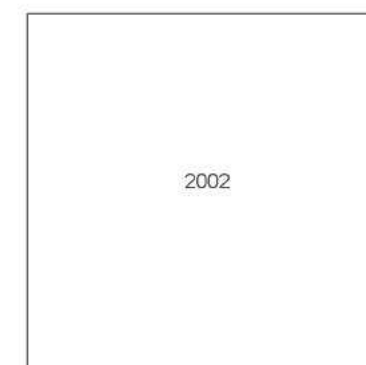
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Grid Ref: 275942, 212548

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000

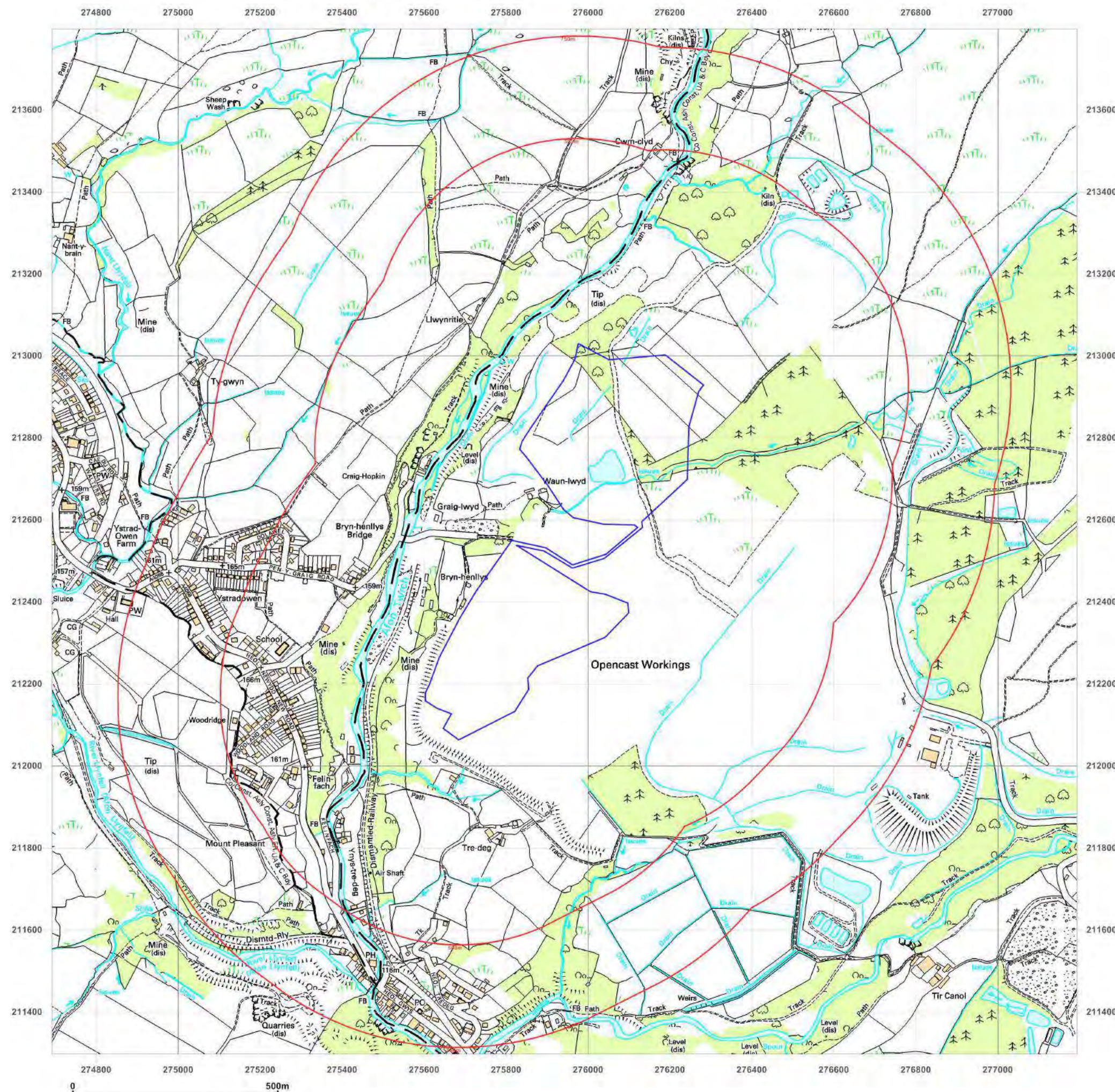


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Site Details:

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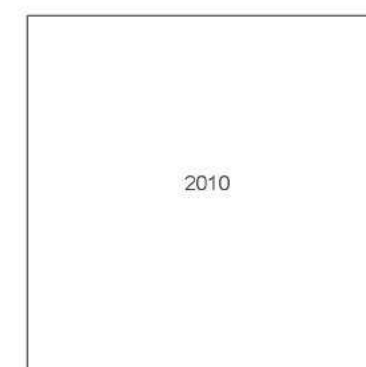
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Grid Ref: 275942, 212548

Map Name: National Grid

Map date: 2010

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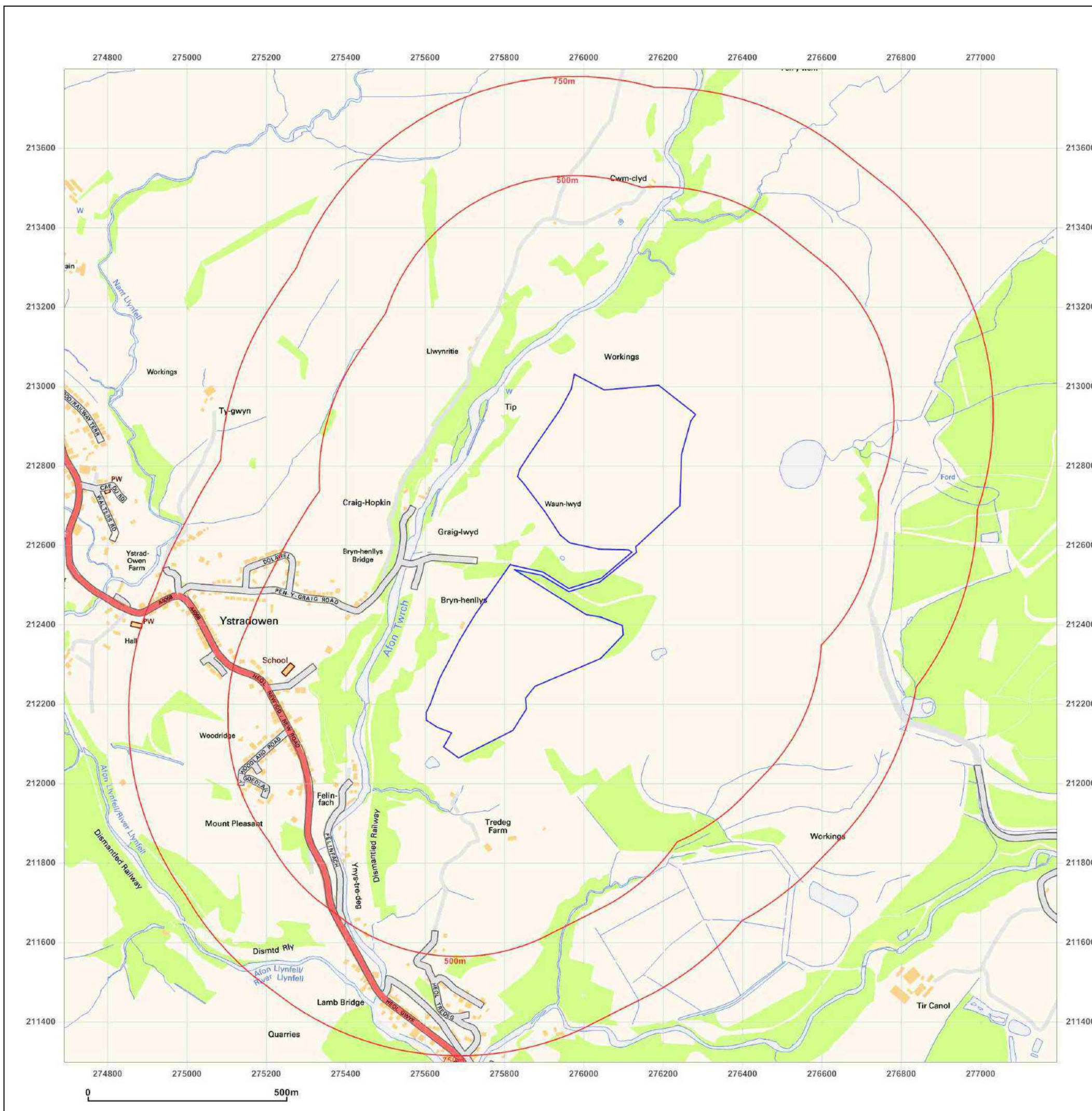


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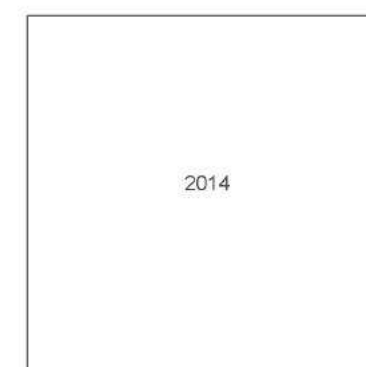
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Grid Ref: 275942, 212548

Map Name: National Grid

Map date: 2014

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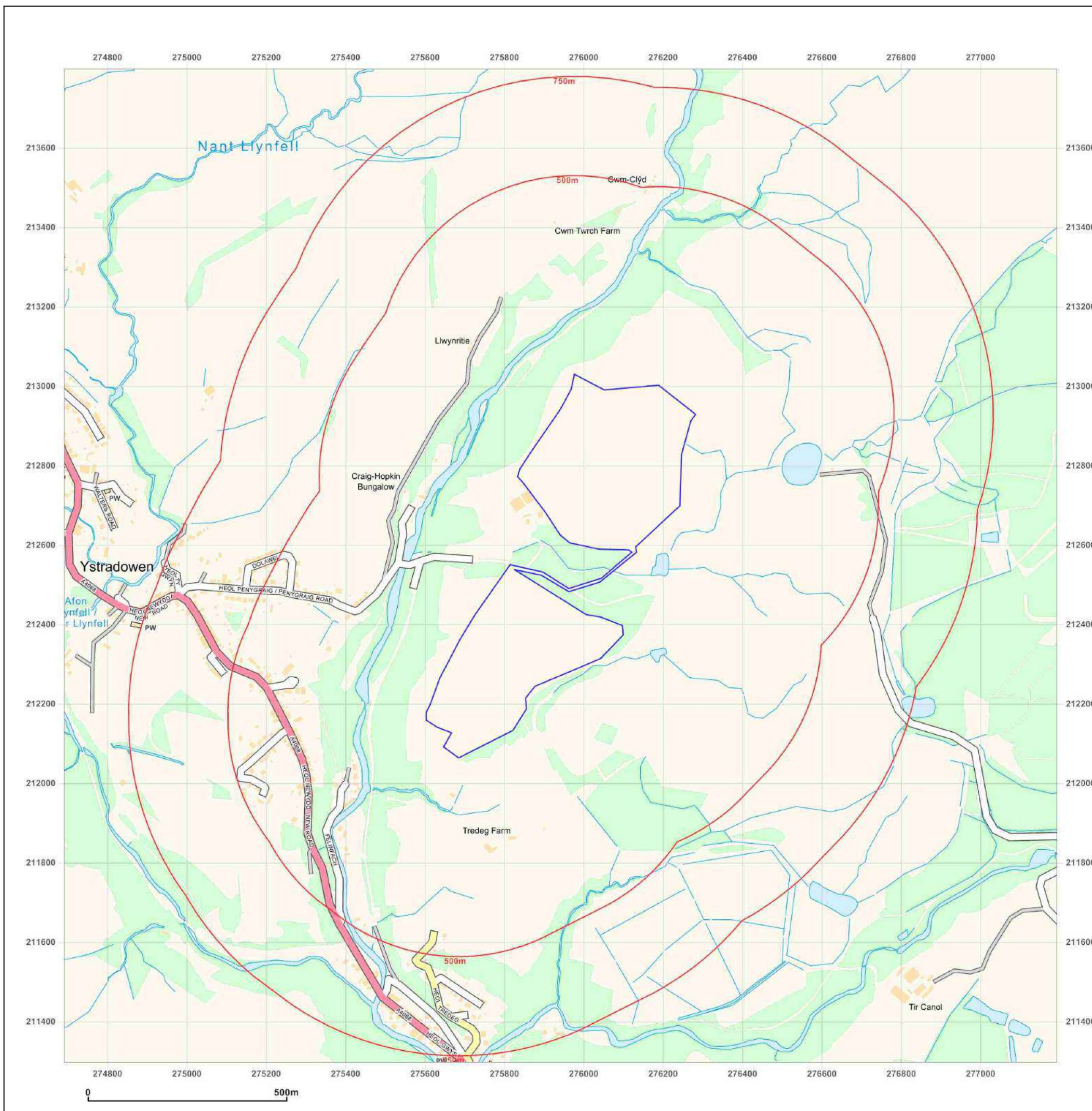


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1877
 Revised 1877
 Edition N/A
 Copyright N/A
 Levelled N/A

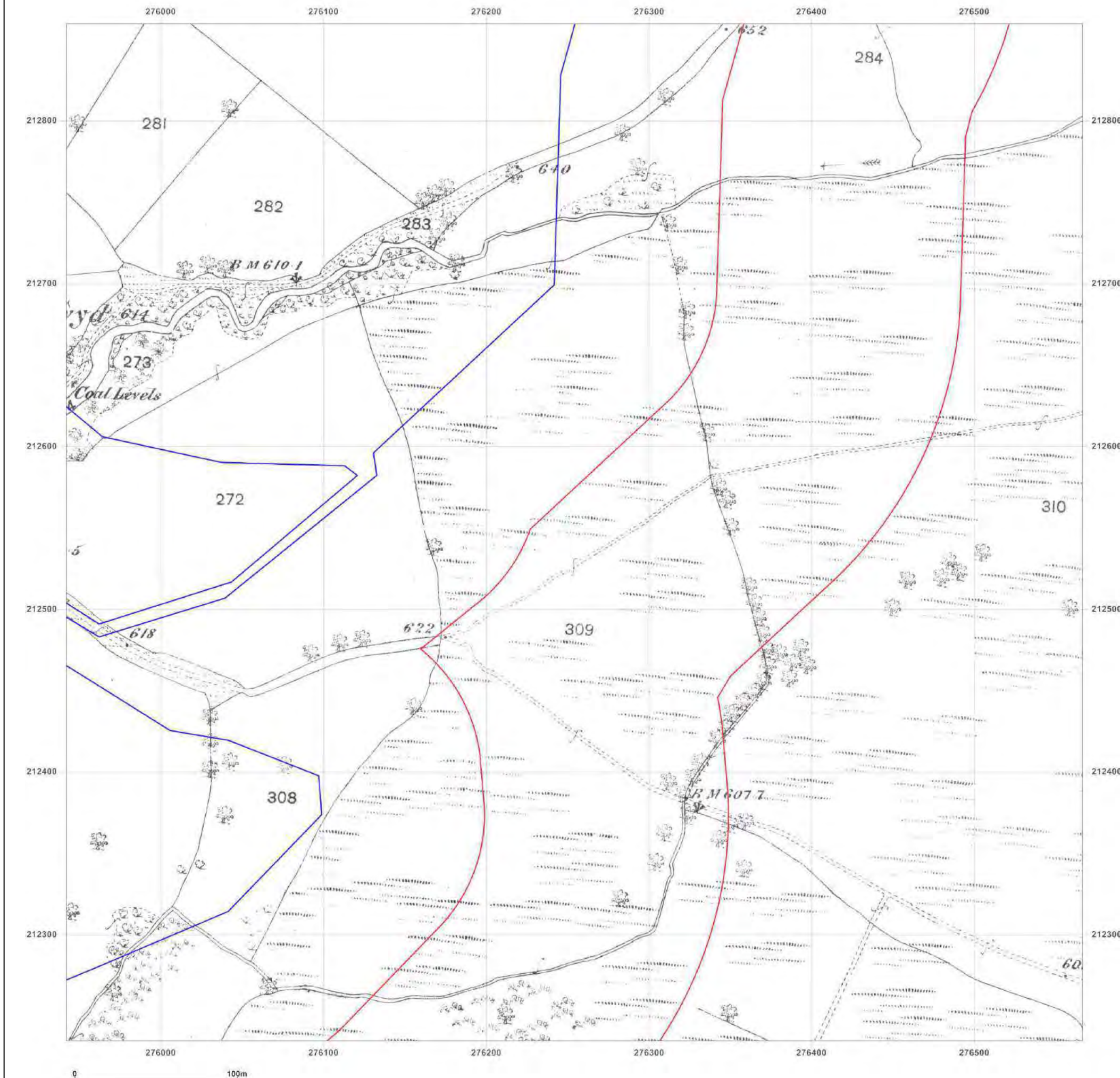


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: County Series

Map date: 1905

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1905
 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

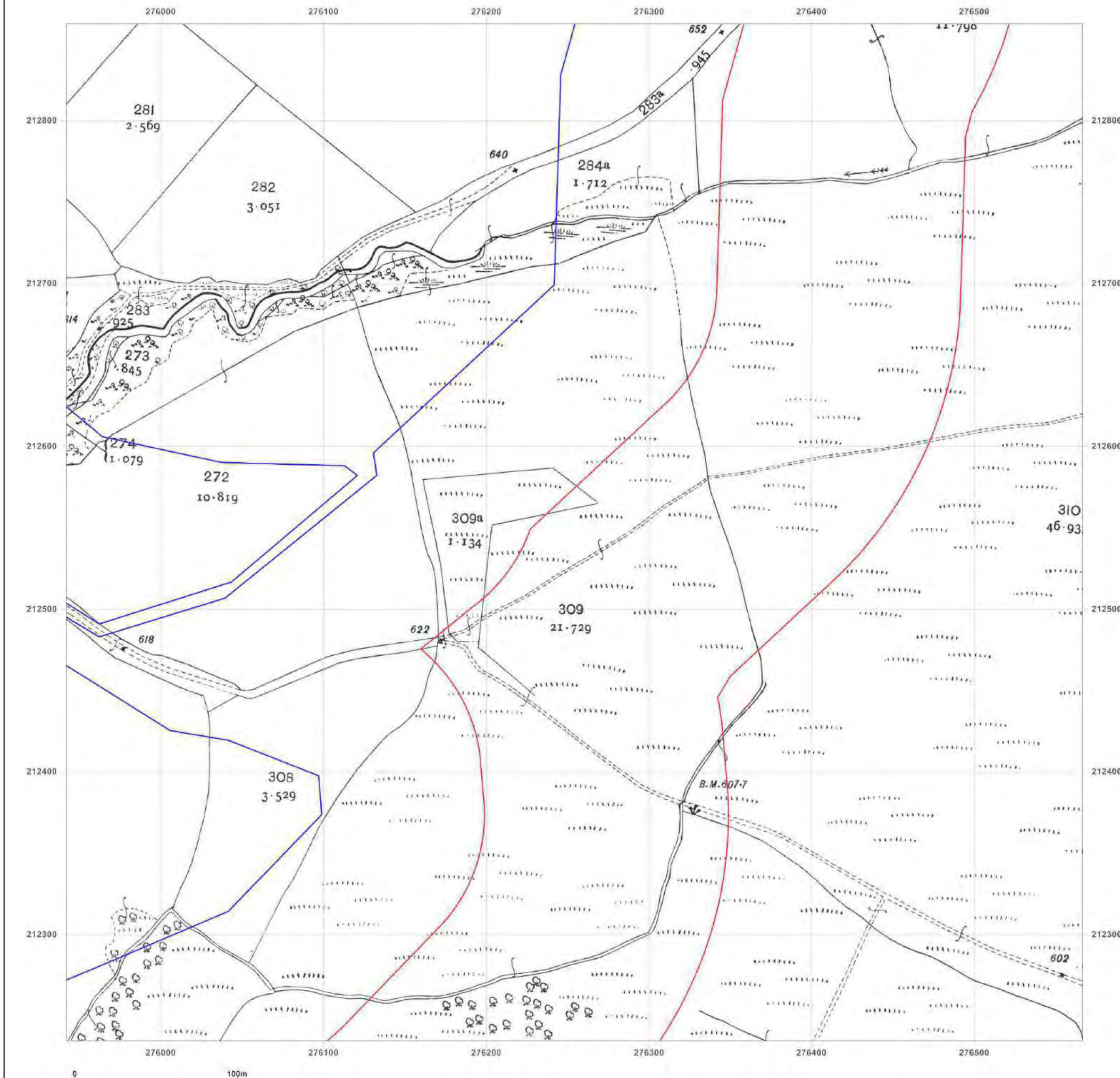


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: County Series

Map date: 1918

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1918
 Revised 1918
 Edition N/A
 Copyright N/A
 Levelled N/A

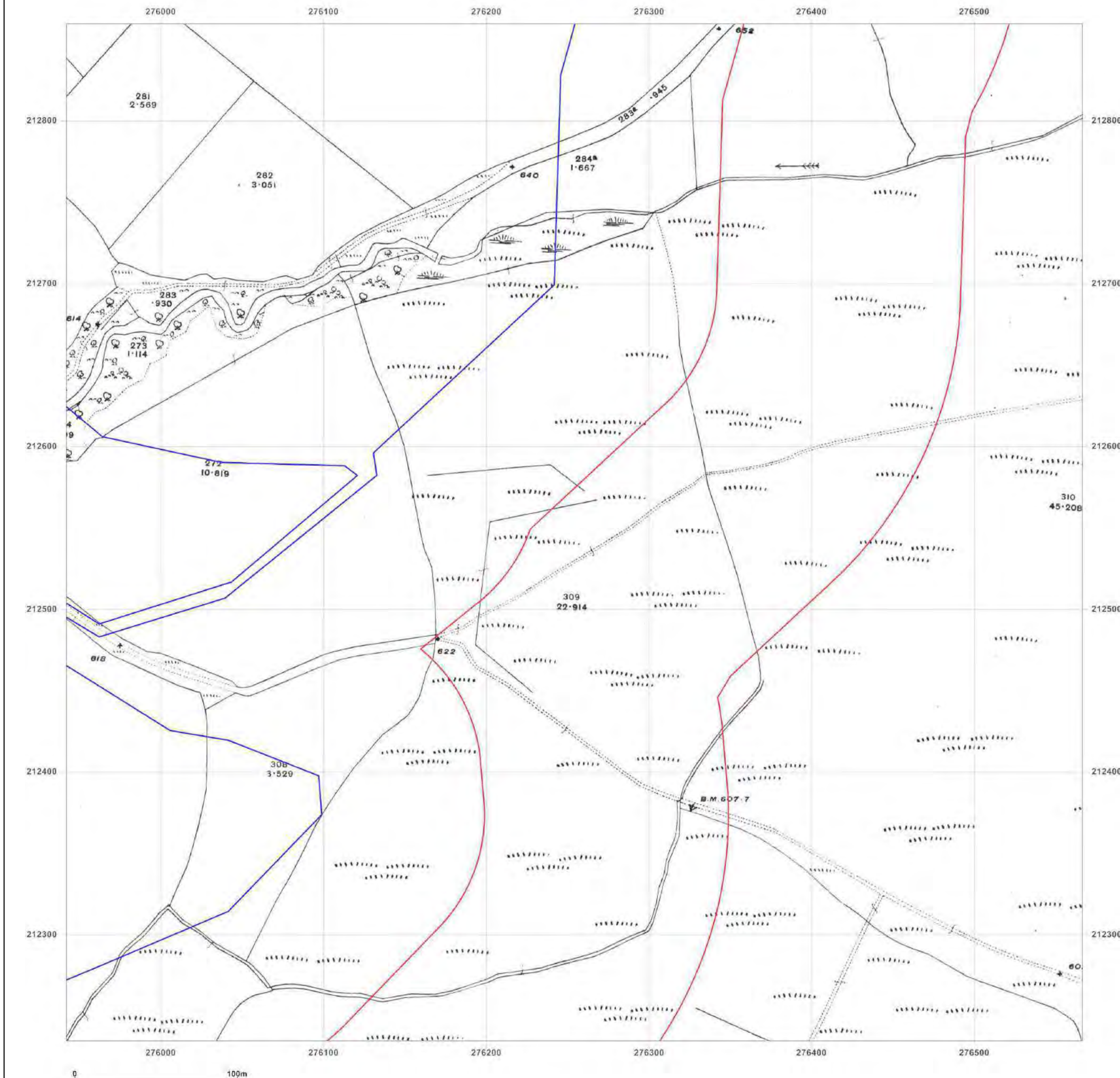


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: National Grid

Map date: 1961-1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright 1962
 Levelled 1956

Surveyed 1962
 Revised 1962
 Edition N/A
 Copyright 1964
 Levelled 1953

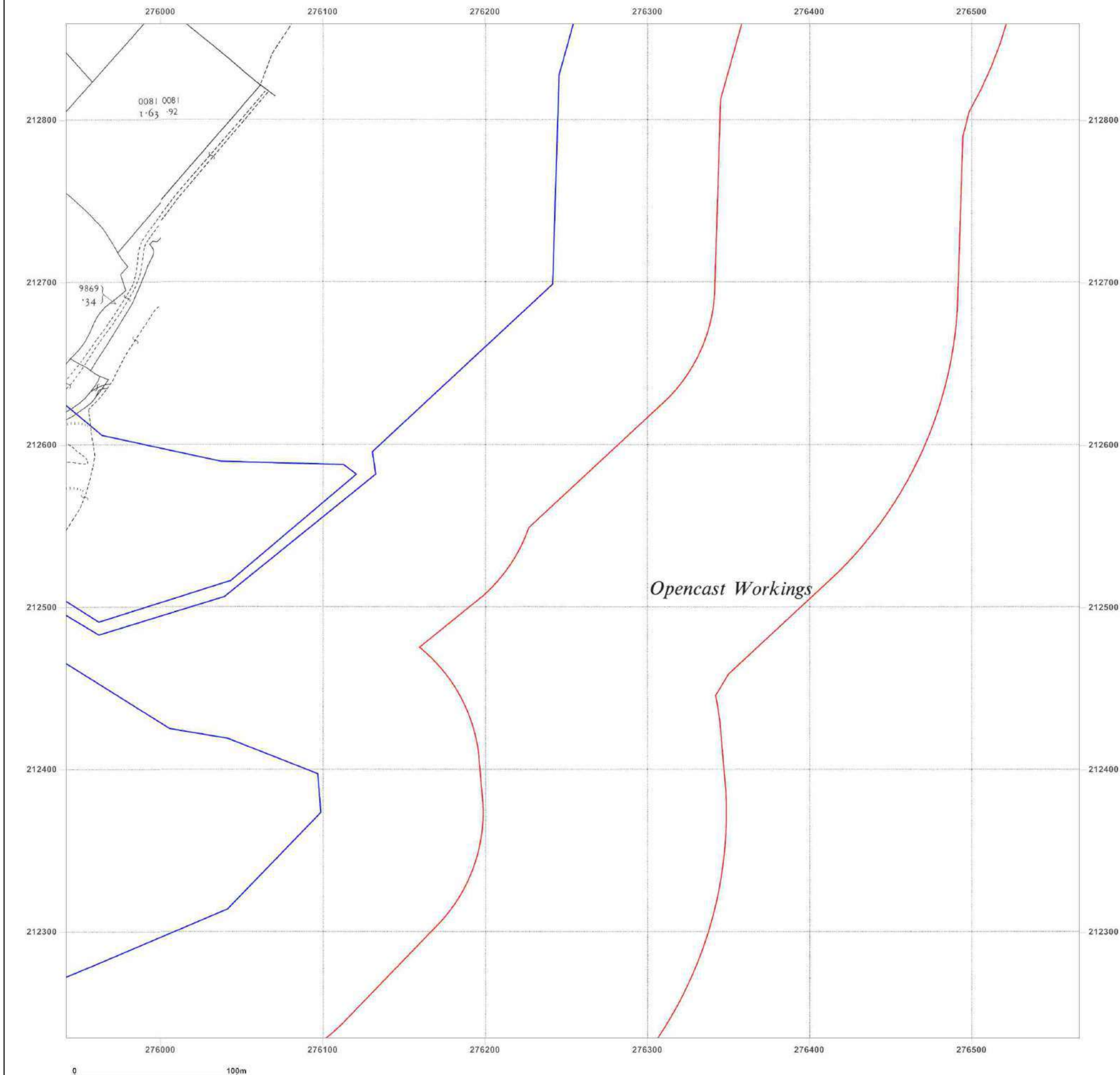


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: National Grid

Map date: 1962-1964

Scale: 1:2,500

Printed at: 1:2,500



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

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

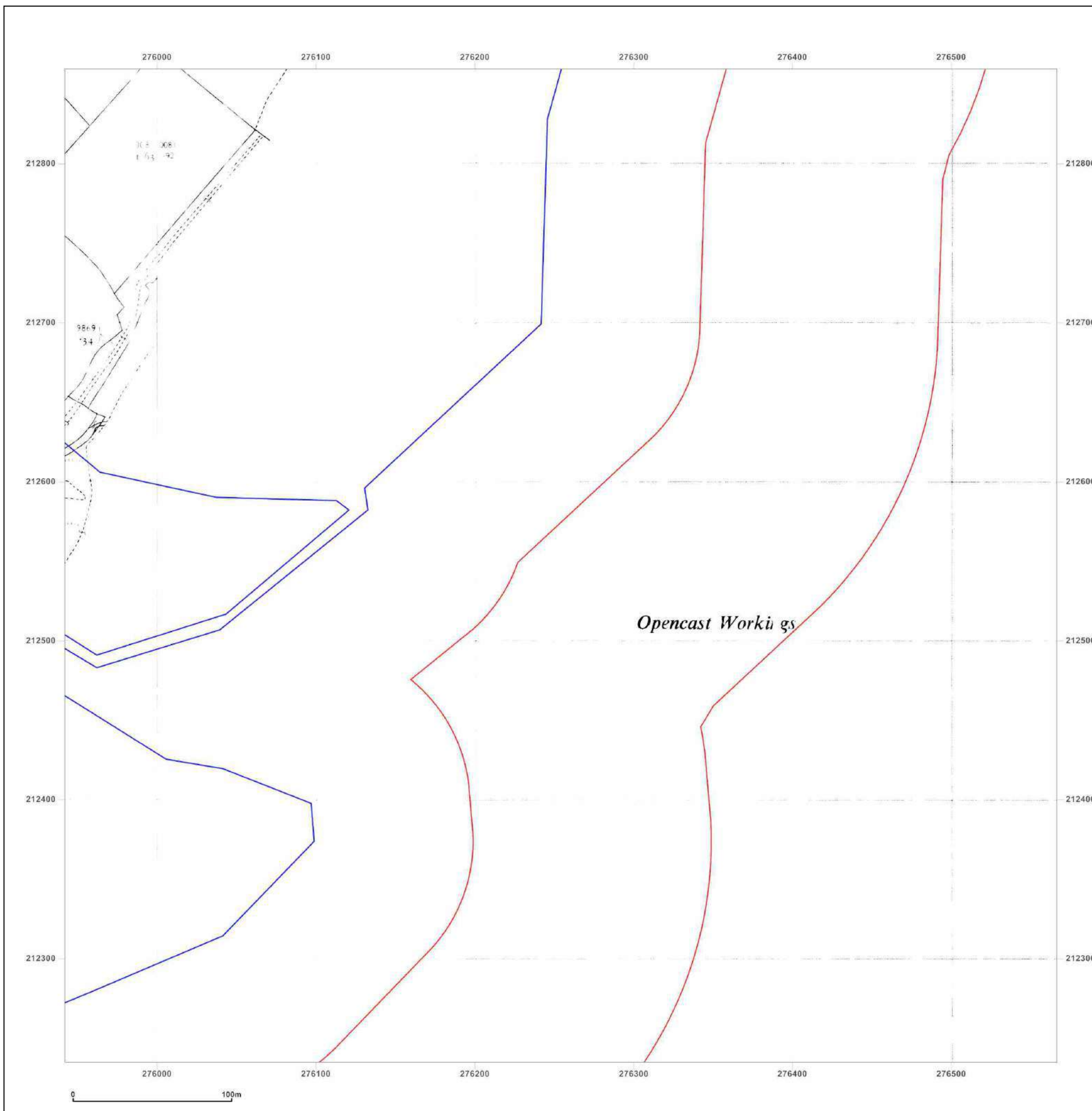


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: National Grid

Map date: 1982-1985

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1982
 Levelled 1956

Surveyed 1962
 Revised 1985
 Edition N/A
 Copyright 1986
 Levelled 1953

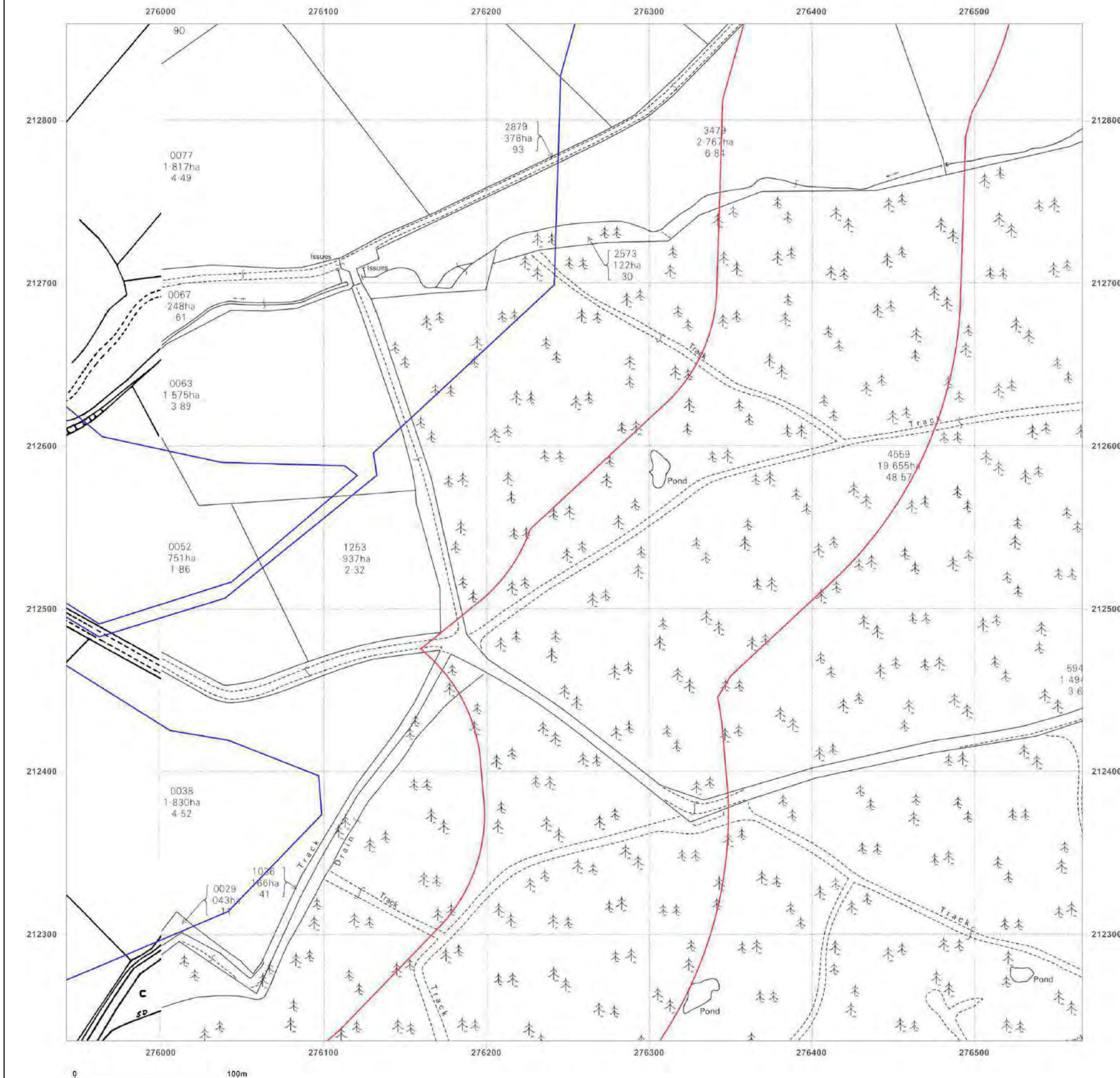


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: National Grid

Map date: 1985

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1985
 Levelled 1963

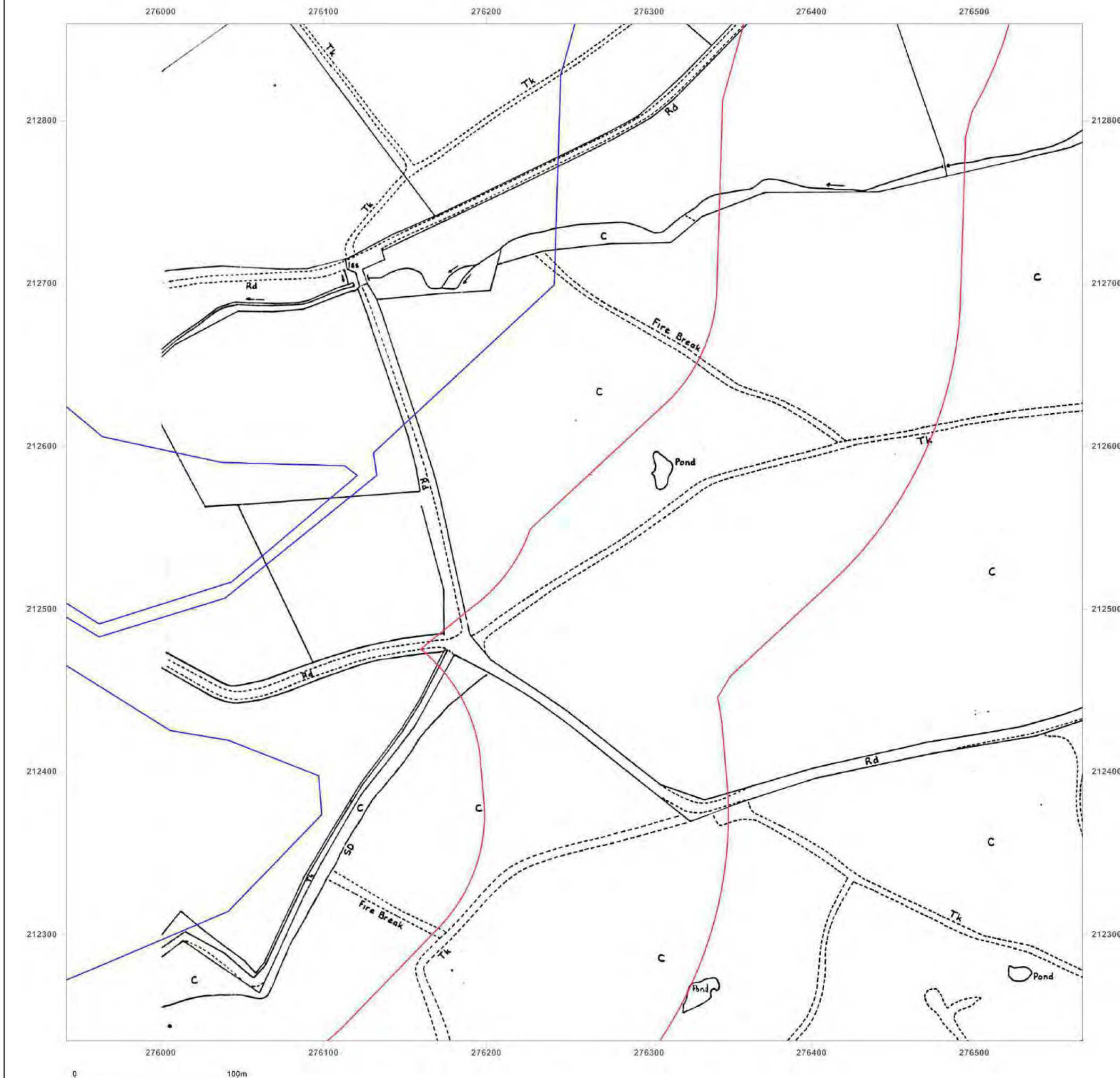


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: National Grid

Map date: 1986-1991

Scale: 1:2,500

Printed at: 1:2,500



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

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

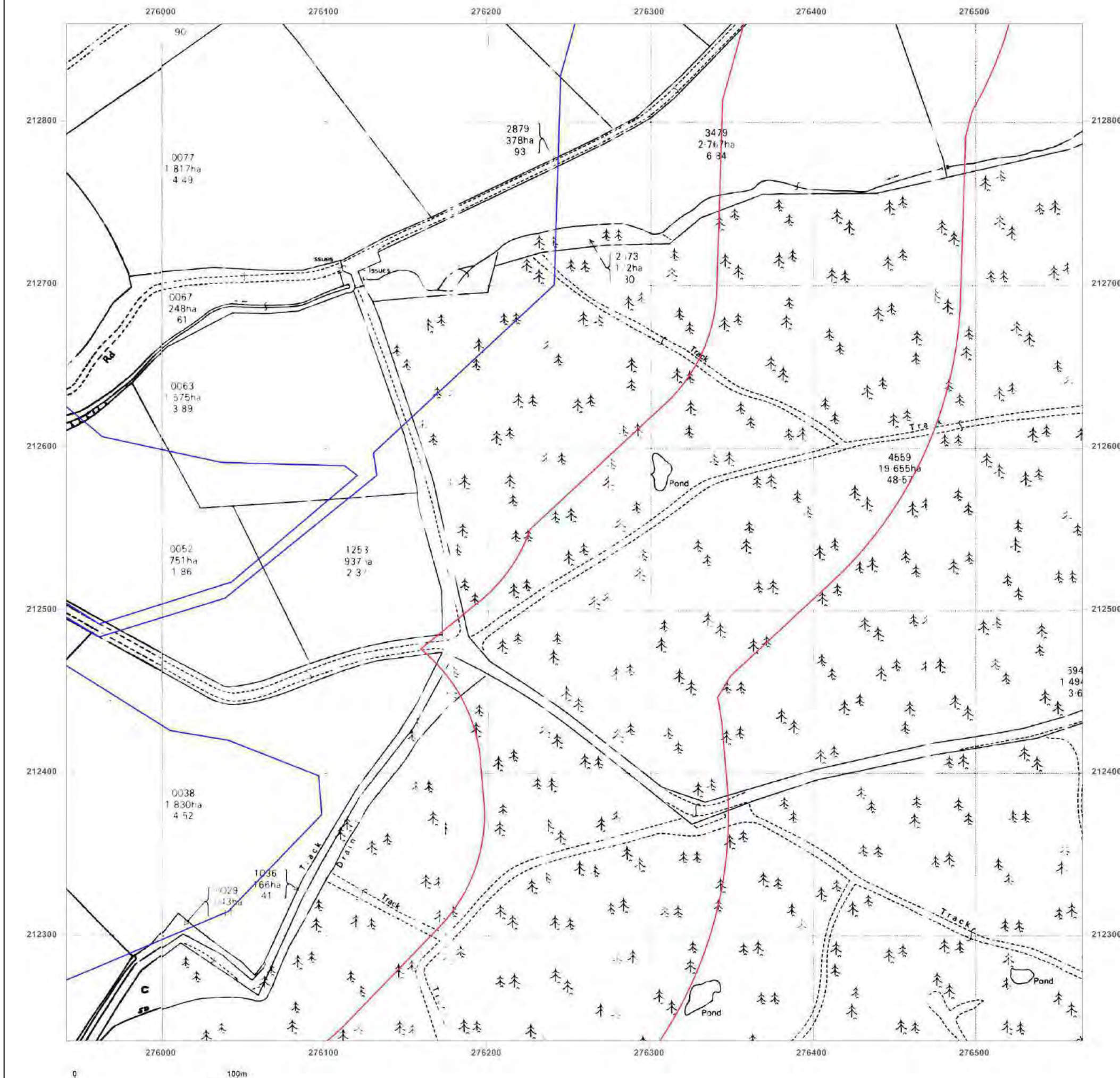


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_2
Grid Ref: 276254, 212547

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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

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

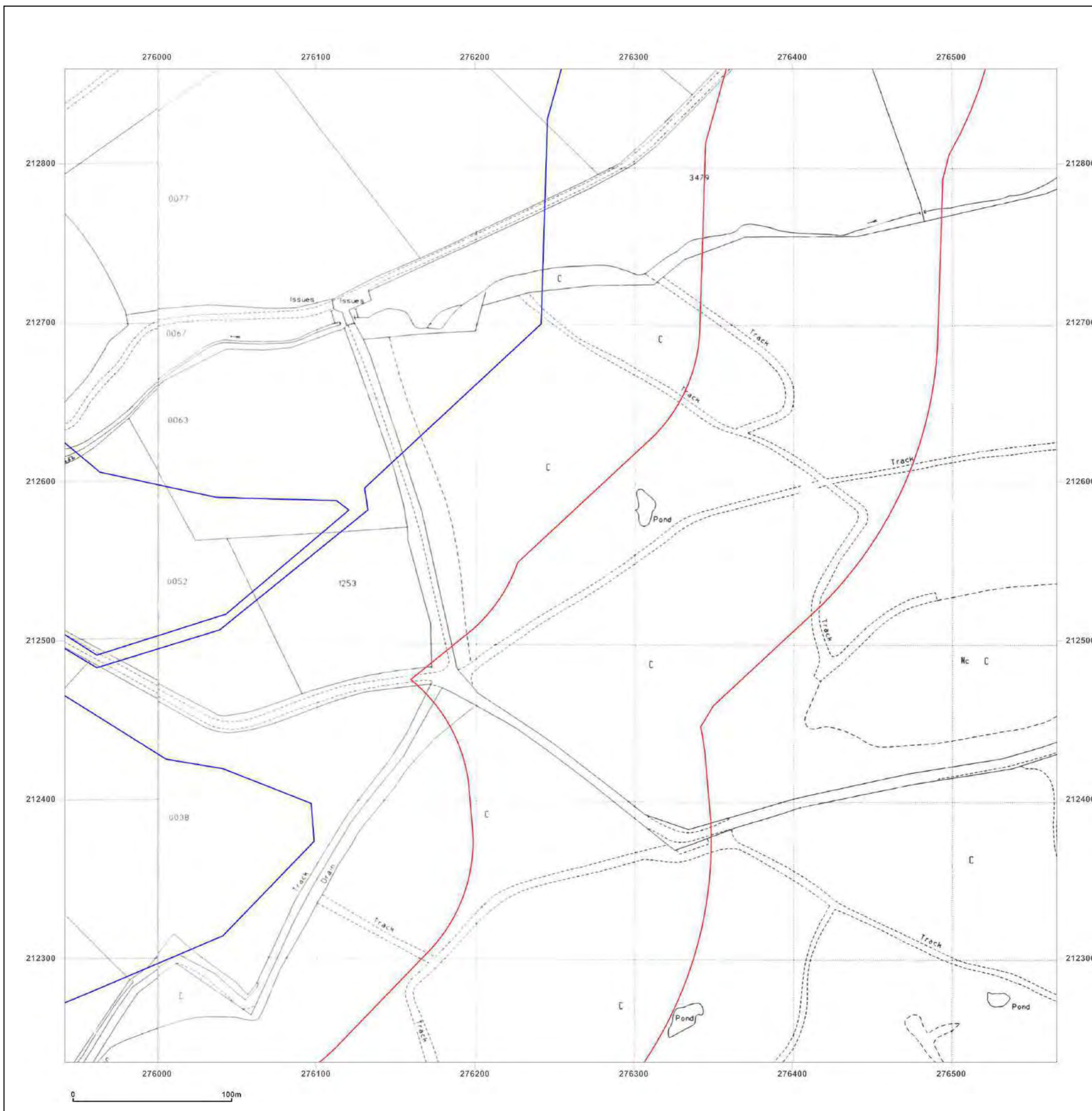


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_3
Grid Ref: 276254, 213173

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1877
 Revised 1877
 Edition N/A
 Copyright N/A
 Levelled N/A

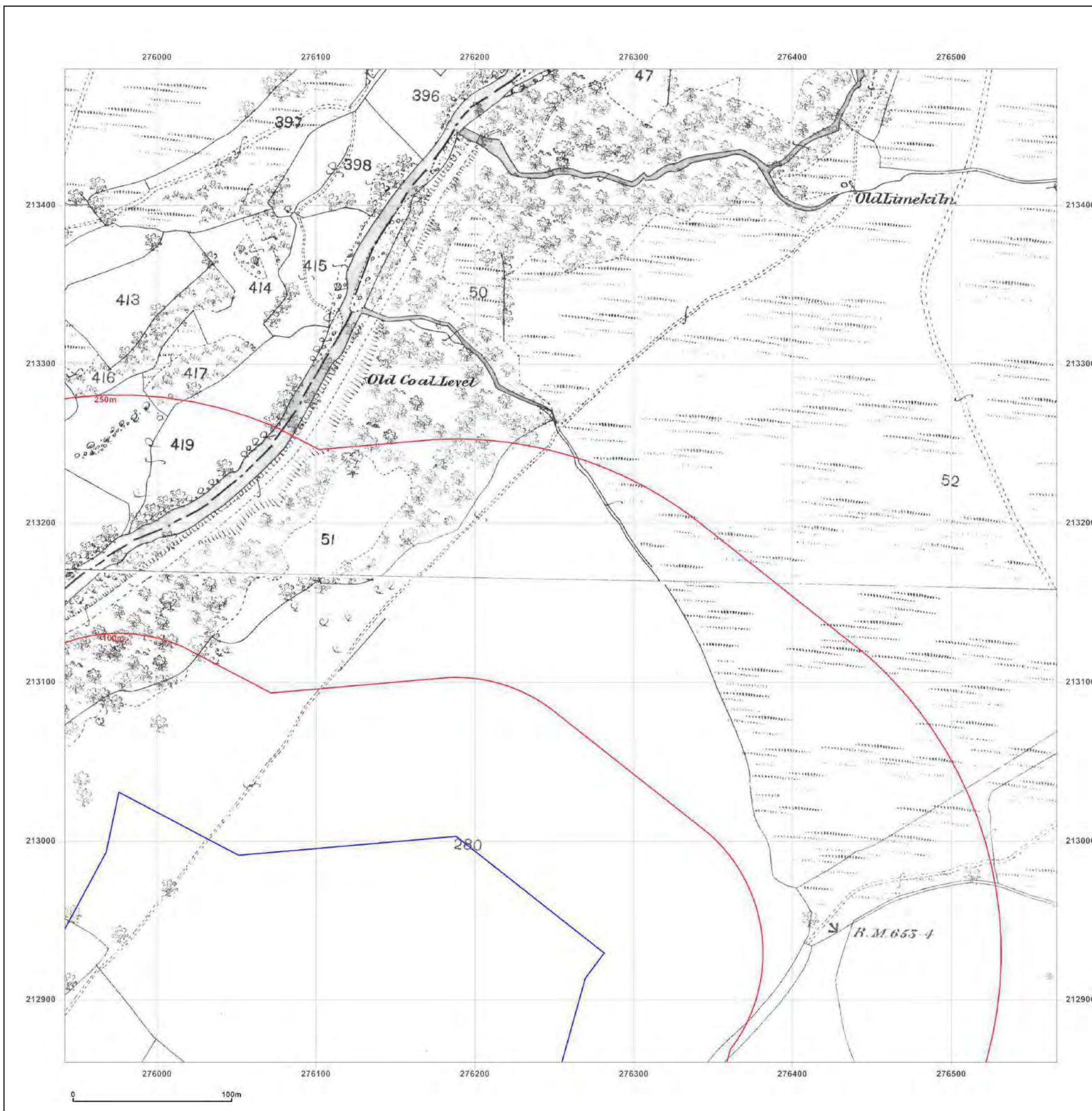


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Production date: 06 June 2019

Map legend available at:
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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_3
Grid Ref: 276254, 213173

Map Name: County Series

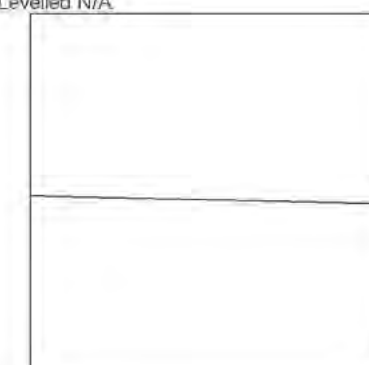
Map date: 1891

Scale: 1:2,500

Printed at: 1:2,500



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

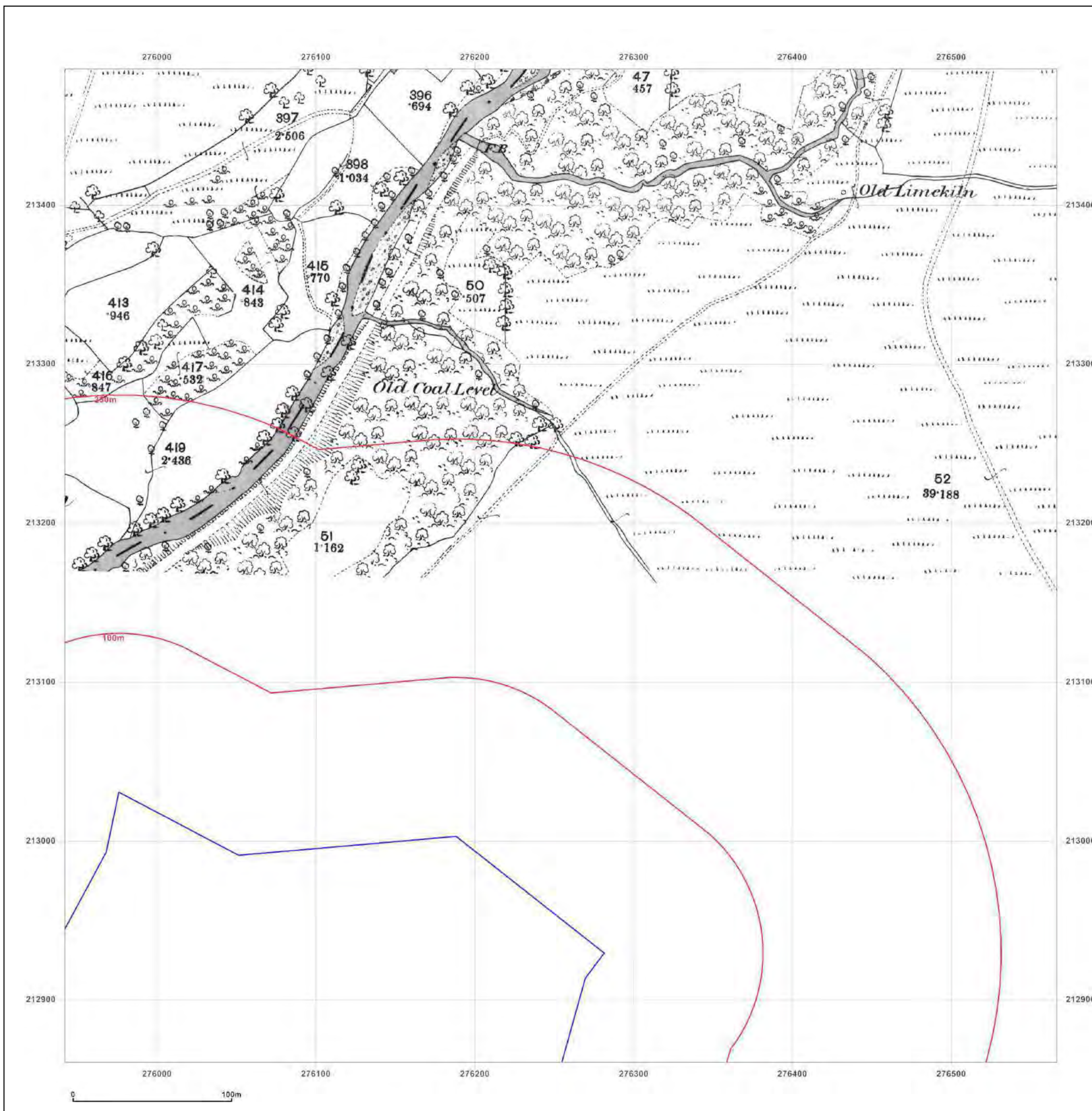


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_3
Grid Ref: 276254, 213173

Map Name: County Series

Map date: 1905

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1905
 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1905
 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

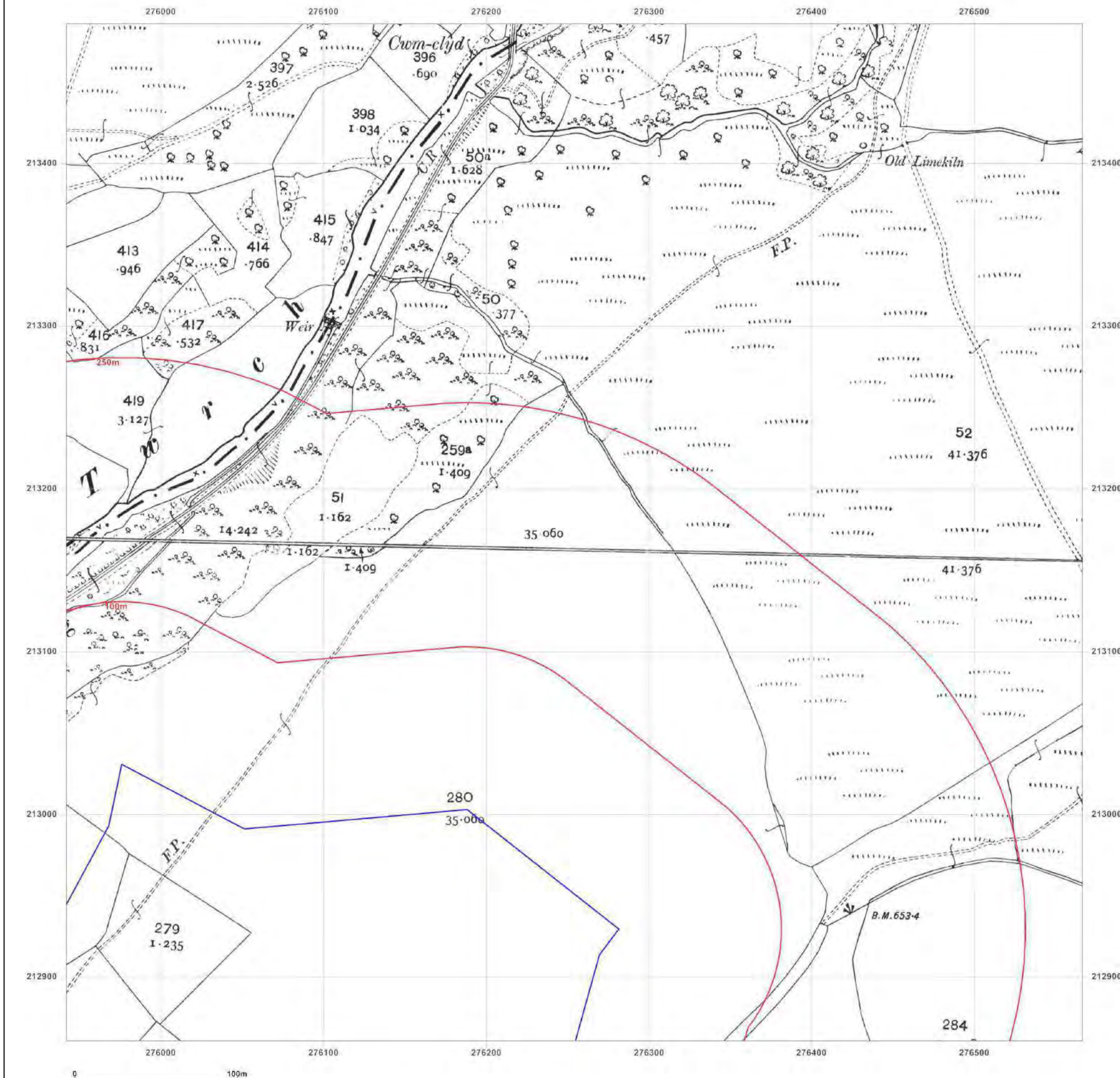


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_3
Grid Ref: 276254, 213173

Map Name: County Series

Map date: 1918-1919

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1919
 Revised 1919
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1918
 Revised 1918
 Edition N/A
 Copyright N/A
 Levelled N/A

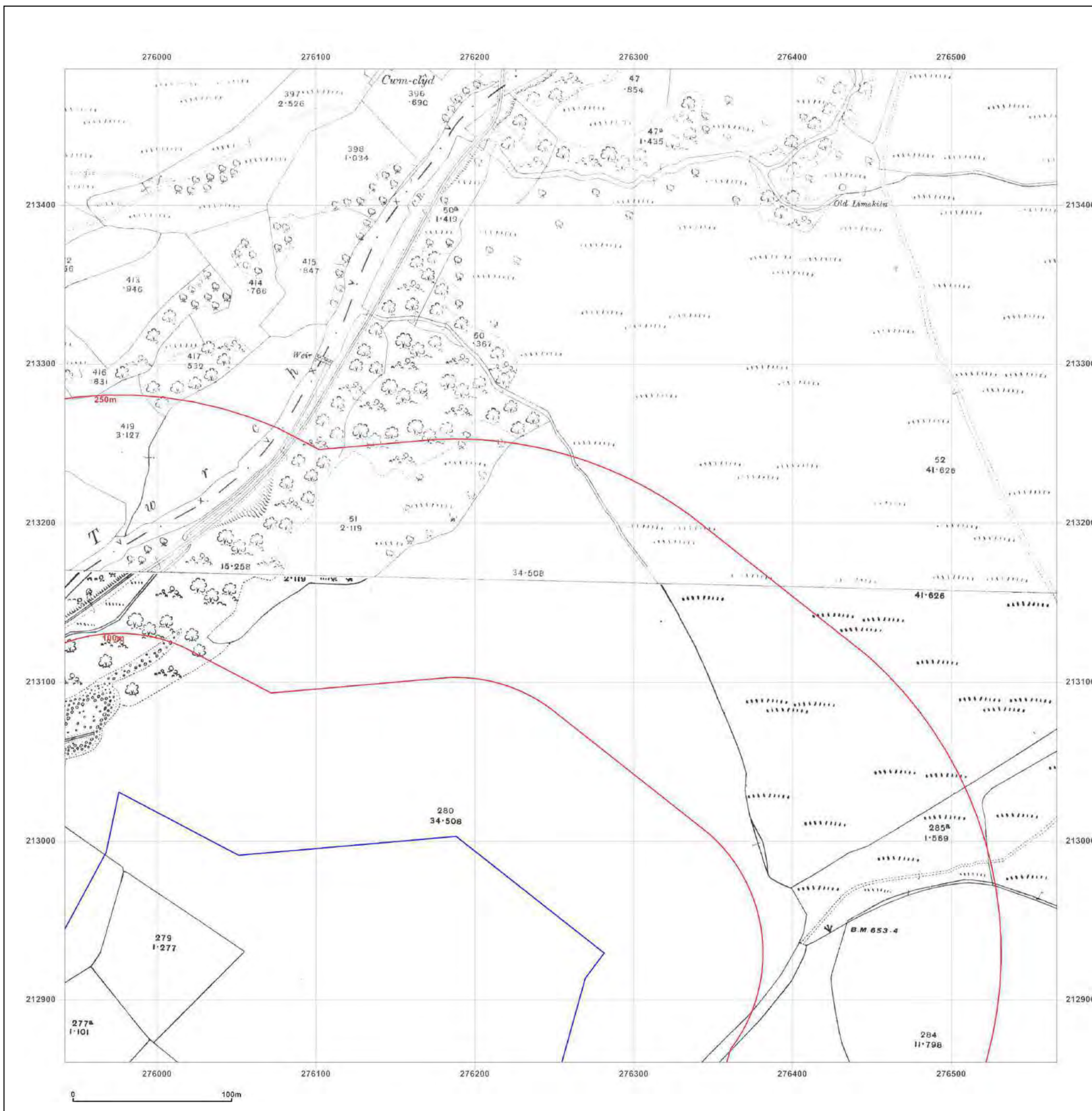


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_3
Grid Ref: 276254, 213173

Map Name: National Grid

Map date: 1961-1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright N/A
 Levelled 1956

Surveyed 1962
 Revised 1962
 Edition N/A
 Copyright 1964
 Levelled 1953

Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright 1962
 Levelled 1956

Surveyed 1962
 Revised 1962
 Edition N/A
 Copyright 1964
 Levelled 1953

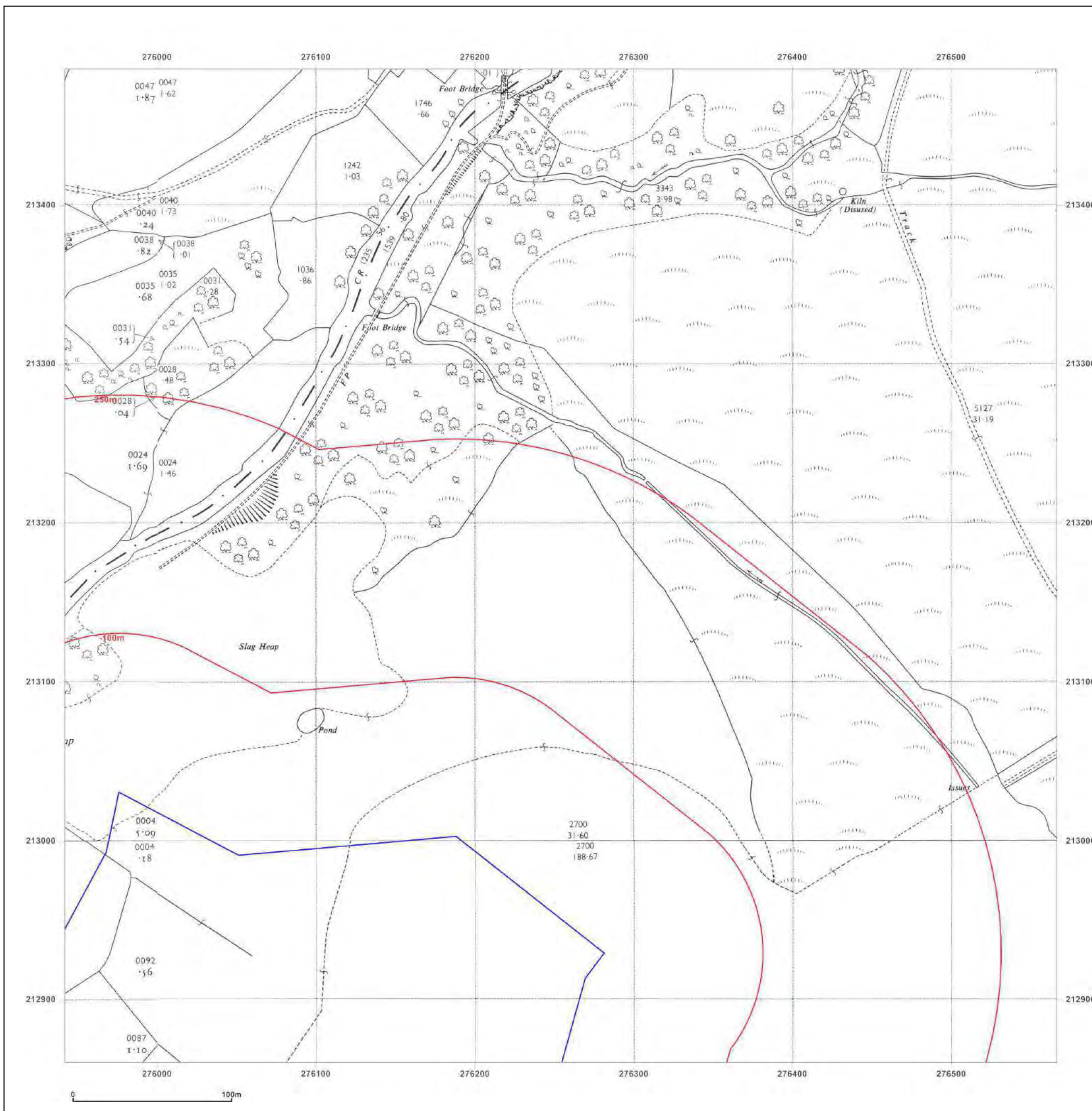


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_3
Grid Ref: 276254, 213173

Map Name: National Grid

Map date: 1962-1964

Scale: 1:2,500

Printed at: 1:2,500



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

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

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

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 Edition N/A
 Copyright N/A
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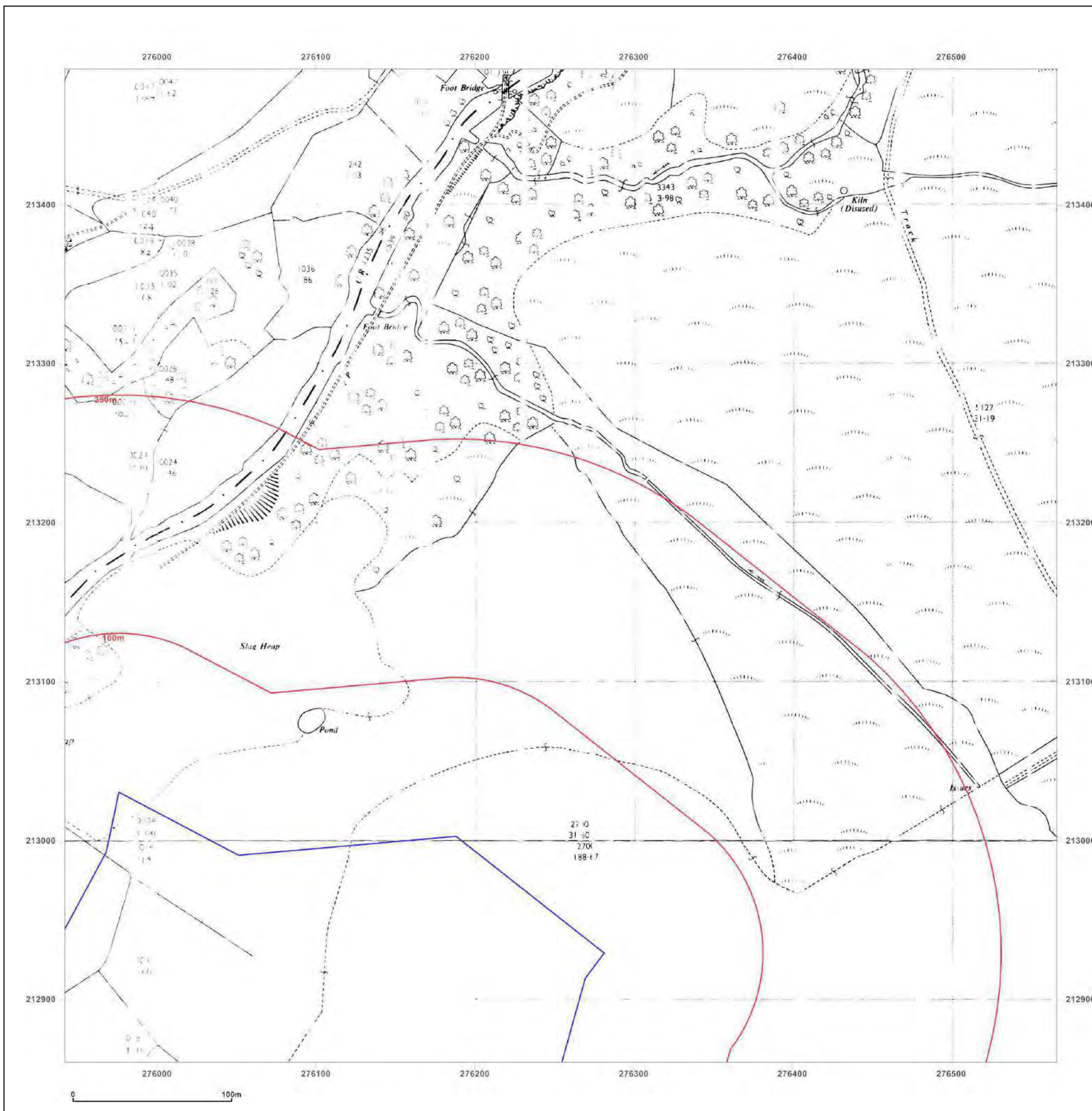


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_3
Grid Ref: 276254, 213173

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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

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

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

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

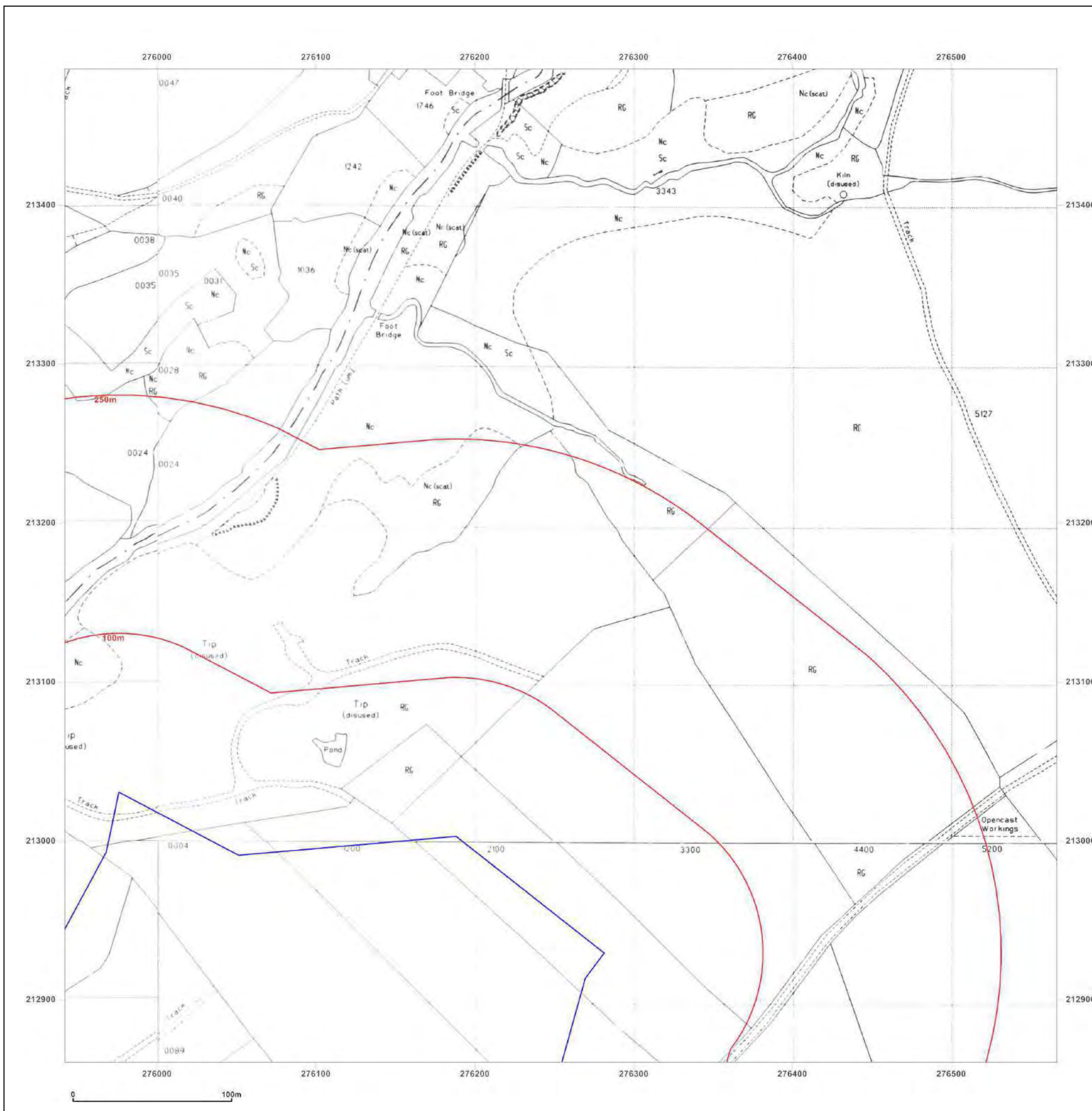


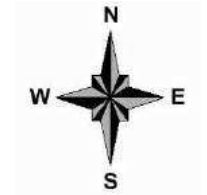
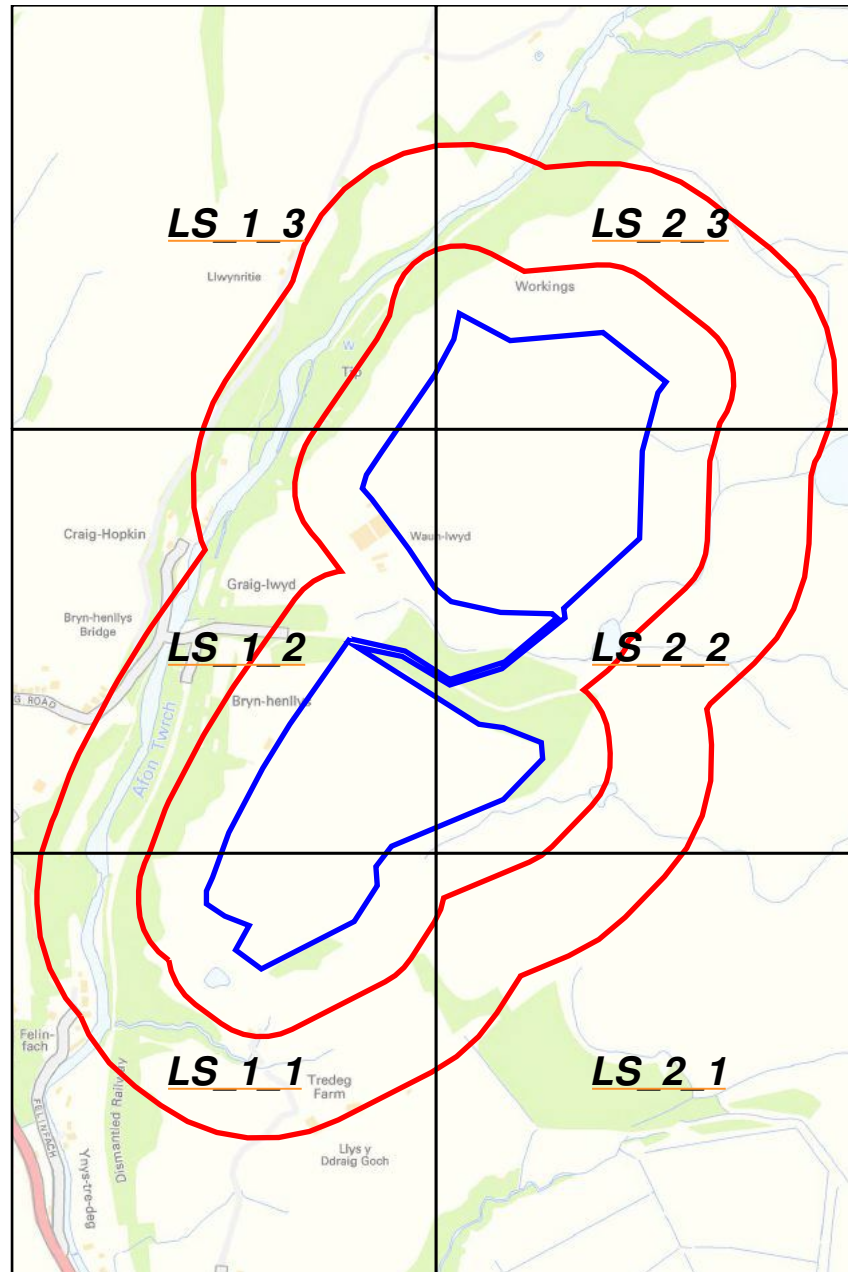
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1:2500 Scale Grid Index

Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_1
Grid Ref: 275629, 211922

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1877
 Revised 1877
 Edition N/A
 Copyright N/A
 Levelled N/A

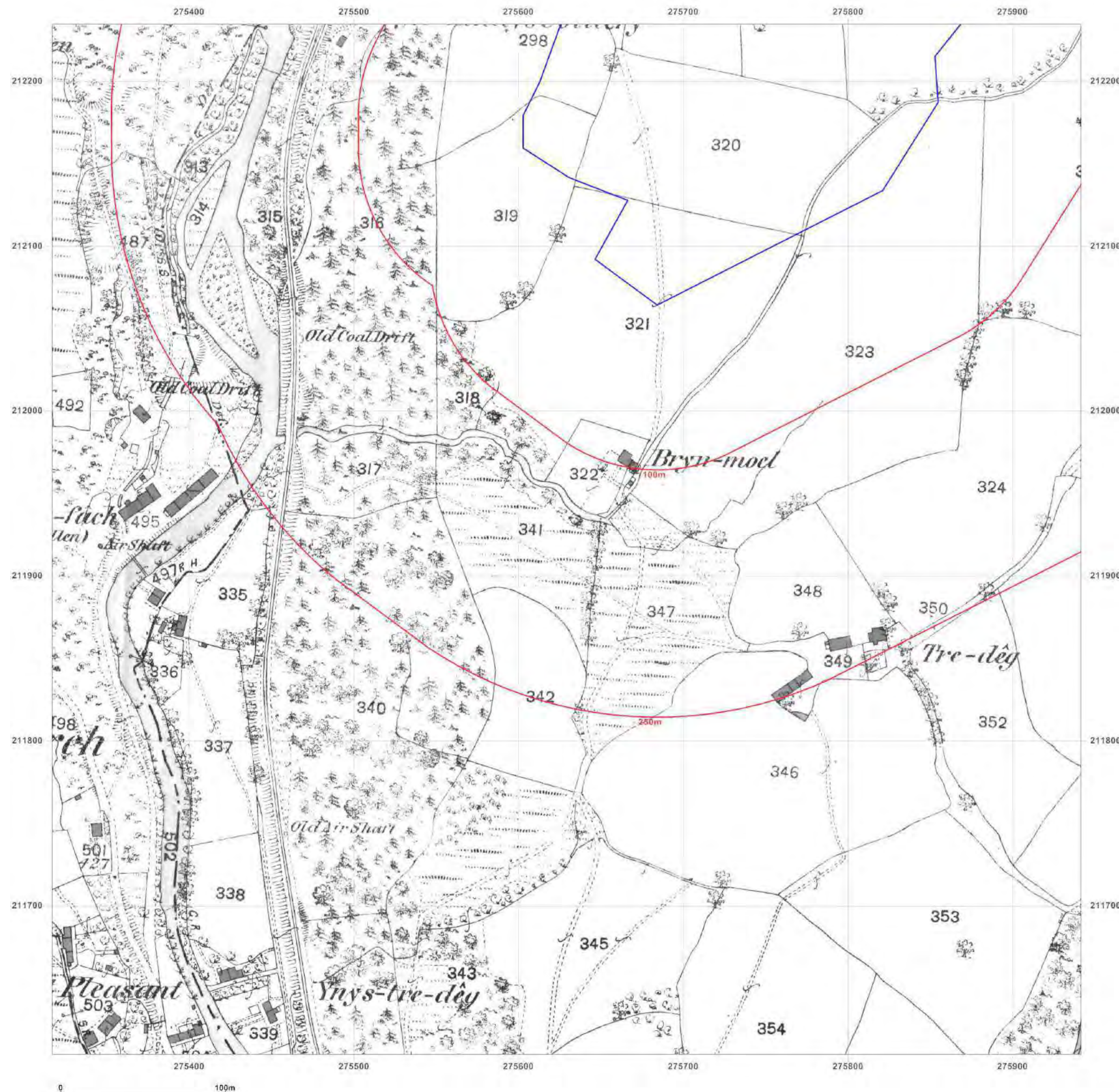


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_1
Grid Ref: 275629, 211922

Map Name: County Series

Map date: 1905

Scale: 1:2,500

Printed at: 1:2,500



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 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

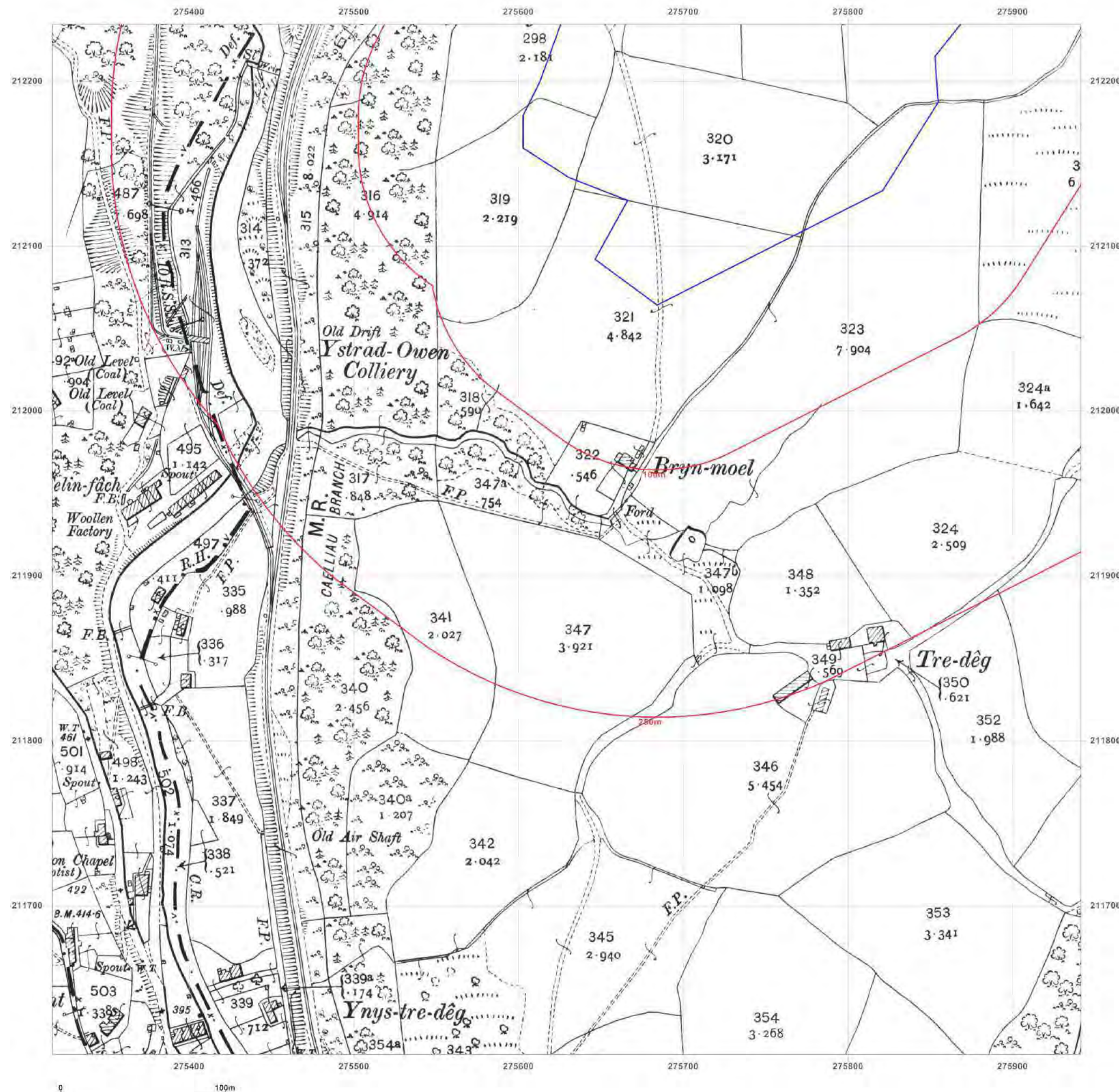


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_1
Grid Ref: 275629, 211922

Map Name: County Series

Map date: 1918

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1918
 Revised 1918
 Edition N/A
 Copyright N/A
 Levelled N/A

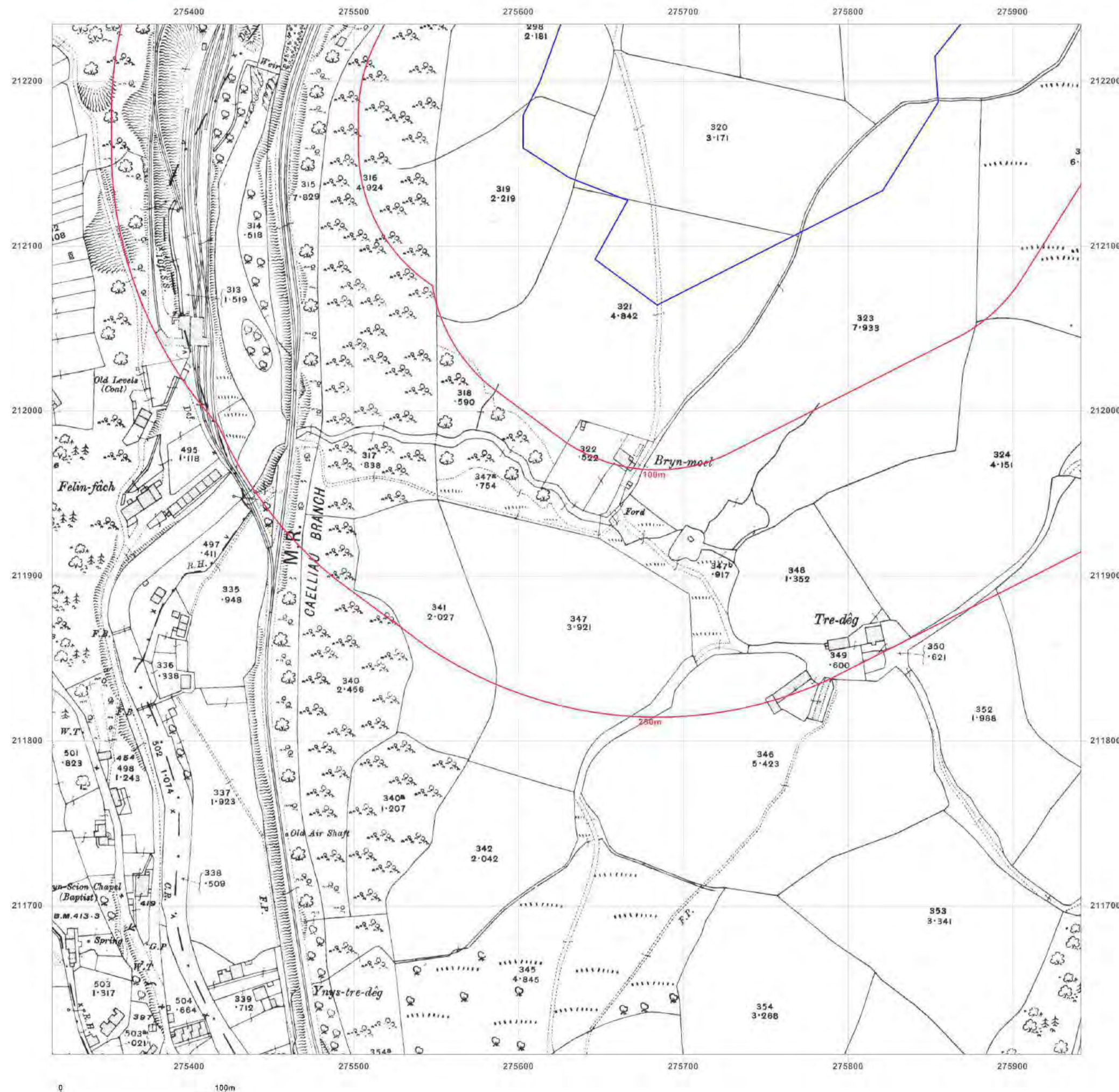


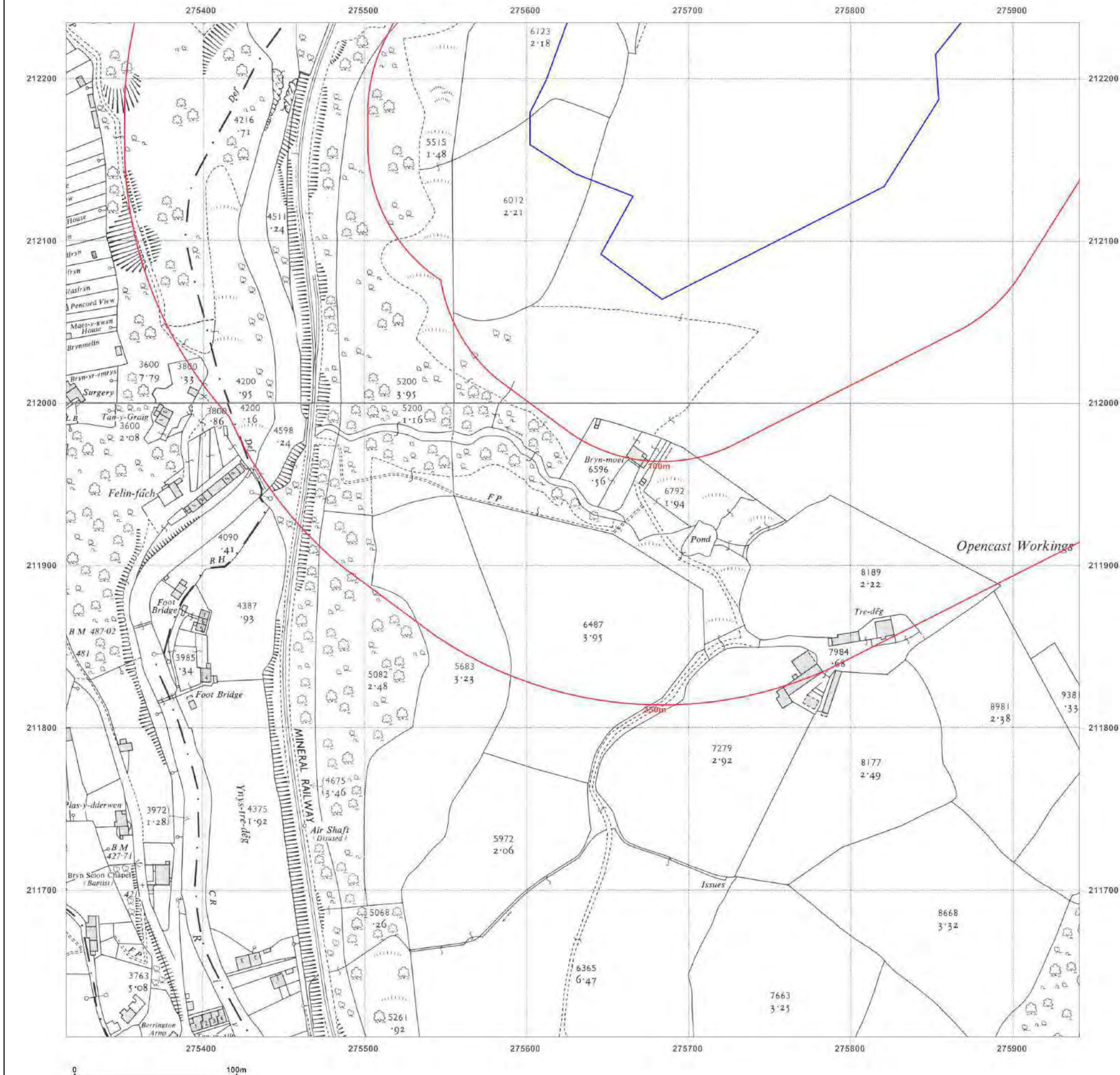
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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_1
Grid Ref: 275629, 211922

Map Name: National Grid

Map date: 1962

Scale: 1:2,500

Printed at: 1:2,500



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

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

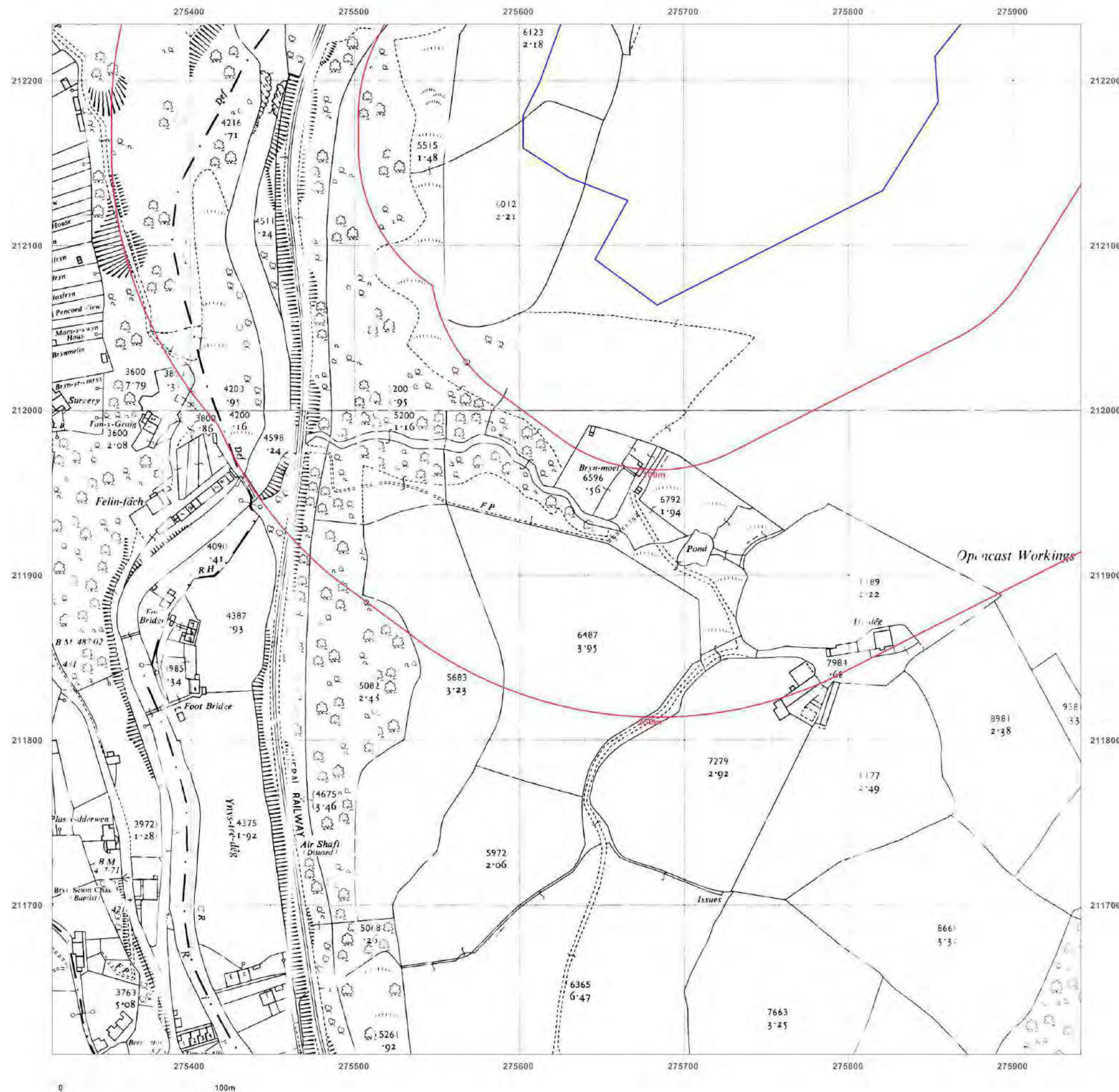


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Site Details:

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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_1
Grid Ref: 275629, 211922

Map Name: National Grid

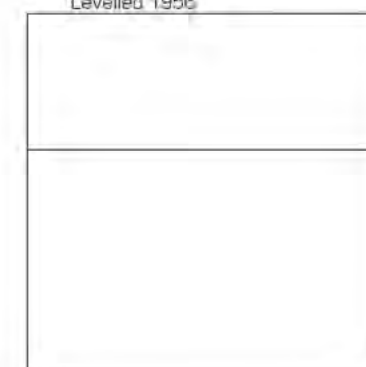
Map date: 1982

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1982
 Levellled 1956

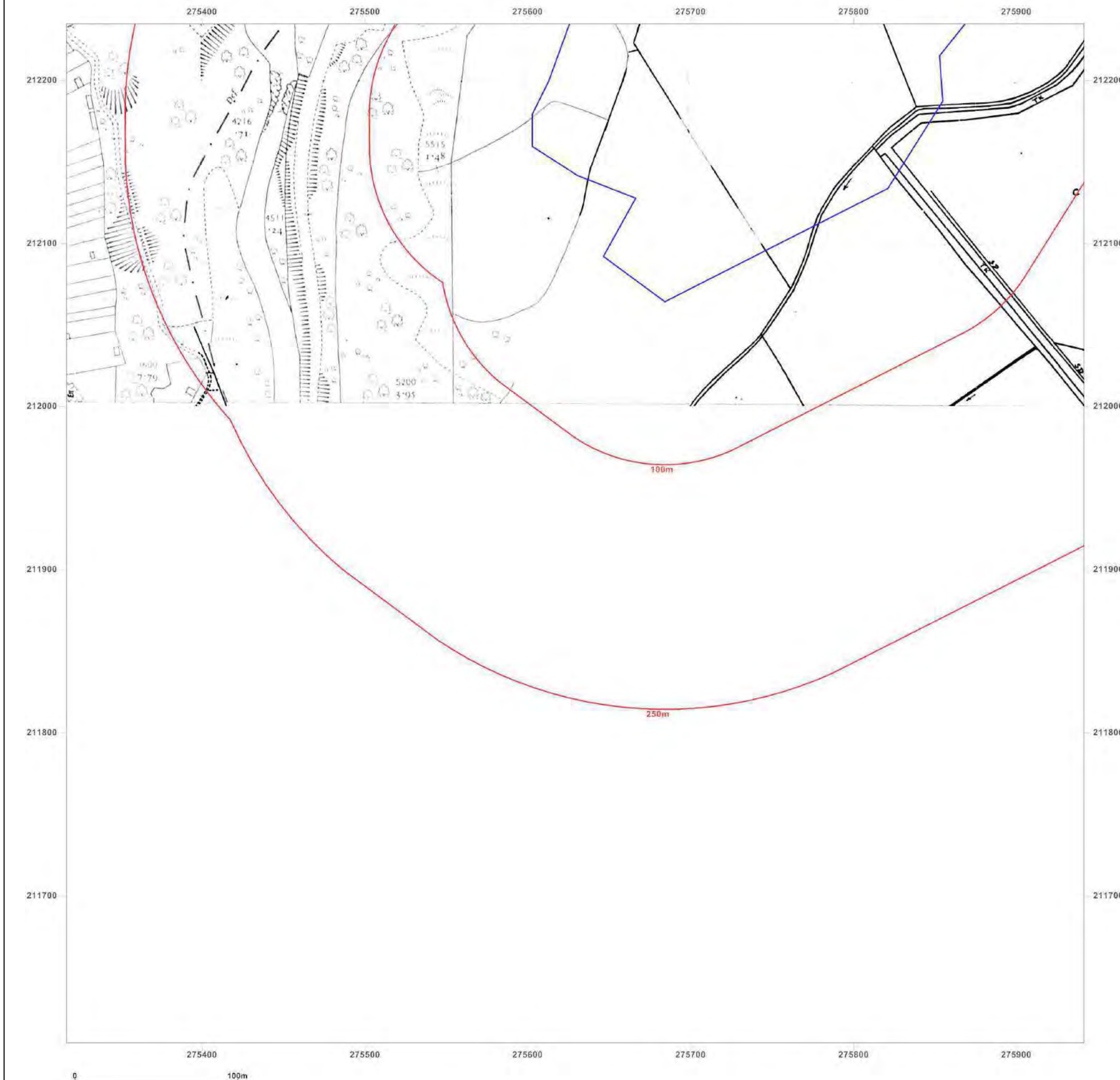


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Production date: 06 June 2019

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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_1
Grid Ref: 275629, 211922

Map Name: National Grid

Map date: 1990-1991

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1956
 Revised 1990
 Edition N/A
 Copyright 1990
 Levelled 1956

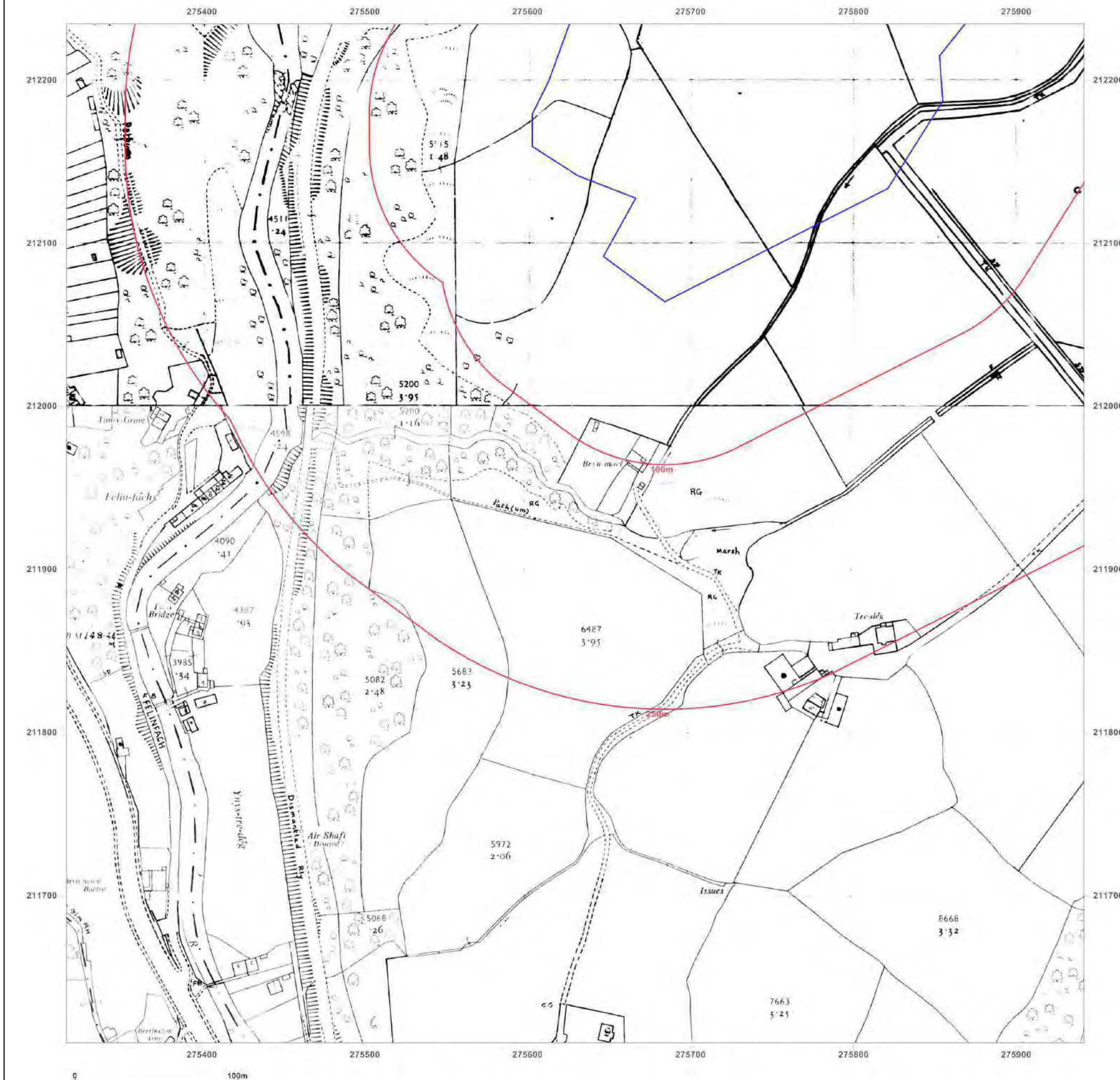


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Site Details:

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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_1
Grid Ref: 275629, 211922

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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

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

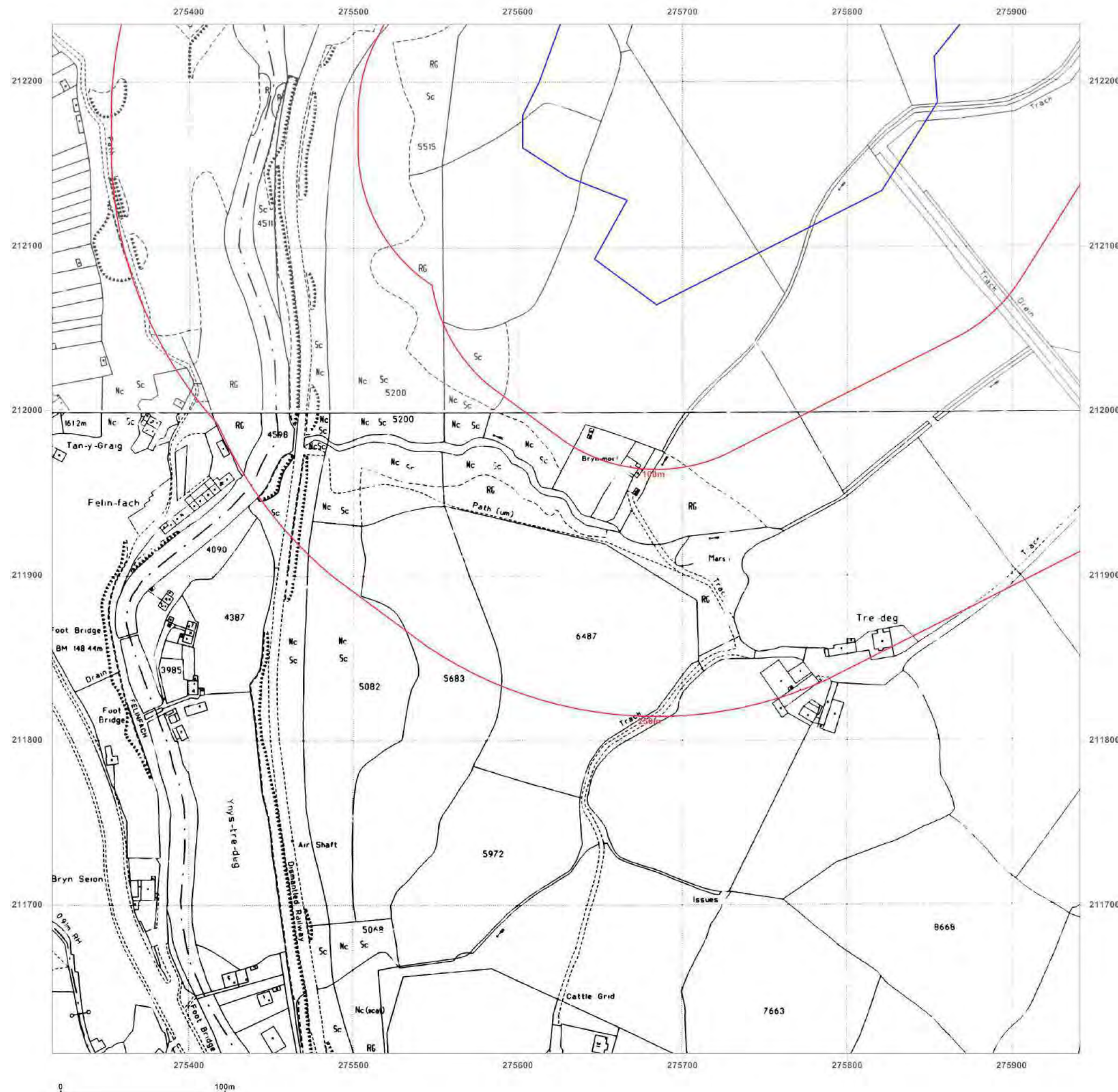


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_2
Grid Ref: 275629, 212547

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1877
 Revised 1877
 Edition N/A
 Copyright N/A
 Levelled N/A

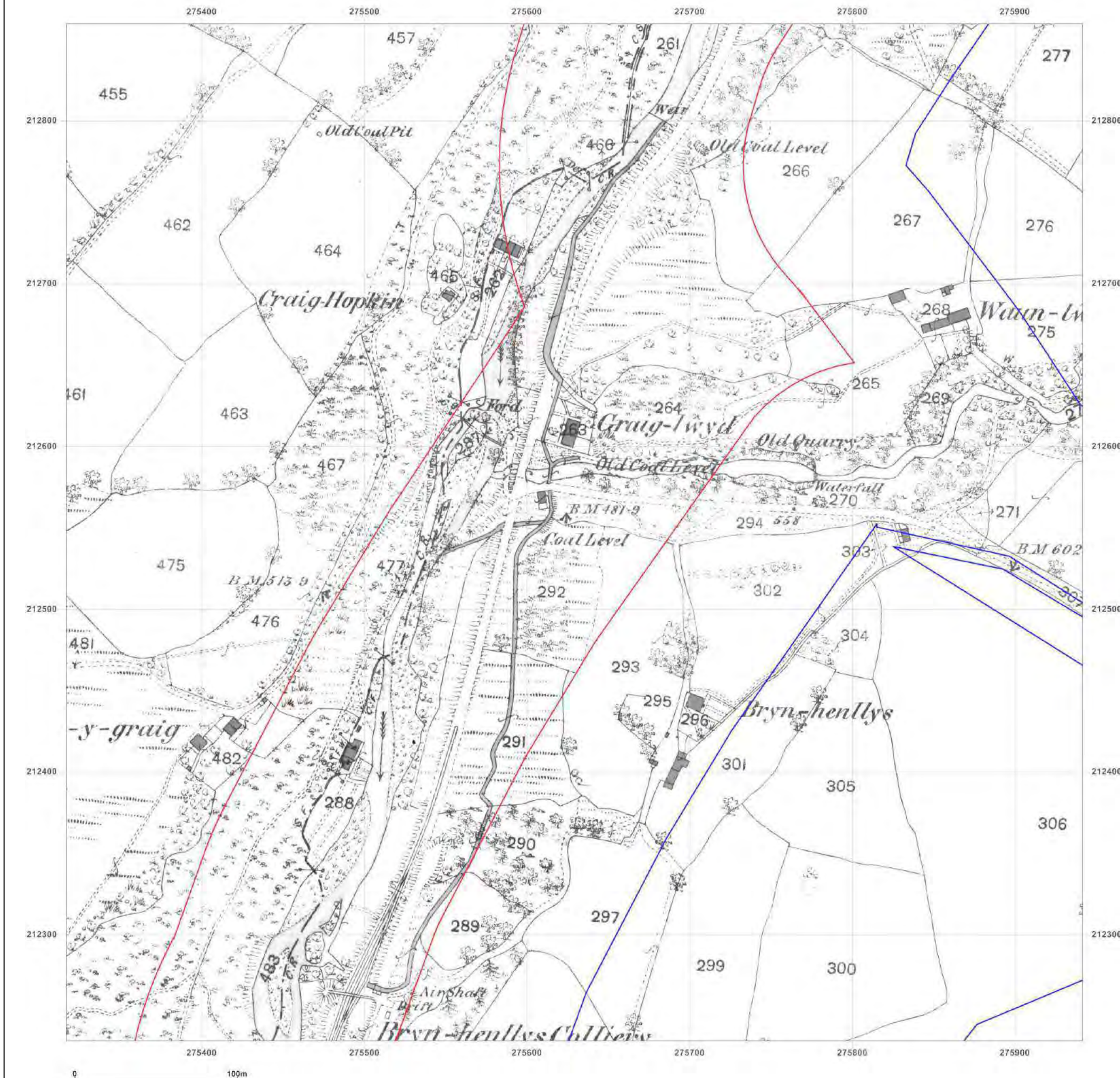


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_2
Grid Ref: 275629, 212547

Map Name: County Series

Map date: 1905

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1905
 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

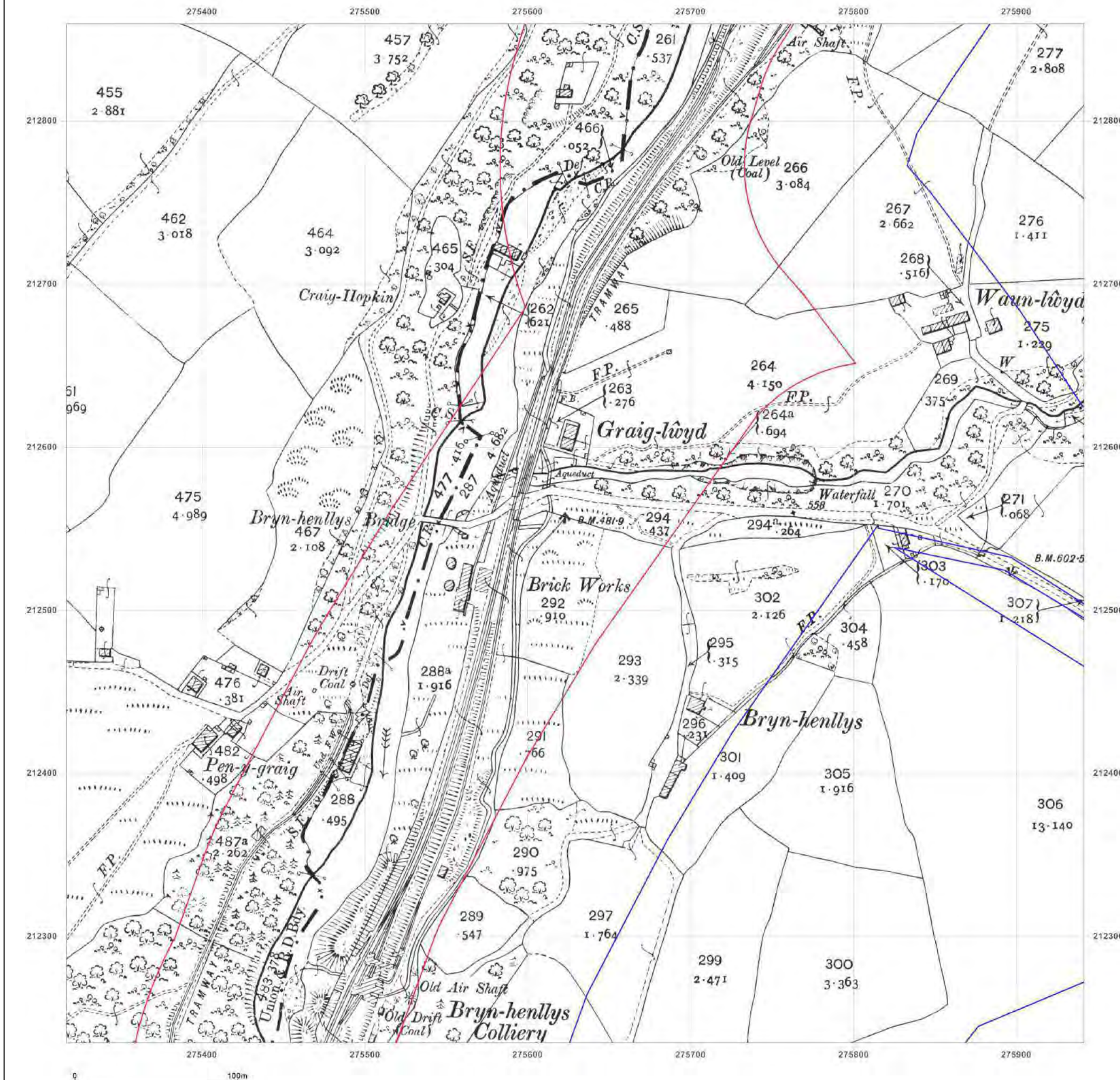


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Production date: 06 June 2019

Map legend available at:
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Site Details:

276031, 212872

Client Ref: Bryn-Henllys_Extension
Report Ref: GS-6079654_LS_1_2
Grid Ref: 275629, 212547

Map Name: County Series

Map date: 1918

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1918
Revised 1918
Edition N/A
Copyright N/A
Levelled N/A

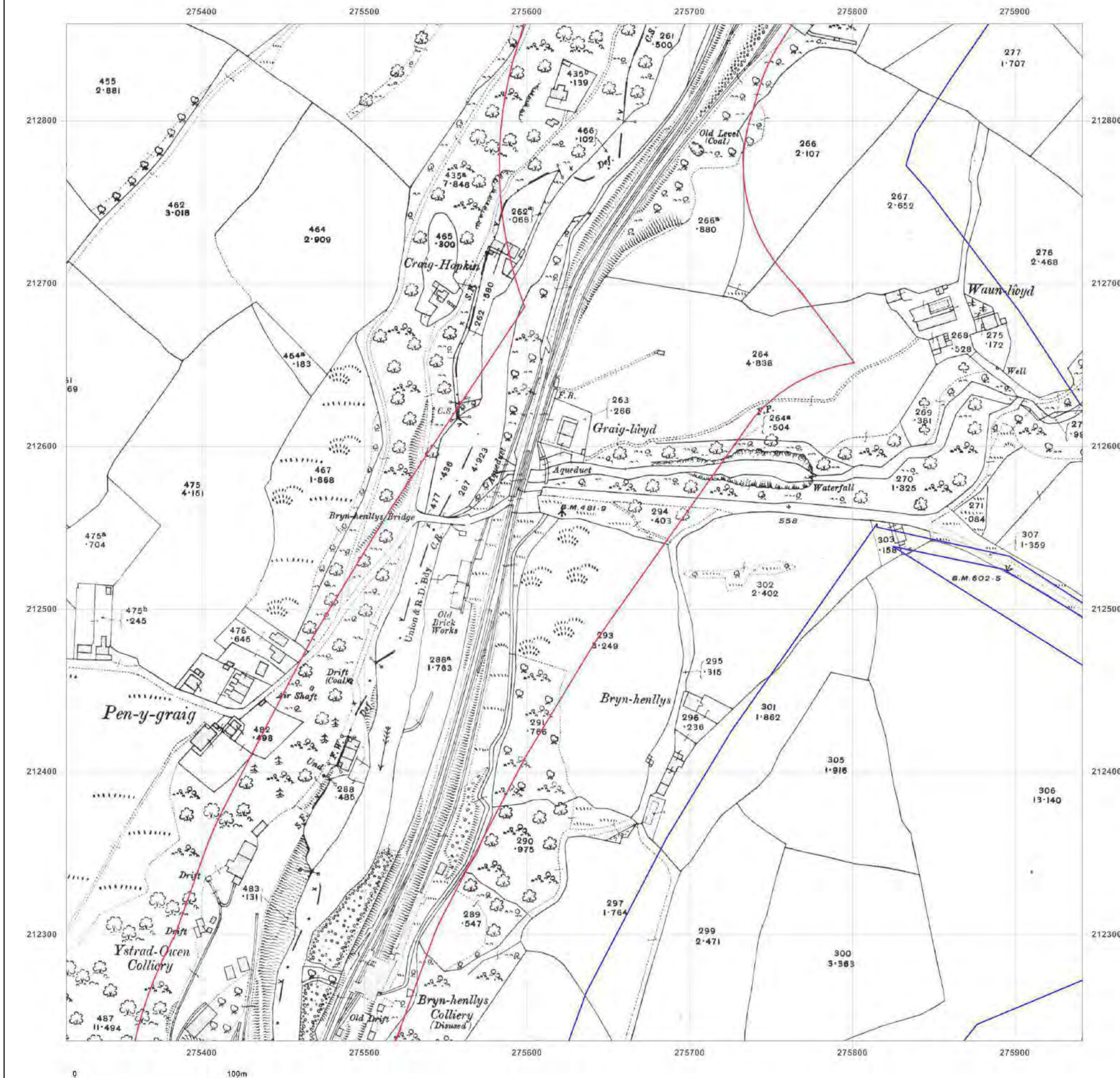


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Production date: 06 June 2019

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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_2
Grid Ref: 275629, 212547

Map Name: National Grid

Map date: 1961

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright 1962
 Levelled 1956

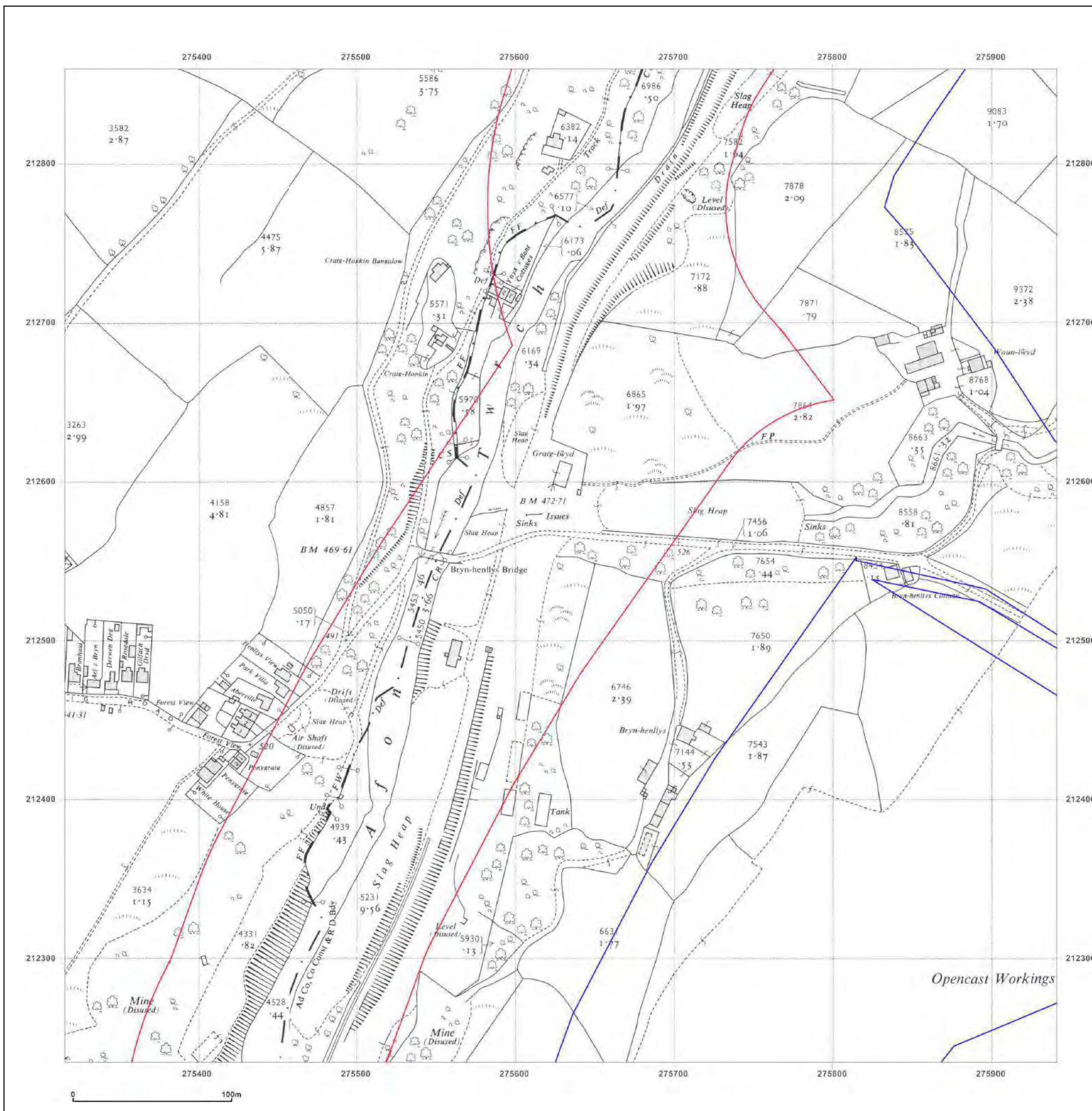


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Site Details:

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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_2
Grid Ref: 275629, 212547

Map Name: National Grid

Map date: 1962

Scale: 1:2,500

Printed at: 1:2,500



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

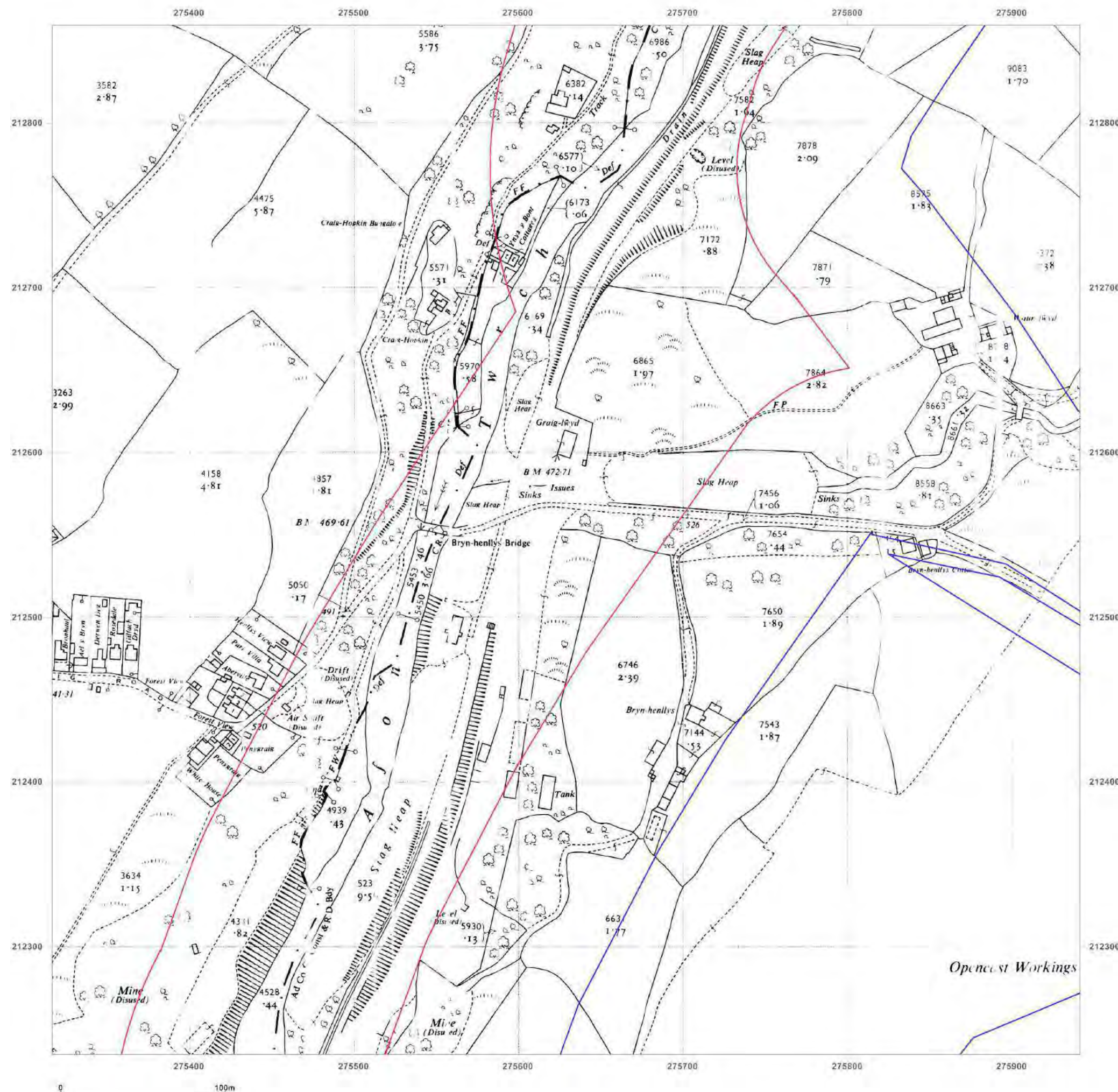


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_2
Grid Ref: 275629, 212547

Map Name: National Grid

Map date: 1982

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
 Revised N/A
 Edition N/A
 Copyright 1982
 Levelled 1956

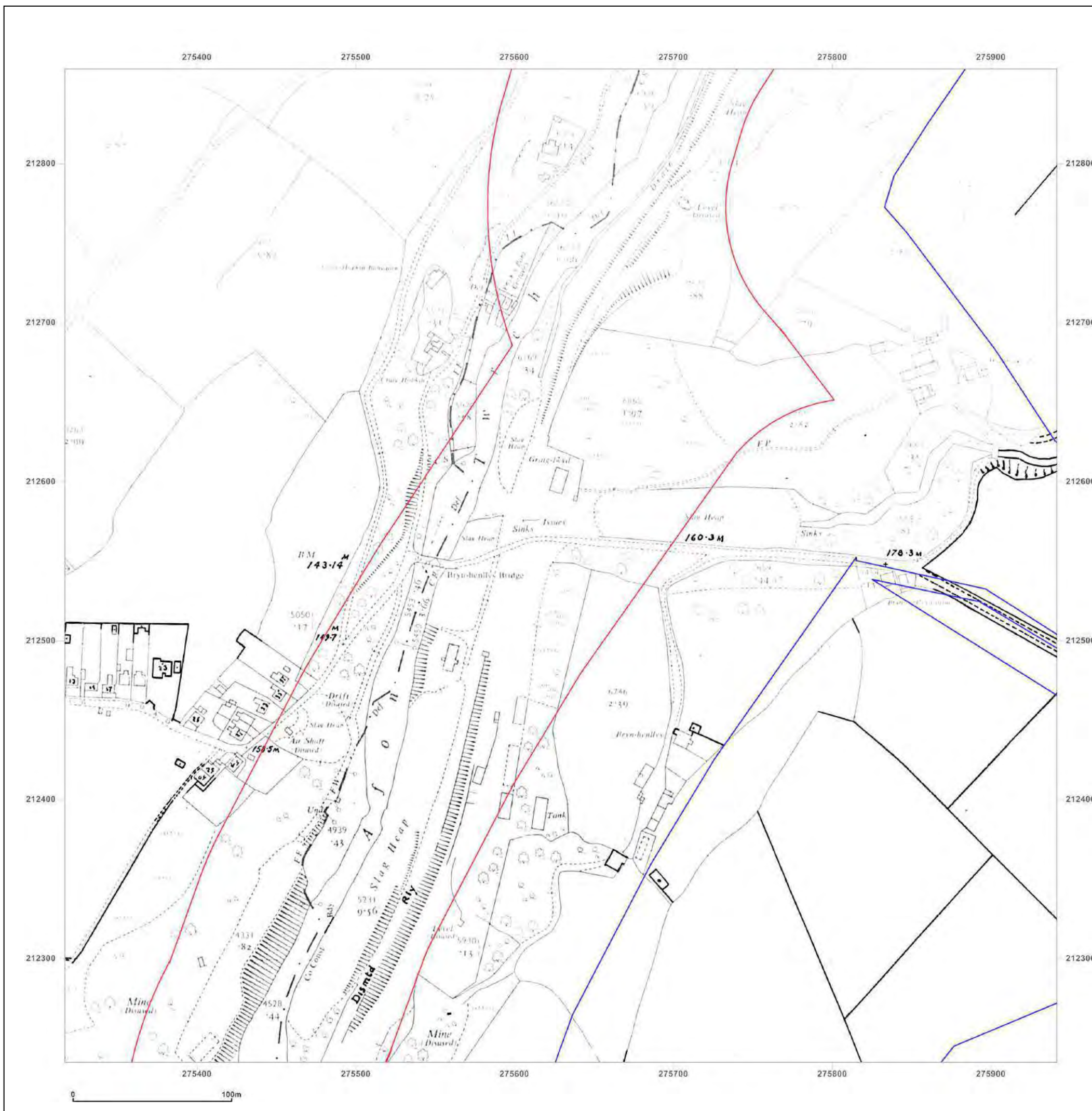


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_2
Grid Ref: 275629, 212547

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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

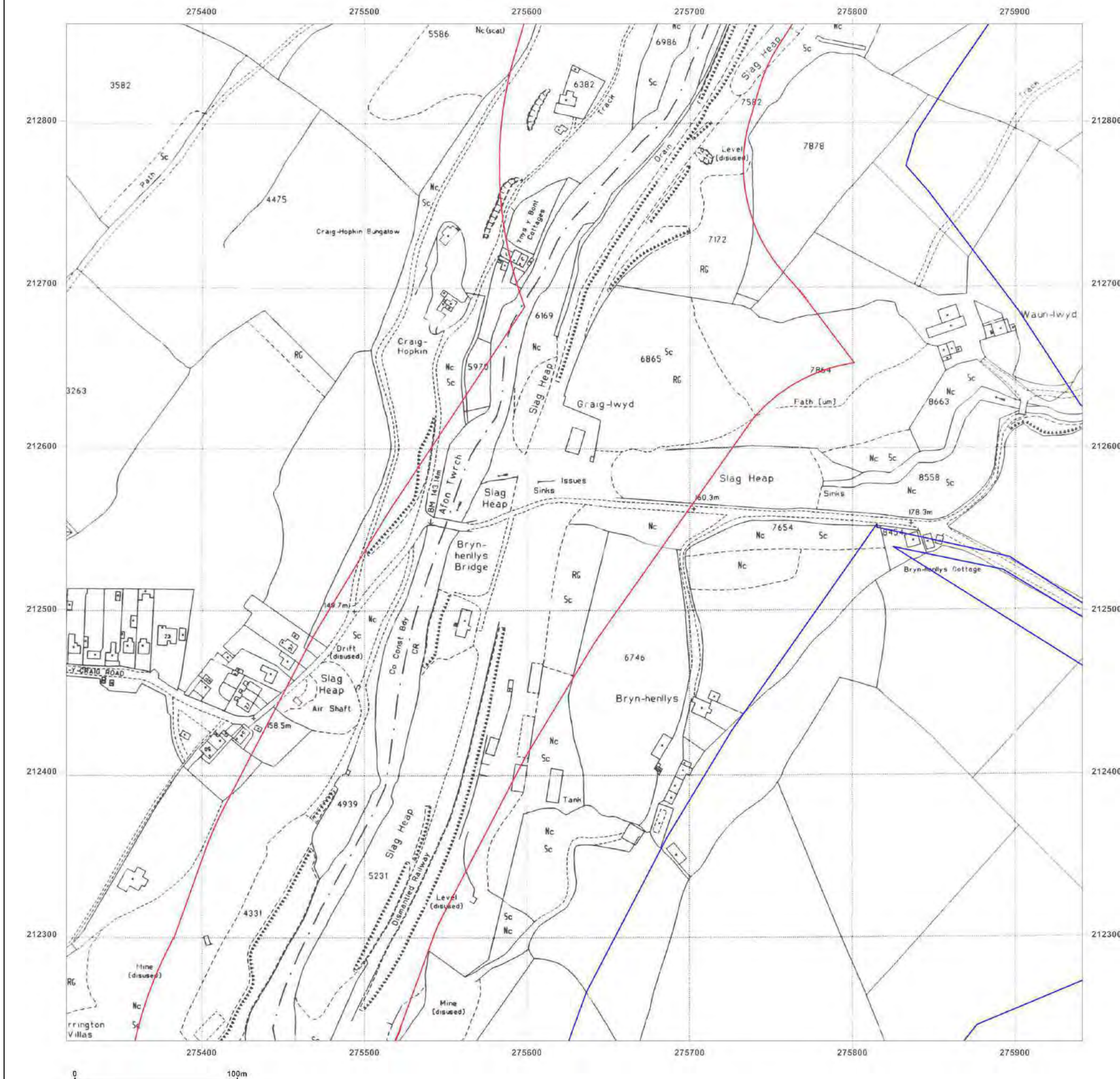


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1877
 Revised 1877
 Edition N/A
 Copyright N/A
 Levelled N/A

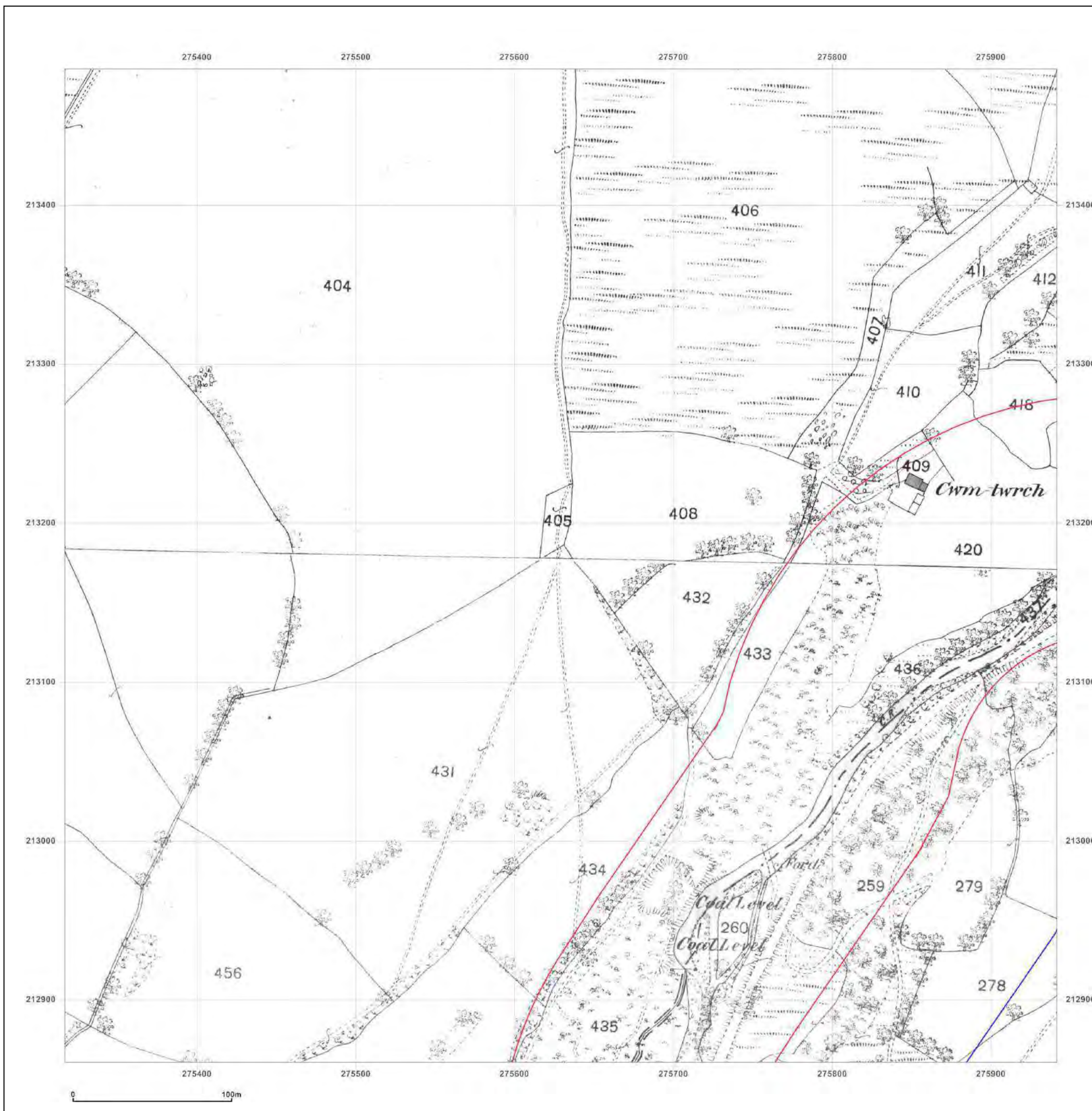


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Production date: 06 June 2019

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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: County Series

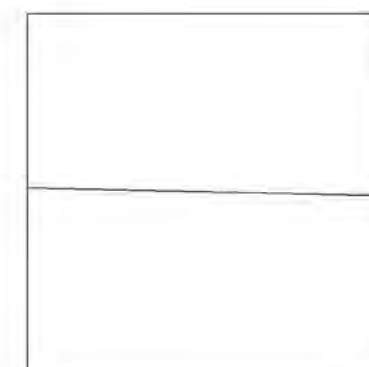
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Scale: 1:2,500

Printed at: 1:2,500



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

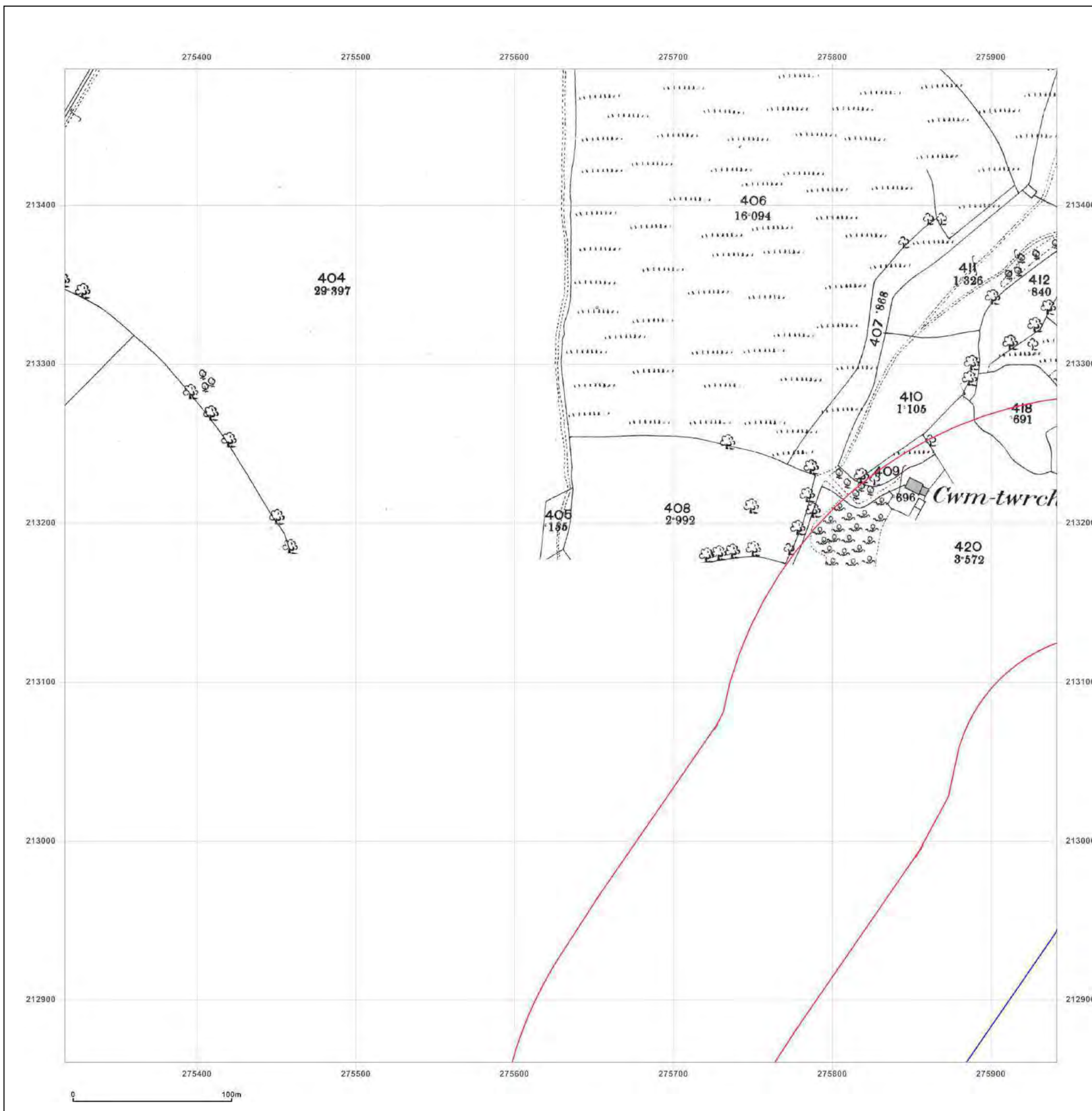


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Production date: 06 June 2019

Map legend available at:
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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: County Series

Map date: 1905

Scale: 1:2,500

Printed at: 1:2,500



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 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1905
 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

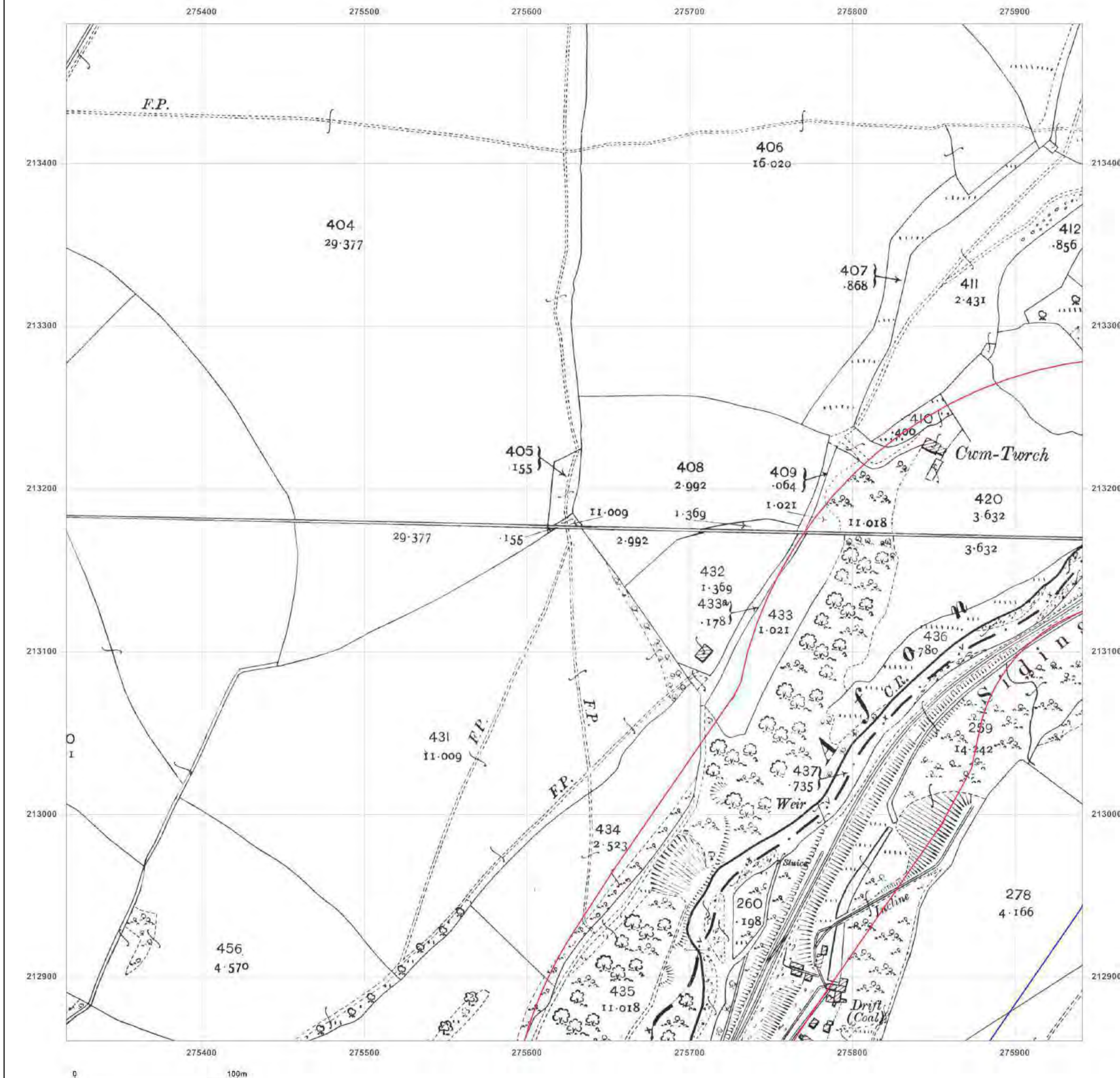


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Production date: 06 June 2019

Map legend available at:
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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: County Series

Map date: 1918-1919

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1919
 Revised 1919
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1918
 Revised 1918
 Edition N/A
 Copyright N/A
 Levelled N/A

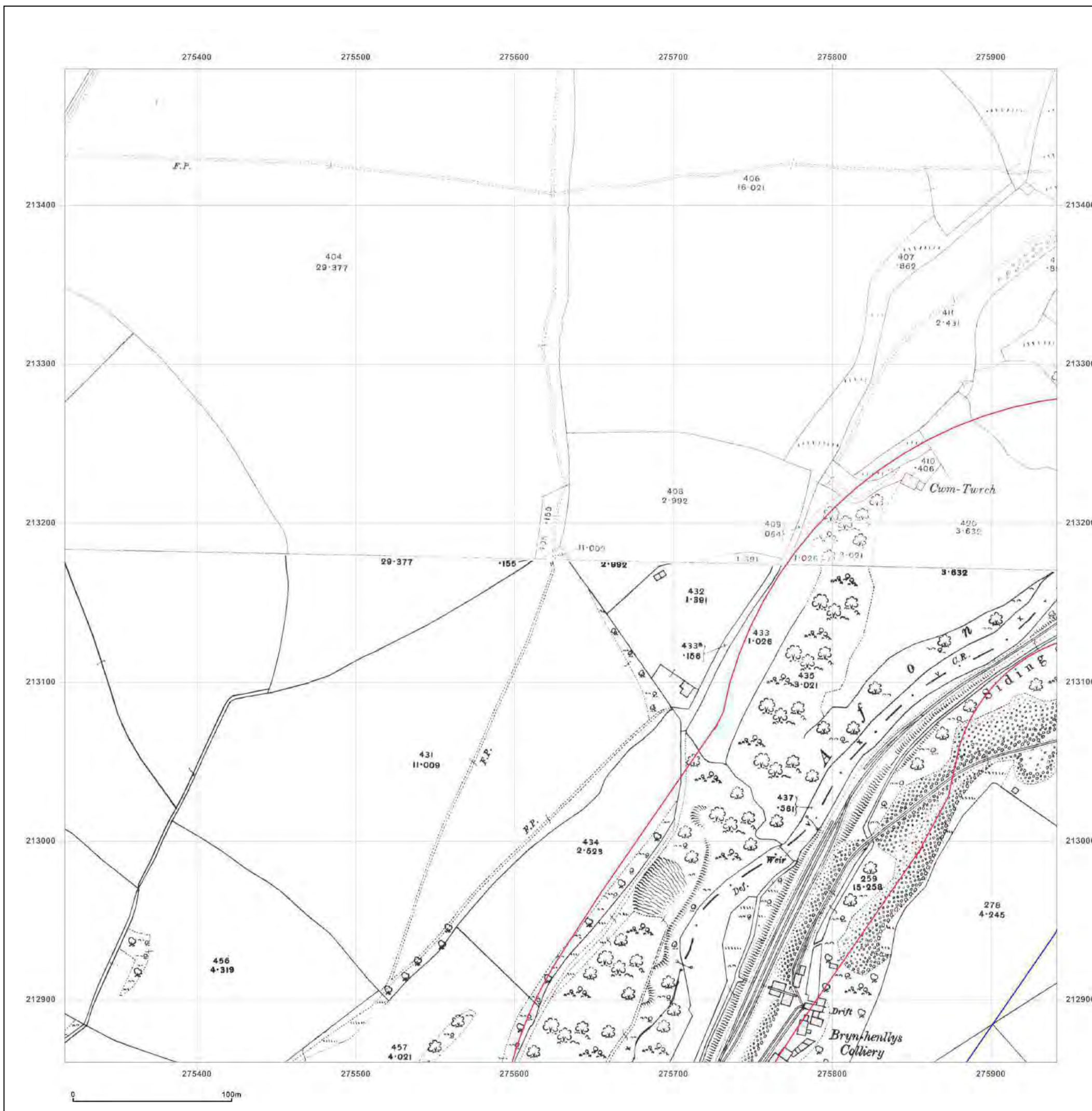


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: National Grid

Map date: 1961

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright N/A
 Levelled 1956

Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright 1962
 Levelled 1956

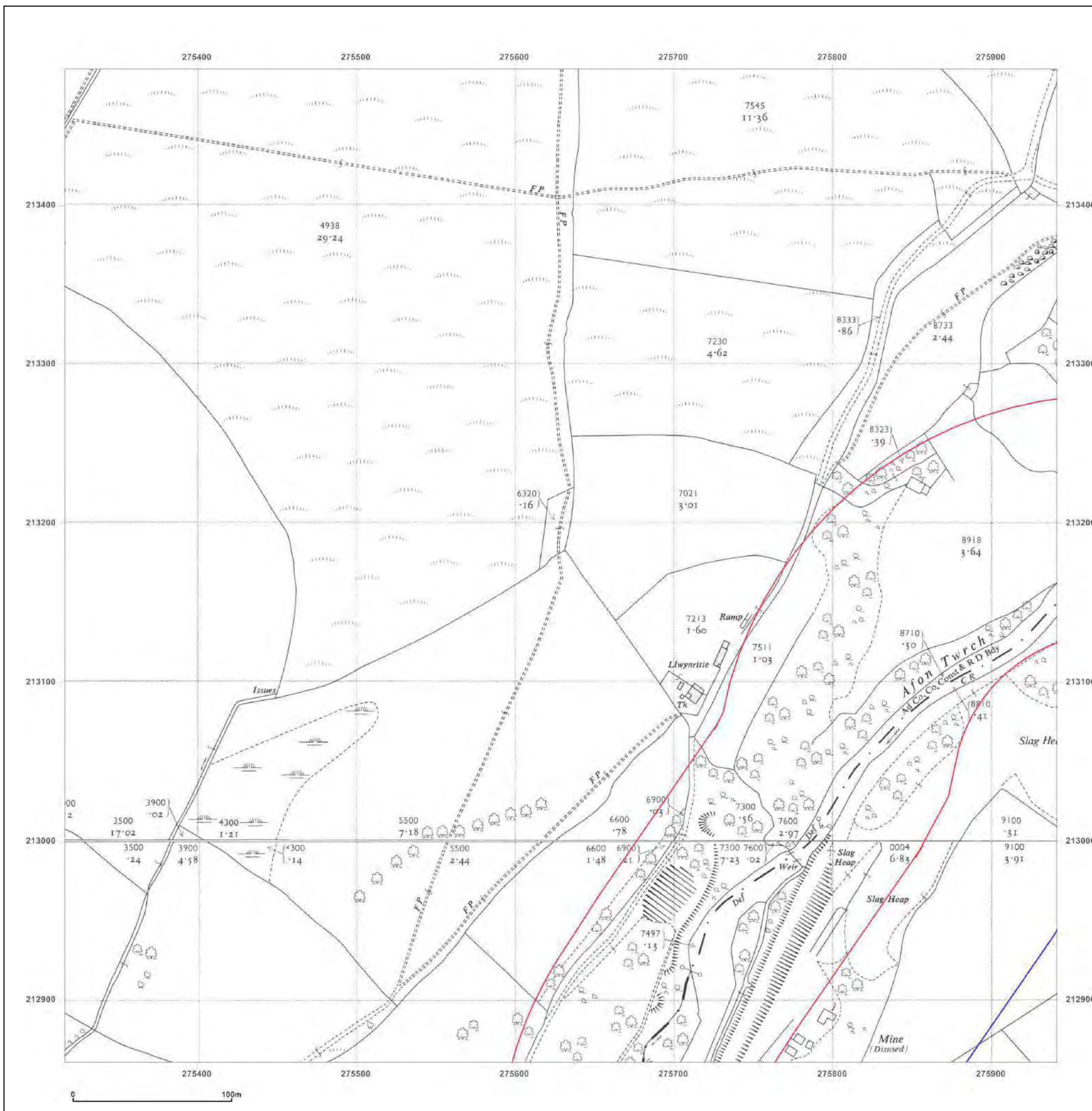


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: National Grid

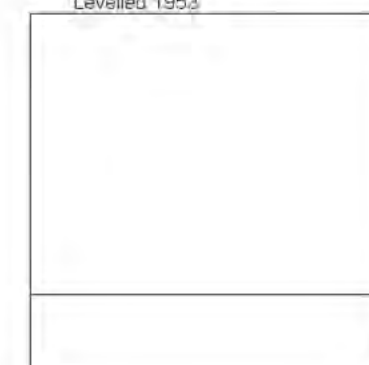
Map date: 1989

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1953
 Revised 1989
 Edition N/A
 Copyright 1989
 Levell'd 1953



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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: National Grid

Map date: 1988-1991

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1953
 Revised 1988
 Edition N/A
 Copyright 1988
 Levelled 1953

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

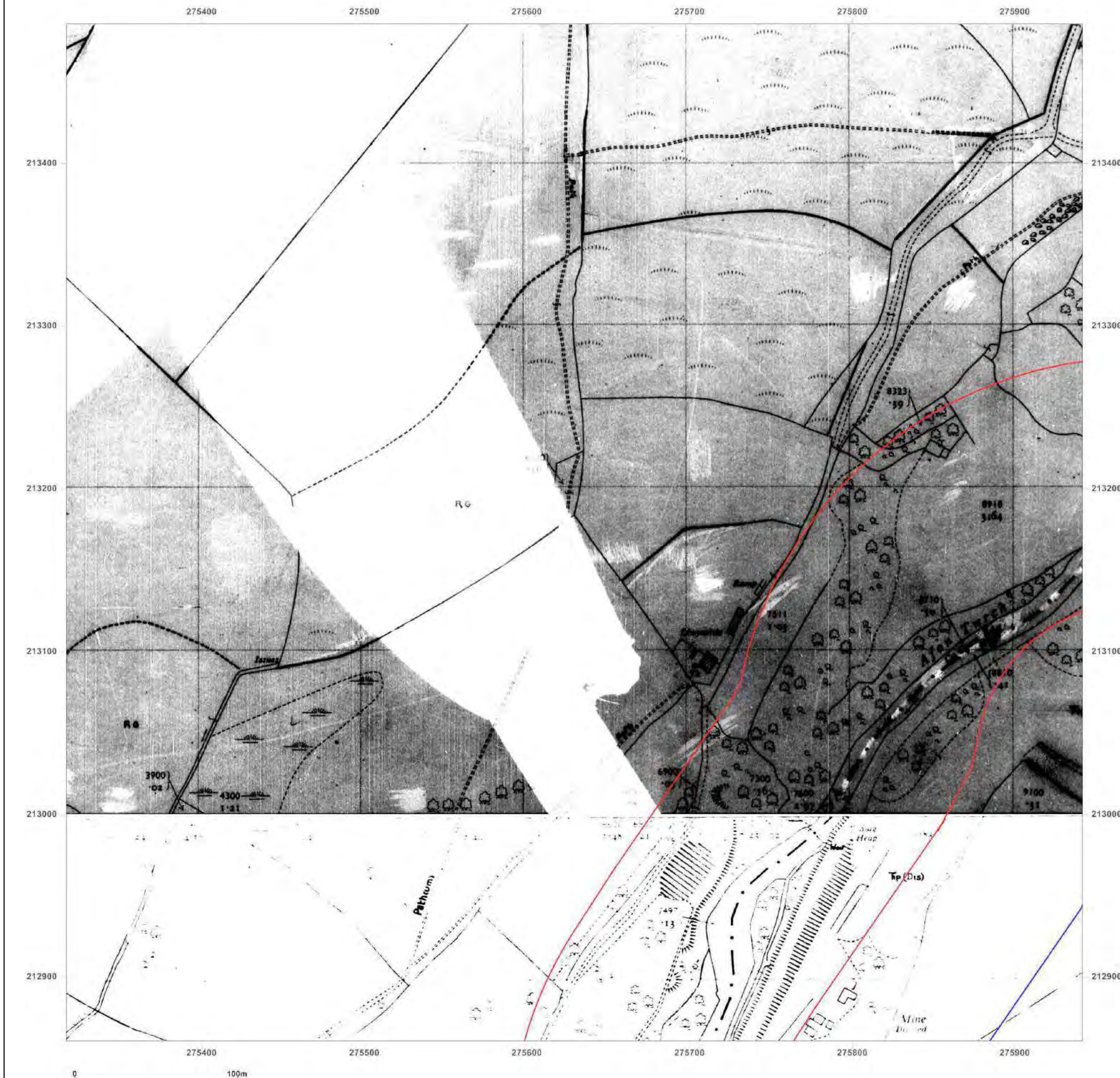


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_1_3
Grid Ref: 275629, 213173

Map Name: National Grid

Map date: 1989-1993

Scale: 1:2,500

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

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

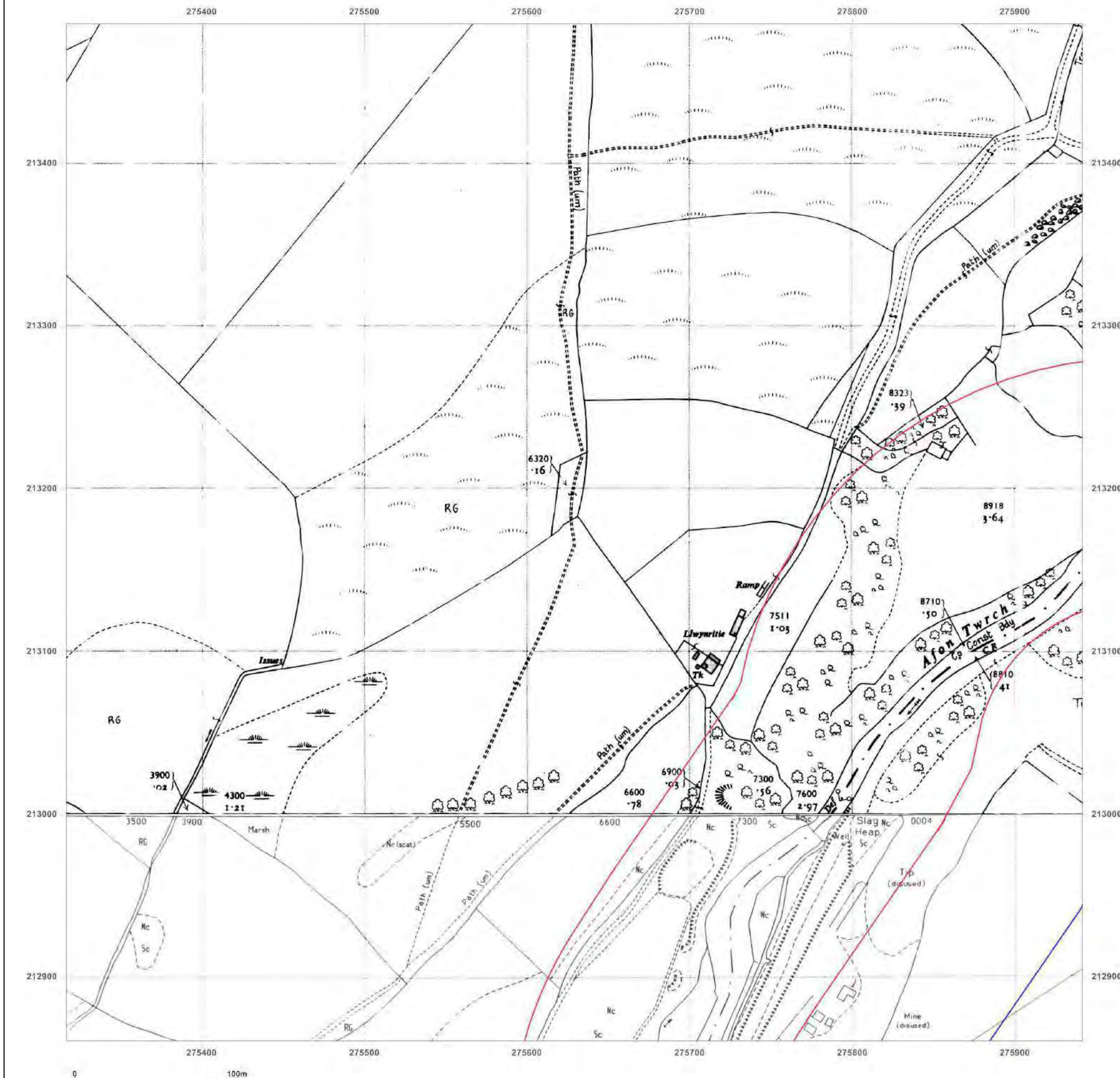


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Production date: 06 June 2019

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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
Grid Ref: 276254, 211922

Map Name: County Series

Map date: 1877

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1877
 Revised 1877
 Edition N/A
 Copyright N/A
 Levelled N/A

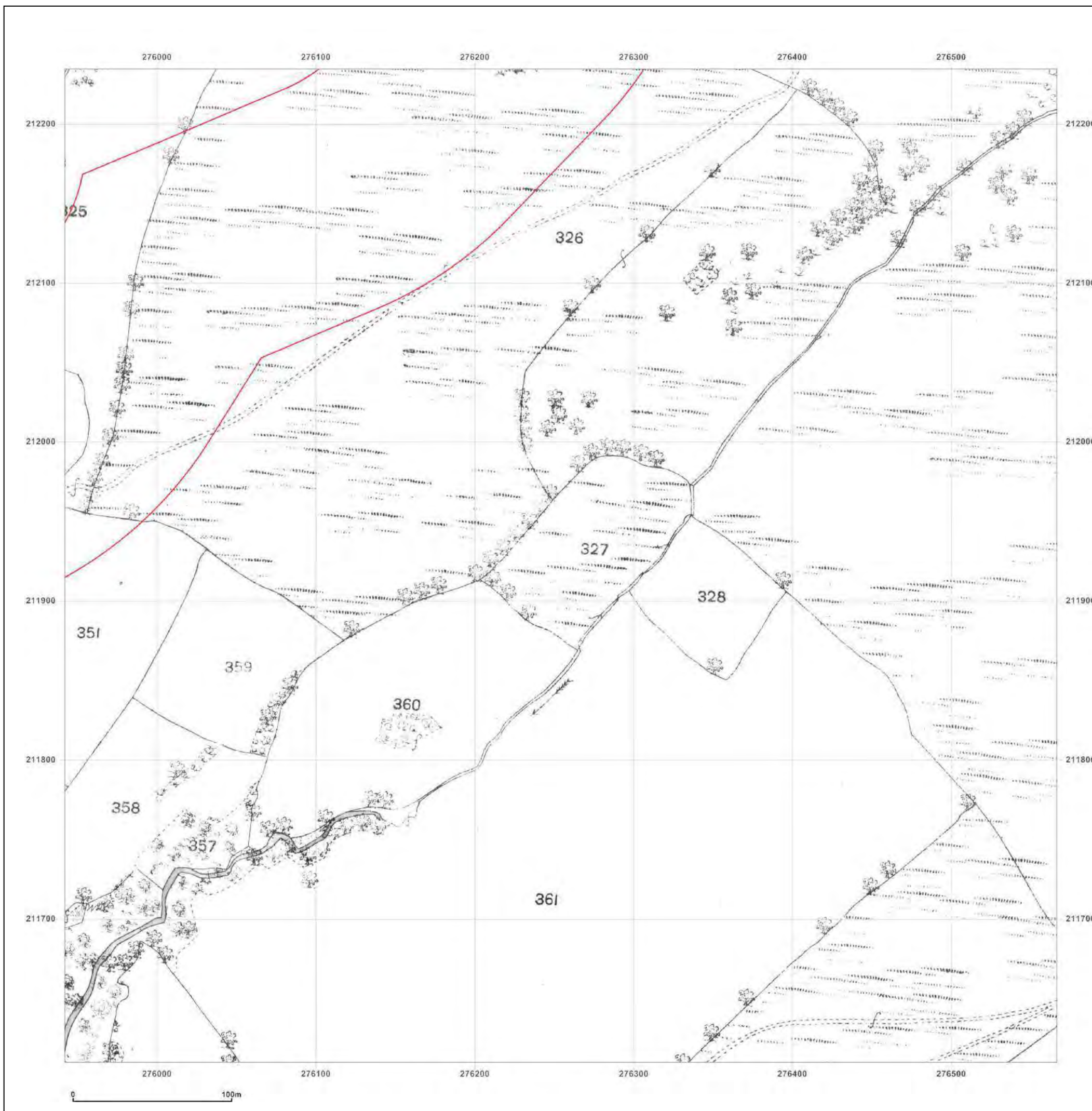


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Production date: 06 June 2019

Map legend available at:
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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
Grid Ref: 276254, 211922

Map Name: County Series

Map date: 1905

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1905
 Revised 1905
 Edition N/A
 Copyright N/A
 Levelled N/A

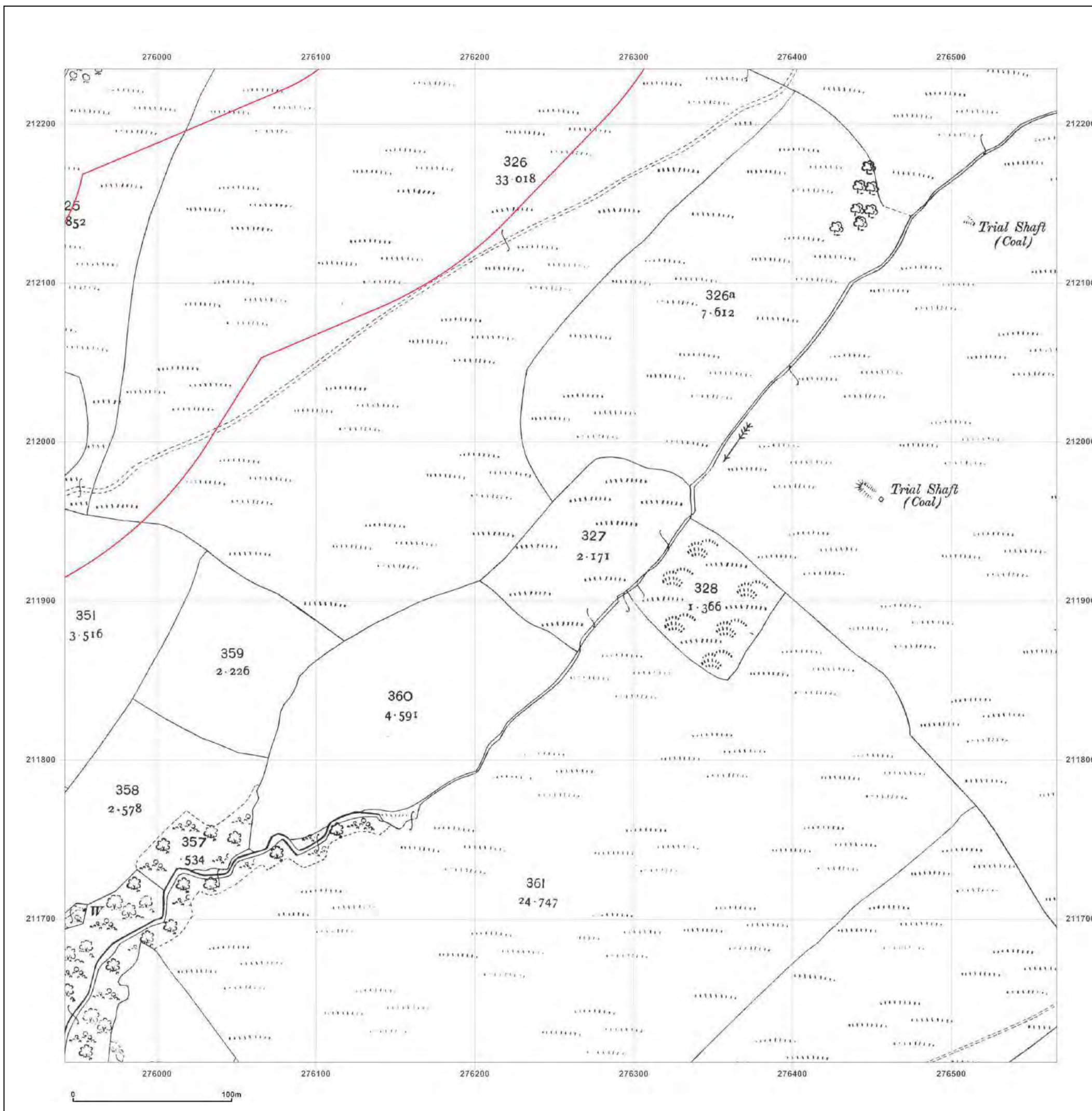


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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
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Map Name: County Series

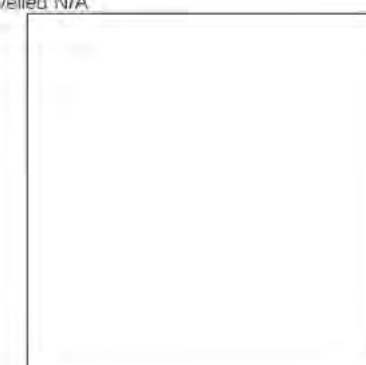
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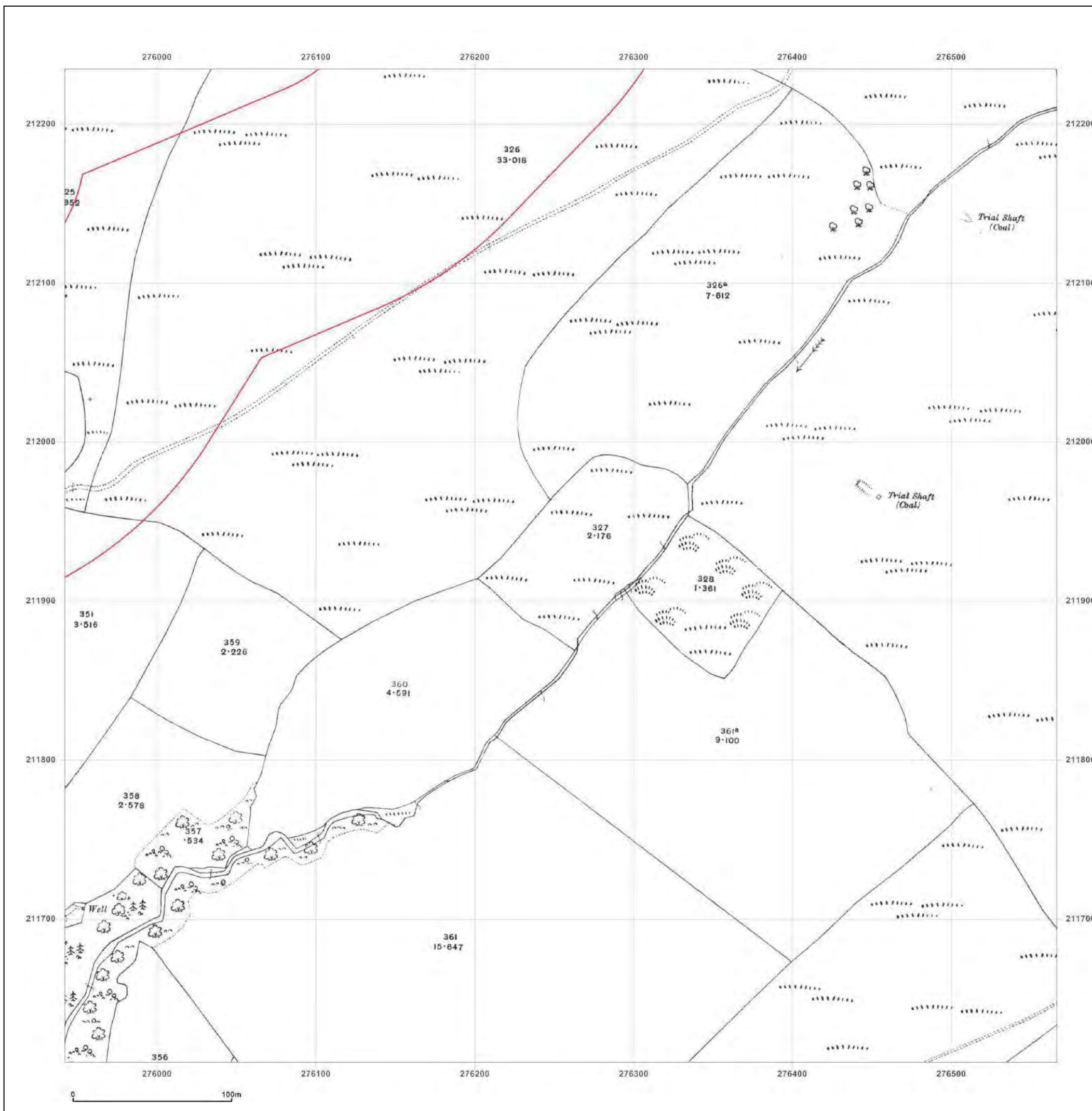


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Production date: 06 June 2019

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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
Grid Ref: 276254, 211922

Map Name: National Grid

Map date: 1961-1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright 1962
 Levelled 1956

Surveyed 1962
 Revised 1962
 Edition N/A
 Copyright 1964
 Levelled 1953

Surveyed 1961
 Revised 1961
 Edition N/A
 Copyright 1962
 Levelled 1956

Surveyed 1962
 Revised 1962
 Edition N/A
 Copyright 1964
 Levelled 1953

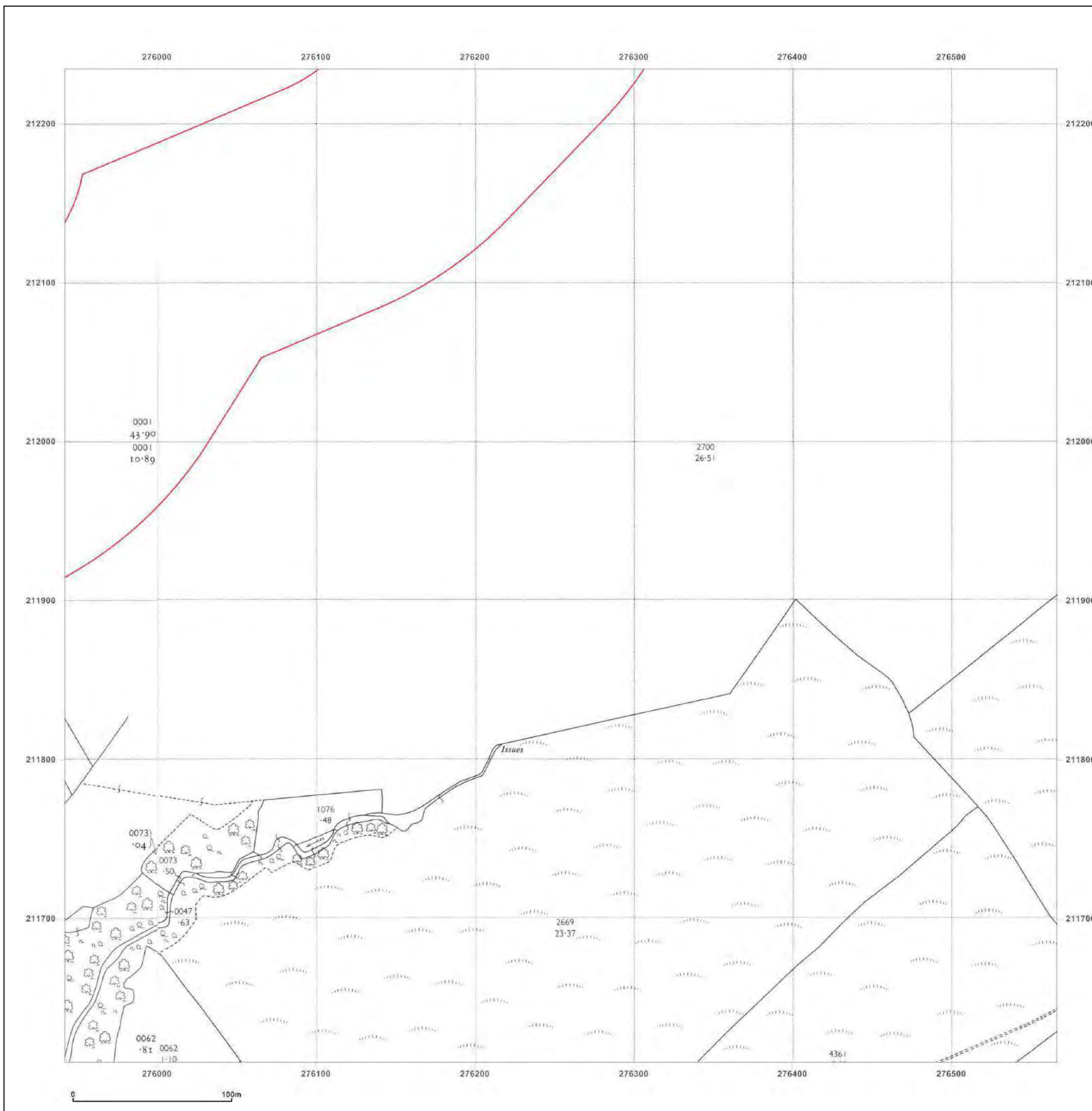


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Production date: 06 June 2019

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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
Grid Ref: 276254, 211922

Map Name: National Grid

Map date: 1962-1964

Scale: 1:2,500

Printed at: 1:2,500



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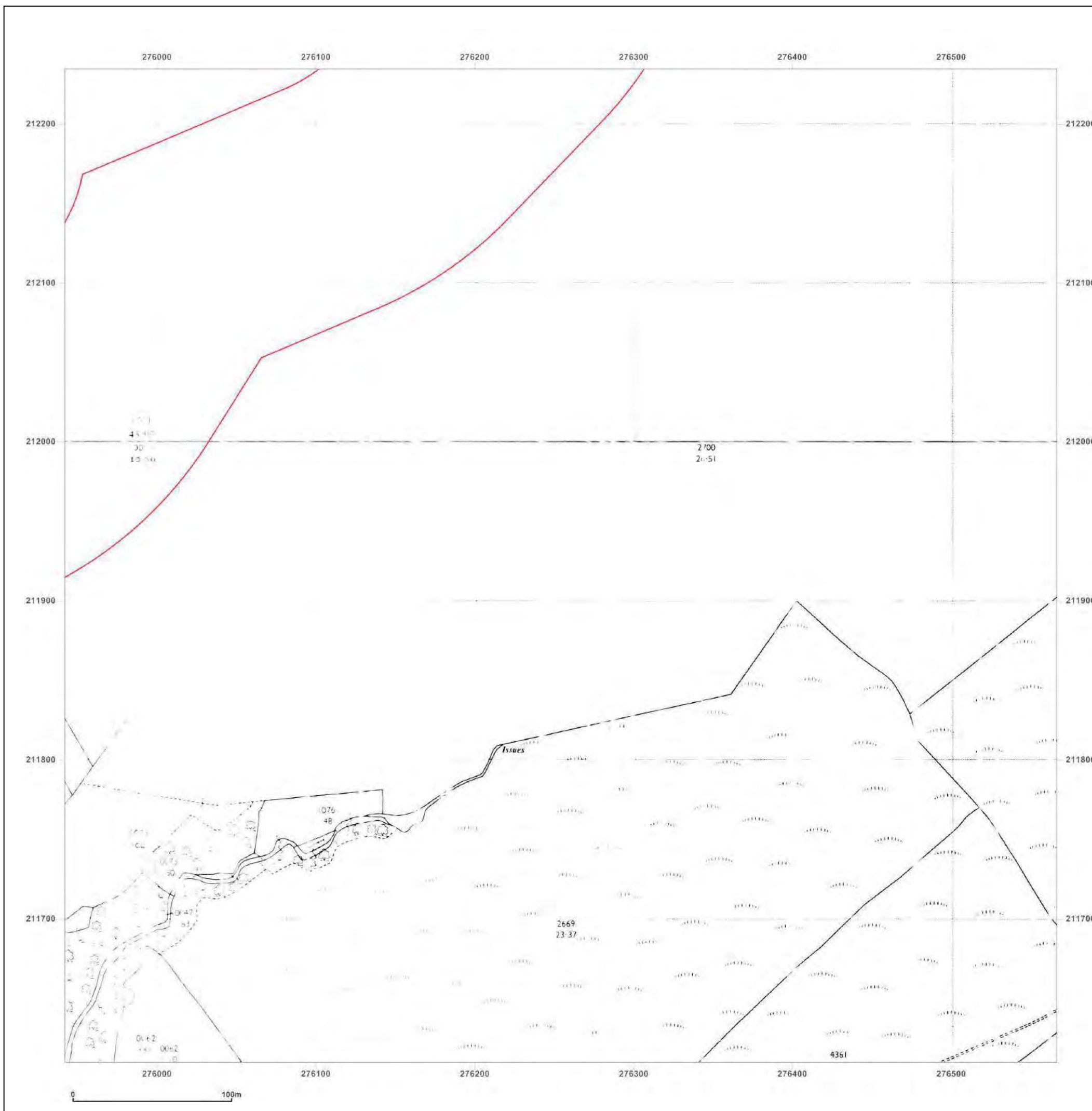


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Production date: 06 June 2019

Map legend available at:
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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
Grid Ref: 276254, 211922

Map Name: National Grid

Map date: 1985-1990

Scale: 1:2,500

Printed at: 1:2,500



<p>Surveyed 1956 Revised 1990 Edition N/A Copyright 1990 Levelled 1956</p>	<p>Surveyed N/A Revised N/A Edition N/A Copyright 1985 Levelled 1963</p>
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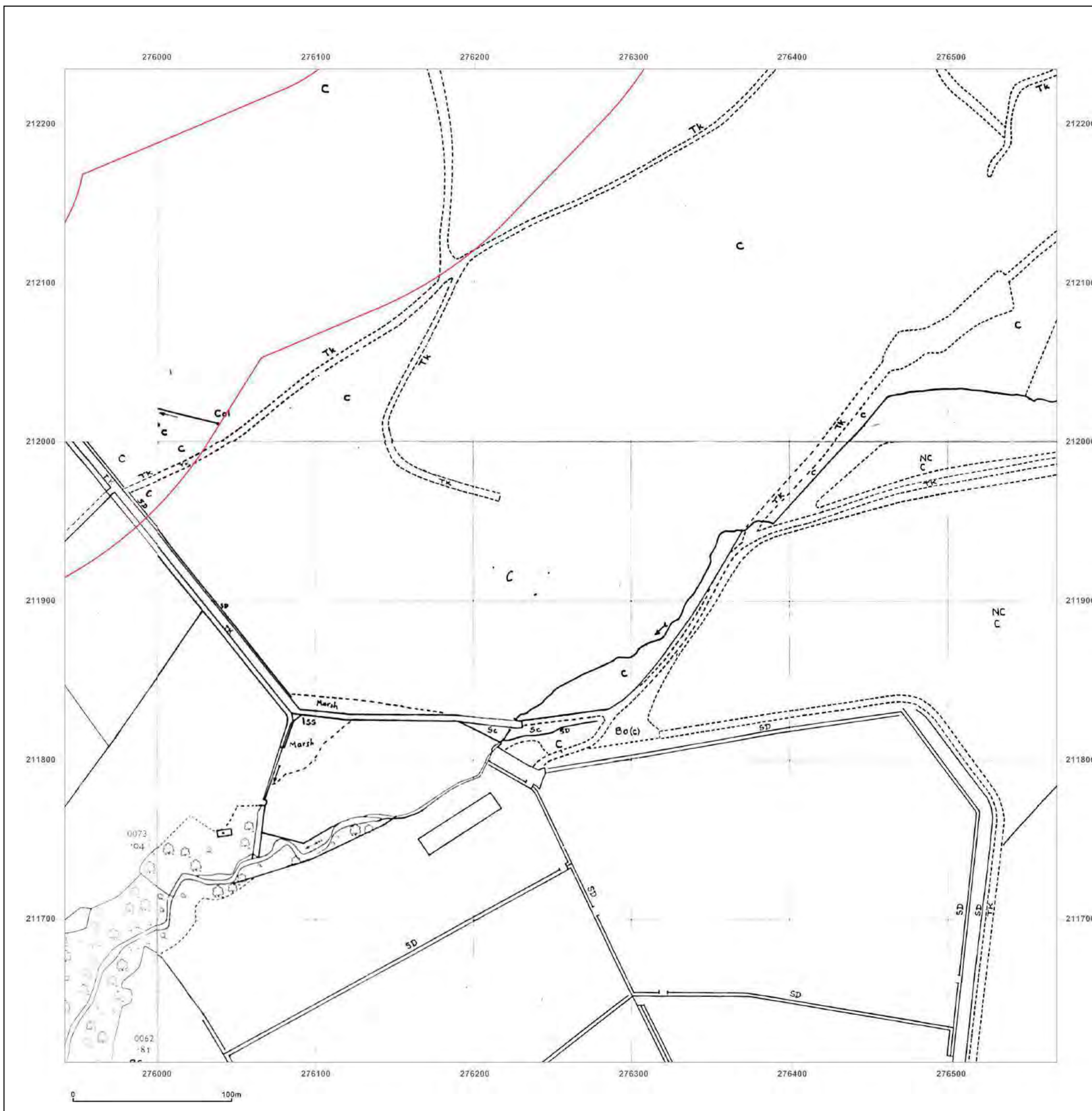


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Site Details:

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Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
Grid Ref: 276254, 211922

Map Name: National Grid

Map date: 1986-1991

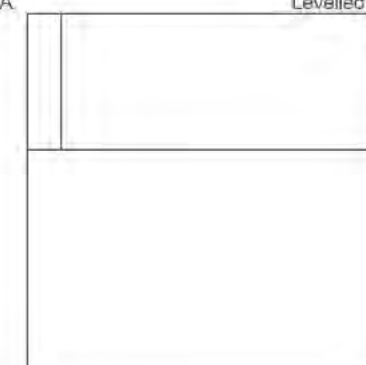
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Printed at: 1:2,500



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 Edition N/A
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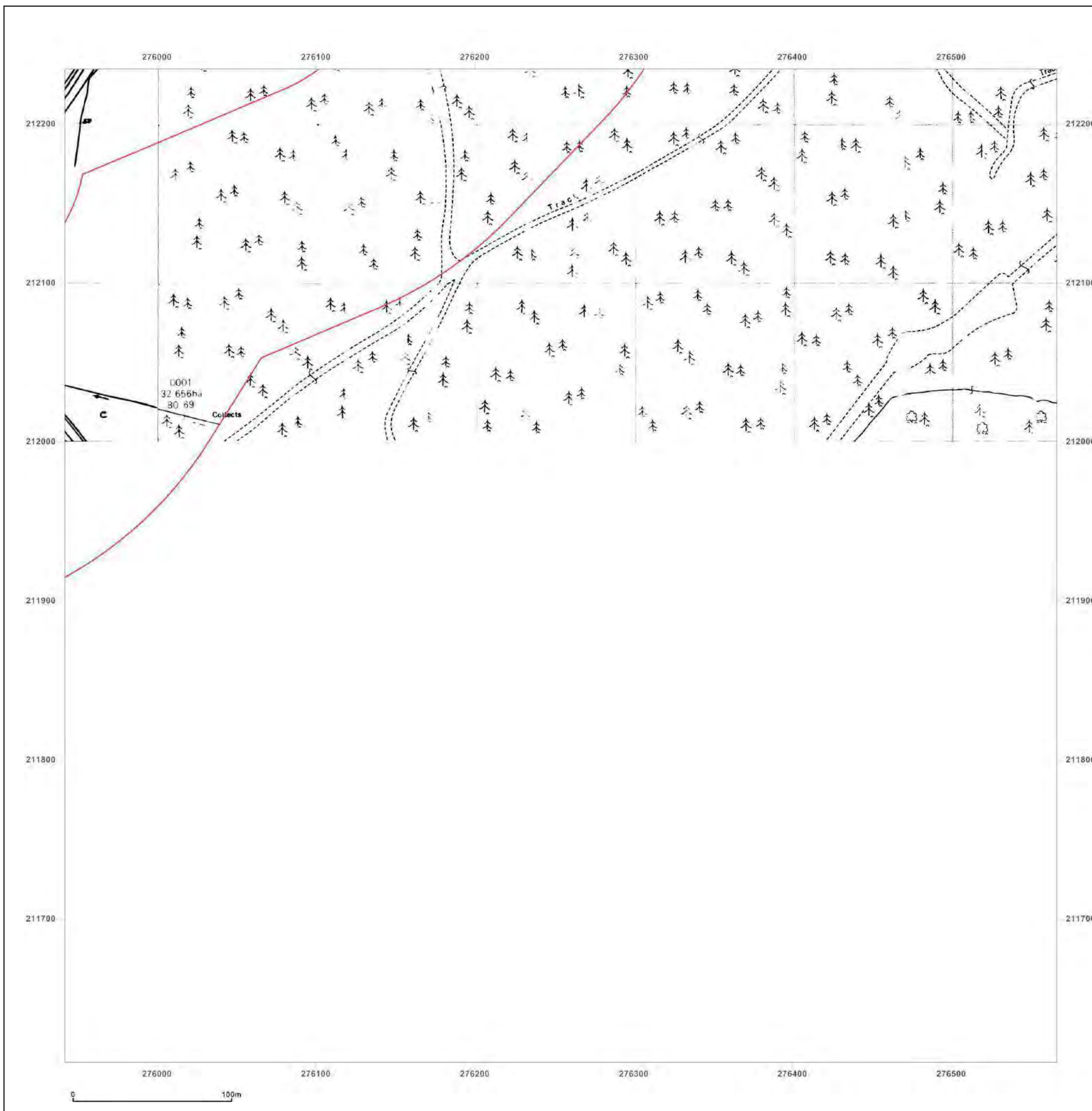


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Production date: 06 June 2019

Map legend available at:
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Site Details:

276031, 212872

Client Ref: Bryn_Henllys_Extension
Report Ref: GS-6079654_LS_2_1
Grid Ref: 276254, 211922

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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



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Appendix VI

Powys County Council Planning Committee Report 28th October 2008

Planning, Taxi Licensing and Rights of Way Committee Report

Reference No: Brynhenllys OCCS

Community Council: Ystradgynlais TC

Officer: Carms CC as part of SLA
with Powys CC

Location: Brynhenllys Former Open Cast Coal Site (OCCS)

Proposal: To establish the position relating to the Restoration and Aftercare of the above site.

Summary

The purpose of this report is to establish the status of the restoration and aftercare at the Brynhenllys OCCS site ("the Site").

Introduction and Background

The Site is identified as the former Brynhenllys Open Cast Coal Site (OCCS). The Site was formerly agricultural land and upland areas extending to some 219 hectares.

Given the Site's location within the wider South Wales coal field areas, the mineral value of the area has been recognised by the coaling operations that have been carried out on the Sites in the last two decades. Planning permission for the development of the Brynhenllys OCCS was granted by the Secretary of State for Wales on 13 May 1993, following an Appeal against the refusal of planning permission by Powys County Council (the predecessor County Council as opposed to the Unitary Authority.)

As is common with schemes of this nature, the proposal as initially submitted contained a strategy for the restoration and aftercare of the Site. Notwithstanding this, the planning permission granted by the Secretary of State, included specific conditions that related to the restoration and aftercare of the Site – Conditions 9, 10, 11 and 12 refer.

Condition 9 – Phased Restoration

Each phase of working shall be restored in accordance with a scheme to be agreed with the Mineral Planning Authority. Each scheme shall be agreed before that phase of working commences, and shall include provision for:-

- a. The final levels of the restored area and surrounding land within the site;*
- b. The natural or artificial drainage of the site including during and after backfilling;*
- c. The replacement of topsoil, subsoil and any suitable soil-forming material;*

- d. Restoration of the land to agriculture, woodland or amenity uses;*
- e. Removal of buildings, plant and machinery on completion of the final phase of the restoration;*
- f. The treatment of the Palleg fault, if disturbed, to prevent the ingress of water from the Farewell Rock*
- g. The restoration of the private access road.*

Condition 10 – Completion of Restoration

All site restoration and landscaping operations shall be completed within 3 years of the completion of coal extraction.

Condition 11 – Aftercare

Each phase of working shall be subject of an aftercare scheme, requiring such steps as may be necessary to bring the land to a condition reasonably fit for the proposed end uses, the details of which shall be submitted to the Mineral Planning Authority at the same time as the scheme required by condition 9 above. The agreed aftercare scheme shall be kept in force until 5 years have elapsed from the date of commencement, which date is to be notified in writing to the Mineral Planning Authority. Aftercare shall be carried out in accord with the agreed scheme which shall specify the steps to be taken and the period during which they are to be implemented. The scheme shall include details of:-

- a. Tree planting and landscaping;*
- b. Cultivations, seeding and management of grassland heath and woodland in accordance with the principles of good husbandry, silvicultural and nature conservation practice;*
- c. Fertiliser and lime application based on soil analysis;*
- d. Grazing management;*
- e. Field water supplies;*
- f. Ditches/watercourses and piped ditch systems to control surface run-off and prevent erosion and a piped drainage system consistent with good practice for the restoration of land to the uses specified;*
- g. Any other agricultural treatment particularly relevant to the site.*

Condition 12

No alterations to the provisions or phasing of the aftercare scheme shall be made except with the prior written agreement of the Mineral Planning Authority.

Coaling ceased at the site in September 2003, with the County Council agreeing an overall restoration scheme on the 16th September 2003. This scheme was the subject of variation over the intervening years, with a significant milestone being a report that was taken to the County Planning Committee on the 28th October 2008. A copy of the report is attached as Appendix 1. This report reflected thoughts at that time about the works that had been carried out in relation to the restoration and aftercare, and provided a further agreed position on this, and what additional works needed to be done.

The resolution of that Committee was that the revised restoration and aftercare management scheme (dated the 21st July) be approved subject to additional requirements, and in accordance with conditions 9-12 of the 2003 approval as referred to in this report.

The history behind the evolution of the site is complex and is explained in more detail below. For the purposes of the background to this report, Committee determination is sought to provide a definitive position in relation to restoration and aftercare pursuant to the resolution in 2008. Officers have also taken Counsel's advice to inform this report.

Legal Basis for Restoration and Aftercare Conditions

As outlined above, the 1993 approval had conditions imposed that sought to govern and direct, amongst other things, the restoration and aftercare of the site. It is important for Members to understand the background to the conditions in question, and the requirement for their imposition.

The power to impose restoration and aftercare conditions is contained within Schedule 5 of the Town and Country Planning Act 1990 (as amended).

A Restoration Condition is defined in Paragraph 2(2) of Schedule 5 as a condition requiring that after the winning and working of minerals is completed or the deposit of mineral waste has ceased, the site shall be restored by the use of any or all of the following, namely subsoil, topsoil and soil making material.

An Aftercare Condition is defined in Paragraph 2(2) of Schedule 5 as a condition requiring that such **steps** shall be taken as may be necessary to bring the land to the required standard for whichever of the following uses is specified in the condition namely, agriculture, forestry or amenity.

Paragraph 2(5) states the **steps** that may be specified in an aftercare condition or an aftercare scheme may consist of planting, cultivating, fertilising, watering, draining or otherwise treating the land.

Paragraph 2(6) and 2(7) **fix** the end of the aftercare period as being five years from compliance with the restoration condition on any part of the site. Compliance with the restoration condition is considered to be the point at which the Council consider that the approved restoration scheme on any part of the site (and any agreed amendments to it) is complied with **as a matter of fact and degree**.

History of Restoration and Aftercare at the Site

The Site has always been split into three distinct areas for restoration purposes – Area A (175.1 hectares, north eastern section within the Brecon Beacons National Park) where the principal coaling activities took place, including the excavation area, overburden storage area and offices etc; Area B (36.9 hectares, small section in north within the National Park) which was an area to the east of the site workings which had been poorly restored as part of a former opencast coal operation; and Area C (7.4 hectares – 1.4 hectares of which was leased) which comprises the corridor along which the site access road was constructed.

Area A

A restoration plan for the first phase of Area A was submitted in April 1998 and restoration was commenced in the southern area. The Council confirmed in September 2000 that restoration was proceeding satisfactorily (with the possible exception of the area set aside for wet heath) in accordance with the restoration strategy contained in the planning application, but requested the submission of details required to comply with condition 9 of the planning permission. A detailed restoration and aftercare scheme was submitted on 7 December 2000.

A revised restoration and aftercare scheme was submitted on 26 February 2003 and was further revised on 14 May 2003, in so far as the size of the fishing pond was reduced below 25,000m³. This scheme was approved on 16 September 2003 (under delegated authority) subject to conditions. An amended scheme dealing with minor changes in layout and contours was agreed by officers of the Council at a site inspection on 16 April 2004 with subsequent variations of intended land use agreed during site inspections in 2007 and 2008.

The latest version of the restoration and aftercare scheme, incorporating the previously agreed variations, was submitted by Celtic Energy on 22 July 2008 and approved by Powys County Council on 28 October 2008, subject to conditions. This scheme in effect superseded all the previous schemes although it should be noted that those parts of Area A which were restored and commenced the aftercare period prior to 2003 were already out of aftercare before this revised scheme was approved.

The revised scheme shows Area A as being restored primarily to moorland grassland and pasture (122.2 hectares), with areas of heath (16.8 hectares), woodland/scrub (29.9 hectares) with the remainder comprising ponds and other features such as buildings and roads. Due to the lack of soil available on site a significant area was to be restored using soil forming material (SFM).

The Council witness expressed concerns at the Public Inquiry about the feasibility of restoration of such large parts of the site using SFM. The Inspector was aware of the constraints relating to the lack of soil and the stony nature of the soil forming material but this did not prevent him from recommending approval of the scheme. Following the grant of planning permission the Council's role is to ensure that the best possible restoration is achieved with the material at their disposal.

That position has continued in so far as Powys County Council has had to seek the best possible result with the material available. This has proved to be a challenge as the SFM on this site is geological material with very low fertility characteristics.

It is critical to the process of establishing a grass sward on SFM to avoid compaction. The emphasis is that it isn't the degree of stoniness in the SFM (obviously not extreme) in a rough grazing standard of restoration that really matters, it is the ability to get a vigorous grass/clover seed mix sown into a rough seedbed when the SFM is newly placed and loose and to allow rooting to develop to depth before natural consolidation takes place. This is one of the reasons that the material is 'loose tipped' rather than spread using a dozer. Subsequent grazing management is also essential to allow a robust turf structure to develop over a slowly degrading/weathering SFM. Animals need to be removed from the land in poor weather conditions during the aftercare period to prevent compaction.

The plan approved as part of the restoration and aftercare scheme has dates on it clearly indicating when, in Celtic Energy's view, restoration was completed and aftercare commenced. Celtic Energy clearly believes these to be the dates by which compliance with restoration conditions and thereby commencement/completion of aftercare is measured. However, it is for the Council to establish when restoration was completed and this has to be when the approved restoration scheme (including amendments) is complied with as a matter of **fact and degree**.

Agreement as to whether restoration was complete (or not) appears to have taken place mainly during site inspections and site meetings and there is little in writing. However, apart from the former office area, the Council has no reason to dispute that restoration has been completed in Area A on the dates indicated on the Plan. Therefore, all of Area A, with the exception of the former office area, is considered to be outside of the aftercare period and the County Council has no further control over the management of those areas.

Some restoration works appear to have been carried out in the former office complex area and its environs in 2008. This extended the aftercare period for this area until 2013. This area partly consists of a concrete pad for the storage of fertiliser and an access track which were retained by agreement as they facilitated the agricultural use of the land. The restoration of this area was carried out using the same SFM as was used on the restoration of the haul road (Area C).

The restored agricultural pasture in Area A is in a well managed condition with the grass sward having been well established, even on the areas restored with SFM.

The heath area has not been a success but it was always envisaged that this was 'experimental' and the Planning Inspector in his conclusions acknowledged that the chances of success were low.

The public rights of way in Area A are legally suspended, with temporary alternative routes being available for some paths. However, Celtic Energy carried out work to physically reinstate the suspended public rights of way, which was completed in 2008. These physically reinstated routes are currently known to be in use by the public, although they are not legally reinstated as yet. The only outstanding issues

on the suspended rights of way are obstructions that have not been caused by the coaling works; these will need to be resolved by working with the landowners.

The formal revocation of the Order suspending the rights of way is currently being considered by the Welsh Government. However, even though they acknowledge that the rights of way issue is a separate issue from the agricultural restoration issue, they have indicated that they will not progress the revocation of the rights of way Order until the Council formalises their view on the status of the agricultural restoration.

The Town Council have raised issues relating to gates across rights of way/roads. This matter is totally unconnected with the agricultural restoration and the Council has appointed an Independent Surveyor to investigate.

Area B

A planting scheme for Area B was submitted to and approved by Powys County Council in 1996. The restoration of this area was carried out in 1998/1999 in accordance with the approved scheme. The area was restored primarily to mixed broadleaf/conifer woodland plantation (28.1 hectares) with moorland grazing (8.5 hectares) comprising mainly of open corridors between blocks of mixed broadleaf/conifer plantations. The restoration of this area was considered to be satisfactory and the 5 year aftercare period expired at the end of 2004. Once the aftercare period expired the County Council had no further control over the management of Area B.

Area C

As stated above there have been a number of versions of the restoration and aftercare schemes for the entire site. The latest version of the restoration and aftercare scheme, incorporating the previously agreed variations, was submitted by Celtic Energy on 22 July 2008 and approved by Powys County Council on 28 October 2008, subject to conditions. This scheme in effect superseded the previous schemes and is the one that is to be used as the basis for any decision on the restoration and aftercare of Area C.

The removal of the haul road is understood to have commenced in 2006. The tarmac surface was removed and buried in the void in Area A and the sub base was recovered and re-used on the roads and rights of way in Area A.

Celtic Energy submitted proposals to Powys County Council on 17 July 2008 for the completion of works to Area C. This was consulted upon and an officer of the Welsh Government confirmed that the schedule of works covered all the matters mentioned in previous correspondence in relation to the haul road. He noted that the restored haul road had been used as a track for farm vehicles, livestock and horses in all conditions causing surface compaction. He also noted that Celtic Energy were unlikely to be in a position to control this activity but that the use of the land was critical to the achievement of aftercare objectives.

On 11 September 2008 Powys County Council wrote to Celtic Energy agreeing the works set out in their letter dated 17 July 2008. This included the removal of the remaining section of haul road and the double gates. However, it was subsequently accepted that the section of haul road was intended to remain as the original section of road was permanently stopped up. It is understood that the double gates were retained at the request of the landowner to facilitate access, although the gates are far wider than is necessary for normal agricultural operations. In February 2006 the landowner in the northern section of Area C also wanted part of the roadway outside of the barn to be retained as a stock feeding area although subsequently this request was withdrawn.

The reinstatement of the line of the temporary diversion of Bridleway 75 was also proposed in the restoration scheme. However, as confirmed in the report to the Council's Planning Committee on 28 October 2008 it was agreed (following representations from the landowner and members of Ystradgynlais Town Council) to leave the temporary bridleway in situ pending an application being made for a permanent diversion of the bridleway, on the grounds that the new alignment serves the public and the landowner better. This has implications for the resultant landform. The application for the permanent diversion of the bridleway has yet to be made as the Orders suspending the rights of way have yet to be revoked.

The report to the October 2008 Planning Committee stated that Celtic Energy had accepted the need for substantial further works on the haul road and that these works were underway and were nearing completion when the site was visited by a Council Officer on 15 October 2008. The only outstanding issue appeared to be an area of sub surface clays which had been exposed and was to be remediated through the importation and spreading of soil located in Area A. One of the conditions attached to the approval of the revised restoration and aftercare scheme was that the spreading of soils was to be undertaken on specified areas of the haul road prior to the commencement of aftercare, the quality, quantity and locations of which to be agreed in writing with the Council before works are undertaken. A letter from Celtic Energy dated the day prior to the Committee meeting suggested that this had already been done and in their view restoration work had already been completed.

However, subsequent correspondence from Celtic Energy suggests that further discussions took place in relation to the spreading of additional soils on the areas of sub surface clays. There was concern that carrying this work out prior to the expiry of Celtic Energy's lease on 30 April 2009 might not be the optimum time of year but Celtic Energy was not prepared to extend the lease and the landowner was not prepared to allow access to the land without the extension of the lease. This work was therefore carried out by Celtic Energy just prior to the expiry of the lease in April 2009. In planning terms the completion of the only identified outstanding restoration issue is considered to have completed the restoration phase of the operation in Area C as a matter of fact. Aftercare therefore commenced in April 2009. It has to be acknowledged that the pre working survey of Area C identified the land to be poor quality Grade 5 agricultural land. The section where the haul road was established was particularly wet with a significant depth of peat. This peat was identified as being unsuitable for use in restoration and was buried in the opencast void. The only material available to restore the area was SFM and this was acknowledged by the

Planning Inspector in his consideration of the scheme prior to planning permission being granted.

SFM has limitations as stated above and it needs to be managed appropriately during the aftercare period in order for a grass sward to become established. Once the sward is established the SFM begins to break down over time forming subsoil and the organic matter begins to form the topsoil. There is evidence that the breakdown of mudstone is beginning to occur in Area C even in its current condition.

It must also be acknowledged that the restoration was being carried out with the aim of returning the land to Grade 5 agricultural pasture. What was required was suitable material to enable cultivation to form a seedbed. The material used was suitable for a standard of restoration that would support rough pasture if adequately managed. Unfortunately, the land has not been managed, unlike parts of Area A which were restored using similar stony SFM and are in a satisfactory condition.

The first phase of aftercare is usually undertaken by the mining contractor immediately after restoration is completed, as it is difficult for a private landowner to undertake such work on SFM. However, it did not take place in Area C for a number of reasons.

Firstly, the weather conditions deteriorated soon after restoration was completed and there was a significant amount of surface erosion which washed away the soils leaving a very stony surface. In part this erosion was compounded due to the removal of drainage grips at the request of the landowner. Secondly, there was significant compaction evident due to the movement of vehicles and livestock in all weather conditions; thirdly, the landowner disputed that restoration had been completed and did not accept responsibility for any further works; and, fourthly, Celtic Energy did not have access to the land following the expiry of the lease on 30 April 2009 so were unable to carry out the initial aftercare works. There was provision within the lease for Celtic Energy to extend it but they chose not to exercise the option.

As the landowner continued to vigorously challenge the decision that restoration had been completed, Powys County Council took the decision to obtain an independent opinion from ADAS in order to seek to resolve the dispute.

The resulting report from ADAS concluded that some attempt at restoration has been made but it falls short of providing a sufficient base for subsequent aftercare to produce a satisfactory pasture. However that report is fundamentally flawed. Legal opinion is that restoration can only be completed when the approved restoration scheme, with any agreed amendments, is implemented and complied with. The author of the ADAS report acknowledged that he did not have a copy of the restoration plan. Accordingly he was not in a position to come to a conclusion as to whether the restoration of Area C was completed in accordance with that plan.

Despite having no responsibility for any further work in planning terms, Celtic Energy offered to carry out some remedial works in Area C as a goodwill gesture in a letter to Powys County Council dated 23 November 2011. In that letter they suggested that the condition of the land was due to the failure of the landowner to properly manage the land following completion of restoration.

The works identified by Celtic Energy as being required to address the issues identified at the site were as follows

- Undertaking agricultural operations in appropriate conditions to relieve compaction and further treat the surface – discing, harrowing and stone picking the top 150mm
- Applying a soil ameliorant such as sewage sludge or agree a programme of fertiliser application to improve soil quality
- Fence out the area to ensure it is not trafficked
- Install shallow drainage where required to prevent erosion.

It should be noted that the identified remedial works fall within the scope of aftercare rather than restoration. However the landowner will not allow Celtic Energy access to his land without a further lease agreement being in place and, as a result, Celtic Energy has withdrawn its offer.

In conclusion, there is no evidence to suggest that restoration was not completed in April 2009. The only outstanding restoration issue was addressed at that time. Aftercare would therefore run until April 2014. The remedial works identified are aftercare works. The aftercare is the responsibility of the landowner and he would be expected to supply information in relation to how he was going to improve the land until the end of the aftercare period. In April 2014 the aftercare period would be complete and the Council would have no further control over the management of Area C.

RECOMMENDATION

Powys County Council accepts that as a matter of fact and degree

- The restoration of Area A is complete. Aftercare is complete on the majority of the site. The former site office complex area remains in aftercare until 2013.
- The restoration and aftercare of Area B is complete.
- The restoration of Area C was completed in April 2009. The aftercare continues until April 2014. Action is required to enable the land to be cultivated into a seedbed to support a sward. The landowner should be invited to carry out these remedial actions.

CYNGOR SIR POWYS COUNTY COUNCIL

COUNTY PLANNING COMMITTEE

28 October 2008

REPORT BY: Head of Regeneration & Development (Organisation & Regeneration Directorate).

SUBJECT: Brynhenllys Open Cast Coal Site – Revised Restoration Scheme

REPORT FOR: **DECISION**

1. Background

- 1.1 The Brynhenllys Open Cast Coal Site was granted planning permission by the Secretary of State for Wales on 13 May 1993 and that authorisation contained a number of conditions relating to restoration and aftercare requiring schemes to be agreed with the Mineral Planning Authority.
- 1.2 Coaling finished at the end of September 2003. An overall restoration scheme for the site was agreed by Powys County Council on 16 September 2003 and since then there have been a number of variations following discussions and site visits culminating in the scheme now prepared for Committee decision which was received on the 23 July 2008.
- 1.3 This latest submission has been prepared following concern expressed relating to the standard of restoration and aftercare after a site visit by officers in February 2008 and subsequent meetings and visits culminating in an on site meeting in April 2008 attended by officers representing Welsh Assembly Government, Brecon Beacons National Park and Powys County Council, employees of Celtic Energy and a prospective purchaser.

2. The Site

- 2.1 The site extends to 219 hectares to the east/north east of Ystradowen and comprising three distinct entities.
- 2.2 Area A is where the principal coaling excavations took place and now with infilling, consists of enclosed agricultural land and woodland on the lower slopes rising through areas of moorland grazing to the open stretches of the Beacons National Park. There are a number of watercourses and man made ponds within the site which is crossed by a network of public rights of way ranging from the reinstated Palleg road (a byeway open to all traffic) to reinstated and newly created public footpaths.

The concept implicit in the original approval for the area aims at a mix of habitats which are beneficial to agriculture, ecological diversity and recreational enjoyment.

- 2.3 Area B lies to the east of A and comprises an area of former open cast operations judged to have been poorly restored following completion of coaling at the Tredeg site. This area commenced restoration in 1998 and 1999 and is now largely occupied by broad leaf and coniferous woodland and is now considered to be satisfactory.
- 2.4 Area C comprises the corridor of the access road used to take coal out (the haul road) which resulted in the loss of agricultural land agreed with owners under leasing arrangements and involving some modification of topography and the temporary diversion of a Bridleway. The restoration and aftercare regime in this area consists of the return of the land to pasture.

3. Consultation

- 3.1 Following the discussions and meetings earlier in 2008 a revised submission including plans and a Restoration and Aftercare Management Scheme was sent out for consultation following its receipt in July 2008.
- 3.2 The written plan submitted will form part of the power point presentation to Committee. The written scheme is attached to this report as *Appendix 1*.
- 3.3 The following representations have been received:-

- i. Ystradgynlais Town Council:- "With reference to your letter dated 29 July 2008, I wish to advise that the 2008 update version of the restoration plan was considered by the Ystradgynlais Town Council at its meeting held on 4 September 2008 and I have been instructed to respond as follows:

General – Whilst the Ystradgynlais Town Council is reasonably content with the contents of the restoration plan it is concerned that the specified restoration works are not being delivered on site.

Natural water courses – As these watercourses do not appear to carry water it is queried whether the statement in section 3.4 "that livestock will get their water source from local water courses" is sustainable. In addition Section 10.1 states that watercourses will be "monitored during the aftercare period to ensure satisfactory performance. It is not evident that these actions are being carried out on site.

Aftercare Soils – It is queried as to whether the aftercare soils have in fact been tested annually to ascertain nutrient deficiencies (Point 3.5). There does not appear to be much visual evidence of fertiliser application ?

Wet Heather – it is noted that this form of restoration has been reconsidered. Although this appears to be against the spirit of the Environmental Statement it is accepted that the National Assembly for Wales Agriculture Department have been party to the decision presumably in consultation with Powys County Council.

Thistle – It is not very evident that thistle is being "controlled via applications of suitable chemical weed killing compound" as stated in Section 5.3.

Seasonal wet grassland – it again appears that the original specification is not being achieved and that the wet grassland is not as extensive as envisaged. It is noted that these areas are to "continue to develop naturally" (Section 6.1). It is

queried as to whether this approach is appropriate.

Woodland 8.3 – There is general concern over the poor performance of the tree planting areas. It is noted in Section 8.5 that “an inspection was carried out in 2007 which resulted in recommendations for management of the woodland including replacement as necessary of trees in various plantations in Area A”. There is no indication in the restoration plan of what the resulting recommendations were although there is a reference to action being underway to re-fix stakes.

Hedgerows – There is similar concern over the performance of the hedgerows. It is noted in Section 9.2 that further hedge planting works are planned for the current year. Whilst it is accepted that the remedial works are to be undertaken it remains to be seen whether or not the works are comprehensive in nature and undertaken to the appropriate standard.

Public Rights of Way – The Ystradgynlais Town Council are very pleased that additional rights of way have now been formed and adopted by the County Council. It is also noted that disability friendly two-way gates have been installed on footpaths 28 and 37. The only areas of concern with regard to the rights of way are that the footbridge on path 37 has not been replaced, no waymarking exists and gates have been locked.

Land Management (Twrch Gorge) – The Ystradgynlais Town Council wishes to again express its extreme disappointment with the decision by Walters/Celtic not to dedicate the Twrch Gorge land for development of the access and amenity. The intention to action this land transaction was clearly stated in a former restoration statement (12.6) and this change of mind is regarded as a material change to the restoration plan. The detrimental implication is that this will now deny the community at large and the Town Council in particular the opportunity to develop the access and amenity potential under a project known as the Ffordd y Glowyr. The land management liabilities that clearly exist on this parcel of land are not addressed in the restoration and aftercare management plan.

Conclusion – Whilst it is recognised that much has been achieved it is evident that the restoration of this former opencast site is far from complete and does not meet in many areas the specified criteria advocated in submitted restoration plans. The suggestion (Section 12.1 that those areas which entered aftercare in the period 1998 – 2003 are now considered to be out of the requisite 5 year period cannot be considered acceptable.”

ii. Welsh Assembly Government:-

“Restoration and Aftercare Management Scheme (2008 Revision) (Drawing 07A03164 superceding Drawing 07A02946b – In general terms my previously expressed concerns over aftercare management on this site persist - the submitted documentation does not assess the current condition of the site or give details of work done. Some areas have been under aftercare management for several years, as per paragraph 12.1, and there should be a detailed record of management inputs, submitted on an annual basis. The scheme (paragraphs 3.5 and 4.2) mentions annual soil analysis over the main agricultural grassland areas, but there is no record of any being carried out. The management of soil nutrients and soil pH is a key factor in agricultural aftercare.”

Restoration of workshop, office and car park area – This recently restored and seeded area appears to be in unsatisfactory condition, based upon the degree of surface stoniness and surface ponding. I have not investigated below the surface but there may be a compaction problem. I hold the view at the moment that this area may not have been restored to the same standard as elsewhere on site, which was carried out as per the Soils Restoration Specification agreed with Taylor Woodrow Mining. Celtic Energy should be asked to consider the matter. Normally, restored areas are not released into aftercare until the standard of restoration is confirmed as satisfactory.

Weed control in agricultural grassland – The scheme at paragraphs 3.2 and 4.3 states that weeds, particularly rush, will be controlled in these areas, but with no details of the extent of the problem and what work has been done to date. This is particularly relevant to the enclosed pastures where productive grassland is the objective, and where rush is taking hold in areas associated with poor drainage (see below).

Natural regeneration of moorland grazing (Natural Park area).— My earlier correspondence on this subject, letter 14 July 2004, advised that the developer should take steps during the aftercare period to monitor progress towards achievement of objectives, which should be clearly stated at the outset. Interventions may be required dependent upon progress towards objectives. The scheme at paragraph 3.3 does not mention the condition of the natural regeneration in this area or management. Inspections have noted that desirable natural regeneration (heather) is becoming established in certain areas, and possible management measures discussed. However, the scheme does not mention this.

Drainage in the enclosed pastures – Previous inspections have highlighted a drainage problem, associated with rush infestation, see above. Drainage works are envisaged at paragraph 4.4 but with no assessment of current condition or details of work done.

Hedge planting in enclosed pasture area north of Palleg Road – The scheme, at paragraph 4.5 and section 9, states that hedge planting has been carried out. Hedge planting had not been done in the area north of Palleg Road at the time of my last inspection, so perhaps this statement requires confirmation.

The rush covered mound (National Park area) – Recent discussions with National Park officers included the regeneration of heather in this area, with associated rush control measures. Paragraph 5.3 includes for weed control, but no detail of work done, and heather regeneration is not mentioned. My last inspection confirmed that the area had not been managed since restoration, resulting in dense rush grown, as anticipated, without control measures being undertaken.

Scrub woodland – natural regeneration – I note that the significant reduction in scrub woodland, as discussed at the last site meeting is now on plan, with compensatory increase in "moorland grazing". I can confirm that I have no objection to this change. In terms of achieving the objective of scrub woodland over the areas now under grazed grassland, I feel that grazing should be prevented; at least until the desired level of regeneration has taken place. This may take several years and certainly longer than 5 years. The trial plots indicate

the process is likely to be slow on soil forming material. The scheme at paragraph 7.1 allows for light grazing, which I feel will be counterproductive in the early stages, and may not be desirable at any stage depending upon long term objectives.

Lagoon in south east section.— Paragraph 10.3. As mentioned in previous correspondence, I am concerned that some of the stone lined drainage channels entering this lagoon from the north are in deteriorating condition and present an ongoing maintenance problem. The channels continue to take significant stormwater flows and remain essential drainage features within an artificially engineered landform. The aftercare period should be utilised to ensure that all necessary remedial engineering work is undertaken, to ensure the land is fit to be released into general farming use. In addition, paragraph 10.3 may be misleading as it fails to mention the ongoing need to maintain the lagoon and drainage channels as an essential drainage facility, which may reduce the opportunities for amenity works.

Change of ownership – It is my understanding that by now the land, excluding the haul road, may have changed hands, to one farmer owner. Paragraph 12.5 mentions this possibility and the passing over of aftercare obligations. Clearly, the new owner is likely to have plans for the land and may wish to put matters in hand during the aftercare period, and that the Celtic Energy submission may not reflect this. I would be pleased to take part in any discussions where it affects agricultural management."

- iii. Solicitor for an owner of Area C (Haul Road) (received prior to the consultation but representative of the concern) – "I understand that Celtic have said they will start the completion of the restoration shortly after the receipt of a letter from yourselves. Could you please inform us when the restoration has been completed to the council's satisfaction and when the five year aftercare period commenced.

I understand that the restored access road will need to remain fenced off from adjacent land so that the aftercare can be undertaken properly. I also understand that one of your main concerns during the aftercare period, is that the land should not be grazed until the sward is properly established and after that it should only be lightly grazed for short periods during periods of dry weather to avoid unnecessary compaction and damage to the sward.

I understand that the length of grazing allowed during the aftercare care period will depend on not only the weather conditions but also on how the sward is becoming established.

We are concerned that the land should not be returned until the aftercare is completed and the site capable of being grazed without restrictions. We would therefore like to be informed by the council when it considers the site is capable of unrestricted grazing."

- iv. Brecon Beacons National Park Authority
No response at time of writing this report.

4. Officer Comments and Appraisal

- 4.1 The restoration of an open cast coal mine is a major undertaking and in terms of an acceptable and attractive land form Brynhenllys is a relative success.
- 4.2 However, as Members will have gleaned from the consultation responses above the restoration of habitat and subsequent aftercare in Area A has left something to be desired. This has now been accepted by Celtic Energy although they have responded to some of the criticisms pointing out that:-
- a) The watercourses have been designed by geotechnical engineers are unlined and will need to be subjected to further monitoring and ongoing maintenance.
 - b) There have been problems with monitoring of soils and these will be rectified.
 - c) Matters relating to wet heather and seasonal wet grassland are being addressed through agreement.
 - d) Commitments have been made in relation to tree planting and hedgerows.
 - e) Footpath issues have now been resolved.
 - f) On the matter of the transfer of Twrch Gorge to the Town Council there is no legally binding agreement for such a transfer.
 - g) An angling facility includes a pond and six acres of land is to be handed over freehold to the Tawe Angling Club.
 - h) Drainage of enclosed pasture will continue to be maintained.
- 4.3 The most recent discussions with representatives of Celtic Energy have revealed that Area A has, with the exception of the land to be transferred to 'Tawe Anglers', been sold to a local farmer who was party to the site visit in April 2008. This means that liability for remaining restoration and ongoing aftercare fall to the new owner and in discussions with that person and his solicitor, the Mineral Planning Authority has been at pains to ensure that the commitment is thoroughly understood.
- 4.4 There is considerable advantage in Area A being owned and managed by one owner. A dividing up of the area into smaller holdings, each with their own aspirations, would have threatened an overall and cohesive strategy.
- 4.5 It is in the light of this advantage and acknowledgement that larger parts of the area will need to come into productive agriculture that the revised strategy for Area A has been negotiated.
- 4.6 The most substantial change from previous approaches has been the reduction in the area of open scrubland and increase in moorland grazing. This has been agreed at officer level because it is not viewed as a threat to the overall landscape objectives of the original planning permission.
- 4.7 Another significant change is the reduction in seasonally wet grassland following the reinstated watercourses. This is a result of these being 'over engineered' and sunk into the ground at a depth where wet margins will not develop. Whilst this is unfortunate and there is some doubt as to the volume of water ever likely to use some of these channels, their reconstruction would be a major undertaking at this stage and would be detrimental to the aftercare programme overall.
- 4.8 It is clear that, with respect to elements of restoration and more comprehensively when it comes to aftercare, there have been deficiencies brought about by a lack of clear objectives translated into specific activities subjected to regular monitoring in order to ensure their success. This is apparent particularly with respect to the establishment of upland scrub, restored heathland and tree and hedgerow

- planting. Whilst work took place initially this was neither followed up with maintenance nor subjected to inspection to ensure progress and to an extent the Mineral Planning Authority must share some responsibility for this.
- 4.9 The new owner has purchased the site in the full knowledge that there are ongoing issues to resolve and, whilst the scheme put forward for Members approval shows compromise to assist the beneficial use of the land for agriculture it offers the opportunity to apply a more rigorous set of requirements for work and its monitoring during the remaining aftercare periods.
- 4.10 County Councillor Sandra Davies and Ystradgynlais Town Council have continued to express concerns relating to full public access to Area A and by the time that Members consider this report it is hoped to provide details of progress following a visit to the site by Council Officers including the Footpath Enforcement Officer. A plan showing the footpath system can be found at *Appendix 2*.
- 4.11 Coming now to Area C (Works to B having been found to be satisfactory), Celtic Energy have accepted the need for substantial further works on the Haul Road which are underway as this report is being written. An inspection took place on 15 October which has revealed that, whilst the restoration works are nearing completion on the top section of the road sub-surface clays have been exposed and this will need to be remedied through the bringing in and spreading of soil. In addition a failed attempt has been made to commence aftercare. This was undertaken in unsuitable weather conditions and any further work apart from realignment of fences and planting of hedgerows will now need to be delayed until late spring/early summer.
- 4.12 As part and parcel of restoration, Celtic Energy were given instructions to reinstate the line of Bridleway 75 which involved the taking out of the temporary diversion. However, following representations from the landowner and members of Ystradgynlais Town Council, it has been agreed to leave the temporary bridleway in situ pending an application being made for diversion on the grounds that it serves members of the public and the landowner better.
- 4.13 Following a satisfactory completion of the current works there will remain a substantial period of aftercare on the Haul Road to ensure that pasture becomes fully established. This will not be as complicated as it is in Area A as, with the exception of the private road at the bottom of the site, the land will be returned solely to grazing. However, this will be reliant on drainage works, cultivation and initial severe restrictions on grazing and avoidance of compaction by use of the land as a means of access either agriculturally or recreationally.
- 4.14 The letter from the major haul road landowner's solicitor has been included as it demonstrates the view that aftercare responsibilities should remain with Celtic Energy. However, since this is dependant on the details of a leasehold agreement between the two parties this is not a dispute in which the Mineral Planning Authority can become involved.

5. Officer Recommendation

- 5.1 It is **RECOMMENDED** that the revised restoration and aftercare management scheme dated 21 July 2008 be approved subject to the additional requirements based on conditions 9 – 12 of the 1993 Planning Approval.

Area A

- i. The approved areas of upland scrub to be fenced off from adjoining moorland grazing in a manner to be agreed in writing by the Mineral Planning Authority.
- ii. Any grazing of upland scrub areas to be agreed in writing the Mineral Planning Authority before it takes place as shall any subsequent removal of protective fencing.
- iii. A report on current condition, provision of soil tests and record of fertiliser/lime applications made in the previous year on enclosed pastures and sown moorland grazing to include any grass harvesting operations is to be provided to the Mineral Planning Authority on an annual basis following which there is to be written agreement between the Mineral Planning Authority and the owner on the programme for the coming year in these respects.
- iv. An area of moorland pasture in the northern sector to the west of the road to Pen-y-Wan where natural regeneration of heather and other moorland species is taking place to be fenced off in accordance with a scheme to be agreed with the Mineral Planning Authority with regular monitoring and supply of results to the Mineral Planning Authority on an annual basis prior to removal of fencing.
- v. The rush infestation on the area of restored heath to be removed either mechanically or chemically and thereafter reseeded in accordance with a scheme to be agreed in writing with the Mineral Planning Authority.
- vi. A scheme for tree and hedgerow to include planting protection and maintenance be agreed in writing with the Mineral Planning Authority and any planting failure replaced with the same or similar species in the first available planting season.
- vii. Watercourses to be monitored to ensure satisfactory performance and any erosion to be made good in accordance with a scheme to be agreed in writing with the Mineral Planning Authority.

5.2

Area C

- i. Spreading of soil is to be undertaken on specified areas of the haul road prior to the commencement of after care, the quality, quantity and locations of which to be agreed in writing with the Mineral Planning Authority before works are undertaken.
- ii. The first phase of aftercare is to be the draining of land in accordance with a scheme to be agreed in writing with the Mineral Planning Authority prior to commencement.
- iii. The second phase of aftercare is to be cultivation of the restored area, the extent of which is to be agreed in writing with the Mineral Planning Authority, prior to the sowing of seed to an agreed mix not later than September 2009.
- iv. A report on current condition, provision of soil tests and record of fertiliser/lime applications made in the previous year on the pasture to include any grass harvesting operations is to be provided to the Mineral Planning Authority on an annual basis following which there is to be written agreement between the Mineral Planning Authority and the owner on the programme for the coming year in these respects.

- v. Grazing and harvesting of grass to be strictly controlled in accordance with a scheme to be agreed in writing with the Mineral Planning Authority and reviewed annually.

Appendix VII

Powys Council Environmental Response

**Gwilym Davies**

Pennaeth Eiddo, Cynllunio a Gwarchod y Cyhoedd
Head of Property, Planning & Public Protection

Gwasanaeth Iechyd yr Amgylchedd/**Environmental Health Service***Cyngor Sir Powys County Council***Neuadd Maldwyn****Y Trallwng / Welshpool****Powys SY21 7AS**

Ms Bethan Hallett
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CF11 9LI

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E-bost / E-mail : david.jones1@powys.gov.uk
Eich cyf / Your ref WK/201910518
Ein cyf / Our ref : DJ1
Dyddiad / Date : 16th July 2019

Os yn galw gofynnwch am /
If calling please ask for : David Jones

Dear Ms Hallett

Environmental Search Request
Re : Bryn Henllys, Upper Cwmtwrch

The following questions have been asked in respect of the above property, our response follows:

Summaries of notable sites (in terms of contamination) within the site boundary and within a search area of 500m radius, that you are aware of, including Part 2A sites or other important sites that the Council feels that the project should be aware of;

- *The most recently produced Contaminated Land Strategy, if this is not freely available on your website;*
- *UXO/UXB records for the site and within a search area of 500m radius;*
- *Groundwater Abstraction records for the site and within a search area of 500m radius;*
- *A plan of the search area; and*
- *Any additional information you feel relevant for identifying potential contamination issues.*

Response: the subject site is in a 'development high risk area' as defined by the Coal Authority. Gas protection measures will be required in any buildings.

The following potential contamination features have been identified in and around the subject site:

Feature	NGR
---------	-----

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Cysylltwch â ni yn Gymraeg neu yn Saesneg. Ni fydd cysylltu yn Gymraeg yn arwain at oedi.
Contact us in Welsh or in English. Contacting in Welsh won't lead to a delay.



Er mwyn cyflenwi gwaith Gwasanaeth Iechyd yr Amgylchedd, mae angen prosesu data personol yn unol â'r ddeddfwriaeth berthnasol. Bydd y wybodaeth hon yn cael ei chadw yn unol â'r ddeddfwriaeth, a rhestr cadw gwybodaeth y Cyngor. Os oes gennych unrhyw bryder ynghylch y defnydd a wneir o'ch data personol cysylltwch â'r Swyddog Diogelu Data trwy anfon e-bost at Information.Compliance@powys.gov.uk <<mailto:Information.Compliance@powys.gov.uk>> neu ffoniwch 01597 826400. Sylwch fod modd dod o hyd i ragor o wybodaeth am Ddiogelu Data a Phreifatwydd yn y cyfeiriad gwe canlynol: <http://www.powys.gov.uk/privacy>

In order to deliver the Environmental Health Service, it is necessary to process personal data in accordance with the relevant legislation. Information held will be retained in accordance with the legislation and the Councils retention schedule. If you have any concerns regarding the use of your personal data please contact the Data Protection Officer by email at Information.Compliance@powys.gov.uk or by phone at 01597 826400. Please note that further information on the Data Protection and Privacy can be found at the following address: <http://www.powys.gov.uk/privacy>

Unknown filled ground, mining & quarrying, mining of coal & lignite	276320, 212440; 275470, 212230; 276110, 211370; 276606, 211340; 276380, 211290; 276210, 213750; 275880, 213050
Mining of coal & lignite	275950, 212620
Heap, unknown filled ground, quarrying & mining	275720, 212590
Former Gilfach colliery	275940, 211490
Glyn Cynwal Isaf landfill	275960, 211250
Tir Canol landfill	277130, 211550

Our Contaminated land inspection Strategy is available on the Council's website at <https://en.powys.gov.uk/article/4484/Contaminated-Land>

We have no information in respect of the other specific questions.

This information is sourced from a third party and has not yet been verified by this Authority. However, it is possible that potential contamination may be investigated at a future date in accordance with the Authority's Contaminated Land Strategy.

Yours sincerely

David Jones
Senior Contaminated Land Officer

Appendix VIII
Preliminary UXO Report

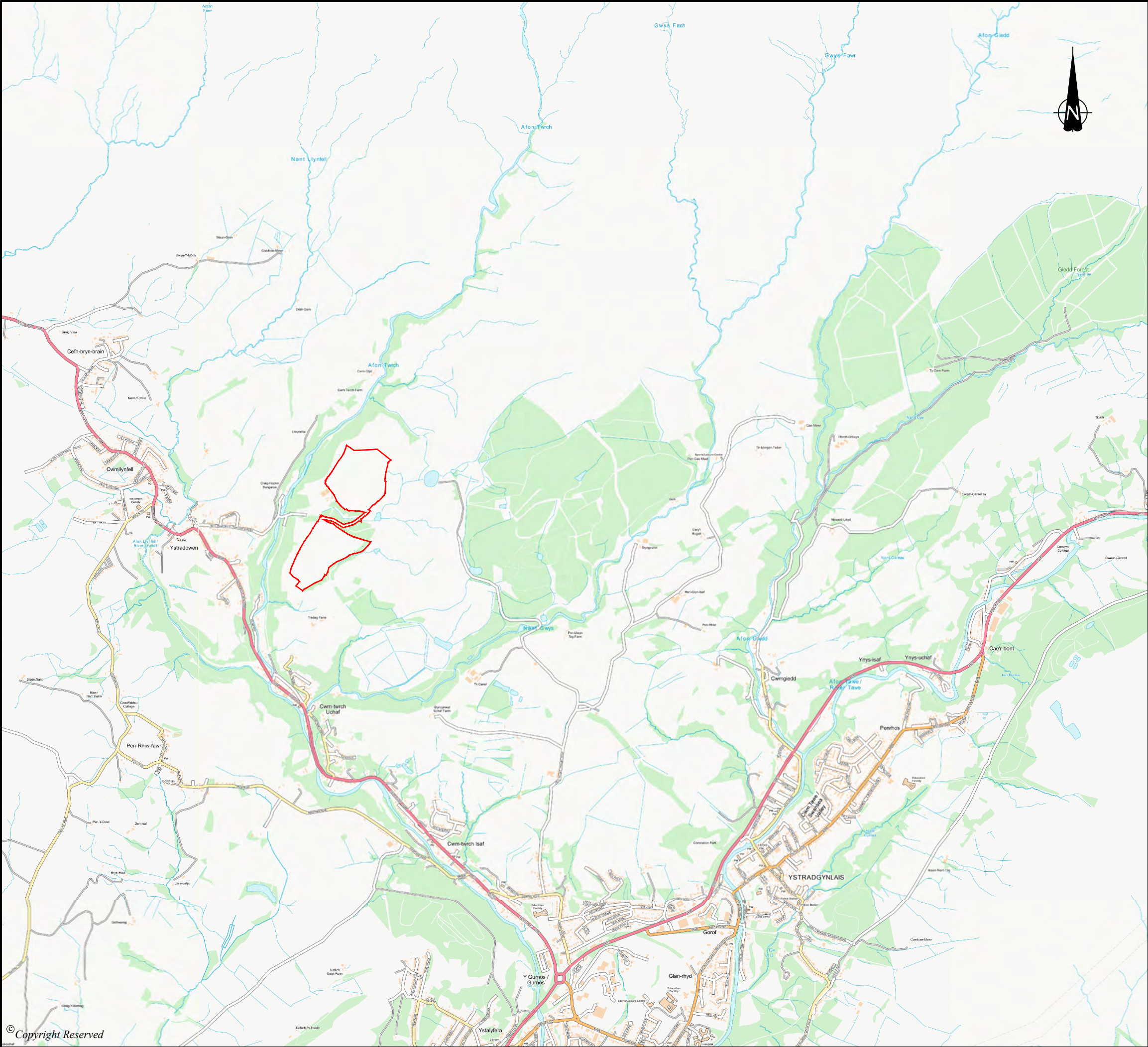
Pre-Desk Study Assessment

Site:	Bryn Henllys Extension, Cwm-Twrch Uchaf, Wales
Client:	Wardell Armstrong LLP
Contact:	Bethan Hallett
Date:	12 th June 2019
Pre-WWI Military Activity on or Affecting the Site	None identified.
WWI Military Activity on or Affecting the Site	None identified.
WWI Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: ■ Transport infrastructure and public utilities.
WWI Bombing	None identified on the Site.
Interwar Military Activity on or Affecting the Site	None identified.
WWII Military Activity on or Affecting the Site	None identified.
WWII Strategic Targets (within 5km of Site)	The following strategic targets were located in the vicinity of the Site: ■ Transport infrastructure and public utilities.
WWII Bombing Decoys (within 5km of Site)	None.
WWII Bombing	During WWII the Site was located in the Rural District (RD) of Ystradgynlais, which officially recorded 6No. High Explosive (HE) bombs with a bombing density of 0.3 bombs per 405 hectares (ha). No readily available records have been found to indicate that the Site was bombed.

Post-WWII Military Activity on or Affecting the Site	None identified.
Recommendation	A detailed desk study, whilst always prudent, is not considered essential in this instance.
<p>This summary is based on a cursory review of readily available records. Caution is advised if you plan to action work based on this summary.</p> <p>It should be noted that where a potentially significant source of UXO hazard has been identified on the Site, the requirement for a detailed desk study and risk assessment has been confirmed and no further research will be undertaken at this stage. It is possible that further in-depth research as part of a detailed UXO desk study and risk assessment may identify other potential sources of UXO hazard on the Site.</p>	

Drawing I

CA11620-001 Site Location Plan



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DO NOT SCALE FROM THIS DRAWING

LEGEND

Site Boundary

REVISION	DETAILS				DATE
	DRN	CHKD	APPD		

CLIENT	Lightsource BP				
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PROJECT	Bryn Henllys Extension				
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DRAWING TITLE	Site Location Plan				
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DRG No.	CA11620-001		REV		
DRG SIZE	A3	SCALE	1:25000	DATE	19.06.2019
DRAWN BY	AW	CHECKED BY	DJ	APPROVED BY	LD



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